Clean Energy Transition Partnership

CETPartnership Joint Call 2025

2025-XX-XX

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The Clean Energy Transition Partnership is a transnational joint programming initiative to boost and accelerate the energy transition, building upon regional and national RDI funding programmes. The initia-tive is receiving funding from the European Union's research and innovation programme "Horizon Europe" under grant agreement No 101069750.

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Definitions

In the Call, the following definitions apply. The Call process includes two stages:

- a **pre-proposal** stage (Stage 1)
- a **full proposal** stage (Stage 2)

The term **proposal** refers to both the pre-proposal and the full proposal.

A proposal is submitted by a **Project Consortium** that may consist of the following **Project Consortium Partners**:

- **Coordinator**: A legal entity applying for funding in the Call and responsible for coordinating and managing the proposal. The Coordinator cannot be changed between the deadline for pre-proposal submission (Stage 1) and the selection of full proposals to be funded (Stage 2) in the Call process.
- **Beneficiary Partners**: All Project Consortium Partners applying for funding in the Call (including the Coordinator).
- **Self-financed Partners**: Project Consortium Partners participating from any country with their costs declared but without applying for funding in the Call. Each Self-financed Partner must submit a Letter of Commitment in Stage 2 of the Call process (see **Subsection 5.2.1**).

The **Project Consortium Partners** are legal entities of any organisation type such as:

- Secondary and higher education establishments
- Research organisations
- Private for-profit companies
- Public bodies
- Other entities (e.g. non-profit organisations)

Each **Project Consortium Partner** may have the following persons:

- A Principal Investigator (PI)
- Any Team Members

The Project Consortium may involve the following stakeholders to ensure acceptance and implementation of solutions developed in the project.

- **End user**: A stakeholder who ultimately uses/consumes a product/service, rather than a stakeholder who trades in it.
- **Need owner**: A stakeholder who seeks a solution to a need/problem within its areas of operation and will benefit from the solution.

List of Abbreviations

XXX Xxx

YYY Yyy

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1. Overview

This chapter describes an overview of this document and the Call.

1.1. This document

This document intends to provide information for potential applicants to consider and develop their proposal to the Clean Energy Transition Partnership (**CETPartnership**) Joint Call 2025 (**Call**). This document describes:

- Overview of the Call as well as its process and procedure (**Chapter 1**)
- General aim and scope (**Chapter 2**), criteria, requirements and guidelines (**Chapter 3 and 4**) to consider in the proposal development
- Call process to follow for the proposal selection (**Chapter 5**)
- Project implementation to consider in the proposal development (**Chapter 6**)
- Areas in the Call (Call Modules) and their specific requirements and guidelines (**Chapter 7**)
- Reporting and Knowledge Community Work Package mandatory in the proposal development (**Annex A**)
- Funding Organisations and their specific requirements and guidelines (**Annex B**)

Further information on this Call can be found on the CETPartnership's website[2], including mandatory templates as well as related platforms (e.g. the Submission Platform[3]) and events.

1.2. The Call

The Call aims to select research, development and innovation (RDI) projects which will become part of the CETPartnership to accelerate the clean energy transition and to contribute to the goal of climate neutrality by 2050. It has a total budget of approximately EUR XXX million committed by around XX **national/regional Funding Organisations** in XX countries (see **Table 1.1**), who will **fund eligible costs directly to Project Consortium Partners** based in their country/region. Additionally, the Call will have co-funding (up to 30% of the total budget of the national/regional Funding Organisations) from the European Union (EU) through the Horizon Europe (HE) RDI Framework Programme.

Table 1.1. Participating countries/regions, including EU Member States or HE Associated Countries shown in bold

Austria	**Greece**	**Portugal**
Belgium (Flanders)	**Hungary**	**Romania**
(Wallonia)	**Iceland**	South Korea
Canada (Alberta)	India	**Spain (Federal)**

[2] https://cetpartnership.eu/
[3] https://cetp-submission.mur.gov.it/

Czech Republic	**Ireland**	**(Asturias)**
Denmark	**Israel**	**(Basque)**
Estonia	**Italy**	**(Cantabria)**
Finland	**Latvia**	**Sweden**
France (Federal)	**Lithuania**	**Switzerland**
(Pays de la Loire)	**Malta**	**Tunisia**
Germany (Federal)	**The Netherlands**	**Türkiye**
(North Rhine-Westphalia)	**Norway**	**The United Kingdom (Scotland)**
(Saxony)	**Poland**	The United States of America

The Call consists of 10 **Call Modules** (**Table 2.1**), addressing different energy technology and system challenges as well as different RDI approaches (research-oriented approaches (ROA) and innovation-oriented approaches (IOA)) for the clean energy transition, and thus complementing and completing each other. Aims, challenges, scope, requirements and guidelines of the Call Modules and expected outcomes of funded projects are described in **Chapter 7**.

Table 1.2. Call Modules in the CETPartnership Joint Call 2025

No.	Title
CM2025-01	Multi-vector interactions between the integrated energy system and industrial frameworks
CM2025-02	Energy system flexibility: renewables production, storage and system integration
CM2025-03A	Advanced renewable energy (RE) technologies for power production (ROA)
CM2025-03B	Advanced renewable energy (RE) technologies for power production (IOA)
CM2025-04	Carbon capture, utilisation and storage (CCUS)
CM2025-05	Hydrogen and renewable fuels
CM2025-06	Heating and cooling technologies
CM2025-07	Integrated regional energy systems
CM2025-08	Integrated industrial energy systems
CM2025-09	Clean energy integration in the built environment

Each **national/regional Funding Organisation** participating in the Call commits its budget to different **Call Modules**. According to their budget, rules and regulations, the Funding Organisations will fund eligible costs in their country/region. Information of the Funding Organisations is described in **Annex B**. Funding Organisations in EU/EEA countries follow the EU/EEA State aid rules.

1.3. Call process and procedure in short

The Call process (see **Chapter 5**) includes two stages: the **pre-proposal** stage (**Stage 1**) and the **full proposal** stage (**Stage 2**) (see **Table 1.3**).

In short, for a proposal to be considered for funding, it must:

- have met all the transnational requirements (see **Chapter 3**) and Call Module requirements (see **Chapter 7**), with Project Consortium Partners deemed eligible by relevant Funding Organisations participating in the Call Module (see **Annex B**), and;
- have been selected according to the ranking and available funding.

One of the transnational requirements (see **Chapter 3**) is that a Project Consortium must consist of a minimum of three Beneficiary Partners adhering to relevant national/regional requirements and guidelines, from a minimum of three different countries participating in the selected Call Module. Of these three Beneficiary Partners, at least two must be from EU Member States or HE Associated Countries (see **Table 1.1**).

Table 1.3. Timeline

Stage 1	**Date**
Opening for pre-proposal submission	11 June 2025
Deadline for pre-proposal submission	9 October 2025, 14:00 CET
National/regional deadline for pre-proposal submission	See **Annex B**
Stage 2	**Date**
Opening for full proposal submission	9 January 2026
Deadline for full proposal submission	12 March 2026, 14:00 CEST
National/regional deadline for full proposal submission	See **Annex B**
Selection decision communicated	Mid-June 2026
Project implementation	**Date**
Project start	1 September–15 December 2026
Project end	

A Project Consortium chooses one Call Module (see **Chapter 7**) to submit its pre-proposal (Stage 1) to. If the pre-proposal is selected in Stage 1, the Project Consortium is invited to submit a full proposal to the same Call Module (Stage 2). If the full proposal is selected for funding in Stage 2, relevant Funding Organisations will fund eligible costs directly to Project Consortium Partners based in their country/region (see **Chapter 6**).

In both Stage 1 and 2, the submitted proposals will be checked according to transnational requirements and guidelines set for the Call in general (see **Chapter 3**), Call Modules (see **Chapter 7**) and Funding Organisations (see **Annex B**). Proposals deemed eligible will then be evaluated according to evaluation criteria (see **Chapter 4**), ranked per Call Module and selected according to the available funding. Funding Organisations may additionally require proposal submission according to own procedures such as deadlines, portals and templates (see **Annex B**). Failing to meet a criterion, requirement or guideline can lead to exclusion from the selection in both Stage 1 and 2. **All Project Consortia are therefore encouraged to check carefully all the criteria, requirements and guidelines, with relevant contacts if necessary.**

Questions about the Call in general should be addressed to the CETPartnership Call Management (**Call Management**, callmanagement@cetpartnership.eu).

Questions about the Call Modules should be addressed to respective Call Module contacts, see **Chapter 7**.

Questions about the national/regional requirements and guidelines should be addressed to respective Funding Organisations, see **Annex B**.

2. Aim, challenges and scope of the Call

This chapter describes the general aim, challenges and scope of the Call and expected outcomes of funded projects. Further information about the CETPartnership's general view, objectives, challenges and expected impact can be found on the website[4] and in the Strategic Research and Innovation Agenda (SRIA)[5] of the CETPartnership.

2.1. Aim

The Call aims to select RDI projects which will become part of the CETPartnership[6] to accelerate the clean energy transition and to contribute to the goal of climate neutrality by 2050. The CETPartnership is a multi-lateral and strategic partnership which brings together public and private stakeholders, foster transnational innovation ecosystems, and overcome the fragmented research and innovation landscape for the clean energy transition. So far, the CETPartnership has brought together around 50 national/regional Funding Organisations from more than 30 countries in Europe and beyond, with co-funding from the European Union (EU) through the Horizon Europe (HE) RDI Framework Programme. It enables the CETPartnership to align RDI priorities of the Funding Organisations and EU and to fund RDI projects through its Joint Calls. This is the third call of the CETPartnership which has planned annual Joint Calls from 2022 to 2027.

The CETPartnership applies a holistic, cross-sectoral and transformative approach, which is structured into **three dimensions of innovation**: 1. Technologies and infrastructures; 2. Integration and organisation; and 3. Transformation and implication (see **Subsection 2.3.2**). The CETPartnership addresses technological and systemic **challenges** identified by need owners (see **Section 2.2**). To complement the challenges with transdisciplinary perspectives, it also considers **cross-cutting topics** (see **Subsection 2.3.1**). Addressing different challenges and cross-cutting topics, the funded projects will be connected to each other and with relevant stakeholders for enhanced communication, collaboration and co-creation. Moreover, they will be supported in **knowledge management** through the Knowledge Community (see **Subsection 2.3.3**) and in **impact and exploitation maximisation** through the Impact Network (see **Subsection 2.3.4**). This enables the CETPartnership to deliver highly impactful RDI activities and highly transformative RDI outcomes to ensure robust clean energy transition pathways.

[4] https://cetpartnership.eu/
[5] https://cetpartnership.eu/sites/default/files/documentation/cetp_sria_1.0.pdf
[6] https://cetpartnership.eu/

2.2. Challenges

The CETPartnership Joint Calls are based on seven thematic challenges identified by need owners, including both technological and systemic challenges for the clean energy transition and thus complementing and completing each other. They are defined in detail in the CETPartnership's SRIA[7] and implemented by the Transition Initiatives (**TRIs**), which are acting bodies and configurations of Funding Organisations in the CETPartnership (see **Table 2.1**).

Table 2.1. Technological (with white background) and systemic (with blue background) challenges of the CETPartnership Joint Calls

Challenge	Acting body
Integrated net-zero-emissions energy system	TRI1
Enhanced zero emission power technologies	TRI2
Enabling climate neutrality with storage technologies, renewable fuels and CCU/CCS	TRI3
Efficient zero emission heating and cooling solutions	TRI4
Integrated regional energy systems	TRI5
Integrated industrial energy systems	TRI6
Integration in the built environment	TRI7

2.3. Scope

All the funded projects in the CETPartnership address their respective focus areas called Call Modules in the Joint Calls. This Call consists of 10 Call Modules, addressing different technological and systemic challenges as well as different RDI approaches and thus complementing and completing each other (see **Table 2.2**).

Table 2.2. Call Modules with technological (with white background) and systemic (with blue background) challenges and their acting bodies in the CETPartnership Joint Call 2025

No.	Title	Acting body
CM2025-01	Multi-vector interactions between the integrated energy system and industrial frameworks	TRI1 & TRI6
CM2025-02	Energy system flexibility: renewables production, storage and system integration	TRI1 & TRI2
CM2025-03A	Advanced renewable energy (RE) technologies for power production (ROA)	TRI2
CM2025-03B	Advanced renewable energy (RE) technologies for power production (IOA)	TRI2
CM2025-04	Carbon capture, utilisation and storage (CCUS)	TRI3
CM2025-05	Hydrogen and renewable fuels	TRI3
CM2025-06	Heating and cooling technologies	TRI4
CM2025-07	Integrated regional energy systems	TRI5
CM2025-08	Integrated industrial energy systems	TRI6
CM2025-09	Clean energy integration in the built environment	TRI7

[7] https://cetpartnership.eu/sites/default/files/documentation/cetp_sria_1.0.pdf

Call Modules focusing on enabling technologies (CM2025-02, 03A, 03B, 04, 05 and 06) typically address approaches with reference to the Technology Readiness Levels (TRLs)[8]. Some distinguish between research-oriented approaches (ROA, CM2025-03A) and innovation-oriented approaches (IOA, CM2025-03B).

Call Modules focusing on system integration (CM2025-01, 02, 07, 08 and 09) typically address holistic, cross-sectoral and transformative approaches structured into three dimensions of innovation (see **Subsection 2.3.2**).

Some Call Modules cover part of other initiatives, which supports the implementation of the European Strategic Energy Technology Plan (SET Plan)[9], builds on SET Plan initiatives (European Research Area Networks (ERA-NETs) [10], Implementation Working Groups (IWGs)[11], etc.) and collaborates with Mission Innovation (MI)[12].

In the proposal development, a Project Consortium must choose one Call Module to submit its proposal. See **Scope** of the relevant Call Module in **Chapter 7** for Call Module specific information.

2.3.1. Cross-cutting topics

To complement the technological and systemic challenges (see **Table 2.1**) with transdisciplinary perspectives, the CETPartnership supports the funded projects in considering **cross-cutting topics**, which are listed below and defined in detail in the CETPartnership's SRIA[13]:

- Robust transition pathways
- Transition and innovation ecosystems
- Fair, just and democratic transition
- Resource efficiency and circularity
- Regulation and market design
- Digitalisation

Collaboration among the funded projects in the cross-cutting topics takes place in the Knowledge Community (see **Subsection 2.3.3**).

In the proposal development, see **Cross-cutting topics** of the relevant Call Module in **Chapter 7** for Call Module specific information.

[8] Definition in Horizon Europe Work Programme 2023-2024 13. General Annexes, 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
[9] https://energy.ec.europa.eu/topics/research-and-technology/strategic-energy-technology-plan_en
[10] https://www.era-learn.eu/support-for-partnerships/cofunded-p2p/era-net-cofund
[11] https://setis.ec.europa.eu/working-groups_en
[12] http://mission-innovation.net/
[13] https://cetpartnership.eu/sites/default/files/documentation/cetp_sria_1.0.pdf

2.3.2. Three dimensions of innovation

To bring together different stakeholders, foster innovation ecosystems, and overcome the fragmented research and innovation landscape for the clean energy transition, the CETPartnership encourages the funded projects to broaden their scope from technologies, infrastructures and system solutions to their integration, through a holistic, cross-sectoral and transformative approach. The approach with key innovations can be visualised in **three dimensions of innovation** (see **Figure 2.1**):

1. This dimension implies **technologies and infrastructures**, for conversion, storage and transport of clean energy and its carriers. The question to address is which new technologies and infrastructures are necessary and how they can be designed and developed into technical solutions for clean energy.
2. This dimension implies **integration and organisation** of the technological solutions in energy systems, for continuous and flexible clean energy services and processes. The question to address is how to organise the interaction of stakeholders from different sectors in the operation of energy systems.
3. This dimension implies **transformation and implication** of the energy systems, considering aspects such as upscaling and replication, human–technology interface, user behaviour, facilitation of innovation ecosystems as well as the interrelation between technology, society and environment. The question to address is how to shape the path for new solutions to become an integral part of the daily lives and businesses of citizens, communities and regions, companies and infrastructure providers.

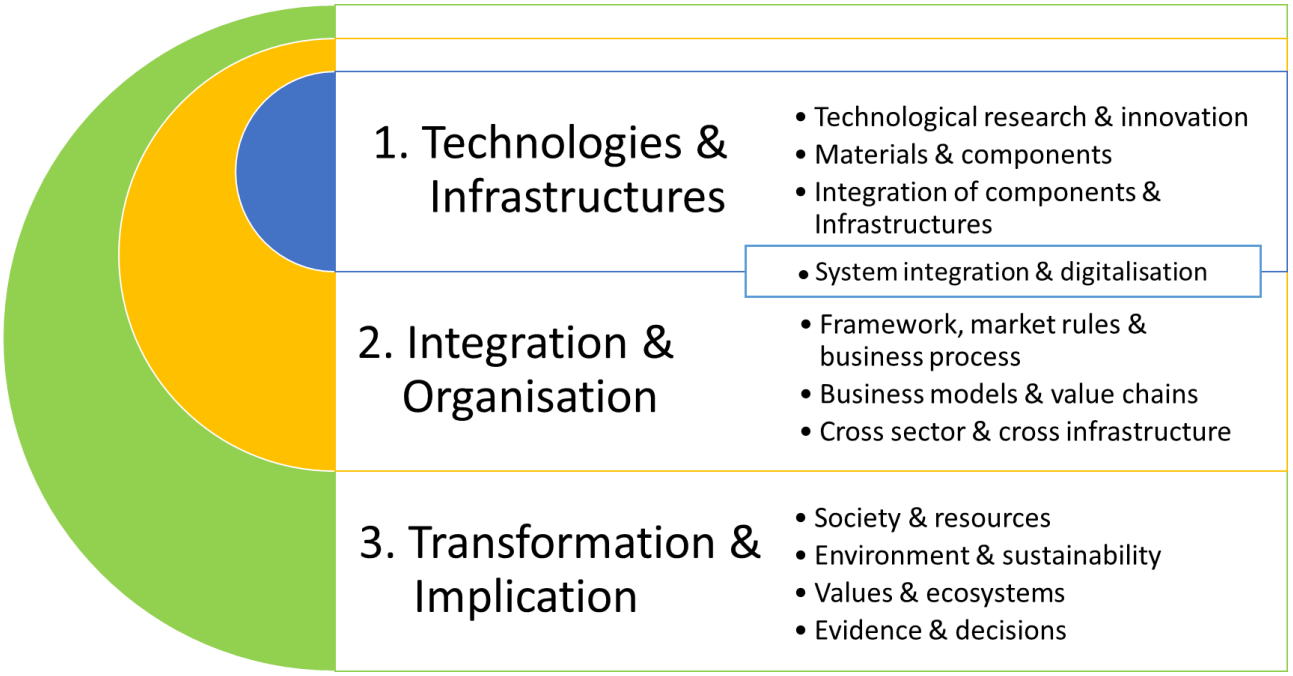

Figure 2.1. Three dimensions of innovation

Collaboration among the funded projects in the dimensions of innovation takes place in the Knowledge Community (see **Subsection 2.3.3**).

In the proposal development, a Project Consortium may benefit from considering more than one dimension and establishing an interdisciplinary consortium. The Call Modules focusing on system integration (CM2025-01, 02, 07, 08 and 09, see **Table 2.2**) typically include at least two dimensions of innovation. See **Dimensions of innovation** of the relevant Call Module in **Chapter 7** for Call Module specific information.

2.3.3. Knowledge management

The CETPartnership expects all the funded projects to actively participate in the CETPartnership Knowledge Community (**Knowledge Community**)[14], which aims to leverage knowledge exchange and co-creation in the thematic challenges (see **Section 2.2** and Table 2.1), Call Modules (see **Section 2.3** and **Table 2.2**), cross-cutting topics (see **Subsection 2.3.1**) and dimensions of innovation (see **Subsection 2.3.2**). It supports multi-lateral collaboration between research, industry, policy and society for the clean energy transition and takes place through strategic knowledge management, i.e.:

- exchanging outcomes from the funded projects
- connecting the funded Project Consortia and other RDI experts
- co-creating evidence-based, state-of-the-art knowledge
- offering the knowledge to support strategic decision-making

The Knowledge Community is supported by the CETPartnership Knowledge Community Management[15], which works closely together with the CETPartnership Impact Support (see **Subsection 2.3.4**), and facilitates the funded projects in engaging and collaborating with relevant stakeholders and in disseminating the knowledge. To support the funded projects in communication, collaboration and co-creation, the CETPartnership provides a Digital Information-System for Communication and Collaboration (DISCCO)[16].

In the proposal development, a Project Consortium must plan a mandatory work package called **Reporting and Knowledge Community Work Package**, including activities in the Knowledge Community. Read more in **Section 3.5** and **Annex A**.

2.3.4. Impact and exploitation maximisation

The CETPartnership expects all the funded projects to maximise the impact and exploitation of their outcomes and create added value for the clean energy transition. The CETPartnership Impact Support (**Impact Support**)[17] provides products and services to support the funded projects in strategising and achieving their impact and exploitation goals. See the introduction video[18] for an overview of the services.

[14] https://cetpartnership.eu/index.php/about/knowledge-community
[15] https://cetpartnership.eu/about/knowledge-community
[16] https://discco.eu/SitePages/Home.aspx
[17] https://cetpartnership.eu/about/impact-exploitation
[18] https://youtu.be/7iH57ciVLaU?si=-5G2IlEQOQqVHLI7

The CETPartnership Impact Network (**Impact Network**)[19] connects the funded projects with relevant stakeholders to enhance the impact beyond established RDI communities. It involves innovation clusters, testbeds, validation labs and living labs and is expanding to include need owners, potential customers, decision-makers, SMEs, startups and follow-up financiers from across Europe.

The CETPartnership Impact Library (**Impact Library**)[20] together with training and networking events, supports the funded projects in developing exploitation strategies, fostering stakeholder collaboration and further enhancing the project impact. It includes tools, methodologies and recorded training webinars and serves as a comprehensive resource to navigate various impact pathways, identify relevant stakeholders, validate results, address social acceptance, assess market potential and prepare for commercialisation.

In the proposal development, a Project Consortium is advised to plan activities to exploit outcomes and maximise impact, by defining impact strategies, identifying stakeholders and assessing Key Exploitable Results (KERs)[21] using the CETPartnership Exploitation Guidelines[22].

2.4. Expected outcomes of funded projects

The project results should make a contribution to the expected outcomes and impacts set out for the Call and Call Module, over the medium and longer term, beyond the immediate scope and duration of the project. The outcomes and impacts of the project may be scientific, economic, technological, societal or environmental.

[19] https://research4impact.eu/cetp-impact-network/
[20] https://research4impact.eu/
[21] https://youtu.be/zpYUwwPPOCU?si=cBlmyjWg3mbC6oUO
[22] https://cetpartnership.eu/sites/default/files/documentation/CETP_exploitation_guidelines_2024.pdf

3. Requirements and guidelines

This chapter describes the requirements and guidelines to consider in the proposal development.

The Call includes the following requirements and guidelines:

- Transnational requirements and guidelines, applicable for all Project Consortia applying to the Call
- Call Module requirements and guidelines, applicable for Project Consortia applying to Call Modules with specific requirements and guidelines, see also **Chapter 7**
- National/regional requirements and guidelines, applicable for Beneficiary Partners applying for funding from Funding Organisations in the Call, see also **Annex B**

Table 3.1. Summary of transnational requirements

1	A proposal must be written in English and submitted on the CETPartnership Submission Platform before the deadlines, following mandatory proposal templates.
2	A Project Consortium must consist of a minimum of three Beneficiary Partners (including one Coordinator) adhering to relevant national/regional requirements and guidelines, from a minimum of three different countries participating in the selected Call Module. Of these three Beneficiary Partners, at least two must be from EU Member States or HE Associated Countries.
3	The total effort of one Project Consortium Partner in the Project Consortium can be maximum 60% of the total project efforts (measured in person-months).
4	The total effort of Project Consortium Partners from one country/region in the Project Consortium can be maximum 75% of the total project efforts (measured in person-months).
5	The following individuals are ineligible for proposal submission: CETPartnership Governing Board members, CETPartnership General Assembly members and researchers from the Funding Organisations in the Call.[23]
6	A project must finish in 36 months from the start of the project.
7	A proposal must include a work package called Reporting and Knowledge Community in their work plan.

For a proposal to be considered for funding, it must have met all the transnational requirements (see this chapter) and Call Module requirements (see **Chapter 7**), with a Project Consortium including Beneficiary Partners deemed eligible by relevant Funding Organisations participating in the Call Module (see **Annex B**). Failing to meet a requirement or guideline can lead to exclusion from the selection. **All Project Consortia are therefore encouraged to check carefully all the requirements and guidelines.**

Below, **requirements** are described in lists (➢) and **guidelines** in texts.

[23] Legal entities who are able to provide written proof that their organisational structure is completely separated from those of the Funding Organisation participating in the Call may under these exceptional circumstances submit their proposal to the Call.

3.1. Proposal submission

- A proposal must be written in English and submitted on the CETPartnership Submission Platform[24] before the deadlines, following mandatory proposal templates available for download on the start page of the Submission Platform. To be considered for funding, submission of a pre-proposal is mandatory for each Project Consortium, and submission of a full proposal is mandatory for each invited Project Consortium. Resubmission or revision of a proposal will be denied after the submission deadline unless it is requested by the Call Management. (**Transnational requirement 1**)
- Funding Organisations may require additional submission according to own submission procedures such as deadlines, portals and templates, see respective national/regional requirements and guidelines in **Annex B**.

3.2. Project Consortium Partners

- A Project Consortium must consist of a minimum of three Beneficiary Partners (including one Coordinator) adhering to relevant national/regional requirements and guidelines, from a minimum of three different countries participating in the selected Call Module. Of these three Beneficiary Partners, at least two must be from EU Member States or HE Associated Countries[25] (**Transnational requirement 2**).
- The total effort of one Project Consortium Partner in the Project Consortium can be maximum 60% of the total project efforts (measured in person-months). (**Transnational requirement 3**).
- The total effort of Project Consortium Partners from one country/region in the Project Consortium can be maximum 75% of the total project efforts (measured in person-months). (**Transnational requirement 4**).
- The following individuals are ineligible for proposal submission: CETPartnership Governing Board members, CETPartnership General Assembly members or researchers from the Funding Organisations in the Call. However, legal entities who are able to provide written proof that their organisational structure is completely separated from those of the Funding Organisation participating in the Call may under these exceptional circumstances submit their proposal to the Call. (**Transnational requirement 5**).
- Specific Call Module requirements may apply regarding the Project Consortia, see **Call Module requirements** in respective Call Modules in **Chapter 7**.
- Specific National/regional requirements and guidelines may apply regarding the Project Consortia, see respective national/regional requirements and guidelines in **Annex B**.

See Definitions for a detailed explanation of the Project Consortium and Project Consortium Partners.

No individual involved in a proposal can act as an evaluator in the Call.

[24] https://cetp-submission.mur.gov.it/
[25] https://ec.europa.eu/info/funding-tenders/opportunities/docs/2021-2027/common/guidance/list-3rd-country-participation_horizon-euratom_en.pdf

The CETPartnership community[26] provides a platform for matchmaking with collaboration opportunities.

3.3. Project duration and budget

- A project must finish in 36 months from the start of the project. (**Transnational requirement 6**).
- Specific Call Module requirements may apply regarding the project budget; see **Call Module requirements** in respective Call Modules in **Chapter 7**.
- Specific National/regional requirements and guidelines may apply regarding the project duration and/or budget; see respective national/regional requirements and guidelines in **Annex B**.

The Call generally aims to support projects with a duration between 12 and 36 months and applying for funding in the Call in the range of (but not limited to) EUR 0.5–5 million, besides possible self-financing.

3.4. Research, development and innovation (RDI) approaches / Technology Readiness Levels[27]

- Specific Call Module requirements may apply regarding the RDI approaches/TRLs; see **Call Module requirements** in respective Call Modules in **Chapter 7**.
- Specific National/regional requirements and guidelines may apply regarding the RDI approaches/TRIs; see respective national/regional requirements and guidelines in **Annex B**.

The Call applies the definition of TRLs in the HE Work Programme[28].

Since the CETPartnership aims to accelerate the clean energy transition to achieve the goal of climate neutrality by 2050, the Call generally aims to fund projects increasing their TRL and reaching medium to high TRLs (4–8), in combination between technological and system solutions with societal, commercial, financial, environmental, regulatory and other critical aspects. TRL increase of 1–2 is considered usual, increase of 3 ambitious and increase of 4 infeasible. Projects may include activities at lower or higher TRLs based on specific needs to reach project goals or meet national/regional requirements and guidelines.

Other frameworks than TRLs may apply as well in some Call Modules. For example, the Commercial Readiness Index (CRI)[29] describes solutions in terms of their commercial value proposition and ability to obtain financing for deployment. The Societal Readiness Level (SRL)[30] is a way of assessing the level of societal adaptation of solutions. In addition, the Smart Readiness Indicator (SRI)[31] is a common EU scheme for rating

[26] https://www.b2match.com/e/clean-energy-transition-partnership-2024
[27] 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
[28] 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
[29] https://arena.gov.au/assets/2014/02/Commercial-Readiness-Index.pdf
[30] https://innovationsfonden.dk/sites/default/files/2019-03/societal_readiness_levels_-_srl.pdf
[31] https://energy.ec.europa.eu/topics/energy-efficiency/energy-efficient-buildings/smart-readiness-indicator_en

the smart readiness of buildings. The CETPartnership Exploitation Guidelines[32] developed by the CETPartnership will be of help in planning a project with activities to advance on scales in such frameworks as well as to exploit outcomes and maximise impact.

3.5. Reporting and Knowledge Community work package

- A proposal must include a work package called Reporting and Knowledge Community in their work plan (see **Annex A**). (**Transnational requirement 7**)

When developing a proposal, it is important to consider the concept and content of the CETPartnership Knowledge Community, in which projects funded by the Call are expected to actively participate. Read more about the Knowledge Community in **Subsection 2.3.3** and the CETPartnership's website[33].

3.6. Open science

The CETPartnership promotes and asks Project Consortia to carefully consider open science practices, including the FAIR principles (Findable, Accessible, Interoperable, and Reusable), with a strong emphasis on high accessibility of funded projects' findings (see the evaluation criterion Excellence in **Chapter 4**). Read more about open science in the EU's open science policy[34].

3.7. Gender dimension

The CETPartnership considers eliminating gender inequality and intersecting socioeconomic inequalities throughout research and innovation systems, for example by addressing unconscious bias and systemic structural barriers. The CETPartnership integrates the gender dimension in the research and innovation content of the Joint Calls (see the evaluation criterion Excellence in **Chapter 4**) and promotes gender balance among personnel in a Project Consortium.

[32] https://cetpartnership.eu/sites/default/files/documentation/CETP_exploitation_guidelines_2024.pdf
[33] https://cetpartnership.eu/about/knowledge-community
[34] https://research-and-innovation.ec.europa.eu/strategy/strategy-2020-2024/our-digital-future/open-science_en

4. Evaluation criteria

This chapter describes the evaluation criteria to be considered in the proposal development.

In both Stage 1 and 2, proposals will be evaluated according to the following main evaluation criteria:

- Excellence
- Impact
- Quality and efficiency of the implementation

The following **sub-criteria** will be used in all the Call Modules to determine the scores for the three main evaluation criteria. **Sub-criteria with asterisk (*) will be used in Stage 2 only**.

Excellence

- Clarity and pertinence of the project's objectives in relation to the Call and Call Module.
- Extent to which the project's objectives are ambitious, and go beyond the state-of-the-art of the proposed work in terms of research/innovation for the clean energy transition.
- Soundness of the proposed methodology, including the underlying concepts, models, assumptions, and interdisciplinary approaches.
- *Appropriate consideration of the diversity and gender dimension in research/innovation content.
- *The quality of open science practices including sharing and management of research/innovation outputs and engagement of citizens, civil society and end users where appropriate.

Impact

- Credibility of the pathways to achieve the expected outcomes and impacts for the clean energy transition specified in the Call and Call Module.
- Likely scale and significance of the contributions due to the project, through appropriate involvement of end-users and other relevant target groups.
- The added value of the transnational collaboration.
- Suitability and quality of the measures to maximise expected outcomes and impacts, as set out in the dissemination and exploitation plan through use of the solutions by target groups where appropriate, including communication activities.

Quality and efficiency of the implementation

- Quality and effectiveness of the work plan.
- *Assessment of risks.
- *Appropriateness of the effort assigned to work packages and the resources overall.

- Capacity and role of each participant, and extent to which the consortium as a whole brings together the necessary expertise.

Gender balance in personnel named in the proposal will be one of the criteria to decide in case of ex aequo proposals.

For proposal evaluation, a full score in the range of 0–5 (see **Table 4.1**) will be awarded at individual evaluations and panel meetings for each of the three main evaluation criteria, not for any sub-criteria. Each main evaluation criterion will be equally weighted.

Table 4.1. Evaluation scores

Score	Description
0	**Fail/Missing**: The proposal **fails** to address the criterion or cannot be assessed due to **missing** or **incomplete** information (unless the result of an 'obvious clerical error').
1	**Poor**: The criterion is inadequately addressed or there are serious inherent weaknesses.
2	**Fair**: The proposal broadly addresses the criterion but there are significant weaknesses.
3	**Good**: The proposal addresses the criterion well but with a number of shortcomings.
4	**Very good**: The proposal addresses the criterion very well but with a small number of shortcomings.
5	**Excellent**: The proposal successfully addresses all relevant aspects of the criterion. Any shortcomings are minor.

5. Call process

This chapter describes the Call process to be followed in the proposal selection.

The Call process includes two stages: the pre-proposal stage (Stage 1) and the full proposal stage (Stage 2). **To be considered for funding, a proposal must be submitted on time, complete and concise. Direct submission of a full proposal in Stage 2 is impossible.**

5.1. Pre-proposal stage – Stage 1

5.1.1. Submission of pre-proposals

A pre-proposal must be submitted by a Coordinator (see **Section 3.2** for the requirements and guidelines on Project Consortia) in reference to a Call Module before **9 October 2025, 14:00 CET** on the CETPartnership Submission Platform[35], in collaboration with the other Project Consortium Partners (including possible Self-financed Partners). On the Submission Platform, the Coordinator must invite all the other Project Consortium Partners. At submission, every Project Consortium Partner invited by the Coordinator must have accepted the invitation and entered its information and budget on the Submission Platform, while any irrelevant partners must have been removed.

The pre-proposal has a draft status until it is submitted. Once it is submitted, it can still be revised and resubmitted as many times as needed before the deadline. The last submitted version proceeds to the next step.

The pre-proposal must include a project description (max 10 pages using the mandatory pre-proposal template available for download on the start page of the Submission Platform and following instructions there) and any possible supporting documents. See **Section 3.1** for the requirements and guidelines on submission. See **Section 3.2–3.7** for the requirements and guidelines on how to formulate the pre-proposal project description. Documents relevant to the Call, including checklists and FAQ, can be found on the Submission Platform and the CETPartnership website.

Please consider that Funding Organisations may additionally require submission according to own submission procedure such as deadlines, portals and templates. See respective national/regional requirements in **Annex B**.

5.1.2. Eligibility check of pre-proposals

Eligibility checks will be performed on a submitted pre-proposal according to:

- Transnational requirements (see **Chapter 3**) by the Call Management.

[35] https://cetp-submission.mur.gov.it/

- Call Module requirements (see **Chapter 7**) by a relevant TRI.
- National/regional requirements and guidelines (see **Annex B**) by relevant Funding Organisations.

The TRI deems the pre-proposal:

- Eligible for submitting a full proposal
- Conditionally eligible for submitting a full proposal, requesting more information or requirements to be included in a full proposal
- Ineligible for submitting a full proposal.

The Funding Organisations deem the Beneficiary Partners in the pre-proposal:

- Eligible for submitting a full proposal
- Conditionally eligible, for submitting a full proposal, requesting more information or requirements to be included in a full proposal
- Ineligible for submitting a full proposal

Considering any Beneficiary Partner deemed ineligible in this step, please note that requirements to proceed to the next step deviate from **Transnational requirement 2**, **3** and **4**, namely that a pre-proposal must meet the following two requirements in addition to **Transnational requirement 1, 5, 6 and 7**:

- The Project Consortium consists of a minimum of **two** Beneficiary Partners (including the Coordinator) deemed eligible or conditionally eligible by relevant Funding Organisations from a minimum of **two** different countries participating in the selected Call Module. Of these two Project Consortium Partners, at least **one** must be from EU Member States or HE Associated Countries.
- The total effort of Beneficiary Partners deemed ineligible by relevant Funding Organisations in Stage 1 covers less than 25% of the total project efforts (measured in person-months).

Please also note that the final eligibility checks for funding will be performed in Stage 2. To be considered for funding, a full proposal must then have fully met all the transnational requirements, including a Project Consortium deemed eligible by relevant Funding Organisations.

5.1.3. Evaluation of pre-proposals

Each pre-proposal will be evaluated according to the evaluation criteria described in **Chapter 4,** by an evaluation panel of at least three independent evaluators[36]. The pre-proposal will receive individual scores from the independent evaluators for each of the three main evaluation criteria in the range of 0–5 and individual total scores in the range of 0–15 from the independent evaluators. This will result in an average score for each of the three main evaluation criteria in the range of 0–5, and a total average score in the range of 0–15. In case of strong disagreement between the individual scores by the independent evaluators (differing 6

[36] All independent evaluators declare their confidentiality, impartiality and independence prior to the start of the individual evaluation. They assess a conflict of interest prior to access to each proposal. In a conflict of interest, the evaluator will be excluded from the further evaluation process. Evaluators working in the same organisations as any Project Consortium Partner may be included in the evaluation process if deemed appropriate.

or more between the lowest and the highest individual total scores), the evaluation panel will have a meeting to reach a consensus and provide a full score for each of the three main evaluation criteria in the range of 0–5, resulting in a total score in the range of 0–15.

A ranking list will be developed for each Call Module with pre-proposals having an average or consensus score at or above 3 for all the three evaluation criteria and a total average or consensus score at or above 10.

5.1.4. Selection of pre-proposals

Following the ranking lists developed in the former step, the Funding Organisations will agree on a list of pre-proposals to be invited to Stage 2, while ensuring that the total funding requested by the invited pre-proposals is maximum four times the available budget for each Funding Organisation.

In case of budgetary constraints, pre-proposals will be selected considering the following **core principles**:

- Maximising the total number of projects funded.
- Maximising the number of countries/regions involved in the projects funded.
- Having a good balance between the Call Modules in terms of the number of projects funded.
- Having similar success rates between the Call Modules.
- Maximising the amount of EU financial contribution generated.

The outcome of Stage 1 will be notified by the Call Management to each Coordinator with a report on the eligibility checks and, if applicable, the evaluation of the pre-proposal, as well as information on the means of redress, see **Section 5.3**.

5.2. Submission of full proposal

5.2.1. Submission of full proposal

A full proposal must be submitted by the Coordinator of each invited Project Consortium (see **Section 3.2** for the requirements and guidelines on Project Consortia) to the same Call Module before **XX XX 2025, 14:00 CEST** on the CETPartnership Submission Platform[37], in a similar manner to the pre-proposal, in collaboration with the other Project Consortium Partners (including Self-financed Partners). The difference from the submission of the pre-proposal (**Subsection 5.1.1**) is that the full proposal must include:

- A project description of max 30 pages (instead of max 10 pages).
- A Letter of Commitment by each Self-financed Partner (with information about its active participation and role).

The following changes between the pre-proposal and the full proposal will be allowed.

[37] https://cetp-submission.mur.gov.it/

4. Addition of a Self-financed Partner.
5. Replacement of (a) Beneficiary Partner(s) deemed ineligible in Stage 1 with (a) Self-financed Partner(s).
6. Changes (other than the case 1 or 2 stated above) initiated by any relevant Funding Organisation or the Call Management.
7. Changes (other than the case 1 or 2 stated above) initiated by a Project Consortium and related to the Project Consortium, duration and budget, only when:
    - the Coordinator stays the same,
    - the changes are well motivated in relation to the project ambition and scope, and
    - the changes are approved by the relevant Funding Organisations and all the Project Consortium Partners.

However, addition of any Beneficiary Partner applying for funding from a Funding Organisation oversubscribed in Stage 1 may be denied.

If any Funding Organisation turns out to be undersubscribed in Stage 1[38], the CETPartnership will encourage Project Consortia to include Beneficiary Partners applying for funding from the undersubscribed Funding Organisations to widen the involvement of Funding Organisations.

Changes in a Project Consortium other than the case 1 or 2 stated above must be notified with written proof from relevant Funding Organisations to the Call Management (callmanagement@cetpartnership.eu) before the panel meeting described in **Subection 5.2.3**.

Please again consider that Funding Organisations may additionally require submission according to own submission procedure such as deadlines, portals and templates. See respective national/regional requirements in **Annex B**.

5.2.2. Eligibility check of full proposals

Eligibility checks will be performed on a submitted full proposal according to:

- Transnational requirements (see **Chapter 3**) by the Call Management.
- Call Module requirements (see **Chapter 7**) by a relevant TRI.
- National/regional requirements and guidelines (see **Annex B**) by relevant Funding Organisations.

The TRI deems the full proposal:

- Eligible for funding in the Call
- Ineligible for funding in the Call

The Funding Organisations deem the Beneficiary Partners in the full proposal:

- Eligible for funding in the Call

[38] Potential Funding Organisations will be found on the start page of the CETPartnership Submission Platform after Stage 1.

- Ineligible for funding in the Call

A full proposal meeting all the transnational requirements and Call Module requirements can proceed to the next step. A full proposal with any ineligible Beneficiary Partners may proceed to the next step if the total effort of ineligible Beneficiary Partners only covers less than 25% of the total project efforts (measured in person-months).

5.2.3. Evaluation of full proposals

Each full proposal will be individually evaluated according to the evaluation criteria described in **Chapter 4,** by an evaluation panel of at least three independent evaluators[39]. The evaluation panel will then have a meeting to reach a consensus and provide a full score for each of the three main evaluation criteria in the range of 0–5, resulting in a total consensus score in the range of 0–15.

A ranking list will be developed for each Call Module with full proposals having a consensus score at or above 3 for all the three evaluation criteria and a total consensus score at or above 10.

5.2.4. Selection of full proposals

The Funding Organisations will agree on a list of full proposals to be funded following the ranking lists in the former step, the available budgets, and the same core principles as in **Subsection 5.1.4**.

The outcome of Stage 2 will be notified by the Call Management to each Coordinator with a report on the eligibility checks and, if applicable, the evaluation of the full proposal, as well as information about redress, see **Section 5.3**.

5.3. Redress

The Coordinator of a Project Consortium, who considers that the outcome was based on an error in the selection procedure, can submit a written complaint. An eligible complaint must:

- be submitted as a single PDF document, including all relevant documents and written in English, to the Call Management (callmanagement@cetpartnership.eu) within 30 days of receiving the outcome.
- indicate which proposal the complaint applies to by stating the proposal code;
- state in what way the outcome is considered incorrect and what change is requested;
- focus on aspects concerning the outcome on the proposal *(e.g. admissibility or eligibility checks, evaluation procedure, etc.)*, not its merits,
- raise procedural irregularities, factual errors, manifest errors of assessment or abuse of powers *(e.g. lack of coherence between scores and comments, lack or inadequate reasoning of the conclusions, the*

[39] All independent evaluators declare their confidentiality, impartiality and independence prior to the start of the individual evaluation. They assess a conflict of interest prior to access to each proposal. In a conflict of interest, the evaluator will be excluded from the further evaluation process.

existence of a conflict of interests, exceeding the limits of discretion, etc.). Mere repetitions of the content of the proposal or disagreements with the result or reasoning of the technical evaluation will not be considered.

Only one request for review per proposal will be considered in Stage 1 and 2 respectively. The request cannot refer to the outcome of proposals submitted by other Project Consortia or under different or previous calls.

An eligible and complete request for review will be referred to a committee convened by the Call Management and comprised of staff who were not involved in the process for eligibility checks or evaluation of the proposal. All requests for review will be treated as confidential but shared with the relevant Funding Organisations.

6. Project implementation

This chapter describes project implementation to be considered in the proposal development.

6.1. Funding arrangements and period

Funding arrangements will be made directly between the Project Consortium Partners and their national/regional Funding Organisations according to the Funding Organisations' procedure. The project must start before 15 December 2025 and finish in 36 months. It is highly recommended that all Project Consortium Partners in the Project Consortium synchronise their project start and end dates, even though their national/regional funding arrangements can be desynchronised.

6.2. Consortium Agreement (CA)

Each Project Consortium must have a signed Consortium Agreement (CA) between all the Project Consortium Partners, including intellectual property rights (IPR) issues. It is recommended to have it already at the project start or within 6 months after the project start and to involve the Coordinator's legal department in this process. There are several models for CA in Horizon Europe projects, which can be modified to fit a CETPartnership project (e.g. DESCA, DIGITALEUROPE MCARD-HEU and EUCAR).

6.3. Gender Equality Plans

The Beneficiary Partners must follow HE Guidance on Gender Equality Plans (GEPs)[40]. It means that public bodies as well as public and private higher education establishments and research organisations established in EU Member States and Associated Countries must have a GEP.

6.4. Changes in projects

Any changes in a project selected for funding must be communicated with and approved by relevant Funding Organisations and reported to the CETPartnership Knowledge Community Management (knowledgecommunity@cetpartnership.eu). Such changes may affect the funding from the CETPartnership.

6.5. Project reporting

The Coordinator must complete a factsheet, annual reports and a final report and contribute to surveys on the transnational level to the CETPartnership, see Task 1 in **Annex A**. The collected data will be used for monitoring purposes.

[40] https://op.europa.eu/en/publication-detail/-/publication/ffcb06c3-200a-11ec-bd8e-01aa75ed71a1/language-en/format-PDF/source-232129669

Specific national/regional requirements and guidelines may apply regarding the reporting.

6.6. Project communication and dissemination

Each project is expected to acknowledge the CETPartnership, EU and relevant Funding Organisations, have a webpage, to prepare popular scientific summaries and to actively participate in the CETPartnership Knowledge Community (see **Subsection 2.3.3**) for increased knowledge sharing and dissemination of results. For more details please read the **Annex A** and the CETPartnership Communication Guidelines[41].

Specific national/regional requirements and guidelines may apply regarding the communication and dissemination.

[41]https://cetpartnership.eu/sites/default/files/documentation/CETP_Communication%20Guidelines%20to%20support%20Calls%20beneficiaries_0.pdf

7.Call Modules

This chapter describes the areas in the Call (Call Modules) and their specific requirements and guidelines.

The Call consists of 10 Call Modules, addressing different energy technology and system challenges as well as different RDI approaches, thus complementing, and completing each other.

In addition to the transnational requirements and guidelines (see **Chapter 3**) and national/regional requirements and guidelines (see **Annex B**), specific Call Module requirements and guidelines may apply, see **Call Module requirements** in the table below each Call Module title. More information about the Call Module requirements may be described in relevant sections of the Call Module text.

CM2025-01 Multi-vector interactions between the integrated energy system and industrial frameworks

Call Module requirements	
For a proposal targeting a higher TRL or including demonstrations, involvement of need owner(s) as Project Consortium Partner(s) is mandatory.	
Guidelines	
Target RDI approaches/TRLs	Final TRL up to 4 in case of modelling and planning activities. TRL jump from 4 to 6-7 for demonstration and application activities (advanced laboratory activities).
Project Consortium Partners	For a proposal targeting a lower final TRL or including tools and methods for modelling and planning, the involvement of need-owners in an advisory or steering board is recommended. For a proposal targeting a higher TRL or including demonstrations, see Call Module requirement above.
Project budget	In the range of EUR 2–3 million, including possible self-financing.
Contact	
Contact both TRI 1 and TRI 6, which have jointly developed this Call Module.	
Definitions	
Vector: the different forms in which energy can be transferred, such as electricity, gas, heat, hydrogen, fuels, water, etc. **Multi-vector**: the integrated use of different vectors in view of the optimisation of the overall efficiency and stability of the system.	

Aim of the Call Module

This Call Module aims to contribute to the **interactions and synergies among the energy system and industries**, adopting a **multi-vector approach** (electricity, gas, heat, fuels, etc.) and fostering flexible interactions between industrial plants and the energy system.

Given the important role of electrification to decarbonise our economies, solutions are required to enable coupling of industry sectors and energy systems, adopting technologies fostering flexibility throughout their

processes (e.g. flexible energy production from owned energy plants, use of flexible Direct Current networks, flexible energy demand, flexible industrial processes and storage) and leveraging the potential related to different vectors (mainly power, heat, gas, water).

Challenges of the Call Module

To enable energy-industry synergies new solutions are required, looking at implications under different perspectives:

- Development of optimal interfaces between industrial systems and the energy system fostering multi-vector integration
- Business models and market and regulation aspects (considering parameters like balance CAPEX/OPEX, cost of electricity and its cycles, efficiency measures, cost of CO_2, price signals, flexibility services to the network, etc.)
- Environmental aspects (considering parameters like enabling solutions for RES integration, reduction of energy consumption and emissions, circularity practices, efficient use of digital technologies etc.)
- Societal aspects (considering parameters like modification of production cycles and impact on workforce, the societal implications of environmental impacts and of the new production cycles related with new energy-industry synergies, etc.)

Scope of the Call Module

Adopting the viewpoint of the energy systems, a Project Consortium is expected to propose **solutions to foster flexible interaction between industrial plants and the energy system, leveraging a multi-vector approach** (electricity, gas, hydrogen, heating/cooling, fuels etc.), unleashing the opportunities related to:

- Flexibility from generation and industrial load for power system balancing (e.g. ancillary services, internal RES, vRES, CHP, internal vector integration, efficiency, load shedding, peak shaving, load shifting, production schedule shifting, Direct Current industrial networks, flexible industrial production processes etc.)
- Energy storage – all types (electric, heat, chemical, gas, water, products) and all durations (short/medium/long storage: electricity, gas, air, H_2 derivatives, products)
- Heat (e.g. waste heat, industrial symbiosis, heat storage)
- Gas (e.g. natural, biogas, biofuels, hydrogen)
- Water (e.g. fresh and from Water Treatments)

Target topics

This Call Module is meant for proposals for R&D projects related to both:

- assessing flexibility resources and needs in the interaction of industrial systems with the energy system looking at a muti-vector approach

- modelling, planning and optimising multi-vector interactions of industrial systems with the energy system (e.g. investigations and simulations of the dynamics of these interactions; development, testing and validation of reliable interfaces; etc.), also including environmental and economic aspects (e.g. analyses of sustainability and environmental impacts of these interactions and market-related aspects)

As a nice-to-have, in addition to what required above, this Call Module is also interested in proposals assessing the societal implications of the new energy-industry synergies enabled by project outcomes, such as the modification of production cycles and impact on workforce.

Dimensions of innovation

A proposal is expected to cover 1st and 2nd dimensions of innovation (see **Subsection 2.3.2**).

Expected outcomes of funded projects

Depending on the specific industrial context, projects should develop one or more of the following:

- tools (e.g. tools for integrated and multi-vector planning under high uncertainty conditions using stochastic and risk-management integrated planning)
- methods (e.g. methods using advanced computational technologies and AI to address holistically the energy system with multi-vector integration and implications related to environment and energy and flexibility markets)
- solutions (e.g. advanced multi-vector interface systems, working on existing infrastructures - support control and measurement tools, or on test facilities – Hardware-in-the-Loop, considering standard architectures, interoperability and cybersecurity by design)

To promote more impactful projects, this Call Module encourages applicants to develop user-friendly tools for future uses in other applications (tools characterised by proper levels of scalability and reproducibility) using open-access platforms.

CM2025-02 Energy system flexibility: renewables production, storage and system integration

Call Module requirements	
None	
Guidelines	
Target RDI approaches/TRLs	Project start: TRL 3 or higher Project end: TRL increase of 1–2 from project start

Project Consortium Partners	• Secondary and higher education establishments
	• Research organisations
	• Private for-profit companies, bringing in expertise, knowledge, and know-how for the implementation of innovative and breakthrough solutions, such as:
	  ○ system operators
	  ○ SMEs
	  ○ spin-off companies
	The participation of SMEs and spin-off companies is recommended
	The participation of partners from member countries of the Green Powered Future Mission (even if not members of the CETPartnership) is not a compulsory prerequisite but a preferential attribute.

Project budget	In the range of EUR 1–2 million, including possible self-financing.
Contact	
Contact both TRI 1 and TRI 2, which have jointly developed this Call Module.	

Aim of the Call Module

This Call Module aims to contribute to the implementation of the Green Powered Future Mission (GPFM) Flagship Project 2 (FP2) "Multilateral research programme"[42] for the power system decarbonisation and transformation, increasing opportunities for international cooperation.

[42] FP2 was launched by the GPFM at the Global Clean Energy Action Forum held in Pittsburgh (September 2022) as part of the GPFM Action Plan 2022–2024

This Call Module is developed in collaboration between the Mission Innovation (MI) GPFM[43] and the CETPartnership TRI 1 and TRI 2.

Challenges of the Call Module

In line with the final goal of MI GPFM and the CETPartnership's SRIA[44], this Call Module addresses the challenge of integrating up to 100% variable renewable energies (e.g. wind and solar) by 2030 while ensuring a cost-efficient, secure and resilient energy system. This overarching challenge can be detailed into these 5 R&I challenges, at the centre of this Call Module:

- increase large-scale renewable generation while preserving system stability and reliability
- foster flexibility services through the adoption of energy storage technologies and systems
- strengthen system stability and flexible operations
- enable flexibility markets adopting innovative flexibility sources and demand side applications
- leverage system digitalisation, including AI and digital twin

Scope of the Call Module

This Call Module addresses key aspects of the clean energy transition ranging from large-scale integration of renewable energy sources into the power grids, considering storage as a possible solution to deal with their intermittent nature, to broad technological and market aspects as well as approaches towards system integration. Moreover, digitalisation and standardisation, being key enablers for the deployment of innovative system flexibility solutions, need to be duly considered by the proposed projects.

This Call Module is intended to concentrate efforts and financial resources to accelerate the deployment of key innovations thus considering replicability and scalability and enabling the realisation of clean energy solutions in the near future.

Among the 50 Innovation Priorities considered in the GPFM Action Plan, 14 of them, well aligned with the CETPartnership's SRIA[45], have been selected for the present Call Module. Funded projects are therefore expected to contribute to reach the targets of both initiatives.

The Call Module mainly focuses on research and development. Nevertheless, it is expected to possibly involve industry, bringing in expertise, knowledge, and know-how for the implementation of innovative and breakthrough solutions. Projects should preferably be designed building on top of existing initiatives or assets and propose replicable and scalable solutions.

Projects are expected to share knowledge and results with the GPFM and through the GPFM knowledge sharing platform[46].

[43] https://explore.mission-innovation.net/mission/green-powered-future/
[44] https://cetpartnership.eu/sites/default/files/documentation/cetp_sria_1.0.pdf
[45] https://cetpartnership.eu/sites/default/files/documentation/cetp_sria_1.0.pdf
[46] https://www.mi-gpfm.com/

Synergies with one or more projects supported under the following Horizon Europe topics are strongly recommended where relevant and applicable:

- HORIZON-CL5-2023-D2-01-04, Battery management system (BMS) and battery system design for stationary energy storage systems (ESS) to improve interoperability and facilitate the integration of second life batteries
- HORIZON-CL5-2023-D2-01-05, Hybrid electric energy storage solutions for grid support and charging infrastructure
- HORIZON-CL5-2024-D2-01-02, Non-Li Sustainable Batteries with European Supply Chains for Stationary Storage

Target topics

Proposals must address one or more of the following Innovation Priorities:

1. Large-scale renewable energy generation for improving system reliability & stability (GPFM IP 1.3.2)
2. Variable renewable energy flexibility provision & contribution to generation capacity (GPFM IP 2.1.1)
3. Innovation in energy storage technologies (GPFM IP 1.5.3)
4. Utility scale storage systems for innovative flexibility services (GPFM IP 2.4.3)
5. System stability assessment considering high VRE penetration (GPFM IP 2.3.1)
6. Enhanced TSO-DSO coordination platform for flexibility markets optimisation (GPFM IP 2.3.2)
7. Flexibility markets for innovative ancillary services by VRE and storage (GPFM IP 2.7.1)
8. Unlocking commercial and residential buildings flexibility potential (GPFM IP 2.5.2)
9. Connected data platforms for enhanced forecasting and flexible operation (GPFM IP 3.3.2)
10. Standardisation of devices and control platforms (GPFM IP 3.1.2)
11. Identify priority dataset for system security (GPFM IP 3.2.2)
12. Grid supporting technologies from inverter-based resources (GPFM IP 1.6.2)
13. Tools and solution for DSO flexibility management (GPFM IP 2.3.4)
14. Demand response, EV services and grid impact assessment (GPFM IP 2.5.4)

The 14 selected Innovation Priorities listed above are clustered into the 5 main R&I challenges (see above in Challenges of the Call Module).

Expected outcomes of funded projects

Project results are expected to contribute to one or more of the following outcomes:

- preservation of power system stability and reliability also in presence of large-scale renewable generation
- provision of flexibility services through energy storage technologies
- enhanced system stability and efficiency, also through digitalisation and AI applications

- development of flexibility markets through demand side applications and use of innovative flexibility sources.

Another expected outcome of funded projects is that, by involving partners outside of Europe, they will facilitate the dissemination of this approach globally. Consequently, this may prompt more countries to embrace clean energy technologies and practices.

CM2025-03A/03B Advanced renewable energy (RE) technologies for power production

Call Module requirements	
CM2025-03B (IOA): Projects Consortia shall comprise at least one industry partner / private for-profit company.	
Guidelines	
Target RDI approaches/TRLs	CM2025-03A (ROA): TRL 3–5 (Project start: TRL 3 or higher; Project end: TRL 4 or higher) CM2025-03B (IOA): TRL 5–7 (Project start: TRL 5 or higher; Project end: TRL 6 or higher)
Project Consortium Partners	Consortia may include: RPOs (public and private Research Performing Organisations and their spin-offs), industrial partners (large companies and/or SMEs), technology providers, any relevant up-taker
Project budget	CM2025-A (ROA): in the range of (but not limited to) EUR 1–2.5 million, including possible self-financing. CM2025-B (IOA): in the range of (but not limited to) EUR 2.5–5 million, including possible self-financing.
Contact	
TRI2	

Aim of the Call Module

The aim of this Call Module is to contribute to the SET Plan targets with specific reference to Actions 1 & 2 'Global Leadership in Renewables'.

Building on the CETPartnership SRIA, the Call Module addresses critical gaps in R&I and push the boundaries of renewable energy technologies to bring onto the market more efficient, reliable, cost-effective and sustainable solutions for a net zero-emission power system.

Challenges of the Call Module

Projects are expected to address one or more of to the following challenges:

- **Advancing technologies and improving performance:** Improving the efficiency and performance of renewable technologies through innovative/improved components, materials and technologies.

- **Next generation RES:** exploring innovative approaches to increase efficiency, sustainability and circularity of RE technologies, reducing environmental impacts of large installations.
- **Improving operational efficiency:** developing advanced monitoring and predictive analytics for renewable energy assets to prevent system failures and maximise energy generation.
- **Integration and hybridisation** of different RES and/or storage technologies on the same site/point of connection to the grid; Production of power along with other energy carriers.
- **Digitalisation and digital twins:** Design and develop digital twins for renewable energy technologies; leverage the potential of digital technologies to improve efficiency and reduce operational cost.

Scope of the Call Module

The Call Module targets RE technologies for power production at primarily utility scale and for distributed generation. Technology areas include wind energy, solar energy (PV and CSP/STE) ocean energy and other offshore renewables, geothermal energy for power production excluding drilling, medium- to long-term storage solutions for stationary applications (utility scale).

Bioenergy for power production is not in scope in this Call Module.

CSP/STE and geothermal applications for heating and cooling and/or industrial processes are addressed in under TRI4 and TRI 6 respectively.

Target topics

WARNING: Applicants are advised to check preliminarily with their respective Funding Organisations if the technology area of interest is supported.

CONCENTRATED SOLAR POWER (CSP) / SOLAR THERMAL ENERGY (STE)

- **Line-focus solar power plants technology:** Components; process innovation and cost optimisation for molten salts systems; solar collector fields with environmentally friendly heat transfer fluids (HTF).
- **Central Receiver power plants technology**: Innovative concepts, materials and components for central receiver molten salt technology.
- **Next generation of thermal energy storage (TES) technologies for CSP:** Heat transfer media for innovative high-temperature thermal storage systems; Environmentally friendly PFAS-free heat transfer fluids (HTF); Characterisations of constrained materials with molten salt mixtures.
- **Digitalisation of CSP plants** for a more efficient flexibility, monitoring, operation maintenance and control, including interfaces for remote control.
- **Coating materials:** Innovative coatings for mirrors and absorbers; quality characterisation and standardisation of reflectors (soiling and degradation).
- **Integration of advanced meteorological data and forecasts**: Meteorological information for yield determination, optimisation and standardisation of CSP and hybrid plants (PV+CSP; STE+PV).

CROSS-CUTTING OFFSHORE RE TECHNOLOGIES (ocean/marine renewables, floating wind/PV, etc.)

- **Critical technologies for arrays:** Intra-array cabling, subsea hubs or other subsea electrical solutions applicable to multiple types of devices; High safety cable design with weak links / additional safety mechanisms.
- **Materials for moorings, foundations and components**: Materials with improved fatigue-resistance, damping, stiffness, bio-fouling management or other cost-reducing characteristics.
- **Mooring and foundations**: Advanced mooring and connection systems for floating ocean/offshore energy devices; Innovative foundations for bottom-fixed devices integrating biodiversity and sustainability; Cost-efficient mooring/connection systems with reduced impact on wildlife/nature.
- **Connections and cabling systems**: Solutions to reduce the cost of connection and cabling systems, maintenance requirements and costs, dynamic cable repair solutions; Integrated station keeping (mooring) and power connection solutions.
- **Operation and maintenance (O&M):** Innovative solutions to reduce costs of maintenance and optimise operations, including data analytics and predictive maintenance; Instrumentation for condition monitoring; Autonomous solutions and vehicles (robotics / drone technologies) for inspection and repair; Self-healing materials.
- **Enhanced Marine and Meteorological Modelling for Offshore Renewables:** Leveraging site-specific ocean and atmospheric data to improve energy yield forecasting, optimise site selection, and enhance the performance, reliability, and availability of offshore renewable installations.

GEOTHERMAL ENERGY FOR POWER APPLICATIONS

- **Resource assessment:** use high performance computing techniques and robotisation to enhance resource assessment and development, lower LCOE for operations, promote safe and sustainable deployment of geothermal energy for power generation.
- **Sustainable and efficient production technologies:** Enhancement of the performance of power plants through the optimisation of the processes and application of innovative environmentally friendly solutions and materials to increase reliability, availability, and grid-balancing flexibility of the geothermal power systems.
- **New tools and approaches for the industrialisation and standardisation** of a “common geothermal project” (for power applications) which fits the social and environmental frame and supports the optimal decision-making process for techno-economic performance evaluation of projects.

OCEAN ENERGY

- **Next Generation of Technologies & Subsystems:** Device-specific PTO or control innovations for devices with demonstrated potential; PTO innovation for components or control strategies that can be used by several devices or device types, considering standardisation, modularity, interoperability, and scalability.

- **Integration of enabling technologies in ocean energy systems:** Advanced instrumentation and sensor technology designed for ocean energy (resistance to harsh conditions, application in remote operations, low maintenance requirements, etc.); Applications of artificial intelligence/big data analysis to address clearly identified problems.
- **Ocean energy analysis and modelling tools**: Advanced simulation of ocean energy subsystems and devices (including material and component degradation); Analysis and planning tools for ocean energy farm deployment; Modelling and simulation of farm construction/operation.
- **Direct generation wave energy converter design and development:** Innovative direct generation technologies.
- **Dry testing of power take-off for wave energy devices** to debug, improve, stabilise, fine-tune and optimise wave energy devices before offshore operations.
- **Tidal stream power take-off:** Improving the survivability and efficiency of tidal blades/drivetrains to enhance performance and reliability of the device.

SOLAR PHOTOVOLTAICS

- **Performance enhancement of PV modules:** increased performance, lifetime, reliability and cost reduction of innovative PV modules (Perovskite, Thin-film non- perovskite, Tandem-PV); Advanced low-cost high-quality silicon cell and module technologies.
- **Sustainability and circularity:** Advanced PV technologies and application with low environmental impact materials, processes, products (optimise resource use of silicon PV modules, with a specific focus on shifting away from critical raw materials and optimising the life-cycle impact of systems through enabling long lifetime and recyclability of components.)
- **Installation and operations:** Mounting structures adapted to large PV modules reducing the amount and nature of materials; Control strategies for trackers to optimise production for complex terrain PV plants sites or bifacial technologies; Optimised, lower-cost tracking systems. Enhanced flexibility services and interoperability.
- **Energy yield improvement:** Innovative solutions to increase the energy yield (integration of sensors at the module or cell level; shade-tolerant PV modules able to deal with dynamic changing illumination conditions, etc.)
- **Digitalisation for O&M:** Digital technologies to increase energy yield and reduce the cost of O&M; advanced data analytics; digital twin of assets and components; predictive maintenance.
- **Innovative applications:** Innovative solutions for agrivoltaics and landscape integration; floating PV.

WIND ENERGY (OFFSHORE AND ONSHORE)

- **Next generation of wind energy systems**: innovative solutions with reduced material consumption and environmental footprint for rotor, drive train, support structures and electrical system; smart rotor technology to reduce loads; adaptive blade and turbine control; comparison of positive / negative effects of increased turbine control.

- **Digital solutions and digital twins for turbine and optimised wind energy applications**, big data analytics and AI combined with system modelling for control and performance optimisation: Reliability prognosis models and data for very long operations.
- **O&M:** Digital solutions for wind energy O&M and installation; Optimisation tools for operational efficiency; Semi-automated inspection methods with advanced detection method (beyond cameras); Robotics and Autonomous Systems for inspection and intervention; Strategies for O&M considering lifetime extension scenarios; End-of-Life Decision Support.
- **Lifetime extension:** Solutions for control and monitoring of the degradation; Self-diagnostic systems and sensor integration; Innovative solutions to extend the lifetime of wind farms; Assessment of most prominent wind turbine component failure modes affecting lifetime extension.
- **Sustainable wind farms:** Modelling of wind farm impacts and cumulative impacts on ecosystems; Comparison of the impacts of different designs on ecosystems (floating- vs. bottom fixed offshore wind, catenary mooring vs. taut/semi-taut mooring, etc.); Mitigation technologies preventing collision; Nature-inclusive design; Monitoring technologies for biodiversity and ecosystem integrity.
- **Site allocation and public acceptance:** Tools to map stakeholder concerns; new ways, practices and tools for increasing public dialogue, enhancing social acceptance and facilitating deployment.
- **Advanced forecasting methods** for wind resources and yield quantification including the assessment of wind flow dynamics and effects on wind farm long-term performance; Improved theoretical and/or computational methods for wind farm simulations; Methods to improve the accuracy of prediction of meteorological events with strong impact on wind farms.

HYBRIDISATION AND INTEGRATION

- **Site, system and technological integration** of co-located RES (onshore and offshore: co-location of ocean and wind energy; co-location of wind and PV; etc.). Hybrid systems combining electricity generation with heat or other energy carriers (H_2, Fuels, etc.) improving cost-effectiveness and overall energy efficiency.

STORAGE

- **Storage solution for renewable power**: Innovative solutions and technologies for medium- and long-term storage of renewable power demonstrating benefit and or integration with the renewable power production technologies.

Expected outcomes of funded projects

- Solutions that enhance the energy conversion efficiency of renewable energy (RE) and overall system efficiency, contributing to zero-emission power production
- Improved technological performance of RE technologies (aligned with SET Plan Implementation Plans), enabling extended operation in harsh or varying weather conditions and increasing the lifespan of components and installations

- Reduction in investment costs and LCOE for RE installations and operations, compared to the regional state of the art
- Feasibility and efficiency of hybrid and integrated solutions to enhance dispatchable energy and system flexibility, while considering potential economic revenue to support market penetration
- Cost-effective medium- to long-term storage solutions for the power sector
- Sustainable RE technologies that minimise environmental impacts, including land and maritime surface use, as well as effects on landscapes and biodiversity
- Significant reduction in the use of critical raw materials
- Development of guidelines and tools to effectively address circularity in RE technologies
- Digital tools to optimise design, deployment, operation and maintenance of RE technologies

CM2025-04 Carbon capture, utilisation and storage (CCUS)

Call Module requirements	
1. Proposals must fit thematically with the definition of CCUS given in this Call Module. 2. Proposals must include industrial involvement in the project. The project must have industrial partner(s) or industrial members in an advisory board. 3. Proposals targeting lower TRL than indicated below are ineligible.	
Guidelines	
Target RDI approaches/TRLs	Project end: TRL 5 or higher
Project Consortium Partners	• Higher education establishments • Research organisations • Private for-profit companies • Public bodies • Other entities (e.g. non-profit organisations) See also Call Module requirement 2 stated above.
Project budget	Applied funding from the Call in the range of (but not limited to) EUR 1–3 million
Contact	
TRI3	

Aim of the Call Module

This Call Module aims to contribute to global decarbonisation efforts by accelerating development and implementation of carbon capture, utilisation and storage (CCUS) technologies by supporting targeted research and innovation activities to reduce costs and implement CCUS at an industrial scale. The Call Module will support global climate targets and pave way for climate neutrality. On a shorter time scale, the Call Module will contribute to significant CO_2 emissions reductions by deployment of CCUS in the 2030ies.

The Call Module supports research and innovation projects to develop and implement CCUS technologies, primarily in the industrial and energy sectors.

Challenges of the Call Module

The challenge is to accelerate and mature CCUS technologies, bring down cost, and implement CCUS at industrial scale.

It is also a challenge to develop circular economy strategies to reduce CO_2 footprint throughout the CCUS life cycle.

To accelerate the time to market for the CCUS technologies, research and innovation actions require cost-shared participation from the industrial sector, especially from energy intensive and heavy industries, which will benefit strongly from implementing CCUS technologies.

Scope of the Call Module

In this Call Module, the term CCUS refers to all areas of the CCU (carbon capture and utilisation) and CCS (carbon capture and storage) chains. It encompasses a wide spectrum of technologies to capture CO_2 from large point sources, transport captured CO_2 through multi-modal approaches, and either store CO_2 in porous geological formations that are typically located several kilometres under the earth's surface, onshore or offshore (CCS), or use the CO_2 to produce valuable products like fuels or energy, chemicals, and other materials (CCU).

In this Call Module, CCU does not include the use of CO_2 as a nonreactive working fluid, unless it is combined with other renewable systems (such as geothermal) to constitute a CCUS system.

Furthermore, in addition to CCUS as described above, the scope of this Call Module also includes carbon dioxide removal (CDR). CDR is defined by Mission Innovation as human activities that deliberately capture CO_2 from the atmosphere and securely store the captured CO_2 in a manner intended to be permanent[47]. For a CDR project to be net negative, on a life cycle basis more CO2 equivalent (CO_2-eq) must be removed than is emitted.

Target topics

Project proposals must contribute to the ambitions of the EU industrial carbon management strategy[48]. Projects proposals should also be aligned with research and innovation activities described by the CCUS Roadmap to 2030 of the SET Plan IWG9[49] and the Mission Innovation Research Priorities[50].

Project proposals must address at least one of the following technological topics:

- CO_2 capture from the energy sector and energy intensive or heavy industry sectors such as cement, iron & steel, aluminium, other metals, waste to energy systems, and petrochemicals.
- CO_2 capture technologies for reducing the carbon intensity of current mobile sources including the marine transport, rail transport, and heavy-duty trucking transportation sectors.

[47] Carbon Dioxide Removal Technology Roadmap: Innovation Gaps and Landscape Analysis. Mission Innovation CDR Misson, August 2022, https://mission-innovation.net/wp-content/uploads/2022/09/Attachment-1-CDR-Mission-Roadmap-Sept-22.pdf
[48] The EU industrial carbon management strategy, https://energy.ec.europa.eu/topics/carbon-management-and-fossil-fuels/industrial-carbon-management_en
[49] CCUS Roadmap to 2030 of the SET Plan IWG9, https://www.ccus-setplan.eu/wp-content/uploads/2021/11/CCUS-SET-Plan_CCUS-Roadmap-2030.pdf
[50] Mission Innovation Research Priorities, https://www.energy.gov/fecm/articles/accelerating-breakthrough-innovation-carbon-capture-utilization-and-storage

- Emissions monitoring and management technologies for CO_2 capture systems.
- Advancing lower cost CO_2 capture technologies that can effectively remove 95-100% of CO_2 from flue gases, with dilute CO_2 concentrations.
- CO_2 transport and storage infrastructure (pipelines, ships and other non-pipeline transport, intermodal options, monitoring and metering within CO_2 networks, temporary storage, well integrity and well technology).
- Developing commercial CO_2 storage sites, including elements that are needed for screening and characterisation, safe management, and low-cost effective monitoring.
- Enabling CCU technologies, including the CO_2 capture, conversion, and utilisation value chain.
- Improvement of the cost-efficiency and energy-efficiency along CCUS value chains (scale-up, storage at basin-scale including hubs, by digital tools, or by effective collaboration among the stakeholders, etc.).
- Development of lower cost solutions for efficient CO_2 capture from hydrogen produced using natural gas, and new technologies for processing, shipping, transport, and storage of hydrogen.
- Bring CDR technologies closer to the market. This includes direct air capture (DAC), enhanced mineralisation and biomass with carbon removal and storage (BiCRS). Technologies included under CDR are similar to what has been defined by the Mission Innovation CDR Mission[51]
- Develop reactive capture (RC) where CO_2 capture and CO_2 conversion is integrated in one single process module.
- Design and manufacturing of new materials that can make CCU/CCS more affordable.

Project proposals must illustrate the potential for upscaling to industrial size, either in a demonstration phase or an early-commercial phase. Proposals focusing on developing new pilot and demonstration facilities are of special interest.

Project proposals must also illustrate how their projects will help accelerate the time to market of affordable, cost-effective, low environmental impact and resource efficient CCU/CCS technologies.

Access to top class research infrastructure is key for reaching the objectives of this Call Module. Project proposals should, if relevant, seek to maximise synergies with existing infrastructures, such as, for example ECCSEL[52], members of the International Test Centre Network[53], the Alberta Carbon Conversion Centre (ACCTC)[54], or similar world class infrastructures.

[51] Mission Innovation (MI), Carbon Dioxide Removal Mission, https://explore.mission-innovation.net/mission/carbon-dioxide-removal/
[52] ECCSEL – European Research Infrastructure for CCUS, https://www.eccsel.org/
[53] International Test Centre Network, https://itcn-global.org/about-the-itcn/
[54] Alberta Carbon Conversion Centre (ACCTC), https://innotechalberta.ca/facilities/alberta-carbon-conversion-technology-centre/

Cross cutting topics

In addition to technological solutions, project proposals should also address cross cutting topics that might impact industrial deployment of the proposed CCUS technology. Cross cutting topics include regulations and market design, circularity and environmental sustainability, social needs, education, digitalisation, robust transition pathways, Innovation ecosystems, and fair, just and democratic transition.

Proposals addressing only environmental, social or economic implications of existing and commercial ready technologies are outside the scope of the Call Module.

Applicants are encouraged to also include one or several of the cross-cutting topics listed below

- Faster scale-up of CCS, CCU or CDR technologies at lower risk (by design, demonstration, development of legal framework, measures to strengthen the innovation system, knowledge sharing from full-scale operations, integration into the energy system, etc.).
- Development of CCS, CCU or CDR market and business case.
- Assessments of risks to the environment and human health throughout the CCS, CCU or CDR life cycle and development of mitigation approaches and strategies.
- Development of circular economy strategies to reduce CO_2 footprint throughout the CCS, CCU or CDR life cycle.
- Development of best practices and strategies for educating the general public about the benefits and risks of CCS, CCU or CDR.
- Development of strategies for engagement between CCS, CCU or CDR project developers and communities that lead to projects with mutual benefits and social acceptance.
- Development of a robust life-cycle assessment (LCA) and techno-economic analysis (TEA) for full CCS, CCU or CDR value chains and life cycles. Alternatively, development of a more complex sustainability assessment addressing social sciences and humanities (SSH) disciplines (e.g., sociology, social psychology and economics).

Development of technologies and approaches for monitoring and managing basin-wide effects and impacts from multiple CCS projects within a basin.

Complementarity with other Call Modules

This Call Module complements CM2025-08, Integrated industrial energy system, where the aim is development and demonstration of technical solutions for integrated industrial energy systems that enables efficient carbon-neutral industrial production. CCU is one of several technologies addressed. Applicants addressing CCU technologies at high TRL for the industrial sector are recommended to apply to CM2025-08.

Expected outcomes of funded projects

Funded projects must advance the state-of-the art for CCS, CCU or CDR technologies and contribute new knowledge and competence that bring CCS, CCU or CDR closer to commercialisation by bridging the gap between technology development and its implementation by the industry.

Funded projects are expected to lead to at least one of the following:

- CO_2 capture on an industrial scale by early 2030s.
- CO_2 storage on megaton scale by early 2030s and gigaton scale by 2050.
- Pave way for deployment of large-scale infrastructure for CO_2 capture from multiple sources, cross-border CO_2 transport, and CO_2 storage of tens of million tons of CO_2 annually by mid 2030s.
- Be a bridge to implementation of CO_2 utilisation projects on an industrial scale by early 2030s that will have a sustainable and significant effect on reducing CO_2 emissions.
- Pave way for Carbon dioxide removal (CDR) technologies implemented on industrial scale by mid 2030s.

CM2025-05 Hydrogen and renewable fuels

Call Module requirements	
1. Proposals must fit thematically with the definitions given in this Call Module. 2. Proposals must include industrial involvement in the project. The project must have industrial partner(s) or industrial members in an advisory board. 3. Proposals targeting lower TRL than indicated below are ineligible.	
Guidelines	
Target RDI approaches/TRLs	Project end: TRL 5 or higher
Project Consortium Partners	• Higher education establishments • Research organisations • Private for-profit companies • Public bodies • Other entities (e.g. non-profit organisations) See also Call Module requirement 2 stated above.
Project budget	Applied funding from the Call in the range of (but not limited to) EUR 1–3 million
Contact	
TRI3	

Aim of the Call Module

This Call Module aims to accelerate the substitution of fossil fuels, contributing to deliver new sustainable and safe solutions to achieve the EU's target of 45% renewables' share in the energy mix, in 2030[55], and support the policy package "EU Fit for 55", by facilitating the development and implementation of technologies for effective and efficient clean production, distribution, storage and end-use of renewable and advanced fuels[56], hydrogen and electrofuels[57], through targeted financing of innovation and research activities.

[55] Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023, amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652

[56] Advanced biofuels mean biofuels that are produced from the feedstock listed in Part A of Annex IX, Directive (EU)2018/2001.

[57] Electrofuels or e-fuels are a class of synthetic fuels and drop-in replacement fuels that are made by storing energy from renewable sources in the chemical bonds of liquid or gas fuels, aiming to be a carbon-neutral fuel. The primary targets are butanol, biodiesel, and hydrogen, but include other alcohols and carbon-containing gases such as methane and butane.

New and improved technologies and solutions resulting from funded projects are expected to advance the transition to a decarbonised economy, enabling climate neutrality by 2050 through fossil fuels' substitution.

It is the ambition of the Call Module to accelerate the time to market for hydrogen and renewable and advanced fuel technologies, requiring industrial involvement both in research and innovation activities.

The Call Module is expected to contribute to the following:

- Enabling **energy storage through hydrogen carriers** by offering new solutions for hydrogen production through electrolysis and advancing a new generation of electrolysers at lower cost and with higher yields in hydrogen production.
- Delivering **new concepts for hydrogen production** at competitive costs compared to fossil fuels' derived hydrogen (*e.g.,* non-pure water electrolysers, water splitting through concentrated solar power (CSP), hydrogen production from natural resources).
- Implementing **pilot installations** to prove new concepts related to the value chain of **renewable fuels**, including **hydrogen**, to accelerate deployments and build technology confidence for societal acceptance.
- Providing safe environmentally and economically feasible solutions for **fuels storage and transport**, including in the case of hydrogen using solid and liquid carriers.
- Producing **technological alternatives for end-use** of 100% renewable and advanced fuels, especially in sectors difficult to decarbonise, such as industry and transport, whereas transport includes aviation, shipping, and heavy-duty machinery related to various activities, should be considered.
- **Accelerating the time to market** of affordable, cost-effective, low environmental impact, and resource-efficient sustainable technologies to produce, store, transport, and distribute hydrogen and renewable and advanced fuels along the whole value chain.

Challenges of the Call Module

Decarbonisation of society through fossil fuels' substitution by renewable fuels will have a significant impact on all economic sectors. Fuels are used across all sectors, *i.e.* in transportation, industry, heat/power generation, domestic, and services. Although technologies already exist in providing fuels from renewable sources, including hydrogen, the challenge is to upscale production with various kinds of feedstock in a sustainable way and at a cost that is competitive to fossil fuel derivatives. In addition, there is a need for transformative changes to deliver new sustainable and safe solutions to contribute to EU and worldwide policies towards carbon neutrality in 2050. This calls for technological development in the whole value chain.

However, providing hydrogen and renewable fuels, to substitute fossil fuels in a competitive, safe and sustainable way poses challenges not only at the level of feedstock and technology, but also regarding infrastructure, industrial involvement and capacitation, market development, regulation and certification, and societal acceptance for a faster penetration. The interoperability of all different segments also needs to be investigated to ensure that technology and infrastructure are efficiently integrated.

Europe faces various challenges considering the deployment of renewable hydrogen technologies, including regulatory frameworks, infrastructures and networks, new market models, and certification of origin, in addition to further research and innovation to deliver breakthrough technologies and new solutions to ensure a safe and sustainable hydrogen-based economy with societal acceptance.

Scope of the Call Module

This Call Module finances projects on hydrogen[58] and renewable fuels[59], including fuels of non-biological origin[60], supporting countries in achieving the decarbonisation goals and in line with SET Plan priorities and new directions to accelerate the clean energy transition[61]. The use of zero-emission energy technologies for conversion processes, such as solar energy to produce cost-effective thermo-, photo-, and electrochemical fuels (so-called solar fuels), as well as the supply of advanced biofuels from sustainable biomass, are important for a net-zero energy system.

This Call Module is **technology focused** but addressing cross-cutting topics to ensure sustainability and a better penetration to advance transition, where social acceptance becomes relevant. It also strives to be complementary to calls for proposals issued by the EC under the Horizon Europe Work Programme, or other available instruments, including the national research programmes.

Hydrogen

The production of hydrogen plays a key role in any industrial society, since hydrogen can be used for many essential chemical processes, as fuel to power electric motors via fuel cells, as input to produce electrofuels (e-fuels), biofuels, and other hydrogen carriers like ammonia, or to power gas turbines.

The use of renewable ammonia is expected to increase for both fertiliser and e-fuels. The advantage of renewable ammonia is that its production does not require a CO_2 source, it is easy to transport, and it is an established commodity. Thus, ammonia can be produced at remote locations with access to cheap renewable electricity.

Hydrogen can be produced from biomass or low-carbon power. Hydrogen produced by water electrolysis has the advantage of producing extremely pure hydrogen (>99.9%), but it can also be produced by gasification of biomass through further hydrogen separation or purification, or other processes. Integration of hydrogen production and carbon capture and storage (CCS) offers significant opportunities for cost reduction. Commercial technologies for this type of hydrogen production are available but not implemented in large scale. Biomass can be used to produce hydrogen, biofuels and CO_2. Production of hydrogen from biomass

[58] This includes hydrogen produced with maximum emission of 3 kg CO_2-eq/kg H_2 (EU taxonomy).
[59] Directive (EU) 2023/2413 of the European Parliament and of the Council of 18 October 2023 amending Directive (EU) 2018/2001, Regulation (EU) 2018/1999 and Directive 98/70/EC as regards the promotion of energy from renewable sources, and repealing Council Directive (EU) 2015/652
[60] Renewable fuels of non-biological origin in the European Union - European Commission
[61] COM(2023) 634 final (2023-10-20); https://research-and-innovation.ec.europa.eu/document/download/e86c56bb-fd23-485e-9ee5-3b3031f32d12_en?filename=com_2023_634_1_en_act_part1.pdf

through anaerobic digestion, fermentation, gasification, or pyrolysis (all with BiCRS) are at earlier stages of commercialisation. Hydrogen production with BiCRS is attractive as it would deliver negative emissions, although it would compete with other sources of demand for biomass.

Renewable fuels

Renewable fuels production, particularly when coupled with power-to-X (e.g. biogas or biosyngas upgrading and solar fuels) and CCUS, offers major opportunities for greenhouse gas mitigation and negative emissions. The provision of such renewable fuels is crucial for applications that are difficult to electrify in industry, as well as for the residential and especially the transport sectors, namely in aviation, shipping and heavy-duty road transport, where low-cost production of alternative clean fuels would promote their uptake with environmental benefits.

Target Topics

Project proposals must contribute to the ambitions of the EU Implementation Plans of SET Plan Working Groups on Renewable Fuels and Bioenergy for Sustainable Transport (IWG8)[62], the Temporary Working Group on Hydrogen (TWG10)[63], the ERA pilot on Green Hydrogen[64] and the Mission Innovation Research Priorities (Houston 2017)[65].

Proposals must focus on at least one of the following technological topics:

- New and improved processes for hydrogen and renewable fuels production
- Reliable and low-cost production technologies of new and advanced fuels
- Development of new processes for fuels production
- Secure and safe storage of hydrogen, including using solid and liquid carriers
- New and adapted infrastructures for hydrogen and new fuels distribution
- New and adapted end-use technologies in residential, industrial and mobility sectors

Proposals must clearly state how projects contribute to the challenges posed and clearly describe the disruptive nature or the innovative aspect of technological concept.

Cross-cutting topics

The technological as well as the environmental, social and economic challenges are required to accelerate decarbonisation through new and improved ways to increase the shares of hydrogen and renewable fuels in the energy system. The introduction of new fuels into the market also depends on societal aspects that

[62] Implementation Plan of IWG8: https://setis.ec.europa.eu/document/download/323a63de-93c3-4768-8a37-9a723a0f2503_en
[63] https://setis.ec.europa.eu/working-groups/hydrogen_en
[64] https://research-and-innovation.ec.europa.eu/research-area/energy/hydrogen_en#set-plan-and-era-pilot-on-green-hydrogen
[65] Mission Innovation research priorities

lead to acceptance of the technologies developed and their products. The Societal Readiness Level (SRL)[66] is also relevant to consider when evaluating opportunities for deployment and commercialisation.

Projects are also required to consider one or more of cross-cutting topics, such as:

- Consumer attitudes, risk perception and the levers which could influence consumer behaviour
- Life cycle, techno-economic and environmental impact analyses, including mass, water, land and energy consumptions aspects
- Barriers, opportunities, and solutions to scaling up
- System analysis and integration of processes in the energy system, continuity/intermittence
- Infrastructure and distribution aspects, including pipeline reuse and cost competitive materials for pipelines
- Digitalisation as part of the project

Expected outcomes of funded projects

Projects are expected to have a significant bearing on accelerating the development and use of hydrogen and renewable and advanced fuel technologies and provide results showing a significant potential CO_2 reduction by 2030 and beyond.

All projects must contribute to new knowledge and new competences to increase technological cost-effective and cleaner solutions that provide alternative fuels to substitute fossil fuels, responding to one or more of the challenges addressed in this Call.

[66] https://innovationsfonden.dk/sites/default/files/2019-03/societal_readiness_levels_-_srl.pdf

CM2025-06 Heating and cooling technologies

Call Module requirements	
The project must have at least one private for-profit company as a Project Consortium Partner. All projects must have a valid proof of concept before applying.	
Guidelines	
Target RDI approaches/TRLs	Project start: TRL3 or higher Project end: TRL4 or higher
Project Consortium Partners	• Private for-profit companies (small, middle-sized, and large) • Research organisations • Secondary and higher education establishments • Non-profit organisations
Project budget	Approximately EUR 1–4 million
Contact	
TRI4	

Aim of the Call Module

This Call Module aims to contribute to enhanced and improved heating and cooling technologies and systems for all major parts of Europe by 2030, and enabling 100% climate-neutral heating and cooling by 2050. This follows the challenge of the CETPartnership TRI4[67], as formulated in the CETPartnership SRIA[68]. For this, we need improved heating and cooling technologies that are more robust, affordable, efficient, easier to install and retrofit, and can be integrated into the energy system easier than today's products and concepts, for buildings, agricultural and industrial users.

Challenges of the Call Module

The energy crisis caused by the war in Ukraine has clearly shown that Europe needs to repower and rethink its heating and cooling policy (ref. REPowerEU[69]), and the revised Renewable Energy Directive[70] (RED III) increases focus on the heating transition. According to Eurostat[71], 26,2% of heating and cooling in 2023 was

[67] TRI 4: Efficient zero emission Heating and Cooling Solutions | CETPartnership
[68] See Challenge 4 in CETP SRIA v1.0-endorsed (cetpartnership.eu)
[69] https://ec.europa.eu/commission/presscorner/detail/en/IP_22_3131
[70] https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en
[71] Renewable energy statistics - Statistics Explained

supplied by renewable energy sources across Europe, while 45,3% of our electricity was supplied by renewable energy sources in that same year. The heating transition is lagging behind. There is a clear challenge to develop better, cheaper, easier applicable and climate-neutral heating and cooling technologies which are needed to provide thermal comfort and heat for industry and agriculture while fully phasing out fossil fuel-fired dependence.

Scope of the Call Module

Projects should aim for more robust, affordable, efficient, easier to install, retrofit, and integrate heating and cooling technologies. Projects that address just one component or one part of the value chain are fully in scope.

This Call Module brings together the Call Modules “Heating and cooling technologies” and “Geothermal energy technologies” from previous CETPartnership Calls (2023 and 2024) in one Call Module and covers the entire scope of those previous Call Modules.

The Call Module supports 1. pilot and demo projects and 2. applied research and development projects that will develop technologies, methods, knowledge or innovations for heating and cooling:

1. Pilot and demo projects (achieving TRL 7 or 8 after project completion) must be realised in real-life operational environments and address at least one of the following compared to state-of-the-art today:
    - cost reduction
    - increase in competitive market opportunities
    - increase in environmental protection
2. Applied research and development projects (achieving TRL 4, 5 or 6 after project completion) must have a valid proof-of-concept before starting, typically develop the innovation in detail in a laboratory or similar setting, and address at least one of the following compared to state-of-the-art today:
    - significant cost reduction
    - significant increase in competitive market opportunities
    - significant increase in environmental protection
    - better tools and methodologies

Proposals are expected to explain their contribution to the objectives of the Call Module and **quantify this contribution** to the extent that this is possible. Considering the urgency of the challenge, market-driven innovation activities are a must. The project must therefore have at least one private for-profit company as a **Project Consortium Partner**. **Applicants must ensure that their proposed work meets national funding instruments, e.g. relating to TRL level and industrial involvement.**

Target topics

Projects should address one or more of the following topics to develop a secure, sustainable, competitive and affordable climate-neutral heating and cooling supply:

Sub-surface climate-neutral heat and cold sources: Innovative approaches for geothermal heating and cooling from the shallow and deeper subsurface, including exploration, resource development techniques and operation.

Above-ground heat and cold sources, Innovative approaches for solar thermal, local and regional excess resources, renewable cooling technologies, concentrated solar for (industrial) thermal energy purposes, ambient heat and cold from the air, surface water, sewers etc., biomass and organic waste and excess heat from industry.

Thermal storage, new storage technologies and storage-related innovations aiming at, including but not limited to large-scale seasonal subsurface thermal storage, small-scale hour-to-day thermal storage in industry and the built environment, smart systems balancing supply and demand, excess power to thermal energy, and thermal storage systems for residential and industrial applications.

Heating and cooling networks, conversion, and integration, including but not limited to innovations for more cost-efficient heating and/or cooling networks and their operation, next generation district heating systems, retrofit of heating and/or cooling networks, conversion technologies such as heat pumping technologies, in the built environment and industry.

End-use systems: innovative distribution systems within the end-user system (typically a building, a home or an industrial complex) are relevant to the heating and/or cooling system because the temperature level matters.

This Call Module is expected to encompass projects both relating to the built environment, agriculture or industrial end-users. For the built environment, the projects may focus on district heating and/or cooling systems and other collective systems, but also on individual solutions.

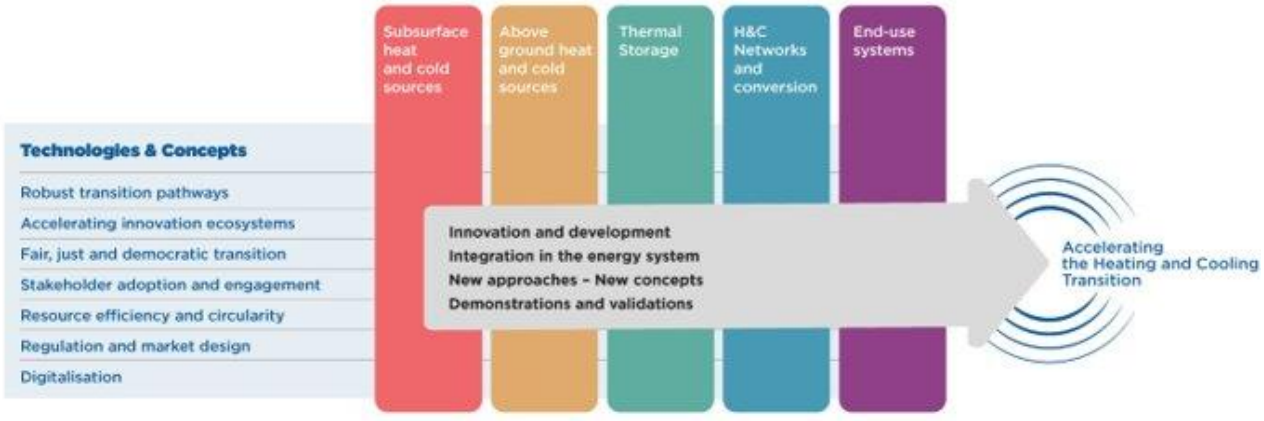

Figure 7.1. Heating and cooling technologies and concepts

The vertical bars in Figure 7.1 indicate the technological scope. The horizontal bars indicate the dimensions which successful projects could address. The arrow in the figure symbolises the forward and future-oriented approach that builds on these various aspects.

Successful projects in the Call Module should address technologies or concepts, components or part of the value chain, and should contribute to one or more relevant **cross-cutting**, non-technological dimensions whenever appropriate. Figure. 7.1 highlights the central role of 'Technologies and concepts', and also indicates the cross-cutting, non-technological themes in the horizontal bars such as a fair, just and democratic transition, public acceptance, resource efficiency and circularity, regulation and market design, digitalisation etc. Proposals that exclusively consider research on cross-cutting issues cannot be funded.

A close interconnection between sources and their temperature level, conversion and distribution technologies, flexibility for the energy system and end-user requirements should be sought for heating and thermal storage operations. Projects should demonstrate their market relevance and potential impact.

Proposals are encouraged to describe how the project will support the energy transition with a view on circularity, resource efficiency and recovery, recycling, and substitution of critical raw materials. Projects that aim at technologies with little or no critical raw materials[72] may identify this as a project quality in their project plan.

Applicants must ensure that their proposed work agrees with the funding instrument of their relevant Funding Organisation – consult Annex C to the Call.

Complementarity with other Call modules

This Call Module complements various Call Modules in the Call. In case of uncertainty about where to best propose your project, consult with relevant Funding Organisations or TRIs.

Concentrated solar power is covered in CM2025-03, while concentrated solar for thermal applications in the industry is covered by this Call Module.

Geothermal energy technologies for power production are covered in CM2025-03.

Projects focusing on integrating heating and cooling in regional or industrial energy systems or the built environment are referred to CM2025-07, 08 and 09, respectively.

Expected outcomes of funded projects

Projects funded in this Call Module should improve business cases and/or increase the competitive market opportunities and environmental protection, compared to state-of-the-art today, through research and innovation. The projects' results must emphasise market-driven innovation activities, and the involvement of a private for-profit company. Involvement of end users and need-owners in Project Consortia is encouraged, where relevant.

[72] See Critical raw materials - European Commission (europa.eu), and including copper and nickel, in line with the Critical Raw Materials act

Project outcomes are expected to help accelerate the time to market of secure, sustainable, competitive, affordable and climate-neutral heating and/or cooling technologies. Projects can also focus on bringing upcoming technologies to a level of validation in a relevant environment or integrating their activities into already viable and ongoing demonstration or piloting projects. All projects are expected to anticipate and substantiate how their results will accelerate the time to market, and include strategies to maximise impact, including a fit-for-purpose consortium.

CM2025-07 Integrated regional energy systems

Call Module requirements	
This Call Module does not support the singular technological development of individual solutions, although technological development can be part of the project proposals.	
Guidelines	
Target RDI approaches/TRLs	Project end: TRL 7 or higher
Project Consortium Partners	• Private for-profit companies • Public bodies (municipalities, local and regional governments) • Innovation clusters • Infrastructure providers and operators • Interregional and transnational innovation ecosystems such as • Cluster networks • Start-ups networks • Higher or Secondary Education Organisation • Research organisations Participation of public and private organisations, networks and clusters, or existing initiatives is encouraged.
Project budget	Applied funding from the Call in the range of (but not limited to) EUR 1.5–5 million, besides possible self-financing
Contact	
TRI5	

Aim of the Call Module

This Call Module aims to promote innovations in regional energy systems that significantly accelerate Europe's energy transition. It focuses on enhancing the functionality of the regional energy system by improving the interaction between energy system components, regional energy exchanges and different actors, including residents, businesses, the public sector, and the transportation system.

Challenges of the Call Module

Regional energy systems have a significant role to play in the clean energy transition. Different geographical regions have different challenges and opportunities, depending on for example geographic location, resource availability, infrastructure, socioeconomic conditions, political landscape, and type of industries[73]. By addressing the regional level of the energy system, such challenges can be addressed, and local resources and other opportunities can be leveraged. The regional scope depends on its context, such as the energy sectors under consideration (the need owners involved, regional resources, demand, and energy exchange) and the region's specific characteristics (urban, rural, agricultural, industrial, islands, etc.).

The energy transition is associated with both technical and complex societal challenges. It requires knowledge about, and insights into, transition, innovation and implementation processes, the acceptance of new systems and services, and the behaviour of stakeholders. Regional governance structures and infrastructures can often address local challenges and opportunities more effectively than national and global ones. Regional energy transition processes can be accelerated by nurturing active involvement of communities, companies, and responsible bodies for energy planning.

The following energy transition challenges are examples of what could be addressed. *Please note that this list is non-exhaustive*.

- Increasing the regional share of renewables among all energy sectors
- Increasing flexibility and resilience within the regional energy system
- Optimising and integrating supplier and consumer infrastructure
- Fostering cross-sector synergies
- Improving the added value in the region by utilising local resources
- Enabling citizens, need-owners, and other stakeholders to take part in related regional value chains

Scope of the Call Module

Project proposals should reflect the needs of a region of interest. This can be done, for example, by referring to existing local/regional climate, energy and implementation plans or roadmaps and describing their contribution to them. The Project Consortium shall cover or involve as many local target groups as possible. Furthermore, the project proposals should enable the Project Consortium Partners and/or relevant actors and stakeholders to carry on with, implement and scale up solutions and results successfully and independently after the end of the project.

To ensure the scalability and contribution to real change, project proposals benefit from building on the results of, and linking to, ongoing or recently completed research and demonstration projects, for example through use of test infrastructure, use of knowledge, cooperation of key demos, transfer of results, etc.

[73] Leveraging regional resources to address regional energy challenges in the transition to a low-carbon future | Open Access Research Journal of Multidisciplinary Studies

Building on existing solutions, project proposals can show how these solutions can be transferred to similar regions in other countries – or show the gap in the framework conditions why the solution cannot be replicated.

Proposals will be assessed mainly on the basis of their specific challenges and proposed solutions, which cover at least some of the following key issues:

- the proposal offers a solution for a specific regional challenge relevant to the energy transition
- the proposed solution involves and enables the orchestration of the specific need owners in the targeted region
- the proposed solution can be translated to other regions (replication in other regions) to increase its positive impact on the energy transition
- the Project Consortium has the capacity to achieve a sustainable outcome in terms of the interplay between technical developments and non-technical aspects

Target topics

Project proposals addressing regional energy transition challenges should include one or more of the following key areas:

1. **Integration of regional infrastructures**: Emphasise the roles of municipalities, local communities, industries, and stakeholders in shaping infrastructures and consumer dynamics.
2. **Utilisation of local energy resources**: Maximise synergies and flexibility in locally available energy sources such as heating, cooling, electricity, and local fuels.
3. **Cross-sectoral integration**: Promote collaboration across sectors, including transport, industry, and trade.
4. **Research-driven innovation**: Align research with initiatives like living labs for prototype development and testing.

The proposal must specify which actors will implement the proposed solution. If relevant actors are not part of the Project Consortium, explain how they will be involved in the project. Projects should – where relevant – involve distribution system operators and local or regional public authorities as Project Consortium Partners.

Target groups include the following entities:

- Local and regional authorities, stakeholder groups or networks, aggregators, etc.
- Regional system operators and distribution system operators (DSOs)
- Private and public need-owners, institutions and citizens, especially involving diversified stakeholders intending to implement innovative and cross-sectoral integrated solutions
- Solution providers: technology product and system developers, service providers, etc.

- R&D institutes, local and regional innovation clusters, programmes and ecosystems, technology transfer agencies, triple helix organisations, etc.

Projects funded by this Call Module should stimulate the formation of Project Consortia involving Project Consortium Partners from countries and regions that have not yet been able to mobilise their stakeholders, for example by inviting follow-up proposals from ongoing CETPartnership projects to expand their Project Consortium to include partners from new regions.

When including different stakeholders into the Project Consortium, we recommend that applicants carefully check the national requirements for Project Consortia of the respective funding organisations. This can be decisive for the composition of Project Consortia and their eligibility for funding.

For proposals that intend to work with former ERA-Net Projects, Demonstration, Real-Lab or Living-Lab approach, it is recommended to consider the Testing and Validation partners in the CETP Impact Network[74] when looking for Project Consortium Partners. For matchmaking opportunities please register at the CETPartnership platform[75].

Dimensions of innovation

Project proposals shall use the Integrative Innovation Model as a framework for the description of their expected impact. Project proposals funded in this Call Module should not only cover the dimension of Technology & Infrastructure. For integrated solutions, we expect that in the best case all layers (Technology & Infrastructure, Integration & Organisation and Transformation & Implications) are covered within the project. Proposals are expected to describe their impact in the dimensions addressed, which can also be complemented by a reference to European transition plans, such as the SET-Plan[76] and in particular the SET-Plan Implementation Plan for Energy Systems (IWG4). Read more about this in the CETPartnership Strategic Research and Innovation Agenda (SRIA) [77].

Complementarity with other Call Modules

The difference to CM2025-01 starts at the interconnection of industry and energy system and focuses on energy system studies (adding environmental/social aspects).

CM2025-02 essentially considers outstanding technical innovations.

CM2025-07 pursues rather moderately innovative solutions that prove their value in the interaction of many stakeholders in the transformation of the energy system. It may include local industries in their interactions with other regional stakeholders.

[74] CETP Impact Network Map - The Impact Network
[75] CETPartnership platform
[76] Strategic Energy Technology Plan (europa.eu)
[77] CETP SRIA_v1.0_endorsed_compressed_0.pdf (cetpartnership.eu)

Expected outcomes of funded projects

- Validated and demonstrated system prototypes (TRL7 or higher) which enable sustainable transition, effective consolidation and growth of integrated regional energy systems, that means going beyond smart city or energy community initiatives to regionally scalable and replicable system solutions.
- Contributions to existing roadmaps and implementation plans, reference architecture models and common standards as they exist and contribute to further development of these.
- Increased participation of regional need owning private and public companies, institutions and people, intending to implement innovative solutions in order to take an active role in the future energy supply and energy system (producing energy, providing flexibility, etc.).

CM2025-08 Integrated industrial energy systems

Call Module requirements	
A Project Consortium must have industrial involvement by at least one industrial Project Consortium Partner (private for-profit company), preferably an end user.	
Guidelines	
Target RDI approaches/TRLs	Project start: TRL 3 or higher Project end: TRL 6 or higher Projects are expected to increase their TRL level throughout the duration of the project so that they move closer to commercial readiness.
Project Consortium Partners	• Secondary and higher education establishments (social science, humanities, technology, economic and science disciplines) • Research organisations • Private for-profit companies (such as industrial companies, suppliers of technology and services) • Public bodies (may include municipal companies) Note Call Module requirement stated above.
Project budget	Applied funding from the Call in the range of (but not limited to) EUR 1.5–5 million, besides possible self-financing.
Contact	
TRI6	

Aim of the Call Module

This Call Module, following the challenge of CETPartnership TRI6[78], aims to develop and demonstrate a set of technical solutions for integrated industrial energy systems that enables efficient carbon-neutral industrial production sites and takes industrial energy systems into development as part of the entire energy system. It focuses specifically on integrated solutions across industries, across energy sectors and across public and private sectors[79].

The Call Module contribute to reducing overall energy consumption, replacing fossil fuels, and accelerating Europe's clean energy transition to lower emissions and increase energy independence. It aims to foster

[78] TRI 6: Integrated Industrial Energy Systems | CETPartnership
[79] CETP SRIA v1.0-endorsed

innovation-driven growth in the European economy and energy sector by supporting projects that accelerate the development of clean technologies. This is achieved through leveraging synergies between national and international programs, as well as addressing key issues that enable faster market adoption, scaling, and enhance the EU's technological independence and global competitiveness.

The expected impact of the Call Module includes:

- Integrating European industry into a climate-neutral economy.
- Enhancing the competitiveness of European industry.
- Strengthening the resilience and security of energy systems.
- Supporting the development and pre-commercialisation of disruptive future technologies. Promoting the wider use of renewable energy sources and emission control technologies to reduce industrial emissions.
- Facilitating the integration of renewable energy into industrial systems to support increased electrification.
- Improving resource and energy efficiency in industrial energy systems through innovative process and system integrations.
- Significantly reducing harmful environmental impact and lowering or eliminating greenhouse gas emissions.
- Boosting circularity, for example through carbon capture and utilisation (CCU) or the reuse of industrial excess heat.

Challenges of the Call Module

There is a need for industrial transformation in the future, with electrification and industrial energy supply relying on renewable sources. Reducing emissions from industry is also a priority, where carbon emissions that cannot be avoided should be captured and either utilised for producing long-lifetime products or stored permanently. As the energy transition in industries advances, industrial energy systems must be integrated with local, regional, and national heat and power networks. Additionally, renewable power will be used to produce hydrogen, which can serve as an energy carrier or raw material in industrial processes, or in CCU to create electro products that replace fossil-based fuels and chemicals.

This Call Module welcomes proposals that address one or more of the following challenges:

Challenge 1 – Reducing emissions from the industrial energy system

Support technological leaps and industry's ambitions to change to more sustainable production by integrated industrial energy systems.

Challenge 2 – Enabling renewable energy integration and resource efficient industrial energy system

Contribute to increasing knowledge and develop new and renewable innovative processes and system integrations that will improve sector coupling in an energy and resource efficient way between industrial energy systems and the energy system in general.

Challenge 3 – Climate-neutral industry

Increase use of renewables, green hydrogen (and its derivatives) and removing carbon emissions from the carbon cycle in industrial energy systems for use in industrial processes or long-lasting products (CCU).

Scope of the Call Module

The Call Module invites proposals for research, development and innovation that address one or more of the following challenges:

Challenge 1 – Reducing emissions from the industrial energy system

This challenge is addressed to projects that will contribute to reducing the industry's process-related emissions, in particular emissions to air. The objective is to support technological leaps and industry's ambitions to change to more sustainable production by integrating clean energy to industrial energy systems.

Process-related emissions refer to emissions directly from industrial processes according to environmental reporting as well as to emissions that occur during the combustion of residual products from fossil raw materials in production processes, such as flaring of industrial residual gases. Emissions with an indirect connection to industrial processes are, for example, combustion emissions from on-site power and heat production.

Projects that focus on reduction of indirect emissions from industry can only be supported in cases where a reduction in direct emissions from processes is also included in the project or when they involve a technological leap for the industry. Therefore, projects that only involve conventional fuel changes will not be funded.

Following are examples of topics that proposals could cover to meet the above challenge:

- Industrial electrification
- Coupling electricity and heat by integrating renewable technologies
- Process-related emissions reduction (e.g. SOx and NOx)

Challenge 2 – Enabling renewable energy integration and resource efficient industrial energy system

This challenge is addressed to projects that will contribute to increasing knowledge and develop new and renewable innovative processes and system integrations that will improve sector coupling in an energy and

resource efficient way between industrial energy systems and the energy system in general. System-level integrations across sectoral boundaries will provide support for a more flexible and robust European energy system based on a high degree of variable renewable energy sources.

The projects in this area can include the role of industry in a larger perspective, i.e., integration between processes within an industrial site, between different industries or integration between an industrial site and the surrounding local or regional energy system, to create an energy- and resource-efficient system from a holistic perspective. The area thus comprises industrial and cross-sectoral symbiosis, including new industrial and system-integrated structures, i.e., projects that study physical exchanges of energy, material or residual streams in the form of, for example, excess heating or cooling, operational and municipal wastes, and residual materials and flows. This area can thus help create circular economy solutions for industry and local communities and regions.

Following are examples of topics that proposals could cover to meet the above challenge:

- Solutions for advanced energy sector coupling in industries for instance for heat using or electricity
- Recovery of excess heat and upgrade (e.g. with heat pump) for reuse within or outside the industrial site
- Energy and resource efficient process technologies

Challenge 3 –Climate-neutral industry

This challenge is by use of renewables, green hydrogen and removing carbon emissions from the carbon cycle in industrial energy systems for use in industrial processes or long-lasting products (CCU). Addressed to projects that will contribute to removing industrial greenhouse gases from the carbon cycle through emission separation combined with long lifetime utilisation or long-term storage of carbon. Special emphasis is placed on greenhouse gases of biogenic origin and on CO_2 removed from the atmosphere to advance development of carbon sinks. The challenge is also addressed to projects that enable industries to implement bio-CCU to produce chemicals from their biological CO_2 emissions, or such energy carriers that would serve as energy storages and support balancing of the renewable-based future energy system. CCU production pathways might involve bioprocesses, e.g. with algae, or synthesis processes with clean hydrogen. Implementation of CCU, might open new business opportunities beyond today's industrial production.

Following are examples of topics that proposals could cover to meet the above challenge:

- Industrial Bio-CCU
- Value chain development for CCU
- Clean hydrogen for energy-intensive industrial applications

Cross- cutting topics

In addition to the target topics, project proposals can (no requirement) address cross-cutting topics that might impact the deployment of industrial integrated energy systems, see chapter 2.

Dimensions of innovation

Projects shall drive innovation, lead to findings and create evidence-based knowledge in the three dimensions of innovation as outlined in the Dimensions of innovation, see **Subsection 2.3.2**.

Complementarity with other Call Modules

The overall flexibility from the interface of industry and energy sector coupling, for the entire energy system, with focus on energy system studies (adding environmental /social aspects) is covered by CM2025-01, while it's covered by this Call Module if looking to the production process themselves and on technology viewpoint from the production site level.

Call Modules directed towards single technology development is focused on CM2025-04, CM2025-05, and CM2025-06.

CCU technology is covered by CM2025-04, while it is covered by this Call Module if linked to industrial processes, industry symbiosis and energy system integration.

Hydrogen technology in industry is covered by CM2025-05, while this Call Module is highlighting hydrogen in industry application and industrial symbiosis.

Concentrated solar for thermal applications in the industry is covered by CM2025-06, while it is covered by this Call Module if linked to industry application and energy system integration.

Industrial applications of new heating and cooling technologies is covered by CM2025-06, while it's covered by this Call Module if linked to industry application with energy system coupling included.

In case of uncertainty about where to best propose your project, consult with relevant Funding Organisations or TRIs.

Expected outcomes of funded projects

Projects that are funded are expected to provide solutions to the challenges in the Call Module through new knowledge, skills, and technologies.

Funded projects are expected to lead to at least one of the following:

A set of technical solutions for integrated industrial energy systems are developed and demonstrated.

Projects are expected to move closer to commercial readiness, and actively exploitation of results

Projects should support the operation of a fully integrated energy system and increase system flexibility and efficiency.

After the projects end the Project Consortium Partners are ready to apply for follow-up funding for demonstration or flagships projects both from private sources and other funding programs like EU's Innovation fund[80].

Establish long-term international collaboration between countries/organisation bringing stakeholders together.

[80] https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/programmes/innovfund

CM2025-09 Clean energy integration in the built environment

Call Module requirements	
Proposals with single technology development are ineligible.	
Guidelines	
Target RDI approaches/TRLs	Project start: TRL 3 or higher Project end: TRL 5 or higher
Project Consortium Partners	• Private for-profit companies (small and medium-sized enterprises (SMEs)) • Public bodies (municipalities, local and regional governments) • Innovation clusters • Ecosystems and programmes • Infrastructure providers and operators • Interregional and transnational innovation ecosystems such as • Cluster networks • Start-ups networks • Secondary and higher education establishments • Research organisations
Project budget	Applied funding from the Call in the range of (but not limited to) EUR 1–5 million, besides possible self-financing.
Contact	
TRI7	

Aim of the Call Module

The overall goal is to achieve a climate neutral building stock/built environment. The Call Module is also complementary to B4PP, DUTP-PED, NEB, and the other Call Modules in this Call.

The aim of this Call Module is the integration of already existing energy production / conversion, energy storage and energy management technologies into the (existing) built environment and to enhance its energy flexibility. The built environment should become an active part within the overall energy landscape.

The second focus is to foster the digitalisation from the planning process, over construction phase to commissioning, through operation and finally ending in decommissioning and disposal.

Thirdly, as the low renovation rates around Europe are problematic and hindering the transformation process another goal is to push the development of new concepts and technologies to renovate and refurbish the existing built environment.

Challenges of the Call Module

One of the following challenges must be addressed.

1. Transform the building to an active part within the energy system by integrating energy production, energy storage and energy management technologies
2. Digitalisation of the whole life cycle of a building (planning, construction, commissioning, operation, decommissioning and disposal)
3. New concepts and technologies for the renovation of the existing built environment

Scope of the Call Module

The scope of these Call Modules is to transform the built environment from a passive towards an active role in the future energy landscape.

Proposals should identify the foreseen application(s) of the developments in different building contexts:

- Existing and new buildings
- Residential (urban, rural, isolated) and non-residential buildings (large public and private buildings, commercial malls, service and mobility infrastructures, logistics platforms such as ports, airports, railway terminals, roads, large parking areas)
- Old, historical and special buildings (cultural and built heritage)
- Different climate and geographical areas

This Call Module addresses innovative aspects and/or new approaches of the integration of *mature* technologies, while the development of single technologies is addressed in other Call Modules.

Proposed projects should include a perspective for technology transfer including plans for verification and validation, data management and exploitation.

Target topics

The targeted topics within challenge 1 are (not exclusively):

- Production of renewable energy within the building
- Seamless integration of these technologies in the urban environment
- Integration of electricity and heat storage
- Integration of e- mobility concepts
- Building-to-Building energy and active buildings concepts
- New air-conditioning and ventilation concepts

- New active building elements like facades, windows, switchable thermal insulation and their system integration
- Other innovative ideas, which contribute to our first aim, namely the integration of renewables, storage solutions etc.

The targeted topics within challenge 2 are (not exclusively):

- Digitalisation of in-building energy management
- Increase self-consumption and energy efficiency during operation
- Active energy production and storage management within buildings
- Digitalisation of networks for heating and cooling
- Building Information Modelling (BIM) from the cradle to the grave including life cycle analysis
- New circular-oriented services at different levels of the Construction and Demolition Waste (CDW) supply/value chain
- Other innovative ideas, which contribute to our second aim, the digitalisation of the planning process.

The targeted topics within challenge 3 are (not exclusively):

- Prefabricated elements to boost renovation processes
- New tools for efficient renovation pathways
- Novel holistic + economically viable concepts incl. demonstration, LCA, etc.
- Serial renovation
- Concepts for heritage buildings
- LCA incl. grey energy
- “User” acceptance and economic viability
- Other innovative ideas, which contribute to the increase of the renovation rate.

Expected outcomes of funded projects

Projects that are funded are expected to provide solutions to at least one of the challenges in the Call Module through new knowledge, skills, and integration approaches.

Funded projects are expected to lead to at least one of the following:

- A set of technical solutions for building integrated energy systems are developed and demonstrated.
- Projects are expected to move closer to commercial readiness.
- Projects should support the operation of a fully integrated energy system and increase system flexibility and efficiency.
- After the projects end the Project Consortium Partners are ready to apply for follow-up funding for piloting or demonstration projects from other funding programs like EU’s Innovation fund (ref).

- Support a wider use of renewable energy sources and digital tools like innovative energy management systems to increase efficiency and flexibility or tools to support planning, facility management during its lifetime and disposal / recycling of buildings.

Annex A Reporting and Knowledge Community Work Package

Transnational requirement 7
A proposal must include a work package called Reporting and Knowledge Community in their work plan.
Contact
Knowledge Community Management

According to the **Transnational requirement 7** (see **Section 3.5**), a proposal must foresee a **Reporting and Knowledge Community Work Package** with necessary resources (efforts measured in person-days as well as budgets). Appropriate resources depend on the Project Consortium composition, target topics, project duration, etc. The minimum resources required are 15 person-days (PD) per year for a project, or 20 PD per year for a larger project with a total budget of more than EUR 2 million. The maximum resources expected are 3% of the total project efforts. To convert person-days (PD) to person-months (PM), an average of 18–20 PD per PM can be used.

Please note that this work package applies to the transnational level of the CETPartnership. Specific national/regional requirements may apply regarding the reporting, communication and dissemination.

The Work Package includes **mandatory** and **optional** activities. In the mandatory activities, at least one Project Consortium Partner needs to participate. Among the optional activities, a Project Consortium is advised to choose based on relevance and capacity of the project.

In general, the following applies to the activities in this Work Package.

- Activities mostly take place virtually or online, with the support of the CETPartnership Knowledge Community Management and the Digital Information-System for Communication and Collaboration, DISCCO[81].
- Participation of multiple Project Consortium Partners in an activity is possible.
- Certain types of Project Consortium Partners may be more appropriate for some activities than others.
- Active participation in at least one Working Group or related activity is encouraged.
- Regular participation in virtual meetings and workshops is encouraged.
- One physical participation per year is advisable, by traveling via train if feasible.

[81] https://discco.eu/SitePages/Home.aspx

- Some national/regional Funding Organisations may only support public organisations in dissemination activities. Consult with relevant Funding Organisations if uncertain.

The work package consists of the following two tasks.

Task 1. Reporting

The Coordinator is responsible for the reporting. See **Table A.1** for details of the activities in this task.

Table A.1. Mandatory activities and estimated time commitments per year in Task 1. Reporting

Activity	Format	Frequency	Estimated time (PD)
Publishable factsheet	Report	1 (project start)	0.5
Annual report	Report	1	≈3–5
Feedback and contribution to surveys	varies	varies	0.5
Final report for the entire project duration	Report	1 (project end)	≈5–7

Task 2. Contribution to the Knowledge Community co-creation activities

The Knowledge Community offers various activities for collaboration and discussion (see **Subsection 2.3.3**) Participation depends on objectives, target topics, RDI approaches, etc. of the project and Project Consortium Partners. See **Table A.2** for details of the activities in this task.

Table A.2. Mandatory (with blue background) and optional (with white background) activities and estimated time commitments per person per year in Task 2. Contribution to the Knowledge Community co-creation activities

Activity	Format	Number of events	Estimated time (PD/event)		
			Duration	Preparation & afterwork	Total
Onboarding meeting	Virtual	1 (January 2027)	0.25	0.25	0.5
Annual Conference	Virtual	1	1.5	≈0.5	≈2
TRI-specific Knowledge Community event	Hybrid	1–2	≤2	Virtual: varies Physical: 1 for travel	Virtual: ≈2 Physical: ≈3
Impact Event	Hybrid	1–2	1	Virtual: ≈0.5 Physical: 1 for travel	Virtual: ≈1.5 Physical: ≈2
Working Group meeting	Hybrid	2–3	0.5	Virtual: ≈0.5 Physical: 1 for travel	Virtual: ≈1 Physical: ≈1.5t
Working Group contribution*	Hybrid	Ongoing	varies	varies	≤6

*Working group contribution can be towards a policy brief, joint article, etc.

Annex B National/regional requirements and guidelines

Table B.1. Participating Funding Organisations

Country	Region	Organisation name	Acronym
Austria		Austrian Research Promotion Agency	FFG
Belgium	Flanders	Fonds Innoveren en Ondernemen	FIO
	Wallonia	Service public de Wallonie	SPW
Canada	Alberta	Emissions Reduction Alberta	ERA
Czech Republic		Technology Agency of the Czech Republic	TA CR
Denmark		Energy Technology Development and Demonstration Programme	EUDP
		Innovation Fund Denmark	IFD
Estonia		Estonian Research Council	ETAG
France	(Federal)	Agence Nationale de la Recherche	ANR
	Pays de la Loire	Pays de la Loire Region Council	RPL
Germany	(Federal)	Projektträger Jülich/Forschungszentrum Jülich GmbH (BMWK)	PtJ (BMWK)
	North Rhine-Westphalia	Projektträger Jülich/Forschungszentrum Jülich GmbH (MWIKE)	PtJ (MWIKE)
	Saxony	Saxon State Ministry for Science, Culture and Tourism	SMWK
Greece		General Secretariat for Research and Innovation	GSRI
Hungary		National Research, Development and Innovation Office	NKFIH
Iceland		The Icelandic Centre for Research	RANNIS
India		Department of Science & Technology, Ministry of Science & Technology, Government of India	DST
Ireland		Geological Survey Ireland	GSI
		Taighde Éireann - Research Ireland (earlier Science Foundation Ireland)	TA-RI (SFI)
		Sustainable Energy Authority of Ireland	SEAI
Israel		Ministry of Energy	MoE
Italy		Ministero dell'Università e della Ricerca	MUR
Latvia		Latvian Council of Science	LZP
Lithuania		Research Council of Lithuania	LMT
Malta		Malta Council For Science And Technology / Science Malta	MCST/SM
The Netherlands		Dutch Research Council	NWO
		Netherlands Enterprise Agency	RVO

Norway		The Research Council of Norway	RCN
Poland		National Centre for Research and Development	NCBR
Portugal		Fundação para a Ciência e a Tecnologia	FCT
Romania		Executive Agency for Higher Education, Research, Development and Innovation Funding	UEFISCDI
South Korea		Korea Agency for Infrastructure Technology Advancement	KAIA
Spain	(Federal)	Centre for the Development of Technology and Innovation.	CDTI
	Asturias	Fundación para el Fomento en Asturias de la Investigación Científica Aplicada y la Tecnología - Agencia de Ciencia, Competitividad Empresarial e Innovación Asturiana	FICYT-SEKUENS
	Basque	Departmento de Desarrollo Económico, Sostenibilidad y Medio Ambiente. Eusko Jaurlaritza-Gobierno Vasco	EUSKADI
	Cantabria	Regional Development Agency of Cantabria	SODERCAN
Sweden		Swedish Energy Agency	SWEA
Tunisia		Ministry of Higher Education and Scientific Research	MHESR
Türkiye		The Scientific and Technological Research Council of Türkiye	TUBITAK
The United Kingdom	Scotland	Scottish Enterprise	SE
The United States of America		Department of Energy	DOE

Table B.2. Funding Partners' participation in Call Modules