Info Day
Innovation Fund 2023 Call

The event will start at 10:00 CET

Join us on Slido

#IF23Call

Disclaimer:

The recording of the Information day held on 07 December 2023 for the Innovation Fund Call 2023, as well as the presentation support materials, are made public to provide potential applicants with general guidance in order to help them complete their proposals.

If there is any conflict between:

- the information provided during the Information day session itself, its recording, the Financial Information File tutorial recording, and the presentation support materials on the one hand, and
- the provisions set out in the official Innovation Fund call text as well as the related FAQ posted on the Funding and Tender portal on the other, the latter two documents take precedence over the materials from the Information day and act as the text of reference for the Innovation Fund Call 2023.

Welcome

Roman DOUBRAVA, Head of Unit
CINEA C4, Innovation Fund

European Commission

Agenda

Morning

10:00 Introduction
10:20 Innovation Fund 2023 Call features
10:40 Q&A
10:50 Selection procedure
11:00 Overview of the award criteria, changes compared to previous calls and lessons learned
12.30 Project Development Assistance

Afternoon

14:00 Relevant costs calculation methodology and differences compared to previous calls
15:00 GHG calculation and methodology
17:25 Closing

How to use Slido

- During the event you can submit comments and questions through Slido.
- To join:
  - Take out your smartphone, tablet or computer and open your browser.
  - Go to **Slido.com** and enter the event code **#IF23Call**.
  - You can now post comments and questions.

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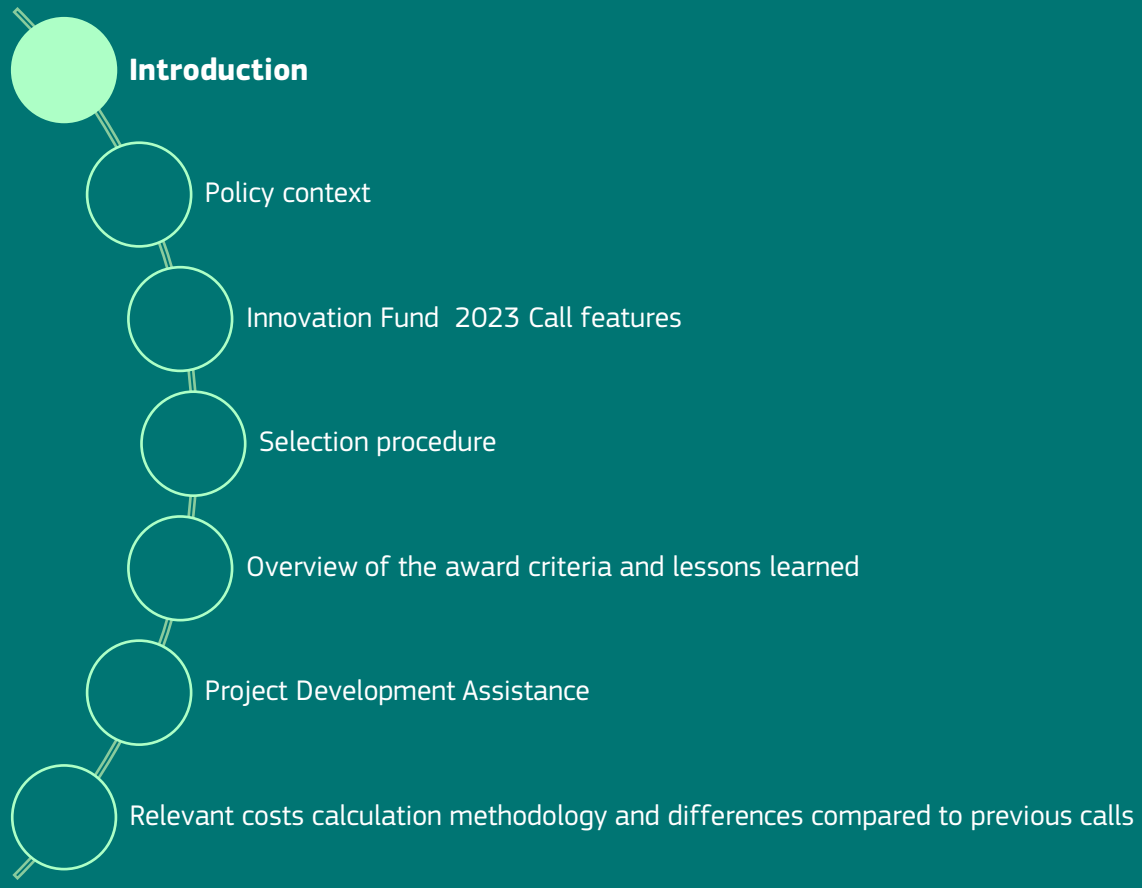
European Commission

Introduction

Paloma ABA GARROTE, Director
CINEA



European Commission

Funded by the EU Emissions Trading System

Innovation Fund

Deploying innovative net-zero technologies for climate neutrality

Funding through Grants and Auctions

EUR 40 billion* to invest from 2020-2030 in EU's climate neutral future

Avoid emissions and boost competitiveness

Supporting manufacturing, production and use in:

Energy intensive industries

Renewables

Energy storage

Carbon capture, use and storage

Net-zero mobility and buildings

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*based on a carbon price of 75 EUR/tonne

Innovation Fund 2023 Call

Topic	Project eligibility CAPEX	Sectors covered
Large-scale projects	CAPEX > €100 million	• Annex I and Annex III to the EU ETS Directive 2003/87, including CCU • CCS • Renewable energy and energy storage technologies • Maritime and aviation
Medium-scale projects	€100 million > CAPEX > €20 million	
Small-scale projects	€20 million > CAPEX > €2.5 million	
Cleantech manufacturing for components	CAPEX > €2.5 million	• Renewable energy installations • Electrolysers and fuel cells • Energy storage solutions • Heat pumps
Pilot projects	CAPEX > €2.5 million	Validating, testing and optimising highly innovative, deep decarbonisation solutions in all sectors eligible for Innovation Fund support

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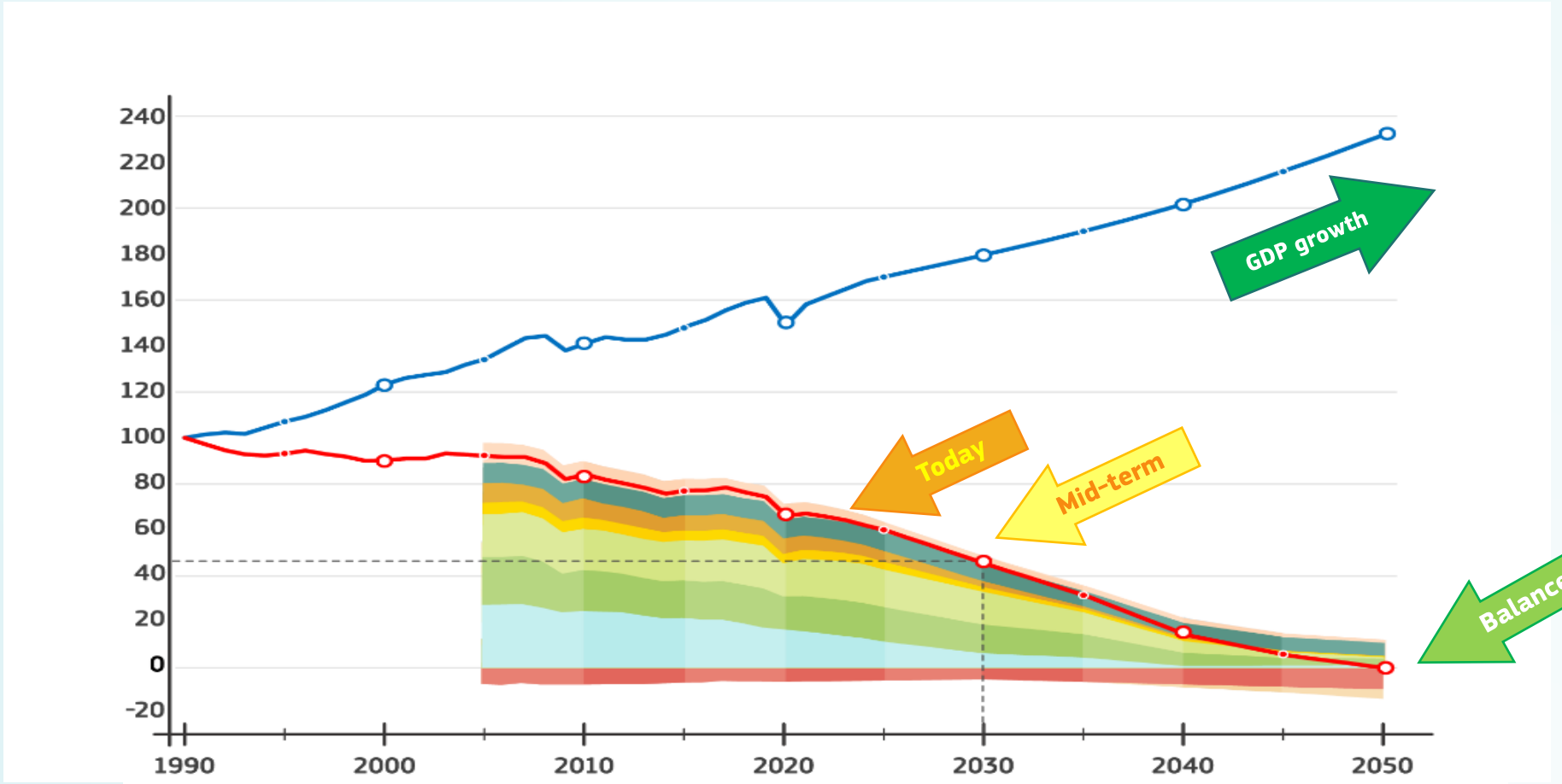
European Commission

Policy context

Alex PAQUOT, Director
DG CLIMA C, Innovation for a Low Carbon, Resilient Economy

European Commission

The EU's pathway to prosperity and climate neutrality



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European Commission

Contributing to the EU Green Deal


Cleaning our Energy system


Making transport sustainable for all


Renovating buildings


Transforming our economies and societies


Working with nature to protect our planet and health


Leading the third industrial revolution


Boosting global climate action

- Innovation Fund focuses on **highly innovative technologies** and **flagship large-scale demonstration** or **first-of-a-kind projects**, located in the EEA that can deliver **significant GHG emission reductions**.

- After revision of the ETS Directive the Innovation Fund can implement **competitive bidding** mechanisms to reward the most cost-efficient projects with a lighter selection procedure.

- Since 2020 the Innovation Fund has selected **more than 100 projects** that have the potential to **avoid more than 470 million tonnes of CO_2eq.**

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Key changes following the Fit-for-55 package

Revised ETS Directive includes changes on:

1. The overall size of the Innovation Fund increased from 450 million ETS allowances to ca. **530 million ETS allowances.**

2. **Scope changes**: new sectors (e.g. maritime); medium-scale projects; DNSH from 2025; stronger reference to multiple environmental impacts.

3. The introduction of **new financial instruments** under the Fund ("Competitive Bidding"): Fixed premium, Contracts for Difference (CfDs) or Carbon Contracts for Difference (CCfDs), covering up to 100% of the funding gap

4. Stronger attention to **geographical balance.**

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European Commission

The Innovation Fund can support urgent policy priorities, but holds a long-term line of bottom-up support across sectors

- **RePowerEU** objective of 10Mt of renewable H2 domestic production.
- **Net-Zero Industry Act**: clean tech manufacturing topic (€700 million in 2022, €1.4 billion in 2023).
- **European Hydrogen Bank:** first pilot auction under the Innovation Fund.

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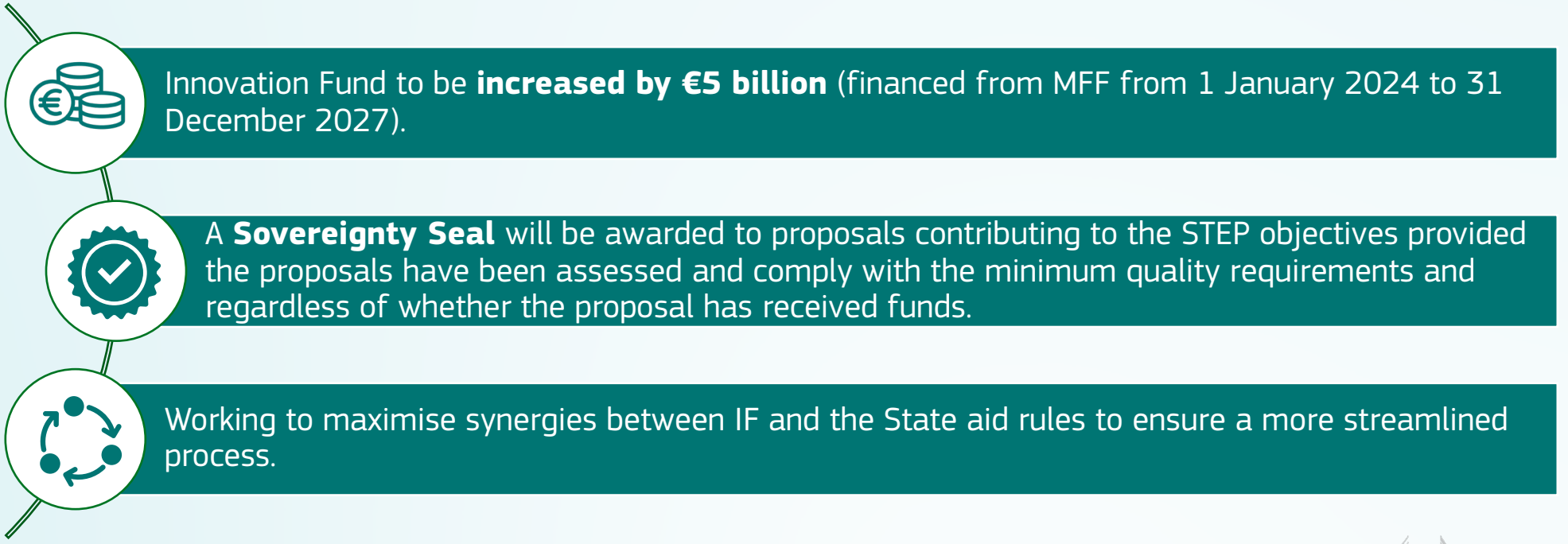
STEP and the Innovation Fund

The EU answers to the need to boost investments in critical technologies:

- reinforcing, leveraging and steering EU funds to investments in deep, digital, clean and bio-technologies;
- introducing the Sovereignty seal, a European quality label for projects.



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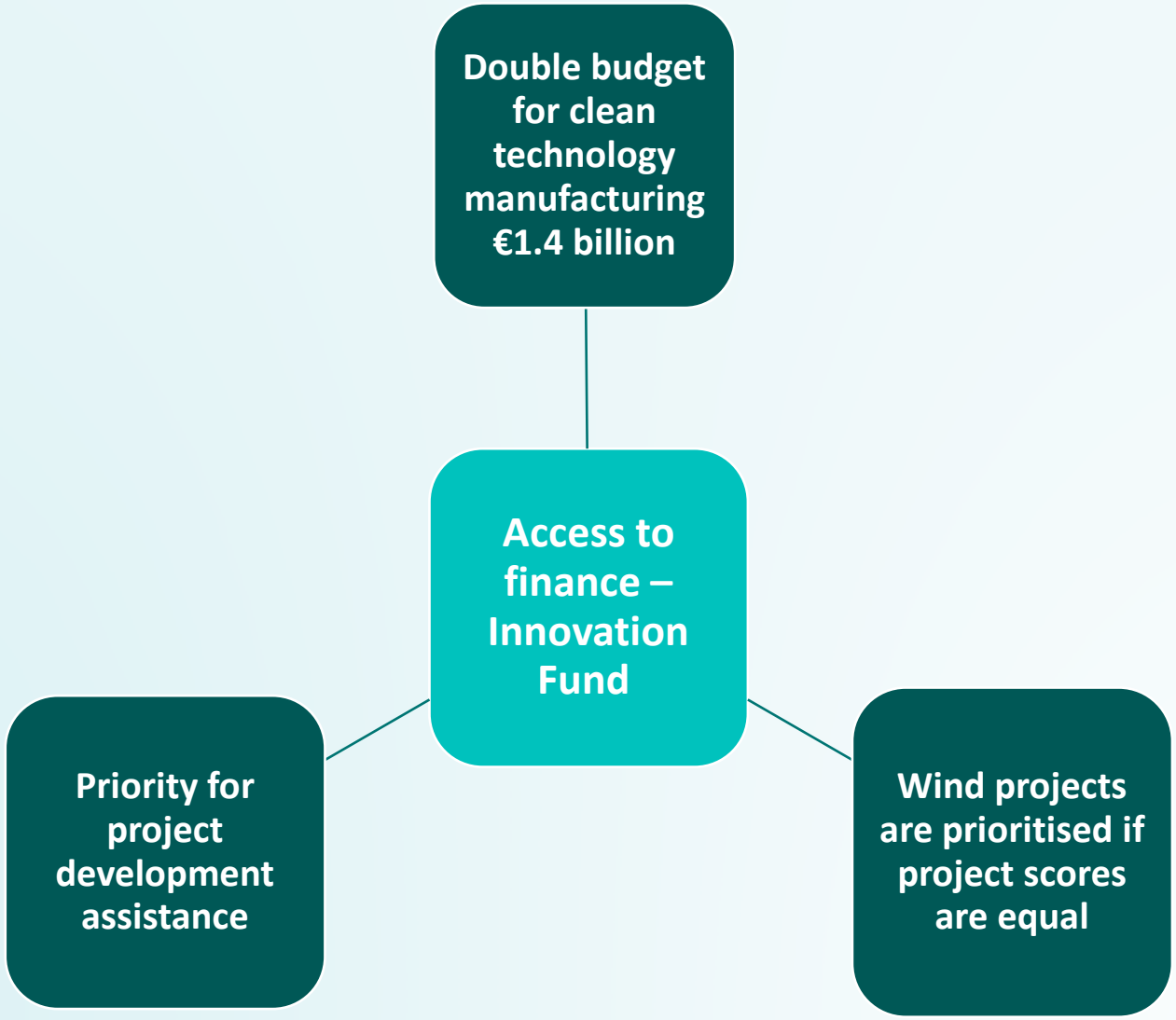
Wind package and the Innovation Fund



- Accelerating wind power deployment given **domestic deployment challenges** coupled with **surging international competition**

- **6 key pillars**
  1. acceleration of deployment through increased predictability and faster permitting,
  2. improved auction design,
  3. **access to finance,**
  4. creating a fair and competitive international environment,
  5. skills
  6. industry engagement and Member State commitments

European Commission

Outlook 2024

Analyse the project pipeline and stakeholder consultations

- The applications to the 2023 calls for grants and auctions and stakeholder consultations will inform policy decisions
- Innovation Fund support for the batteries value chain

Prepare next calls for proposals for autumn 2024

- Based on resources available

Strengthened Project Development Assistance (technical and financial support from the European Investment Bank (EIB) to improve project maturity)

- Geographical and sectoral balance. Priority for wind energy and maritime projects

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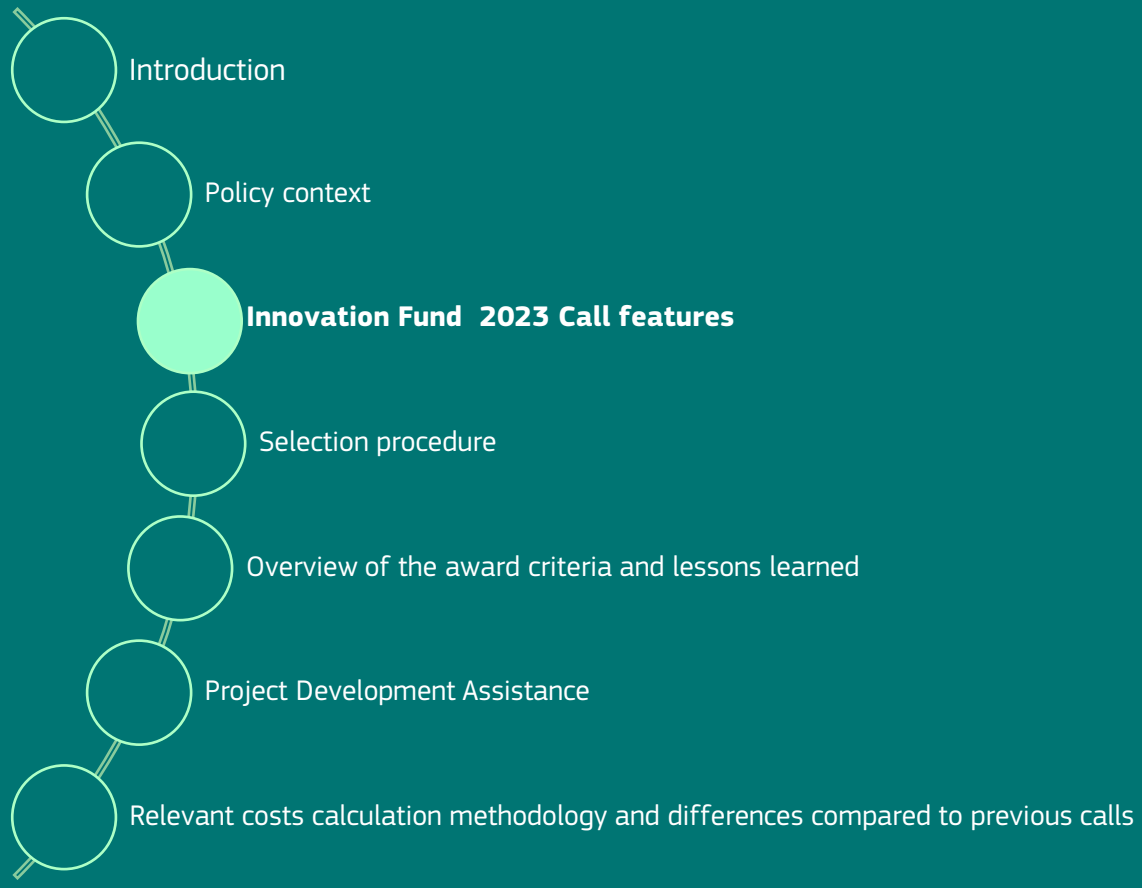
Call features

Joao SERRANO GOMES, Policy Officer
DG CLIMA C2, Low Carbon Solutions (II):
Research & Low Carbon Technology Deployment



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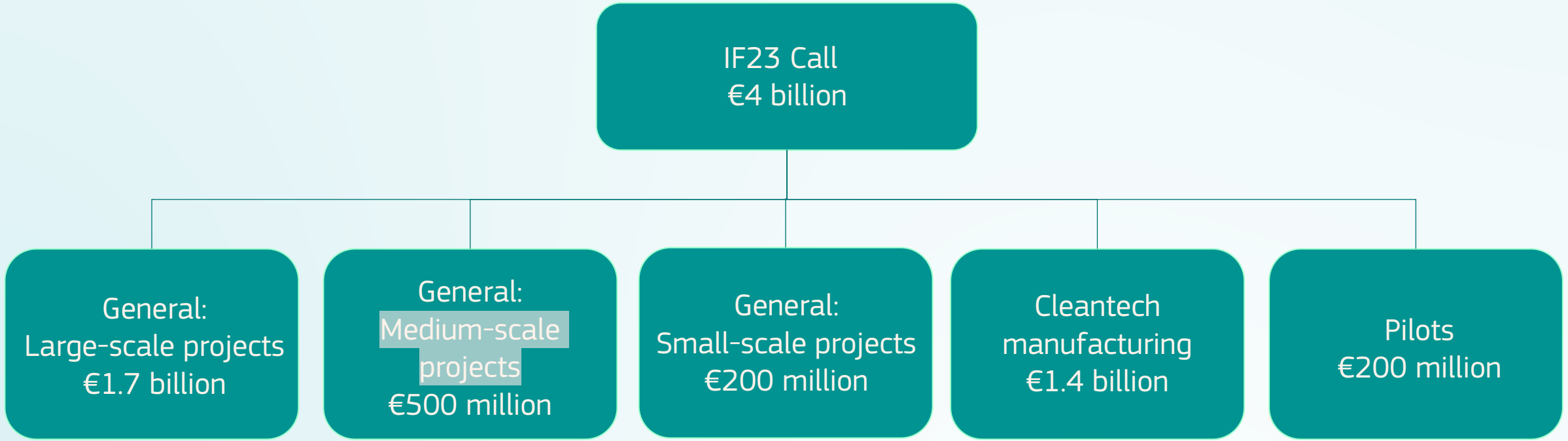
Structure of the IF23 Call

- Overall budget: **€4 billion** + 20% flexibility reserve



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Structure of the IF23 Call

- Bottom-up approach covering all areas eligible in the **general decarbonisation** window(s) under **three topics by project size:**

	Small-scale projects	Medium-scale projects	Large-scale projects
Project size (by CAPEX)	**Up to €20 million**	**Above €20 million and up to €100 million**	**Above €100 million**

- EU Green Deal Industrial Plan, Net Zero Industry Act and Wind Energy Package key priorities reflected by the continuation of two focused topics:
  - **Manufacturing topic on innovative cleantech manufacturing;**
  - **Pilot proposals that focus on validating, testing and optimising highly innovative solutions.**

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Structure of the IF23 Call

The topics allow focus on key **policy priorities**.

The ‘policy’ topics benefit numerous sectors and **avoid ‘parcelling’**.

The topics reserve a **dedicated budget envelope**.

The topics make competition among proposals more **focused**.

Manufacturing and Pilots topics apply weighting of award criteria to reflect policy priorities: **fast project maturity** and **higher degree of innovation**

Maritime sector is fully eligible and there are specific provisions on full climate impact, including black carbon.

Topics designed not to overlap - **one proposal application can only be made to one topic**.

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General Decarbonisation Topic(s)

The following **activities can be funded** under these topics:

- supporting innovation in low-carbon technologies and processes in sectors listed in **Annex I and Annex III to the EU ETS Directive**, including environmentally safe carbon capture and utilisation **(CCU)**, as well as **products substituting carbon-intensive ones** produced in sectors listed in Annex I.
- construction and operation of projects that aim at the environmentally safe capture and geological storage of CO_2 **(CCS).**
- support the construction and operation of innovative **renewable energy** and **energy storage technologies**.

General Decarbonisation Topic(s)

- Carbon capture and utilisation: if the captured CO_2 is from activities in Annex I of the EU ETS Directive, or if the utilisation of CO_2 results in products substituting carbon-intensive ones from the sectors listed in Annex I to the EU ETS Directive.

- In infrastructure related projects, fair and **open access for other operators** needs to be ensured.

- Projects installing and operating mature electrolyser technologies without additional relevant innovation in the use of the produced hydrogen are advised to apply to the **IF23 Auction for RFNBO Hydrogen.**

- Support **to maritime** and **aviation** can be provided for breakthrough innovative technologies, including **innovative infrastructure** in the maritime sector, notably for EU container transshipment ports.

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General Decarbonisation Topic(s)

- The project must **operate at least five years** after entry into operation, **at least three years** for small-scale projects.

- Contribution to building EU industrial capacity, technology leadership, supply chain resilience, and strategic autonomy.
  - To be assessed under Replicability award criterion

- Only projects that have not started works at the time of grant application can be funded.

- The **relative GHG emission avoidance** must be at least **50%.**

- **Cost efficiency ratio** must be lower or equal than **200 €/t CO2-eq.**
- Simplifications kept for small-scale projects: knowledge sharing plan requirements; degree of innovation at national level.

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General Decarbonisation topic(s)

2022 (3rd) Large-scale call projects:

- **BioOstrand:** First commercial deployment of solid biomass-and-power-to-sustainable aviation fuels technology line-up.
- **GeZero:** First German inland cement plant Geseke aims to become net carbon negative by implementing a full CCS chain.
- **T-HYNET** first-of-a-kind large-scale electrolyser to produce renewable hydrogen with 150 MW capacity.

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General Decarbonisation Topic(s)

Award criteria	Minimum pass score	Maximum score
Degree of innovation	9	15
GHG emission avoidance potential		
Absolute GHG emission avoidance	n/a	2
Relative GHG emission avoidance	n/a	5
Quality of the GHG emission avoidance calculation and minimum requirements	3	5
Total GHG emission avoidance potential	n/a	12
Project maturity		
Technical maturity	3	5
Financial maturity	3	5
Operational maturity	3	5
Total Project maturity	n/a	15
Replicability	9	15
Cost efficiency		
Cost efficiency ratio	n/a	12
Quality of the cost calculation and minimum requirements	1.5	3
Total Cost efficiency	n/a	15
Total (without bonus)	n/a	72
Bonus point 1	n/a	1
Bonus point 2	n/a	1
Bonus point 3	n/a	1
Bonus point 4	n/a	1
Total (with bonus)	n/a	76

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Cleantech Manufacturing Topic

Objectives:

- Foster **innovative manufacturing in cleantech** for hydrogen production/consumption, renewable energy, and energy storage.
- Build industrial capacity, technology leadership, and supply chain resilience within the EU.

The following **activities can be funded** under this topic:

- Develop facilities for producing **components** in:
  - **Renewable energy** installations (e.g., wind, solar, geothermal).
  - **Electrolysers** and **fuel cells.**
  - **Energy storage** solutions for stationary and mobile use for intra-day and long duration storage.
  - **Heat pumps** for various uses.

Cleantech Manufacturing Topic

- Components definition also **includes the final equipment** such as wind turbines, solar panels, batteries, heat pumps or electrolysers, as well as sub-components like nacelles or blades for wind turbines
- Topic is targeting those **components and materials (except mining activities) that are a significant factor** in the performance and/or cost of the final equipment.
- Scope includes **recycling or reusing critical materials** used in the mentioned equipment or components.
- Equipment and components can be sold on the EU market and in third countries.
- Promote innovation in **cleantech manufacturing/production processes** and **final product improvements.**
- Emphasis on factors like **cost reduction, performance improvement, efficiency, and sustainability.**

Innovative Clean-tech manufacturing

2022 (3rd) Large-scale call projects:

- **TopSOEC:** Topsoe solid oxide electrolyser cell modules factory.
- **HyNCREASE:** Manufacturing lines of hydrogen-related components for electrolysers and fuel cells
- **DAWN:** Production of lightweight and flexible copper indium gallium selenide thin-film solar cells and panels.

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European Commission

Cleantech Manufacturing Topic

- Innovation can concern one or several steps of the manufacturing process or the production of an innovative component.
- Projects achieving **financial close within two years** and **entry into operation within four years** after grant agreement signature may earn a higher score in project maturity evaluation.
  - ➢ To be assessed under the Financial and Operational Maturity award criterion
- **Excluded activities**: demonstration of use of innovative components (including the final equipment) in power/heat generation/energy storage/production & consumption of hydrogen (submit those in General or Pilot topics).
- Only projects that have not started works at the time of grant application can be funded. New
- The relative **GHG emission avoidance** must be at least **50%.** New
- **Cost efficiency ratio** must be lower or equal than **200 €/t CO_2-eq.** New

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Cleantech Manufacturing Topic

Award criteria	Minimum pass score	Maximum score	Weight
Degree of innovation	9	15	2
GHG emission avoidance potential			
Absolute GHG emission avoidance	n/a	2	1
Relative GHG emission avoidance	n/a	5	1
Quality of the GHG emission avoidance calculation and minimum requirements	3	5	1
Total GHG emission avoidance potential	n/a	12	1
Project maturity			
Technical maturity	3	5	2
Financial maturity	3	5	2
Operational maturity	3	5	2
Total Project maturity	n/a	15	2
Replicability	9	15	1
Cost efficiency			
Cost efficiency ratio	n/a	12	1
Quality of the cost calculation and minimum requirements	1.5	3	1
Total Cost efficiency	n/a	15	1
Total (without bonus points)	n/a	102	n/a
Bonus point 1	n/a	1	1
Bonus point 2	n/a	1	1
Bonus point 3	n/a	1	1
Bonus point 4	n/a	1	1
Total (with bonus points)	n/a	106	n/a

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Pilot Projects Topic

Objectives:

- Support **highly innovative, disruptive or breakthrough technologies** in deep decarbonisation needed for achieving the climate neutrality goal.

The following **activities can be funded** under this topic:

- sectors listed in Annex I and Annex III to the EU ETS Directive 2003/87, including environmentally safe carbon capture and utilisation (**CCU**).
- **products substituting carbon-intensive ones** produced in sectors listed in Annex I to the EU ETS.
- construction and operation of innovative **energy storage, CO_2 storage** and **renewable energy installations**, including electricity/heat grid connections.

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Pilot Projects Topic

- Topic is targeting a **higher degree of innovation** with respect to other topics
  - Points under Degree of Innovation award criterion are doubled.
- Emphasis on addressing technical risks linked to the innovative technologies, such as **optimising process and operational parameters,** and **enhance final product characteristics**.
- Pilot projects should prove an **innovative technology** in an operational environment, i.e., include pilot manufacturing lines, but are not expected yet to reach large-scale demonstration or commercial production.
- The projects can entail **limited production/operation** for testing purposes, including delivery to/from potential customers for validation.

Pilot Projects Topic

- **Project viability** rather than project profitability is to be demonstrated.
  - To be assessed under the Financial Maturity award criterion.
- Typically projects with **limited life-time (3-5 years)** and the technology should then move to large-scale demonstration or fist-of-a-kind commercial production.
  - To be demonstrated under replicability award criterion.
- Potential to be fully compatible with a 2050 climate neutrality objective and pilot installations should exhibit minimal residual emissions or result in net carbon removals.
  - The **relative emission avoidance must be at least 75%**.

- Contribution to building EU industrial capacity, technology leadership, supply chain resilience, and strategic autonomy.
  - To be assessed under replicability award criterion.

Pilot Projects Topic

- New
- Projects achieving **financial close within two years** and **entry into operation within four years** after grant agreement signature may earn a higher score in project maturity evaluation.
  - ➢ To be assessed under the Financial and Operational Maturity award criterion.
- Maximum grant is limited to **€40 million per project**.
- New
- Only projects that have not started works at the time of grant application can be funded.
- The project must operate **for at least three years after entry into operation.**
- It is expected that projects will be more costly and thus less stringent formula **for cost-efficiency criterion** is applied: 12 – (12 x (cost efficiency ratio/2000))

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Pilot Projects Topic

2022 (3rd) Large-scale call projects:

- **E-fuel pilot**: Innovative and cost-efficient production process for syncrude using industrial off-gases, renewable energy and water.
- **Hippow**: testing a highly innovative prototype of powerful offshore wind turbine generator.
- **Volta Project**: Hybrid mid-sized pilot furnace for flat glass

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Pilot Projects Topic

Award criteria	Minimum pass score	Maximum score	Weight
Degree of innovation	9	15	2
GHG emission avoidance potential			
Absolute GHG emission avoidance	n/a	2	1
Relative GHG emission avoidance	n/a	5	1
Quality of the GHG emission avoidance calculation and minimum requirements	3	5	1
Total GHG emission avoidance potential	n/a	12	1
Project maturity			
Technical maturity	3	5	1
Financial maturity	3	5	1
Operational maturity	3	5	1
Total Project maturity	n/a	15	1
Replicability	9	15	1
Cost efficiency			
Cost efficiency ratio	n/a	12	1
Quality of the cost calculation and minimum requirements	1.5	3	1
Total Cost efficiency	n/a	15	1
Total (without bonus points)	n/a	87	
Bonus point 1	n/a	1	1
Bonus point 2	n/a	1	1
Bonus point 3	n/a	1	1
Bonus point 4	n/a	1	1
Total (with bonus points)	n/a	91	n/a

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Q&A session

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Enter the code #IF23Call

Ask your question or vote for an existing one!

European Commission

Selection Procedure

Roman DOUBRAVA, Head of Unit
CINEA C4, Innovation Fund

European Commission

IF23 Call in a nutshell

Launch 23 Nov. 2023
Deadline 9 April 2024
Results Q4 2024

€4 billion for grants
+
Project Development Assistance (PDA)

Five topics

AWARD CRITERIA

- Degree of innovation
- GHG emission avoidance
- Project maturity
- Replicability
- Cost efficiency

Bonus points: Net Carbon Removals, Other GHG savings, electricity from additional RES, maritime sector decarbonisation potential

GRANT DISTRIBUTION

LUMP-SUM contribution grant up to 60% of relevant costs

- up to 40% of grant at financial close
- remaining amount of at least 60% after financial close
- generally, at least 10% after entry into operation.

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IF23 Call text and mandatory documentation

Call text

Funding and tender Portal

Mandatory documentation

Application Forms:

- **Part A**
- **Part B**
- **Part C**

Mandatory annexes:

- Detailed budget table/relevant cost calculator
- Participant information
- Timetable/Gantt chart
- GHG emission avoidance calculator
- Feasibility study
- Business plan
- Detailed financial model
- Knowledge sharing plan (except for small-scale)

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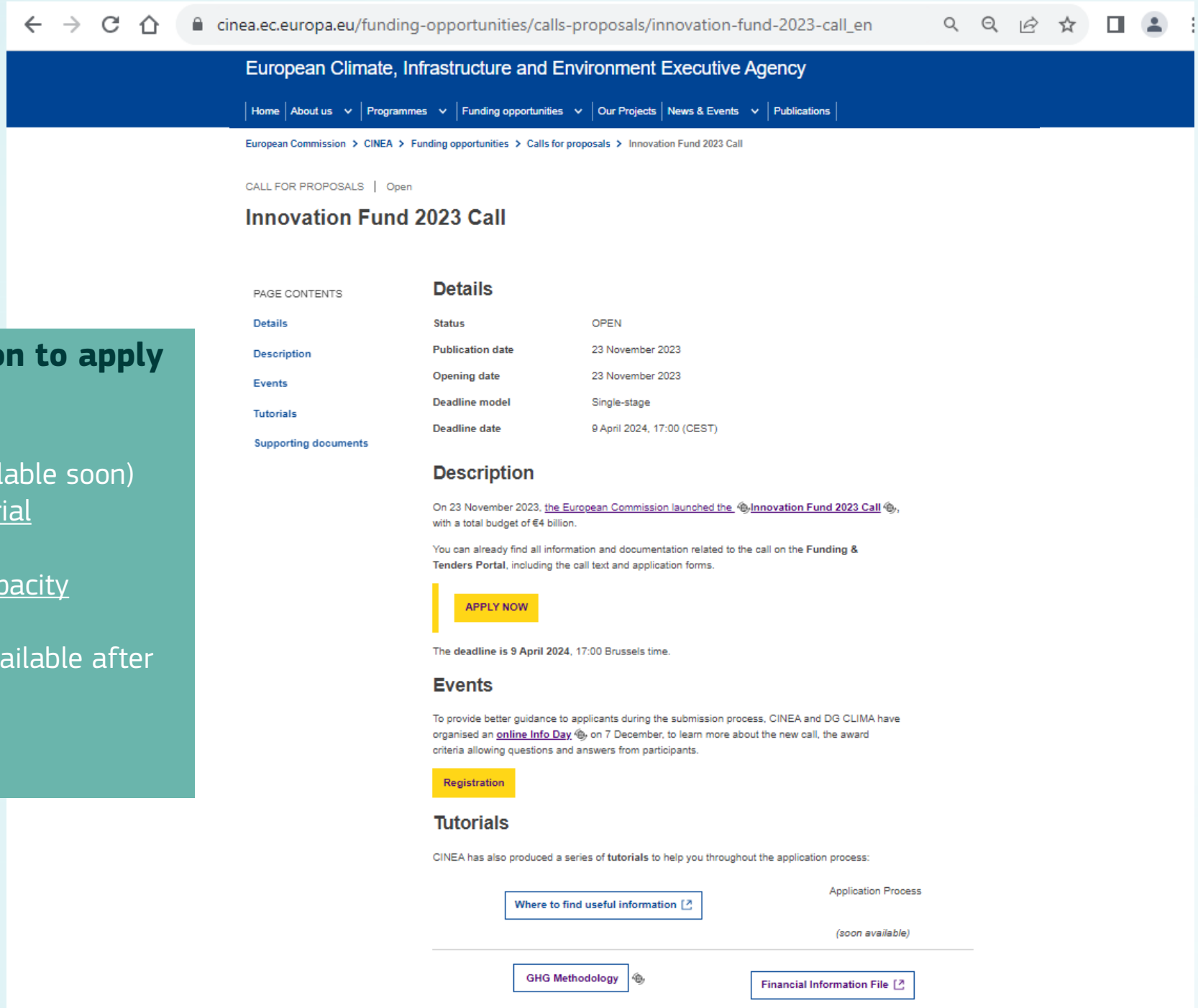
CINEA website for mandatory documentation

How to apply

Check all relevant information to apply

- Funding and Tenders Portal link
- Application process tutorial (available soon)
- Financial Information Sheet tutorial
- GHG Methodology tutorials
- Legal validation and financial capacity assessment process tutorial
- Info Day recording and slides (available after the event)
- Where to find useful information
- FAQ



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Admissibility and eligibility criteria

Admissibility

- Submitted **before** call **deadline**, electronically and using forms in the Submission System
- Complete all the application forms and include mandatory annexes

Eligibility

- Participants have to be **legal entities**; can be established anywhere in the world.
- Projects must be located in the **EEA** (EU Member States and Iceland, Liechtenstein, and Norway)
- The project must:
  - Reach **financial close within four years** after grant signature (maximum time to financial close)
  - **Operate at least** (minimum GHG emission avoidance monitoring period) **five years** after entry into operation
    - Except SSP and PILOTS – at least **three years** after entry into operation
- Project budget: the maximum grant amount **must not exceed 60% of the relevant costs**
- Eligible activities

Geographical location for new sectors

Maritime sector projects

- When the projects concern **investments in ships**, those ships must call ports under the jurisdiction of an EEA country* on a regular basis (at least **30% of their annual calls** on ports) or perform service or support activities in such ports
- When the projects concern **investments in ports infrastructure** the ports must be under the jurisdiction an EEA country.
  - Some examples: renewable alternative fuel bunkering infrastructures in ports, including container transhipment ports

**(see the list in the call text)*

Maritime, buildings, and road

For new activities introduced by the revised ETS Directive (meaning maritime, buildings and road transport) the eligibility of projects located in **Norway, Iceland, and Liechtenstein** is dependent on the incorporation of the **revised ETS Directive into the EEA Agreement and its entry into force before the deadline for submission of proposals**.

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Eligible activities scope

Large, medium, and small-scale projects

- **Innovation in low-carbon technologies and processes** in sectors listed in Annex I and Annex III to the EU ETS Directive 2003/87, including CCU
- Construction and operation of projects for **CCS**
- Construction and operation of innovative **renewable energy** and **energy storage technologies**
- **Maritime and aviation** transport sectors: energy efficiency, sustainable alternative fuels, electrification, zero-emission propulsion technologies, wind technologies, innovative infrastructure in the maritime sector for EU container transhipment ports

Cleantech components manufacturing

- **Renewable energy installations** (in photovoltaics, concentrated solar power, on-shore and offshore wind power, ocean energy, geothermal, solar thermal, and others), including their connection to the electricity/heat grid
- **Electrolysers and fuel cells**
- **Energy storage solutions** covering batteries and other storage solutions for stationary and mobile use for intra-day and long duration storage
- **Heat pumps**

Pilot projects

- Construction and operation of projects **validating, testing and optimising highly innovative, deep decarbonisation solutions in all sectors** eligible for Innovation Fund support

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Award Criteria

Degree of innovation	GHG emission avoidance potential	Project maturity	Replicability (New)	Cost efficiency (New)
• Innovation beyond state of the art (see Annex 1 of call text) at European level (except SSP – European or national) • Consider the ongoing Innovation Fund projects	• Absolute • Relative • Quality of the GHG emission avoidance calculation and minimum requirements	• Technical • Financial • Operational	• Efficiency gains • Further deployment • Resilience of EU industrial system • Multiple environmental impacts • Knowledge sharing	• Cost efficiency ratio (different formula for Pilot projects) • Quality of the cost calculation and minimum requirements

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Bonus points

Bonus	Scoring
1.The potential to deliver **net carbon removals**	1 point (half point 0.5 possible)
2. **Other GHG savings** from emissions sources that go beyond the boundaries established in the Innovation Fund methodology for the given sector	1 point (half point 0.5 possible)
3. Commitment to use **electricity from additional renewable sources or** to use **RFNBO hydrogen**	1 point (half point 0.5 possible)
4. For **Maritime sector** projects only: demonstrated potential to decarbonising the maritime sector and reducing its climate impacts	1 point (half point 0.5 possible)

New

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Cascade approach

Consequences on the number of projects evaluated in full

1. Check **eligibility** and **admissibility**

(if all requirements are not met, the evaluation is stopped)

2. Assess **Degree of Innovation** criterion

(if the score is below threshold, the evaluation is stopped)

3. Assess **GHG Emissions Avoidance** and **Project Maturity** criteria *(if all requirements are not met or score is below threshold, the evaluation is stopped)*

4. Assess **Replicability** and **Cost efficiency** criteria

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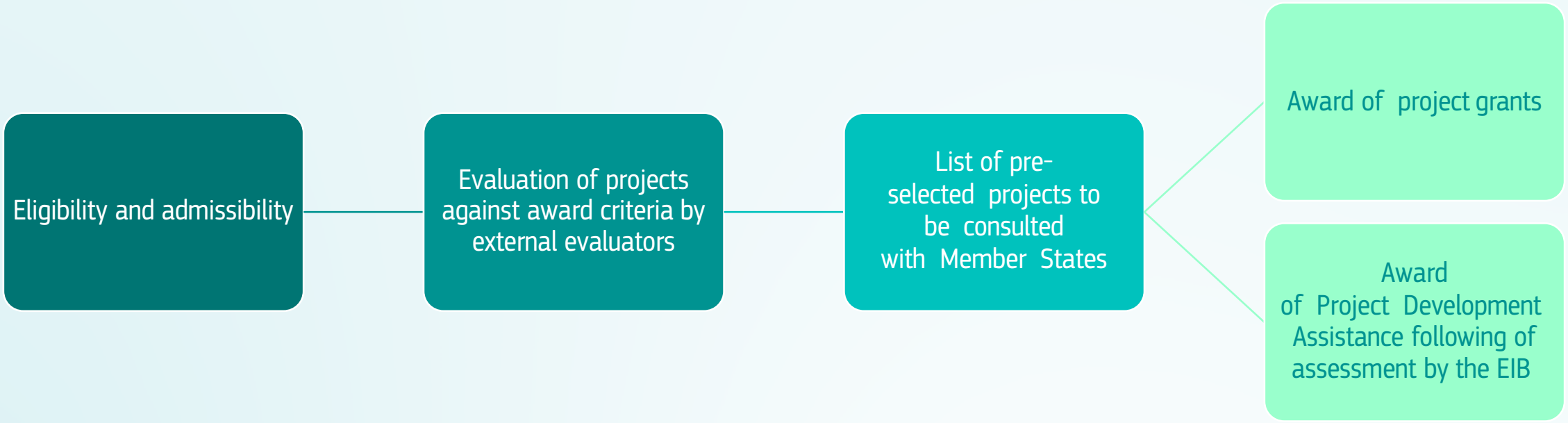
Selection Procedure



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Lessons from Large-scale call - 2022 (LSC-2022)

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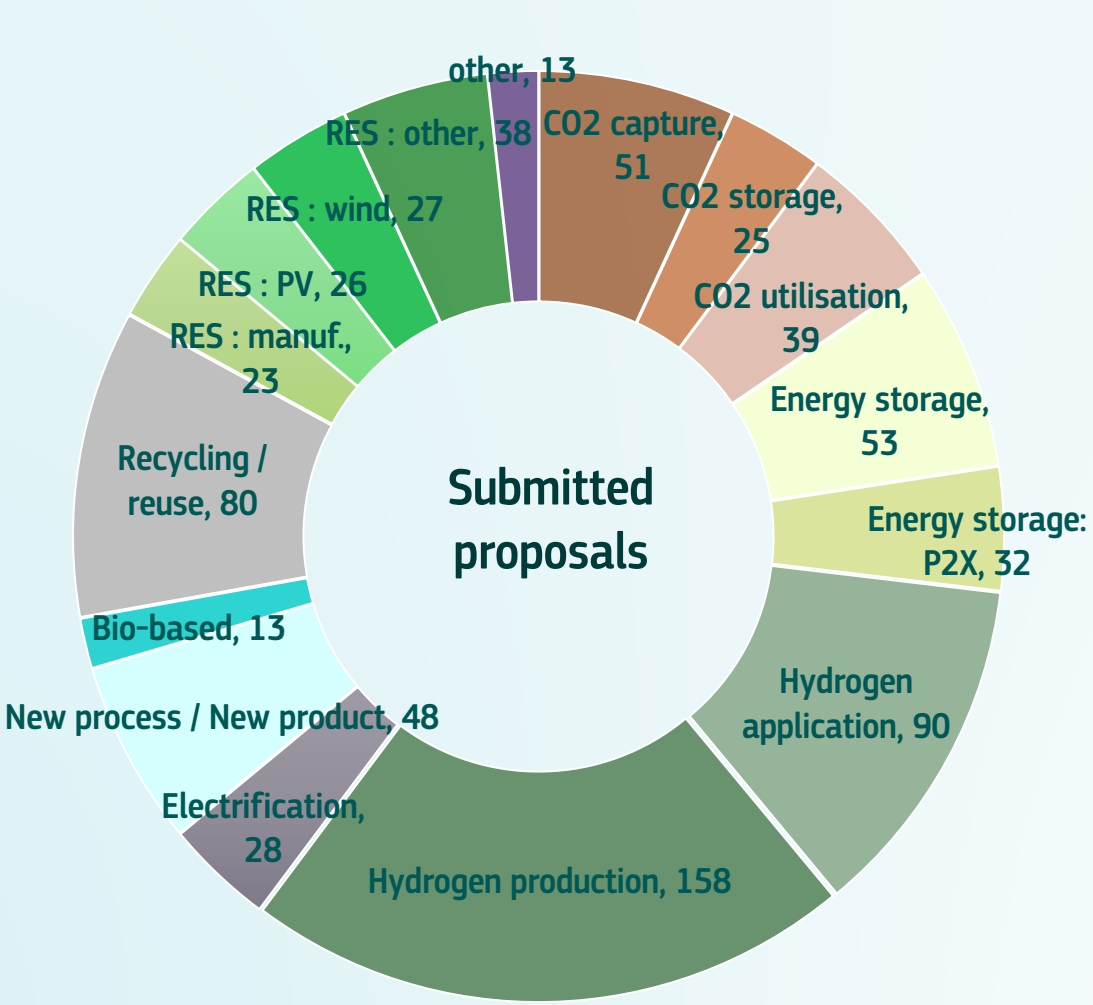
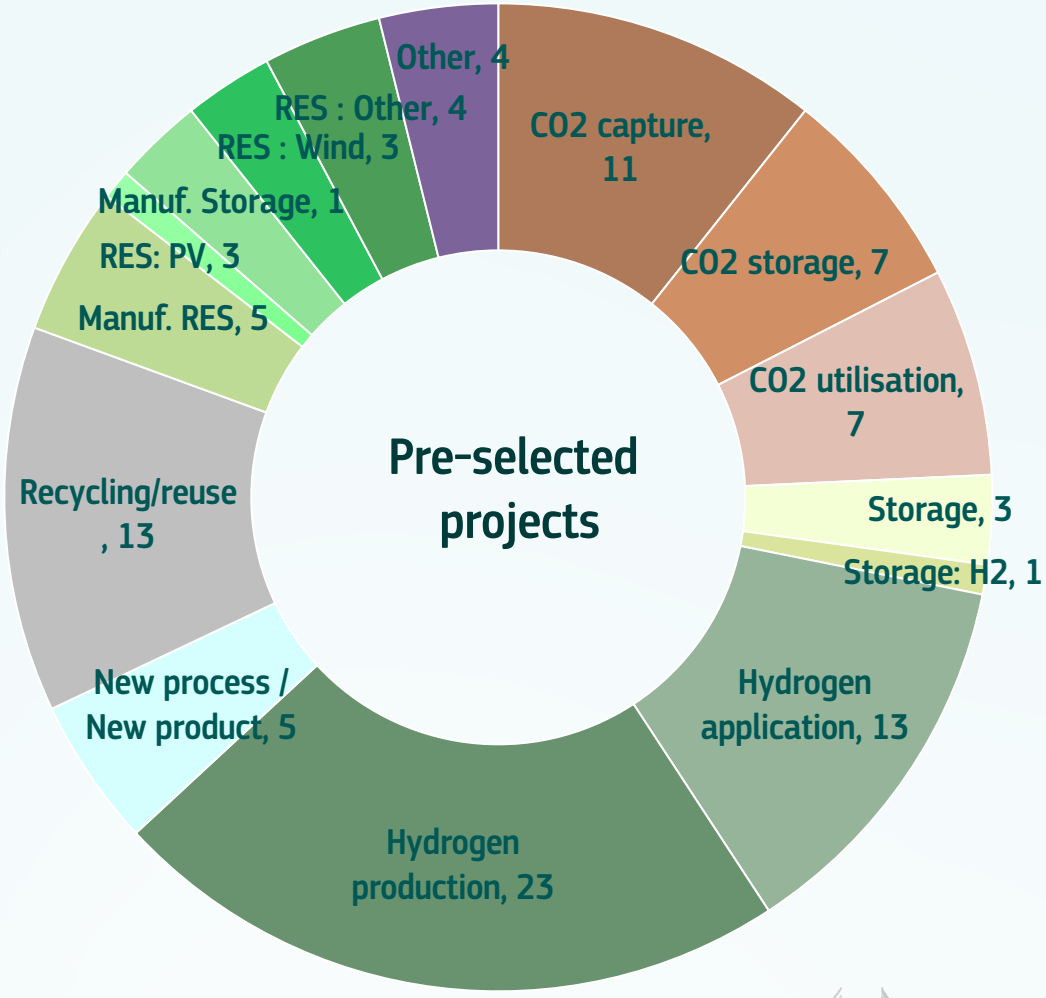
Climate mitigation pathways

from Innovation Fund's LSC-2022 proposals & pre-selected projects





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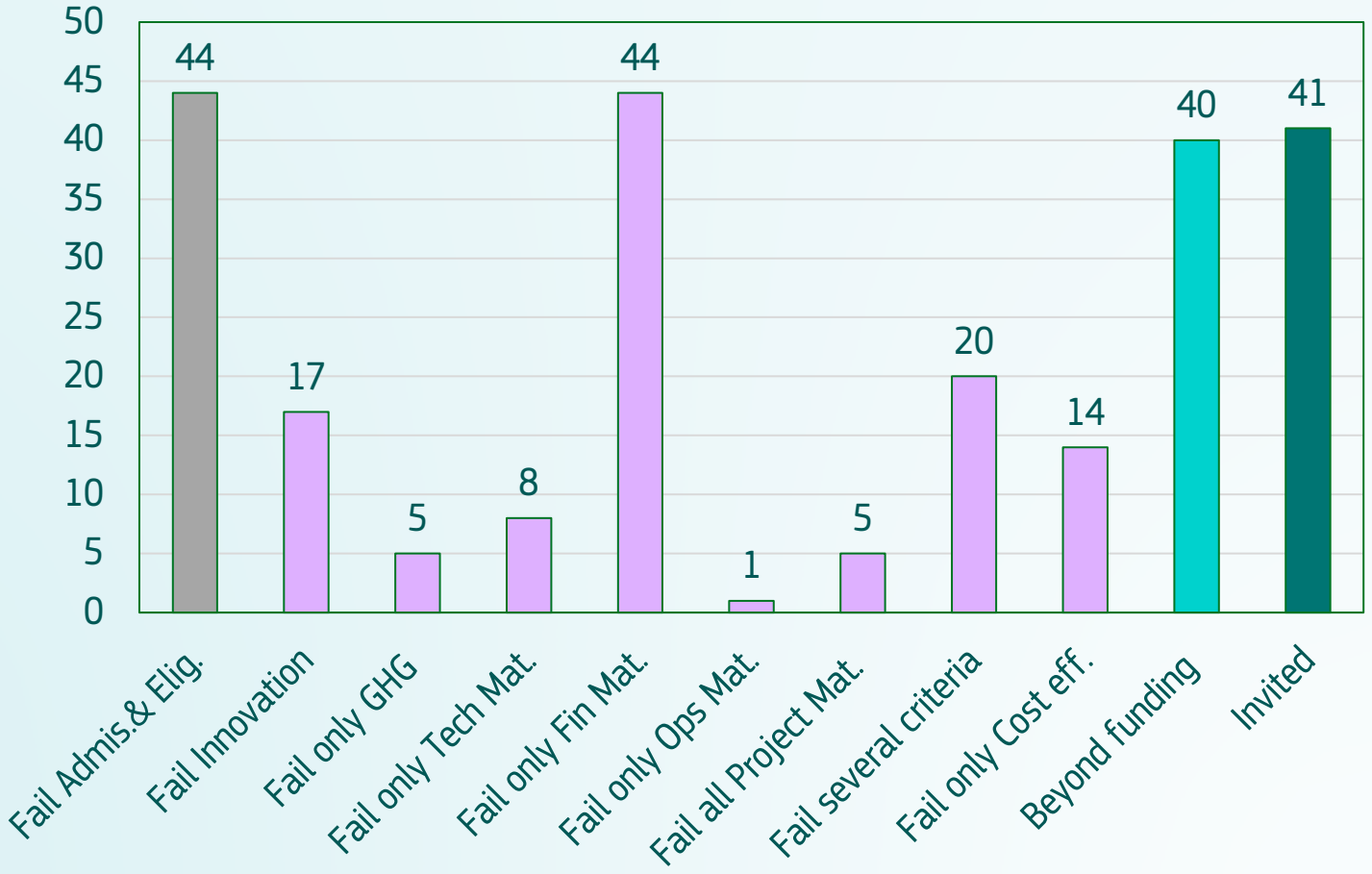
Performance of LSC-2022 proposals

Out of 239 proposals, 41 were pre-selected for funding (*)



From all 239 proposals

- 18% non-admissible or eligible
- 48% failed during evaluation
- 17% beyond funding

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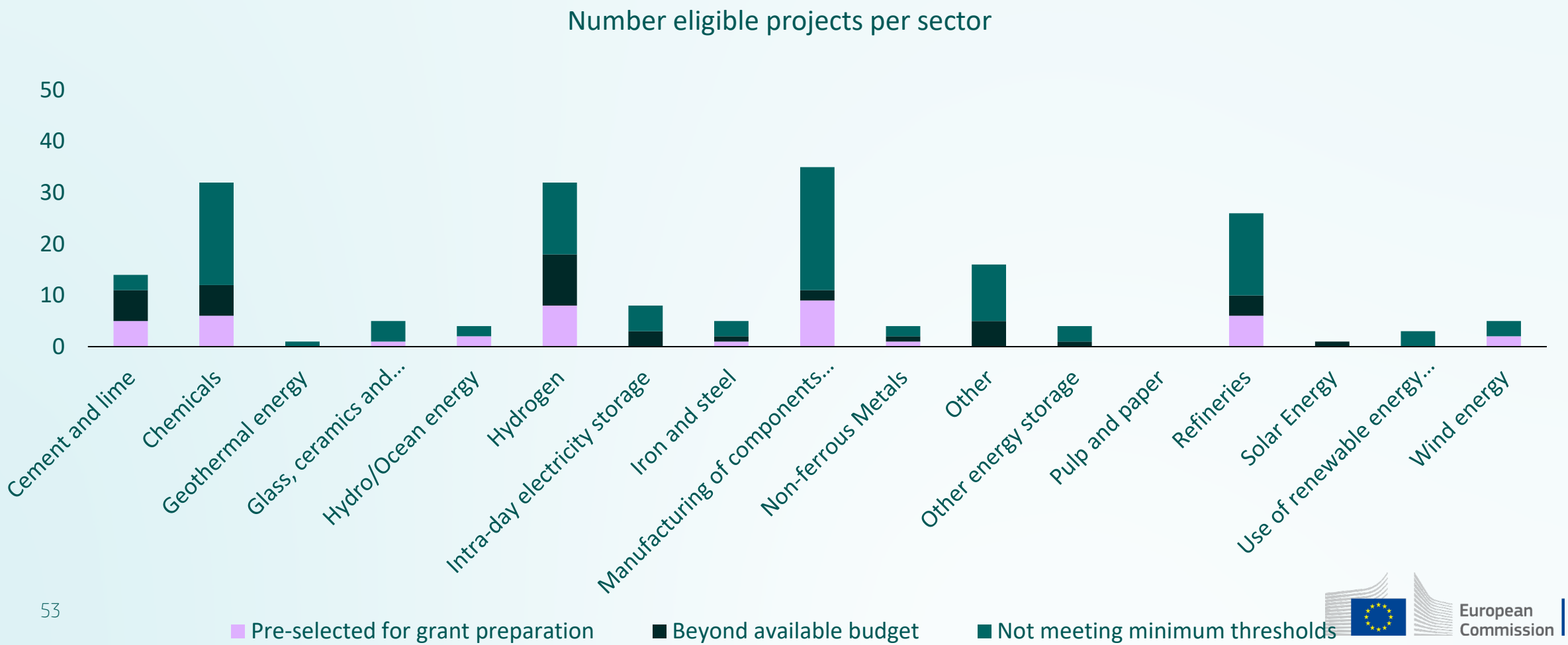
(*) based on proposals evaluated taking account of cascade approach

European Commission

Eligible proposals per sector

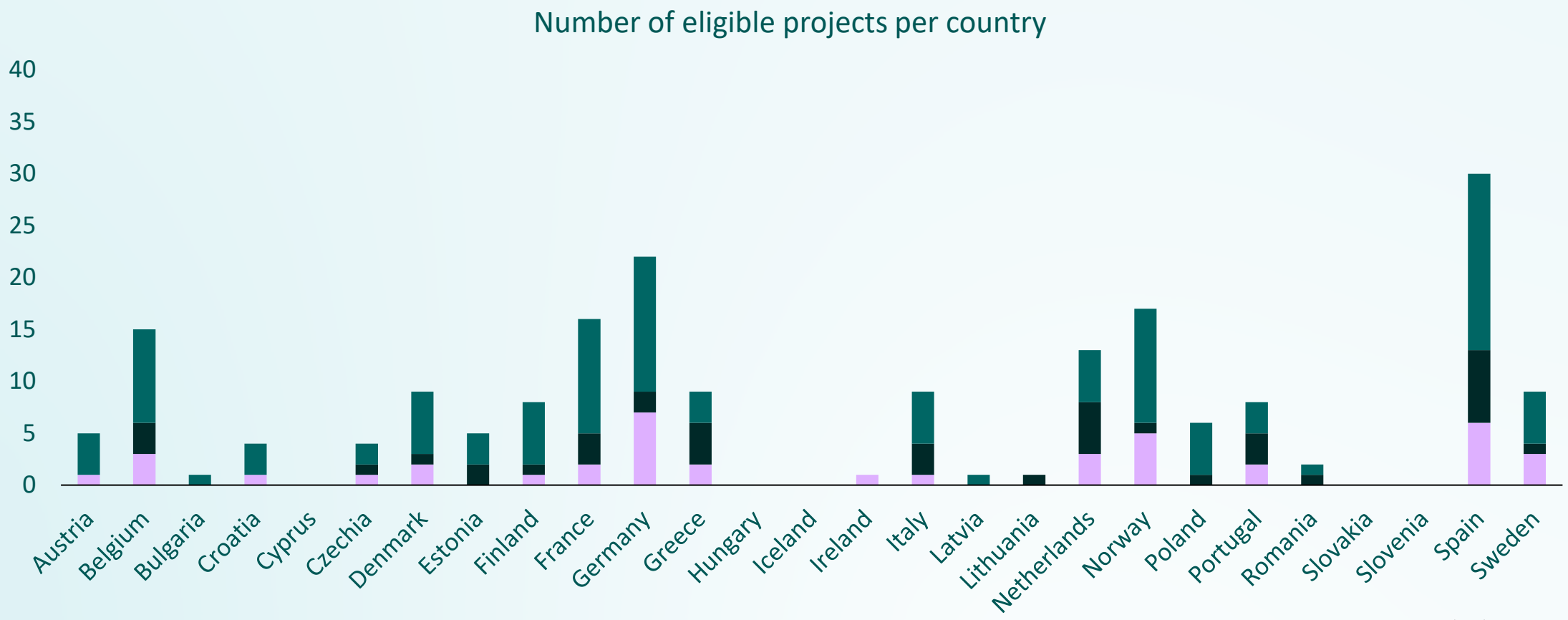
Sector coverage was good with big representation of 4 sectors (Hydrogen, Manufacturing, Chemicals and Refineries)



European Commission

Eligible proposals per country

Country coverage for eligible proposals was high (**22** out of 29 countries)

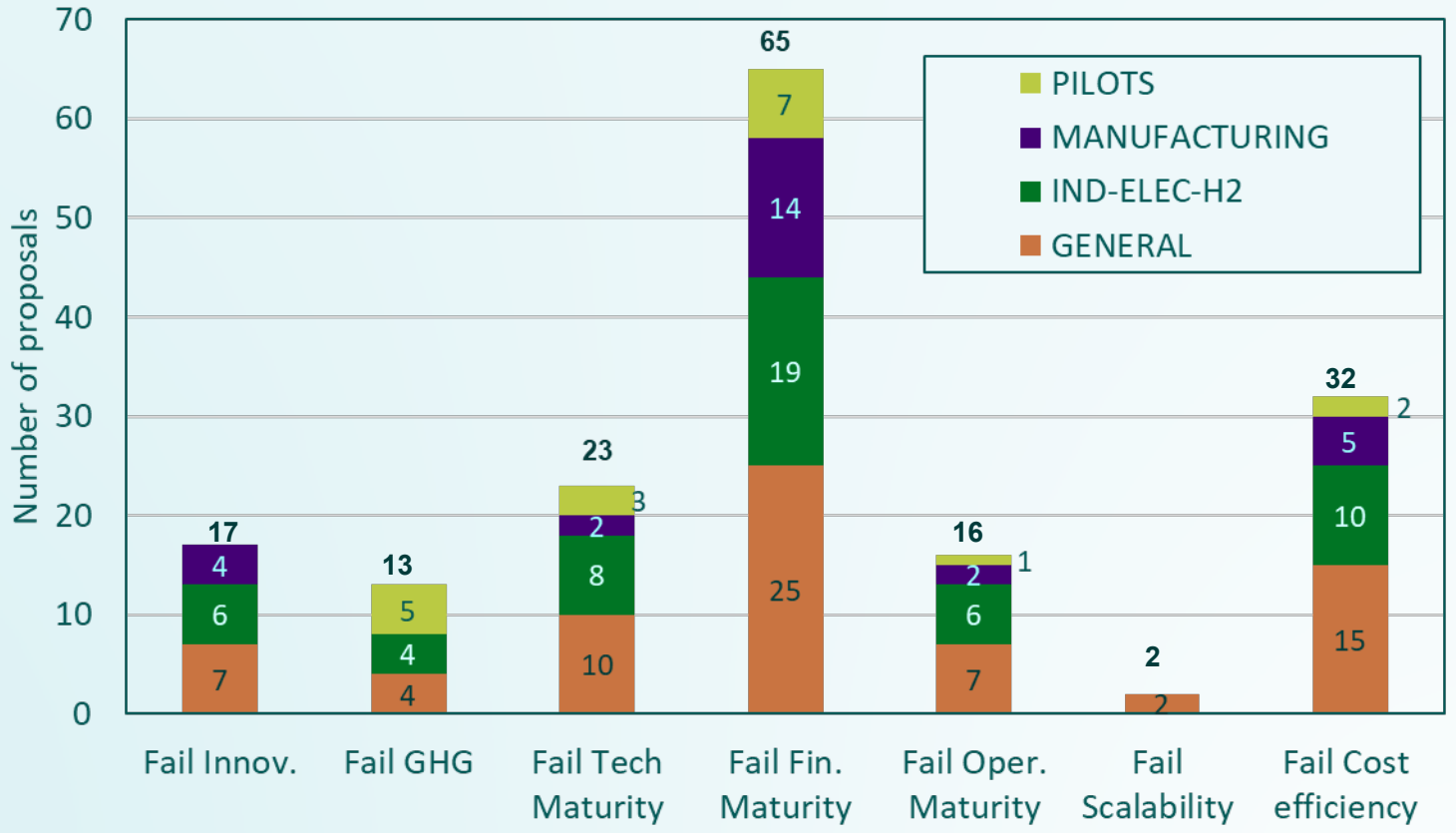


European Commission

Main weaknesses of eligible proposals

Large-scale call 2022

Overview of the number of proposals that failed each criteria*



114 proposals failed during evaluation.

* Some proposals failed various criteria simultaneously

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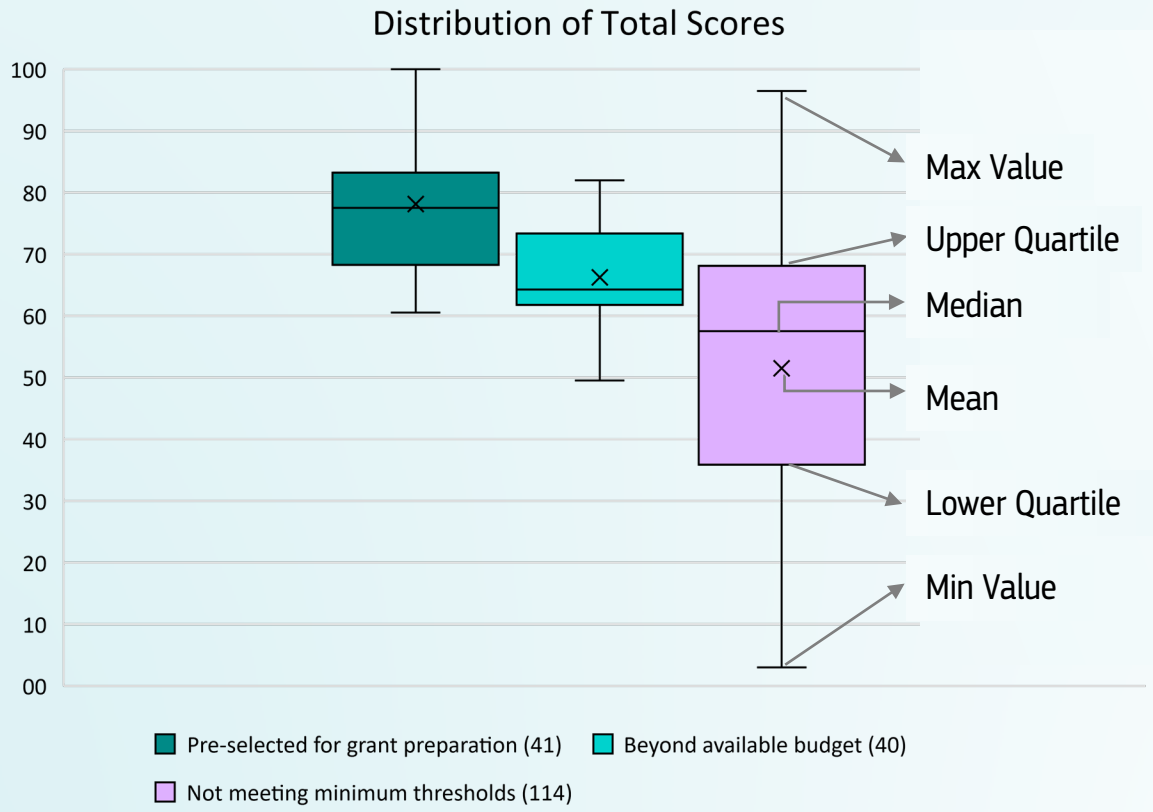
Total Score Analysis

The 41 best scoring projects were pre-selected.



- The 41 pre-selected proposals presented **high quality** and achieved high scores on all criteria, reflecting strong total scores
- Pre-selected proposals exhibit an **average total score of 78.1 points**
- **Two-thirds** of the selected proposals have a total score above 75 points
- Most of the proposals which fell below the budget threshold also performed very well

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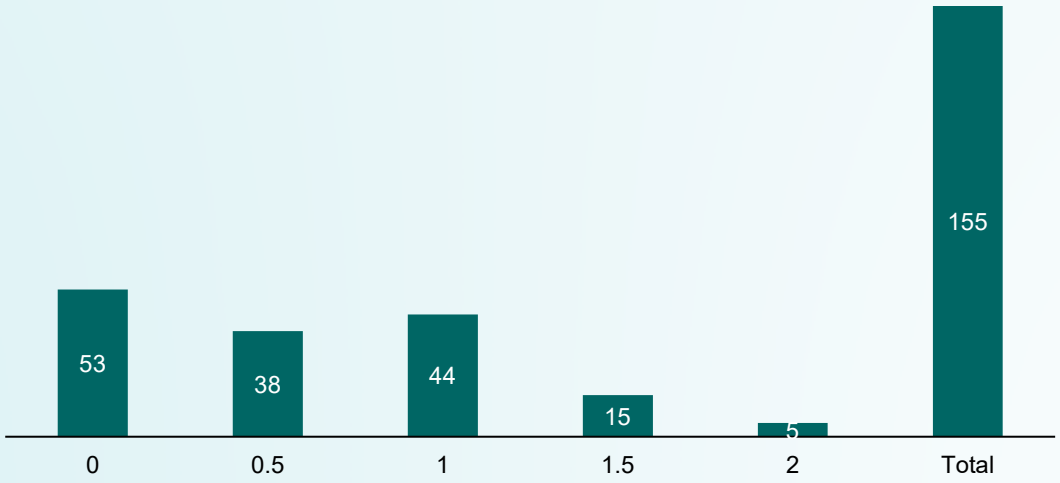
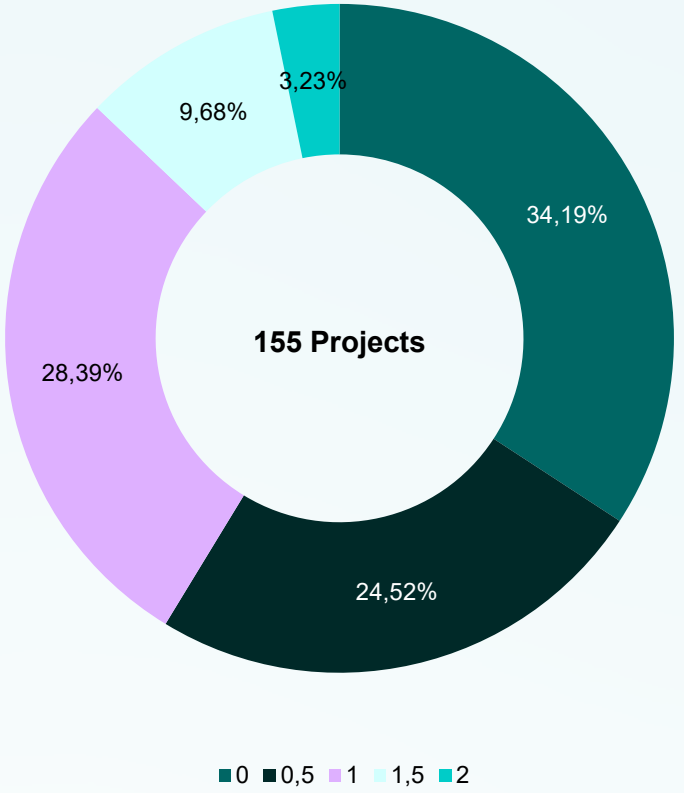
Bonus points

Results from Large-scale call 2022

The **average bonus points** amongst the evaluated projects was **0.61.**

- **155 projects** were evaluated for bonus points
- **34.19%** of projects did not receive any bonus points
- Majority of projects which received Bonus points **received 1 Bonus point (28.39%)**
- Only 5 projects were awarded 2 Bonus points
- 53 evaluated projects did not receive any Bonus points

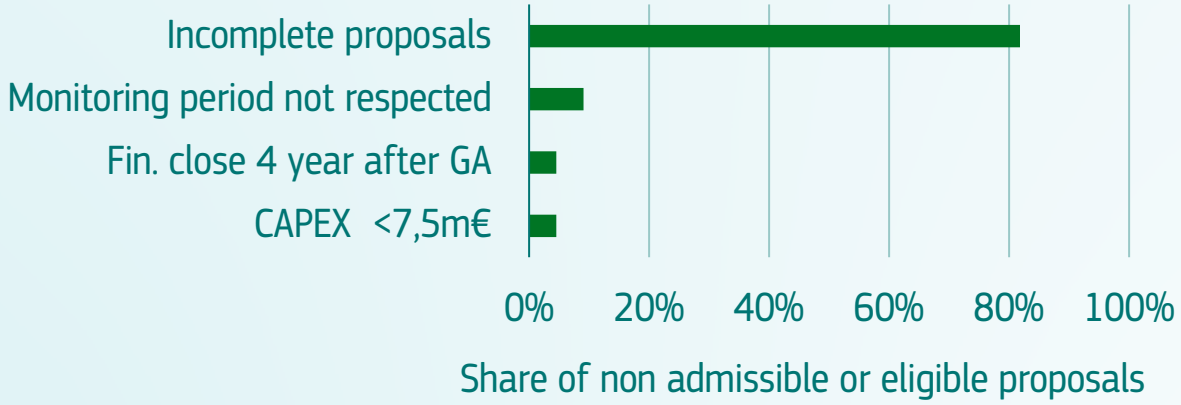




European Commission

Admissibility and Eligibility (A&E)

How do proposals fail on A&E?



>80% of non- A&E proposals are incomplete

Common fails from incomplete proposals:

- *Relevant cost calculator* missing
- *Part B* not fully completed
- *Detailed financial model* missing
- *Business plan* missing
- *GHG calculator* missing
- *Feasibility study* missing
- *Gantt* missing
- *Knowledge sharing plan* missing

Be thorough to fulfil **Admissibility and Eligibility** criteria as described in the call text

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Award criteria
Changes from previous calls and lessons learned

Susanna GALLONI and Gianluca TONDI, Heads of Sectors, CINEA C4, Innovation Fund
Christophe DEHOUT, Senior Financial Engineer CINEA A1

European Commission

The Award Criteria

- Degree of Innovation
- GHG emission avoidance
- Bonus points 1 and 2
- Project Maturity:
  - Technical,
  - Financial and
  - Operational maturity
- Bonus points 3 and 4
- Replicability
- Cost efficiency

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Degree of Innovation

Gianluca TONDI, Head of Sector
CINEA C4, Innovation Fund

European Commission

Degree of Innovation

Innovation in relation to the state of the art:

- State of the art
- Innovation beyond the state of the art

Quality, soundness, and reliability of the information provided

- **Application form, Part B:**
  - Section 1: Degree of innovation
- Feasibility study (mandatory annex)
- Any existing technical due diligence report (optional)

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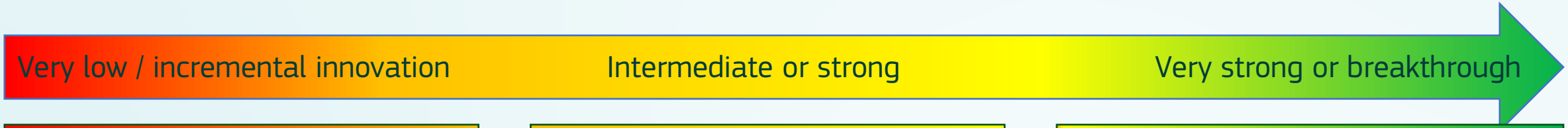
Degree of Innovation

- Innovation Fund aims at supporting projects beyond incremental innovation on a scale from intermediate to breakthrough, including scaling-up, considering the European level as reference point (for SSP topic the European or national level)



Incremental innovation: minor changes or improvements to existing products, processes or business models; implies limited new knowledge / technology; such projects **will not be retained.**

Intermediate or strong: new or considerably changed technologies or processes or business models; novel combinations of mature technologies; scale-up of innovative technologies

Very strong or breakthrough: completely new technologies or processes or business models; innovations leading to significant changes that transforms entire markets or industries or creates new ones

Degree of Innovation: types of innovative actions

Innovation Fund aims at supporting technologies, business models and processes that are not yet commercially available, representing innovative solutions which are sufficiently mature for demonstration at pre-commercial/commercial scale

First-of-a-kind commercialisation or **large-scale commercial size demonstration** of technologies, processes or business models previously proven at pilot or smaller scale, or large-scale demonstration plants

A **second or more of a kind commercialisation**, under certain conditions. In particular, where the relevant costs remain a significant share of total costs that prohibit commercialisation without further public support. Innovation beyond incremental must still be demonstrated.

Innovative smaller demonstrations or pilot plants, targeting validation of innovative solutions in industrial environment.

Projects aimed at demonstrated **scaling up** of innovative techniques, processes and technologies for their broad roll-out, which contribute significantly to the decarbonisation of the IF sectors.

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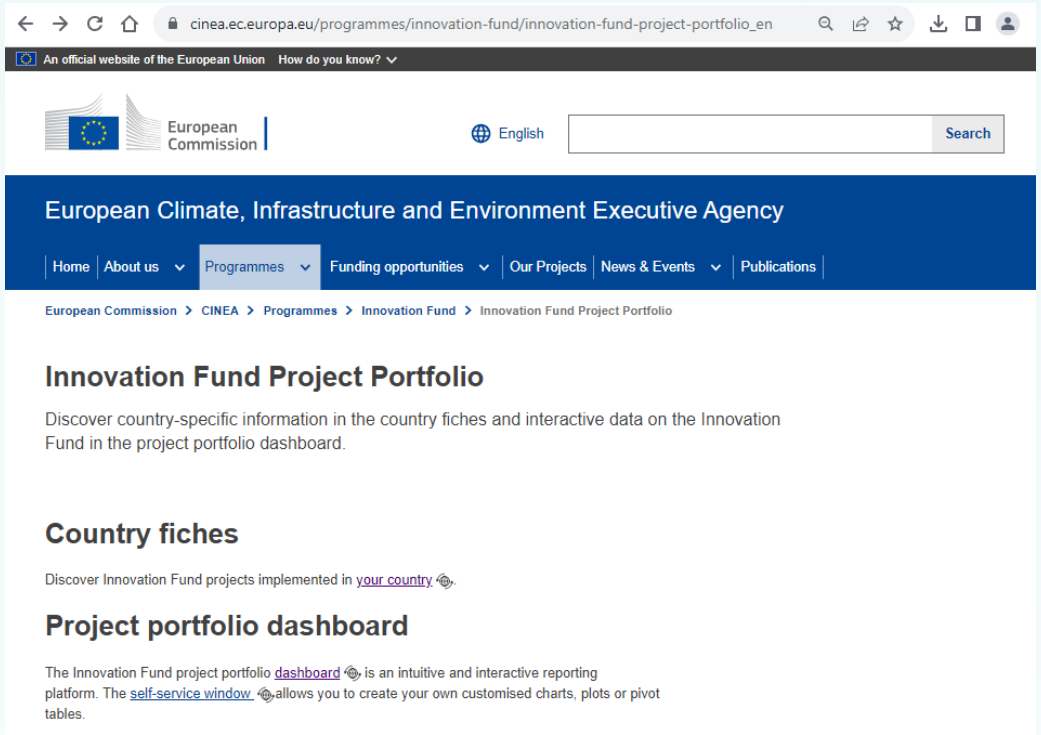
References to Innovation Fund projects

- Proposals focusing on innovations similar to the ones of ongoing Innovation Fund projects, must clearly justify where the new innovative elements lie
- Such projects may receive a lower score
- Consult the list of funded Innovation Fund projects (Innovation Fund Project Portfolio Dashboard)



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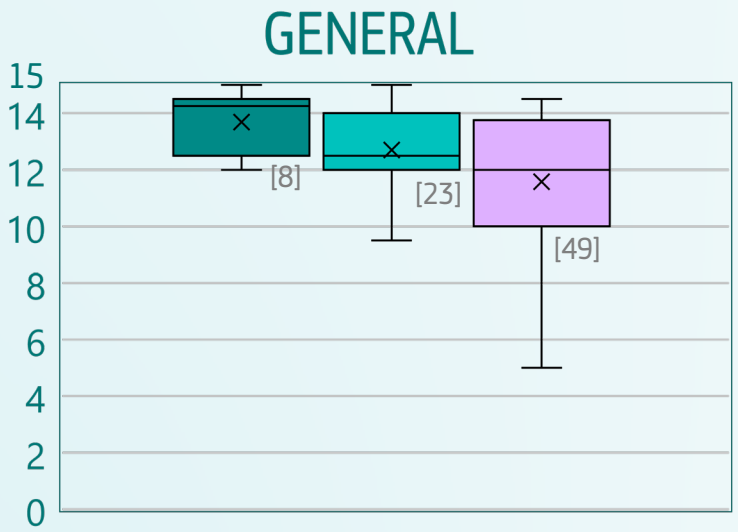
Degree of Innovation for topic General - SSP

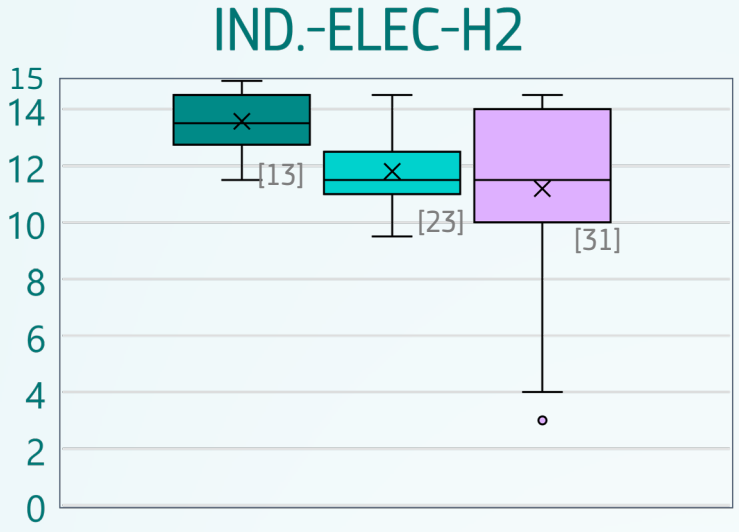
Innovation at national level

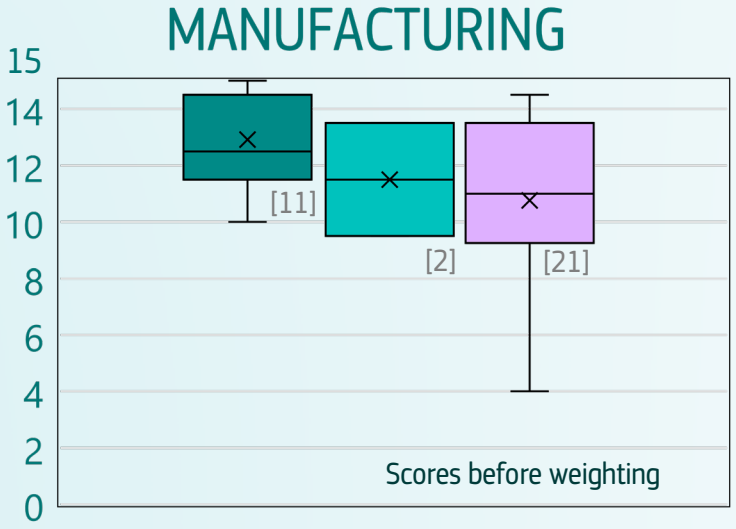
- For **small-scale projects** (INNOVFUND-2023-NZT-GENERAL-SSP), the reference point can be at European or national level.
- For innovations at national level: the geographical reference of the state-of-the-art must be the country where the project will be implemented. The proposal should demonstrate how it goes beyond this national state-of-the-art.
- Proposals going beyond state-of-the-art at national level can meet the minimum threshold of this criterion; however, if a proposal is also going beyond the state-of-the-art at European level, it may receive a higher score.

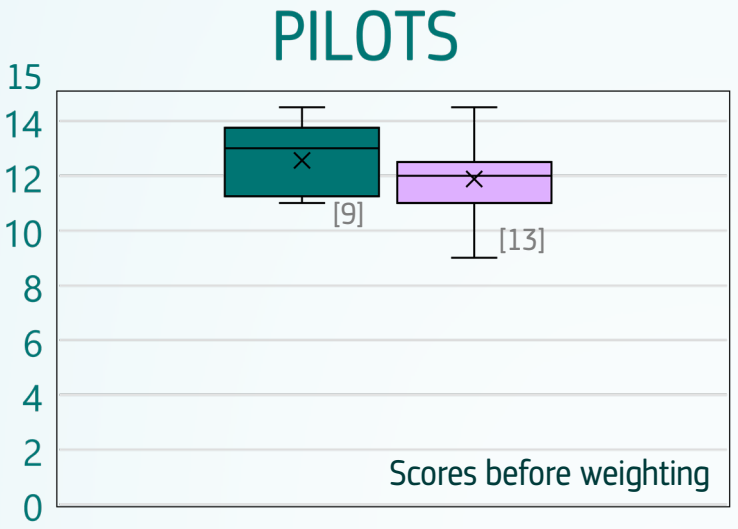
Degree of Innovation

Scores per topic: Large-Scale Call 2022









Proposals evaluated

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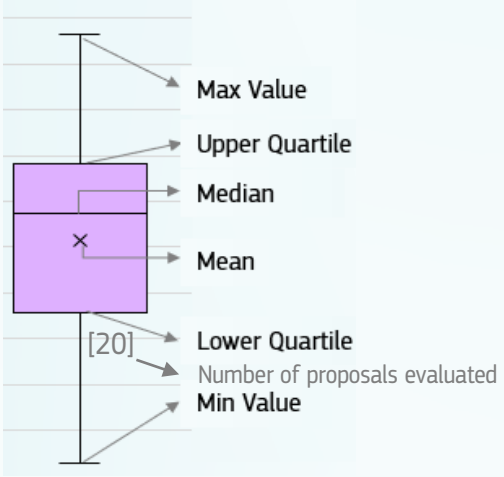
- Beyond available budget
- Not meeting minimum thresholds

How to interpret these graphs



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Lessons learned - Degree of innovation

- Check thoroughly **ANNEX 1** in call text
- Be clear, exhaustive and transparent
- Provide convincing and substantial evidence for your claims
- Make clear references to the feasibility study, where relevant

Describe	Identify	Provide evidence ->Feasibility study, GHG calc, other

• Relevant **state-of-the-art**
  • Technological aspects
  • Commercial aspects
• Consider **quantitatively**
  • Costs
  • Technical characteristics - Performance
  • TRL/SRL
	• How does your innovation go beyond state-of-the-art?
	  • **Compare** with other previous & ongoing **EU and IF projects**
	  • Include your geographical reference point
	• **Consider Barriers**
	  • for scaling up
	  • for technology integration
		• Compare **key performance data vs state-of-the-art**
		  • Relevant parameters
		  • Consider also energy efficiency and circularity
		• Provide **patent data** (when relevant)
		• Consider how will the innovation be implemented or integrated?

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GHG emission avoidance potential

Gianluca TONDI, Head of Sector
CINEA C4, Innovation Fund

European Commission

GHG emission avoidance potential

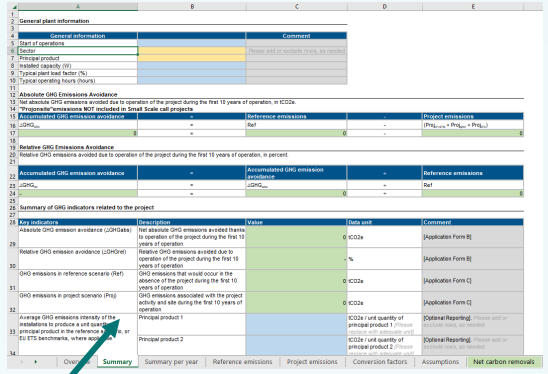
Absolute GHG emission avoidance

Relative GHG emission avoidance

Quality of the GHG emission avoidance calculation and minimum requirements

- **Application form, Part B, sections:**
  - Section 2: GHG emission avoidance potential
    - 2.1 Absolute GHG emission avoidance
    - 2.2 Relative GHG emission avoidance
    - 2.3 Minimum requirements
- **GHG emissions avoidance calculator** (mandatory annex)

GHG emission avoidance potential (1)



- Absolute GHG emission avoidance: difference between the expected GHG emissions of the proposed project and the GHG emissions in the reference scenario during 10 years after entry into operation.

- Relative GHG emission avoidance: absolute GHG emission avoidance divided by the GHG emissions in the reference scenario over the same 10 years period

The calculation must be done:

- using the relevant GHG emission avoidance calculator
- following the Guidance on the GHG emission avoidance methodology

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GHG emission avoidance potential (2)

- **Quality of the GHG emission avoidance calculation** and minimum requirements:

  - external experts will assess the quality and credibility of your calculation of GHG emission avoidance potential;
  - in case of issues in the quality of the calculation (including reliability and margin of uncertainty of key parameters and/or key assumptions), points may be reduced;
  - in case the calculation methodology is incorrectly applied or in case the Application documents have not been filled correctly, the score for this sub-criterion will be below the minimum threshold and the proposal will be rejected.

GHG emission avoidance potential (3)

- Quality of the GHG emission avoidance calculation and **minimum requirements**

Where relevant, the proposal should demonstrate whether the proposed project meets or not the **minimum requirements**:

- For projects producing products with an EU ETS benchmark: the process emissions of the project per unit of product must be below the **EU ETS benchmark(s)** applicable at the call deadline;
- For projects using biomass feedstocks: the biomass used will at least meet the **sustainability requirements** of the Renewable Energy Directive;
- For all projects: the **relative GHG emission** avoidance must be:
  - for **all topics** except INNOVFUND-2023-NZT-PILOTS: **at least 50%**
  - for INNOVFUND-2023-NZT-**PILOTS** topic: **at least 75%.**

Proposals not meeting minimum requirements will be rejected!

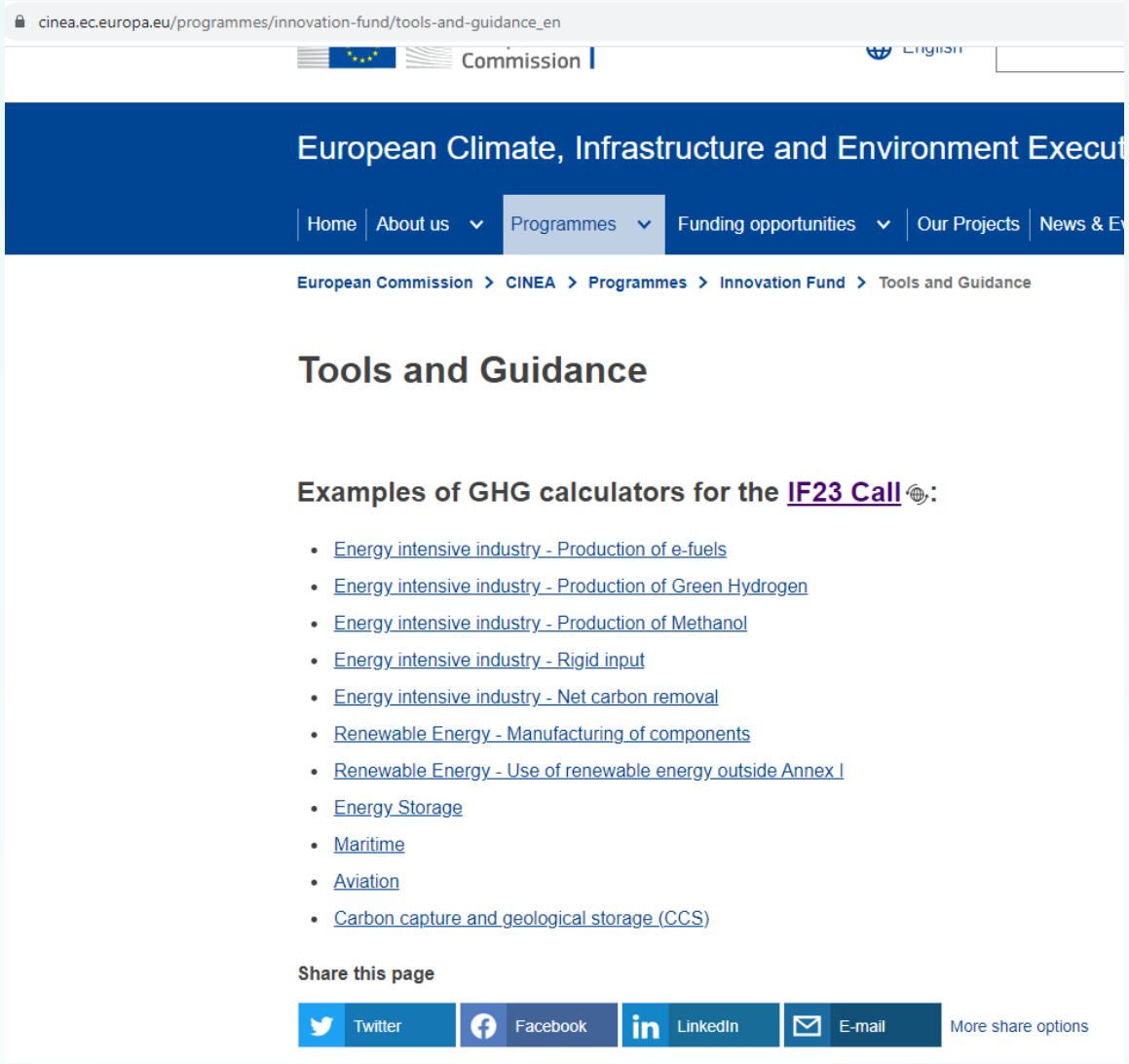
New features of the GHG Calculation criterion

Two new sections in the GHG calculation methodology and GHG calculators

- Maritime
- Aviation

A new set of filled examples in the templates

Tutorial on how to fill in the GHG Calculators



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Absolute GHG Emissions avoidance

Scores per topic LSC-2022

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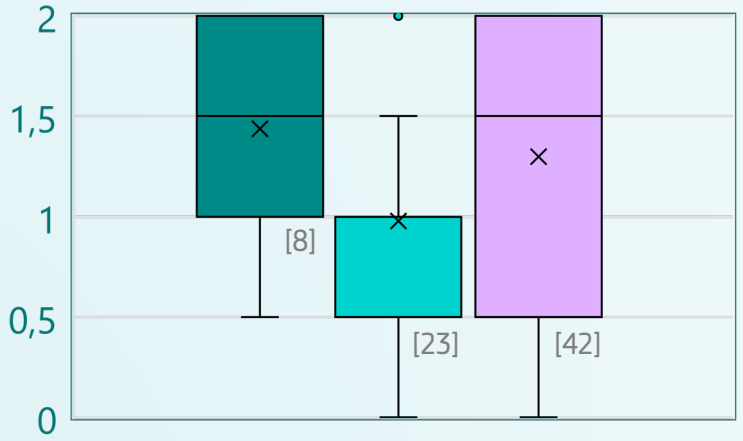
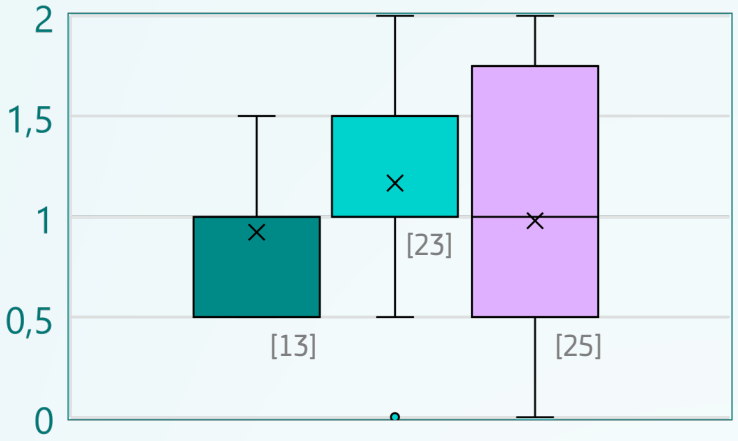
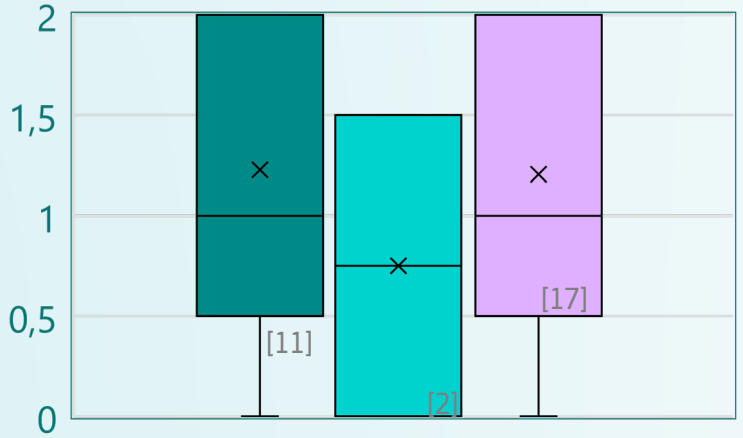
GENERAL



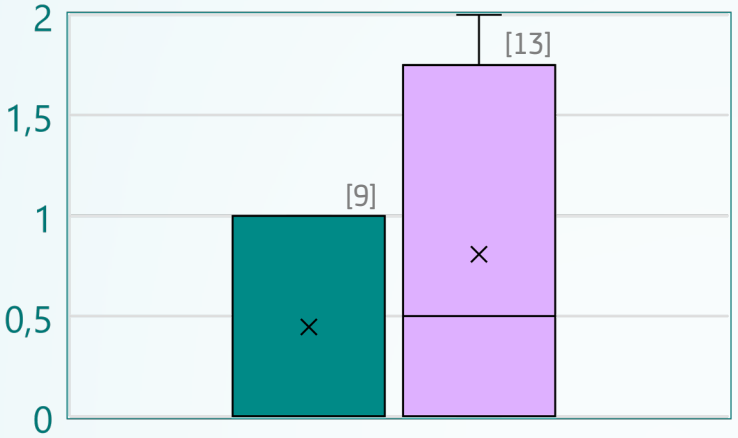
IND.-ELEC.-H2



MANUFACTURING



PILOTS



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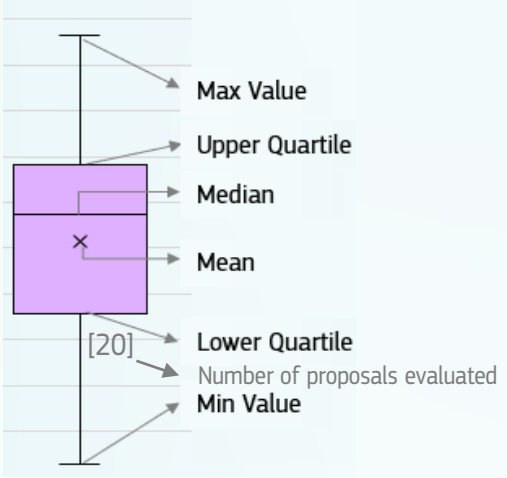
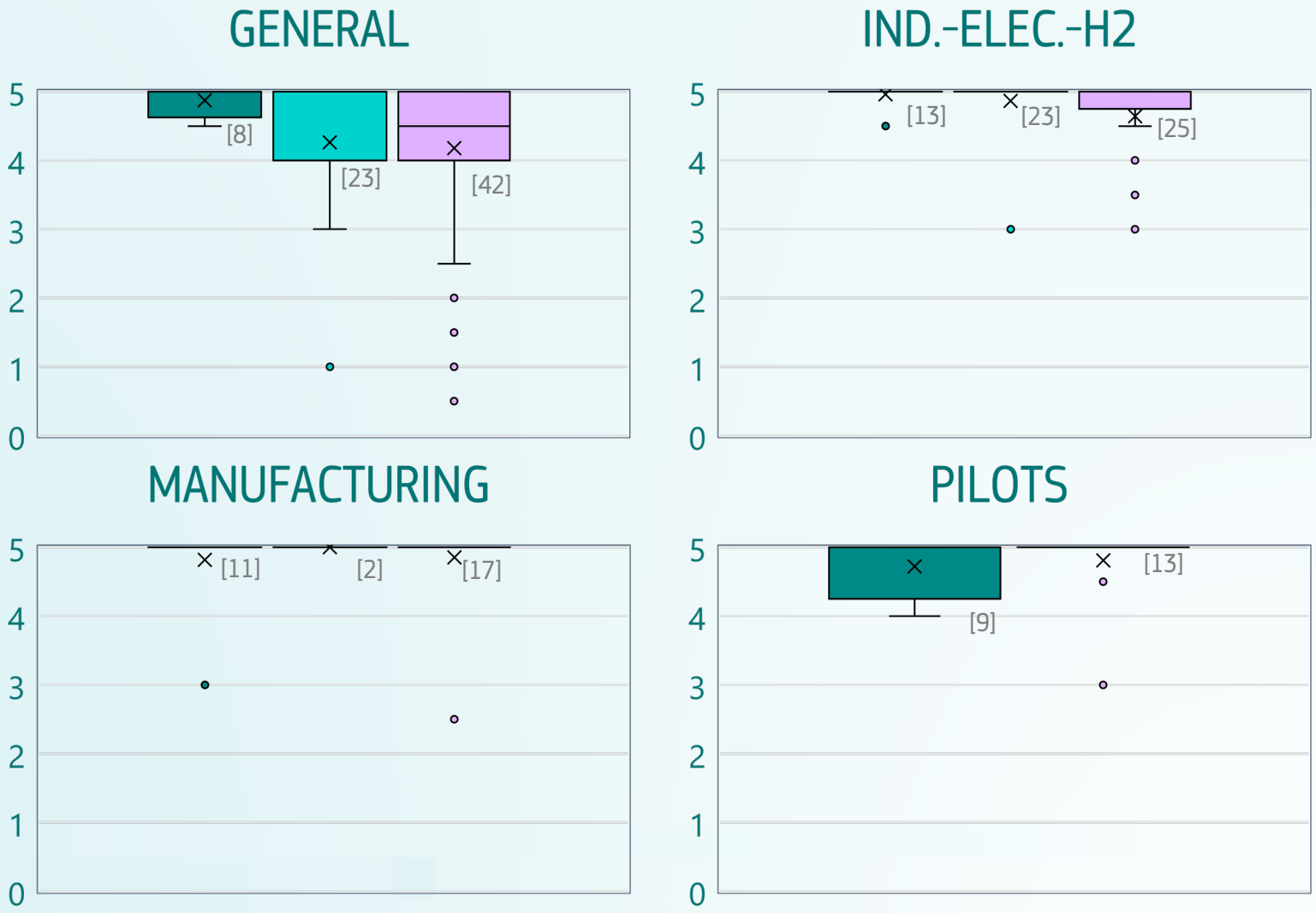


European Commission

Relative GHG Emissions avoidance

Scores per topic LSC-2022

Slido **#IF23Call**



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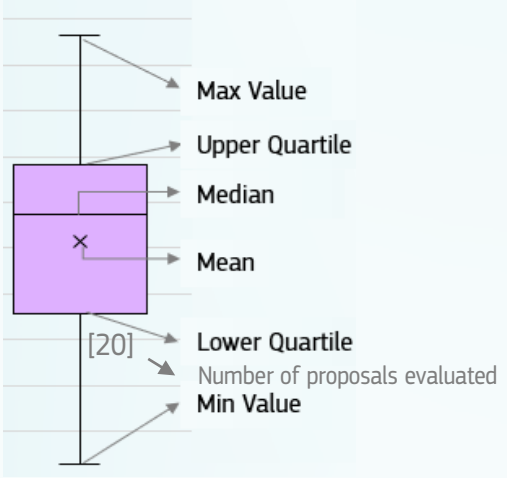

European Commission

Relative GHG Emissions avoidance

Percentage points per topic LSC-2022

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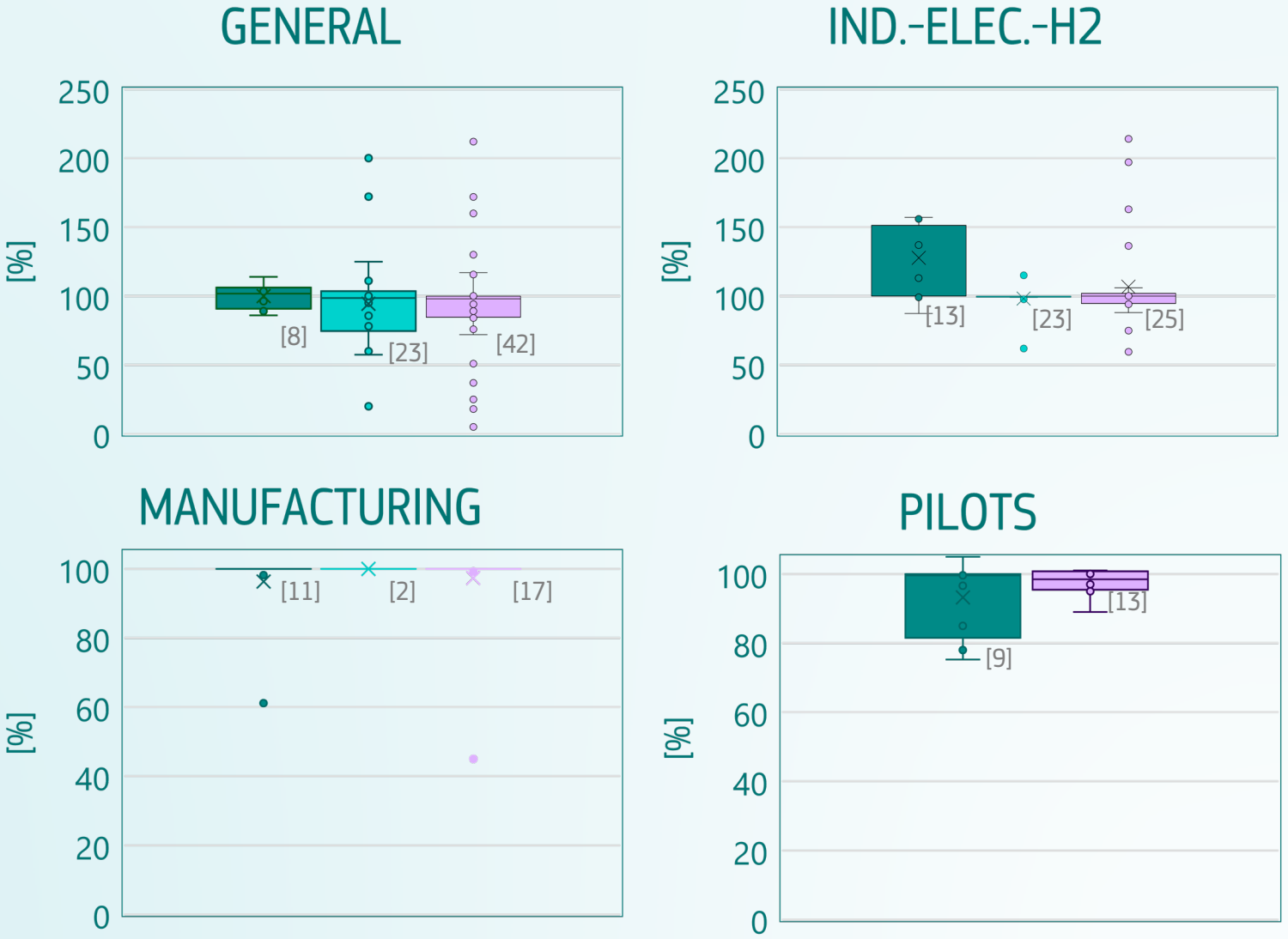

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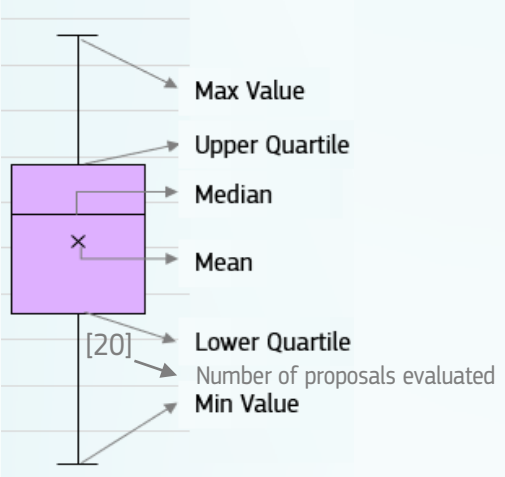

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Relative GHG Emissions avoidance

Results per topic LSC-2022

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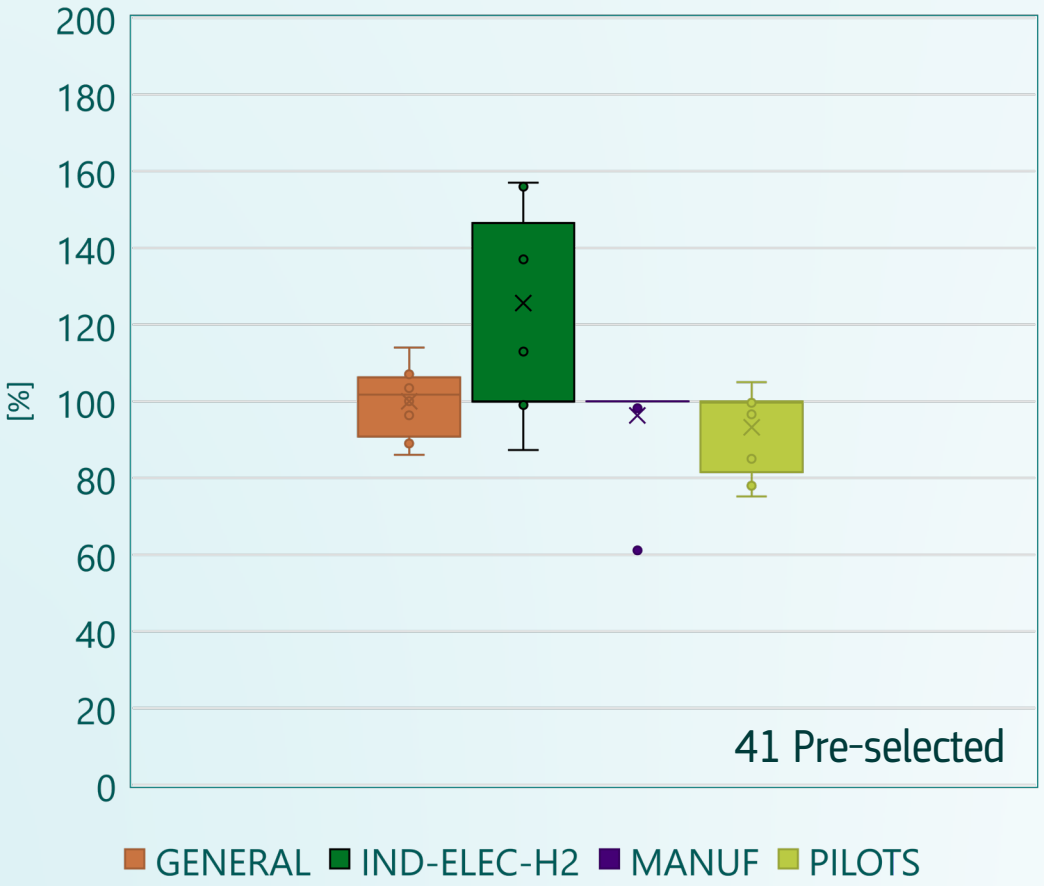
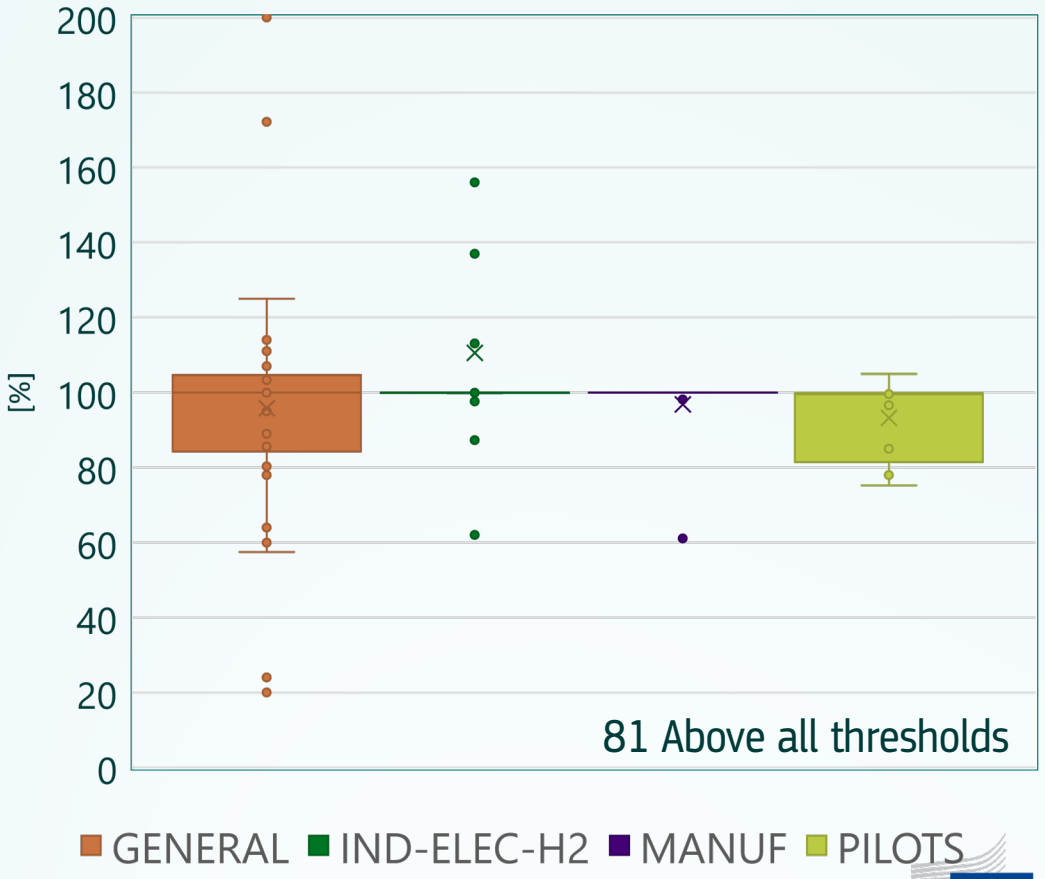
PRE-SELECTED projects by TOPIC



Including: Pre-selected projects and proposals above all thresholds



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Quality of GHG calculation

Scores per topic LSC-2022

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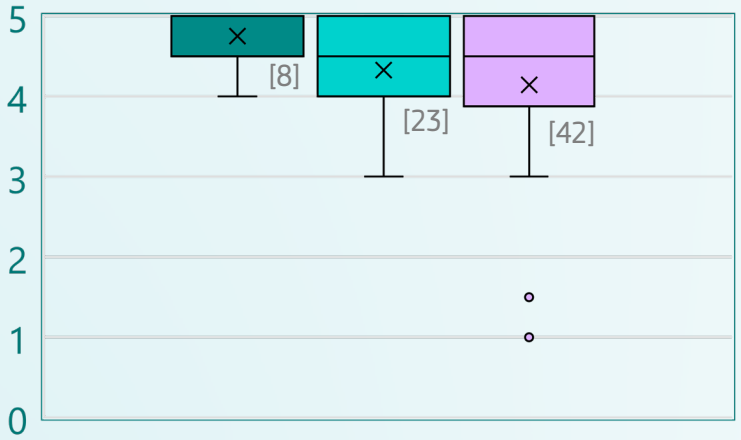
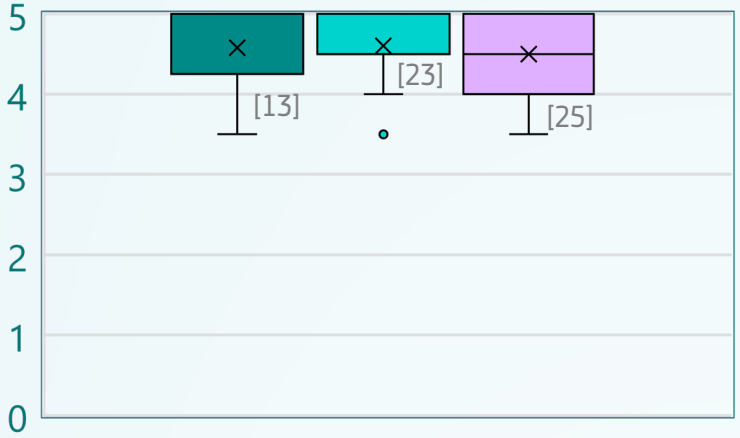
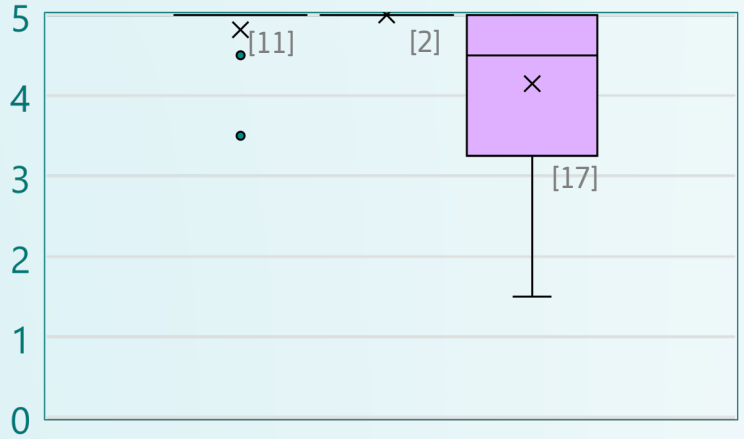
GENERAL



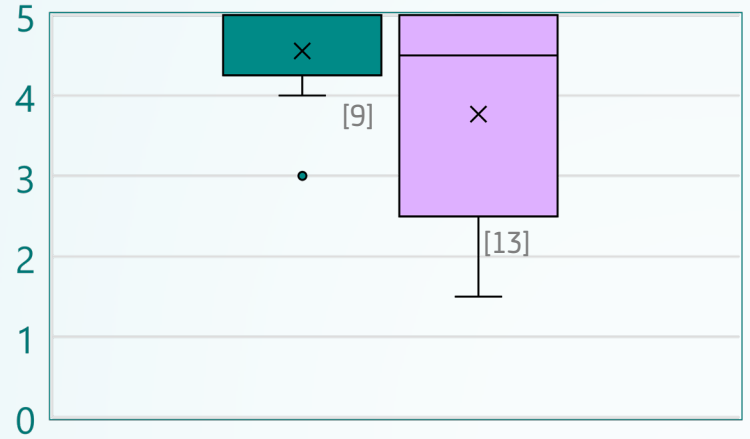
IND.-ELEC-H2



MANUFACTURING



PILOTS



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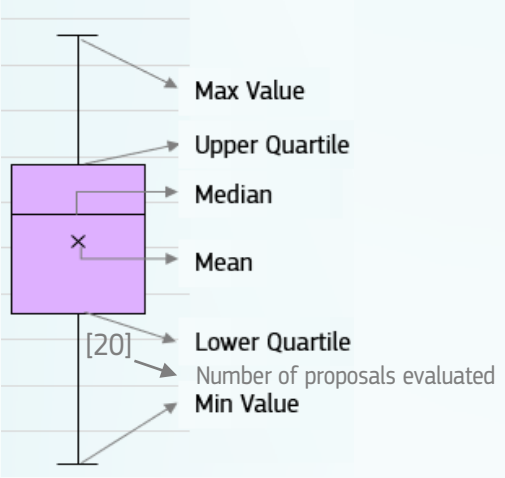

European Commission

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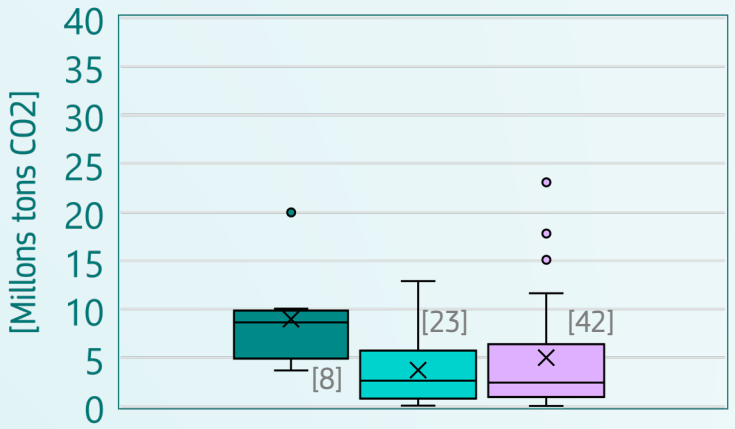
Absolute GHG Emissions avoidance

Results tons CO_2,eq avoidance - LSC-2022

GENERAL



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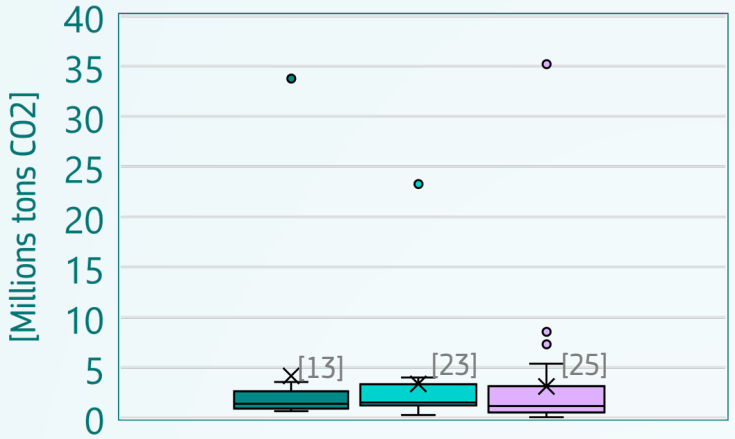

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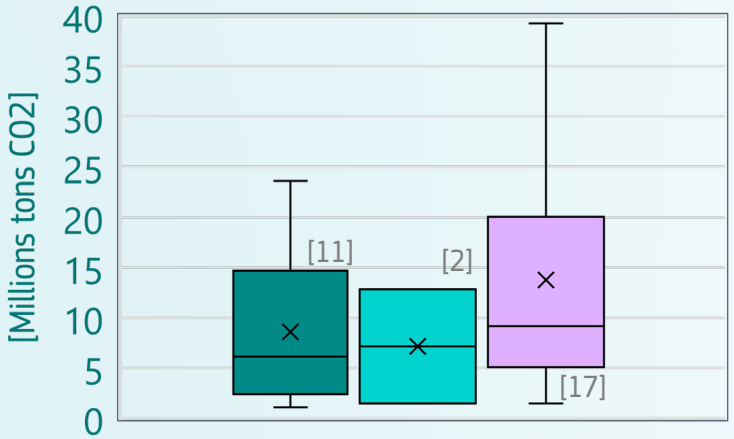

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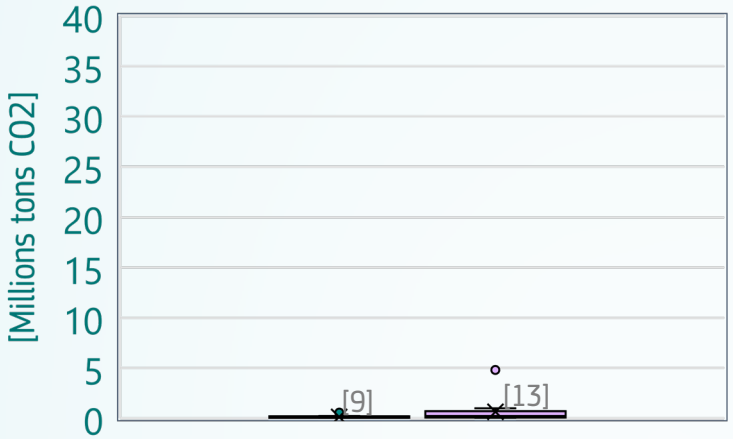

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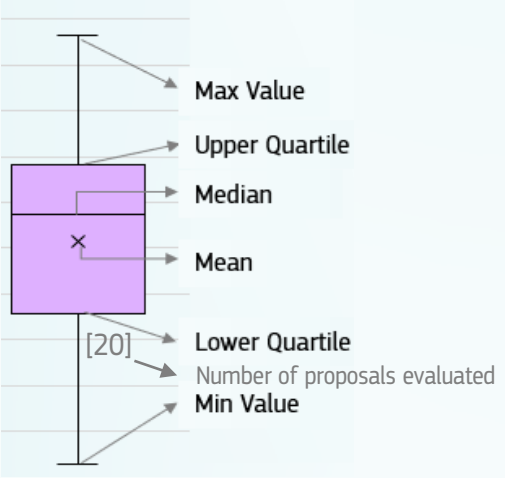


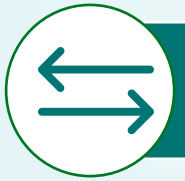
European Commission

Lessons learned - GHG Emissions avoidance potential

Follow the IF GHG emission methodology for calculation and reporting

Identify **principal product(s**), select sector, scenario and methodology accordingly

Use correct **emissions factor(s)** in line with the methodology



Justify choices made in the application of the GHG emissions avoidance methodology, when relevant

Assumptions must be **robust and properly justified**

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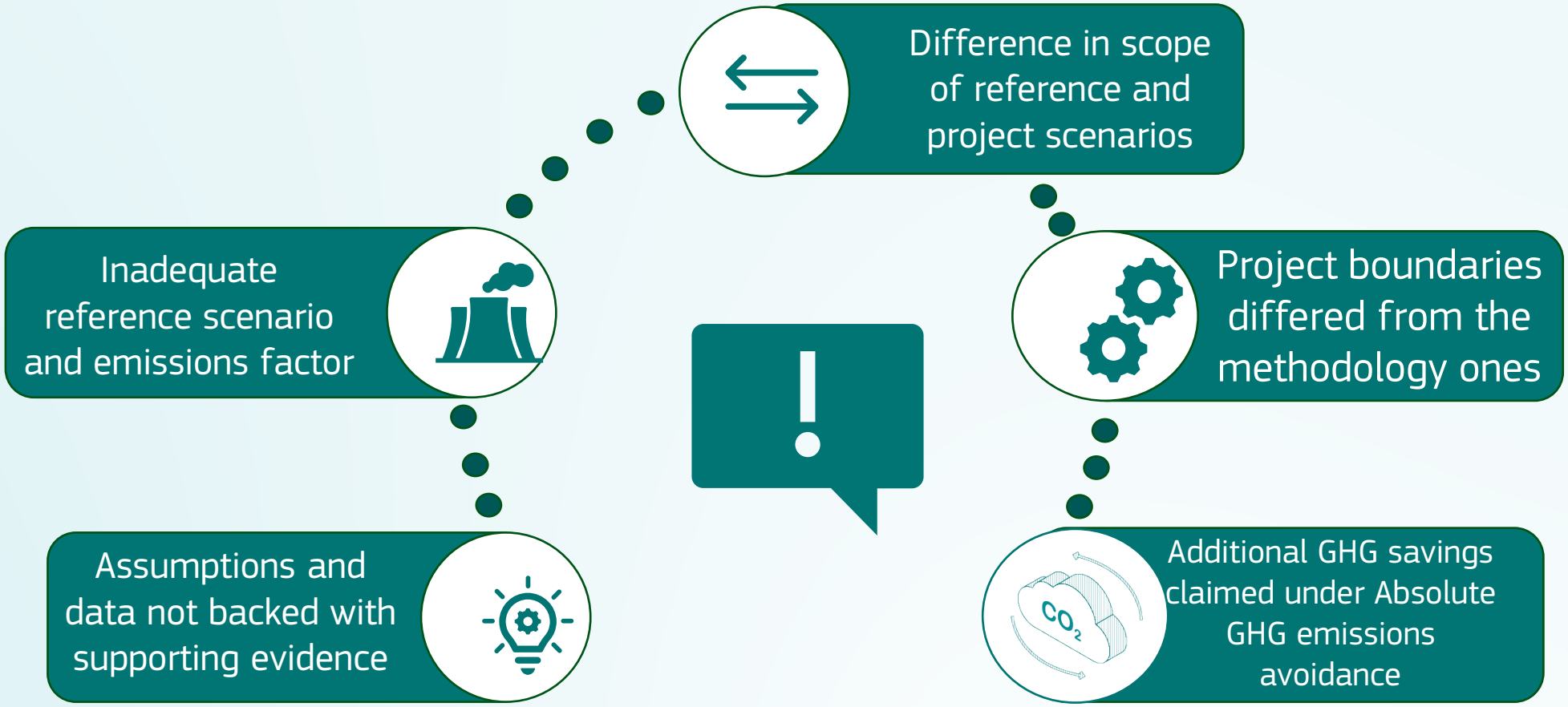
Lessons learned:
Main mistakes on GHG emissions avoidance



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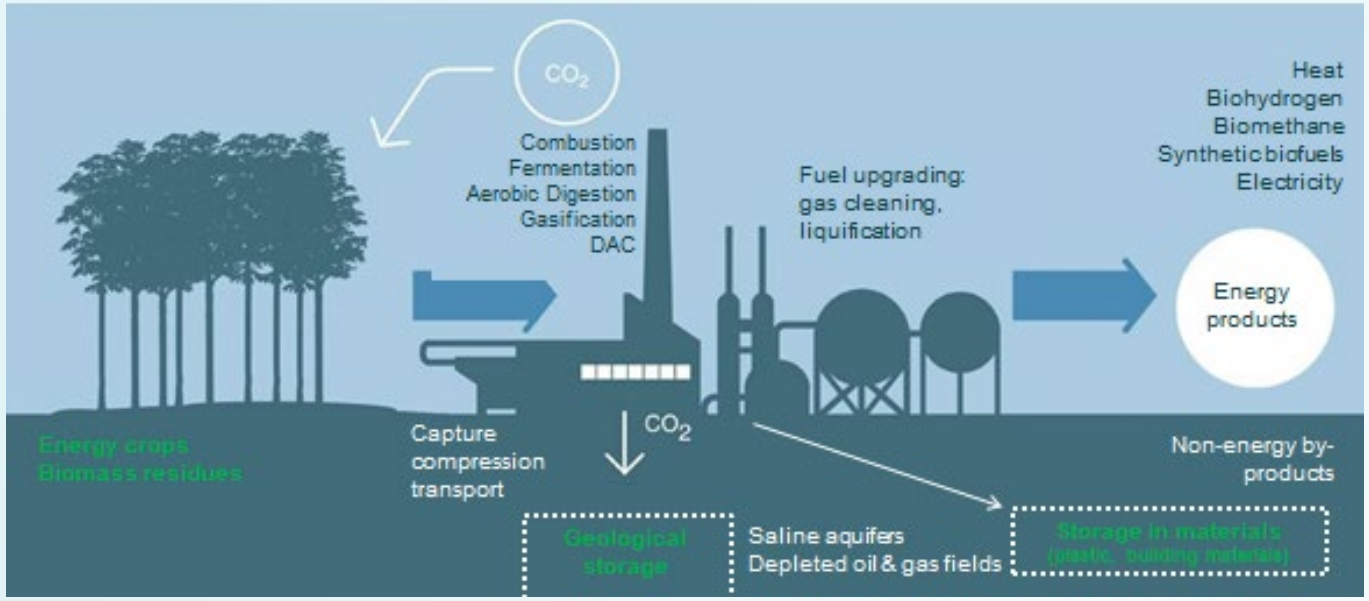
Bonus 1 and 2

Gianluca TONDI, Head of Sector
CINEA C4, Innovation Fund

European Commission

Bonus Point 1: net carbon removal



Application form, Part B
- Section 6

Template GHG emission Calculator
- Tab "Net carbon removals"

- The **total project emissions should be negative**
- For EII projects, negative emissions can only be claimed **excluding any credit for timed operation**
- For EII projects: the non-principal products are **not allowed to be the only source** of negative emissions in the projects

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Bonus Point 2: other GHG emission savings

Other GHG savings from emissions sources that go **beyond** the boundaries established in the Innovation Fund GHG calculation methodology for the given sector, such as:

- Emissions due to transportation of raw materials or finished products,
- Waste management,
- Upstream emissions of fuels in the project scenario, etc.

Application form, Part B
- Section 6

Template GHG emission Calculator
- Tab "Other GHG emission avoidance"

Q&A session

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Project Maturity:
Technical maturity
Financial maturity
Operational maturity

Susanna GALLONI, Head of Sector
CINEA C4 Innovation Fund
Christophe DEHOUT, Senior Financial Engineer
CINEA A1

European Commission

Technical Maturity

Susanna GALLONI, Head of Sector
CINEA C4, Innovation Fund

European Commission

Technical Maturity

Technical feasibility to deliver the expected output and GHG emissions avoidance

Technology risks and proposed mitigation measures

- **Application form, Part B, sections:**
  - Section 0: technical characteristics and scope / technology scope
  - 3.1 (technical maturity)
  - 3.4 (risk management)
- Feasibility study (mandatory annex)
- Any existing technical due diligence report (optional)

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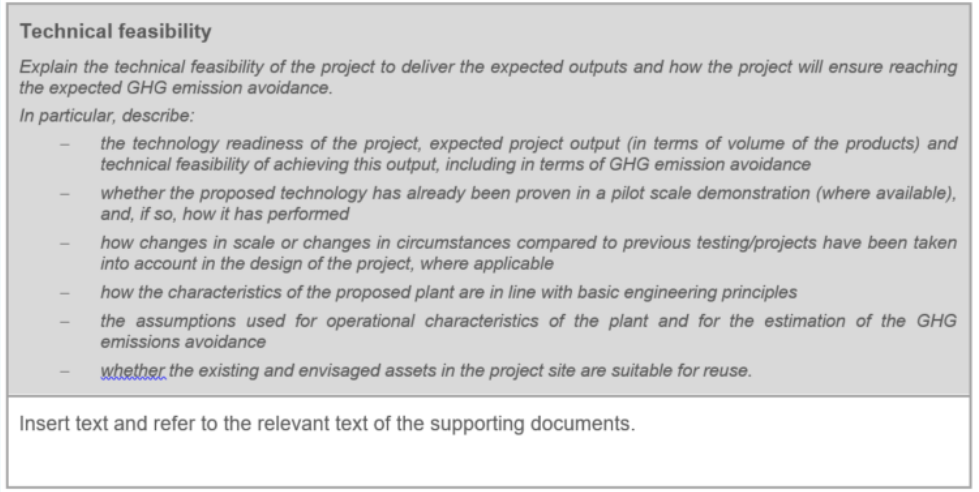
Technical Maturity – technical feasibility

Guiding principle / key questions to reply:

- Explain the degree of technology readiness of the proposed solution and the technical feasibility of delivering the expected output (e.g., in terms of volume of the products).
- In particular:
  - Has the technology already been proven in a pilot scale demonstration?
  - Are the characteristics of the proposed plant credible and in line with basic engineering principles?
  - Provide robust and credible assumptions used for operational characteristics of the plant and estimation of the expected outputs
  - Provide clear reference to relevant parts of the Feasibility study and other supporting documents.



Technical feasibility

Explain the technical feasibility of the project to deliver the expected outputs and how the project will ensure reaching the expected GHG emission avoidance.

In particular, describe:

- *the technology readiness of the project, expected project output (in terms of volume of the products) and technical feasibility of achieving this output, including in terms of GHG emission avoidance*
- *whether the proposed technology has already been proven in a pilot scale demonstration (where available), and, if so, how it has performed*
- *how changes in scale or changes in circumstances compared to previous testing/projects have been taken into account in the design of the project, where applicable*
- *how the characteristics of the proposed plant are in line with basic engineering principles*
- *the assumptions used for operational characteristics of the plant and for the estimation of the GHG emissions avoidance*
- *whether the existing and envisaged assets in the project site are suitable for reuse.*

Insert text and refer to the relevant text of the supporting documents.

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Technical Maturity – risks

Guiding principle / key questions to reply:

- Describe key risks identified in relation to the proposed technology/process,
- Describe the proposed risk mitigation measures and explain why they are suitable
- Moreover, risks identified should be summarised in the risk table (section 3.4 application form)
- Underpin your analysis with the feasibility study and provide the risk heat map

Technical risks and proposed risk mitigation measures

Describe key risks identified in relation to the technology, the proposed risk mitigation measures and why they are suitable.

Insert text and refer to the relevant text of the supporting documents.

Critical risks and risk management strategy

List critical risks, uncertainties or difficulties related to the implementation of your project, and your measures/strategy for addressing them.

Indicate for each risk (in the description) the impact and the likelihood that the risk will materialise (high, medium, low), even after taking into account the mitigating measures.

***Note:** Uncertainties and unexpected events occur in all organisations, even if very well-run. The risk analysis will help you to predict issues that could delay or hinder project activities. A good risk management strategy is essential for good project management.*

Risk No	Description	Work package No	Proposed risk-mitigation measures

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Feasibility study

- The feasibility study should include information in line with the minimum content indicated in section 5 of the call text:
  - Project description (background information, objectives, resource and feedstock availability and yield potential, expected project outputs, innovation)
  - Location analysis and strategic overlook (site, site plans, stakeholders' involvement and acceptance)
  - Technical maturity assessment (technology readiness, technology process, suppliers of technology, feasibility of achieving project outputs)
  - GHG avoidance and key consumptions figures
  - Environmental and socio-economic impacts and mitigation measures
  - Techno-economic feasibility
  - Risks and mitigation measures (including heat map)

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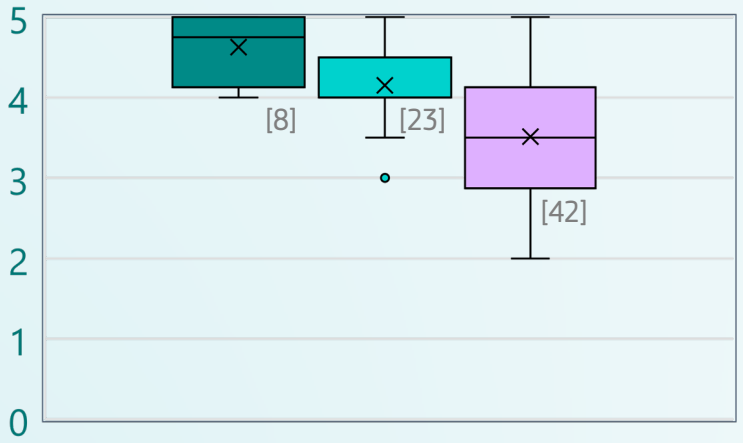
Technical maturity

Scores per topic LSC-2022

GENERAL



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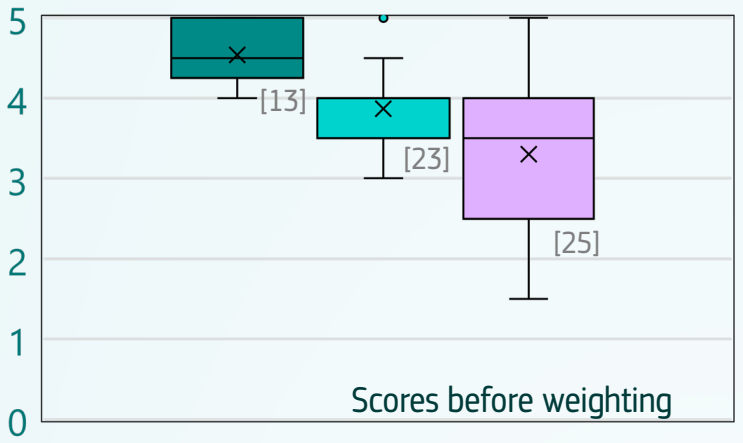
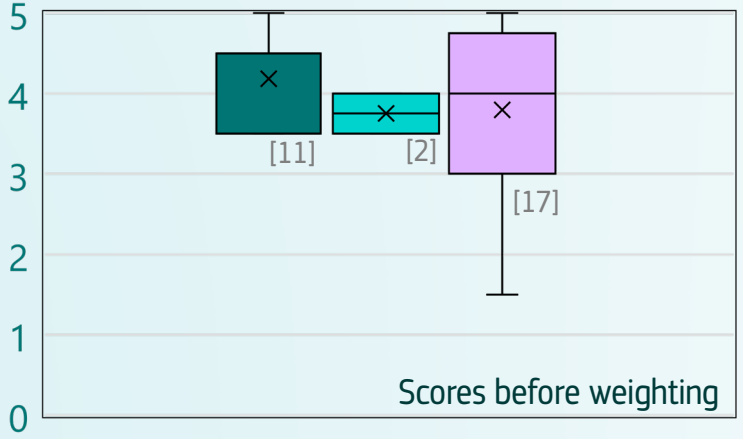
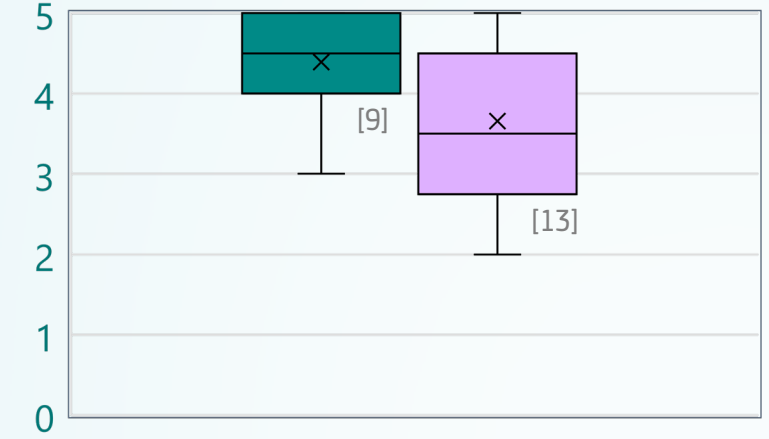


MANUFACTURING



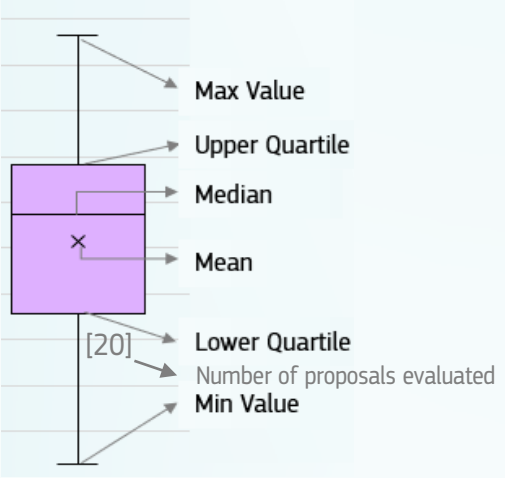
PILOTS



Proposals evaluated

- Pre-selected for grant preparation
- Beyond available budget
- Not meeting minimum thresholds

How to interpret these graphs



European Commission

Lessons learned - Technical maturity

Describe readiness level	Identify	Provide evidence ->Feasibility study, other docs

• Actual readiness level of your technology
  • Be concise
  • Provide **key facts and figures**
	• Relevant data – from your previous stages: pilots / projects…
	• Include all relevant critical **risks** and **mitigation** strategies
		• Due diligence report
		• Procurement quotes
		• MoU
		• Signed letters of intents/ support

Ensure **consistency** between documents:
Feasibility study, business plan, GHG calculations

Resubmissions are welcome, especially when TRL is improving

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Q&A session

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Financial Maturity

Christophe DEHOUT - Senior Financial Engineering Manager
CINEA

European Commission

Financial Maturity

Key points

Lessons learned and do's/don'ts

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Financial Maturity

Key points

Objective: assess the project capacity to reach Financial Close within 4 years or faster*

Project business plan and profitability

Soundness of the financing plan

Commitment of project funders

Understanding of project business and financial risks

*For the topics Pilots and Manufacturing, projects demonstrating the **ability to reach financial close within two years and entry into operation within four years** after grant agreement signature may receive a higher score under the project maturity criterion

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European Commission

Financial Maturity

Key points

Objective: assess the project capacity to reach Financial Close within 4 years

Relevant sections of the proposal and mandatory annexes

- **Application form, Part B, sections:**

  3.2 (Financial maturity)

  3.4 (Risks management)

  7 Work packages, activities, milestones

- Mandatory annexes : Business Plan (including financial statements of the project shareholders), Financial Information File **to be filled completely** (which includes the Relevant cost calculator, the financial model Summary Sheet, the grant drawdown schedule and the cost efficiency calculation), Applicant's Financial Model (xls)

- Any existing due diligence report (optional)

Financial Maturity

Business model => Business plan

- Credibility of the business model and business plan:
  - Describe the proposed project business model, including the project competitive advantage, targeted market(s) and products, barriers to entry and how it addresses market gaps.
  - Fully describe and substantiate the main revenues and cost assumptions (CAPEX and OPEX). Include a detailed breakdown and description of prices and volumes assumed (attach any available due diligence).
  - Describe the strategy to secure key contracts with off-takers, key suppliers, construction contractors… Where available, provide contractual evidence for example letters of support, indicative terms from MoU's,..
  - Justify the contingencies (CAPEX and OPEX) used and ensure that they are in line with market practice in your sector.

Financial Maturity

Business Plan => Financial model

- Robustness of the cash flow projections and project profitability
  - Ensure that the financial projections are coherent with the assumptions of the business plan and across the other application documents.
  - Fill in the Financial Model Input Sheet in the Financial Information File and make sure the data are coherent with your own financial model.
  - Describe project returns over the entire project lifetime with/without the grant and compare it to the WACC.
  - Ensure that assumptions used for WACC adequately reflect the project risks.

Financial Maturity

Soundness of financing plan

- Project Financial Close must be reached latest 4 years after signing of the Grant Agreement.

  ⇒ Justify the planned date for Financial Close, clearly describe the work packages, milestones and deliverables up to that date.

- Demonstrate financial viability of your project. Does the financing plan cover construction costs and potential negative operational cash flows?

- If your financing plan includes external debt, justify the key terms and show they are in line with market standards. Ensure that the level of debt assumed is supported by stable cash flows and reinforced with long-term off-take contracts. If possible, letters from banks substantiating the conditions and letters of potential off-takers are always a plus.

- Describe the funding structure in the organizational chart highlighting the main legal entities and where the debt (if any) will be raised (will it be recourse/non-recourse?).

- Make sure that grant disbursement is in line with the call text.

Financial Maturity

Commitment of project funders

- Describe the state-of-play, nature, level and conditions of support provided by project funders.
- Provide corresponding evidence like letters of interest/support, letters of approval from funders/shareholders or board confirming the support of the financing plan. This will be even more crucial for unprofitable projects (pilots or others). Also describe the necessary internal approval process.
- Support from other sources including market mechanisms, support from Member States and status/planning for State aid clearance where relevant (provide evidence if you have, do not just mention it).

Financial Maturity

Business and financial risks

- Provide a description of the main business and financial risks with the appropriate mitigation measures
- Underpin your analysis with the business plan and provide a risk heat map
- Describe contingency planning and/or contingency funding to cover downside scenarios like lower green price premium, sales growth or lower than anticipated, price increase, higher construction cost, absence of additional grant (if any)
- Fill in the risk matrix in section 3.4 of the application form part B

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Financial maturity

Scores per topic LSC-2022

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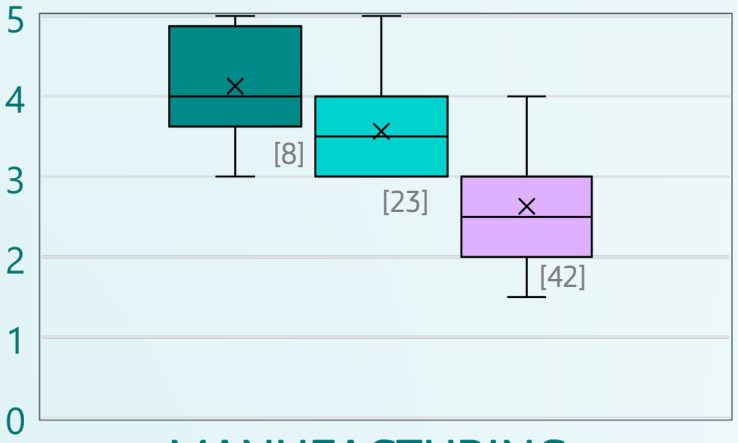
GENERAL



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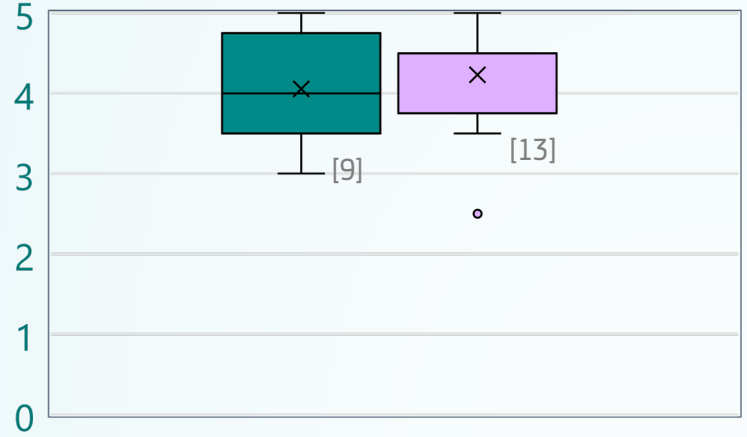
MANUFACTURING

PILOTS



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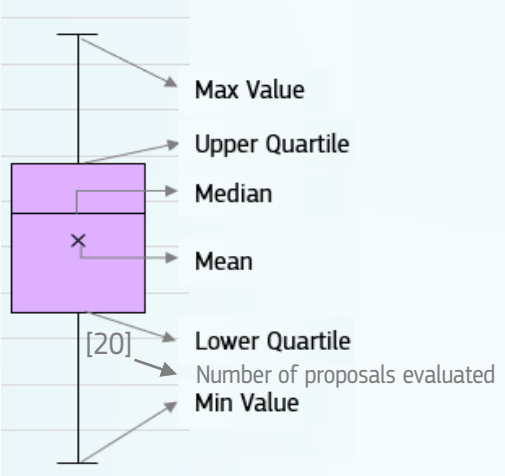

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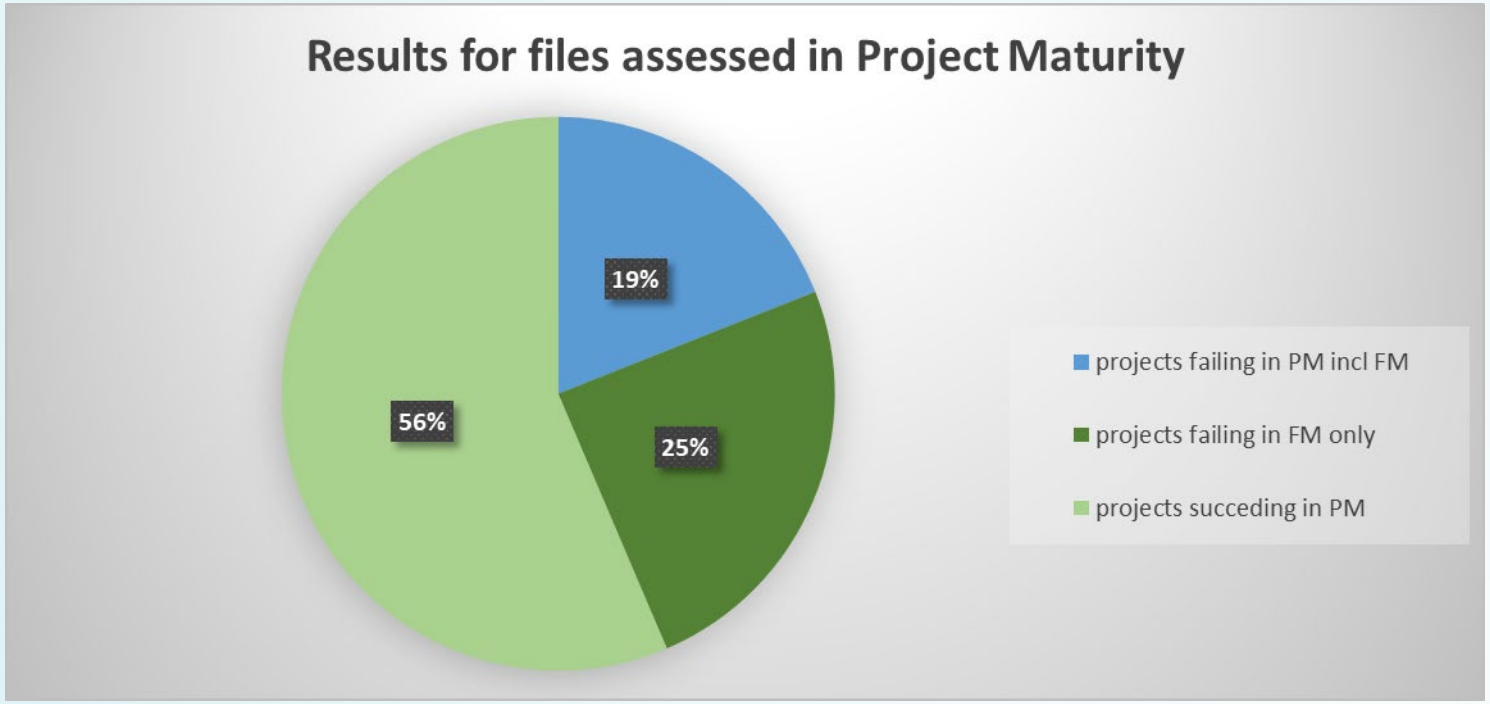
Main lessons from previous Large-scale call in Financial Maturity



- Project maturity failing rate decreased in the last call from 49 to 44%, but project maturity still remains the most selective criterion.
- Applications failing only in financial maturity decreased from 36 to 25% of all evaluated applications in project maturity.

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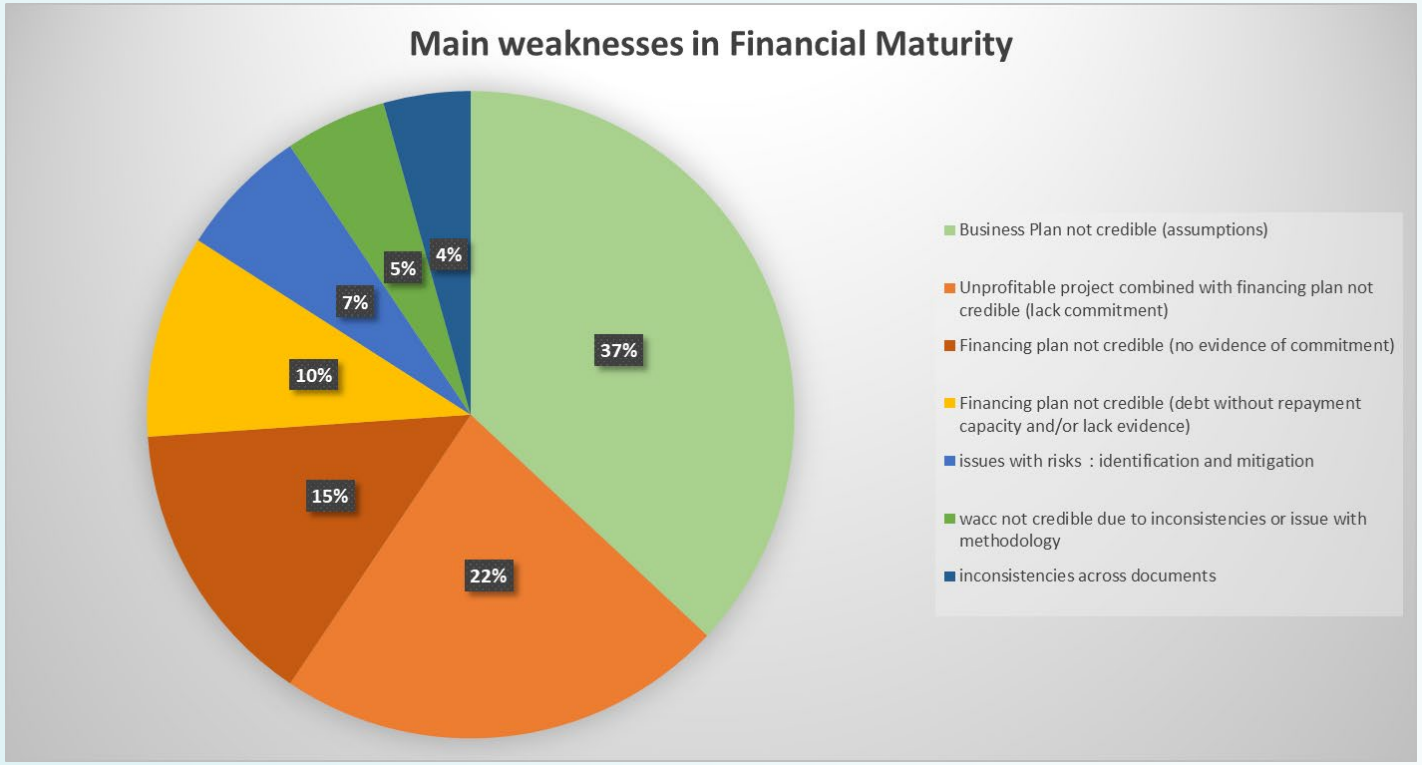
Main reasons for failure in Financial Maturity



- Issues with **Business Plan** credibility was the **most frequent weakness**
- Followed by **unprofitable projects showing a lack of commitment** from shareholders and then
- **Credibility of the financing plan** coupled with lack of commitment/evidence

Clearly **identify all funding sources** with their terms and conditions and the progress made in defining and/or negotiating them with funding counterparts.

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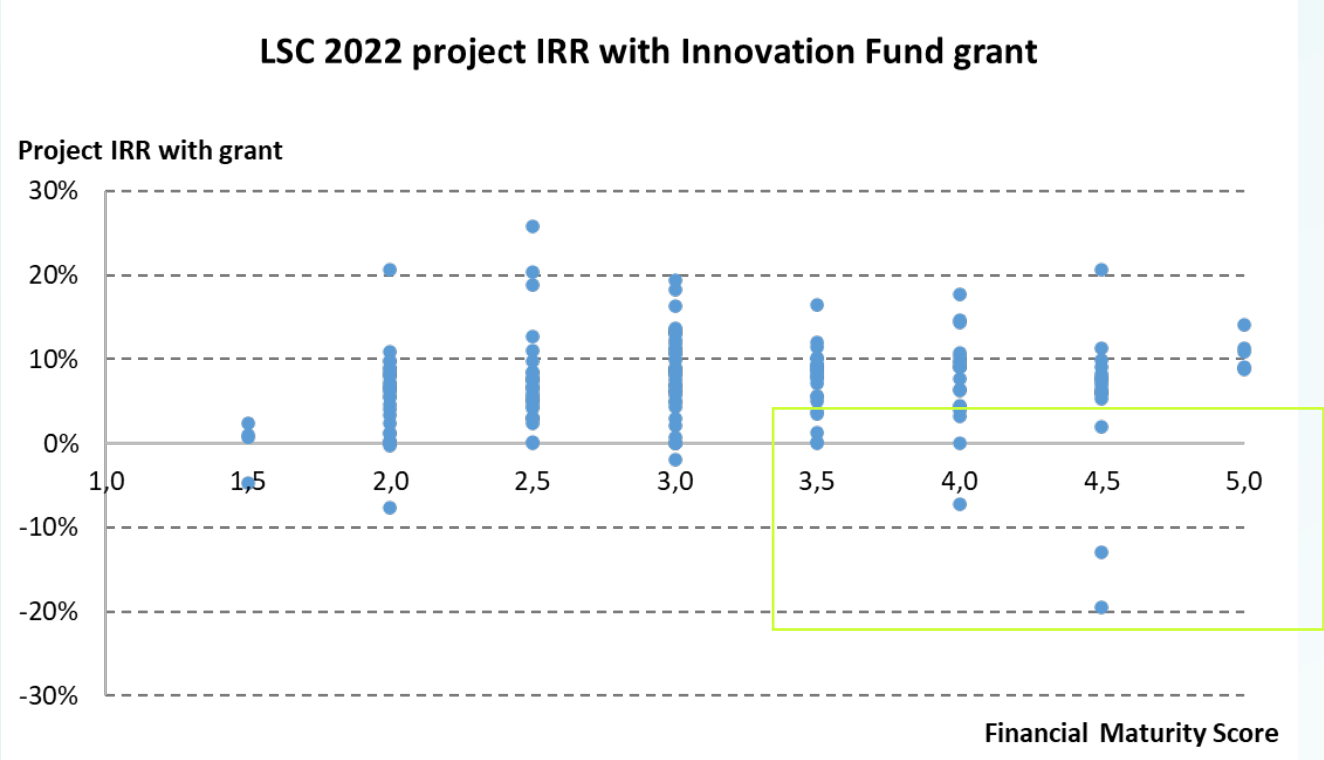
Funders commitment is important



Even projects with negative or low IRR can pass the Financial maturity sub criteria thanks to the **solid letters of commitment** from the project sponsors/shareholders => make sure the commitment letters recognize the issue of project profitability and confirm the willingness to implement the project.

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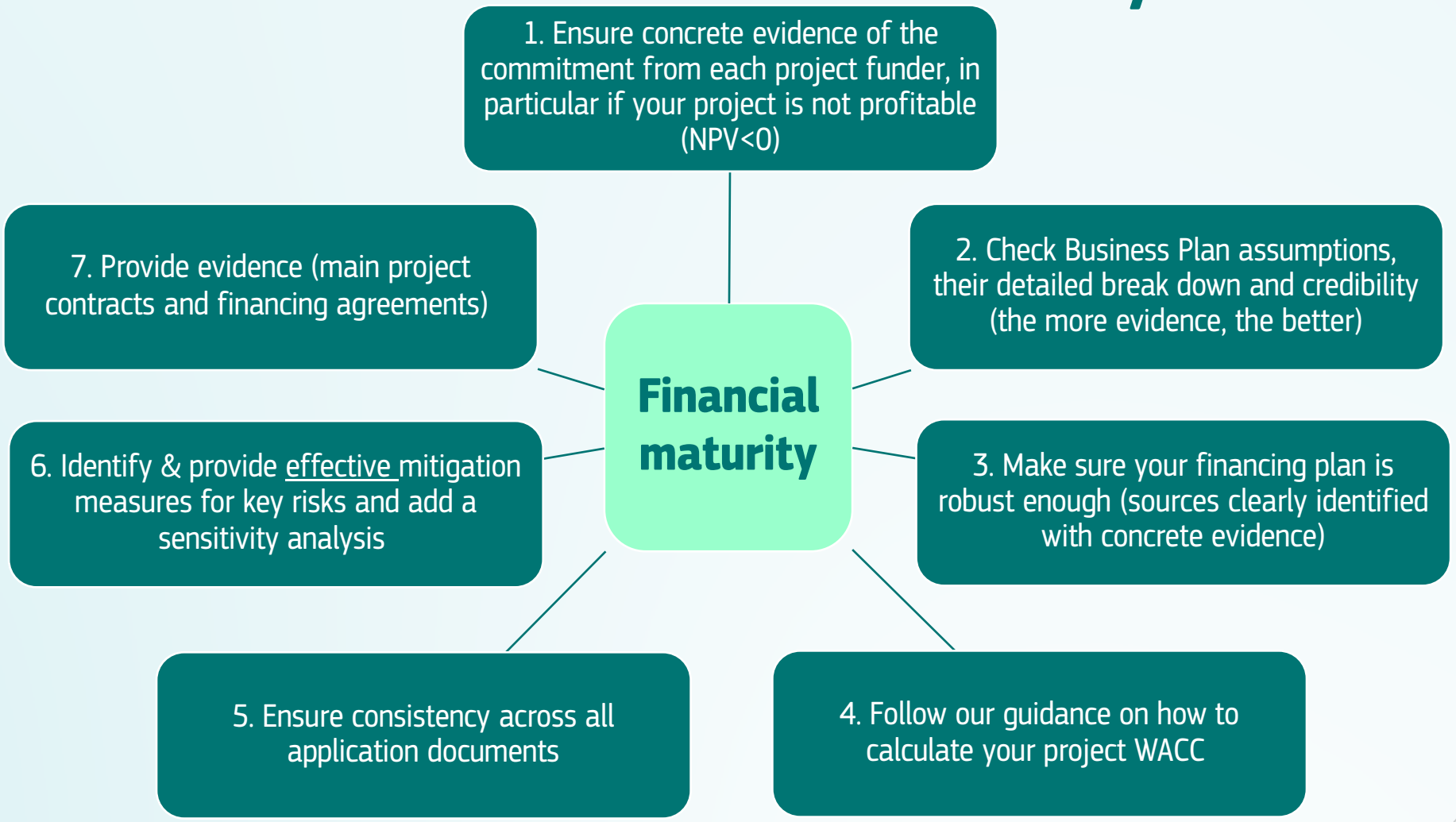
7 Golden Rules of Financial Maturity



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Operational Maturity

Susanna GALLONI, Head of Sector
CINEA C4, Innovation Fund

European Commission

Project Maturity : Operational Maturity

Credible project implementation plan covering financial close, entry into operation and annual reporting after the entry into operation and related deliverables

Relevance and track record of the project management team and soundness of the project organisation

State of play and credibility of the plan for obtaining required permits, intellectual property rights or licences and other regulatory procedures

Soundness of the strategy for ensuring public acceptance

Address project's implementation risks (e.g. dependencies on other projects) and credible risk mitigation measures

Application form, Part B, sections:

- 3.3 - Operational maturity
- 3.4 - Risks and mitigation measures
- 7.1 - Work Plan
- 7..2 – Work Packages, activities, resources and timing

Timetable-Gantt chart (mandatory document)

Participant information (including CVs and previous projects, if any)

- Any existing due diligence report (optional)

European Commission

Operational Maturity

Credibility and level of detail of project implementation plan covering all project milestones & related deliverables

Project implementation plan

Describe the implementation planning of the project and key milestones, deliverables and work plan for project development, construction and roll out, and envisaged permitting procedures.

Provide the timeline which must cover the period of the project implementation starting from the signature of the grant up to the end of the monitoring and reporting period and include inter alia the status of project development, the steps concluded so far (e.g. FEED study, initial permits, etc.), the planned date for the final investment decision, start of construction, commissioning and testing, entry into operation.

The timeline should be illustrated in the Gantt chart required in section 6.2.

Provide information on the following aspects:

- *strategy to reach the milestones of financial close and entry into operation as well as the intermediate milestones*
- *planned timing of project activities and milestones and how it ensures meeting the project milestones (e.g. sufficient time reserve for procurement and delivery of major capital components, commissioning and appropriate ramp-up period of reduced output in the initial operation of the project)*
- *strategy for regular operation of the proposed technology during the monitoring and reporting period (e.g. maintenance, down times for revisions, operational capacities, quality assurance/quality control)*

The implementation planning must be consistent with the work packages, milestones and deliverables described in section 6.2, as well the project implementation plan.

Applicants are expected to implement the construction works without delay and complete the construction of the project within a reasonable timeframe relative to market standards.

Insert text and refer to relevant sections of the supporting documents

Guiding principle / key questions to reply:

- Project **milestones** must include at least financial close, entry into operation and annual reporting after the entry into operation (guidance provided in the call text and application form).
- Provide **timeline** from signature of the grant up to the end of the operation period; **ensure consistency** with timetable provided as annex.
- **key aspects**: strategy to reach milestones of financial close and entry into operation; ensure timing of planned activities during plant construction; regular operation of the technology during operation period.
- implementation planning **consistent** with work packages, milestones and deliverables described in section 7 of Part B.
- Ability to **reach entry into operation** in line with market standards in the sector or faster.

European Commission

Operational Maturity

State of play and credibility of the plan for obtaining required permits, IPR or licences and other regulatory procedures

Permits, rights, licences and regulatory procedures *Describe in detail the regulatory framework impacting the project, any intellectual property rights or licence and other relevant regulatory procedures, relevant permitting processes needed (including permits related to environmental impacts), permits obtained and still needed and the plan for obtaining them.* *Include a timeline indicating the relevant permit application dates, expected reception dates and measures planned to ensure timely granting.*
Insert text and refer to relevant sections of the supporting documents

Guiding principle / key questions to reply:

- Key aspects to be covered: detailed analysis of the regulatory framework; any intellectual property rights or licence; other relevant regulatory procedures; relevant permitting processes needed (including permits related to environmental impacts).
- State of play: description of permits already obtained and still needed and the plan for obtaining them, including timeline indicating the relevant permit application dates, expected reception dates and measures planned to ensure timely granting.

Operational Maturity

Soundness of the public acceptance strategy

Public acceptance
Describe all environmental impacts expected throughout the project life-cycle (from construction to operation to decommissioning), and the mitigation measures. Explain when the environmental studies, assessments and modelling will take place. *Explain the degree of public acceptance of the technology and the project.* *Explain how public acceptance will be ensured.*
Insert text and refer to relevant sections of the supporting documents

Guiding principle / key questions to reply:

- Detailed description of all environmental impacts expected throughout the whole project life-cycle (from construction to operation to decommissioning), and associated mitigation measures.
- Degree of public acceptance of the technology and the project.
- Clear and specific strategy on how public acceptance will be ensured (please do not limit to generic explanations of the issue).

Operational Maturity

Relevance & track record of project management/team and soundness of the project organisation

Project management team and project organisation

Describe the project management team and the project organisation, including:

Project management team:

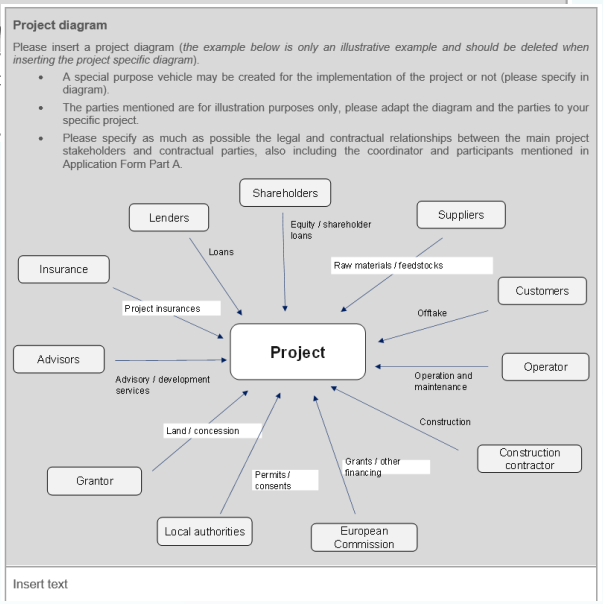
- *project team, including key qualifications and track records of the staff responsible for project implementation (see also Participant information)*
- *ability to operate without interruption if a key individual leaves*
- *sufficient coverage of all required skills (such as technical expertise, technology commercialisation, business management, financial management and environmental management)*
- *need for additional outside resources.*

Project organisation:

- *project management structure;*
- *governance, responsibilities and decision-making mechanisms and processes within the consortium;*
- *evidence that the applicant`s management and sponsors are committed to implementing the project;*
- *quality management and health and safety processes and how they are expected to meet the best industry practice.*

Please make reference to the project d

Insert text and refer to relevant sec



Guiding principle / key questions to reply:

- Project management team, e.g.: key qualifications and track record; sufficient coverage of all necessary skills; provide justifications on the need for additional outside resources.
- Project organisation, e.g. project management structure; governance, responsibilities and decision-making mechanisms and processes within the consortium; quality management, health and safety.
- Provide a project diagram visualising the involved actors and organisation of the project.

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Operational Maturity

Operational risks and credibility of proposed mitigation measures

Guiding principle / key questions to reply:

- Describe key project implementation risks (e.g., related to construction, project design, operation & decommissioning or risks stemming from dependencies from other projects).
- Propose convincing risk mitigation measures and explain in detail why they are suitable.
- Summarise the identified risks in the risk matrix in section 3.4 of the application form.

Operational risks and proposed mitigation measures

Detailed description of the project's operational risks and the proposed risk mitigation measures. Include all known risks associated with construction, project design, operation and decommissioning, relevant to the project technology, category and sector.

Explain how risks (including timing, weather conditions, commissioning conditions, unexpected or undesired events) are taken into account in the project planning and strategy and the proposed mitigation measures.

Description of measures proposed to handle any potential forced outages (e.g. power plant, capture or separation plant, compression plant, transportation, energy or CO_2 storage site) and operational interdependencies of all parts along the project value chain.

Insert text and refer to relevant text of the supporting documents.

Critical risks and risk management strategy

List critical risks, uncertainties or difficulties related to the implementation of your project, and your measures/strategy for addressing them.

Indicate for each risk (in the description) the impact and the likelihood that the risk will materialise (high, medium, low), even after taking into account the mitigating measures.

***Note:** Uncertainties and unexpected events occur in all organisations, even if very well-run. The risk analysis will help you to predict issues that could delay or hinder project activities. A good risk management strategy is essential for good project management.*

Risk No	Description	Work package No	Proposed risk-mitigation measures

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Operational maturity

Scores per topic LSC-2022

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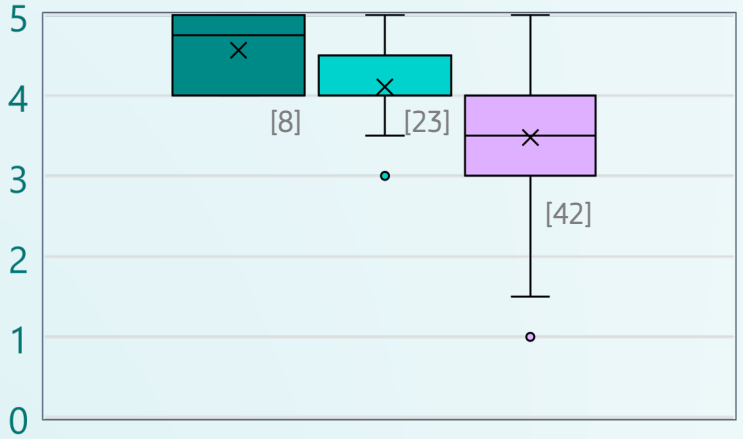
GENERAL



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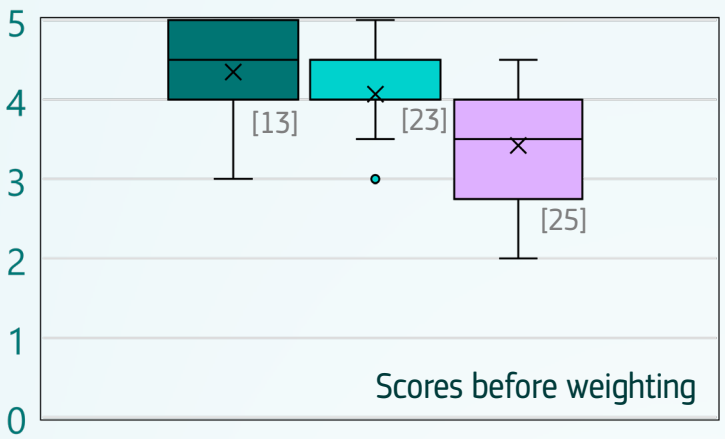
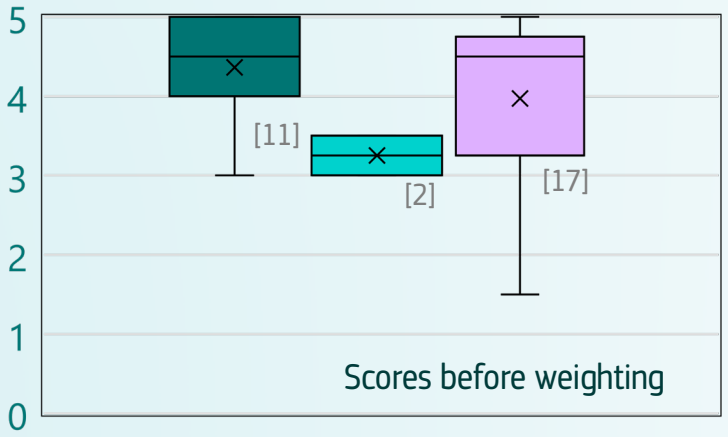
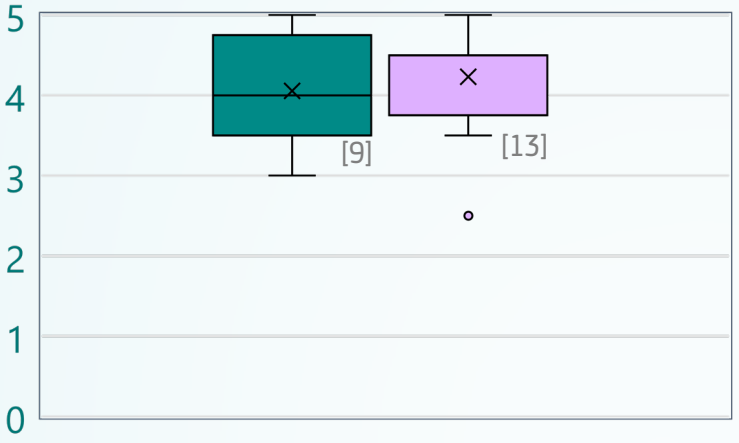


MANUFACTURING



PILOTS



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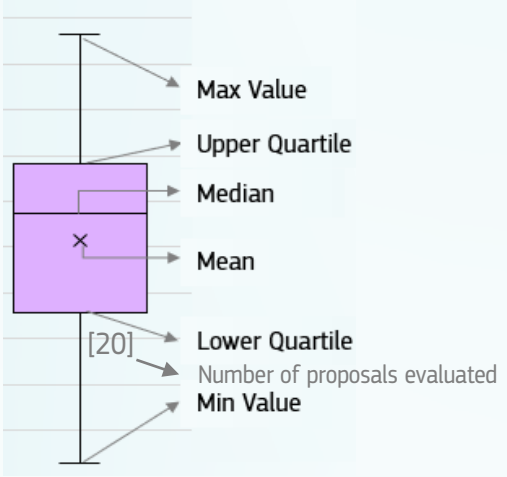
- Not meeting minimum thresholds

How to interpret these graphs



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Lessons learned: Operational maturity

Justify the likelihood of your project deployment as planned

Operations

- Define solid **Work Packages** and **Tasks**
- Set clear and realistic **deliverables**, **milestones** and **means of verification**
- Include relevant **operational risk** assessment
- Ensure availability of necessary know-how in the team

Timeline

- Ensure consistency between **Gantt** & tasks/ WPs (interdependencies)/ FiF
- Consider realistic timing for:
  - Construction and supply
  - Obtaining permits, rights and licences
  - Ensuring public acceptance
  - Potential delays

Clear strategy

- Clearly identify project parties and responsibilities
- Clear **Role distribution**
- **Link WP &** corresponding **financial costs**
- Set a clear strategy for:
  - Construction, considering targets/ deadlines & needs
  - Obtaining permits, rights and licenses
  - Ensuring public acceptance

Ensure **consistency** between **all** your documents

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Lessons learned: Project maturity

Timeline

Define project timeline

- Comprehensive, realistic and consistent with technical and financial elements of your project

Risks

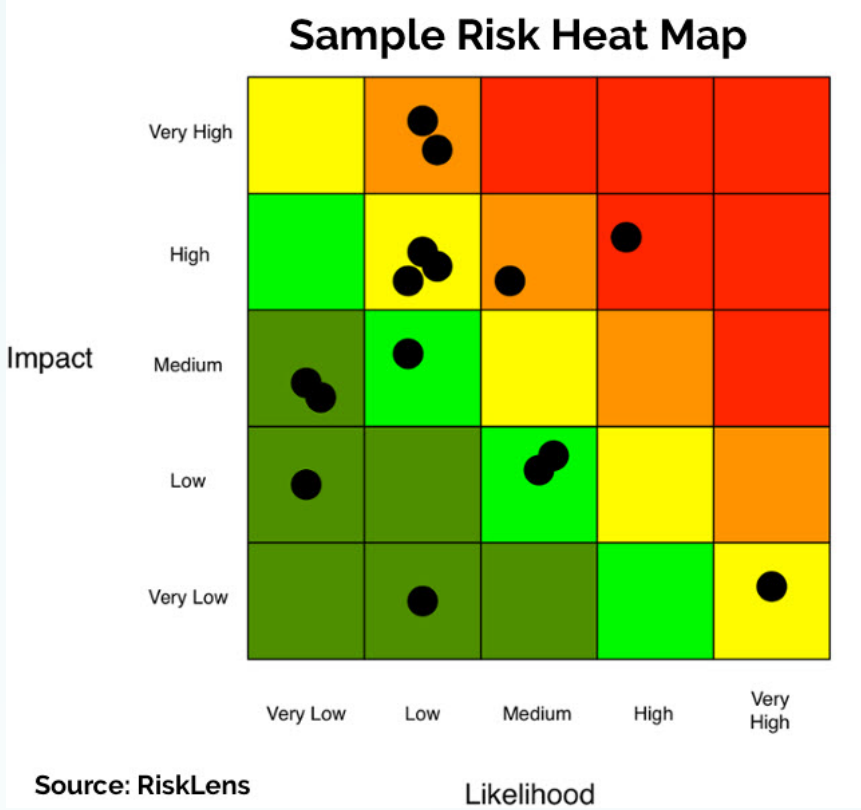
Identify Technical, financial and operational **risks**

- Provide a **comprehensive risk assessment**

- Ensure convincing **mitigation strategies** across all major risks

Evidence

- **Provide contractual evidence**
- E.g., letters of support, MoUs, indicative terms of agreement for off-take agreements, key suppliers, quotes from vendors, EPC parties



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Bonus points 3 and 4

Susanna GALLONI, Head of Sector
CINEA C4, Innovation Fund

European Commission

Bonus point 3: Renewable Electricity, RFNBO

Commitment to use electricity from additional renewable sources or to use RFNBO hydrogen:

- Projects requiring significant amounts of electricity are encouraged to demonstrate whether they are using additional electricity of **renewable origin coming from project's own installation or that will be procured via the grid**, e.g. via Power Purchasing Agreements (or MoUs or LoIs for such PPAs).
- Projects that propose to consume significant amounts of hydrogen are encouraged to demonstrate whether it is **RFNBO hydrogen** as defined in the Renewable Energy Directive 2018/2001 and its Delegated Regulations on methodology for RFNBOs.

Application form, Part B

- Section 6

Template GHG emission Calculator

- Tab "Additional renewable electricity"

Bonus point 4: maritime sector projects

- Only for maritime sector projects!
- Demonstrated potential to decarbonising the maritime sector and reducing its climate impacts.

Application form, Part B

- Section 6

Replicability

Gianluca TONDI, Head of Sector
CINEA C4 Innovation Fund

European Commission

Replicability

- Replicability in terms of efficiency gains
- Replicability in terms of further deployment
- Resilience of EU industrial system
- Potential in terms of multiple environmental impacts
- Quality and extent of the knowledge sharing

- **Application form, Part B, sections:**
  - 4.1 - Replicability
  - 4.2 - Knowledge sharing — Communication, dissemination and visibility
- **Knowledge sharing plan**
  - Mandatory document for all topics except INNOVFUND-2023-NZT-GENERAL-SSP (Small-scale projects)

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Replicability (1)

Replicability in terms of efficiency gains

- expected technology cost reductions
- efficient use of resources or other ways to address resource constraints

- Describe the potential or the proposed solution to lead to **cost reductions**
  - Provide credible estimates on the expected cost reductions based on reliable assumptions, both in the short/medium-term and the long-term.

- Describe how your project addresses **resource constraints:**
  - Through efficient use of or reduction in consumption of critical raw materials, biomass and other scarce resources.
  - Or in other ways through circularity, recycling and recyclability of such resources, or mitigation of supply shortage risk through partnerships with actors from the relevant supply chain.

Replicability (2)

Replicability in terms of further deployment

- Transfer of the proposed solutions to other sites
- Related expected additional emission avoidance
- Projects dependent on subsidies: potential to become cost-competitive and financially viable

- Describe the potential of the proposed solution to be replicated in **other sites**:
  - Plans of transfer to other sites, regionally or across the EU economy or globally where relevant.
  - Potential transfer beyond the sector, where relevant.
  - Substantiate the claimed potential, by providing data estimations on locations, budget allocation, products & production capacities, potential commercial activities and market share opportunities, sector coupling, cooperation with other actors of the regional economy and/or beyond.
- Provide an estimation of the related expected **contribution to emissions avoidance**
  - e.g. number of potential replicable installations and resulting emissions avoidance; underpin your estimations with reliable assumptions.
- For projects to a large degree dependent on subsidies, describe the potential to become **cost-competitive** and **financially viable** over time in the **absence of subsidies**

Replicability (3)

Resilience of EU industrial system

- net-zero technologies for **EU resilience**
- European value chains
- jobs, economic growth, competitiveness
- **Strengthening of the EU's maritime transport value chain**

New

New

- Describe the expected contribution to secure and sustainable supply of net-zero technologies, to safeguard the **resilience of the energy and industrial system in the EU.**
- Describe the contribution to new EU value chains / reinforcement of existing ones, in particular contribution to the development of strategic autonomy in industrial supply chains.
- Describe the positive impacts in terms of economic growth, competitiveness and creation of quality jobs, with clear evidence.
- For maritime sector projects, ability to strengthen the EU's maritime transport value chain, including port activities (e.g. delivery of renewable alternative fuels in container transhipment ports), increased competitiveness and job creation in the European maritime sector.

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Replicability (4)

Potential in terms of multiple environmental impacts

- multiple environmental impacts, such as biodiversity protection, land, air and water pollution

Quality and extent of the knowledge sharing

- Communication and dissemination activities initiated by the project

- Provide in part B a summary of the knowledge-sharing plan (or for the topic GENERAL-SSP, outline the plan for the activities for knowledge-sharing).
- Describe the communication and dissemination activities planned to promote activities and results of your project and maximise its impact.
- Clarify how you will reach the target groups, relevant stakeholders, policymakers and the general public and explain the choice of the dissemination channels.
- Describe how the visibility of EU funding will be ensured.

The knowledge sharing plan should include a clear and concrete description of all knowledge sharing, communication and dissemination activities initiated by the project at the various project stages.

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Quality and Extent of the Knowledge Sharing

- **Knowledge sharing goals**:
  - De-risking innovative low-carbon technologies with regard to wide-scale commercialisation
  - Acceleration of deployment
  - Increasing the undertaking of, and confidence in these technologies by the wider public
  - Maintenance of a competitive market for the post-demonstration deployment of the technologies

- **Check thoroughly ANNEX 2 in call text**
- **Please refer to the “Knowledge Sharing report template” available on the Funding & Tenders portal to better understand the information to be provided during project implementation**
- **Confidentiality will be ensured!**

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Replicability (ex-Scalability)

Scores per topic LSC-2022

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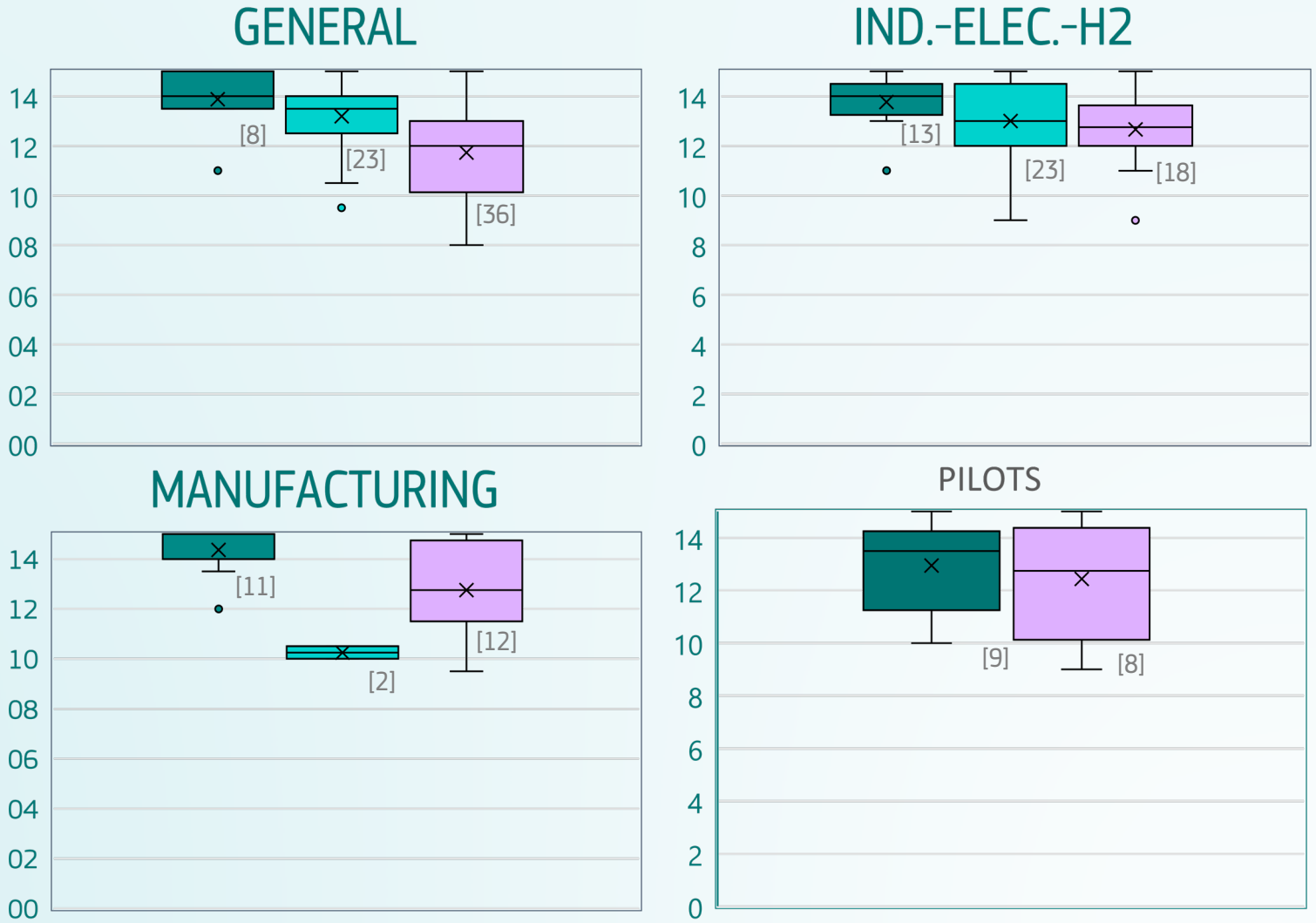
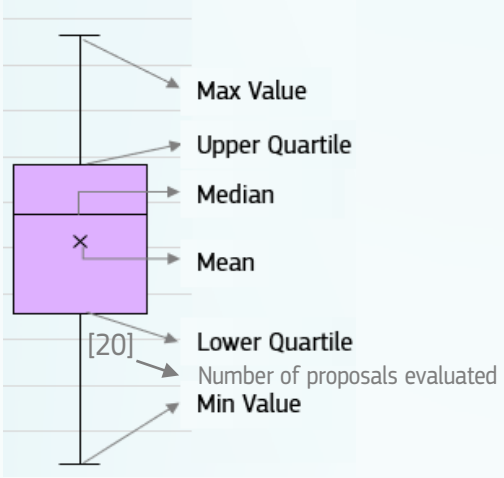


Proposals evaluated

- Pre-selected for grant preparation
- Beyond available budget
- Not meeting minimum thresholds

How to interpret these graphs



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Lessons learned for Replicability (previously Scalability)

- Provide a credible plan for technology uptake in other sites
- Provide credible assumptions on cost reductions
- Underpin your claims with evidence and calculations
- Present how IPR and licensing issues will be handled, e.g., technology transfer at sector level
- Avoid unsubstantiated, generic claims related to EU policy objectives and initiatives
- Clear and comprehensive communication & dissemination strategy

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Cost efficiency

Christophe DEHOUT, Senior Financial Engineering Manager
CINEA A1

European Commission

Cost efficiency– key points

Objective: assess the quality of the grant calculation and CE ratio

Relevant sections of the proposal and mandatory annexes

- **Cost efficiency is split in two parts :**
  - One automatic (scored on 12 points)
  - One "qualitative" on how the computation of Cost Efficiency ratio was made
- **Cost efficiency has minimum requirement for all topics €200/tCO_2eq except for Pilots**

- **For Pilots** where projects are more costly: **less stringent formula** for cost-efficiency criterion is applied: **12 – (12 x (cost efficiency ratio/2000)**
- **Application form, Part B, sections:**

  5 (Cost Efficiency)

  Mandatory annexes : Financial Information File **to be filled completely** (which includes the Relevant cost calculator, the financial model Summary Sheet, the grant drawdown schedule and the cost efficiency calculation), documents mentioned under "Other Annexes" on page 13 of the call text if the Reference Plant relevant cost methodology is used

Cost efficiency

Requested Innovation Fund grant + other public support *

=

Absolute GHG emission avoidance

During 10 years after entry into operation

Maximum requested IF grant is 60% of total relevant costs

Applicants choosing not to apply for the maximum grant will be more competitive when ranked against other applicants in 'cost per unit performance' metric.

1) *Other public support must impact the same project (i.e. the case of cumulation) and include State aid or funding from the EU funding programmes*
2) *For public support received during operation, the rule is to add the undiscounted amount during the first ten years of operation*
3) *Some forms of State aid such as taxes or tariff reductions can only be reflected in the Relevant Costs*
4) *Cumulation rules must be respected (for State aid: see Commission guidelines such as GBER or CEEAG), for other EU funding programmes – see "no double funding" rules in the Financial Regulation.*

Cost efficiency

Scores per topic LSC-22

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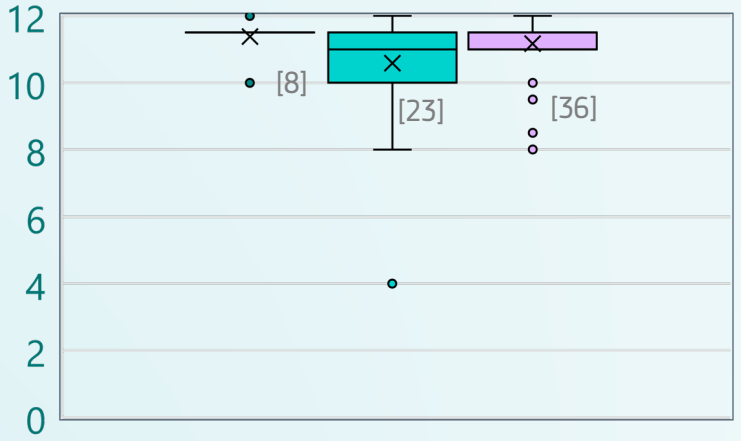
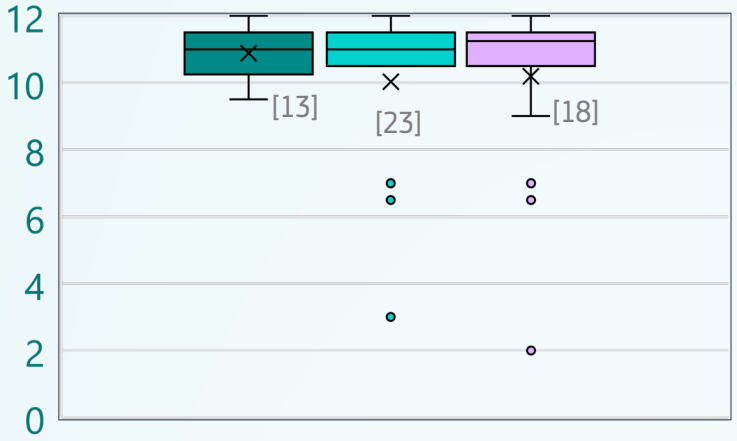
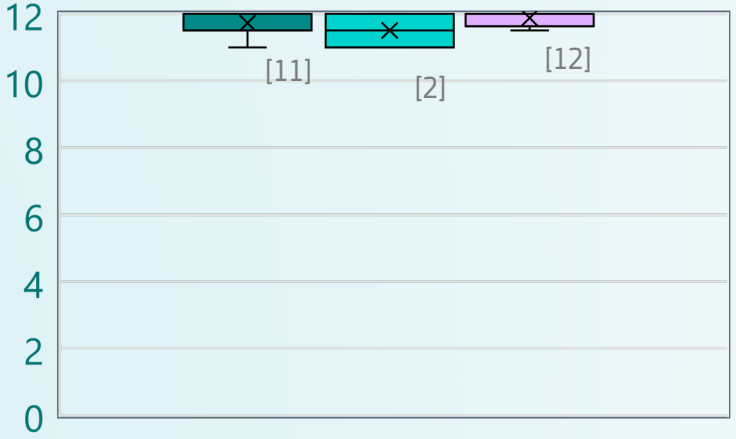
GENERAL



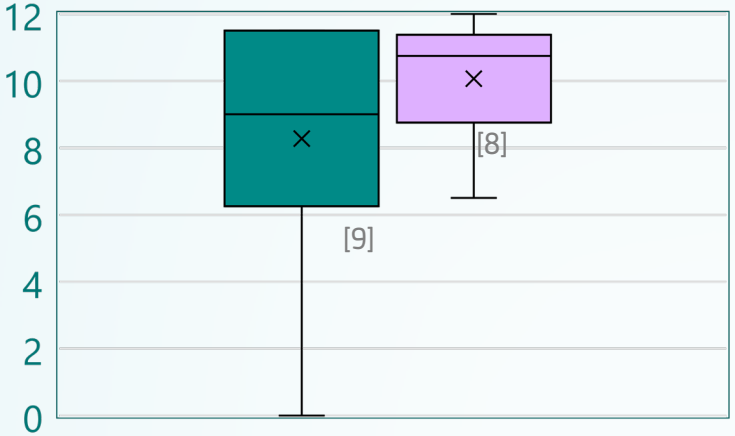
IND-ELEC-H2



MANUFACTURING



PILOTS



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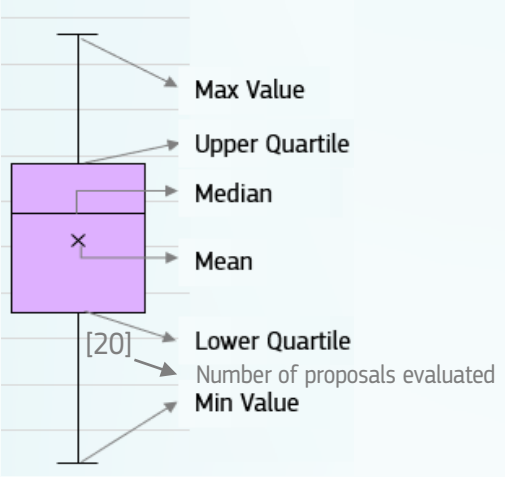

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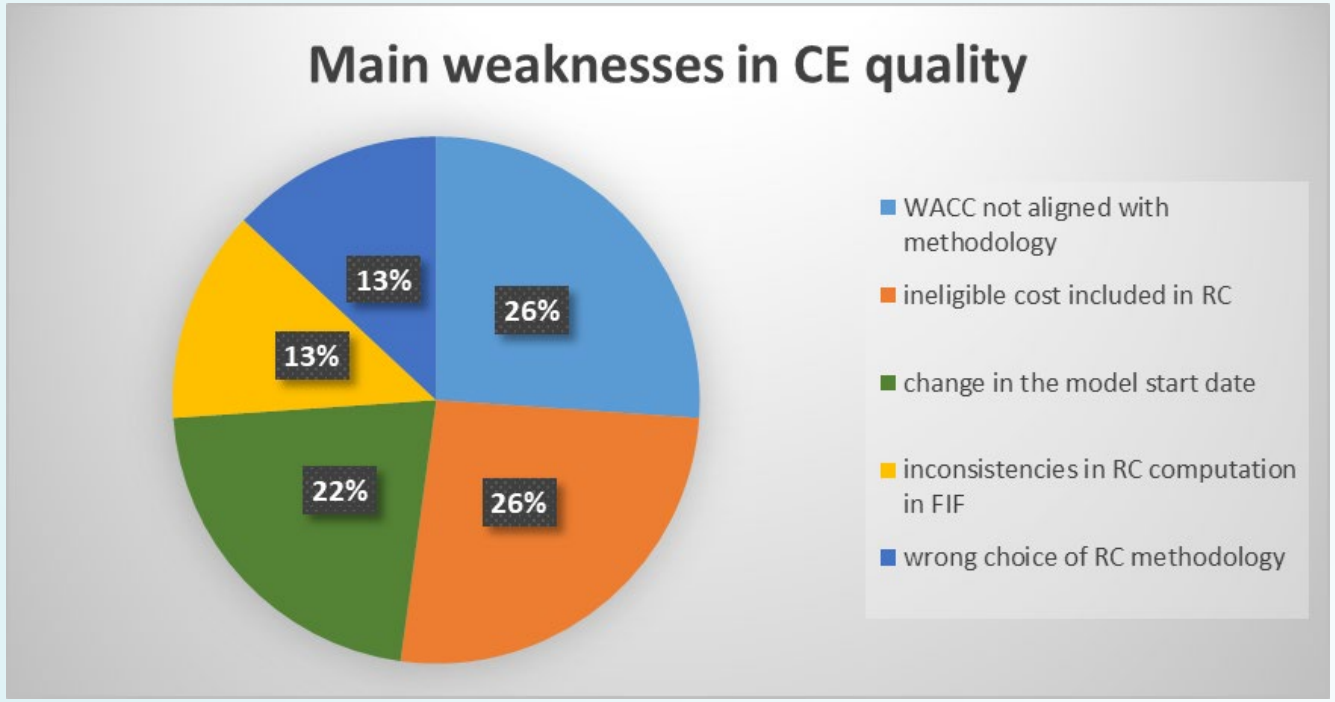
Main reasons for failure in Cost Efficiency quality



Several measures have been taken in the documentation to grasp address the points mentioned above:

- Further streamlining the Relevant Cost (RC) methodologies and simplifying the WACC computation by proposing default values for Beta and ERP.
- Clarifying even more the eligible costs for the RC computation in the guidance.
- Locking calculation cells in the FIF.

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Q&A session

Go to Slido.com

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Ask your question or vote for an existing one!

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EIB support to Innovation Fund Project Development Assistance (IF PDA)

Dr. Zoran STANIC, Head of IF Unit
European Investment Bank (EIB)

European Commission

EIB at a glance

Largest multilateral lender and borrower in the world

Leading provider of climate finance

Governed by the EU Member States

Over **€1.5 trillion** invested since 1958

- More than **14,400 projects** in over **160 countries**
- Crowding-in bank: **€4.9 trillion** overall investment mobilised
- Lending ca. €65 billion in 2022

Headquartered in Luxembourg

- Around **4,800 staff**: In addition to finance professionals, we have engineers, economists and socio-environmental experts
- **57 offices** around the world

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EIB role in the Innovation Fund Project Development Assistance

- The Innovation Fund includes a dedicated **Project Development Assistance (PDA)** to improve the "maturity" of projects for subsequent applications

"**Maturity**" refers to selection criterion C in Article 11 of the Delegated Regulation of the Innovation Fund: *"Project maturity in terms of planning, business model, financial and legal structure as well as project of reaching the financial close within a predefined period of time not exceeding four years after the award decision"*

- According to Art. 13, the following activities may be funded by way of PDA:

  (a) improvement and development of a project documentation, or of components of the project design with a view to ensuring the sufficient maturity of the project

  (b) assessment of the feasibility of the project, including technical and economic studies

  (c) advice on the financial and legal structure of the project

  (d) capacity building of the project proponent

- The EIB has been entrusted by the Commission with the implementation of the PDA task in accordance with Article 18(1)(c) of Delegated Regulation (EU) 2019/856
- The PDA will be implemented by financial and technical experts of the EIB with support from external consultants

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Criteria for projects to be considered for PDA support following an application to the IF

Project development assistance support (PDA)

Proposals that are not selected for funding due to budget limitations (including those on the reserve list, if any) and proposals that fail to reach the threshold for any of the project maturity sub-criteria will be proposed for PDA if they:

- *have given their consent in the application form*
- *respect at least the minimum requirements for 'GHG emission avoidance' and reach the minimum thresholds for 'Degree of innovation' and 'Replicability' (if applicable in accordance with the evaluation in cascade).*

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PDA process

CINEA evaluation/ longlist → EIB screening → Award decision → Fine-tune PDA scope with clients → Sign PDA agreement

Sign PDA agreement → PDA work planning → Consultancy services procurement → Consultancy work management → Report to EC

Project Summary Note

Budget
Time, Quality

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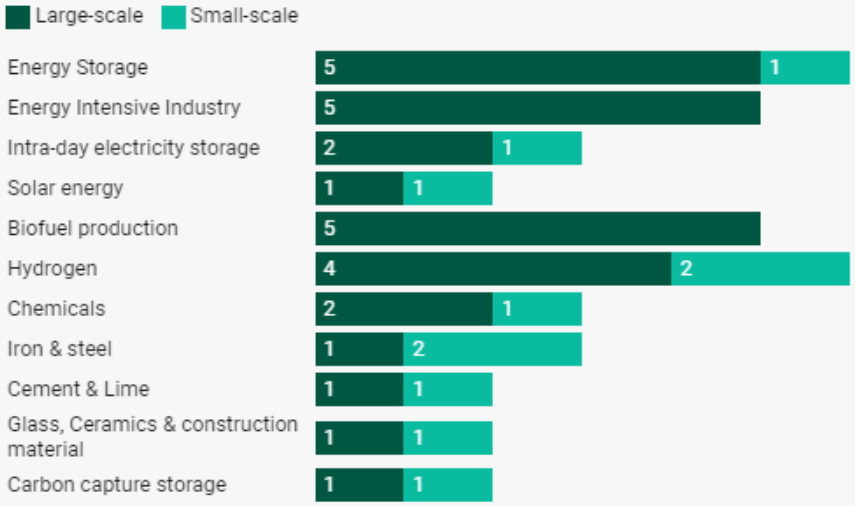
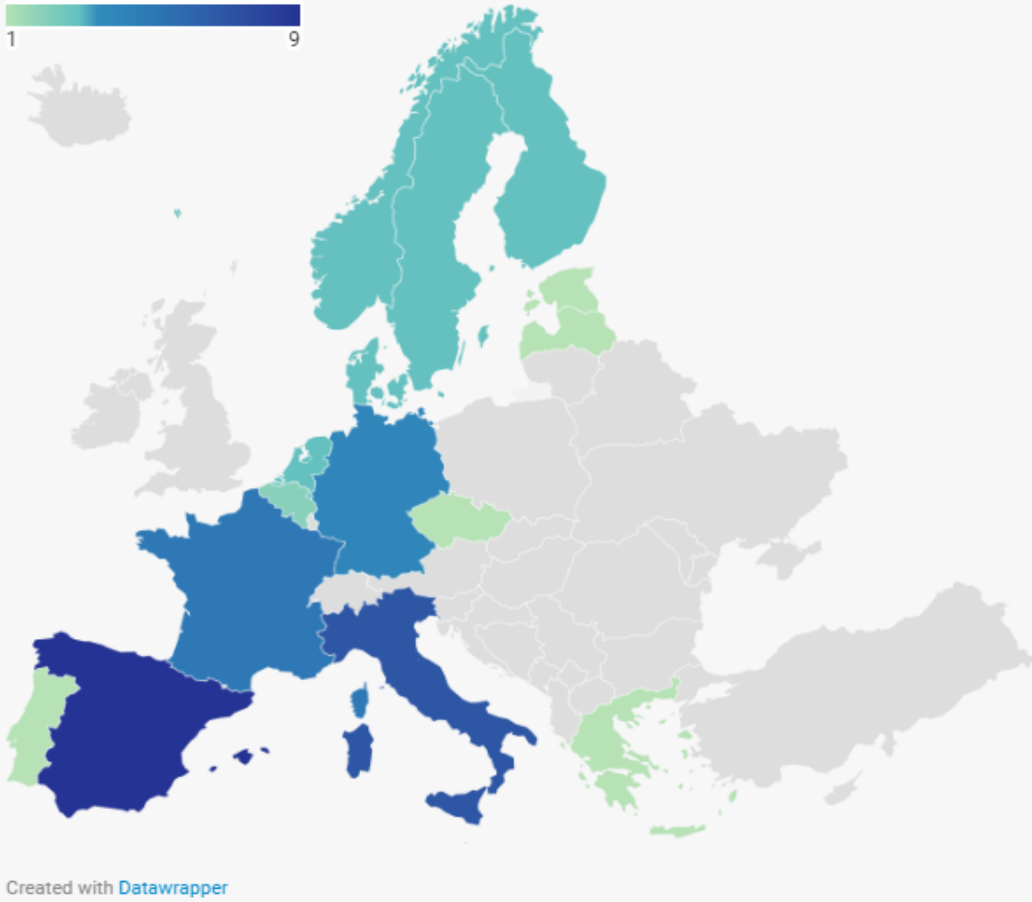
Overview of awarded PDA projects

By the numbers

Number of projects that received project development assistance



Our project development assistance across the European Union



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PDA examples from IF cycles

Independent reviews

- Technology assessment: verification of key technical parameters of the project
- CAPEX & OPEX review
- Market analysis review
- Pilot project review and scale-up risk assessment

Additional studies

- Business case modelling
- Market research
- Life Cycle Assessment (LCA)

Financial modelling

- Review of the existing financial model
- Development of a bank-standard financial model

Other Financial Advisory

- Business Plan assessment
- Corporate strategy guidance
- Advice on fundraising strategy
- Support with equity pitch documentation

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PDA case study: Market study for the project EQUIGY CBP

The project: European crowd balancing platform to allow aggregators to participate in the electricity balancing markets with smaller Distributed Energy Resources (DER), e.g. home batteries, electric vehicles, etc.

Market study:

- Assessment of relevant DER
- Analysis of European balancing markets incl. outlook and barriers to entry (interviews with stakeholders)
- Aggregator business mapping
- Assessment of the platform

https://equigy.com/wp-content/uploads/2022/11/Ramboll-for-publication.pdf

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Success story: CO2ncrEAT

CO2ncrEAT

Production of a **green building product** such as masonry blocks **by reusing CO_2** from industrial exhaust gases **and wasted by-products** from the steel industry

Location	Belgium
Category	Carbon capture utilisation (CCU) & Carbon capture and storage (CCS) technology

PDA highlights

- **FINANCIAL PDA**: The financial model supported the economic rationale of the project and helped clarify the financial commitment of each partner- Key risks addressed during working sessions
- **TECHNICAL PDA**: Detailed CAPEX breakdown, quotation transformed into a clear and structured list of investments required to setup CO2ncrEAT

Success stories: projects selected for IF grant

HyPUSH

Implementation and operation of a green **hydrogen-powered vessel (freight transport)** combining **lythium battery and hydrogen fuel cells.**

Location	France
Category	Substitute products

TECHNICAL PDA

MEIGA (Green Meiga)

E-methanol production, based on a **H2 production** system comprising **Alkaline, PEM, SOEC and Co-SOEC systems** and a **CO2-capture** integrating enzyme-based and direct air capture technologies.

Location	Spain
Category	Low Carbon Fuels

FINANCIAL PDA

TECHNICAL PDA

H2-LSE-TGN (T-HYNET, Tarragona Hydrogen Network)

Green hydrogen production plant with a **150 MW alkaline electrolyser and 8 tonnes hydrogen storage**.

Location	Spain
Category	Hydrogen

FINANCIAL PDA

TECHNICAL PDA

GIGAGREEN (Giga Arctic)

Construction of a **Gigafactory to produce clean battery cells** in Norway, powered with 100% green electricity.

Location	Norway
Category	Energy Storage

FINANCIAL PDA

TECHNICAL PDA

TRISKELION

Green methanol production from hydrogen and captured CO2. H2 production via electrolysis with electricity from renewables, CO_2 captured from an existing co-generation plant.

Location	Spain
Category	CO2 transport and storage

FINANCIAL PDA

TECHNICAL PDA

Grant awarded under IF SSC2

Invited for grant preparation under IF LSC3

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Innovation Fund PDA

EIB financial and technical experts provide Project Development Assistance (PDA)
to Innovation Fund eligible projects

EXTENDED PDA FROM 2024 ONWARDS

- ✓ Applying or benefitting from PDA is **not dependent** on submitting an application to the Innovation Fund.
- ✓ Under the extended PDA process, **new sectoral and geographic targets are in place, and a larger number of projects will be supported**.

Access Route 1 → **Application to IF Calls for Proposals**

- **After submitting an IF grant application, and if unsuccessful**, your application may be eligible for PDA.
- PDA aims to **enhance the financial viability and improve the technical maturity of project proposals** for submission to future Innovation Fund Calls (although not compulsory) or other EU funding requests, national grant preparation or financing from private sources.

Access Route 2 → **OPEN PDA**

- Project promoters who are interested in obtaining PDA support may **approach the EIB directly**.
- **Eligibility for the Innovation Fund is a prerequisite** for consideration of Open PDA.

More information on EIB webpage

Innovation Fund - Project Development Assistance (eib.org)

Contact us directly at:
ifpda@eib.org

Examples of PDA support

- Business Plan development
- Financial modelling
- Capital structuring
- Market research
- Risk analyses
- Investor packages
- Technology assessments
- Techno-economic studies
- Offtake strategies
- CapEx & OpEx reviews
- Life cycle assessments
- Cost benefit analyses

Key highlights

- The purpose of PDA is to **increase the project's maturity** based on specific recommendations with **limited time and budget**
- Projects receiving PDA support **can reapply to subsequent IF calls (although this is not mandatory)**
- Projects can receive **technical and/or financial** PDA support
- Overall responsibility for project development remains with the promoter

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Morning session's closure

Roman DOUBRAVA, Head of Unit
CINEA C4, Innovation Fund

European Commission

Some Recommendations (1)

- Read carefully the call documents and understand well the requirements (including the admissibility and eligibility ones)
- Get familiar with and follow the call methodologies and guidance (GHG and relevant costs)
- Before submitting, please check consistency between different parts and documents of your application
- Help is available:
  - Lessons learned and info-day recordings
  - Tutorial on the application procedure (available soon)
  - FAQ
  - Innovation Fund helpdesk
  - IT helpdesk
  - The existing Innovation Fund projects – dashboard

*Recording, the presentation and extra slides on lessons learned from LSC 2022 will be available on CINEA website

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Some Recommendations (2)

- Cover in a **clear and exhaustive manner** all the points in the Part B and substantiate them
- Avoid vague statements as evaluators will be asked whether the claims you made are credible:
  - provide well-founded quantifications, based on reliable assumptions,
  - underpin your claims with evidence and analysis,
  - be realistic in your expectations.

Agenda – Afternoon sessions

Relevant cost calculation

14:00 – 14:05 Introduction

14:05 – 14:35 Relevant costs calculation and methodology and differences compared to previous calls

14:35 – 14:50 Q&A

14:50 – 15:00 Break

GHG calculation and methodology

15:00 - 16:00 GHG calculation and methodology (part 1)

- General Introduction regarding the methodology
- GHG Emissions avoidance in EII including cleantech and CCS

16:00-16:15 Q&A

16:15 – 17:10 GHG calculation and methodology (part 2)

- GHG Emissions avoidance in RES including cleantech
- Energy Storage including cleantech and Hybrid projects
- GHG methodology on Maritime
- GHG methodology on Aviation

17:10– 17:25 Q&A

17:25-17:30 Closing

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Recording will be available on CINEA website

Forthcoming events

IF SSC 2022

- Results to be announced in December 2023

IF23 Auction

- 23 November 2023 - 8 February 2024
- Link to application

IF23 Call

- 23 November 2023 - 9 April 2024
- Link to application

Innovative Clean Tech Conference 2024

- SAVE THE DATE - 11 April 2024
- Hybrid event

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The European Climate, Infrastructure and Environment Executive Agency (CINEA)

Sign up as an EU expert for the INNOVATION FUND

Deploying innovative net-zero technologies for climate neutrality

More information here:

https://europa.eu/!RTnFrw

Join as project evaluator for the Innovation Fund

- Technical expert
- Financial expert
- GHG expert
- Rapporteur

Sign up as an EU expert

European Commission

Feedback

Help us improve future events!

Take your mobile device
Go to slido.com
Enter the code **#IF23Call**
Reply to the questions (less than 5 minutes)

Thank you!

Info Day
Innovation Fund 2023 Call

The event will start again at 14:00 CET

Join us on Slido

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Innovation Fund 2023 Call

Roman DOUBRAVA, Head of Unit,
CINEA C4 Innovation Fund

European Commission

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Recording will be available on CINEA website

How to use Slido

- During the event you can submit comments and questions through Slido.
- To join:
  - Take out your smartphone, tablet or computer and open your browser.
  - Go to **Slido.com** and enter the event code **#IF23Call**.
  - You can now post comments and questions.

Or scan me

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Relevant cost calculation

Christophe DEHOUT, Senior Financial Engineering Manager
CINEA A1

European Commission

Relevant Cost

What has changed since the last large-scale call?

- New definition of Relevant Cost following the revised Innovation Fund Delegated Regulation.
- The same methodologies apply whatever the size of the project
- Further streamlining by reducing the number of methodologies to 2 (Levelised cost methodology is no longer used).
- Simplification of the WACC computation by proposing default values for the beta levered and the ERP.
- New data transfer sheet in the FIF to help fill in the Application Form Part C.
- Further guidance for manufacturing projects on CAPEX and EiO.

Key principles
Definitions

Relevant costs ("RC") = *"The Relevant Costs shall be the net extra costs that are borne by the project proponent as a result of the application of the innovative technology related to the reduction or avoidance of the greenhouse gas emissions.*

CAPEX	Construction costs, site infrastructure costs, development costs and intangible assets of the project (please refer to glossary in RC guidance document) - not discounted
OPEX	Operation and Maintenance cost, decommissioning costs (if in the first 10 years), they do not include depreciation cost of CAPEX! - discounted
Operational benefits	Any revenue received by the project from the sale of EU ETS free allowances for reductions in CO_2 emissions, sale of CO_2 as final product, or monetization of CO_2 certificates due to reduction of CO_2 - discounted
Discount rate	Discount rate used for NPV calculations is the Weighted Average Cost of Capital (WACC) of the project

Key principles
Which methodology should applicants use?

No reference plant: default methodology, recommended for all projects

Reference plant: “fall-back” option if the project fulfils the following conditions :

- The Project relates to the construction of a completely new plant/unit. Add-ons to existing installations must use the No Reference Plant Methodology.
- The Reference Plant has the similar characteristics (output, capacity) as the Project plant.
- The Reference Plant complies with the European Union environmental standards and with EU legislation, including the EU ETS benchmark for industrial products where relevant.
- Applicants must provide documents necessary to assess the credibility of the financial and technical data of the reference plant, such as: proof of planning of such a (reference) plant/unit as an alternative to the project, formal board documents, financial reports, internal business plans or studies.
- A complete and detailed set of verifiable financial projections is added to the Applicant’s detailed financial model (mandatory).

Key principles

General assumptions applicable to all methodologies (1)

Carbon price and OPEX inflation

- **Carbon price:** applicants are asked to justify the carbon prices that they consider appropriate over the entire project lifetime
- **OPEX inflation:** applicants are free to provide their best estimate of OPEX taking account of inflation with the justification for the assumptions taken

The projections should be consistent across all application documents

Non-eligible costs (non-exhaustive)

- **Financial cost :** IDC, bank fees,..
- Costs incurred **before the date of submission of the application**
- **Terminal value:** no value beyond the asset useful lifetime
- **Stranded assets:** write down of assets related to existing technologies are excluded
- **Decommissioning costs:** acceptable if during first ten years (e.g. for demo projects)

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Key principles
General assumptions applicable to all methodologies (2)

CAPEX

- Following the definition of entry into operation, only CAPEX incurred **before entry into operation** are included in the relevant cost computation and are **undiscounted**
- Capex incurred **after** the date of entry into operation can only be **maintenance CAPEX and will be discounted**

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Methodology

No reference plant

Approach

- **Default** methodology
- Compulsory for add-on projects (for example carbon capture)

Formula

RC = best estimate of CAPEX and NPV of OPEX, Maintenance CAPEX net of Revenues and Operational Benefits of the project over a 10-year period

$$Relevant\ costs = CAPEX + PV\ OPEX + PV\ Maintenance\ CAPEX\ - PV\ Operational\ Benefits\ - PV\ Revenues$$

Methodology

2 Reference plant (*)

Approach

- Establish the reference plant based on the product produced, not sector.
- Check if the reference plant complies with the conditions mentioned in the Relevant Cost Guidance and notably with the European Union environmental standards and with EU legislation, including the EU ETS benchmark for industrial products where relevant.
- Prepare carefully all mandatory documents including the Other annexes mentioned in the call text.

(*) Fall-back methodology when conditions presented above are met

Methodology

2 Reference plant (*)

Formula

Relevant Cost for the Reference Plant = A- B, where:

A = Project $CAPEX + PV\ Project\ OPEX + PV\ Project\ Maintenance\ CAPEX\ - PV\ Project\ Operational\ Benefits\ - PV\ Project\ Revenues$

And B = Ref Plant $CAPEX + PV\ Ref\ plant\ OPEX + PV\ Ref\ Plant\ Maitenance\ CAPEX\ - PV\ Ref\ Plant\ Operational\ Benefits\ - PV\ Ref\ Plant\ Revenues$

A is actually equal to the Relevant cost using the default methodology with the PV computed using the project WACC

The PV in B is computed with the Project WACC without the project innovation risk premium and with the same leverage as the Project, cost of debt should be in line with the ones generally used in the sector

Projects with the component B equal or extremely close to 0 may use the Default methodology

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(*) Fall-back methodology when conditions presented above are met

Relevant Cost

Tips

- Compute the relevant cost as early as possible, using the right methodology to see if your project can get a grant.
- Contingencies should always be justified.
- Read carefully which cost are eligible and which are not.
- Pay attention to CAPEX after entry into operation, based on your project phases.
- Do not include grants in the equity or debt when computing the WACC.
- Ensure the coherence of data between the FIF, your own financial model and the business plan.

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Weighted Average Cost of Capital (WACC)

Key principles

- WACC is applied to discount future revenue income and cost streams over the project lifetime to make them comparable
- Applicants should calculate a project WACC based on the project cost of equity and project cost of debt
- They should not use their corporate WACC

Formula

$$WACC = E/V * Re + D/V * Rd * (1-Td)$$

Re = cost of equity
Rd = cost of debt
E/V = equity portion of total capital (Equity over total Value)
D/V = debt portion of total capital (Debt over total Value)
Td = Tax rate

- For the WACC computation, shareholders loans should be counted as equity as they carry exactly the same risks.

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Weighted Average Cost of Capital (WACC)

Approach

- Cost of equity:

  $Re = Rf + (\beta * ERP) + IP$

  - Rf = risk free rate
  - β = beta of the project
  - ERP = equity risk premium
  - IP = innovation premium

New

Estimation

- Rf: applicants are required to use the Appendix 2 of guidance document
- Beta : proposed default value of 1 (compulsory for sectors not in the table in Appendix 2 of the RC guidance)
- ERP: proposed default value of 6%
- Innovation premium: if innovation leads to risks that go beyond the conventional sector. As default, a value of 3% should be applied, with the potential to increase it to 4% or lower it to 2% upon due justification

- Cost of debt:

  $Rd = base\ rate + credit\ spread$

- Base rate: swap rates consistent with average debt maturity.
- Credit spread: based on terms expected by debt providers, in line with market standards

FIF tutorial

Available on YouTube:
https://youtu.be/5WiHf7ZNOBw

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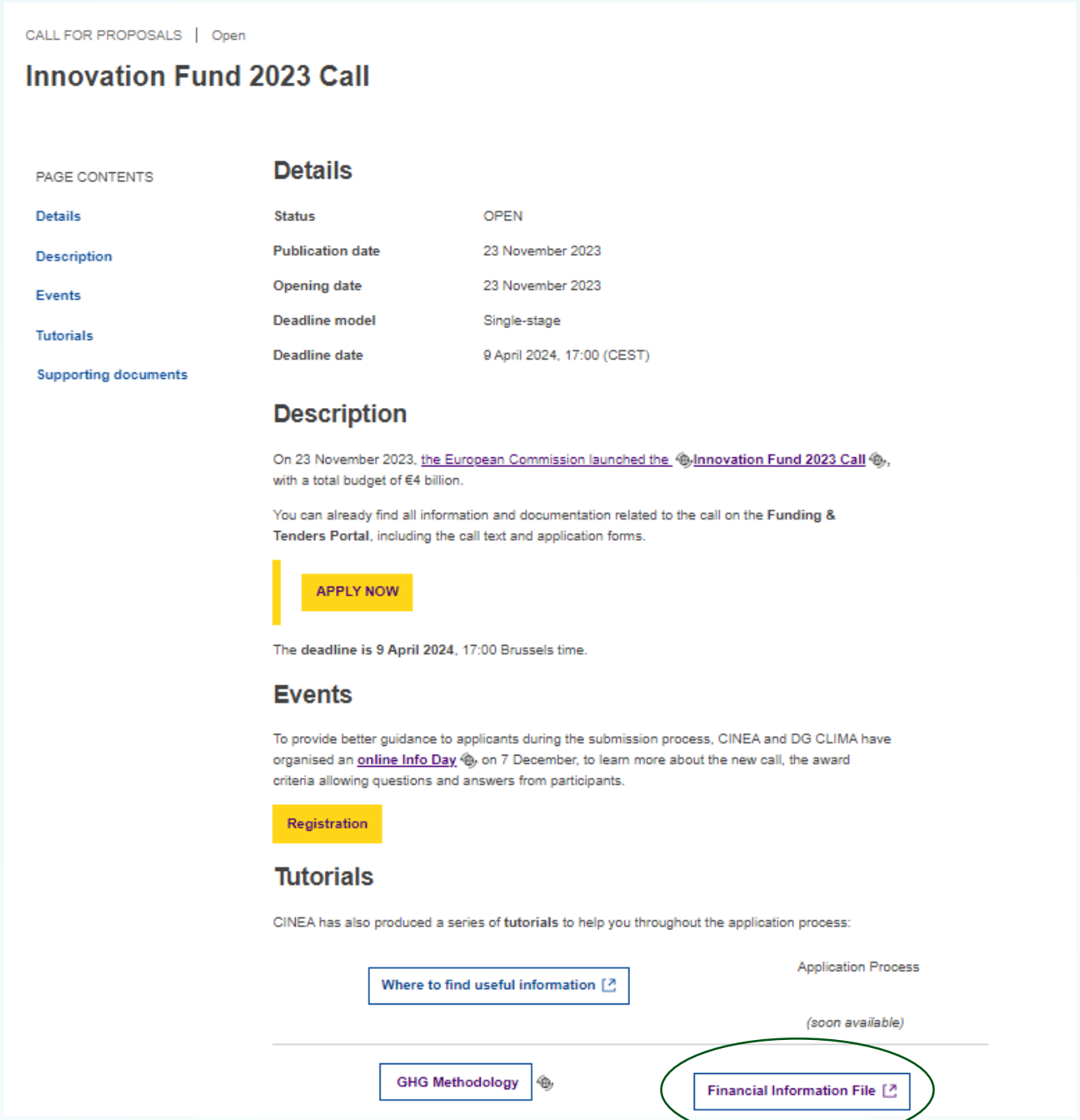

CALL FOR PROPOSALS | Open

Innovation Fund 2023 Call

PAGE CONTENTS

- Details
- Description
- Events
- Tutorials
- Supporting documents

Details

Status	OPEN
Publication date	23 November 2023
Opening date	23 November 2023
Deadline model	Single-stage
Deadline date	9 April 2024, 17:00 (CEST)

Description

On 23 November 2023, the European Commission launched the **Innovation Fund 2023 Call**, with a total budget of €4 billion.

You can already find all information and documentation related to the call on the **Funding & Tenders Portal**, including the call text and application forms.

APPLY NOW

The **deadline is 9 April 2024**, 17:00 Brussels time.

Events

To provide better guidance to applicants during the submission process, CINEA and DG CLIMA have organised an **online Info Day** on 7 December, to learn more about the new call, the award criteria allowing questions and answers from participants.

Registration

Tutorials

CINEA has also produced a series of **tutorials** to help you throughout the application process:

Where to find useful information

Application Process

(soon available)

GHG Methodology

Financial Information File

Q&A session

Go to Slido.com

Or scan me

Enter the code #IF23Call

Ask your question or vote for an existing one!

European Commission

Info Day
Innovation Fund 2023 Call

The event will start again at 15:00 CET

Join us on Slido

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GHG calculation and methodology

Joao SERRANO GOMES, Policy Officer
DG CLIMA C2, Low Carbon Solutions (II):
Research & Low Carbon Technology Deployment

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Main principles and application process

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GHG Emission Avoidance Criteria

The GHG methodology forms the **basis of the scoring for the "GHG emission avoidance effectiveness" criterion** and informs applicants on how to estimate GHG emissions avoidance over the first 10 years of operation for their type of project.

Absolute GHG emissions avoidance

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y)$$

in tonnes CO_2e

Relative GHG emissions avoidance

$$\Delta GHG_{rel} = \frac{\Delta GHG_{abs}}{\sum_{y=1}^{10} (Ref_y)}$$

in %

Where:

- Ref: emissions that would occur in the absence of the project
- Proj: emissions from the project activity

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Submitting an application

Step by step

1. Define project and organisational boundaries
2. Classify your project
3. Identify the appropriate methodology section and tools
4. Identify the reference scenario for your project type and sector
5. Apply your projected operational data to calculations
6. Upload estimated GHG emissions avoidance to submission portal alongside supporting calculation tool

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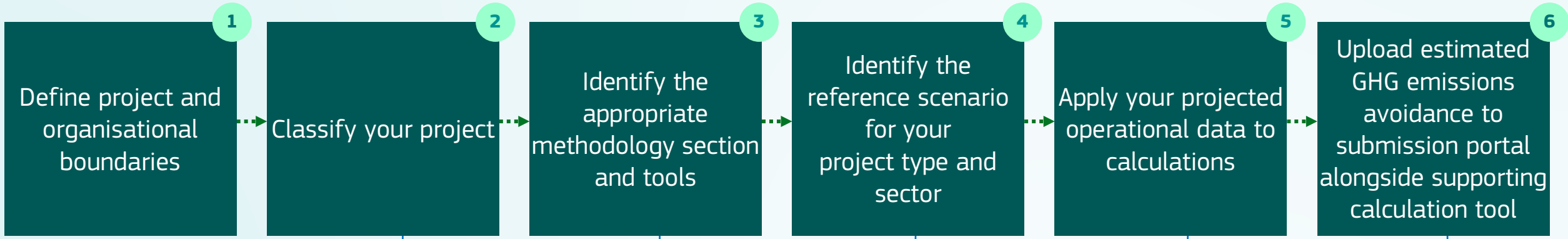
Serious inherent weaknesses (SIW)

Serious inherent weaknesses are mistakes, that occur in one or more steps of the application process, which can **substantially influence the GHG emissions avoidance calculations**.

The identification of serious inherent weaknesses automatically fail the proposal.



Examples:

Conceptual errors leading to significant discrepancy in the GHG emissions calculation, due to claimed credits of non-principal products

Double counted reductions for hybrid projects

Or

Incorrect selection or application of the GHG methodology

Emissions factors, ETS benchmarks and Fossil Fuels Comparators differ from those provided

Or

Use of an alternative reference scenario that fits your project best

Inclusion of emissions that are outside the boundaries of the GHG methodology

Or

Omission of emissions that are mandatory

Part B of the application form have not been filled-in correctly

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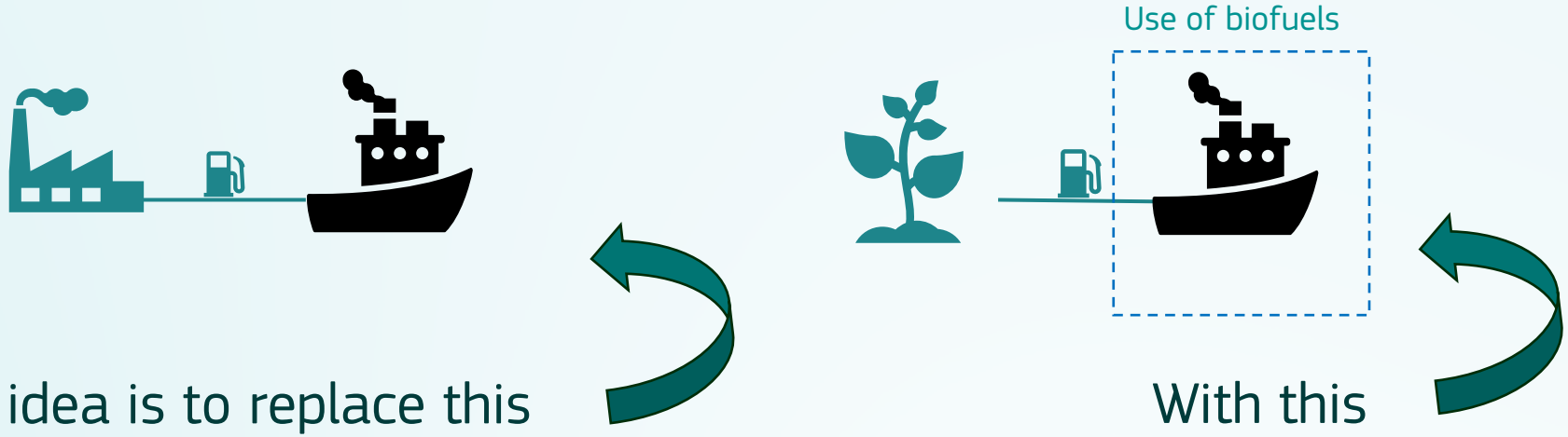
Define your boundaries

What is your project idea? What practice or product do you intend to replace? The geographical outreach? Where does it sit in the value chain, production or use?

Example:



What is your project idea? To replace the conventional maritime fuel in large vessels with biofuels
What practice or product do you intend to replace? A cleaner transportation of good and passengers
The geographical outreach? Biofuel will be supplied by a local producer, and will cover the demand of all international cargo trips
Where does it sit in the value chain, production or use? Only the use of the biofuels, the production of such fuels is not part of the project

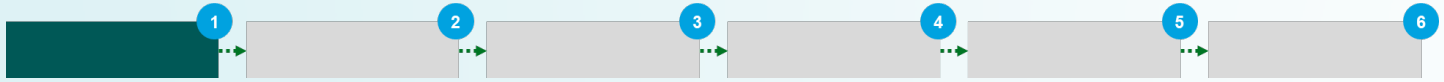
Define your boundaries

The system boundaries vary depending on the sector of the project. Overall, the methodology is structured with the intention of capturing the **most common and material GHG emission sources covered under the ETS**, such as :

- Fuel combustion in stationary and on-site vehicles
- Fugitive emissions in geothermal power plants and CCS projects
- Emissions from the transport and supply of biomass-based fuels.

Emissions generally excluded

- Capital goods
- Extraction, processing, refining, distribution and storage of fossil fuel
- Fugitive emissions due to well testing and well bleeding in geothermal power plants
- Biogenic CO_2 emissions from combustion of biomass, decomposition or degradation at EoL, processes
- Indirect land use change
- Decommissioning of the power plant and machinery at the end-of-life
- Employee commuting, business travels and waste generation at administrative offices
- Manufacturing process in the sector 'Manufacturing of components for production of renewable energy or energy storage'.
- Transport in EII (with the exceptions of section 1.1.5)



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Define your boundaries

Transport emissions should be considered in the following cases:

- CO_2 transport associated emissions in projects including a CCU or CCS element.

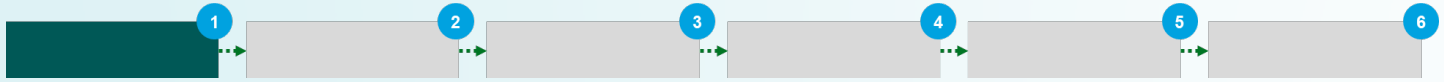
- Reference scenario for one or more of the principal products is based on a physically different product that is used for a comparable function → the project emissions must include any emissions associated with distributing that principal product to the point of use.

- Biomass or waste materials are used as feedstock/inputs → the project emissions must include any additional emissions associated with gathering those materials and transporting them to the first point of processing/treatment when the transport range exceeds 500 km. Applicants may use actual values or values given in the methodology

Classify your project

When submitting the application, the applicant needs to choose the sector under which the project falls. This choice may influence the outcome of the evaluation, as they will be ranked under the sector of the project. The sector is determined based on the function of the principal product or service that is the main aim of the project.

Category	Energy Intensive Industries (EII), incl. carbon capture and storage (CCS) and utilisation (CCU) / Renewable energy (RES) / Energy storage (ES) / Mobility / Cleantech manufacturing
Sector	EII → chemicals, hydrogen, etc. / RES → wind, solar, etc. / ES → intra-day, other storage / Mobility → aviation, maritime / Cleantech → manufacturing of components for ES, RES, EII **Examples for each category**
Product / service	Chemicals → organic chemicals, etc. / Solar → dispatchable electricity, heating, cooling. Other storage → hydrogen-based storage / Aviation → transp. of goods Components for EII → electrolisers, etc. **Examples for selected sectors**



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Classify your project

1.2 Specification of a sector for the purpose of the GHG emission avoidance calculations, and principal products

When submitting the application, the applicant needs to choose the sector under which the project falls (see Table 1.1). Note that this choice may influence the outcome of the evaluation, see the call text for details. The sector shall be determined based on the function of the principal product or service that is the main aim of the project.

Table 1.1 provides an overview of sector classification associated with possible principal products or services, and provides an indication of the section of the methodology to follow for the GHG emission avoidance calculation of a given type of project. The sector **must** be chosen from the list provided, but the principal product may not be explicitly listed (for example a project in the sector 'glass, ceramics and construction material' may specify its principal product as 'shatterproof glass' rather than identifying one of the more generic products listed below). Table 1.1. Sector classification and methodology section

CATEGORY[5]	SECTOR[6]	PRODUCTS/SERVICES[7]	SECTION
Energy Intensive Industries (EII)	Refineries	fuels (incl. e-fuels, bio-fuels)	Section 2
	Iron & steel	coke iron iron ore steel cast ferrous metal products other ferrous metal products or substitute products, please specify	Section 2
	Non-ferrous metals	aluminium, precious metals, copper, other non-ferrous metal, cast non-ferrous metal products, other ferrous metal products or substitute products, please specify	Section 2
	Cement & lime	cement cement clinker lime, dolime, sintered dolime other cement or lime products or substitute products, please specify	Section 2
	Glass, ceramics & construction material[8]	flat glass container glass glass fibres other glass products tiles, plates, refractory products bricks houseware, sanitary ware other ceramic products mineral wool gypsum and gypsum products other construction materials or substitute products please specify	Section 2
	Pulp & paper	chemical pulp mechanical pulp paper and paperboard sanitary and tissue paper other paper products or substitute products, please specify	Section 2
	Chemicals	organic basic chemicals	Section 2

Please refer to the Section 1.2, Table 1.1 of GHG methodology for full list of sectors and products/services

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Classify your project

Project examples	Advice on the choice of category and sector
Biorefineries	Depending on the final products, bio-refinery projects need to choose either: refineries if predominantly producing fuels; or chemicals if predominantly producing chemicals; or pulp and paper if predominantly producing pulp and paper products. In some cases, applicants will be able to choose between refineries and chemicals.
Direct air capture (DAC) or waste to energy with CCS	EII → Other
DAC with CCU	Such projects must result in substitute products for the products of Annex I of the ETS Directive. The sector to choose is the sector of the substitute product.
Wastewater treatment	Such a project can be eligible if using RES, then the sector is “Use of renewable energy outside Annex I”. If biofuels are produced, then refineries can be chosen.
Water desalination	Such a project can be eligible if using RES, then the sector is “Use of renewable energy outside Annex I”. If using more than 20 MWh, then the sector can be classified as EII → Other.
SAF production	Projects aiming exclusively to produce SAFs shall apply under the EII category. However, projects that envisage both the production and use of SAFs shall apply as a hybrid EII and AVI project.

Classify your project

Choosing your principal product

The main aim or purpose of your project may determine the sector and the reference emissions.

If you will produce:

just one product: your one product is your principal product, but in some case the use may vary

more than one product, but all in the same sector: your principal product will reflect the outputs of your type of industry

products from 2 or more sectors: choose one of the sectors of the principal products, other products not pertaining to the chosen sector are then non-principal products

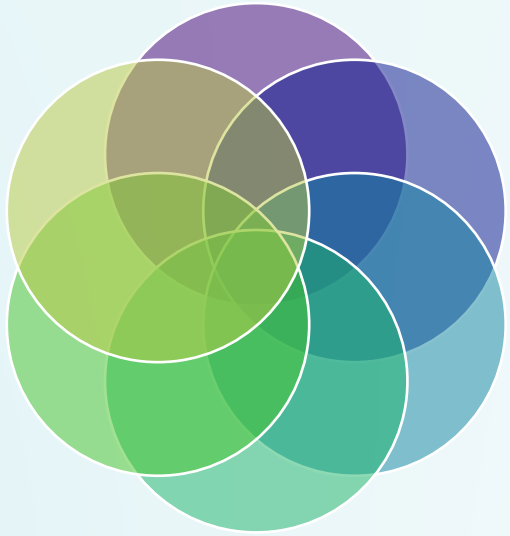
Example: a project produces hydrogen with electricity. If the main aim of the project is:

… **to store otherwise curtailed renewable electricity** → Sector is 'energy storage'
… **to produce as much hydrogen as possible** → Sector is 'hydrogen' under EII, and the reference is EU ETS benchmark for hydrogen
… **to produce hydrogen for transport applications** → Sector still hydrogen under EII, but reference is fossil fuel comparator for the transport fuel displaced
… if it is **combined with innovative renewable electricity** → Sector is either 'renewable electricity' or 'energy storage', submitted as hybrid project

Identify your adequate methodology(ies)

Section 2: Energy-intensive industries, including CCU and biofuels, substitute products

Section 7: Aviation, including plants for the manufacturing of aircraft or their components



Section 6: Maritime, including plants for the manufacturing of vessels or their components

Section 5: Energy storage including plants for the manufacturing of ES components

Section 3: Carbon Capture Credit: calculation detailed in section 3 but projects classified under relevant EII or RES sector

Section 4: Production and use of **renewable electricity, heat and cooling**, including plants for the manufacturing of RES components

Each section includes:

- Scope
- System boundaries
- Instructions on how to calculate the Absolute and relative GHG emissions avoidance
- Data and parameters: default values to be used, and data to be monitored for disbursement and for knowledge-sharing purposes
- Supporting documents: GHG Calculation tool, an example and a video tutorial

Identify your adequate methodology(ies)

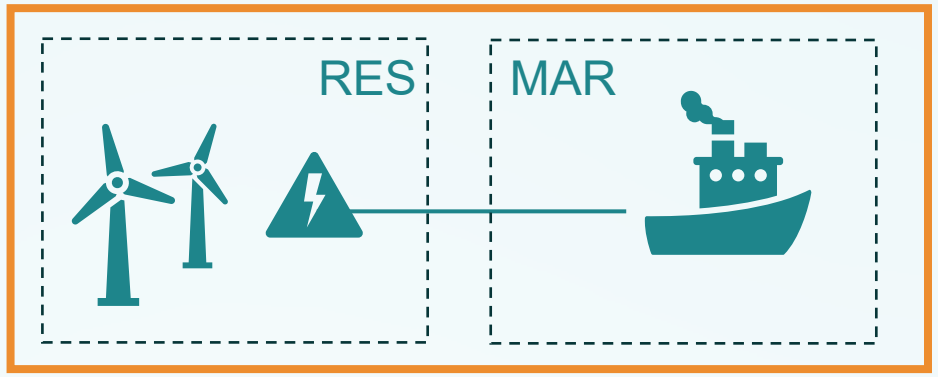
Hybrid project

Applicants may combine activities related to two or three eligibility categories (energy-intensive industry, renewable energy sources, energy storage), to be referred to as hybrid projects.

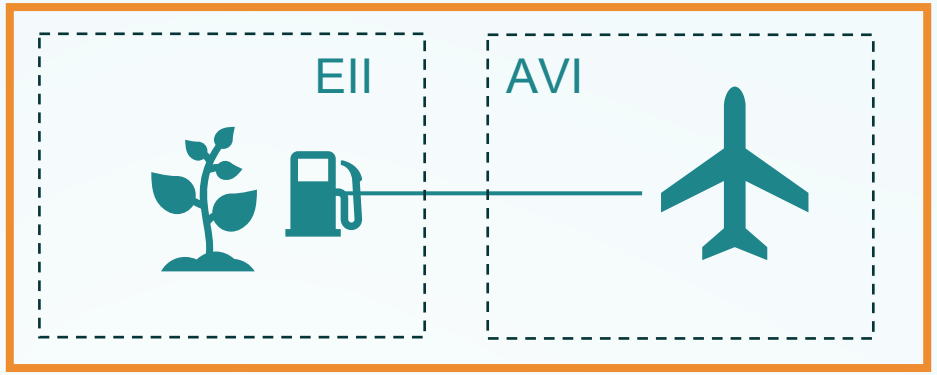
- **Absolute GHG emission avoidance**: calculate separately using respective methodologies and add them up. Remove double counting of avoidance and/or emissions, if any.
- **Relative GHG emission avoidance**: calculate based on the cumulated emission avoidance and the cumulated project emissions

Note: Projects that capture CO_2 generated that have products under the EII or under RES categories are not deemed hybrid projects. These projects shall combine the calculation of the CC component of the project following Section 3 with the EII component (Section 2) or RES component (Section 4), whilst removing any double counting.

Example of Hybrid Project 1



Example of Hybrid Project 2



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Identify your adequate methodology(ies)

Hybrid project examples

EII + RES

Typical project: export renewable electricity and/or heat from an industrial plant belonging to one of the EII sectors.

Pay attention to:

- Correct emission factor for electricity in the different parts of the project, i.e. factor from RES section for the net electricity export
- The power from the RES part will be pre
  to local use in the EII part

EII + ES

Typical projects: combination of hydrogen production and storage; virtual load management of industrial installations.

Pay attention to:

- Amount of revenues should be the guiding principle to split production activities between the EII part and the ES part.

To cumulate GHG savings from different sectors, follow the instructions from all corresponding sections and avoid double counting!

Typical project: Projects that include physical or virtual storage of renewable electricity

Pay attention to:

- Split feed-in of renewable electricity generated by the project into a storage component and the residual uncontrolled feed-in.
- Provide a detailed plan how to match the storage consumption to times when emissions of electricity supply are below average.

RES + ES

Typical projects: Fuel productions and its usage in vessels/aircrafts.

Pay attention to:

- In general, fuel production projects are considered to be EII.
- To gain credits for reducing non-standard GHG emissions, the usage must be part of the project and treated as in the MAR/AV section.

EII + MAR/AV

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Identify your reference scenario

The GHG emissions that would occur **in the absence of the project** are calculated based on the assumption that the **product** would be delivered under the following circumstances

Category / Sectors / products	GHG emissions are based in the reference scenario (among others) on:
EII	EU ETS benchmark(s), fossil fuel comparators (FFCs, see Table 2.2), or proposed by applicants if the reference cannot be constructed by combination of benchmarks and FFCs
EII / Refineries / Biofuels	Adapted fossil fuel comparators from REDII (1)
EII / CCS	CO_2 is released (i.e., not captured) /available in atmosphere
RES / Renewable electricity	2030 electricity mix
RES / Renewable heat **EII / other (bio-heat)**	Natural gas boiler
RES / Renewable cooling	2030 electricity mix

European Commission

Identify your reference scenario

The GHG emissions that would occur **in the absence of the project** are calculated based on the assumption that the **product** would be delivered under the following circumstances

Category / Sectors / products	GHG emissions are based in the reference scenario (among others) on:
ES / Energy storage **RES / Dispatchable renewable electricity** **EII / other (bio-electricity)**	Single-cycle natural gas turbine (used for peaking power)
ES / Electricity grid auxiliary services	Combined-cycle natural gas turbine (partial load)
ES / Heat / Hydrogen storage	EU ETS benchmark for heat / hydrogen production
ES / Energy storage in vehicles	Diesel-fuelled internal combustion engine
MAR	A conventional vessel running on heavy fuel oil
AVI	A conventional aircraft running on jet A1 Kerosene

Reminder: modifying the reference scenario to match your specific project case will be treated as a SIW

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Apply your data to the calculation

GHG Calculators

Tools have been made available to support the calculation in the various sectors. The methodology includes default parameters that will be deemed as constant throughout the duration of the project, including the ETS benchmarks. This to secure alignment and reduce the volume of data to be defined and monitored by the applicant.

Summary

This is a Pivot Table. As such, changes you make to the data set are not automatically picked up by it.

To update the pivot table with the applied changes to the text or numbers in your data set, you need to refresh it: (1) Click any cell inside the pivot table. (2) Right click

Row Labels	Sum of t CO2e
Refinputs	
Refprocesses	
Refproducts	
Refuse	
RefEoL	
Grand Total	

Reference emissions calculation

Note: for many projects the reference emissions for processes will be based on an EU ETS benchmark, fossil fuel comparator or other natural-gas-base disaggregate process emissions, and may be no emissions in the inputs, products, use or end of life boxes. Note that there may still be input emissions

							Projected operational data		
Source	Plant / Unit	Process	Input	Output	Parameter monitored	Description of parameter	Data unit	Year 1	Year 2
Inputs *[add rows and column, as needed]*									
Ref_{inputs}									
Ref_{inputs}									
Ref_{inputs}									
Processes *[add rows and column, as needed]*									

GHG emission factors, and other conversion factors for calculation of reference emissions				
Type of data	Description	Fuel / Feedstock / Product	Proposed value	Data unit
Default factors				
ETS Product benchmarks	Coke-oven coke (obtained fro	Coke	0.217	tCO2e / t
ETS Product benchmarks	Agglomerated iron-bearing pro	Sintered ore	0.157	tCO2e / t
ETS Product benchmarks	Liquid iron saturated with carb	Hot metal	1.288	tCO2e / t
ETS Product benchmarks	Anodes for aluminium electroly	Pre-bake anode	0.312	tCO2e / t
ETS Product benchmarks	unwrought non-alloy liquid alu	Aluminium	1.464	tCO2e / t
ETS Product benchmarks	Grey cement clinker as total cl	Grey cement clinker	0.693	tCO2e / t
ETS Product benchmarks	White cement clinker for use a	White cement clinker	0.957	tCO2e / t
ETS Product benchmarks	Quicklime: calcium oxide (CaC	Lime	0.725	tCO2e / t
ETS Product benchmarks	Dolime or calcined dolomite as	Dolime	0.815	tCO2e / t
ETS Product benchmarks	Mixture of calcium and magne	Sintered dolime	1.406	tCO2e / t
ETS Product benchmarks	Float/ground/polish glass (as t	Float glass	0.399	tCO2e / t
ETS Product benchmarks	Bottles of colourless glass of a	Bottles and jars of colourless g	0.290	tCO2e / t

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Apply your data to the calculation

Emission factors for the grid electricity

Table 1.3. Emission factors for applications involving production, use and/or storage of grid electricity

Category / sector / products	Net electricity exported	EF	Electricity consumed	EF
Energy intensive industry, except bio-electricity	Net amount of electricity exported from the project to the grid	0.00 gCO_2e/MJ	Amount of electricity fed from the grid to the project	0.00 gCO_2e/MJ
Electricity-saving projects in energy intensive industry	An electricity-saving projects would not deliver net electricity export	n/a	Amount of electricity saved (i.e. no longer fed from the grid to the system)	48.8 gCO_2e/MJ [0.176 tCO_2e/MWh]
Timed electricity demand (see section 2.2.6.3.6):	A virtual-stored-energy-release component	140 gCO_2e/MJ [0.505 tCO_2e/MWh]	A constant average consumption component	0.00 gCO_2e/MJ
CCS	A CCS-only project would not deliver net electricity export	n/a	Electricity consumed for injection and/or capture:	0.00 gCO_2e/MJ
Renewable non-dispatchable electricity	Net amount of electricity produced in the reference scenario and replaced by non-dispatchable electricity in the project scenario	48.8 gCO_2e/MJ [0.176 tCO_2e/MWh] $EF_{electricity,ref}$	Amount of electricity imported from the grid and consumed at the project site:	0.00 gCO_2e/MJ $EF_{electricity,proj}$
Renewable dispatchable electricity, including bio-electricity in EII	Net amount of electricity produced in the reference scenario and replaced by dispatchable electricity in the project scenario	140 gCO_2e/MJ [0.505 tCO_2e/MWh] $EF_{electricity,ref}$	Amount of electricity imported from the grid and consumed at the project site:	0.00 gCO_2e/MJ $EF_{electricity,proj}$

The EF for the grid electricity is not the same across all project categories and applications.

Make sure you adopt the adequate EF for your project.

Please refer to the Section 1.2, Table 1.3 of GHG methodology for full list of EF for either use, generation or storage of grid electricity

European Commission

Apply your data to the calculation

Assumptions

Applicants are required to document quantitative and qualitative assumptions used in the calculations. A transparent documentation of methods and secondary data used to extrapolate/estimate the operational data allow for a more effective review of the robustness of data adopted.

Quantitative assumptions

Data / Assumption	Proposed value	Data unit	Description	Basis or source of the assumption	Hyperlink to the original source, if applicable	Brief description of the monitoring plan	Area / Department responsible
Example: Share of organic waste in the MSW incinerated in project	*0.00%*	*%*	*Solid waste composition*	*Conservative assumption by the applicant to avoid possible overestimation of GHG emission avoidance claims*			

[add or exclude rows and columns, as needed]

Qualitative assumptions

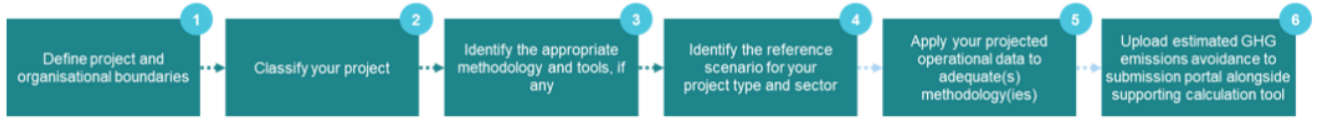
Data / Assumption	Description	Basis or source of the assumption	Hyperlink to the original source, if applicable	Brief description of the monitoring plan	Area / Department responsible
Example: No demand for offshore service vessels	*No demand for offshore service vessels as O&M will be performed using drones*	*Based on project planning, and best practices in year 2020.*	Project Planning_O&M		

[add or exclude rows and columns, as needed]

Apply your data to the calculation
Examples

Make sure you consult the hypothetical examples available to illustrate the use of the tool for each project category.
Find available examples here: https://cinea.ec.europa.eu/innovation-fund/tools-and-guidance_en

Large Scale projects: Example of calculation of GHG emission avoidance (EII) - methanol (Version 1.0 - 18 March 2021)



Context of project and organisational boundaries
The project foresees the construction of a biomass gasifier and electrolyser to feed a methanol synthesis unit. The plant will use biomethane as the main gasifier feed, plus grid electricity and a fossil natural gas boiler for heat. The syngas from the gasifier will be complemented in the methanol synthesiser fe
The projected production is 100,000 t methanol per year once the facility reaches full capacity (projected for year 3).
The reference scenario for methanol production is given in the GHG avoidance methodology - an emission factor of 82.5 gCO2e/MJ may be used.
The project scenario includes several inputs, several processes, and end of life emissions from disposal of the methanol. There are no additional non-principal products or changes in in-use emissions.

Classification
Category: Energy Intensive Industry
Sector: Chemicals
Product: organic basic chemicals (methanol)

IF Methodology
EII, Section 2 of IF LSC GHG Methodology

Reference scenario
As stated in the GHG avoidance methodology for the energy intensive industries, the reference scenario for methanol may be based on the estimated GHG intensity of production of methanol from natural gas, given in the methodology as 82.5 gCO2e/MJ.
There is no ETS benchmark for standalone methanol production. The ETS refinery benchmarks include methanol production units but these refinery sub-units are not relevant for the IF.

Application of projected operational

Tab "Reference emissions":

	Sum of t CO2e
Refinputs	-
Refprocesses	1,518,618.8
Refproducts	-
Refuse	-
RefEoL	-
Grand Total	**1,518,618.8**

Projected operational data																		GHG emissions due to production in the reference				
Source	Plant / Unit	Process	Input	Output	Parameter monitored	Description of parameter	Data unit	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10	Type of data	Value	Unit / t product	t CO2e / [unit]	t CO2e
Processes *[add rows and column, as needed]*																						
$Ref_{processes}$	Methanol plant	Methanol production	Natural gas	Methanol	Methanol output	Tonnes of methanol produced	tonnes	50,000	75,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	100,000	Other natural-gas-based fossil defaults	19.90	GJ	0.0825	1,518,619

Apply your data to the calculation

Monitoring plan

For the project-specific data used in GHG avoidance calculation, a monitoring plan consisting of a detailed, complete and transparent documentation of the information and data sources shall be submitted at the application.

Data traceability						
Provide a brief description of your monitoring plan. It may include procedures for data collection procedures (information on how the parameters are measured/calculated, aggregated, recorded, calculated, checked/reviewed and reported), as well as roles and responsibilities. You may include diagrams showing all relevant monitoring points.						
Area / Department responsible for collection and archiving	**Data source**	If applicable, **equipment used for monitoring, including details on accuracy and calibration**	**Monitoring frequency**	**QA/QC Procedures**	**Additional description of the monitoring system**	**Reliability**
						Primary Data

Taken from data management platform
Internal control spreadsheet
Direct measurement
Estimated
Adoption of assumptions (please describe)
Extrapolation (please describe)
Sample (please describe)
Other

Primary Data
Third Party Data
Secondary Data - Calculated based on actual data
Secondary Data - Based on assumptions
Secondary Data - Extrapolation
Other evidence

Apply your data to the calculation

Best practices checklist

To ensure you prepare your submission in line with the best practices, we recommend you consult the Checklist tab, where you can self-assess your own project against the best practices for calculating and presenting GHG emission avoidance to eliminate possible mistakes. This checklist has been built based on the experience gathered from previous calls, the common mistakes identified as well as the best practices followed by applicants.

	Example of questions:
Alignment with the methodology	In case an EU ETS benchmark is used, are these values up to date?
Transparency of the calculation	Have each adopted assumption been disaggregated in the excel sheet (i.e. in easily verifiable units) and with their rationale (i.e. the basis of the calculation) properly referenced and/or any data sources used?
Robustness of data	Have projected operational data been backed by robust evidence or, if estimated/extrapolated, linked to the assumptions table? Are the conversions sufficiently visible so they can be easily reviewed and the robustness of the assumptions checked? Are the characteristics of the proposed plant credible and in line with basic engineering principles, e.g. heat and mass balance? Where assumptions have been applied for operational characteristics and KPIs used, have these been selected in a conservative yet accurate manner, i.e. to avoid under/over estimation?
Transparency of the calculation	Has a clean, tidy and organised excel sheet with different colour codes (in order to visually differentiate cells with input data, comment and calculations) been provided?
Consistency of the application	Have absolute and relative emissions for the full 10 years of operation and, in the case of EII projects, the EU ETS benchmark used (if applicable) been objectively and visibly declared in the Application Form B? Are these values declared also consistent with the values indicated in the excel sheet? (E.g.: Absolute GHG emission avoidance potential for the project is XXX million tons CO2 for the first 10 years of operation).
Sustainability requirements	For projects using feedstock of biogenic origin: have sufficient assurance that the biomass supplied will meet the sustainability requirements of the recast Renewable Energy Directive (RED II) and that will originate from feedstock with a low risk of causing indirect land-use change been provided?

Submit your application

Using the indicators calculated automatically and summarised in the “Summary” tab, applicants shall transfer the corresponding information to the mandatory forms. Having a well-structured and tidy summary table will facilitate transferring results to the forms, and reduce mistakes in the calculation of reference emissions for projects with multiple products

Key indicators	Description	Value	Data unit	
Absolute GHG emission avoidance (ΔGHGabs)	Net absolute GHG emissions avoided thanks to operation of the project during the first 10 years of operation	0	tCO2e	Application Form B
Relative GHG emission avoidance (ΔGHGrel)	Relative GHG emissions avoided due to operation of the project during the first 10 years of operation	0	%	
GHG emissions in reference scenario (Ref)	GHG emissions that would occur in the absence of the project during the first 10 years of operation	0	tCO2e	Application Form C
GHG emissions in project scenario (Proj)	GHG emissions associated with the project activity and site during the first 10 years of operation	0	tCO2e	
Average GHG emissions intensity of the installations to produce a unit quantity of principal product in the reference scenario, or EU ETS	Principal product 1		tCO2e / unit quantity of principal product 1 *[Please replace with adequate unit]*	Knowledge Sharing
	Principal product 2		tCO2e / unit quantity of principal product 2 *[Please replace with adequate unit]*	
	Principal product 3		tCO2e / unit quantity of principal product 3 *[Please replace with adequate unit]*	
Average GHG emissions intensity of the installations to produce a unit quantity of the principal product in the project scenario	Principal product 1		tCO2e / unit quantity of principal product 1 *[Please replace with adequate unit]*	
	Principal product 2		tCO2e / unit quantity of principal product 2 *[Please replace with adequate unit]*	
	Principal product 3		tCO2e / unit quantity of principal product 3 *[Please replace with adequate unit]*	

European Commission

Energy Intensive Industries

Overview and calculation

Chris Malins, Cerulogy

European Commission

Scope

This section applies to projects that produce principal products that substitute a product **whose conventional production is covered by Annex I of the EU ETS Directive** and any other **innovative processing of biomass feedstock to produce bio-based products and biofuels in bio-refineries**. Note the bio-electricity and bio-heat fall into the energy intensive industries category but that GHG reductions from those projects must be assessed using the methodology for renewable energy sources

Examples of sectors producing products covered by Annex I	Examples of other EII products
Refineries	Manufacturing of components for electrolysers and fuel cells
Iron and steel	Bio-electricity
Non-ferrous metals	Bio-heat
Cement and lime	Bio-products
Glass, ceramics and construction material	CO_2 transport
Pulp and paper	CO_2 storage

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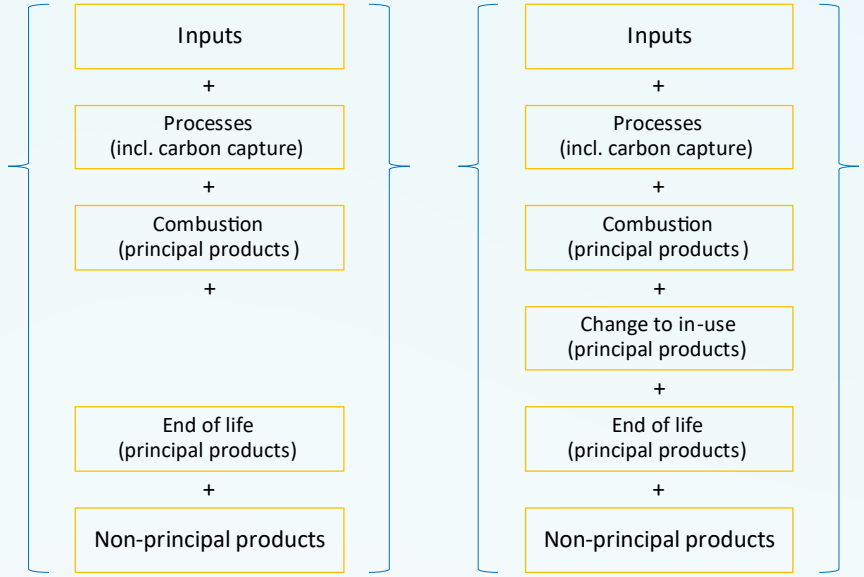
Boundaries

$$\Delta GHG_{abs} = \sum_{y=1}^{10} \left(\text{Reference } (Ref_y) - \text{Project } (Proj_y) \right)$$



- The system boundary must include:
  - The parts of an installation at which innovative practices are introduced
  - All processes downstream of that
  - Upstream processes controlled by the applicant, unless a reason is given to exclude such a process
- The system boundary may include processes at several physical locations
- In general, transport emissions are excluded, except:
  - CO2 transport for CCU/CCS
  - Distribution emissions for products substituting a physically different conventional product
  - Biomass/waste materials transported > 500 km
- Material/energy inputs coming from outside the system boundary must be included as inputs
  - Emission factors shall be taken from the input data hierarchy
  - Applicants may choose to bring other upstream processes into the system boundary and assess them directly

- Applicants must also consider:
  - Emissions from combustion of the principal products
  - Change to in-use emissions associated with the principal products
  - Emissions from end of life of the principal products
- If additional non-principal products are produced, they are given an emission credit

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Choosing the reference scenario

- Correctly establishing the reference scenario emissions is central to the application
- The reference scenario consists of the emissions associated with conventional production of a quantity products that performs an equivalent function to the principal products of the project
  - If the product is physically similar to the conventional product it replaces, the reference should include production of an identical quantity of product
  - If the product is physically different, the quantity considered in the reference scenario may differ from the quantity in the project scenario
  - E.g. if hydrogen is supplied to fuel cell vehicles the reference scenario includes the quantity of fossil transport fuel required to perform an equivalent transport service, based on an energy efficiency ratio
- There are nine cases for the reference scenario
- A product with multiple principal products may have to sum multiple reference cases

Reference cases

1. A relevant EU ETS product benchmark (or benchmarks) exists
2. An appropriate reference scenario can be constructed from a combination of EU ETS product benchmarks and other benchmarks sub-installation
3. Modifications to existing production systems
4. Transport fuel substitutes
5. Natural gas substitutes
6. The principal product can be synthesised from natural gas and a life-cycle emissions value is available in the data hierarchy
7. Direct air capture for CCS, and BECCS
8. Storage or transport of captured CO_2
9. The applicant proposes a reference scenario

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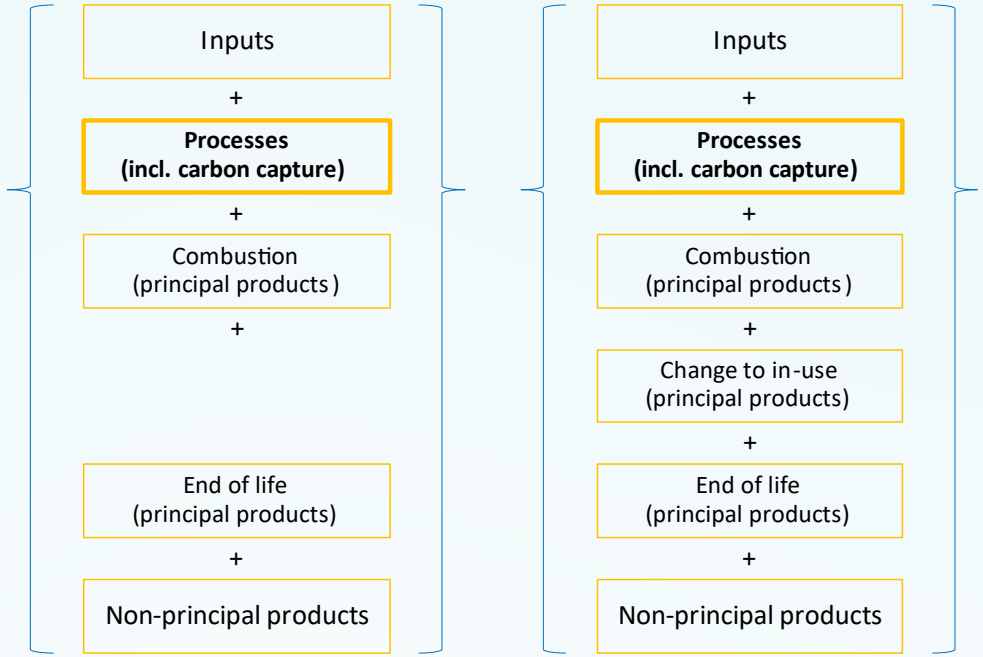
Processes

$$\Delta GHG_{abs} = \sum_{y=1}^{10} f \left(\text{Reference } (Ref_y) - \text{Project } (Proj_y) \right)$$



- The process emissions must include:
  - CO_2 from fuel combustion within the system boundary
  - Other emissions of CO_2, CH_4, N_2O within the system boundary
  - Transport emissions, where required
  - Emissions savings delivered by timed operation for electricity-consuming projects
  - Credit for carbon capture and storage or utilisation
  - Any change in emissions from waste processing

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Inputs

$$\Delta GHG_{abs} = \sum_{y=1}^{10} f \left(\text{Reference } (Ref_y) - \text{Project } (Proj_y) \right)$$

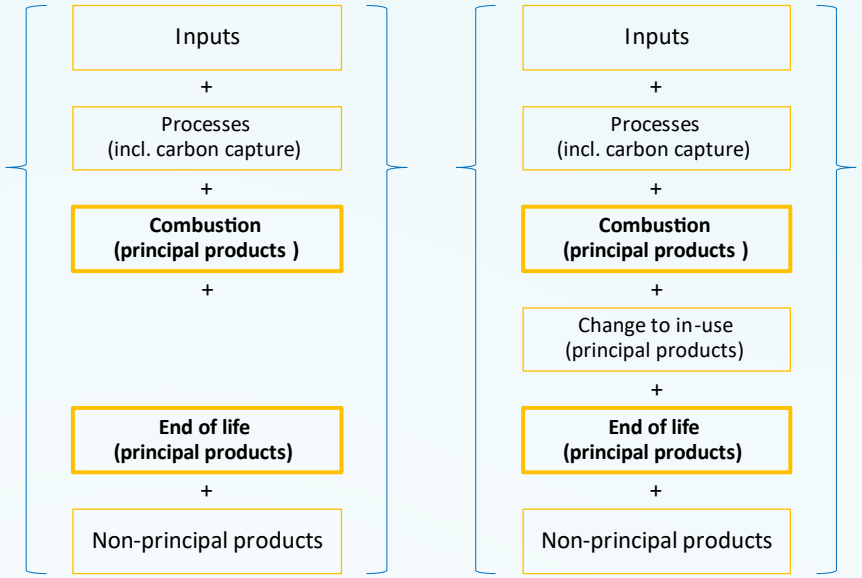
Reference (Ref_y)	Project ($Proj_y$)
Inputs	**Inputs**
+	+
Processes (incl. carbon capture)	Processes (incl. carbon capture)
+	+
Combustion (principal products)	Combustion (principal products)
+	+
	Change to in-use (principal products)
	+
End of life (principal products)	End of life (principal products)
+	+
Non-principal products	Non-principal products

- All material and energy inputs entering the system from outside the system boundary, e.g. heat, electricity, chemicals, feedstock, biomass
  - Note: fossil fuels consumed within system boundary are dealt with under processes
- Some minor inputs may be disregarded as 'de minimis'
- Inputs are divided into 'elastic' and 'rigid'
- When rigid inputs (e.g., wastes) are consumed we expect an existing use or disposition to be changed
  - Emissions must be assessed based on increased use of replacement materials with elastic supply or by assessing emissions from change in disposition
- When elastic inputs are consumed, we expect more to be produced
- Input electricity: 0 gCO_2e/MJ
- Input heat: 62.4 gCO_2e/MJ
- Input biomass: RED II Annex V disaggregated defaults

- Other emission factors to be chosen from input data hierarchy (Appendix 1)
  - Justify choice
  - EU ETS benchmark values should not be used for input emission factors
  - May need to adjust to exclude carbon contained in the material, to avoid double counting
  - Emission factors including upstream fossil fuel extraction may be reduced by 15%

Principal product combustion/end of life

$$\Delta GHG_{abs} = \sum_{y=1}^{10} f \left(\text{Reference } (Ref_y) - \text{Project } (Proj_y) \right)$$



- Where principal products contain carbon atoms, the eventual disposition of those atoms must be considered
- If a principal product will be combusted in-use (e.g., fuels), include combustion emission under principal product combustion
- If a principal product will not be combusted, must consider end-of-life
  - If carbon atoms will be recycled to new products, no end-of-life emission
  - If carbon atoms will remain incorporated in the material for at least 50 years, include end of life emissions equivalent to oxidation of 50% of contained carbon
  - Otherwise, end of life emission should assume oxidation of 100% of contained carbon

- Other reductions in expected end of life emissions compared to a conventional product may be included as a negative emission (credit) term

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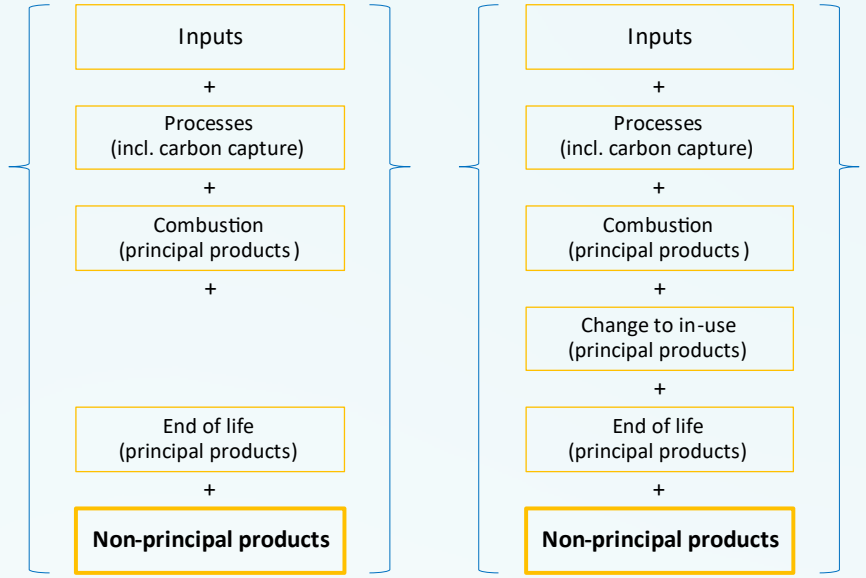
Non-principal products

$$\Delta GHG_{abs} = \sum_{y=1}^{10} f \left(\text{Reference } (Ref_y) - \text{Project } (Proj_y) \right)$$



- Some processes produce more than one product
- If you count a second product from your project as co-principal, then production of an equivalent amount of conventional product should be added to the reference scenario
- If you treat it as non-principal, then a credit may be included in the non-principal products section
  - Use an emission factor from the input data hierarchy

- In some cases, a conventional reference process will produce a non-principal product
  - Include a non-principal product credit in the reference scenario

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Credit for carbon capture and storage/utilisation

Overview and calculation

Chris Malins, Cerulogy

European Commission

Carbon Capture and Storage (CCS)
Carbon Capture and Use (CCU)

- Some projects in the energy intensive industries or renewable energy categories may include elements of carbon capture and storage or utilisation
- Credit for CCS (in accordance with the CCS Directive) may be given when:
  - CO_2 generated within the system boundary of a project is captured and will be transferred to a storage site
  - A project does not include carbon capture from a process but involves the development of CO2 transport infrastructure and/or CO_2 storage sites
- Under IF23 if applicants from different parts of a single CO_2 storage chain may apply and are no longer required to divide the CO_2 avoidance between themselves
  - E.g., three projects could apply to capture, transport and store a single CO_2 stream, and would be treated as independent projects

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CCS/U sectors

- Projects that capture CO_2 within the system boundary and transfer it for storage
  - Sector and category determined by the principal product
  - The CO_2 stream that is subject to capture should be included as a project emission under processes (EII methodology) or the $Proj_{bio/geo}$ term (RE methodology) (biogenic CO_2 would be zero rated)
- Projects that transport or store CO_2 that is captured outside the system boundary
  - Sector 'other', product 'CO_2 transport' / 'CO_2 storage'
  - The amount of CO_2 entering the system boundary should be included as a project emission under processes (it is not relevant whether the original source was biogenic)

- EII projects that capture CO_2 within the system boundary and transfer it for utilisation
  - Sector determined by the principal product
  - The CO_2 stream that is subject to capture should be included as a project emission under processes (EII methodology) (biogenic CO_2 would be zero rated)
  - The CO2 utilisation may be by a third party (i.e. outside the system boundary)
  - The CO2 utilisation must be additional (e.g. it cannot be for an existing CO_2-utilising facility)
- EII projects that utilise captured CO_2
  - Sector determined by the principal product
  - The CO_2 may be utilised in producing principal and/or non-principal products

- **A CCS/U credit should be calculated following the rules in Chapter 3 of the GHG methodology**

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Calculating a carbon capture credit (CC_{credit})

$$CC_{credit,y} = CC_{storage,y} + CC_{use,y} - (CC_{capture,y} + CC_{pipeline,y} + CC_{transport,y} + CC_{injection,y} + CC_{EHR,y})$$

- $CC_{storage,y}$: CO_2 permanently stored
- $CC_{use,y}$: CO_2 incorporated into products
- $CC_{capture,y}$: emissions from the CO_2 capture activities
- $CC_{pipeline,y}$: emissions from transport of CO_2 by pipelines
- $CC_{transport,y}$: $= Proj_{transport,road,y} + Proj_{transport,rail,y} + Proj_{transport,maritime,y}$
- $CC_{injection,y}$: emissions from injection at the geological storage site
- $CC_{EHR,y}$: emissions when storage is associated with EHR

- Note: the $CC_{storage,y}$ and $CC_{use,y}$ terms should already exclude CO_2 lost to leakage
- It is therefore not obligatory to explicitly characterise leakage at each step
- You should still justify your assumptions, including as they relate to leakage rates

$CC_{transport,y}$ calculation

Parameter	=	Equation
$CC_{transport,y}$	=	$CC_{transport,road,y} + CC_{transport,rail,y} + CC_{transport,maritime,y}$
$CC_{transport,road,y}$	=	$\sum_{L=1}^{I} (Kroad_{,L} * CO_{2road,L} * EFroad * 10-3)$
$CC_{transport,rail,y}$	=	$\sum_{L=1}^{I} (Krail_{,L} * CO_{2rail,L} * EFrail * 10-3)$
$CC_{transport,maritime,y}$	=	$\sum_{L=1}^{I} (Kmaritime_{,L} * CO_{2maritime,L} * EFmaritime * 10-3)$

Reference emissions for DACCS and BECCS

- Where a project consists solely of the installation of a direct air capture facility or of a carbon capture unit at a biomass power facility, with the captured CO_2 sent for permanent storage, then the reference scenario emissions shall be set to zero
- For these cases, the relative emission saving cannot be calculated in the normal way, and therefore it shall be declared as 200%
- This makes DACCS and BECCS projects eligible to record bonus points for net carbon removal

Net carbon removals

- Applicable if total project emissions are negative…
  - …excluding any credit for timed operation
  - …and where non-principal products are not the only source of negative emissions

$$\widehat{\Delta \mathrm{GHG}_{\mathrm{rel}}} = \frac{\Delta \mathrm{GHG}_{\mathrm{abs}} + \sum_{y=1}^{10}(\mathrm{TO}_y)}{\sum_{y=1}^{10}(\mathrm{Ref}_y)} (> 100\%)$$

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$$\Delta GHG_{abs} = \sum_{y=1}^{10} f \left(\text{Reference } (Ref_y) - \text{Project } (Proj_y) \right)$$

Reference (Ref_y)

- Inputs
- +
- Processes (incl. carbon capture)
- +
- Combustion (principal products)
- +
- End of life (principal products)
- +
- Non-principal products

Project ($Proj_y$)

- Inputs
- +
- Processes (incl. carbon capture)
- +
- Combustion (principal products)
- +
- Change to in-use (principal products)
- +
- End of life (principal products)
- +
- Non-principal products

Q&A session

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European Commission

Renewable energy sources Overview and calculation

Laura Pereira, ICF

European Commission

Scope

This section applies to innovative renewable energy projects for the purpose of generating electricity and heating/cooling, including

Generation of renewable energy	Dispatchable or non-dispatchable electricity and/or heat produced from wind, solar, geothermal, ocean power plants
	Dispatchable or non-dispatchable electricity and/or heat produced from biomass. **Note**: fuels derived from biomass fall under EII.
	Heat pumps
Use of renewable energy outside the ETS Annex I activities	Electricity supplied by a direct connection to a dedicated renewable source
	Wind electricity delivered by the grid, that would otherwise be curtailed;
	Hydroelectricity that has insufficient demand in the region and will probably be insufficiently connected to the rest of the grid even in 2030 to allow all of it to be used
	Renewable electricity supplied under a PPA with additional renewable power plants
Manufacturing of components for RES installations	e.g., production of innovative heat pumps, photovoltaic modules and wind turbines. Applicants shall demonstrate the existence of one or several buyers (i.e., companies that will use the innovative technology to generate renewable electrical or thermal energy) through provisional contract agreements to ensure accountability over the intended GHG emission avoidance.

Credit for carbon removals: Projects involving capture of CO_2 at existing RES facilities shall apply under the category/sector/product EII/Other/Storage and follow the EII methodology, using Case 7 (BECCS) or Case 3 (any projects other than BECCS) for reference emissions.

Boundaries

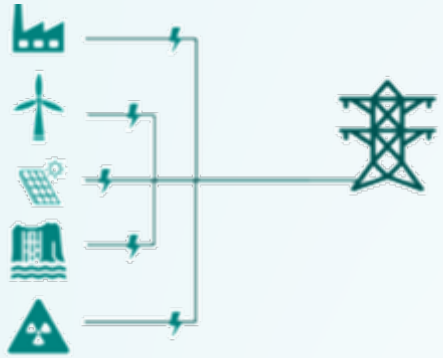
Scenario	Emission source	Large and medium scale projects	Small scale projects
Reference	GHG emissions for the generation of electricity, heating or cooling in fossil fuel power plants, which will be replaced due to the project activity	Yes	Yes
Project	GHG emissions due to consumed electricity and fossil fuel in stationary machinery and on-site vehicles at the project site(s)	Yes	No
	GHG emissions due to leakage during the operation of geothermal power plants, and from the production and supply of biomass-based fuels	Yes	Yes

For the sake of simplification, and to enable a fair competition between projects, the **reference scenario has been pre-defined for all projects** producing the same output (principal products), despite the regional differences that will invariably be observed in real life.

Absolute GHG emissions avoidance

Generation or use of renewable energy

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \Big(\quad - \quad \Big)$$



$$= \sum_{y=1}^{10} \Big(Ref_{grid\ /\ heat\ /\ cool} - \big(Proj_{onsite} + Proj_{bio} + Proj_{geo} \big) \Big)$$

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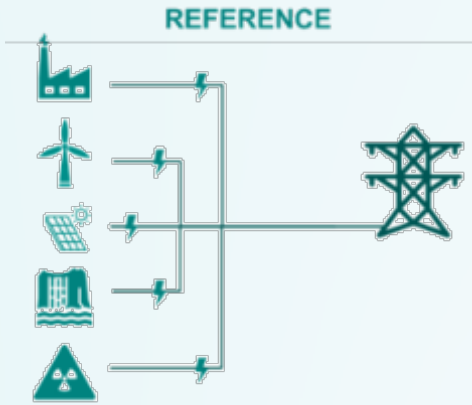
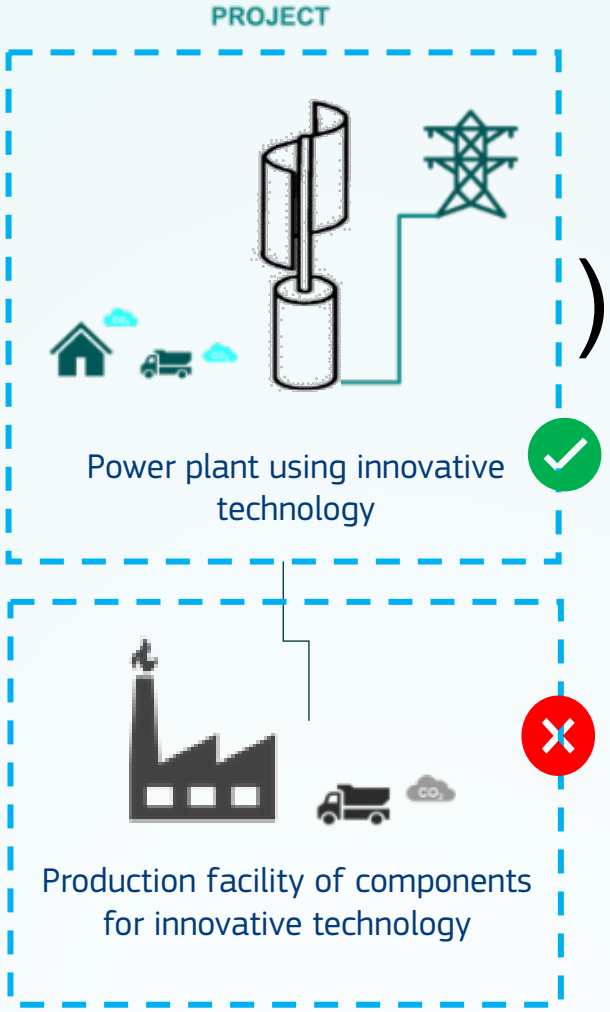
Absolute GHG emissions avoidance

Manufacturing of components for RES installations

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \left(\right.$$



$$-$$



$$\left. \right)$$

GHG avoidance will be equal to the emissions saved by the innovative technology when operating

The applicant has to:

- Demonstrate the **existence of a buyer of the technology** (i.e. a company that will run the wind power plant) in the EU + NO + IS market to ensure the accountability over the promised GHG avoidance, and
- Present the **rationale for the projected performance** of the component as well as of other components that will be needed at the power plant, but not necessarily manufactured at the same facility.

Emissions due to the manufacturing are **out of the scope of GHG avoidance calculations**

European Commission

Example RES
Renewable heating

Potential SIW: unrealistic, too simplistic and/or non evidenced approach to estimate on-site emissions.

1. Description: The project foresees the conversion of biogenic residues into heat, which will be sold to a nearby cement industry currently purchasing heat from a coal-fired CHP plant, and to the City where the project is based as district heating
2. Classification: EII → Other → Heat / Methodology: RES, Section 4
3. Reference: Heating is supplied by natural gas boilers

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \left(Ref_{heat} - Proj_{onsite} \right) = \sum_{y=1}^{10} Ref_{heat} - \left(Proj_{FF,stat,y} + Proj_{FF,mob,y} + Proj_{elect,y} \right)$$

$$P_{heat} * PLF * T_y * EF_{NG} / 0.90$$

$$Q_{FF\_stat,y} * EF_{FF}$$

$$Q_{FF\_mob,y} * EF_{FF}$$

$$EC_y * EF_{grid,proj}$$

Where:

- QFF_stat/mob,y= Quantity of fossil fuel type FF combusted in stationary or mobile sources at the project site in year y, in litres or m3.
- ECy = Amount of electricity imported from the grid and consumed at the project site in year y, in MWh.
- Pheat = Installed capacity, i.e. maximum thermal power output, in Watts.
- PLF = Plant Load Factor, i.e. plant's capacity utilisation, in %
- Ty = operating hours in year y, in hours

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Example RES

Production of blades for floating wind turbines for RES electricity

1. Description: Project envisages production of an innovative blade for use in floating wind power plants; the innovative blade has a higher capacity factor than a conventional blade.
2. Classification: RES → Manufacturing of components for renewable energy → wind plants and their components / Methodology section: RES, Section 4
3. Reference: Electricity is supplied by the EU grid mix (reference year 2030)

$$\Delta GHG_{abs} = \sum_{y=1}^{10}(Ref_y - Proj_y) = \sum_{y=1}^{10} CS * N_y \left(Ref_{elect} - Proj_{onsite}\right) = \sum_{y=1}^{10} CS * N_y * EG_{elec,y} * EF_{elec,ref} - CS * N_y * Proj_{onsite}$$

$$CS * N_y * P_{elec} * PLF * T_y * EF_{elec,ref} - CS * N_y * (Proj_{FF,stat} + Proj_{FF,mob} + Proj_{elect})$$

Example:

$$0.6 * (100\ MW + 300\ MW + 400\ MW + \ldots + 400\ MW) * 45\% * 8400\ hours/year * EF_{elec,ref}$$

- 0.6: Cost of the innovative component as a fraction of the total capital cost
- (100 MW + 300 MW + 400 MW + ... + 400 MW): Evidenced assumption of the cumulated capacity installed until Years 1 – 10
- 45%: Average capacity factor achieved
- 8400 hours/year: Assumption of operating hours

Potential SIW: unrealistic and non-evidenced number of blades sold

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European Commission

Energy storage
Overview and calculation

Jakob Wachsmuth, Fraunhofer ISI

European Commission

Energy storage

Services and products

This section applies to projects that **store any type of energy** (in particular electricity, heat, cold, hydrogen, gaseous or liquid fuels) that was supplied to a later moment of use. The storing may include the conversion of one energy type into another.

Technologies	Electricity storage technologies
	Heat and cold storage technologies
	Hydrogen storage technologies
	Gaseous fuel storage technologies
	Liquid fuel storage technologies
	Combinations of the above, including smart grid technologies
Services	Short-term electricity storage (among others arbitrage, reserve power, ramping)
	Auxiliary services to electricity grids (among others reactive power, synchronous inertia)*
	Avoidance of renewable energy curtailment
	Other energy storage
Manufacture of components for energy storage, such as batteries.	

Applicants must provide appropriate reference scenarios supported by convincing evidence.

Energy storage

Scope

- **In the case of projects converting electricity into fuel, such as hydrogen or other synthetic fuels, the application should generally be made under the EII category.**
- Such projects may only fall under this section if the utilisation of excess renewable energy is a primary aim of the project. For such projects, the electricity consumed will be limited to period of high renewable energy production that result in a particularly low load factor.

- The spatial extent of the system boundary includes the project energy storage plant/unit and all facilities that the InnovFund project energy storage plant is connected to and are not metered separately.
- In well justified cases, such as for management of distributed renewable energy, the condition for a single metering point may not be applicable.
- It is **not permissible to claim credit for a storage system during any period during which it is simultaneously charged and discharged**.

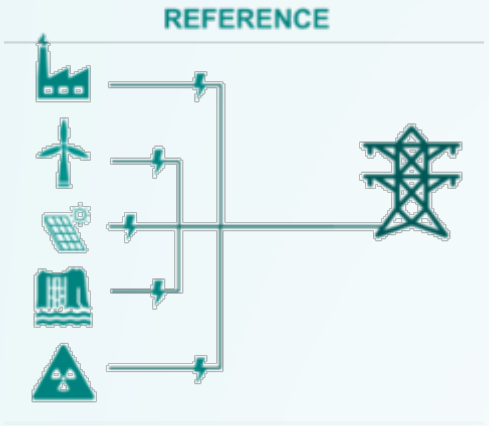
Boundaries

Scenario	Emission source	Large and medium scale projects	Small scale projects
Reference	Ref_{energy}: Emissions related to the provision of energy in the absence of the project activity. This includes direct emissions, indirect emissions, process-related emissions from the production of hydrogen, and from transmission losses.	Yes	Yes
	$Ref_{services}$: Emissions related to provision of auxiliary services to grids in absence of the project activity. This includes direct emissions, in particular from inefficient operation of fossil plants, indirect emissions and from transmission losses.	Yes	No
Project	$Proj_{energy}$: Emissions related to the provision of energy caused by the project activity. This includes direct emissions, indirect emissions, process-related emissions from the production of hydrogen, and from transmission losses.	Yes	Yes
	$Proj_{on-site}$: On-site emissions of fugitive GHG and from energy use other than energy storage. This includes emissions from combustion at the vehicles, and other processes at installations functionally connected to the transport network.	Yes	No

Energy storage

GHG emissions avoided is based on annual energy stored using emission factors depending on type of usage

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \left(\right.$$



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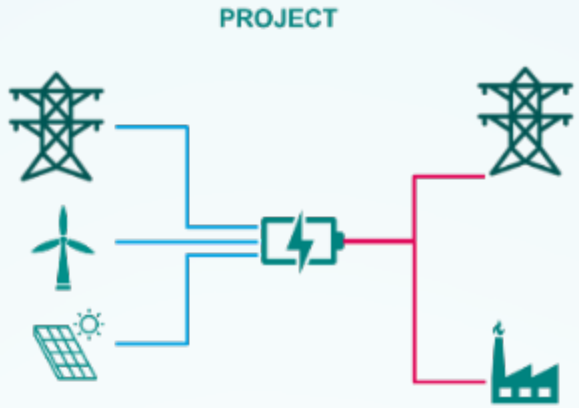

$$\left. \right)$$

$$= \sum_{y=1}^{10} \left(Ref_{energy} - Proj_{energy,y} \right)$$

= Net energy supplied
* EF for reference technology

= Fossil-based energy stored
* fossil fuel EF

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Energy storage
Example: Hydrogen storage

You can access a quantitative version of this example in the GHG calculator example: Energy storage

1. Description: An innovative hydrogen storage (e.g., using liquid organic hydrogen carrier (LOHC)) is used to deliver hydrogen produced in one chemical plant as a by-product to another plant, where it replaces fossil hydrogen.
2. Classification: Energy storage → other energy storage → hydrogen
3. Methodology: Energy Storage, Section 5
4. Reference: ETS benchmark for hydrogen production

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} (Ref_{energy,y} - Proj_{energy,y})$$

$Ref_{energy,y}$: $E_{out,hydrogen,y} * EF_{out,hydrogen} + E_{out,heat,y} * EF_{out,heat}$

$Proj_{energy,y}$: $E_{in,hydrogen,y} * EF_{in,hydrogen} + E_{in,heat,y} * EF_{in,heat}$

The applicant can provide additional information on the source of the stored hydrogen, but does not need to do so.

$EF_{in,hydrogen}$ = EU ETS benchmark for hydrogen production (as long as no additional information on hydrogen source is provided)

5. Data:
   - $E_{in/out,hydrogen,y}$ = **Assumed** amount of hydrogen stored/recovered by the project in year y, in TJ.
   - $E_{in/out,heat,y}$ = **Assumed** amount of heat used/recovered by the project in year y, in TJ.
   - $EF_{in,hydrogen\ /heat}$ = Emission intensity of hydrogen/heat production for specific hydrogen/heat source
   - $EF_{out,hydrogen\ /heat}$ = EU ETS benchmark for hydrogen/heat production

SIW: wrong reference scenario

Production facilities of components for energy storage
Example: batteries for electric vehicles

1. Description: The project envisages the production of innovative batteries to be used in electric vehicles, which will enable to replace long-distance internal combustion engine (ICE) cars.
2. Classification: Energy storage → Manufacturing of components → Batteries
3. Methodology section: Energy storage, Section 5 of Annex C
4. Reference: Cars run on diesel-fuelled ICEs

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} N_y * CS \left(Ref_{energy,y} + Ref_{services,y} - Proj_{energy,y} \right)$$

(Ref$_{energy,y}$ and Ref$_{services,y}$ → 0; Proj$_{energy,y}$ → 0)

$$N_y * CS * (EF_{transport,y} * E_{transport,y}) = N_y * EF_{transport,y} * FE_{transport,y} * 14{,}300 \text{ km/a}$$

5. Data:

- N_y = **Assumed** additional number of batteries installed in e-vehicles until year y
- CS = innovative components' cost as a fraction of the total capital cost
- $E_{transport,y}$ = Assumption of electricity supplied for use in e-vehicles in year y, in TJ
- $FE_{transport,y}$ = Assumed fossil fuel efficiency of a replaced vehicle in year y, in TJ/km

The applicant shall demonstrate the existence of a buyer of the component/technology to ensure the accountability over the promised GHG avoidance.

Applicants will have to present the rationale for the projected performance of the batteries. For cars, an average travel distance of 14,300 km/year should be assumed.

European Commission

Energy storage
Example: Hybrid RES and Storage

1. Description: A floating PV plant (annual production 100 GWh/a) is combined with an innovative electricity storage (input 50 GWh/a, output 45 GWh/a) to provide controllable RES-E generation.
2. Classification: RES, energy storage → solar energy, short-term electricity storage → electricity
3. Methodology: RES and Energy Storage, Sections 4 and 5
4. Reference: Electricity is supplied by the 2030 grid mix (RES) and an NG turbine (electricity storage)

$$\Delta GHG_{abs} = \underbrace{\sum_{y=1}^{10}(Ref_y - Proj_y)}_{\textbf{RES}} + \underbrace{\sum_{y=1}^{10}(Ref_y - Proj_y)}_{\textbf{STORAGE}} = \sum_{y=1}^{10}\Big(Ref_{grid,y} + Ref_{energy,y} - \overset{0}{Proj_{energy,y}}\Big)$$

Remove double-counting

$E_{out,y} * EF_{out,elect} = 45\ GWh/a * EF_{out,elect}$

$(EG_{grid,y} - E_{in,y}) * EF_{grid,ref} = (100 - 50)\ GWh/a * EF_{grid,ref}$

5. Data:
   - $EG_{grid,y}$ = Annual PV generation in year y, in GWh/a.
   - $E_{in,y}$ = Annual energy storage input in year y, in GWh/a.
   - $E_{out,y}$ = Annual energy storage input in year y, in GWh/a.

SIW: Double-counting, which cannot be removed based on the information in the application

SIW: $EF_{grid,ref}$ is used for Ref_{grid} and $Ref_{energy,}$

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European Commission

Maritime
Overview and calculation

Jonathan Köhler, Fraunhofer ISI

European Commission

Scope

Possible type of projects

Innovative projects that can demonstrate GHG emission avoidance and that contribute to the reduction of effects of non-CO_2 gases within the defined scope, could be accountable. Examples of such projects:

Projects that reduce energy use per functional unit e.g., MJ per tonne km	Innovative vessels and their components (e.g., new hull designs, energy saving propulsors, power train hull appendage and other hull technologies)
	Wind propulsion technologies and power take-in from propulsors (e.g., Flettner rotors, sail rigs, other wind propulsion devices);
Projects that reduce GHG emissions per energy use, e.g., tCO_2e / MJ	Fuel switch (e.g., use of SAFs, electricity, or synthetic fuels from green hydrogen instead of fossil fuels, biofuels)
	Solutions to reduce GHG emissions from on-board ship systems (e.g., fuel cells for vessels)
	New exhaust cleaning systems
Infrastructure **projects that contribute to the reduction GHG emissions**, e.g., onshore RES power supply to ships	

Projects combining the above and including:

- a modal shift (e.g. a combination or various modes with a higher use of shipping)
- software and systems for ship operations and monitoring (e.g., weather routing software, maintenance optimisation)
- operational measures, (e.g., speed reduction approaches, reductions in waiting time to enter/leave port)

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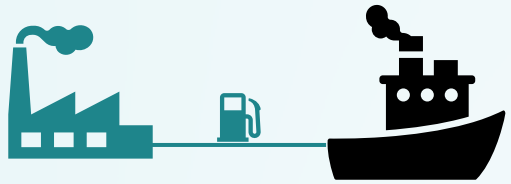
Boundaries: Maritime

Scenario	Emission source	Large and medium scale projects	Small scale projects
Reference	Energy-related GHG emissions present in the reference scenario for the delivery of the same transport services as provided by the innovative project, e.g., direct emissions of climate pollutants from the use of fossil fuels, indirect emissions from the use of methanol, ammonia and hydrogen, both by vessels, vehicles and at port facilities.	Yes	Yes
	Other GHG emissions present in the reference case for the delivery of the same transport services as provided by the innovative project, e.g., fugitive and slipped emissions of all GHGs	Yes	Yes
Project	Energy-related GHG emissions that will occur due to the provision of the reference transport services by the project put in place, e.g., direct emissions of climate pollutants from the use of fossil fuels, indirect emissions from the use of methanol, ammonia and hydrogen, both by vessels, vehicles and at port facilities.	Yes	Yes
	Other GHG emissions that will occur due to the provision of the reference transport services bythe project put in place, e.g., fugitive and slipped emissions of all GHGs	Yes	Yes

Absolute GHG emissions avoidance

Transportation of goods and passengers

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \left(\right.$$



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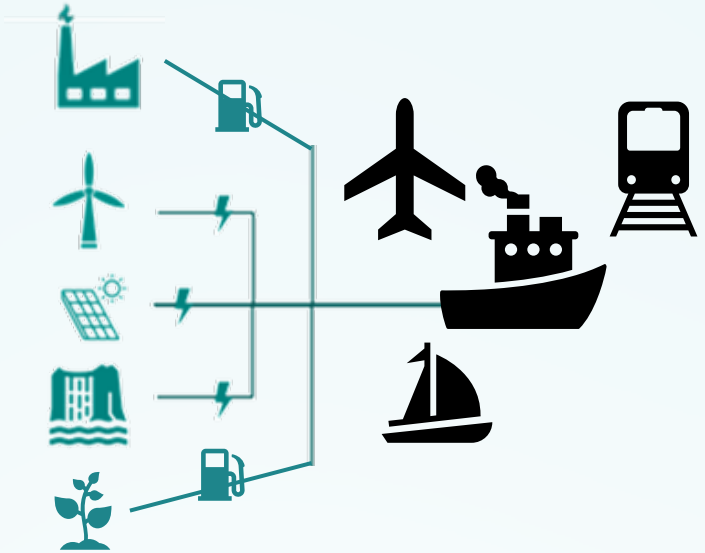

$$\left. \right)$$

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$$= \sum_{y=1}^{10} \left(Ref_{energy} + Ref_{other} \right) - \left(Proj_{energy} + Proj_{other} \right)$$

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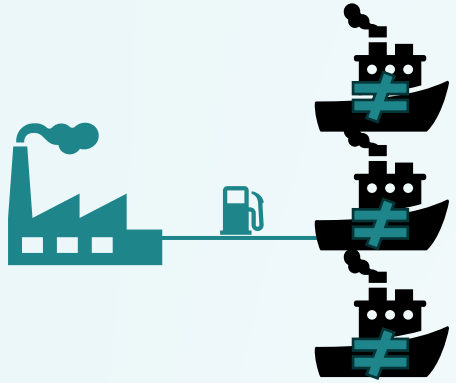
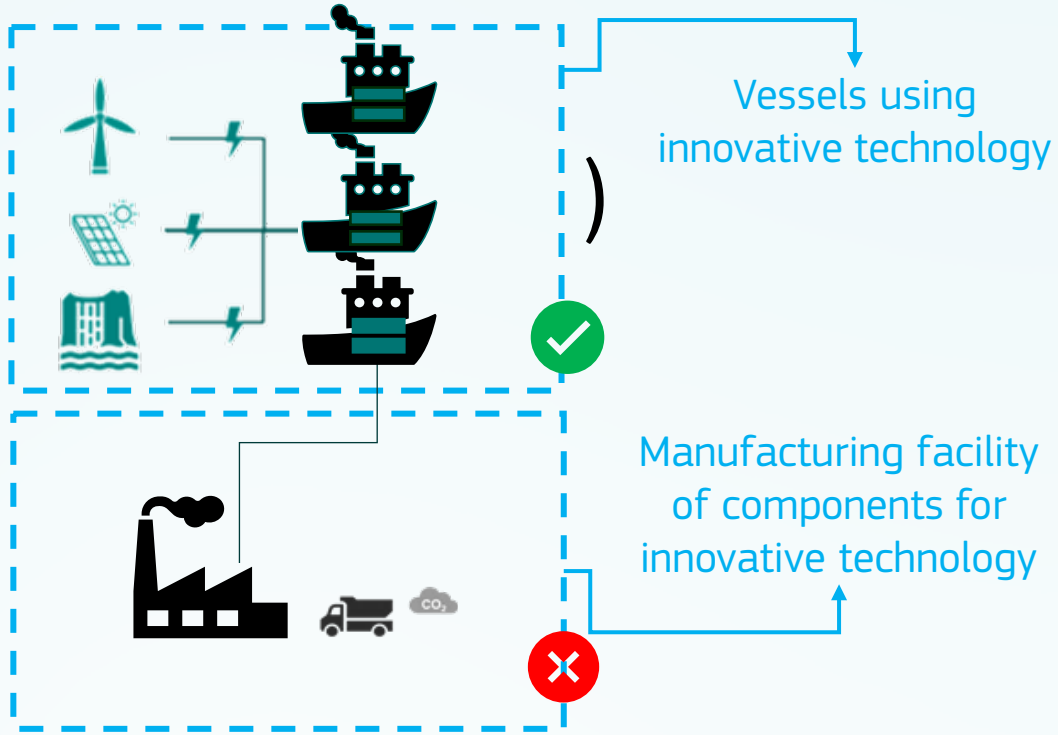
Absolute GHG emissions avoidance

Manufacturing of innovative vessels or their components

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10}$$





Emissions due to the manufacturing of the innovative aircraft/vessel are out of the scope of GHG avoidance calculations.

GHG avoidance will be equal to the emissions saved by the innovative technology when operating

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Absolute GHG emissions avoidance

Black carbon and other non-Kyoto climate effects

The recent revision of the EU ETS Directive highlights the role of reducing the full climate impact, including black carbon emissions in the maritime sector. Accordingly, these emissions are accounted for in the GHG methodology.

The direct and non-direct climate impacts of black carbon and its importance in the maritime sector are well established, but there is no established GWP for black carbon in existing EU regulations
--> The methodology makes use of the average GWP applied by IMO and ICCT: **GWP_BC = 900 tCO2e/t.**

Potential **climate impacts of other emissions not covered by Kyoto (e.g. sulfur) are less clear** for the maritime sector. The GHG methodology does not cover these but includes the option to include these **under 'Other GHG emission avoidance'** without providing further guidance. Applicants should provide clear explanation and sufficient evidence for their relevance and applied data.

Maritime

Example: Transport of goods and/or passengers

1. Description: Install sail technology on a bulk carrier. Combine with 1/3 reduction in operating speed and weather routing for overall 76% reduction in fuel requirement
2. Classification: Mobility → Maritime → Transportation of goods/services / Methodology: MAR, Section 6
3. Reference: Conventional bulker fuelled with reference maritime fuel

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \left(EF_{mar\ ref\ fuel} * E_{ref,mrf,y} + BC_{ref,y} \right) - \left(EF_{mar\ ref\ fuel} * E_{proj,mrf,y} + BC_{proj,y} \right)$$

$$BC_{ref,y} = \sum_{y=1}^{10} Q_{BCref,\,y} * GWP_{BC}$$

$$BC_{proj,y} = \sum_{y=1}^{10} Q_{BC\ proj,\,y} * GWP_{BC}$$

Values estimated or modeled by the applicant and duly evidenced

4. Data:

- $E_{ref/proj,mrf,y}$ = Annual use of the EU marine reference fuel in the reference/project scenario in year y, in TJ.
- $EF_{mar\ ref\ fuel}$ = GHG emission factor for the use of the EU marine reference fuel in the project scenario in year y, in TJ.
- $Q_{BCref/proj,\,y}$ = Quantity of black carbon emitted from combustion of fuels in the reference/project scenario in year y, in tonnes.
- GWP_{BC} = Global Warming Potential of black carbon in tonnes CO2eq/tonne BC.

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Aviation
Overview and calculation

Laura Pereira, ICF

European Commission

Scope

Possible type of projects

Innovative projects that can demonstrate GHG emission avoidance and that contributes to the reduction of effects of non-CO_2 gases within the defined scope, could be accountable. Examples of such projects could include:

Projects that reduce energy use per functional unit e.g., MJ per journey	Design changes (e.g., new airframes, optimised weight)
	Operational measures, (e.g., speed limitation approaches, software improvements, climate-optimized flight trajectories to avoid climate forcing arising from aircraft contrails)
	Engine efficiency (e.g., replacement of fleet with equivalent with more efficient motors)
	Integrated projects which include software type activities such as changes to flight paths or air traffic management
Projects that reduce GHG emissions per energy use, e.g., tCO_2e / MJ	Manufacturing of electric or hydrogen-fuelled aircraft or their components
	Fuel switch (e.g.,use of electricity, sustainable biofuels or renewable fuels of non-biological origin, instead of the conventional fossil fuel)
Projects that envisage a modal shift (e.g., new mode of transportation, or a combination or various modes)	
Other **projects that contribute to the reduction non-CO_2 effects**, e.g., contrails from aviation	

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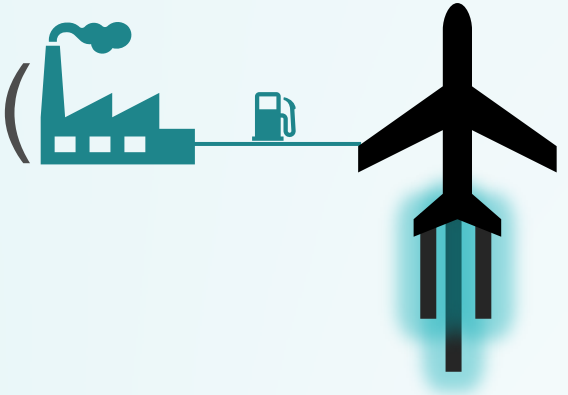
Boundaries

Scenario	Emission source	Large and medium scale projects	Small scale projects
Reference	GHG emissions due to the combustion of conventional aviation fuel that in the absence of the project activity would be consumed for the operation of the flights covered by the project	Yes	Yes
	Other climate impacts due to the non-CO_2 effects that would occur in the absence of the project activity	Yes	Yes
Project	GHG emissions due to the combustion of the fuels of fossil origin, including any residual quantities of jet A-1 kerosene and the fossil fuel share of SAFs, that will be consumed in air, water or land modes proposed in the project activity	Yes	Yes
	GHG emissions due to the (1) combustion of the biomass-based fuel, including the share of biogenic fuels in SAFs), (2) generation of renewable energy sources or (3) generation of electricity that will be either imported from the grid or produced on-site that will be consumed in air, water or land modes proposed in the project activity	Yes	No
	GHG emissions due to the use of H_2, including derived synthetic fuels, and any share used in the composition of SAFs that will be consumed in air, water or land modes proposed in the project activity	Yes	Yes
	Other climate impacts due to the non-CO_2 effects that will occur in the project activity	Yes	Yes

Absolute GHG emissions avoidance

Transportation of goods and passengers

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \left(\right.$$



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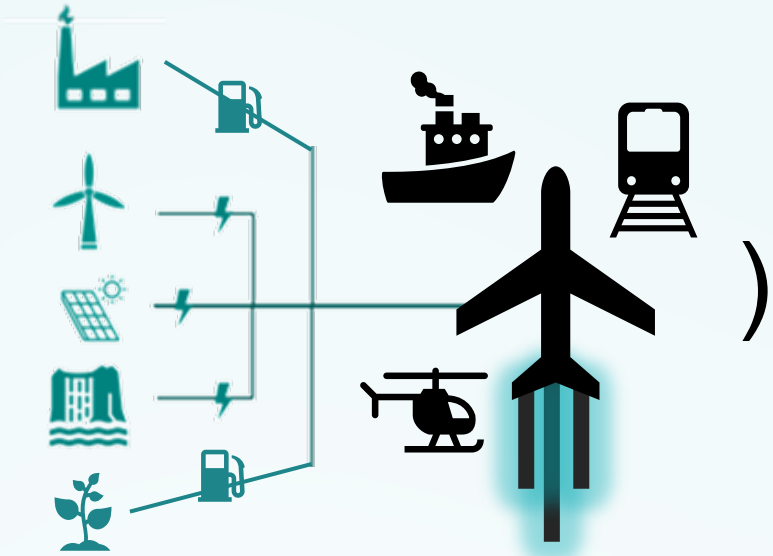

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$$= \sum_{y=1}^{10} \left(Ref_{jetA1} + Ref_{nonCO2} - (Proj_{FF} + Proj_{bio} + Proj_{elec} + Proj_{res} + Proj_{H2}) + Proj_{nonCO2} \right)$$

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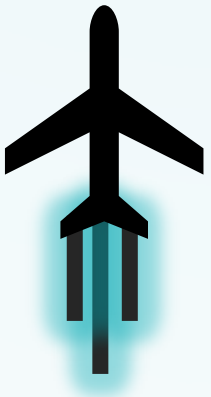
Absolute GHG emissions avoidance

Non-CO_2 effects

The non-CO_2 impacts derive mostly from the contrails as a result of water vapour and emissions from nitrogen oxides (NOx), soot particles and oxidised sulphur species. Their net impact is a warming effect on the climate, although there are a number of individual warming and cooling effects from the respective aviation non-CO_2 emissions, with trade-offs and uncertainties of different degrees, and with sensitivity to atmospheric conditions at the point of emission.

To ensure equal treatment for the **reference scenario, a fixed equivalence factor of three should be applied**. This is aligned with the range of overall radiative forcing from aviation identified by the IPCC in its special report on aviation (1999) ranging from 2 to 4 times the radiative forcing from CO2 alone.

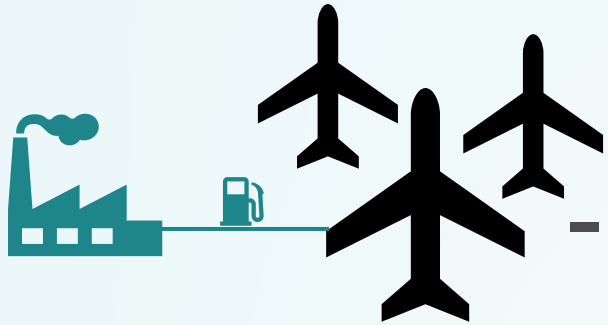
As projects have a rather unique nature, under the **project scenario, applicants will have to explain their own approach for calculating or modelling non-CO_2 effects**, using the corresponding CO_2 equivalency metric, demonstrated either by scientific literature or by modelling global near surface temperature change.



Absolute GHG emissions avoidance

Manufacturing of innovative aircraft or their components

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} ($$



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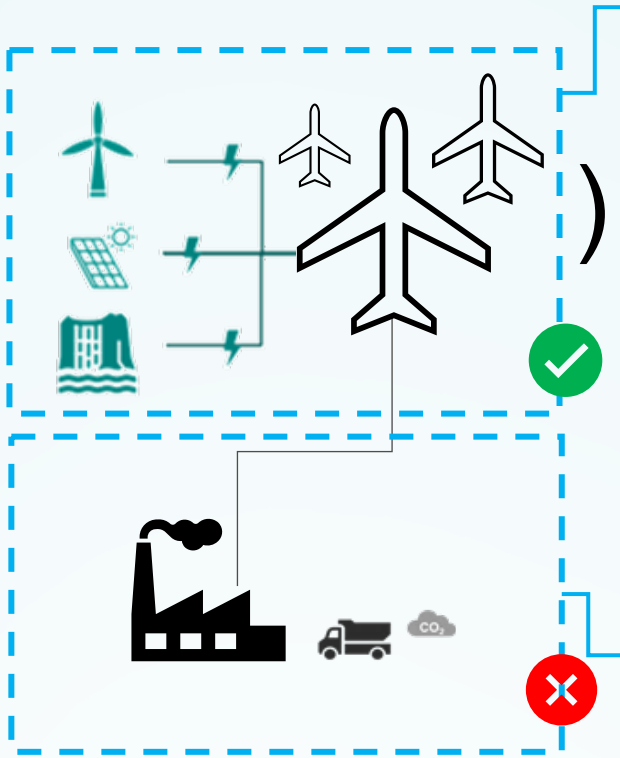

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Emissions due to the manufacturing of the innovative aircraft are <u>out of the scope of GHG avoidance calculations</u>.

GHG avoidance will be equal to the emissions saved by the innovative technology when operating

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Example AVI

Fuel switch and fuel efficiency

1. Description: Replacement of flights with flights using an innovative and more efficient aircraft fueled with SAF, that is composed by a blend of jet A1 kerosene and biofuel.
2. Classification: Mobility → Aviation → Transportation of goods/services / Methodology: AVI, Section 7
3. Reference: Convention aircraft is fuelled with conventional aviation fuel

$$\Delta GHG_{abs} = \sum_{y=1}^{10} (Ref_y - Proj_y) = \sum_{y=1}^{10} \left(Ref_{jetA1,y} + Ref_{nonCO2,y} - \left(Proj_{FF,t,y} + Proj_{bio,t,y} + Proj_{nonCO2,y} \right) \right)$$

$$= \sum_{y=1}^{10} Q_{jetA1,y} * EF_{jetA1} + 2 * Q_{jetA1} * EF_{CO2,jetA1}$$

$$- \left((Q_{FF,t,y} * EF_{FF}) + (Q_{bio,t,y} * EF_{bio}) + Proj_{nonCO2,y} \right)$$

Based on the share of fossil fuel in the SAF

Based on the share of biofuel fuel in the SAF

Values estimated or modeled by the applicant and duly evidenced

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Final remarks

Joao SERRANO GOMES, Policy Officer
DG CLIMA C2, Low Carbon Solutions (II):
Research & Low Carbon Technology Deployment

European Commission

Important reminders

- SIW automatically fails a proposal.
- Read the GHG Methodology carefully and submit your questions if anything remains unclear.
- Questions could be sent to the helpdesk, throughout the call window. The purpose of the helpdesk is to clarify doubts related to the methodology, not to confirm if your calculation is correct.
- Consult the examples of the application of the GHG Calculation Tools available, and the tutorials

Closing remarks

Roman Doubrava, Head of Unit
CINEA C4, Innovation Fund

European Commission

Feedback

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Reply to the questions (less than 5 minutes)

Thank you!

Forthcoming events

IF SSC 2022

- Results to be announced in December 2023

IF23 Auction

- Application period 23 November 2023 - 8 February 2024
- Link to application

IF23 Call

- 23 November 2023 - 9 April 2024
- Link to application

Innovative Clean Tech Conference 2024

- SAVE THE DATE - 11 April 2024
- Hybrid event

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More information here:

https://europa.eu/!RTnFrw

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- Technical expert
- Financial expert
- GHG expert
- Rapporteur

Sign up as an Expert (europa.eu)

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More information

All (past) call documents available on the Funding and Tenders Portal including:

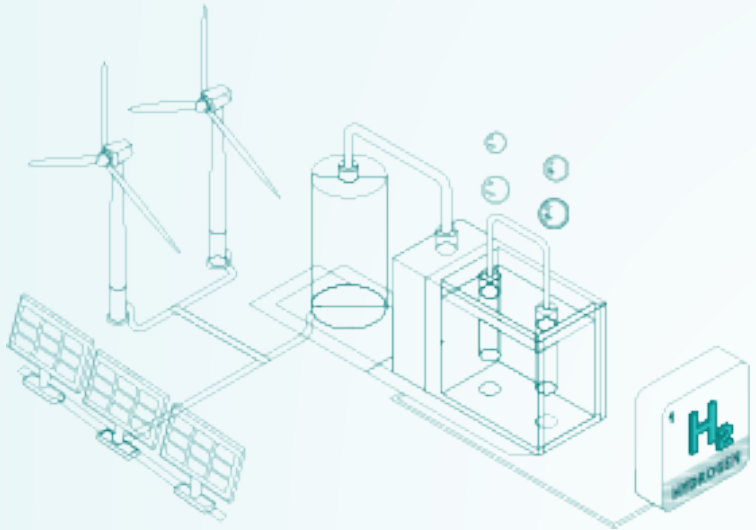
- ✓ Guidance and calculation tools on GHG emissions and relevant costs
- ✓ Frequently asked questions

https://europa.eu/!QB67by

Further info, planning of new calls, recorded webinars and videos available on the IF Website:

https://europa.eu/!rx34Dt

And more videos available on YouTube:
https://bit.ly/2WxK8w7



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