The GHG emission methodologies

Main principles and application process

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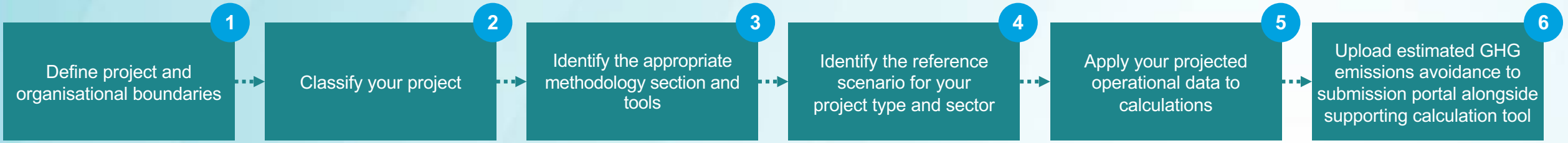
Submitting an application

Step by step



Tip: in practice the applicants may finalise the decision about the project boundary after they have decided on principal product, reference and appropriate methodology.

Application of the methodology

- To support applicants quantifying GHG emissions avoidance potential over the first 10 years of operation
- To form the basis of the scoring for the "GHG emission avoidance potential" criterion and cost efficiency
- To serve as KPI for project monitoring and disbursements of grants
- To inform on requirements for knowledge-sharing purposes

Selection criteria

Projects will be selected based on:

1. Potential of greenhouse gas emissions avoidance
2. *Degree of innovation*
3. *Project viability and maturity*
4. *Scalability*
5. *Cost efficiency (cost per unit of performance)*

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Absolute and relative GHG emission avoidance

Absolute GHG emission avoidance is the difference between:

- the **emissions that would occur in the absence of the project** (*Ref*), and
- the **emissions from the project activity** (*Proj*)

Timescale: 10-years. Forecasting: emission factor will be fixed for the 10 years of calculation

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 %

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Boundaries

Boundaries vary depending on the sector of the project.
Overall, the methodology is structured with the intention of capturing the most common emission sources of the ETS GHGs, such as for example:

- 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 (source of errors)

- 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)

Sector classification (1/4)

1. Define project and organisational boundaries
2. Classify your project
3. Identify the appropriate methodology section and tools, if any
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

CATEGORY	SECTOR	PRODUCTS/SERVICES
Energy Intensive Industries (EII) - 1/2	Refineries	fuels (incl. e-fuels, bio-fuels)
	Iron & steel	Coke iron iron ore steel cast ferrous metal products other ferrous metal products or substitute products, please specify
	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
	Cement & lime	cement lime, dolime, sintered dolime other cement or lime products or substitute products, please specify
	Glass, ceramics & construction material	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

Sector classification (2/4)

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CATEGORY	SECTOR	PRODUCTS/SERVICES
Energy Intensive Industries (EII) - 2/2	Pulp & paper	chemical pulp mechanical pulp paper and paperboard sanitary and tissue paper other paper products or substitute products, please specify
	Chemicals	organic basic chemicals inorganic basic chemicals nitrogen compounds plastics in primary forms synthetic rubber other chemical products or substitute products, incl. bio-based products, please specify
	Hydrogen	hydrogen
	Other	Dispatchable electricity, incl. bio-electricity heat, incl. bio-heat other, please specify
Energy Intensive Industries when CCS is the main aim of the project	choose an EII sector	Annex I product
	EII / Other	CO_2 Transport
	EII / Other	CO_2 Storage

Sector classification (3/4)

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CATEGORY	SECTOR	PRODUCTS/SERVICES
Renewable energy	Wind energy	Non-dispatchable electricity Heating cooling
	Solar energy	Non-dispatchable electricity heating cooling
	Hydro/Ocean energy	Non-dispatchable electricity Dispatchable electricity Heating cooling
	Geothermal energy (including ambient energy through heat pumps)	Dispatchable electricity heating cooling
	Use of renewable energy outside Annex I	use of renewable energy in waterborne transport use of renewable energy in water desalination use of renewable energy in wastewater treatment other
	Manufacturing of components for renewable energy or energy storage (for the production of components of renewable energy)	wind plants and their sub-components solar plants and their sub-components hydro/ocean plants and their sub-components geothermal / ambient plants (including heat pumps) and their sub-components recycling of materials for production of RES plants other, please specify

Sector classification (4/4)

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CATEGORY	SECTOR	PRODUCTS/SERVICES
Energy storage	Intra-day electricity storage	electricity
	Other energy storage	electricity heating cooling
		hydrogen-based energy storage e-fuel-based energy storage
	Manufacturing of components for renewable energy or energy storage (for production of components for energy storage)	batteries and their sub-components recycling of materials for production of batteries other, please specify

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Examples

Projects	Choice of sector
Bio-refineries	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 (such as a bio-based substance with both fuel and chemical applications) applicants will be able to choose between refineries and chemicals.
Direct air capture (DAC) with CCS; **Waste to energy with CCS**	EII / Other
DAC with CCU; **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 renewable energy, 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 renewable energy, then the sector is “Use of renewable energy outside Annex I”. Such a project can be eligible due to size, i.e. if using more than 20 MWth, then the sector can be EII / Other.

Choice of a sector

Reference and project emissions must be consistent with the choice of sector; the sector chosen must be appropriate for the project

The main aim of the project may determine the sector and the reference emissions

- **if one product is clearly the only possible choice as principal product**: the choice is straightforward: e.g. wind energy or cement production
- but may be influenced by the use: e.g. ethanol can be used in chemicals or as a fuel (refineries)
- **if more than one product could be considered principal but all in the same sector**: also straightforward: e.g. different chemicals (chemicals) or fuels (refineries)
- **if products from 2 or more sectors could potentially be considered principal**: 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**, the sector is 'energy storage'
… **to produce as much hydrogen as possible**: then the 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**: then either 'renewable electricity' or 'energy storage' or hybrid project

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Energy-intensive industries, including CCU and biofuels, substitute products

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

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

Energy storage including plants for the manufacturing of ES components

Emission avoidance calculation methodology

Includes:

- Scope
- System boundaries
- Absolute and relative GHG emissions avoidance
- Data and parameters: *default values to be used*
- In appendix: monitoring, reporting and verification of performance: *for disbursement and for knowledge-sharing purposes*

+ GHG calculators

+ Examples

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Serious inherent weaknesses (SIW) in the context of the Innovation Fund

Serious inherent weaknesses are mistakes that can substantially influence the GHG emissions avoidance calculations. Such errors could derive from an incorrect application of the methodology or from a situation in which Part B of the application form and the GHG emissions calculator have not been filled-in correctly. Serious inherent weaknesses automatically fail the proposal.

SIW – examples 1/2

- Incorrect selection and/or application of GHG methodology section or combinations of GHG methodology sections (in case of hybrid projects) chosen;
- Emissions that are outside the scope of the GHG methodology have been included in the GHG emissions avoidance calculation
- The proper reference scenario for the product that the project will fully or partly replace not selected;
- Not all project emissions requested in the methodology have been identified or supplied;
- Some reference scenario emissions added in the calculation contrary to GHG methodology indications.

SIW – examples 2/2

- Double-counting of emission avoidance, especially relevant for hybrid, CCS and CCU projects;
- Potential leakage sources (e.g. expected methane leakage in project involving biogas generation, or CO2 leakages following capture) have not identified or sufficiently accounted for in the calculations;
- Emissions factors, ETS benchmarks and Fossil Fuels Comparators adopted by the applicant differ from those provided in the methodology or their selection is not properly justified (in the case of emission factors);
- Any conceptual error leading to significant discrepancy in the GHG emissions calculation, including when deriving from claimed credits of non-principal products.

Hybrid projects – general indications

Possible error:

Double-counting of emissions or avoidance/reduction

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.

Projects that capture (some of) the CO_2 generated that have products under the EII eligibility category or produce energy under RES: combine the calculation of the CC component of the project following section 3 with the EII component following the section 2 or renewable energy component following section 4, whilst removing any double counting. These would not be hybrid projects though as they would be classified under EII or RES.

- **Absolute GHG emission avoidance**: calculate separately using respective sections of the methodology and add them up, while removing double counting of avoidance and/or emissions, if any.

- **Relative GHG emission avoidance**: calculate based on the added-up absolute emission avoidance and the added-up reference emissions

source of errors

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Hybrid case: EII + RES

- Credits for the renewable energy exported.
- Particular attention to the correct emission factor for electricity in the different parts of the project, i.e. 0.1757 tCO_2e/MWh for the net electricity exported from the RES part of the project, even if the hybrid project application is submitted for an EII sector. Own-estimated emission factor is a source of errors that could be classified as SIW.
- Avoid double counting
- The power from the RES part will be preferentially supplied to local use in the EII part
- Typical project: export renewable electricity and/or renewable heat from an industrial plant belonging to one of the EII sectors.

Hybrid case: EII + ES

- The EII emissions and the ES emissions need to be then summed up while removing double counting.
- In case of activities overlapping between the EII and the ES parts, the revenue should be the guiding principle to split production activities between the EII part and the ES part.

Hybrid case: RES + ES

- Clarify the system boundaries for the RES component and the ES component
- The RES emissions and the ES emissions need to be then summed up while removing double counting
- The applicant should demonstrate that the power from the RE facility will be supplied to the ES project when the timing of power generation is consistent with the needs of the storage facility, and may claim credit under the RES methodology for any excess power exported.
- The combined facility should never store power from the grid at the same time as it is exporting renewable power to the grid.

Hybrid case: EII + RES + ES

- Credits for the renewable energy exported and for the energy stored in addition to the GHG emissions avoided in the EII part.
- Such hybrid projects application should combine the three components and clarify the system boundaries for the three parts.
- The three GHG emission terms need to be then summed up while removing double counting.

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$$\Delta GHG_{abs} =$$

EII:
$$= \sum_{y=1}^{10} \left(Ref_{inputs,y} + Ref_{processes,y} + Ref_{combustion,y} + Ref_{EoL,y} + Ref_{non\text{-}principal,y} - (Proj_{inputs,y} + Proj_{processes,y} + Proj_{combustion,y} + Proj_{change\_use} + Proj_{EoL} + Ref_{non\text{-}principal,y}) \right)$$

CC:
$$= \sum_{y=1}^{10} \left((CC_{storage,y} + CC_{use,y}) - (CC_{capture,y} + CC_{injection,y} + CC_{EHR,y} + CC_{pipeline,y} + CC_{transport,y}) \right)$$

RES:
$$= \sum_{y=1}^{10} \left(Ref_{electricity\ or\ heat,y} - (Proj_{bio,y} + Proj_{geo,y} + Proj_{on\text{-}site,y}) \right)$$

ES:
$$= \sum_{y=1}^{10} \left(Ref_{energy,y} + Ref_{services,y} - (Proj_{energy,y} + Proj_{on\text{-}site,y}) \right)$$

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1. Define project and organisational boundaries
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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 (1/2): (source of errors)

Eligibility category / Sectors / products	Reference scenario
Energy intensive industry	Frequent cases are based on EU ETS benchmark(s) and/or fossil fuel comparators (FFCs). If the reference cannot be constructed by combination of benchmarks and/or FFCs and/or other predefined references as indicated in the methodology, then applicants should build an appropriate reference scenario
EII / Refineries / Biofuels	Adapted fossil fuel comparators from REDII
RES / Renewable electricity; EII/bio-electricity; (non-dispatchable) and EII electricity saving projects	Expected 2030 electricity mix (0.1757 tCO_2e/MWh)
RES / Renewable heat; EII/bio-heat	Natural gas boiler (0.202 tCO_2e/MWh)
RES / renewable cooling	Expected 2030 electricity mix (0.1757 tCO_2e/MWh)

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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 (2/2): (source of errors)

Eligibility category / Sectors / products	Reference scenario
ES / Energy storage; RES / Dispatchable renewable electricity	Single-cycle natural gas turbine (used for peaking power) (140 tCO_2e/TJ or 0.504 tCO_2e/MWh)
ES / Electricity grid services	Combined-cycle natural gas turbine (partial load)
ES / Heat	ETS benchmark for heat (47.3 t CO_2e/TJ)
ES / Hydrogen storage	ETS benchmark for hydrogen production (48.2 t CO2e/TJ or 6.84 t CO_2e / tonne H2)
Energy storage in vehicles	Diesel-fuelled internal combustion engine (222.3 tCO_2e/TJ or 800 tCO_2e/MWh)

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Tools have been made available to support the calculation in the various sectors

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]*									
$Ref_{processes}$									
$Ref_{processes}$									
$Ref_{processes}$									
Products *[add rows and column, as needed]*									
$Ref_{products}$									
$Ref_{products}$									

ETS benchmarks and other relevant emission factors already part of the database

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 fror	Coke	0.217	tCO2e / t
ETS Product benchmarks	Agglomerated iron-bearing prc	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 alur	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
ETS Product benchmarks	Bottles of coloured glass of a r	Bottles and jars of coloured gla	0.237	tCO2e / t
ETS Product benchmarks	Melted glass for the productior	Continuous filament glass fibre	0.309	tCO2e / t
ETS Product benchmarks	Facing bricks with a density >	Facing bricks	0.106	tCO2e / t

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Emission factors for the production, use and/or storage of grid electricity (Table 1.3)

	Net electricity exported	EF	Electricity consumed	EF
Energy intensive industry	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	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)	48.81 gCO_2e/MJ [0.1757 tCO_2e/MWh]
Timed electricity demand (see section 2.2.6.3.6):	A virtual-stored-energy-release component	140 gCO_2e/MJ [0.504 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	48.81 gCO_2e/MJ [0.1757 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	Net amount of electricity produced in the reference scenario and replaced by dispatchable electricity in the project scenario	140 gCO_2e/MJ [0.504 tCO_2e/MWh]	Amount of electricity imported from the grid and consumed at the project site	0.00 gCO_2e/MJ EF_{in}
Energy Storage	Net amount of dispatchable electricity supplied by the project	140 gCO2e/MJ [0.504 tCO2e/MWh] EF_{out}	Amount of electricity consumed by the project (both storage and self-consumption)	0.00 gCO2e/MJ EF_{in}

source of errors

** Grid electricity consumed is treated as zero carbon assuming full decarbonisation of the electricity mix by 2050*

Transport emissions

source of errors

- 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

Assumptions | Applicants are required to document quantitative and qualitative assumptions used in the calculations

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]

Best practices: 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, e.g., check whether the characteristics of the proposed plant are credible and in line with basic engineering principles, or whether these have these been selected in a conservative yet accurate manner, i.e., to avoid under/over estimation

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Monitoring Plan

Projected operational data									GHG emissions due to production in the reference scenario					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.						
Source	Plant / Unit	Process	Input / Output	Parameter monitored	Description of parameter	Data unit	Year 1	Year 10	Type of data	Value	Unit / t product	t CO2e / [unit]	t CO2e	Area / Department 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
Inputs *[add rows and column, as needed]*																				
Ref_{inputs}																				
Ref_{inputs}																				
Ref_{inputs}																				
Processes *[add rows and column, as needed]*																				
$Ref_{processe}$																				

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	Brief description	Reliability

Fill in the columns for data traceability information under the Reference & Project emissions of the respective tools with detailed, complete and transparent documentation of the parameters used in calculations and data sources

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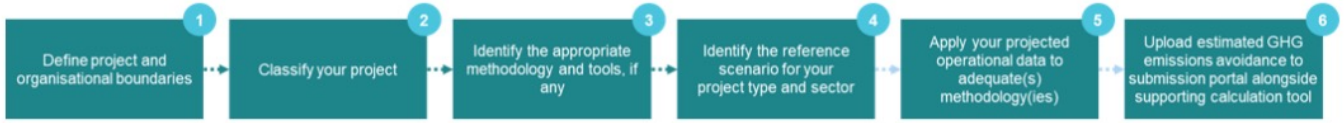
Examples | Hypothetical examples are available to illustrate the use of the tool for each project category

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 fee
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	C
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	Th all en hi ref

Checklist | Applicants shall prepare their submission in line with the best practices

The document has been built based on the experience gathered from previous calls, the common mistakes identified as well as the best practices followed by applicants. This tab is made available to applicants to self-assess whether they are following the best practices in calculating and presenting GHG emission avoidance in order to eliminate possible mistakes.

Checklist for self-assessment of accordance with best practices

			Yes / No / NA
1	Alignment with the methodology	Have the GHG calculations been submitted in an excel sheet that mirrors the GHG methodology, using the same terminology for GHG emission sources and activities within the scope of the given sector? (Please note that an excel template now exists also for energy intensive industries.) Any deviations are explained clearly and justified.	
2	Alignment with the methodology	Have ONLY emissions inside the scope of the IF GHG avoidance criteria been considered for the final emissions calculation? (GHG savings that could be claimed under Net carbon removals and other GHG savings should be indicated separately, see next point.)	
3	Alignment with the methodology	In case the project presents benefits which are out of the scope of the IF GHG emission avoidance criterion, has an excel-based calculation of these additional benefits with respect to GHG emission avoidance been provided? Does the calculation of the additional GHG emission avoidance follow the logic of the IF GHG emission avoidance methodology? Have you presented the additional calculations in the separate tabs 'Other GHG emission avoidance' and "net carbon removals"? Have you referred to the excel file/tabs, when presenting the additional benefits under "Net carbon removals, other GHG savings" in Application Form B?	
4	Alignment with the methodology	Have sufficient data and explanations to fully explain the project, its boundaries and its interactions with other installations been provided? Have the data used and methods adopted to estimate the GHG emissions and emission factors been documented in a transparent manner, creating a clear verification trail? Have you provided information sources and hyperlinks to the original reference in the application files?	
6	Alignment with the methodology	Have the principal product(s) and the reference products they substitute been identified? Do the principal product(s) represent the main objective of the project? Are the principal product(s) all in the same sector?	
7	Alignment with the methodology	For projects with multiple products, have ONLY the GHG emissions attributed to the chosen “principal products” been considered in the reference emissions when calculating the RELATIVE GHG emission avoidance? (please note that whilst all emissions in the reference scenario shall be considered for the absolute avoidance calculation, ONLY emissions of PRINCIPAL PRODUCTS in the reference scenario shall be considered for the relative avoidance calculation)	
8	Alignment with the methodology	In case an EU ETS benchmark is used, are these values up to date? The EU ETS benchmarks have been updated in Implementing Regulation determining revised benchmark values for free allocation of emission allowances for the period from 2021 to 2025 pursuant to Article 10a(2) of Directive 2003/87/EC of the European Parliament and of the Council.	

1. Define project and organisational boundaries
2. Classify your project
3. Identify the appropriate methodology and tools, if any
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

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]*	

Best practices: following the structured and tidy summary table is expected to facilitate transferring results to the forms, and reduce mistakes in the calculation of reference emissions for projects with multiple products

European Commission

Changes from the previous calls – 1/3

- clarification for projects with multiple principal products and for hybrid projects,
- addition of subsection 1.1.2.1. for Net Carbon Removals,
- clarifications in table 1.1 on sector classification,
- addition of a paragraph for principal products of a project replacing the function of a physically different conventional product (section 1.2),
- clarifications for projects earning revenues from the sale of multiple products,
- clarification for manufacturing of components,

Changes from the previous calls – 2/3

- adding specific data references for projects manufacturing electrolysers (load factor and CAPEX),
- clarifications to table 1.3,
- Addedition of paragraph “Simplification for Pilot Projects”,
- creation of subsection 1.3.5. for combustion emissions,
- addition of 2 example cases for setting the reference scenario for a principal product,

Changes from the previous calls – 3/3

- addition of elements for Cases 3, 4 and 6 in section 2.2.4,
- addition of a reference for methane leakage in section 2.2.5,
- addition of examples for “Other relevant inputs”,
- reformulation of section 3 “Carbon Credits”,
- clarification of the scope of section 4 and 5,
- addition of an equation for manufacturing of components of renewable energy systems,
- addition of examples for auxiliary services.