

FMO

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Absolute GHG Accounting Approach for Financed Emissions

FMO Technical Paper 2 | October 2018



Table of Contents

1	Introduction	3
2	Accounting scope	5
2.1	Absolute	5
2.2	Annual	6
2.3	Financed GHG emissions	7
2.4	Under management	7
3	Calculation framework	8
3.1	Primary data collection	8
3.2	Basic calculation	9
3.3	Activity	10
3.4	Emission factors	10
3.5	Investment size	11
3.6	Attribution	12
4	Opportunity for feedback	13
5	Glossary	14

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1 Introduction

This paper is the second in a series of technical papers by FMO. Paper 1 outlines how a 1.5°C pathway can be derived for a financial institution. In this second paper we present an absolute approach to GHG accounting of financed emissions, which enables an assessment of climate performance against such a pathway.

The absolute GHG accounting approach presented in this document details FMO's current thinking on how to establish the financed emissions of its portfolio. While we have a good idea of the broad accounting rules and scoping of the calculations there are still a number of issues that need further consideration and refinement. We invite other financial institutions as well as anyone else with an interest in the topic to provide their views and feedback to help us progress our approach and to join our pursuit for real climate impact.

GHG accounting for financial institutions has been evolving in recent years. In 2011, the GHG Protocol published their Corporate Value Chain (Scope 3) Accounting and Reporting Standard in which the first standard was presented to account for financed emissions of financial institutions.¹ Afterwards, several initiatives (like UNEP FI and WRI guidance, PRI Montreal pledge, UNEP FI and CDP Portfolio Decarbonization Coalition) were launched to assess the environmental impact of financial assets and to encourage policy and investment practices for climate change mitigation. International Financial Institutions (IFIs) have been working successfully together over the past years on a harmonized approach to project-level greenhouse gas (GHG) accounting of avoided emissions. These mainly cover project investments in renewable energy and energy efficiency. At the end of last year, the Dutch Platform Carbon Accounting Financials (PCAF), currently consisting of 14 financial institutions, published their first report on a harmonized approach for other asset classes.

So far, external reporting by FMO on GHG emissions has been based on emissions avoided using the IFI harmonized approach for project-level GHG accounting. FMO aims to double the amount of avoided emissions (between an average across contracted investments in 2010-12 and 2018-20). GHG avoidance is only being calculated for investments that qualify as green under FMO's green label.

FMO has taken part in many of the international developments on climate accounting as climate action is one of FMO's strategic goals, with Sustainable Development Goal 13 serving as one of the three main impact objectives.

Based on the work being done within PCAF, we have been exploring ways to supplement our GHG avoidance measurement with an absolute metric that can assess the annual emissions of our portfolio. Avoiding GHG emissions by, for example, building renewable energy supports the transition towards a low-carbon economy, whereas considering absolute emissions can inform FMO's performance against a 1.5°C pathway. The absolute GHG accounting approach will apply to both green and non-green investments.

¹ Under the GHG Protocol Corporate Value Chain Standard, emissions of investments are reported under category 15 Investments, which 'includes scope 3 emissions associated with the reporting company's investments in the reporting year'. It states that 'emissions from investments should be allocated to the reporting company based on the reporting company's proportional share of investment in the investee'.

This paper outlines our current thinking on such an absolute GHG accounting approach. Section 2 describes the accounting scope that is used to delineate the accounting approach, and section 3 provides the basics of the GHG emissions calculation framework. As there are still several questions and challenges ahead of us, we welcome your feedback on this paper. This document is an opportunity for other financial institutions to join us in our thought process and harmonize absolute GHG accounting at an early stage. Section 4 provides some explicit questions where we would like to ask for input around topics such as the portfolio scope and attribution.

For consultation

2 Accounting scope

The scope of the absolute GHG accounting approach can be summarized in one sentence, with the different elements elaborated in the subsections below: the *absolute* (2.1) *annual* (2.2) *financed GHG emissions* (2.3) for the portfolio *under management* (2.4).

2.1 Absolute

In order to mitigate dangerous climate change, it is now generally recognized that the world should be aiming to keep global warming well below 2°C. This means the world has a limited amount of *carbon budget* to spend, i.e. there is only a limited amount of GHG emissions that can be emitted. Global scenarios assume that annual global carbon emissions should be net-zero by 2050 to achieve a 1.5°C scenario (see Figure 1).

Achieving net-zero in 2050 can only be accomplished by reducing and capturing real emissions, which means applying an absolute GHG accounting approach. An absolute approach implies that the accounting should be based on the generation and sequestering of emissions. The accounting should be done in such a way that all emissions can be aggregated to arrive at the total absolute financed GHG emissions for FMO. Avoided emissions from, for example, renewable energy or avoided deforestation do not qualify as absolute emissions. This is an important distinction as avoided and absolute emissions cannot be summed together (see Box 1). FMO already has a methodology and tools in place to measure avoided emissions.

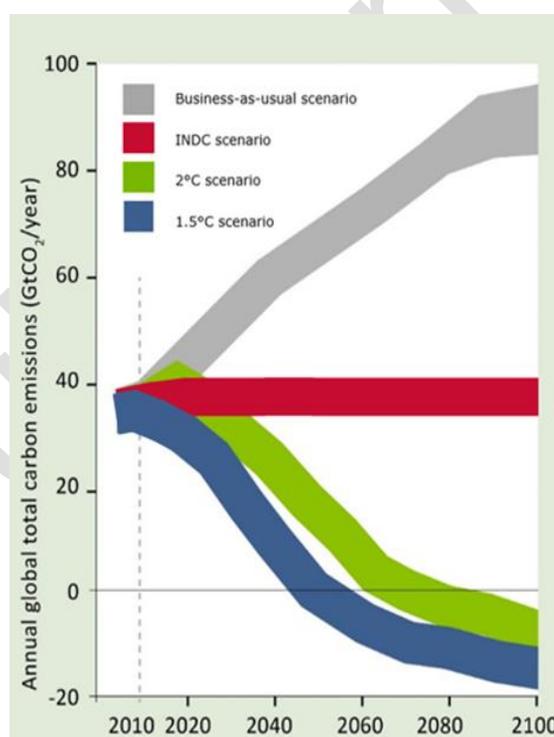


Figure 1: Global CO₂ emission pathways

Box 1: Absolute emissions versus avoided emissions

The **absolute emissions** are the actual/estimated emissions generated or sequestered as a result of an investment, for example the GHG emissions due to an expansion of a farm, the construction emissions due to the placement of a wind turbine or the sequestration of greenhouses gases by growing biomass.

The **avoided emissions** are the emissions that are avoided as a result of a project when compared to a baseline scenario established in accordance with the GHG Protocol, for example emissions avoided by additional renewable energy capacity that is assumed to replace future fossil fuel-based power plants, or emissions avoided through the protection of forests against illegal logging.

Absolute emissions can be mapped as *generated* emissions and *negative* emissions linked to either *corporate finance* or *project finance* (see Table 1). In the absolute GHG accounting approach, project finance refers to finance earmarked for a specific activity or project.

Table 1: Categorization of absolute emissions

	Corporate finance	Project finance
Generated emissions	Emissions produced through an ongoing business, e.g. an agricultural company that emits greenhouse gases every year because of fossil fuel combustion or due to methane emissions of livestock.	Emissions increased through a specific earmarked investment, e.g. the construction of a wind farm where construction machinery uses fossil fuels or an earmarked expansion of an agricultural company.
Negative emissions	Emissions sequestered through a company or project, e.g. a forestry company/project that sequesters greenhouse gases every year as a result of trees growing.	

In addition, to the two main categories of emissions outlined in the table above, we believe that earmarking an investment towards a specific improvement, like the replacement of an old machine with a new and more efficient one, can deliver an absolute emission saving. This would apply, for example, to certain energy efficiency projects. We propose that in such special cases the financed emission could be considered as negative. To help illustrate this thinking Figure 2 provides an example of an earmarked investment where an old machine is being replaced. Assuming the old machine was producing 10 ktCO₂e/year while the new machine only produces 7 ktCO₂e/year, then the emissions saved would be calculated as -3 ktCO₂e/year (see Figure 2). We invite others to share their views with us on this topic.

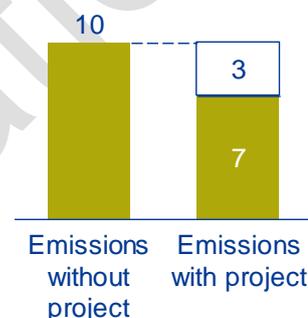


Figure 2 Example of saved emissions for Project Finance

2.2 Annual

Absolute emissions will be calculated annually using direct data when available. If direct GHG data is not available, the absolute emissions will be estimated either by using operational data on fossil fuel use or applying an economic input-output model. The annual emissions will always be related to project size or company value.

The GHG Protocol (corporate value chain (Scope 3) accounting and reporting standard) also states that '*because investment portfolios are dynamic and can change frequently throughout the reporting year, companies should identify investments by choosing a fixed point in time, such as December 31 of the reporting year, or using a representative average over the course of the reporting year*'. Given that the size of FMO's portfolio under management is relatively stable, the annual emissions will in most cases be calculated at the same date every year (see also section 3.3.2 of the PCAF Carbon Accounting Approach).

FMO will account for its financed emissions as long as the investment is part of portfolio. This obviously implies that full lifecycle emissions are not allocated to FMO. We realize that this could be seen as a challenge and welcome any views on this matter.

2.3 Financed GHG emissions

Only the financed GHG emissions of FMO's portfolio are included in the accounting approach. This implies that FMO's own emissions from office space and corporate travel are excluded and managed separately. Financed GHG emissions therefore only includes the emissions from FMO's investments. The GHG protocol defines this as: "a reporting company's scope 3 emissions from investments are the scope 1 and scope 2 emissions of investees". Therefore, the absolute GHG accounting approach will focus on the *attributed* scope 1 and 2 emissions of FMO's portfolio.

The greenhouse gases accounted for can include those covered by the GHG Protocol: carbon dioxide (CO₂), methane (CH₄), nitrous oxide (N₂O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulphur hexafluoride (SF₆) and nitrogen trifluoride (NF₃). Emissions are expressed in tonnes CO₂ equivalent using the global warming potentials for each greenhouse gas.

Initial estimates of relevant parameters will be made at the time of contracting, but these will be updated when more information becomes available. For example, for private equity it might be unclear at the time of contracting what sectors and countries a fund will invest in, so that only rough estimates of expected emissions can be made. These can be further refined once it becomes clear what the actual investments of the fund will be.

2.4 Under management

The portfolio under management by FMO will be accounted for in terms of emissions. We are however still considering exactly what investments fall under the term *portfolio*. We invite others to share their views with us. For example: to what extent should investments listed off the balance sheet be accounted for? Is it a matter of having financial or operational control?

3 Calculation framework

When direct emissions data is not available the absolute GHG accounting approach is based on a calculation logic in which activity is multiplied by an emission factor, which is attributed to FMO’s fair share. Primary data is preferred over modelled data.

The basic calculation logic of absolute emissions depends on the type of data that is available. Figure 2 outlines three options, including the preferred hierarchy. The first and preferred option is that absolute emissions are based on primary GHG data (direct verified GHG data), with the second option to calculate emissions based on related primary data, such as the fuel use or number of hectares planted. If primary data is not available, then the third option is to use (economic) models to estimate the GHG emissions. This hierarchy is similar to the one described in PCAF. The data hierarchy and the associated data collection are further described in section 3.1. The subsequent sections 3.2 - 3.6 detail the basic calculation methodology and define the elements used in the calculation.

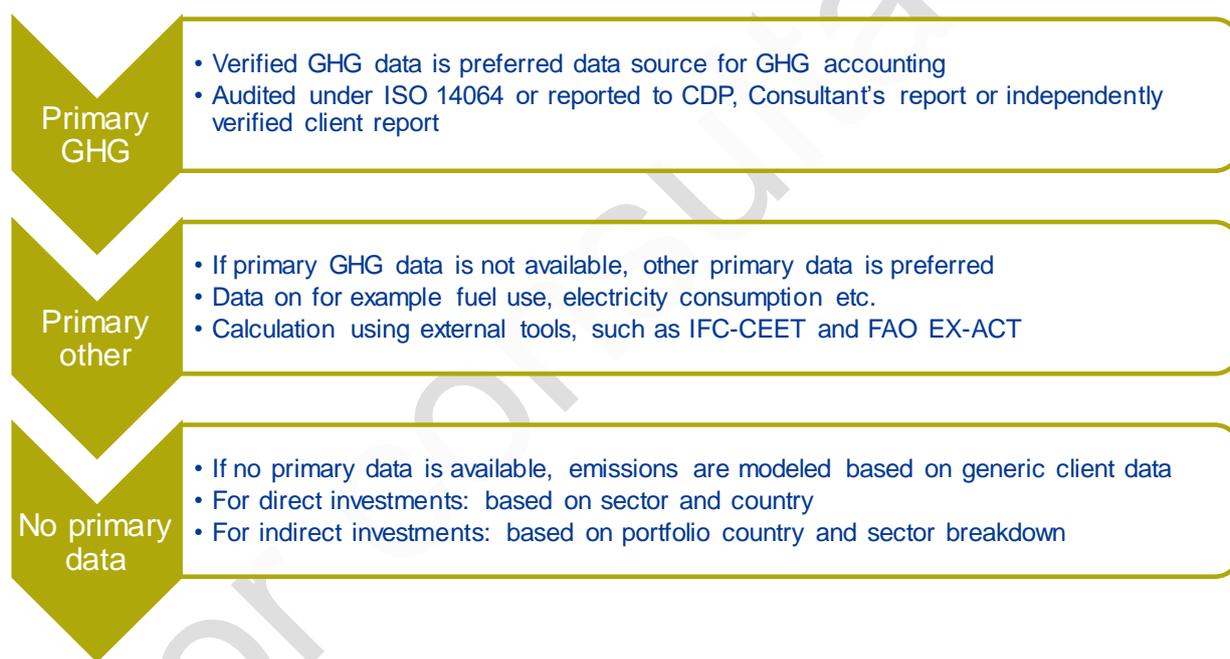


Figure 3: Hierarchy of data used for calculation of absolute GHG emissions

3.1 Primary data collection

Data on annual GHG emissions is collected within FMO. It is required to report Scope 1 and 2 emissions when emissions of the investee/client or the project exceed 25,000 tCO₂e. If the split of GHG emissions to scope 1 and 2 is not available, the total figure is reported as total scope 1-3 emissions.

When primary data is available (i.e. the first option in Figure 3), FMO uses the following hierarchy for preferred sources:

1. GHG data audited under ISO 14064 or reported to CDP
2. Consultant's report
3. Independently verified client report

In some cases, and although the investee/client or the project is expected to emit more than 25,000 tCO₂e, primary data may not be available. This applies in particular to indirect financing such as intermediate lending and private equity in generalized funds. Obtaining primary GHG data for microfinancing can also be challenging given to large number of end beneficiaries.

In such instances the emissions will if possible be calculated based on other primary data such as fuel use or hectares planted. The IFC-Carbon Emission Estimation Tool (CEET) is used in most cases, as this includes calculation methodologies for multiple sectors relevant for FMO (fuel consumption, electricity consumption and wastewater operations). The FAO EX-ACT Tool can be used for calculations relating to agriculture and forestry investments. These tools will calculate the generated and negative emissions based, for example, on fuel consumption, electricity consumption, area of reforestation, agricultural farming practices and land-use change.

If no primary data is available at all an economic input-output model will be used to estimate the financed emissions.

3.2 Basic calculation

The absolute GHG accounting approach focuses on the emissions financed by FMO's investments. Absolute emissions are to be calculated for FMO's portfolio under management. The basic calculation methodology can be expressed as *activity x emission factor x (investment size / attribution factor)*. The detailed formulas are presented below. The parameters' unit is denoted within [brackets]. Specific elements of the formulas are described in sections 3.3 – 3.6.

Primary (non-GHG) data available:

$$\text{Annual physical activity [e.g. kg]} \times \text{Emission factor} \left[\frac{\text{tCO}_2\text{e}}{\text{e.g. kg}} \right] \times \frac{\text{Investment}^2 \text{ size FMO [M€]}}{\text{Total company value or total project size [M€]}}$$

No primary data available (i.e. modeled data):

$$\sum_{\text{country/sector}} (\text{Investment size FMO [M€]} \times \text{Annual economic activity} \left[\frac{\text{M€ output}}{\text{M€ invested}} \right] \times \text{Economic emission factor} \left[\frac{\text{tCO}_2\text{e}}{\text{M€ output}} \right])$$

² In accordance with PCAF, 'the term "investment" (unless explicitly stated otherwise) is used in the broad sense: 'putting money into activities or organisations' with the expectation of making a profit'. This in contradiction to the more narrow definition sometimes used within for example a bank: as one of several financing options, besides e.g. debt finance, equity finance. Most forms of investment involve some form of risk taking, such as investment in equities, debt, property, projects, and even fixed interest securities which are subject to inflation risk, amongst other risks'.

3.3 Activity

There are two types of activities used in the absolute GHG accounting approach: *physical activity* and *economic activity*. Physical activity is relevant when primary data is available, and economic activity is relevant when no primary data is available.

The physical activity is the physical act that generates or sequesters emissions, for example the burning of fossil fuels or growing of trees. The unit depends on the type of activity. Examples of activities include: the use of 1,000 tonnes of crude oil per year, the planting of 10 hectares of trees per year or the driving of 200,000 km per year. As presented in section 2.2, all activities should be expressed per annum.

When primary data is not available, data on economic activities will be used. These describe in what sectors and countries the investment will be used. For intermediate financing, the investment may be mapped to multiple different sectors, according to the intermediary's portfolio, so that the total GHG emissions will be a weighted sum of different emission factors. Assumptions need to be made on how FMO's investment can be translated into economic output, for example using capital intensity factors.

3.4 Emission factors

There are two types of emission factors used in the absolute GHG accounting approach: *physical emission factors* and *economic emission factors*, which relate to physical and economic activities described above.

The physical emission factor is the emission factor associated with a physical activity. The unit depends on the type of activity. For example, emission factors could be 3.0 tCO₂eq/tonne crude oil, -200 tCO₂eq/hectare forest and 100 gCO₂eq/kilometer driven. Emission factors are positive for produced emissions and negative for sequestered emissions.

The economic emission factor is the emission factor associated with an economic activity. These economic emission factors can be structured in different ways based on the underlying datasets that are used. Most often, there are different economic emission factors available for different countries/regions and sectors.

Dedicated green credit lines for financial institutions require the loan to be used for specific climate-friendly purposes. Under FMO's definition for green investments, activities that contribute to the mitigation of climate change are eligible for a (partial) green status, along with investments in climate change adaptation and other footprint reduction.

With regards to climate change mitigation, activities are considered green if:

- they are listed in table 1 of the Common Principles for Climate Mitigation Finance Tracking OR
- they are related to energy efficiency which achieves at least a 20% reduction in energy consumption or GHG emissions compared to a business as usual scenario.

To reflect the lower GHG intensity of a green investment, the accounting approach will implement a *20% reduction on the economic emission factor* for green credit lines to financial institutions (i.e. when GHG emissions are calculated based on modeled data). We assume that green lines generally finance investments with better energy

efficiency and lower GHG emission factors than the sector/country averages set as default in the input-output model. The 20% reduction reflects the eligibility criteria of FMO's green label.

3.5 Investment size

PCAF states: '*Follow the money is a key principle for footprinting of financial assets, i.e. the money should be followed as far as possible to understand and account for the carbon impact in the real economy*'. Therefore, the accounting approach considers the GHG impact of FMO's financed emissions which implies that defining the investment size should be aligned with the financial accounting as much as possible. Consequently, there are several considerations when determining FMO's investment size: 1) financing lifetime, 2) the inclusion of repayments, provisions and write-offs, 3) the value of the investment and 4) the approach to guarantees. In the remainder of the paragraph we will elaborate on these considerations. In particular in reference to 2), 3) and 4) we welcome your input.

Ad 1): Following financial accounting, the financial lifetime of the investment is leading in the GHG accounting, not the operational lifetime.

Ad 2): To determine FMO investment size for a *debt* instrument, it seems reasonable to consider loan repayments, so that the financed emissions will decline to zero at the end of the loan tenor. For project finance this will mean that the emissions financed by FMO will be related to the remaining debt as part of the total project size. However, we are discussing the implications of the inclusion of provisions and write-offs if GHG emissions are estimated via an economic model. Following financial accounting, it is assumed that these elements should also be considered, as provision and write-offs can no longer be considered investments. Good practice suggests using *actual outstanding exposure* (ref. PCAF), but it is not exactly clear how this considers provisions, write-offs and non-disbursed amount. We would welcome views on these points.

Ad 3): To determine FMO's investment size for *equity instruments*, the main question is if the investment size should change over time e.g. by considering changes in fair value. This is closely related to the attribution question: we propose below (paragraph 3.6) to use PCAF's requirement of total debt and equity (ref. enterprise value) as the denominator to attribute emissions for corporate equity. For project equity we are considering how to value FMO's investment. We would like to better understand the implications of these two options and are keen to hear your views.

Ad 4) How to consider guarantees in the accounting approach is another element for discussion. We believe that guarantees facilitate additional physical and economic activities, which would support their inclusion as financed emissions. Another view could be that guarantees have no attribution until they are called. Our current thinking is that guarantees are typically only called when a company or project is not performing at which time there is likely limited economic activity taking place and hence fewer emissions. Therefore, we would think that emissions accounting for guarantees before they are called might make sense, but we would appreciate your feedback on this topic.

3.6 Attribution

The GHG Protocol states that “*emissions from investments should be allocated to the reporting company based on the reporting company’s proportional share of investment in the investee*”. This is based on the principle of *fair share*, whereby FMO accounts only for the emissions linked to its share of the total investment. The attribution however may differ depending on data availability:

When primary data is available, the GHG emissions will be calculated based on the physical activities for the entire company or project. This means that the emissions need to be attributed based on FMO’s investment share. PCAF states: “*the financial value of the asset that, in relation to the investment, determines the proportional share for accounting the carbon footprint, should include all financial flows (i.e. equity and debt) to the investee as much as possible*”. As a result, emissions are proportionally attributed for corporate finance to the company’s total debt + equity. For project finance, emissions are proportionally attributed to the total project size.

For consultation

4 Opportunity for feedback

As we indicated in the preceding sections, there are a few topics where additional clarity is needed. This document is an open invitation to other financial institutions as well as anyone else willing and able to help us further refine the absolute accounting approach and move towards harmonization. In particular, we would like to solicit your feedback and input on the following:

- **Absolute emissions:**
 - o Should this include reduced emissions through earmarked brownfield investments in energy efficiency?
- **Portfolio under management:**
 - o Does this only include portfolio on balance sheet of the financial institutions?
 - o Should write-offs and provisions be included?
- **Fair share of equity:**
 - o Should equity size account for changes in fair value?
- **Guarantees:**
 - o How should guarantees be treated?

For input or additional information please contact: consultation@fmo.nl

5 Glossary

Absolute emissions	The emissions generated and sequestered as a result of an investment. For example, the GHG emissions produced by a company or project due to agricultural expansion, the construction of a windfarm or the sequestration of carbon in a forestry plantation. In other methodologies, these emissions are referred to as gross emissions.
Avoided emissions	The avoided emissions are the emissions that are avoided as a result of a project when compared to a baseline scenario established in accordance with the GHG Protocol. For example, emissions avoided from fossil fuel power production by constructing additional renewable energy, or emissions avoided by reducing land-use change. In other methodologies, these emissions are called relative emissions.
Corporate finance	Finance for a company, not earmarked for a specific activity or project
Economic activity	Activity that generates economic output. Economic activities have economic emission factors associated with them.
Financed emissions	Emissions (generated or sequestered) by FMO's investments.
Investment	The term "investment" (unless explicitly stated otherwise) is used in the broad sense: 'putting money into activities or organisations' with the expectation of making a profit'. This in contradiction to the narrower definition sometimes used within for example a bank: as one of several financing options, besides e.g. debt finance, equity finance. Most forms of investment involve some form of risk taking, such as investment in equities, debt, property, projects, and even fixed interest securities which are subject to inflation risk, amongst other risks.
Primary data	Direct data on physical activities to calculate GHG emissions, such as data on fuel use or number of hectares planted. The calculation can be done externally, so that direct verified GHG data is presented to FMO, or the calculation can be internally within FMO using emission tools based on physical activity data sent to FMO.
Project finance	Finance earmarked for a specific activity or project.
Physical activity	Physical act that generates and sequesters emissions, for example the burning of fossil fuels. Physical activities have physical emission factors associated with them.