



# The NATO Greenhouse Gases Emission Mapping and Analytical Methodology

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# Executive Summary

The NATO Green House Gases (GHG) Emissions Mapping and Analytical Methodology provides guidelines and tools to calculate the greenhouse gas emissions from the various civilian and military structures (installations and assets) of the NATO Enterprise. The methodology applies only to the various NATO bodies and structures (as identified in this paper) and not to NATO Allies. However, it may be useful to Allies in facilitating their own national plans.

The data collected and analysed using this methodology serve as a basis for setting GHG reduction targets for the NATO Enterprise. This methodology will not set those targets and it will not forecast future emissions. Rather it will support the decision making process for NATO's goal of assessing the feasibility of reaching net zero GHG emissions by 2050. The methodology has been independently validated with recommendations made for improvement; these are being taken into account as part of a continuous improvement cycle. Sensitive in-house data has not been included in this version.

## Introduction

This document responds to the implementation of the NATO Climate Change and Security Action Plan, to develop a 'mapping and analytical methodology on greenhouse gas emissions'. The Action Plan was endorsed by NATO's Heads of State and Government at the 2021 Brussels Summit.

To develop the parameters and the scope of the NATO Greenhouse Gases Emissions Mapping and Analytical Methodology that will apply to the NATO Enterprise, across its civilian and military structures, NATO staff have drawn on best practice from various Allies.

The aim of this Methodology is to estimate the GHG emissions from NATO's civilian and military facilities and installations, and provide a basis to identify opportunities for GHG emissions reductions.

This document is a first iteration of the methodology, which will be further refined to take into account lessons learned during implementation.

# Governance

The NATO Enterprise is made up of various reporting bodies (see graphic below). There is no hierarchy among the reporting bodies in terms of GHG emissions reporting.

The various reporting bodies are responsible for collecting the raw data and calculating their GHG emissions on a yearly basis. The data are coordinated by NATO HQ, and specifically by the Emerging Security Challenges Division.

An internal emission report is drafted based on these annual data. The report does not rank the various NATO Enterprise reporting bodies against one another, neither against a scale. The Methodology has been designed to help NATO evaluate the challenges and opportunities towards achieving net zero emissions, while delivering on the core missions and functions of the Alliance, and maintaining a credible deterrence and defence posture.



Graphic 1: NATO's Enterprise reporting bodies

# Challenges

The large geographic distribution of the NATO Enterprise across Europe and North America, and the organizational and juridical specificity of its reporting bodies, influence the collection and analysis of raw energy consumption data.

Depending on their ability to collect and analyse raw energy data, some of the reporting bodies may need to exclude some of their emissions sources. For instance, it may prove challenging to disaggregate information on energy consumption for entities that operate together with other organizations.

In the majority of such cases, this refers to NATO military or civilian structures that operate in various host nations and where the operating costs are divided between national and/or multinational bodies. Due to various local circumstances, GHG emissions may need to be estimated based on square meters of allocated space, equipment type, or usage hours.

In other instances, in a multinational context, some of the NATO-led military structures are operating together with the NATO Agencies, such as the NCIA; in this way, the reporting bodies work to ensure that the data are not double-counted.

## Scope of the Methodology

This methodology excludes emissions from NATO-led operations and missions and other process activities such as training and exercises.

The methodology does not:

- Provide a forecast of GHG emissions using the calculation methodology;
- Set GHG reduction targets;
- Present a finalized dashboard for reporting progress. This is recommended as further work.

# Methodology

This methodology provides a framework for initial calculations of GHG emissions of the NATO Enterprise. It is based on the Greenhouse Gas Protocols (GHG Protocol), which provides accounting and reporting standards, sector guidance, and calculation tools.

The scope of the methodology is to offer guidance on calculating GHG emissions, and to serve as a source to develop strategies and policies for emissions reductions and to track the progress of those policies over time. It will also support the establishment of a record of emissions and track their evolution across NATO.

The methodology comprises a GHG Inventory for the NATO Enterprise and a Calculation Tool. The GHG Inventory for the NATO Enterprise is presented in the next section.

The raw data are measured or estimated before being converted into a Carbon Dioxide Equivalent (CO<sub>2</sub>e) using recommended conversion factors.

Future reporting of the baseline calculation will be conducted through a dashboard, currently under development, that could be used to support decision making on energy management and associated investment options.

This dashboard will continue to be refined, in line with the implementation and fine-tuning of the methodology.





# Greenhouse Gas (GHG) Inventory for the NATO Enterprise

## Introduction

The Greenhouse Gas (GHG) Inventory for the NATO Enterprise is based on the recommendations of the internationally recognised GHG Corporate Standard Protocol. It relies on the principles of relevance, completeness, consistency, transparency and accountability, as stated in the GHG Protocol.

As NATO develops its competence in measuring its GHG emissions, it will aim to use the evidence collected to inform decisions on enhancing operational effectiveness, for instance, through understanding where investment in improving energy efficiency could be prioritized.

The scope of the GHG Inventory is to:

- provide guidance in calculating GHG emissions;
- serve as a source to develop strategies and policies for GHG emissions reductions;
- provide a basis to identify opportunities for GHG reductions;
- track the progress of those policies over time; and,
- support the establishment of a record of emissions, tracking their evolution across NATO.

NATO Enterprise civilian and military facilities have been given guidance on applying the NATO GHG Inventory specifications. This includes being given access to a general GHG emissions calculation tool developed for this purpose, which can be used according to specific organizational and operational requirements.

## Operation Control

The various bodies of the NATO Enterprise are instructed to apply the general principle of operational control (an entity accounts for 100 percent of the GHG emissions from operations/activities over which it has control) when deciding on the sources of emissions.

This inventory contains guidance in the following areas:

1. Organizational boundaries
2. Operational boundaries
3. Scopes
4. Calculating emissions
5. Reporting
6. Reviewing

# Greenhouse Gas (GHG) Inventory for the NATO Enterprise

## 1. The organizational boundaries

When determining organizational boundaries, the reporting body should determine the impact of their legal and organizational structure on GHG emissions reporting. In addition, the reporting bodies should also assess the appropriate circumstances in which GHG emissions should be reported, while considering their potential impact (sensitivity of the data) to mission and operation critical capabilities.

For example, the organizational boundaries for a particular NATO entity could be a mix of several of the following items:

1. Building X, location
2. Infrastructure Y, location
3. Mission W, location
4. Project Z, location

## 2. The operational boundaries

The operational boundaries involve identifying GHG emissions associated with the operations of the various reporting bodies, categorizing them as direct and indirect emissions, and choosing the scope of accounting and reporting for direct and indirect emissions as follows:

### Direct emissions

- Stationary combustion sources (in-house use of energy sources for running buildings and / or other infrastructure (heating, steam, electricity))
- Mobile combustion sources (vehicles, aircraft, ships, helicopters, etc.)
- Refrigerants (air-conditioning, refrigerants, other unintended gas releases, gases released by usage of radar systems, avionics cooling, fire suppression)

### Indirect emissions

- Purchased electricity; heating (district, natural gas, gasoil, biomass, biogas, petrol); steam; cooling
- Travel (business, commuting)



# Greenhouse Gas (GHG) Inventory for the NATO Enterprise

## 3. The GHG Emissions Scopes

NATO Enterprise entities collate data in accordance with the principle of operational control against the following GHG emissions scopes, accepting that not each element of each scope will be relevant and that, for scope 3, data may not yet be accessible until NATO's experience develops.

### **Scope 1:**

- Stationary combustion
- Mobile combustion
- Refrigerants and other fugitive emissions

### **Scope 2:**

- Purchased electricity (location-based)
- Purchased electricity (market-based)
- Purchased heating and steam (location-based)
- Purchased heating and steam (market-based)

### **Scope 3:**

- Purchased goods and services
- Capital goods
- Fuel-and energy-related activities (not included in scope 1 or scope 2)
- Upstream transportation and distribution
- Waste generated in operations
- Business travel
- Employee commuting
- Upstream leased assets
- Downstream transportation and distribution
- Downstream leased assets
- Investments

# Greenhouse Gas (GHG) Inventory for the NATO Enterprise

Scope	Activity Type	Category	Subcategory
Scope 1	Mobile Combustion	Gasoline	---
		Diesel	---
	Purchased Heat	Diesel	---
		Natural Gas	---
	Refrigerants	Extinguishing & Cooling Agents	---
	Stationary Combustion	Distillate Fuel Oil	---
		LPG	---
		Natural Gas	---
	Transportation	Aviation Fuel	ASL E-3A
		Car	---
Ship/Boat		---	
Scope 2	Purchased Electricity	Electricity	Belgium
			France
			Germany
			Greece
			Hungary
			Italy
			Luxembourg
			Netherlands
			Norway
			Poland
			Portugal
			Türkiye
	United Kingdom		
USA			
Purchased Heat	Diesel	---	
	Natural Gas	---	
Scope 3	Transportation	Airplane	< 3000 km > 3000 km
		Car	---
		Ship	---
		Train	National
			International

# Greenhouse Gas (GHG) Inventory for the NATO Enterprise

## 4. Calculating emissions

An Excel table, which has already been developed, is used to record raw data and calculate the NATO Enterprise GHG emissions.

The baseline year for calculating the emissions is 2019; it is recognized that recalculation will be required if errors amount to 5% or more of the total emissions.

On data collection and recording, any assumptions made and any departures taken from the recommended guidelines should be duly reported.

## 5. Reporting

An analysis of the emissions data should be sent up the management chain to support further reduction policy decisions across the NATO Enterprise.

## 6. Reviewing

The reporting of GHG emissions will be kept under review in-between reporting periods to ensure consistency and accuracy of the data and calculation methodology.

