



**CARBON
TRUST**

Certificate of Assurance

MKS PAMP SA

has measured and achieved a reduction in the product carbon footprints of their

Gold 1oz Lady Fortuna™ Minted Bar

Carbon Trust Assurance Limited verifies in accordance with ISO 14064-3 that MKS PAMP SA has re-calculated and achieved a reduction in one Carbon Footprint representing one Stock Keeping Unit (SKU) and one Product sold Cradle-to-Grave (Business-to-Consumer) and marketed globally, in accordance with:

- ISO 14067:2018 - Greenhouse gases — Carbon footprint of products — Requirements and guidelines for quantification and communication
- Product Carbon Footprints: Requirements for Assurance v3.0 – Part 1: Technical
- Product Carbon Footprints: Requirements for Assurance v3.2 – Part 2: Claims and labelling

A detailed list of verified Carbon Footprint and Reduction results can be found in the associated Verification Letter supplementary results document, CERT-13809.

Valid from: **01 April 2025**

for and on behalf of Carbon Trust Assurance Ltd,



Martin Hockaday
Head of Assurance



CARBON TRUST

Carbon Footprint Label

MKS PAMP SA

has measured and achieved a reduction in the product carbon footprint of their

Gold 1oz Lady Fortuna™ Minted Bar

Carbon Trust Assurance has verified that this product has met all the requirements for using the Carbon Trust Carbon Footprint Label.



The above is the generic version of the Carbon Trust Label which you are licensed to use, the final label text and artwork for your label shall be issued upon agreement of text and signatory of the Label Licence Terms and Conditions.

A full description of the scope of verification and a detailed list of verified Carbon Footprint and Reduction results can be found in the associated Verification Letter supplementary results document, CERT-13809.

Valid from: 01 April 2025

Valid Until: 31 March 2027

for and on behalf of Carbon Trust Assurance Ltd,

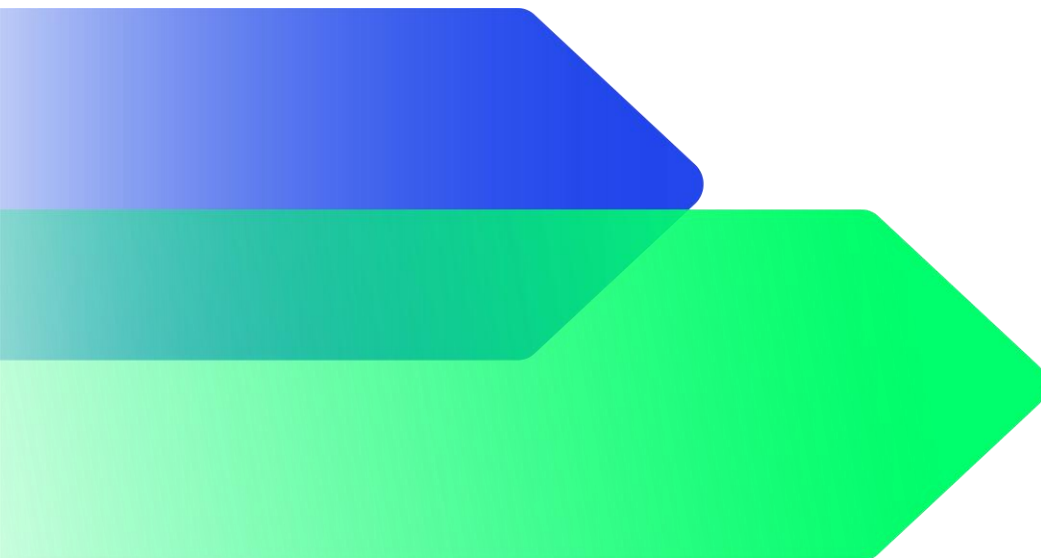


Martin Hockaday
Head of Assurance

MKS PAMP SA – Carbon Footprint of General Feed Gold 1oz Lady Fortuna™ Minted Bar

Product Emissions Report

April 2025



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1. Summary

1.1. Introduction

This report presents the results from the carbon footprint study of MKS PAMP SA’s gold minted bar, namely Lady Fortuna™.

This report conforms to the requirements for public disclosure of the life cycle GHG emissions of products laid out in the “Code of Good Practice for product GHG emissions and reductions”. It aims to provide the basis to allow consistent information for product GHG emissions and reduction, assessed in conformity with the ISO 14067 Standard. The Product Emissions Report should be made available in the public domain

1.2. Background Information

Table 1: MKS PAMP SA Product(s) Carbon Footprint - Background Information

Category	Description
Company name	MKS PAMP SA
Company contact information	Prom. de Saint-Antoine 10, 1204 Geneva, Switzerland
Product name(s)	Gold 1oz Lady Fortuna™ Minted Bar
Boundary	Cradle to grave
Standards, specifications and/or other documents used for footprinting methodology against which the company has been assessed for conformity	ISO 14067 Standard Carbon Trust Product Carbon Footprint - Requirements for Certification v3.0
Name of the independent, third-party verifier	Carbon Trust Assurance Ltd
Level of assurance achieved	Reasonable
Date of certification	01/04/2025

Functional unit	kgCO ₂ e per kg
Data period	01/07/2023 – 30/06/2024
Product consistency criteria (PCC)	Product Category Criteria Form for Precious Metals (Unapproved)

1.3. Results

The overall emissions are reported in Table 2 below Please refer to the complementary MKS PAMP Footprint Expert FINAL.

Table 2: Footprinting Results Gold 1oz Lady Fortuna™ Minted Bar (Cradle-to-Grave) – Global Market

Net Total Emissions (kgCO₂e per kg of gold)	1,974.17
Fossil Emissions (kgCO ₂ e per kg of gold)	1,846.54
Biogenic Emissions (kgCO ₂ e per kg of gold)	0.01
Land Use Change Emissions (kgCO ₂ e per kg of gold)	127.62

1.4. Data

The data quality assessments were carried out based on a key developed internally at Carbon Trust. The overall data quality for the project was good, because of the primary data quality.

1.5. Key Assumptions

Table 5 in Section 2.4.2 outlines the key assumptions that have been made.

1.6. Interpretation of results

An overall breakdown of the emissions associated with the various products and process steps for each product are reported in Table 8: Gold 1oz Lady Fortuna™ Minted Bar (Cradle-to-Grave) – Global Market. This table demonstrates that the highest emission process is that of the raw material (raw gold) which account for 94% of the total footprint and land use change which accounts for 6% of the total footprint.

The LUC methodology follows the 2019 IPCC Guidelines for National Greenhouse Gas Inventories. The equations and default constants used in the methodology are revised for specific land and biomes. To calculate LUC emissions, direct LUC equations and methodology were used. Indirect LUC has not been accounted for due to the lack of internationally agreed procedure.

Further details are recorded in section 2.4 Methodological Choices

1.7. Disclaimer on uncertainty

The emissions figures provided in this report have been calculated in accordance with the requirements of ISO 14067 standard, using the primary and secondary sources of data specified above. Based on ISO 14067 standard method of assessment, we believe that our assessment has identified 95% of the likely GHG emissions associated with the full life cycle of the product(s) covered in this report. However, readers should be aware that even primary sources of data are subject to variation over time, and the figures given in this report should be considered as our best estimates, based on reasonable cost of evaluation.

2. Main Report

2.1. Goal of the study

Table 3: Goal of the Study

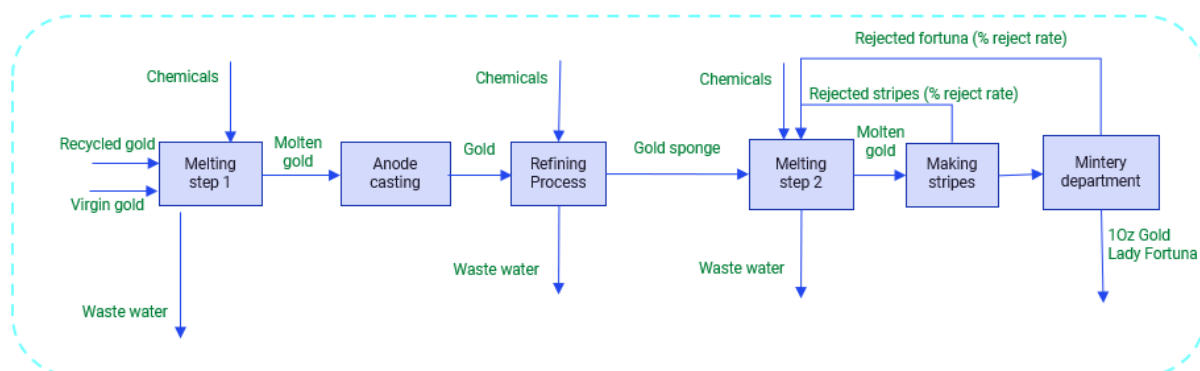
Category	Description
Intended applications of study	Business to Consumer (or business consumer) with label license
Environmental footprint impact category	Climate change
Methodological or environmental footprint impact category limitations	Land use change implications
Reasons for carrying out the study	To calculate and verify the carbon footprints of the products
Target audience	Customers of the reporting company, MKS PAMP SA
Reference PEFCRs	N/A
Commissioner of the study	Tamara Jomaa-Shakarchi

2.2. Scope

The project scope involves calculating the carbon footprint of Gold 1oz Lady Fortuna™ Minted Bar within the general feed. These product(s) will be footprinted cradle-to- grave, using kgCO₂e/kg as the functional unit.

2.3. Boundary





2.3.1. Raw materials

Gold inputs come from both virgin and recycled sources. The activity data provided by MKS PAMP SA was the total mass of the raw material inputs for each footprinted product over the reporting year.

The largest emission source within the raw materials was the gold input. The emission factors used for the gold were calculated using the EU Product Environmental Footprint Circular Footprint Formula (PEF CFF). The virgin emission factor for gold was calculated for specific suppliers provided by MKS PAMP SA. Recycled emission factors for gold were taken from the World Gold Council.

The Product Environmental Footprint (PEF) is a life cycle assessment (LCA) based method to quantify the environmental impacts of products established by the EU. The overarching purpose of PEF is to enable to reduce the environmental impacts of goods, accounting for supply chain activities (from extraction of raw materials, through production and use and to final waste management). This purpose is achieved through the provision of detailed requirements for modelling the environmental impacts of the flows of material/energy and the emissions and waste streams associated with a product throughout its life cycle.

The Circular Footprint Formula (PEF CFF) provides the approach that shall be used to estimate the overall emissions associated to a certain process involving recycling and/or energy recovery. These moreover also relate to waste flows generated within the system boundary.

The emission factor applied to the input gold material was calculated using the following two formulae which have been derived from PEF CFF below. An adaptation has been made in multiplying it with EvLUC to account for land use change from mining,

$$Pr = R2 \times (1-A)MQL + R1A$$

$$EF = Pr \times Er + (1-Pr) \times Ev + Pr \times Er + (1-Pr) \times EvLUC$$

With respect to both the virgin gold and recycled gold, a 3-year rolling average emission factor has been applied and implemented into the PEF CFF. This allows MKS PAMP SA to obtain a supplier specific EF from each of their mines which may have varying yields over the years.

Pr is derived by calculating an average of the mine emission factors over the 3-year period.

Table 4: Explanation of PEF CFF formula

Parameter	Definition
Pr	The portion of the emission factor which can use Er (the recycled content)
Ev	Specific emissions and resources consumed (per functional unit) arising from the acquisition and pre-processing of virgin material, 3-year rolling average applied to this figure.
Ev LUC	Specific emissions and resources consumed (per functional unit) arising from land use change emissions caused by extraction of the virgin material.
Er	Specific emissions and resources consumed (per functional unit) arising from the recycling process of the recycled (reused) material, including collection, sorting and transportation process.
Er LUC	Specific emissions and resources consumed (per functional unit) arising from land use change emissions caused by the recycled material
R1	Proportion of material in the input to the production that has been recycled from a previous system. A three year rolling average has also been applied to R1.
R2	Proportion of the material in the product that will be recycled (or reused) in a subsequent system. R ₂ shall therefore take into account the inefficiencies in the collection and recycling (or reuse) processes. R ₂ shall be measured at the output of the recycling plant.
A	Allocation factor of burdens and benefits (jointly: "credits") between supplier and user of recycled materials.
MQ	<i>For metals, this value is 0.2.</i> The recycling process shall account for material quality loss during recycling, which is pre-defined for most materials.
QL	<i>For metals, this value is 1.</i>

Definitions from: [Publications Office](#)

For other chemical inputs, emission factors were taken from BEIS 2023 and Ecolnvent 3.10. In the cases when the emission factors were not available in either database, an emission factor of a similar chemical was applied from Ecolnvent.

2.3.2. Manufacturing

The raw materials were transported to MKS PAMP SA's manufacturing facility in Switzerland.

The activity data provided by MKS PAMP SA included the distance and mode of transport for each of the raw materials, as well as supplier location. Using these distances, the Carbon Trust's road freight v4.5 calculator was used, whereas air freight and sea freight BEIS 2023 was used. This methodology calculators were used to find the emission factors for each raw material's upstream transport.

For manufacturing, electricity was the main energy source and 100% of the electricity was derived from hydroelectric power. Other energy sources used at the plant were natural gas and propane. This activity data was provided by MKS PAMP SA in MWh / year (for electricity) and m³ / year (for natural gas and propane) for each process step. IEA 2023 emission factor was used for electricity as they use renewable energy. Emission factors from BEIS 2023 were used for natural gas and propane. For each process step a specific amount of kgCO₂e emissions were associated with them, namely for example the first melting or the anode casting.

There were the following waste streams: black water, white water, non-precious metal waste, used crucibles. Waste activity data was derived from input data provided by MKS PAMP SA and BEIS 2023 was used for waste treatment emission factors.

2.3.3. Packaging

Packaging was carried out at MKS PAMP SA's facility in Ticino, Switzerland.

Gold 1oz Lady Fortuna™ Minted Bar are individually packaged in protective plastic rolls with a paper certificate each. 25 bars are packaged in one plastic box for shipping.

In terms of activity data, the mass of materials for one box or pallet was provided. These masses were then scaled up to account for the total production output for each product. Emission factors applied to these packaging materials came from the Carbon Trust's biogenic database.

2.3.4. Transport

Finished products are transported by road from MKS PAMP SA in Switzerland to Zurich airport or to the final customers in Switzerland. The products are flown internationally, and from here, the products are transported to the end customer, by air and/or road.

For each country, the activity data was calculated using the specific mode and distance of the type of transport used. Using these distances, the Carbon Trust Road Freight Calculator v4.5 was used, whereas air freight and sea freight BEIS 2023 was used.

2.3.5. End of life

It is assumed that 100% of the metal is recycled due to the nature of the product being a precious metal. The End-of-Life profile for packaging was calculated using BEIS 2023 disposal emission factors and the disposal method percentages of the different countries of the sold products.

2.3.6. Excluded attributable processes

Use phase has been excluded from the boundary of lifecycle of these products as they are used as investment bars, and therefore have no emissions associated with them as they would remain in a closed vault.

2.4. Methodology

2.4.1. Methodological choices

Significant methodological choices for calculating the product footprint of MKS PAMP SA's SKUs are listed below:

- Calculation models were based on templates available in Footprint Expert Multi SKU and Footprint Expert 5.1 (FPX). These were set out in the different life cycle stages of gold bar, from the raw materials entering the facility and going through the first round of the foundry, to the grain entering the bullion department, packaging, and sent to retailers.
- Global warming potential (GWP) factors were taken from the PEF CFF Calculator, Road Freight Calculator v4.5, EcoInvent 3.10 and BEIS 2023.
- Based on low materiality, emissions from upstream packaging of the raw material inputs, namely the chemicals and silver, and land use change for procured gold where the mine source could not be verified and accurately calculated, are being excluded.
- Land use change calculation tool follows the 2019 IPCC Guidelines for National Greenhouse Gas Inventories. Equations and default constants used in the methodology are revised for specific land and biomes.
- A 3-year rolling average has been applied to the virgin gold emissions factor and the percentage of recycled gold procured.

2.4.2. Key Assumptions

Table 5 outlines the key assumptions that have been made for this metal type.

Table 5: List of Assumptions

Process Step	Key Assumption
Grouping	Grouping for different finesses, ie. 995+ and 999.9 gold lb have been grouped as large bars. This is because the difference lies in downstream distribution and EOL, the rest of the processes remain the same.
Inbound transport gold	To calculate the amount of gold transported per supplier, first the total amount transported was determined, then a percentage per supplier was calculated and consequently applied to the total amount (gold input allocation tab)
Emission factors	Where specific raw materials did not have an equal emission factor, a generic Ecoinvent 3.10 organic chemical emission factors were applied.
Allocation of input	The data received was for groups of products and not per SKU. Therefore an allocation key has been created to determine amount of gold produced per group, and calculate the amount of materials/utilities per group
Mass balance	MKS PAMP SA inputs include raw metals and chemicals. Due to inconsistency in the mass balance, to balance the inputs and output materials, it is assumed all chemicals are wasted as copper sulphates.
Helicopter transport	Assumption that a helicopter can fly 250km/h: https://www.helicentre.eu/en/faq/#:~:text=How%20fast%20do%20helicopters%20fly,on%20one%20tank%20of%20fuel.

Industrial by product - input gold	Have assumed the split from the WGC of virgin and recycled gold of 64.41% and 35.59%.
Recycled EF for gold	The WGC emission factor was used for the recycled gold as well as the investment gold.
Water	No water input data was provided; therefore, it was assumed that the sum of black and white water was that of input water.
End of life	Where specific packaging disposal data could not be provided, assumptions were made based on the percentage of gold sold in each geographical region and applied to each SKU to calculate end of life emissions per country.
Inbound transportation gold	To calculate exactly how much gold was transported per different supplier, the total amount transported was used to calculate the percentage per supplier and applied that to the total amount of gold used. This percentage split is included in the model.
Emission factors	For the raw materials where emission factors were not found, a generic Ecoinvent organic chemical emission factor was applied.
Allocation of inputs	The data received was for the family group of the product and not per different SKU, hence an allocation key was created which was then used to determine the amount of gold produced and consequently the amount of materials/utilities is used.
Raw Materials	The virgin emission factor for gold was provided by MKS PAMP SA for all its suppliers, where there were none, an emission factor taken from the world gold council study was used.
End of life	In terms of the PEF CFF, a 100% recycling rate of finished gold is assumed for finished gold products. Due to the nature of the value of the end product, we assume that this will not be disposed of through waste streams and will eventually be recycled. Furthermore, the products are sold branded and stored in vaults so unlikely that they are purchased for further processing.
End of life	Waste disposal percentages per each country were uplifted to ensure that the total added up to 100%
LUC Calculation methodology	The LUC methodology follows the 2019 IPCC Guidelines for National Greenhouse Gas Inventories. Equations and default constants used in the methodology are revised for specific land and biomes. To calculate land use change, direct LUC equations and methodology were used. iLUC has not been accounted for due to the lack of internationally agreed procedure.
Assessment period	A 20 year assessment period is used, even though the mine life cycle can be over 20 years, a reputable source could not be found. Instead the IPCC's 2003 Good Practice Guidance for Land Use, Land Use Change and Forestry, and its default value of 20 years was used. The linear discounting method is used to allocated emissions over the assessment period.
Exclusion	Assume no land use change where land type is rocky or desert or where there has been no visible expansions or change to the landscape in the last 20 years.
Methodology	Using the gold procured by MKS PAMP SA, a percentage was calculated for the amount of gold MKS PAMP SA procures of total gold produced by the mine. The percentage is used to apportion the hectares of the mine for only the amount procured by MKS PAMP SA.
Unknown Mines	There are several gold sources which MKS PAMP SA procure from where the original source is not known as the gold is sourced from a refinery or an aggregator. In these

	cases, we have used mines that have sold similar quantities of gold as an assumption for the mine hectares and a 2014 start date.
Rolling average	Gold percentages for secondary data taken from WGC and are: recycled content 54% and virgin content 46%
Helicopter transport	Assuming a standard utility helicopter such as: https://www.airbus.com/en/products-services/helicopters/civil-helicopters/h145/h145-technical-information with a carrying load of 1905kg. Assumed standard capacity at 70% of this which is 1333.5kg. Helicopter model found here: https://www.ias-aviation.net/en/notre-entreprise/

2.4.3. Allocation of inputs

MKS PAMP SA produce several products at their facility. Raw materials, outputs and utilities were provided for each process step for all products within project scope. When modelling the individual product footprints, a calculation was made to identify the production inputs and utilities required for 1kg of each product and the associated outputs for 1kg of product. This was then multiplied by the total output of the product to determine the total input emissions associated with each SKU.

The inbound transportation file included the transportation information for all inbound gold. In order to allocate only the emissions related to the general feed large gold bars and the kilo gold bars, an allocation factor was required. Using the percentage of gold procured from each mine of the total gold procured, an allocation was calculated to determine the input gold transported from each mine for both the general feed large gold bar and the kilo gold bar. An additional adjustment was made to the inbound gold to remove the inbound gold related solely to the provenance products. The client provided a percentage split of gold per product from each of these source mines.

The LUC emissions were also calculated using an allocation factor. The change in land use was calculated by drawing polygons on google earth of the developed land areas. The land use change in hectares was apportioned based on the percentage of gold procured by MKS PAMP SA for this product over the total metals production of the mine.

2.4.4. Allocation due to recycling

Recycling allocation allows products to use the generally lower, recycled material emissions factor, rather than exclusively using virgin material emissions factors, for a portion of some input materials – thereby reflecting the benefits of recycling in reducing GHG emissions. The methodology (PEF CFF) used, balances how much benefit is attributed to products that use recycled input materials and how much is attributed to products that are recycled and provided these materials

It was assumed that gold had a recycling rate of 100% due to the high value of the end product. The end-of-life fates for packaging materials were found at a country level.

Please refer to section 2.3.1 where further information is provided on the PEF CFF.

Table 6: SKU list and ID Number

Product Name	ID Number
Gold 1oz Lady Fortuna™ Minted Bar	ZAUFS00606

2.4.5. Methodological changes since previous report

The previous inventory reports were called Phase 1 MKS PAMP FPX Multi SKU V5.

Where there is a reduction assessment being made, this will only reflect reductions that are due to the actions of MKS PAMP SA (Product Carbon Footprints: Requirements for Assurance Part 2: Claims and Labelling, section 3.3). Where there have been changes to the data quality or improvements made to the calculation methodology, the baseline footprint has been re-baselined in order to also reflect those changes, so that the reduction assessment can be made with comparable footprints (Product Carbon Footprints: Requirements for Assurance Part 1: Technical, section 9.2).

The following changes in this section are all subject to re-baselining.

Input metal data granularity - Co-Product and Ex-Investment

Data granularity for input metals has improved so that supply can be defined as ex-investment or industrial by-product rather than only recycle or virgin (doré).

To use the PEF CFF approach, inputs must be defined as virgin or recycle so that credit can be allocated for recycling/use of recycle.

Ex-investment metals are deemed to be recycle. Industrial by-product metals are offcuts/scrap which the supplier cannot process, e.g. the remnants of a blank after some shape has been stamped from it. In GHG accounting terminology, this is a co-product, an output which is not the primary product but which is not a waste (i.e. it has value). Without knowing the supplier's own inputs, an assumption must be made on the content of that co-product metal with respect to virgin and recycle percentage.

For this assumption, the World Gold Council's (WGC) guidance (2021 - Gold and Climate Change - Decarbonising investment portfolios) was followed, so that there is an assumed approximate 70:30 split of virgin:recycle for these inputs.

Rolling Average for Co-Product

As the footprint applies a 3 year rolling average to the recycled content percentage, the footprint also extrapolates the above Co-Product assumption to the previous years. Those previous year datasets did not have the same granularity, i.e. all metal was grouped as either recycle or virgin, and so any industrial by-product was previously grouped in with recycle. Therefore, in order to re-baseline, the % of this year's input which is industrial by-product was subtracted from the previous year's recycle percentage and was re-assigned to either recycle or virgin according to the WGC recommended split. This means that the recycle percentage of the previous year's decreases very slightly.

World Gold Council Emission Factor for Virgin Gold

This is not strictly a methodological change but is noteworthy for its impact.

All mines which do not carry out their own footprinting use an average emission factor from the WGC. In previous footprints this number was ~38,000kgCO₂e/kg, but the latest WGC guidance has re-stated their estimate at ~32,000kgCO₂e/kg. Therefore, this has been updated in this footprint and in the previous years which are included in the 3-year rolling average.

Skarn Emission Factors

Skarn Associates is a mining-focused data analyst firm specializing in asset-level environmental and GHG emissions intelligence across the extractive sector.

Where mines do carry out their own footprints these are taken from the Skarn database and used in the footprinting. Where a mine is carrying out their own footprint now but was not doing so in the past (i.e. it was previously using the WGC average emission factor), the WGC emission factor is replaced with the more accurate, measured, Skarn emission factor in those past years.

This re-baselining of previous estimated footprints with the measured footprints can cause the emissions factor of the input virgin metal to be higher or lower than it was before, but this is an increase in accuracy of footprint, rather than a true increase or decrease of the footprint.

Harmonisation of Emission Factor Databases

In the previous set of footprints, End of Life emission factors for treatment of waste came from both the BEIS and Ecolnvent databases. In order to harmonise the approach and to update to the latest best practice guidance from our Data Team, in this year’s footprints, all end of life and waste emission factors have been taken from the BEIS database.

Biogenic Emissions

In the previous footprint, Carbon Trust used a biogenic calculator, separate to the CFF calculator, to calculate the biogenic emissions factors for the packaging material. This year, the biogenic emissions calculation has been incorporated into an improved tool.

2.5. Data

2.5.1. Data Collection and Validation

MKS PAMP SA provided all activity data used for the analysis. All the input data drivers are summarised in the footprint model under their relevant process sheet. The main point of contacts for the data was MKS PAMP SA ESG team members. The Carbon Trust provided MKS PAMP SA with a data collection template to be used.

2.5.2. Data Quality

The data quality assessments were carried out based on a key developed internally at Carbon Trust. The overall data quality for the project was medium, because of the quality of data that was provided for the chemicals and raw precious metals. Table 7 summarises the data quality assessment of the most material data points.

Table 7: Gold 1oz Lady Fortuna™ Minted Bar quality assessment for material data points

Data point	Emission Factor Data Quality Indicator	Activity Data Quality Indicator	Application Data Quality Indicator
Raw Materials	Good	Good	Medium

Packaging	Good	Good	Good
Manufacturing	Good	Good	Good
Downstream distribution	Good	Good	Good
End-of-Life	Good	Good	Good
Land use change	Medium	Medium	Medium

2.6. Results

An overall breakdown of the emissions associated with the various products and process steps is reported in Table 8 below.

Table 8: Gold 1oz Lady Fortuna™ Minted Bar – Global Average Market

Data Category	Emissions	Emissions	%
<i>Process</i>	<i>kgCO₂e/kg</i>	<i>Total tCO₂e</i>	
Input Materials (Gold)	1,945.97	26,569,409.60	98.57%
Input Material	2.91	39,758.21	0.15%
Transport	6.38	87,157.16	0.32%
Utility	5.52	75,302.82	0.28%
Packaging	0.83	11,353.61	0.04%
Output (Waste)	0.08	1,028.45	0.00%
Downstream Distribution	12.37	168,866.94	0.63%
End of Life	0.11	1,552.17	0.01%
PRODUCT CARBON FOOTPRINT	1,974.17	26,954,428.96	100%

2.7. Conclusions

The two main hotspots within the carbon footprint are that of the raw materials, namely the raw gold and the land use change, driven by the carbon intensity surrounding the emission factors.

2.8. Recommendations

2.8.1. Emissions reductions

The main emissions hotspot of both products is the gold raw material input and land use change from the source mines. Sourcing raw materials with a higher percentage of recycled content would be the most impactful way of reducing the product footprint.

Moreover, switching to the use of low-carbon methods of transport, both upstream and downstream (business to business transport), will decrease this further. This might include alternative fuels, electric vehicles, or even more efficient delivery routes. For third-party logistics, (retailer to consumer) it is recommend that MKS PAMP SA engage with suppliers in switching to more sustainable transport options.

In addition to the procurement of recycled gold, MKS PAMP SA could work more with mines to understand what land rehabilitation projects they are involved and see where they could lower LUC emissions by sourcing from mines that are in not in expansion or increasing emissions through land use change.

2.8.2. Data quality improvements

There are several recommendations to improve future recertification and results:

Raw materials (Gold): MKS PAMP SA provided the gold sourcing data of the used mines and the emission factors from these mines. Obtaining more visibility not only on Dore but also on the recycled gold sources would help to derive a more accurate recycled gold emission factor.

Other inputs: Obtaining supplier-specific emission factors would increase the accuracy of the footprint as generic emission factors would no longer be required.

Inbound transportation and downstream distribution: Attaining more clarity over the transportation stages could improve footprint accuracy. For example, it may be that the suppliers use electric vehicles, or particularly efficient logistical practices.

Mine Data: For the calculation of land use change, a large amount of data research was required by the delivery team as the client did not hold specific data on the mines. Challenges such as, some mines not exclusively mining gold, unknowns around how much land has actually been changed and the age of the mines, difficulty accessing reports which disclosed development or production resulted in a number of assumptions and a lower data quality score for the LUC emissions. Gaining visibility on the expansion of mines and land use change due to gold exploration will help with the calculation of the land use change emissions.

2.9. Disclaimer on potential uses of this report

The results presented in this report are unique to the assumptions and practices of MKS PAMP SA. The results are not meant as a platform for comparability to other companies and/or products. Even for similar products, differences in unit of analysis, use and end-of-life stage profiles, and data quality may produce incomparable results. The reader may refer to the ISO 14067 standard for additional insight into the GHG inventory process.

3. Annex

Annex 1: Certification Details (Third Party Sign-Off)

This product footprinting study has been subject to an independent critical review to verify whether the methodology used for this LCA is compliant with ISO 14067 standard.

Category	Description
Name of the certifier	Rajul Shah
Date of certification	1 April 2025
Data valid until	31 March 2027

carbontrust.com

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Published in the UK: 2025



At MKS PAMP, our commitment to sustainability is at the heart of everything we do. In July 2022, MKS PAMP became the first in the industry to launch a portfolio of precious metals products which have had their carbon footprint verified by [the Carbon Trust](#), assuring them against international footprinting standards including ISO 14067.

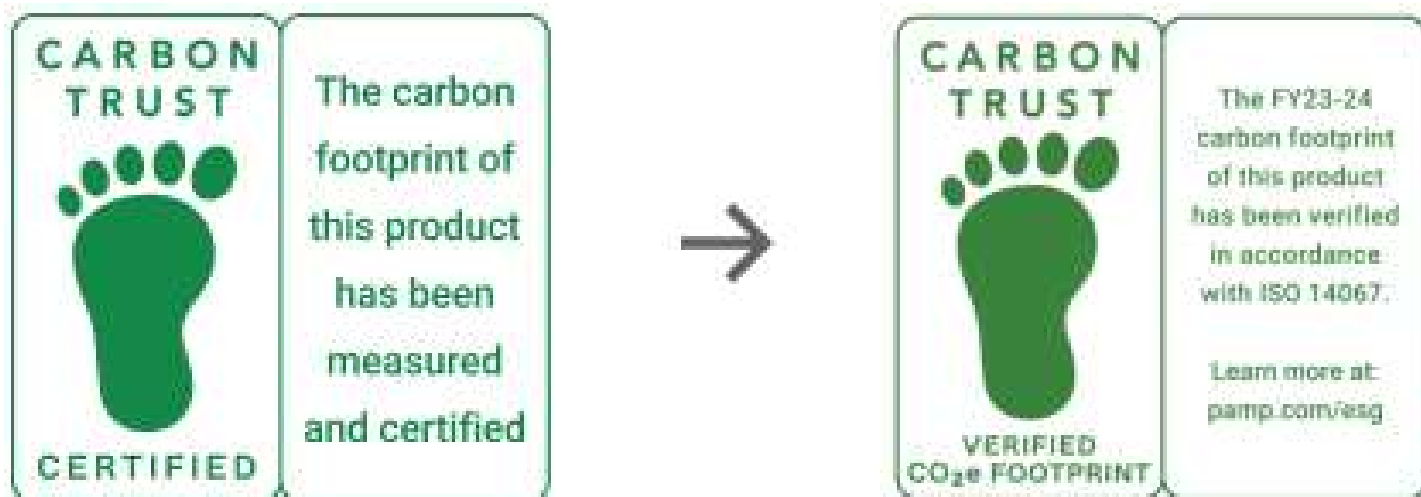
Since launching our independently verified products, we have continuously evolved our approach to responsible precious metals refining, and have expanded our Carbon Verified products portfolio to include a wide range of offerings, from gold cast bars and precious metals grains to the globally renowned 1-ounce gold Lady Fortuna™ minted bar.

As of **April 1, 2025**, the Carbon Trust has phased out its previous Carbon Measured and Carbon Neutral labels. In alignment with these changes, we are introducing our new Carbon Trust Verified product range, reflecting our ongoing efforts to reduce environmental impact.

This transition marks a significant step in rethinking sustainability in the precious metals industry. By choosing our Carbon Trust Verified products, you are supporting a future built on real reductions, responsible sourcing, and greater transparency.

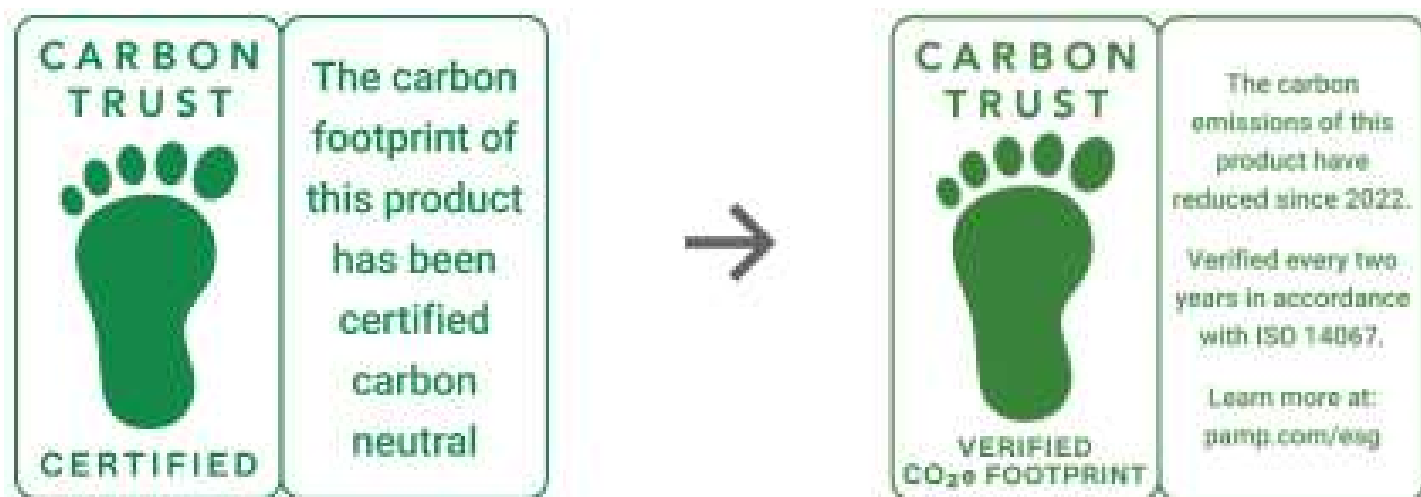
Carbon Measured and Carbon Neutral products produced before March 31, 2025, will retain their respective labels. You can find more information on these products at the following link: [Carbon Neutral and Carbon Measured products](#).

1 What Is Changing?



Carbon Measured → Carbon Verified

The term **Carbon Measured** is now replaced by **Carbon Verified**, ensuring the same rigorous emissions assessments, verified by the Carbon Trust.



Carbon Neutral → Carbon Reduced

Previously, our **Carbon Neutral** products relied heavily on offsetting to remove emissions. Now, our **Carbon Reduced** range focuses on real, ongoing **yearly reduction efforts** to lower emissions across our supply chain.



2 What This Means For You?

- **A Commitment to Continuous Improvement**

Rather than relying on offsets, our Carbon Reduced products focus on **actual reductions** in emissions through innovative sustainability initiatives.

- **Greater Transparency & Impact**

Our emissions reduction targets align with our internal best practice and SBTi commitments, ensuring **long-term climate action** beyond carbon neutrality.

- **Independently Certified**

Each product in the Carbon Trust Verified range continues to undergo **rigorous assessment** to ensure credibility and accountability.

3 Our Labels: Carbon Reduced and Carbon Verified

Carbon Reduced Label



This label shows that **the product's carbon footprint has achieved reductions since 2022, and that MKS PAMP SA has committed to achieving continued footprint reductions with reduction plans.** This label demonstrates our commitment to the decarbonisation of our product portfolio through:

1. The **measurement** and **verification** of the product's footprint in accordance with **ISO 14067**.
2. The **reductions** of the CO₂e emissions linked to the product from sourcing to end-of-life.

Carbon Verified Label



This label shows that the CO₂e emissions linked to the product have been **measured** and **verified** in accordance with ISO 14067.

Available for B2B products only.

4 Our Labeled Product Portfolio

Carbon Reduced Label

Gold 999.9 and 995+ Large Bars (400oz)



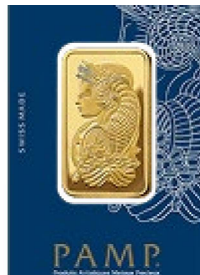
View [Certificate of Assurance & Footprint Label](#)

Gold 999.9 and 995 Kilo Bars (VERISCAN™ included)



View [Certificate of Assurance & Footprint Label](#)

Gold 1oz Lady Fortuna™ Minted Bar



View [Certificate of Assurance & Footprint Label](#)

Carbon Verified Label

Gold 999.9 Grains (1g to 5kg)



View [Certificate of Assurance & Footprint Label](#)

Silver 999.9 and 999 RJC CoC Recycled Grains (1g to 25kg)



View [Certificate of Assurance & Footprint Label](#)

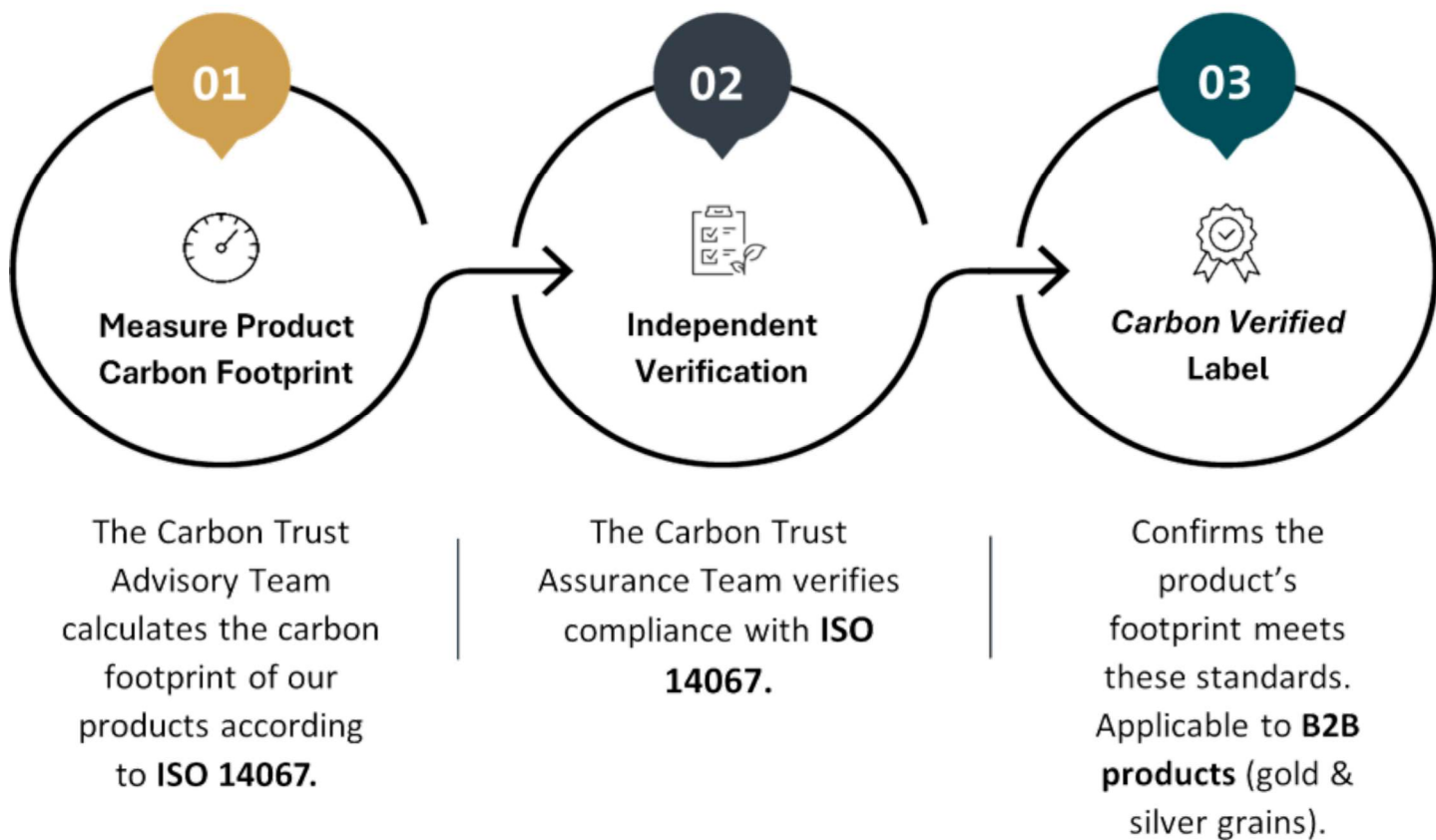
Provenance™ Gold Grains (2 Specific Sources)



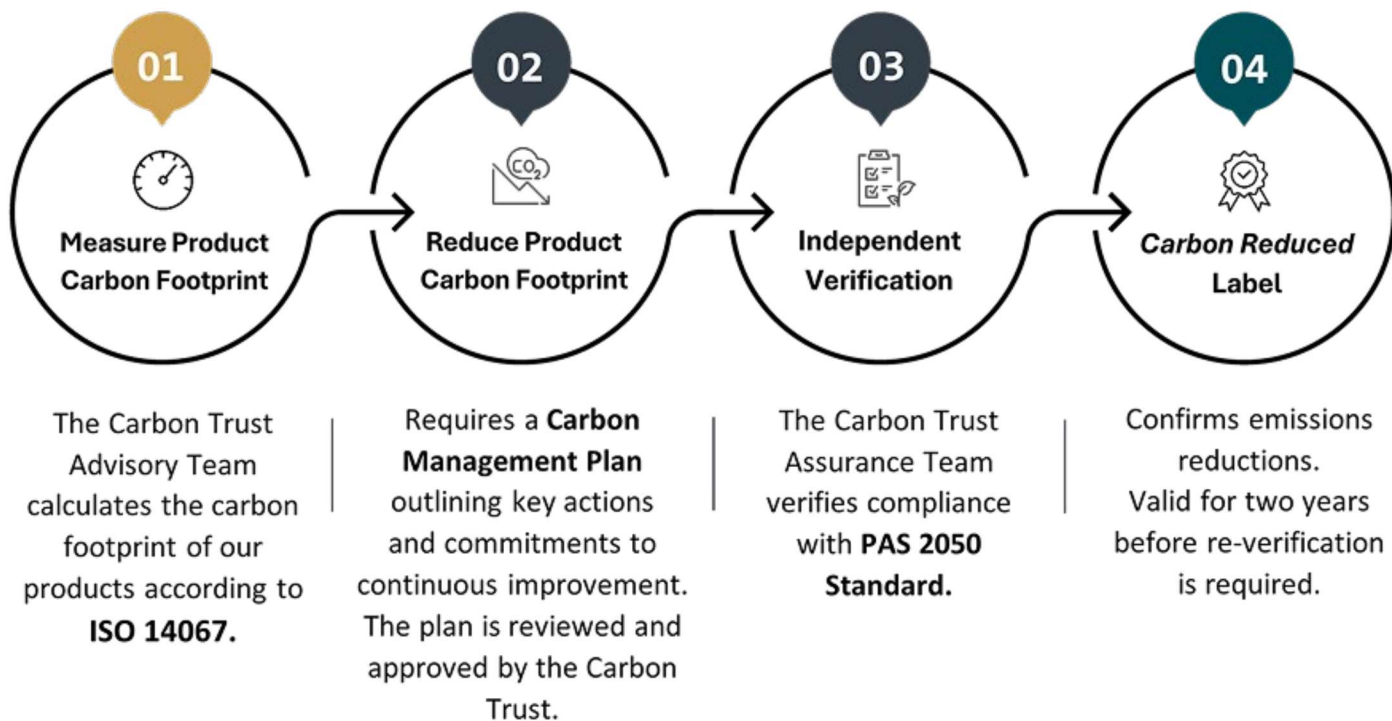
View [Certificate of Assurance & Footprint Label](#)

5 Process to Obtain Labels

Carbon Verified Footprint Process:



Carbon Reduced Verification Process:





6 Our Approach To Carbon Reduction

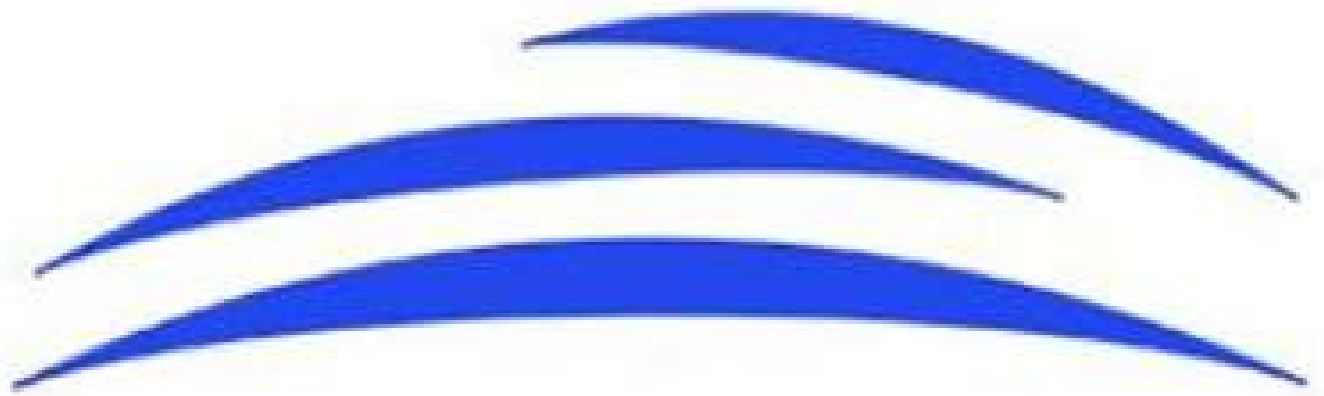
The Carbon Reduced label requires **key actions** and **continuous commitments to reduction of the product emissions**.

Since over 99% of the GHG emissions associated with our products come from the sourcing of precious metals, we focus our decarbonization efforts on improving our sourcing strategies across both mined and recycled materials, while continuing to reduce emissions within our own operations.

As part of our carbon reduction actions, MKS PAMP SA has implemented strategies to drive

measurable impact, including:

- **At our plant:** Enhancing energy efficiency at our production site, adopting cleaner technologies, and expanding renewable energy use. Key initiatives include the installation of high-efficiency furnaces, the Acidless Separation (ALS) furnace to reduce chemical use, and solar energy production at our refinery.
- **With our sources:** Tracking and driving progress, collecting data to monitor supplier emissions, assess sourcing trends, and align sourcing decisions with our reduction targets.



CARBON TRUST

7 About the Carbon Trust

The Carbon Trust provides third-party assurance of **carbon measurement, verification, and reduction**. Their process involves:

- **Building a carbon footprint model.**
- **Assessment for compliance with relevant international standards.**
- **Independent evaluation leading to verification certification.**

Through the Carbon Trust verification, we ensure that our products undergo a full carbon footprinting process where the emissions generated across the product' value chain (Scope 1, 2, and 3) are **measured** and **disclosed** on the product certificate.

To learn more about our ESG principles, strategy and reporting, please visit: mkspamp.com/esg

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PREVIOUS

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