Annex – Methodological Note on GHG Emissions Calculations

Scope of this document

This document provides background and explanations to the significant year-on-year movements in CWS Workwear Scope 3 GHG emissions, as reported in FY2025 report. These deviations are not explained by changes in procurement volumes or operational activity but rather attributable to transitions in emission factor databases and updated calculation methodologies across Scope 3 sub-categories.
Broader information on GHG emissions accounting and reporting of CWS Workwear and CWS Group is also provided for better context and understanding.

CWS Corporate Carbon Footprint – Background

CWS Group accounts for its GHG emissions in accordance with the **GHG Protocol Corporate Accounting and Reporting Standard**, which represents the globally recognized framework for corporate greenhouse gas measurement and reporting. Under this standard, emissions are categorised across three scopes:

- **Scope 1**: direct emissions from owned or controlled sources
- **Scope 2**: indirect emissions from purchased energy
- **Scope 3**: indirect emissions occurring in the company's upstream and downstream value chains

This approach further aligns with the requirements of the **Corporate Sustainability Reporting Directive (CSRD)** and its underlying European Sustainability Reporting Standards (ESRS), in particular **ESRS E1 — Climate Change**.
To define the organizational boundary of its inventory, CWS Group applies the operational control approach as defined under the GHG Protocol. Within this approach, the company accounts for 100% of the GHG emissions from operations over which it has operational control — defined as the authority to introduce and implement operating policies. This approach is best aligned with the Group and all its businesses management and reporting structures.
In these last years CWS has been progressively improving the coverage, granularity, and overall accuracy of its carbon inventory. As of reporting year 2025, the company started working with new carbon accounting software. This resulted in a partially revised approach especially for the calculation of some Scope 3 sub-categories, which are subject to inherent uncertainty arising from the use of secondary emission factor databases, geographic assumptions, and modelling choices. Reporting companies are expected to reduce such uncertainty progressively and to disclose their sources transparently.
The updated methodologies applied by CWS as of 2025 are aiming at this and are in full alignment with the GHG Protocol.

Data Collection & Analysis

Across all businesses within CWS Group, data collection for GHG reporting follows a hybrid or "semi-centralized" approach that can be summarized in the following steps

1. **De-centralized data collection:** experts/data owners across the organization input and validate (through a 4-eyes process) data into an ESG reporting software.
2. **Central aggregation:** a central (Group-level) reporting term runs a plausibility check on the received data, informs data providers in case of relevant deviations, and imports the validated data into a carbon accounting software.
3. **Analysis & Reporting:** the same reporting team works with the carbon accounting provider to finalize the carbon footprint of each business/organisation within CWS Group. Reports are then generated and shared across the organisation and to all stakeholders

This approach ensures that a consistent methodology is applied across all CWS Businesses and optimizes processes by leveraging – where possible – central or shared resources (like centrally managed data, e.g. spend and other financial data).

CWS Workwear GHG Inventory

CWS Workwear delivers workwear solutions to a wide range of industries - from metal and food production to hospitality, logistics and retail. The company runs a circular *workwear-as-a-service* business model, many products are leased and periodically washed, inspected and repaired before being returned to customers. From a carbon accounting perspective, this model has the main implication of "internalizing" – i.e. reporting under Scope 1 & 2 rather than under Scope 3 – most of the downstream emissions related to product processing, use and transportation (details below for excluded categories).
The table below lists the main emissions sources for CWS Workwear and their allocation under the GHG Protocol.

Emission Source	GHG Protocol Allocation	Description / Examples
Fossil fuel combustion from laundry processes	*Scope 1 (Stationary)*	Natural gas combustion for washing and drying processes, oil combustion for water heating / boilers.
Fossil fuel combustion from internal fleet	*Scope 1 (Mobility)*	Diesel and gasoline used for vans (collection and delivery from/to customers) and for company cars.
Purchased electricity for laundries, offices & depots	*Scope 2*	Purchased electricity for washing machines, conveyors belts, lightning, etc, and for electric vehicles, offices and depots.
Purchased heat or steam for laundries, offices & depots	*Scope 2*	Purchased heat or steam from district heating or for other laundry processes (e.g. ironing). Also, includes heating purchased in Offices and depots.
Workwear garments manufacturing	*3.1 – Purchased goods & services*	Production of cotton, polyester, viscose, nylon, etc.

Laundry detergents	*3.1 – Purchased goods & services*	Production of detergents, softeners, disinfectants, etc. used in laundry processes.
Packaging materials	*3.1 – Purchased goods & services*	Polybags, boxes for garment delivery, etc.
Services	*3.1 – Purchased goods & services*	This includes, but is not limited to, digital, financial, administrative, maintenance, and marketing services.
Capital Goods	*3.2 – Capital goods*	Capex investments for new laundries, machinery / equipment, vehicles, etc.
Fuel & Energy (Upstream)	*3.3 – Fuel & energy activities*	Extraction and processing/production of used of gas, oil, and electricity.
Inbound transport of garments/items	*3.4. – Upstream transportation and distribution*	Transportation of all procured items (textile garments, components, detergents, etc.). Also including internal logistics (i.e. laundry ->depot-> customers) that are outsourced to external providers.
Waste generated in laundry operations	*3.5 – Waste generated in operations*	Wastewater, sludge, damaged garment disposal, and packaging.
Business travel	*3.6 – Business Travel*	Travelling of sales representatives, other staff.
Commuting of employees	*3.7– Employee Commuting*	Commuting of employees from and to offices, laundries, and depots.
Disposal of materials at EoL	*3.12 – EoL Treatment of sold products*	E.g. Disposal, recycling, incineration at product (garment) retirement

Given the described CWS Workwear business model, the following Scope 3 categories are currently excluded as not applicable or not material:

- 3.8 / 3.14 – Upstream/Downstream leased assets: the company does not operate leased assets without operation control (therefore all assets are reported in Scopes 1 & 2).
- 3.9 – Downstream transportation and distribution: the company relies on its internal fleet to deliver its products to customers. These are final users (no further downstream transportation).
- 3.10/3.11 – Use/Processing of sold products: the company provides finished products which are not further processed. As for consumption/use stage, those emissions are accounted for under Scopes 1 & 2 in line with wash-as-a-service business models.
- 3.14/3.15 – Franchises / Investments: the company does not own franchises, or investments in third parties

Explanation of latest year-to-year deviations for CWS Workwear

CWS Workwear GHG emissions for 2025 show significant deviations from 2024 data, on some Scope 3 sub-categories. **These deviations are not related to reduction measures, and only partially due to operational reasons (e.g. changes in sites energy consumption).**
The main underlying reasons are:

- Switch to a different carbon accounting methodology, especially for some Scope 3 sub-categories, and/or includes the use of different emission factors databases compared to previous years
- Progresses in data quality, completeness and coverage in some categories (e.g. waste data, data from the business fleet and company cars)[1]

The rationale behind these methodological changes – that apply to all businesses within CWS Group – is improved comparability and consistency of GHG emissions reporting, both externally (versus industry peers) and internally within Haniel Group companies as well.[2]

The new carbon accounting methodology impacts in particular the following categories:

- **3.1 – Purchased Goods & Services**
  This category has been calculated with different versions of Ecoinvent: v3.10 in 2024, v3.11/12 in 2025. These latest **versions revised their emission factors for textile materials** (e.g. cotton, polyester, both having a heavy share in CWS Workwear procurement) as they reflect systematic updates to the underlying energy and supply chain datasets used to construct emission factors. Both China and India— which process many global natural and cellulosic fibres — added substantial renewable capacity to their electricity mix.
  Another factor behind this deviation is that until 2024, accounting for this category was done by assigning combined emissions factors to the specific materials – to represent as much as possible all the manufacturing processes. The logic applied was closer to a Product Carbon Footprint (PCF) analysis, whereas as of 2025 it was decided to assign standard pre-set emission factors. With current data availability, this ensures comparability with peers and competitors.

  Disclosure guidance: *The decrease reflects Ecoinvent incorporating more recent and accurate energy data for major textile-producing geographies, and the decision to apply pre-set emission factors rather than combined ones. It does not indicate an operational reduction in supply chain emissions intensity.*

[1] Not addressed in this document, refer to ESRS Tables notes on the report.
[2] As part of CSRD reporting consolidation at Haniel Group level, all companies in the group will be reporting their GHG emissions using the same software and same methodologies.

- **3.2 – Capital Goods**
  This category has been calculated with DEFRA database, switching from previously applied Exiobase. The decrease in this category mostly reflects DEFRA narrower and more aggregated system boundaries compared with Exiobase.
  Exiobase models capital goods through a global input-output framework that traces emissions across multi-tier international supply chains, including production in high-emission geographies such as China and India. On the other hand, DEFRA spend-based factors for capital goods are calibrated on UK/EU average supplier mixes, which embed cleaner energy grids and narrower system boundaries. For this category, Exiobase systematically produces higher factors because supply chain complexity and global sourcing dominate the emission profile.
  Therefore, DEFRA places greater emphasis on practical corporate reporting consistency (especially for EU-based businesses) rather than on granular representation of complex global supply chains. With CWS Workwear being an EU-based business, DEFRA approach is considered more appropriate.

  Disclosure guidance: *The decrease reflects a change in the system boundary and geographic assumptions of the emission factor methodology, not a reduction in capital goods procurement or supplier emissions intensity.*

- **3.4 – *Upstream Transportation and Distribution***
  For 2025, emissions in this category were calculated using the DEFRA database instead of the previously used Exiobase model. The increase observed is primarily driven by this methodological change.
  DEFRA applies transport-specific emission factors based on actual modes of transport (e.g. road, air, sea) and includes full “well-to-wheel” emissions. This approach provides a more direct and realistic representation of fuel use and logistics activities. In contrast, the previous Exiobase method used broader sector averages, which tend to understate transport-related emissions.
  As CWS Workwear relies significantly on internal and external logistics — particularly road transport — the DEFRA methodology better reflects the company’s operational reality. As a result, reported emissions in this category are higher, not due to increased transport activity, but due to improved measurement accuracy.

  Disclosure guidance: *The increase reflects the higher physical specificity of DEFRA transport factors for road and air freight modes, including their well-to-wheel system boundary.*

- 3.7 – Employee Commuting
  An entirely **new and more accurate methodology** is applied here, provided by our carbon accounting supplier, replacing the previous in-house estimation. The new methodology is based on modal split assumptions refined using region-specific and city-level datasets. The increase is entirely due to this approach.

  Disclosure guidance: *The increase reflects a new, externally validated, and more accurate methodology, that better captures the emissions for this category.*

Summary of deviations

Category	Previous methodology	Current methodology	Observed direction	Reason
3.1	Ecoinvent v3.10	Ecoinvent v3.11/v3.12	Decrease	- Switch to pre-set emission factors (from combined ones) - Update of Ecoinvent EFs for key textile materials
3.2	Exiobase (MRIO)	DEFRA spend-based	Decrease	Boundary change due to change to DEFRA
3.4	Exiobase (MRIO)	DEFRA mode-specific & spend-based	Increase	Boundary change due to change to DEFRA
3.7	In-house methodology	Externally supported	Increase	Switch to new and improved methodology

As part of continuous efforts to improve the reliability of GHG Accounting and at the same time ensure reporting consistency, CWS Workwear will reassess this and the previous methodology ahead of the next reporting seasons. Any further adaptions or changes will be transparently documented and made available to all stakeholders.