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**10-YEAR ANNIVERSARY**

# **Aerospace Industry Tool for Calculating Scope 3 Greenhouse Gas Emissions of Purchased Goods & Services and Capital Goods: User Guide**

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*20 August 2021*

*Version 1.0*

This document is released for purpose of supporting voluntary accounting and reporting of greenhouse gas (GHG) emissions associated with purchased goods and services and capital goods across the aerospace industry.

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Aerospace Industry Tool for Calculating Scope 3 Greenhouse Gas Emissions of Purchased Goods & Services and Capital Goods: User Guide

## Version History

<b>Date</b>	<b>v#</b>	<b>Modified By</b>	<b>Section, Page(s) and Text Revised</b>
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## 1 Glossary

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<b>Acronym</b>	<b>Definition</b>
<b>BoM</b>	<b>Bill of Materials</b>
<b>CG</b>	Capital Goods
<b>EF</b>	<b>Emission Factor</b>
<b>GHG</b>	Greenhouse Gases
<b>IAEG</b>	<b>International Aviation Environmental Group</b>
<b>ISO/TR</b>	International Organization for Standardization/Technical Report
<b>PG</b>	<b>Purchased Goods</b>
<b>PG&amp;S</b>	Purchased Goods & Services
<b>PP&amp;E</b>	<b>Plant, Property, &amp; Equipment</b>
<b>WG3</b>	IAEG Work Group 3

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## 2 Introduction

### 2.1 Context

As described in “GHG Reporting Guidance for the Aerospace Industry, A Supplement to the GHG Protocol Corporate (Scope 1 and 2) and Value Chain (Scope 3) Accounting and Reporting Standards”, the International Aerospace Environmental Group (IAEG) identified both “Purchase of Goods and Services” (PG&S) and “Capital Goods”(CG) categories as potentially relevant Scope 3 categories for member companies and their value chain partners. IAEG consequently decided to develop relevant methodology and guidance materials to allow aerospace and defense companies to report greenhouse gas (GHG) emissions for these categories.

This document provides guidance for assessing GHG emissions inventories associated with PG&S and CG. An overview of the methodology is presented, followed by step-by-step instructions on how to apply the methodology in conjunction with a simplified calculation tool (the “tool”) specifically developed for aerospace-related PG&S and CG GHG emissions accounting.

### 2.2 Definitions

#### 2.2.1 Purchased goods and services

The GHG Protocol Corporate Value Chain Accounting Reporting Standard<sup>1</sup>, defines PG&S as “this category includes emissions from all purchased goods and services not otherwise included in the other categories of upstream scope 3 emissions (i.e., category 2 through category 8)”.

#### Examples of PG&S:

- Titanium Casting
- PVC pipe
- Nylon
- Advertising
- Telecom service

Purchased goods are typically items that are directly related to making the final product (such as intermediate goods) or non-product-related inputs (such as office supplies or manufacturing spare parts).

Services are defined as intangible products used in the conception of the final product or service offered by the company.

Companies should follow their own financial accounting procedures to determine whether to account for a purchased product as a capital good or as a purchased good or service. Companies should not double count emissions between both categories.

Note: Accounting conflicts might arise between the default choices allocated to the different types of products in this methodology and the company’s procedures. In such situations (i.e., a given machinery or vehicle considered as a PG rather than a CG), the user should inform IAEG Work Group 3 (WG3) of the mismatch to help with methodological/tool improvement and, in the meantime, reporters should carefully select what seems to be the most appropriate category for the specific good, and document any assumptions associated with the allocation.

<sup>1</sup> <https://ghgprotocol.org/standards/scope-3-standard>

## 2.2.2 Capital goods

The GHG Protocol Corporate Value Chain Accounting Reporting Standard, defines CGs as “final products that have an extended life and are used by the company to manufacture a product, provide a service, or sell, store, and deliver merchandise. In financial accounting, capital goods are treated as fixed assets, for instance as plant, property, and equipment (PP&E).”

As mentioned in the PG&S subsection, companies should follow their own financial accounting procedures to determine whether to account for a purchased product as a capital good or as a purchased good or service. Companies should not double count emissions between both categories.

Accounting conflicts might arise between the default choices allocated to the different types of products in the methodology and the company’s procedures. In such situations (i.e., a given machinery or vehicle considered as a PG rather than a CG), the user should inform IAEG Work Group 3 (WG3) of the mismatch to help with methodological/tool improvement and, in the meantime, reporters should carefully select what seems to be the most appropriate category for the specific good, and document any assumptions associated with the allocation.

### Examples of CG:

- Equipment
- Machinery
- Buildings
- Facilities
- Vehicles

### 3 Methodology overview

#### 3.1 Available approaches

Two estimation approaches are available to users of the tool for estimating PG&S and CG Scope 3 impacts: spend based and mass-based.

The Spend-based approach enables users to estimate GHG emissions based solely on the company's expenditure data (i.e., purchase orders, general ledger, etc.). Spend-based estimations are generally considered more straightforward and less effort intensive since PG&S and CG expenditure data are usually readily available in companies. However, results obtained using this approach generally tend to have a lower accuracy than mass-based or life cycle assessment approaches.

The Mass-based approach allows users to base their calculations mostly on physical characteristics such as the mass breakdown of products to achieve a more accurate GHG assessment. The mass-based approach is usually effort intensive since data on the mass breakdown of products is generally not as readily available as spend-based data and generating it usually requires more resources. On the upside, this approach is generally considered to be more accurate than the spend-based one.

A third and even more accurate calculation option is a life cycle assessment (LCA) for each product. However, a LCA is usually highly resources and time intensive and requires special software and/or information technology tools.

The choice of approach depends in part on the company's experience, or maturity, with GHG emissions quantification because the analyses for these different approaches involve varying levels of complexity. Figure 1 compares the approaches in terms of complexity and maturity.

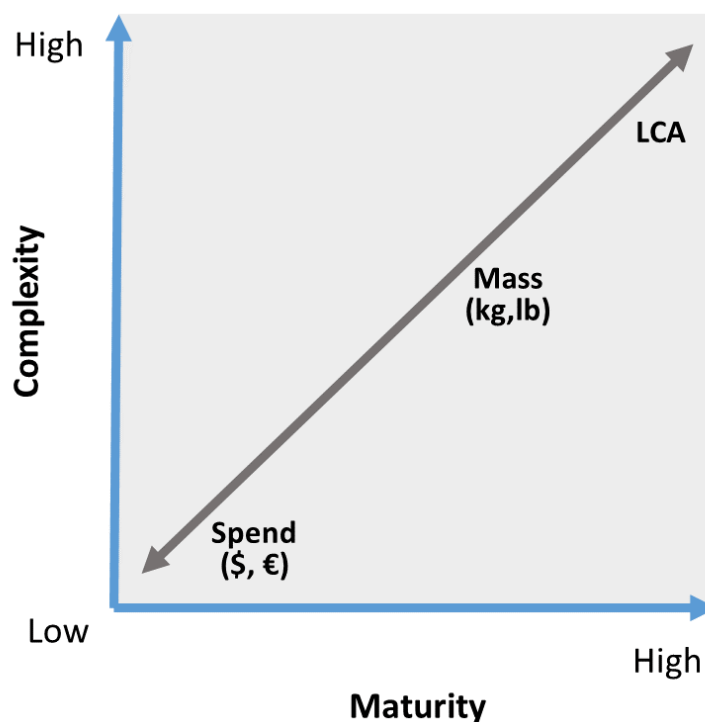


Figure 1: Schematic of the available approaches with respect to maturity and complexity

### 3.2 Main features of the methodology

The goal of this methodology is to offer aerospace companies a way of quantifying GHG emissions while accounting for the varying operational capabilities among companies. A three-approach methodology was developed where users of the methodology are invited to choose among three ways to calculate their emissions. The selection of the appropriate approach depends on the familiarity of the user with Scope 3 accounting, the level of accuracy required, the data available to the user and the human resources available for data collection.

The three approaches are “Spend-based”, “Hybrid” and “Mass-based”.

- The Spend-based approach enables users to estimate GHG emissions based solely on the company’s expenditure data (i.e., purchase orders, general ledger, etc.).
- The Hybrid approach allows users to use a mix of both expenditure data and physical data for their analysis.
- The Mass-based approach allows users to base their calculations mostly on physical characteristics such as the mass breakdown of products to achieve a more accurate GHG assessment.

Table 1 provides an overview of key features to facilitate the comparison between each approach’s strengths and weaknesses.

**Table 1: overall presentation of the three approaches**

Approach	Spend-based	Hybrid	Mass-based
<b>Accuracy</b>	Low	Medium	Medium - High
<b>Granularity</b>	Low	Low-medium	Medium - High
<b>Data input complexity</b>	Low	Medium	High
<b>Estimated level of effort</b>	A few hours	A few days	A few weeks

### 3.3 Purchased Goods & Services categories for the purpose of GHG accounting

Purchased goods and services are classified into 16 categories relevant to the aerospace and defense industry value chain, organized into 4 general groups. The categories are the same across all 3 approaches of this methodology, but the granularity and type of Emissions Factor (EF) in each category vary between approaches.

Table 2 shows the organization of groups / categories and subcategories as well as the type of EF that are available for each subcategory.

Table 2: Categorization of PG&S

Group	Category	Spend-Based EF	Mass-Based EF
Assembly and structural components	Metallic components	X	X
	Non-metallic components	X	X
Manufactured components and materials	Metallic components	X	X
	Non-metallic components	X	X
	Electrical and electronic equipment	X	X
Raw materials	Metallic raw materials	X	X
	Non-metallic raw materials	X	X
	Gases and chemicals	X	-
Services	Professional services and Consulting	X	-
	Financial services and insurance	X	-
	Travel services	X	-
	Telecom services and IT support	X	-
	Materials handling	X	-
	Research, development and testing services	X	-
	Repair and overhaul (of product)	X	-
	Miscellaneous	X	-

### 3.4 Capital Goods categories for the purpose of GHG accounting

Table 3 shows the organization of proposed groups / categories and subcategories for CG.

Table 3: Categorization of CG

Group	Category	Spend-Based EF	Mass-Based EF
Capital goods	Buildings	X	X
	Industrial equipment	X	X
	Fleet	X	X
	Telecom equipment and IT hardware	X	X

## 4 Step-by-step guide

This section provides the instruction to guide the user through the use of the tool. In each section, references are made to the corresponding sheet in the Excel tool.

### 4.1 Getting familiar with the tool – “Read me” sheet

The user should consult the “Read me” sheet before starting an assessment as it contains all the necessary basic information to start using the tool. In particular, it indicates:

- the significance of the color code;
- input cells and restricted (calculated) cells

### 4.2 Identifying the relevant assessment approach – “Decision tree” sheet -

Choosing the appropriate approach for each company depends on several factors: the familiarity of the user with Scope 3 accounting, the level of accuracy required, the data available to the user and the availability of the resources to collect data.

The user should determine the assessment approach best suited for their needs, available resources, and available data based on the decision tree shown in Figure 2.

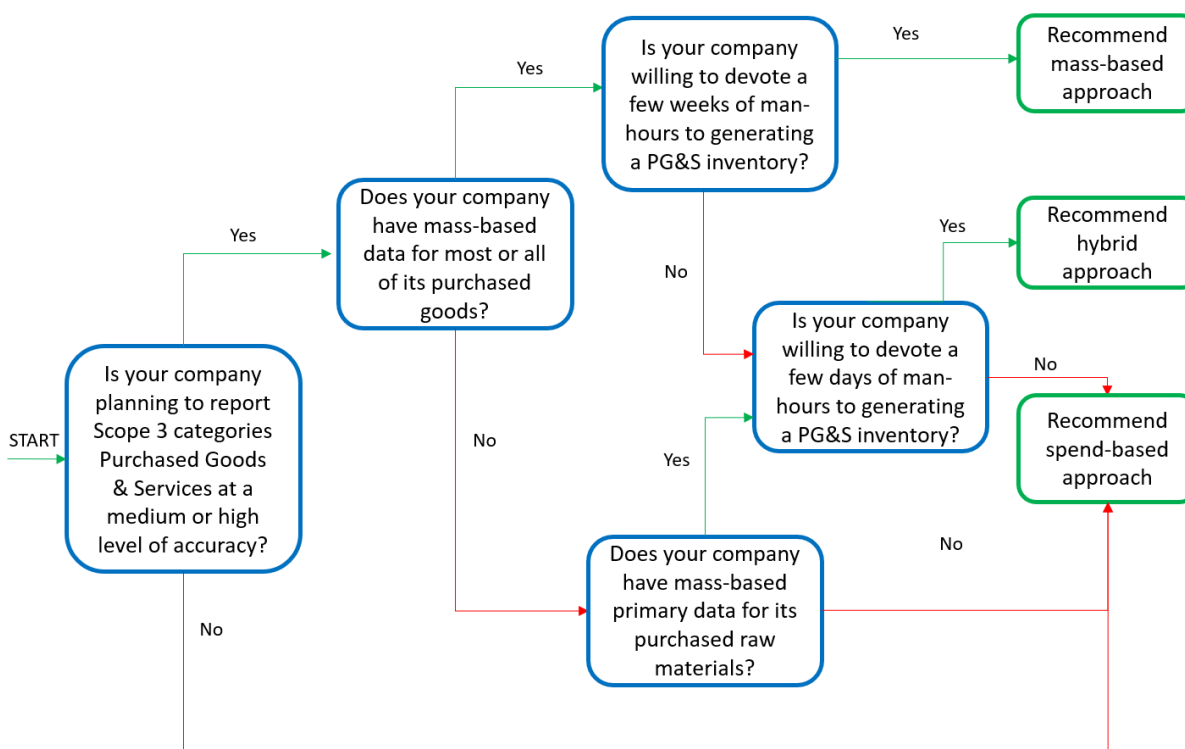


Figure 2: Decision tree for the selection of the appropriate assessment approach

In the **Decision Tree** sheet, answer the questions by “Yes” or “No” to identify the most relevant approach to the reporting company’s situation. Specify the year for which the analysis will be conducted.

Please answer the questions below to define your assessment level: Spend-based methodology recommended

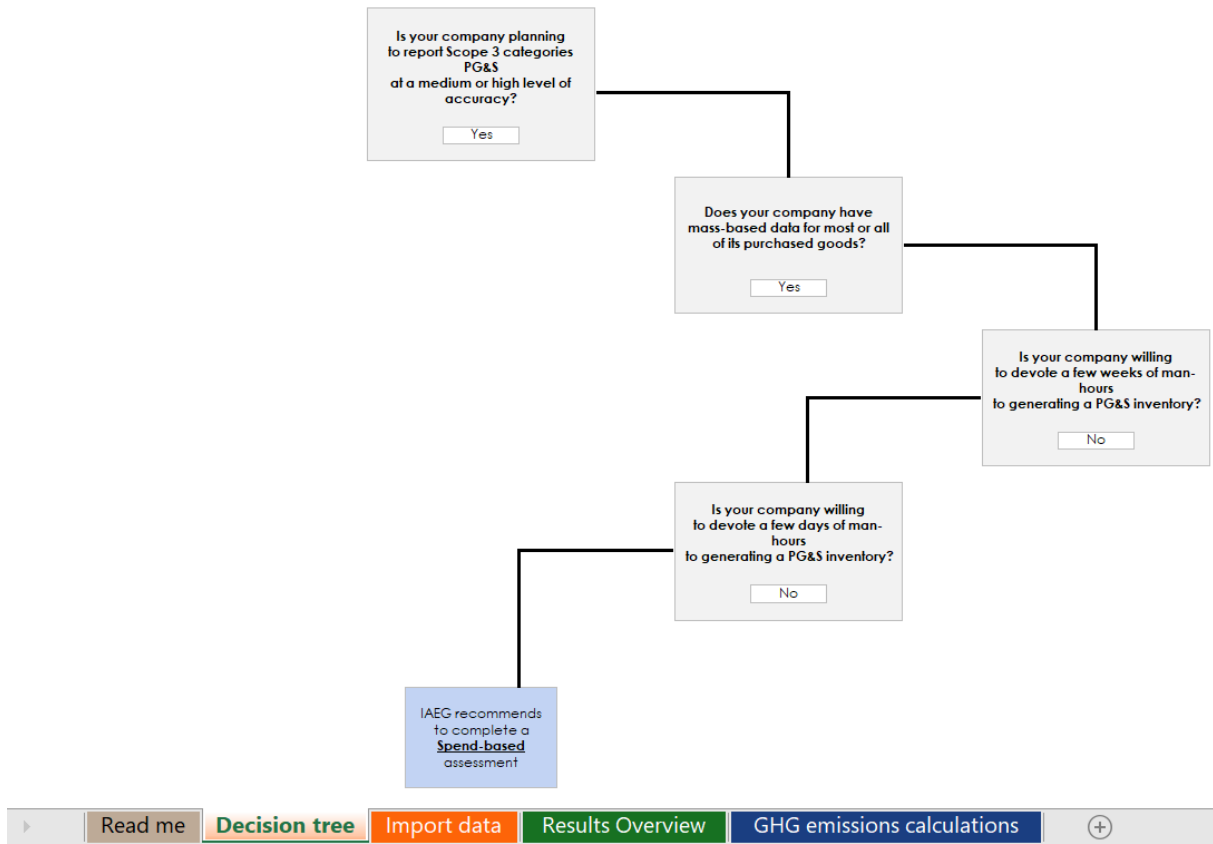


Figure 3: Decision tree as displayed in the tool

## 4.3 Data collection

### 4.3.1 Identifying data source

To complete an assessment of Scope 3 emissions for PG&S and CG, the user needs to first dedicate time for data collection. As presented in the previous paragraphs, the information needed for the calculations is either derived from **spend-based** or **mass-based data**.

**Spend-based data** are likely to be located in internal purchase databases within the company. The target dataset should account for 100% of Enterprise spend (or as close as possible), representing all in-scope company entities as per the GHG Protocol’s definition of operational boundary.

**Mass-based data** are generally owned by dedicated teams within the company, such design, procurement, or production departments, as they often record information on raw materials or aerostructures.

### 4.3.2 Ensuring materiality in data collection

Aerospace reporters should aim to account for all PG&S and CGs goods from their operations. However, as explained in ISO/TR 14069, organizations often have incomplete records of purchased

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goods. Therefore, ensuring the completeness of the data collection is often a challenge, especially when dealing with PG&S and CG.

To ensure an adequate level of accuracy, the reporting company should identify subcategories that are likely to be the most significant or material from a GHG emissions standpoint. Significant GHG emissions are defined in ISO14064:2018 whereas materiality is defined in the GHG Protocol Corporate Value Chain Accounting and Reporting Standard<sup>2</sup>. For a company with limited or no previous experience in PG&S GHG emissions estimation, performing an initial assessment of the PG&S through the spend-based approach could help identify which emissions subcategories are significant or material. Should the reporting company decide to exclude sources of emissions, it must justify its decisions and demonstrate that the total economic value or total mass is inferior to a pre-defined exclusion threshold.

The reporting company should clearly describe which PG&S subcategories are taken into account in the analysis. Similarly, it should state and justify the ones that are excluded and the extent to which it affects the total GHG emissions.

To ensure data quality, please refer to the Chapter on "Managing Inventory Quality" (Chapter 7) of the GHG Protocol Corporate Standard<sup>3</sup> which gives guidance on how to plan and implement a GHG Data Quality Management System.

#### **4.3.3 Data tracking**

The reporting company should keep records of the raw data used for the analysis to support any audit or verification process, and to promote comparability of results across successive years. Note that the accuracy of the overall analysis is highly dependent on the accuracy and completeness of the collected input data.

The reporting company should especially keep a copy of the methodology and the tool used for assessing emissions from PG&S and CG.

The data that may be reviewed by an auditor include:

- Emission factors value, units, sources and years;
- Emission factors computation formula (if they are computed);
- Spend or mass-based inputs.

### **4.4 Filling with the inputs – “Import data” sheet**

#### **4.4.1 Mapping categories**

As a first step, it is recommended that the user become familiar with Table 2 and Table 3. For more detailed information on available emission factors (EFs), the user can also refer to the GHG emissions calculation sheet of the tool.

Users must then determine a mapping from each internal purchasing category to an appropriate corresponding subcategory of the IAEG Scope 3 methodology. This mapping activity is initially done

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<sup>2</sup> <https://ghgprotocol.org/standards/scope-3-standard>

<sup>3</sup> <https://ghgprotocol.org/corporate-standard>

the first time the methodology is used and is a prerequisite for the first assessment of PG&S and CG emissions. This process should be repeated in subsequent assessments on a case-by-case basis, in particular when the purchasing databases evolve or when new subcategories are added to the methodology.

The following subsection provides detailed instructions on the matching step.

In the **Import Data** tab, fill in the required information for each group, both for PG&S and CG.

1. Fill in columns 'Expenditure ID' and 'Expenditure label' with the relevant information from the reporting company PG&S database. Expenditure ID may be a unique identifier per line item such as (1), or PGS1, etc. Expenditure label may be the purchasing category label assigned in the reporting company's expenditure data or supply chain report.

Expenditure ID	Expenditure label	Approach	Group
#####	Expenditure 1	Mass-based	Assembly and structural components
#####	Expenditure 2	Mass-based	Assembly and structural components
#####	Expenditure 3	Mass-based	Manufactured components and materials
#####	Expenditure 4	Mass-based	Manufactured components and materials
#####	Expenditure 5	Mass-based	Manufactured components and materials
#####	Expenditure 6	Mass-based	Raw materials
#####	Expenditure 7	Mass-based	Raw materials
#####	Expenditure 8	Spend-based	Raw materials
#####	Expenditure 9	Spend-based	Services

Figure 4: Screenshot of the tool focusing on Expenditure ID and Expenditure label

2. In the 'Group' column, select the category that maps to the expenditure from the drop-down menu

Approach	Group	Category
Mass-based	Assembly and structural components	Metallic assembly and structural components
Mass-based	Assembly and structural components	Non-metallic assembly and structural components
Spend-based	Manufactured components and materials	Metallic manufactured components
Mass-based	Assembly and structural components	Non-metallic manufactured components
Mass-based	Manufactured components and materials	Electrical and electronic equipment
Mass-based	Raw materials	Metallic raw materials
Mass-based	Raw materials	Non-metallic raw materials
Spend-based	Raw materials	Non-metallic raw materials
Spend-based	Services	Professional services and consulting
Spend-based	Services	Financial services and insurance
Spend-based	Services	Travel services
Mass-based	Services	Telecom services and IT support
Spend-based	Services	Materials handling

Figure 5: Screenshot of the tool focusing on "Group" column

Note: if any of the drop-down menu does not appear at some point in the process, restart from the "Group" or Category" cell.

3. In the 'Category' column, select the category that best fits the expenditure in from the drop-down menu

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Group	Category	Subcategory
Assembly and structural components	Metallic assembly and structural components	Aluminium, extrusion profile - Casting
Assembly and structural components	Non-metallic assembly and structural components	Carbon Fiber, short fibers - Unspecified process
Assembly and structural components	Non-metallic assembly and structural components	Aluminium, extrusion profile - Casting
Manufactured components and materials	Metallic assembly and structural components	Carbon fiber, high strengths, long fibers - Pultrusion
Manufactured components and materials	Non-metallic assembly and structural components	Electrical cable
Raw materials	Metallic raw materials	Aluminium, extrusion profile
Raw materials	Non-metallic raw materials	Glass fibers, high strength
Raw materials	Non-metallic raw materials	Fabrics for seat, unknown mass and material
Services	Professional services and consulting	Business support services
Services	Financial services and insurance	Financial services, insurance and consulting
Services	Travel services	Travel services
Services	Telecom services and IT support	Cloud services
Services	Materials handling	Materials handling

Figure 6: Screenshot of the tool focusing on “Category” column

- In the ‘subcategory’ column, select the subcategory that best fits the expenditure in from the drop-down menu

Category	Subcategory	Level	Value
Metallic assembly and structural components	Aluminium, extrusion profile - Casting	3	150,100.00
Non-metallic assembly and structural components	Carbon Fiber, short fibers - Unspecified process	3	15,020.00
Metallic assembly and structural components	Aluminium, extrusion profile - Casting	3	150,300.00
Non-metallic manufactured components	Aluminium, extrusion profile - Casting	3	15,040.00
Electrical and electronic equipment	Aluminium, extrusion profile - Cold rolling	3	1,505,000.00
Metallic raw materials	Aluminium, extrusion profile - Hot rolling	3	150,600.00
Non-metallic raw materials	Aluminium, extrusion profile - Metal drilling	3	150,700.00
Non-metallic raw materials	Aluminium, extrusion profile - Metal sheet stamping	3	150,700.00
Non-metallic raw materials	Aluminium, extrusion profile - Unspecified process	3	150,700.00
Non-metallic raw materials	Aluminium, sheet - Casting	1	150.00
Non-metallic raw materials	Aluminium, sheet - Cold rolling	1	150.00
Professional services and consulting	Business support services	3	1,509.00
Financial services and insurance	Financial services, insurance and consulting	3	1,510.00
Travel services	Travel services	3	1,511.00
Telecom services and IT support	Cloud services	3	1,512.00
Materials handling	Materials handling	3	1,513.00
Research, development and testing services	Research, development and testing services	3	1,514.00
Repair and overhaul	Nonresidential Building Repair And Maintenance	3	1,515.00

Figure 7: Screenshot of the tool focusing on “subcategory” column

- In the ‘Value’ column, enter the value in the unit specified in the “unit” column. The unit column is pre-populated based on the selection of Approach in column G.

Subcategory	Level	Value	Unit
Aluminium, extrusion profile - Casting	3	150,100.00	kg
Carbon Fiber, short fibers - Unspecified process	3	15,020.00	kg
Aluminium, extrusion profile - Casting	3	150,300.00	kg
Carbon fiber, high strengths, long fibers - Pultrusion	3	15,040.00	kg
Electrical cable	3	1,505,000.00	m
Aluminium, extrusion profile	3	150,600.00	kg
Glass fibers, high strength	3	150,700.00	kg
Fabrics for seat, unknown mass and material	1	150.00	kUSD
Business support services	3	1,509.00	kUSD
Financial services, insurance and consulting	3	1,510.00	kUSD
Travel services	3	1,511.00	kUSD
Cloud services	3	1,512.00	Tb
Materials handling	3	1,513.00	kUSD
Research, development and testing services	3	1,514.00	kUSD
Nonresidential Building Repair And Maintenance	3	1,515.00	kUSD

Figure 8: Screenshot of the tool focusing on “Value” column



systems, brakes, wheels, and tires. While several materials are used, high-strength steel and titanium alloys are in greatest presence. Hence, the selection in the tool would go as follows:

**Category:** Manufactured components and materials

**Sub-category:** Metal based manufactured components for aircraft (other than engines)

#### 4.4.2.3 **Industrial equipment**

Certain capital goods such as machine tooling or assembly and transportation jigs, are internal purchasing categories that can account for a significant part of a company's annual spending. The IAEG tool has therefore identified subcategories for these materials:

**Category:** Industrial equipment

**Sub-Category:** Machines and industrial equipment

### 4.5 **Back-end calculations – “GHG emissions calculation” sheet**

The “GHG emissions calculation” tab performs the GHG emissions calculations based on the data entered in the “Import data” tab. The values entered in the “Import data” tab are multiplied by the appropriate EF to derive a subcategory's emissions in metric tons of CO<sub>2</sub>. The applicable subcategories are shown in blue and subcategories that are not filled in on the “Import Data” tab remain grayed out.

The values calculated in “GHG emissions calculation” then are used to build the graphs in the “Results Overview” tab. Please note that no action is required from the user for this tab to work properly.

### 4.6 **Reviewing the results – “Results overview” sheet**

Once all data has been entered, go to the **Results Overview** tab to view the results.

#### 4.6.1 **Associated emissions and share of total emissions**

In the first section of the results tab, a table displays the results of the data according to the information entered in the “import data” tab. The categories of PG&S and CG are presented by their groups to allow the user to better understand the most important categories of emission within each group. An example of the table is provided in Figure 10.

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Group / Category	Emissions (MTCO <sub>2</sub> e)	Share of total emissions (%)	Category rank
<b>Assembly and structural components</b>	<b>865</b>	<b>13.6%</b>	□
<i>Metallic assembly and structural components</i>	570	9.0%	6
<i>Non-metallic assembly and structural components</i>	296	4.7%	10
<b>Manufactured components and materials</b>	<b>854</b>	<b>13.4%</b>	□
<i>Metallic manufactured components</i>	0	0.0%	15
<i>Non-metallic manufactured components</i>	618	9.7%	4
<i>Electrical and electronic equipment</i>	236	3.7%	12
<b>Raw materials</b>	<b>1,242</b>	<b>19.5%</b>	□
<i>Metallic raw materials</i>	359	5.7%	9
<i>Non-metallic raw materials</i>	882	13.9%	1
<i>Gases and chemicals</i>	0	0.0%	15
<b>Services</b>	<b>3,398</b>	<b>53.4%</b>	□
<i>Professional services and consulting</i>	219	3.4%	13
<i>Financial services and insurance</i>	135	2.1%	14
<i>Travel services</i>	257	4.0%	11
<i>Telecom services and IT support</i>	586	9.2%	5
<i>Materials handling</i>	671	10.6%	2
<i>Research, development and testing services</i>	431	6.8%	8
<i>Repair and overhaul</i>	478	7.5%	7
<i>Miscellaneous</i>	621	9.8%	3
<b>Total Purchased Goods and Services</b>	<b>4,360</b>	<b>100.0%</b>	
<b>Capital Goods</b>	<b>1,263</b>	<b>100.0%</b>	□
<i>Buildings</i>	124	9.8%	3
<i>Industrial equipment</i>	83	6.5%	4
<i>Fleet</i>	550	43.5%	1
<i>Telecom equipment and IT hardware</i>	507	40.1%	2
<b>Total Capital Goods</b>	<b>1,263</b>	<b>100.0%</b>	
<b>Total emissions</b>	<b>7,623</b>		

Figure 10: Associated emissions and share of total emissions table

This first section also contains three charts to help the user visualize the source of their emissions (see Figure 11). The first pie chart displays the data for both PG&S and CG. The second and third pie charts display the same data separately. Beneath each pie chart is a stacked bar which provides information on the percentage of total emissions derived from spend-based and mass-based EF.

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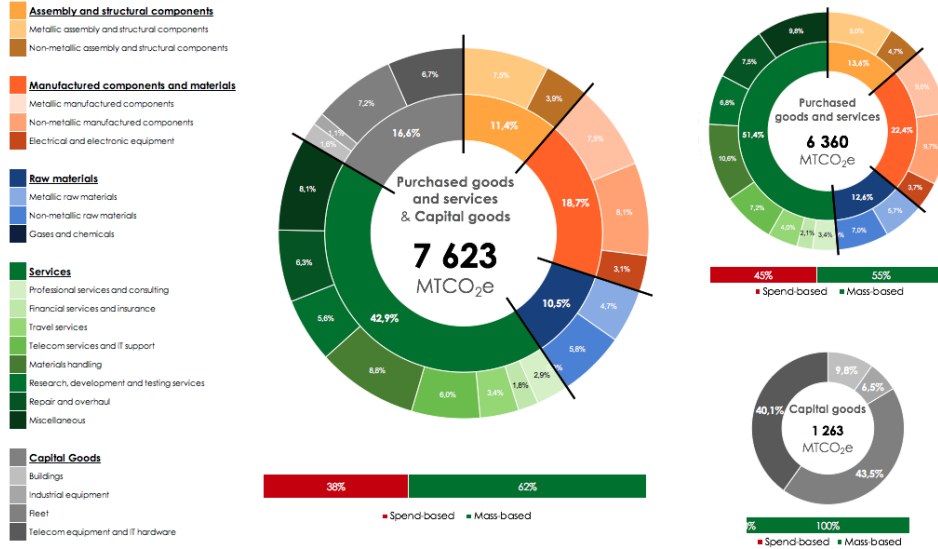


Figure 11: Associated emissions and share of total emissions graphs

4.6.2 Distribution of GHG emissions by degree of decreasing significance

In the second section of the results tab, a table (see Figure 12) displays the results of the data by decreasing share of the total emissions to allow the user to better understand the most impactful categories of emission in their overall inventories.

Rank	Category	Emissions (MTCO <sub>2</sub> e)	Share of total emissions (%)	Cumulative emissions (%)
<b>Purchased Goods and Services</b>				
1	Materials handling	671	10.3%	10.3%
2	Miscellaneous	621	9.6%	19.9%
3	Non-metallic manufactured components	618	9.5%	29.4%
4	Telecom services and IT support	586	9.0%	38.5%
5	Metallic manufactured components	570	8.8%	47.3%
6	Metallic assembly and structural components	570	8.8%	56.0%
7	Repair and overhaul	478	7.4%	63.4%
8	Non-metallic raw materials	442	6.8%	70.2%
9	Research, development and testing services	431	6.6%	76.9%
10	Metallic raw materials	359	5.5%	82.4%
	<b>Others</b>	<b>1143</b>	<b>17.6%</b>	<b>100.0%</b>
11	Non-metallic assembly and structural components	296	4.6%	86.9%
12	Travel services	257	4.0%	90.9%
13	Electrical and electronic equipment	236	3.6%	94.5%
14	Professional services and consulting	219	3.4%	97.9%
15	Financial services and insurance	135	2.1%	100.0%
16	Gases and chemicals	0	0.0%	100.0%
<b>Capital Goods</b>				
1	Fleet	550	43.5%	43.5%
2	Telecom equipment and IT hardware	507	40.1%	83.7%
3	Buildings	124	9.8%	93.5%
4	Industrial equipment	83	6.5%	100.0%

Figure 12: GHG emissions distribution table

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The second section also contains two charts to help the user visualize the impact of their total emissions from each category. The graphs display the data for PG&S and CG separately as shown in Figure 13. The bars indicate total emissions per category mapped on the primary y-axis, while the line indicates cumulative emissions represented by the categories on the chart mapped on the secondary y-axis.

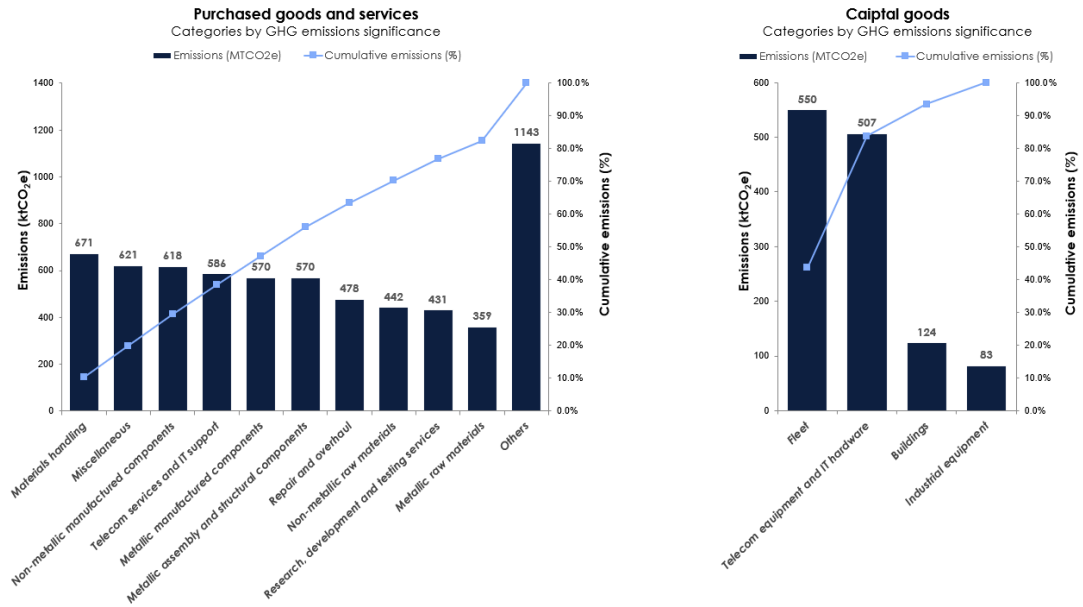


Figure 13: GHG emissions distribution graphs

## **5 Conclusion**

This guide describes how to perform an assessment of GHG emissions from PG&S and CG for aerospace and defense companies. By following the instructions, the user will be carried through each step of the process, including the use of the Excel tool developed in support of the methodology.