

Verification report of KNOLL's 2025 GHG footprint

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1. Introduction

KNOLL PACKAGING is a global SME that produces Paper & Carboard rigid boxes for prestige brands (cosmetics, perfumes, spirits). This year, there are two GHG calculation excel file to be verified:

- a. One for KNOLL company worldwide, which includes the 5 offices globally. Scope 3 emissions includes the 2025 volumes from all suppliers located in China, Italy, Serbia and those of the JB plant in the Philippines – total of **10 Million boxes**
- b. One for the JB plant standalone, located in the Philippines, limited to the boxes made in the plant in 2025 – total of **2,93 Million boxes**

2. Goal and description of the verification process

The goal of the verification process is to check compliance of the calculations with the GHG protocole accounting rules, and check consistency with previous year's reports.

Standard of verification used : GRI section 2-5 external assurance– see below

12	GRI 2: General Disclosures 2021
Disclosure 2-5 External assurance REQUIREMENTS The organization shall: a. describe its policy and practice for seeking external assurance, including whether and how the <u>highest governance body</u> and <u>senior executives</u> are involved; b. if the organization's sustainability reporting has been externally assured: i. provide a link or reference to the external assurance report(s) or assurance statement(s); ii. describe what has been assured and on what basis, including the assurance standards used, the level of assurance obtained, and any limitations of the assurance process; iii. describe the relationship between the organization and the assurance provider.	

Limitation of the verification process: verification does NOT include any verification of compliance of KNOLL 2025 activity data (fuel consumption, electricity consumption, tonnage of raw materials, logistic information) with the data from their internal information systems, like an external auditor would do. The verification is therefore focusing its effort on the correct application of the carbon accounting rules, and cross verifications to perform a consistency check, including a gap analysis to previous year's reported emissions.

KNOLL is using the report to double check its calculations. KNOLL can decide to modify its Carbon Footprint report before its publication based on the recommendations of the report. This increases the reliability of the data published, and engage the company in the continuous improvement of carbon emissions data.

3. Description of the work performed, and steps of the verification process

- a. Open the excel calculation file prepared by KNOLL PACKAGING
All calculations are made by KNOLL in the excel template designed and supplied by the ABC association (Association pour la Transition Carbone), located in France, version 8.9.
This template has been designed by the association to perform carbon footprint of French companies in the frame of their legal obligations. This format and methodology are updated at least once a year, and are endorsed by the French environment agency, the ADEME.
- b. Check the most significant tabs
 - Read the data tabs: understand the activity data, and check if the preparation of the data for usage in the calculation template is correctly done, without errors in units and consistent with GHG protocole methodology
 - Check the most significant activity data is properly transferred into the calculation tab, without omissions nor double counting
 - Check consistency of emission factor used with the activity data, consistency with units being used, and consistency with previous year's emission factor
 - This verification is done at least for full scope 1 and 2. The scope 3 tabs are verified at least for the TOP 3 contributors in terms of overall company's carbon footprint
- c. Data quality and maturity
For each data tab verified, the quality of the data is checked. Recommendations are made on how to improve reliability of the carbon footprint calculation in the future
- d. Gap analysis
Comparison is done between data from reporting year (N) and previous year's report (N-1). Goal is to contribute to the interpretation of the company's progress towards its GHG reduction goal in 2030. Such an interpretation requires to understand the number of boxes produced for year N and year N+1, plus any external factor that has an impact on the company's carbon footprint, to be able to discriminate progress or

regression for each source of GHG emissions individually. This helps to write recommendations on the action plan.

4. Information about the author of the verification, and its relationship with KNOLL

Pierre Gliganic is an independent consultant in sustainability since 2018, for Impact 2050, a consulting firm located in Paris, France.

Link to the company's web site is attached here : <https://impact-2050.org>

Pierre is a mechanical engineer and is a certified carbon footprint assessor endorsed by BPI France, the French investment bank, to perform carbon footprint calculations for French companies in the frame of the legal framework which makes it mandatory to perform a carbon footprint for companies above 500 employees since 2012 (BEGES).



Pierre was a Corporate Social Responsibility director for 6 years at Delphi, US based company, and is therefore used to perform carbon footprints according to the GHG protocole format, and write reports according to the Carbon Disclosure Project (CDP) framework.

KNOLL PACKAGING has a full time dedicated Sustainability Director, Ms Wincy CHENG, based on Hong-Kong, which leads all activities for KNOLL related to sustainability on daily basis.

The level of consulting provided by Pierre Gliganic to KNOLL does not go beyond one day per month, since more than 5 years, and solely focus on proof verification of methodology for carbon footprinting, Life Cycle analysis, and third party verification of public reports. This organization avoids any risk of conflict of interest, and respects the good practice of separation between consulting services, and verification activities.

This being said, the end decision about actions to be performed, and how to report externally on the company's practices remains in the hands of KNOLL PACKAGING.

I can attest that highest level of management has been involved to oversee the content of the 2025 GHG emissions report, mainly with participation of Mr Ben COHEN, co-owner of the family company and head of KNOLL's innovation & marketing teams, and Ms Wincy CHENG, sustainability director.

5. Result of the verification for KNOLL company worldwide – 5 offices

This specific carbon footprint calculation has been performed by KNOLL every year since 2019. This is therefore the 7th time that this carbon footprint has been performed, with high level of maturity.

The verification of the carbon footprint for the 5 KNOLL offices was based on following KNOLL's file named "Bilan_Carbone_V8.9_ENG – 2025 calculation FINAL"

The outcome of the verification process is summarized below: in black color is the observations from the review, in blue the updates (response from KNOLL) and in red the closing (final conclusion)

- a. Scope 1 & 2 "Energy" tab: **everything is correct.** The natural gas consumption from NY office is correctly computed and represents 23 tCO₂e for production only. Your ventilation of electricity consumption is well done @ 66 tCO₂e, and includes green electricity, which means you calculated scope 2 as a "market based" value. Another calculation will need to be made for "location based" in CDP.
Closing : KNOLL has sent the "location-based" scope 2 calculation after the review, in a file named "Bilan_Carbone_V8.9_ENG – 2025 calculation (location based) FINAL", estimated at 94 t CO₂e for production only, which has also been verified and confirmed correct.
- b. Scope 1 "Non energy" tab: **everything is correct.** Knoll computes leakage of cooling fluids with real life data from maintenance reports. End result is 13,6kg of R22 fluid for china office, and computed correctly.
- c. Scope 3 "Inputs – Goods and materials" tab : **everything is correct in terms of calculation method and end results**

A cross verification of overall tonnage has been done between what "comes in" and what "comes out" :

- What come « in » = total inputs of Raw Materials+components+shipping pack , as indicated in the tab « data for inputs (products) »
- What comes « out » = tonnage of scrap or production waste (side info, not mentioned in any tab) + tonnage of all shipments to customers, as indicated in the tab « data for Freight »
- Verification= Computation of gap between what comes in and out, expected to be as small as possible
- Tonnage of purchased tools where not included in the verification, because these are not shipped anywhere
- Several iterations of verification helped to uncover misreported data (confusion between gross and net shipping weight), and final test showed a small discrepancy of 1 ton, therefore satisfactory test
- For next year, potential improvement area could be addition of tonnage for wood pallets used for shipping product that could be included in inventory (used on some of the shipments), not included today

Regarding emission factors used for purchased paper materials : the question about mismatch between EF from Eco-Invent (as used today) ranging from 1,3 to 4,5 t CO₂e/t, and the EF from paper makers suppliers ranging from 0,1 to 0,6 tCO₂e/ton, is still valid. Eco-Invent data is 7 to 10 times bigger than paper manufacturer's values. The long-term desired state is to use the real EF from suppliers (so called "primary data") as much as possible. However, KNOLL has used the EF from eco-Invent to be conservative. The calculation of KNOLL carbon footprint is therefore likely over stated, which is the right conservative approach. The source of emission factors for papers being Eco-Invent should be mentioned in any external reporting.

Side note : emission factors from Eco-Invent cover a different set of life cycle stages than those of paper makers. Transformation of raw materials (paper, carboard) with processes like bending, cutting, glueing, drying is included in eco-invent, but NOT in paper maker's Emission factors. The energy to manufacture a paper & carboard box was supposed to be negligible so far, but this year, the JB plant energy consumption indicates that electricity needed to manufacture a box can represent 65% of total box GHG emissions from purchased materials (741 tCO₂e/1148 tCO₂e= 0,65). This factor can justify to apply a multiplication factor of 1,65 to the total emissions from purchased materials, but is not enough to explain the 7 to 10 ratio that we observe today. This explains a portion of the gap observed between Emission factors from Eco-Invent and paper maker's Emission factors, but NOT all the gap. Consistency of methodology to compute Emission factors still needs to be improved until we can get a better understanding of the correct data to be applied.

Closing : KNOLL confirmed they will mention that Emission factors used for their carbon footprint for paper and carboard products are those of Eco-Invent (conservative approach that tends to over-state the carbon footprint calculations).

d. Scope 3 « Freight » tab:

Data has been properly reported in calculation sheets. Air freight is calculated **without** contrails.

Closing : KNOLL confirmed they will mention this important assumption in their carbon footprint reportings

e. Scope 3 « End of Life » tab

- **No problem found.** The quantity of GHG is increasing almost proportionnal to the nbr of boxes, therefore the end of life data increases consistently. This source of emissions has however significantly increased over time, in spite of an overall trend to nbr of box produced reduced from 20M in 2019 down to 10M in 2024 and 2025. This is due to a change of « end of life » Emission factors in 2023. A methodologic patch is recommended to be implemented to be able to trace this modification of EF in 2023 and retro-calculate the carbon footprint for past years from 2019 to 2022 included.

f. Scope 3 "Transporting people" tab :

- the computation of passenger.km for daily employee commuting data is correct. Recommendations from last year have been taken into account. The details allows the external vericator to understand the data. For example : details about nbr of employee in each office spread by transportation mode + nbr of commuting days for each office, then calculation of total passenger.km done.

- Same thing for the employee business travel section: computing method correct, improved data versus last year, with additional information provided on departure, arrival locations, nbr of passengers.

g. Comparison between 2024 and 2025 inventories (“GHG protocole” tab in the file)

- Summary chart – embedded in the “GHG protocole” tab

GHG Protocol																				
Is the site considered a franchise ?			No												Overview by categories for GHG Protocol extract					
Is the site considered a franchise ?			No																	
Back to Description			Calculated values										ADDED by P GLS/ANIC							
Emission categories	Numbers	Emissions	GHG emissions								Avoided GHG emissions		2024 Carbon footprint	Variation 25 vs 24 (in tCO2e)	Justification					
			CO2 (t CO2e)	CH4 (t CO2e)	N2O (t CO2e)	HFCs (t CO2e)	PFCS (t CO2e)	SF6 (t CO2e)	Other gases (t CO2e)	Total (t CO2e)	CO2 % (t CO2e)	Uncertainty (t CO2e)	Total (t CO2e)	% export	Total (t CO2e)					
Scope 1	1-1	Direct emissions from stationary combustion sources	19	0	0	0	0	0	0	19	0	0	19	100%	18	-2				
	1-2	Direct emissions from mobile sources with combustion engine	0	0	0	0	0	0	0	0	0	0	0	100%	2	-				
	1-3	Direct emissions from non energy processes	0	0	0	0	0	0	0	0	0	0	0	100%	0	-				
	1-4	Direct fugitive emissions	0	0	0	0	0	0	0	0	24	24	0	7	100%	30	-4			
		Total Scope 1	19	0	0	0	0	0	0	43	44	0	7	100%	59	-				
Scope 2	2-1	Indirect emissions from electricity consumption	81	0	0	0	0	0	0	81	0	0	81	100%	59	-2				
	2-2	Indirect emissions from steam, fuel or cooling consumption	0	0	0	0	0	0	0	0	0	0	0	100%	0	-				
			Total Scope 2	81	0	0	0	0	0	0	81	0	0	81	100%	59	-			
Scope 3 emissions Upstream																				
Scope 3	3-1	Purchased goods or services	3 818	0	0	0	0	0	0	3 818	0	576	0	100%	4 030	-21				
	3-2	Capital goods	0	0	0	0	0	0	0	0	0	0	0	100%	0	-				
	3-3	Emissions related to fuels and energy (not included in scope 1 & 2)	0	1	0	0	0	0	0	0	9	0	0	100%	9	0				
	3-4	Upstream freight	0	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-5	Waste generated	1	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-6	Business travel	49	0	0	0	0	0	0	0	50	0	4	100%	22	0				
	3-7	Employee commuting	42	0	0	0	0	0	0	0	42	0	15	100%	27	0				
	3-8	Upstream leased assets	0	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-9	Other indirect emissions upstream	0	0	0	0	0	0	0	0	0	0	0	100%	0	-				
	Scope 3 emissions Downstream																			
	3-10	Downstream freight	1 001	0	0	0	0	0	0	0	1 070	0	131	100%	792	27				
	3-11	Transformation of sold products	0	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-12	Use of sold products	0	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-13	End of life of sold products	184	0	0	0	0	0	0	0	978	1 031	130	100%	1 044	-69				
	3-14	Downstream leased assets	0	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-15	Franchises	0	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-16	Investments	0	0	0	0	0	0	0	0	0	0	0	100%	0	0				
	3-17	Other indirect emissions downstream	0	0	0	0	0	0	0	0	0	0	0	100%	0	-				
			Total Scope 3	5 102	0	0	0	0	0	0	5 966	1 031	605	0	100%	5 926	-			
Total			5 222	0	0	0	0	0	0	24	6 070	1 031	605	0	100%	6 034	-			
10M boxes in 25																				
10M boxes in 24																				

- **Overall trend** is 6070 tCO2e (total on 3 scopes) in 24 for 10 M boxes produced, which is +36 tCO2e above the total of 6034 tCO2e for 2024, for 10 Millions boxes produces as well (stable production)
- **Purchased goods** decreased by -211 tCO2e in 25 versus 24, due to a slightly different mix of raw maerial used. It is difficult to see if action plan has produced any positive outcome in this context, but at least, the numbers have improved.
- **Freight** : GHG emissions for freight has increased by +277 tCO2e between 2024 and 2025. The action plan that consist in modal shift (decreasing air transportation for replacement by boat where possible) has not been able to bring the expected improvement

h. Overall, the conclusions of the verifications of 2025 carbon footprint for KNOLL 5 offices are:

- i. High quality of data and supplier cooperation to collect accurate data. No issues with calculation methods and correct application of GHG protocole guidelines.

- ii. A quick calculation of scope 2 location based has been added for CDP reporting, on top of Market Based calculation
- iii. The incertitude on emission factors used for raw material is still high, but there will be no possibility to do any better until paper makers invest more energy in harmonization of calculation method. Furthermore, the choice has been to select to worst Emissions factors available to tend to over-state the emissions, to be on the safe side.
- iv. An historical chart of GHG emissions, and carbon budget over several years would be needed in the future to know if company is on track or not to meet its 2030 target.
- v. An effective action plan to reduces GHG emissions brings results that can be seen in reported data year on year:
 - Scope 1 & 2 : energy saving efforts, installation of solar panels on the roof of the NY office, purchase of green electricity in most other offices worldwide
 - Scope 3 :
 - implementation of monthly data collection with suppliers to assess tonnage of purchased materials for each products components (paper, plastic, inks, glue, magnets, components...), shipment packagings and production tools
 - proactive purchase order management to anticipate production dates, and reduce air freight shipment and foster usage of boat transportation instead – while no reduction could be observed this year in a stable production level context
 - Eco-design of products to continuously improve weight: the average weight per box was
 - 253gr/box in 2023
 - 191 gr/box in 2024
 - 184 gr/box in 2025
- vi. As always, for external communication, it is recommended to share openly the calculation method assumptions :
 - coverage of 100% of KNOLL worldwide sites (5 offices) and a scope 3 that includes all its suppliers in China, Italy, Serbia, and the Philippines, and all shipments to end customers in the US and in Europe.
 - Operational Control mode
 - GHG protocole method
 - EF used for paper purchased materials comes from Eco Invent database (ASKOR), the EF from suppliers are NOT used because each paper maker is using its own methodology to compute Emission factors with a lack of consistency.
 - FLAG (Forest, Land Use and AGriculture) emissions are directionally **not included** (while emissions from burning the black liquor @ paper making stage is unclear and still in the grey zone)
 - air freight emissions are **without** contrails

6. Result of the verification for JB plant in the Philippines, standalone

The specific carbon footprint calculation for JB plant has been performed by KNOLL for the second time in 2025. This is therefore still a low level of maturity in terms of data, and the very beginning of action plan.

The verification of the carbon footprint for the JB plant was based on KNOLL's file "Bilan_Carbone_V8.9_ENG – 2025 calculation (JB) V2".

The outcome of the verification process is summarized below: in black color is the observations of the review, in blue the updates (response from KNOLL) and in red the closing (final conclusion)

- a. Scope 1 & 2 "Energy" tab: **everything is correct.** The ventilation of electricity consumption is well done, and for fuels as well. The electricity produced by the solar panels is correctly assigned. This will represent both your market based and location based emissions, since the two values will be identical for this year.
- b. Scope 1 "Non energy" tab: there were NO leakage of cooling fluids this year, therefore no emissions.

- c. Scope 3 "Inputs – Goods and materials" tab :
Total of 554 tons of raw materials have been ordered to produce the 2,932 Million boxes.

The raw materials are correctly collected and reported in the calculation tabs, with the correct emission factors, and with same emission factors as for KNOLL 5 offices inventory.

- d. Scope 3 « Freight » tab:
Consistency check = here for the plant, there will be two separated flux of logistics – upstream and downstream, since the purchased materials are delivered physically to the plant, as opposed to the KNOLL 5 offices where the parts are delivered door to door directly from suppliers to the customers.

A cross verification of overall tonnage has been done between what "comes in" and what "comes out" :

- What come « in » = total inputs of Raw Materials+components+shipping pack , as indicated in the tab « data for inputs (products) »
- What comes « out » = tonnage of scrap or production waste (side info, not mentioned in any tab) + tonnage of all shipments to customers, as indicated in the tab « data for Freight »
- Verification= Computation of gap between what comes in and out
- Tonnage of purchased tools where not included in the verification, because these are not shipped anywhere

- Last iteration of verification concluded that 554 tons of raw materials and components were sent to the plant by suppliers = tonnage “in”. For tonnage out, we have identified 117 tons of waste in production (not reported anywhere in the excel tabs) + a total of 268 tons of finished products sent to customers. The resulting gap is therefore $554 - 117 - 268 = 169$ tons, which indicates some values need to be double checked. Potential root cause for gaps can be missing data collected from suppliers, or the wood palets used for shipment that are NOT included in the “In” section

Updates from Knoll staff : for the Freight upstream tonnage, there are a lot of material that we kept in the factory as inventory so its not immediate in and out in the same year.

Closing : No comments. Calculation is directionally correct.

e. Scope 3 « Transporting people » tab:

Consistency check = here for the plant, there are 100 employees working (according to “description” tab). I therefore would expect that the total of employees assessed for commuting daily to work from cells B162 to B167 in the “data” tab is equal to 100. The total here is only 12 employees, which suggests that some employees were not assessed. May be because they come to work by walking, or by bike? Worth checking and correcting calculations if needed.

Updates from Knoll staff : For “transporting people”, a lot of employees come to work in company car or company shuttle which emission is calculated through the fuel use. Only 12 employees go to work by their own means.

Closing : No comments. Calculation is correct.

f. Scope 3 « end of Life » tab:

No comments on calculations which are compliant. Some global emission factors from UNEP have been used to replace French specific data, which increases reliability of assessment.

g. Comparison between 2024 and 2025 carbon footprint

	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
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