# KDD063 - Sustainability Footprint Management

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|---|---|
| **Status** | Approved |
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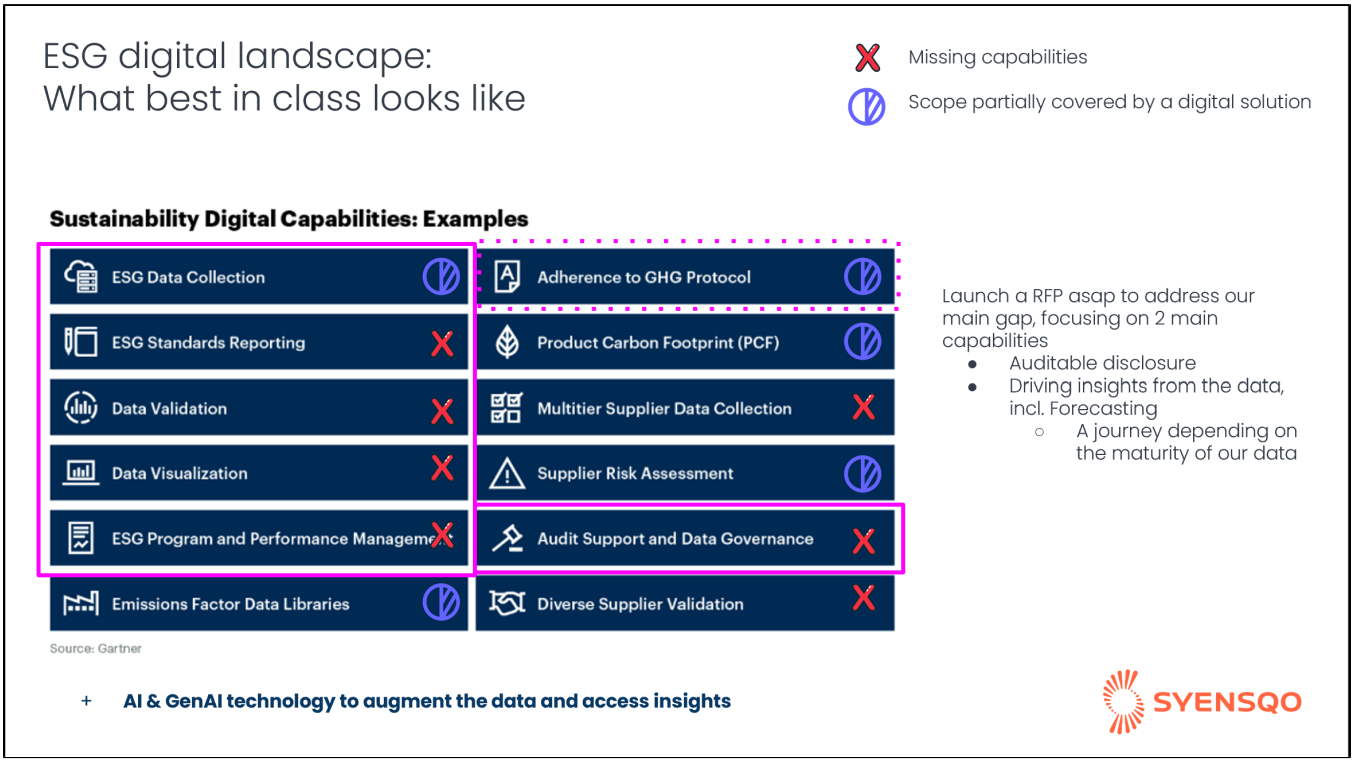
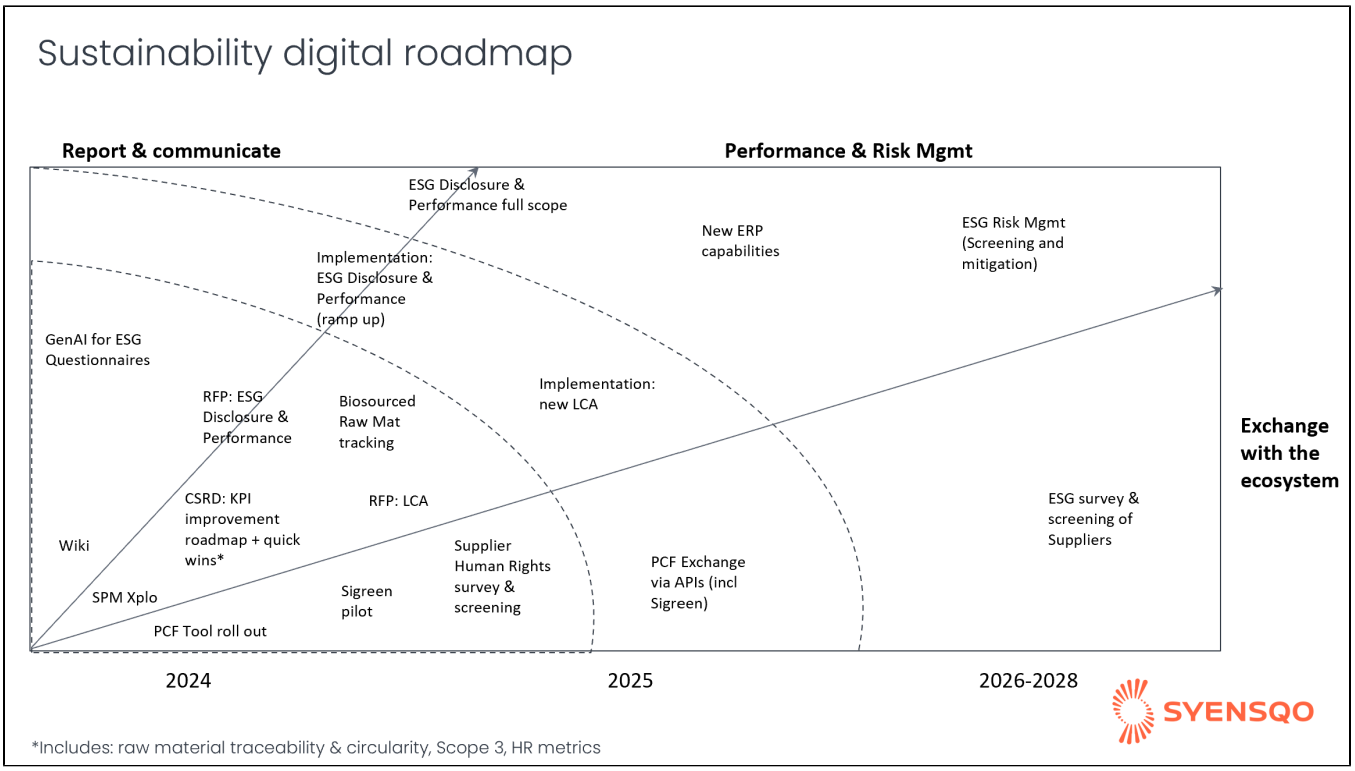
## Issue

The management of product carbon footprint (PCF) as governments worldwide tighten climate regulations, monitoring and reducing all emissions avoids legal and financial penalties, especially in relation to Scope 3.1 emissions. Regulations focus more on reporting on Environmental, Social and Governance (ESG), hence PCF is not currently enforced to be provided by regulations. The key driver is the customer impact on buying decisions focusing on more PCF friendly products. It is of importance to customers striving for lower CO2 and greener products. Syensqo's aim is to take control of what is happening in the supply chain to avoid an impact on business continuity. The company needs to record and report on the activity data and emissions factor. Currently this data is built up by experts (internally and externally) or sourced from external databases.




Syensqo needs to act with its suppliers to reduce Scope 3 emissions to reach Syensqo's climate commitment and support product competitiveness. T he future solution for footprint management in Syensqo needs to be determined as part of Scope 3 aligning with ERP project principles.




A decision is required as to which tools should manage the business and system process for Sustainability footprint management in line with the Syensqo Sustainability roadmap, potentially replacing current tools in the Sustainability landscape.

# Recommendation

There is an expectation that Syensqo should adopt a mainstream integrated solution for carbon footprint management. It enables Sysenqo to achieve group targets by understanding where emissions come from at operational, procurement and market level. Data accuracy is key to govern and implement the solution going forward, hence it needs to be based on an integrated data flow which represents one version of truth.

The recommendation is for the business to implement SAP EHS Emissions Management for Scope 1 and 2 as well as SAP Sustainability Footprint Management to cover current and future Scope 3 requirements from the outset as part of an integrated ERP solution (Option D). Whilst the extent of Scope 3 integration with SAP and hence the extent of SAP SFM scope is to be finalised as part of detailed design, the recommendation is to endorse the implementation of SAP SFM together with SAP EHS Emissions Management in support of an integrated solution for Scope 3 in the long-term.

It needs to be confirmed as part of detailed design, which of the current applications in the ESG landscape will be replaced by the recommended solution. The future implementation of additional SAP SFM functionalities and enhanced integration with other processes as per SAP Roadmap will harmonise the ESG landscape further along the process.

# Background & Context

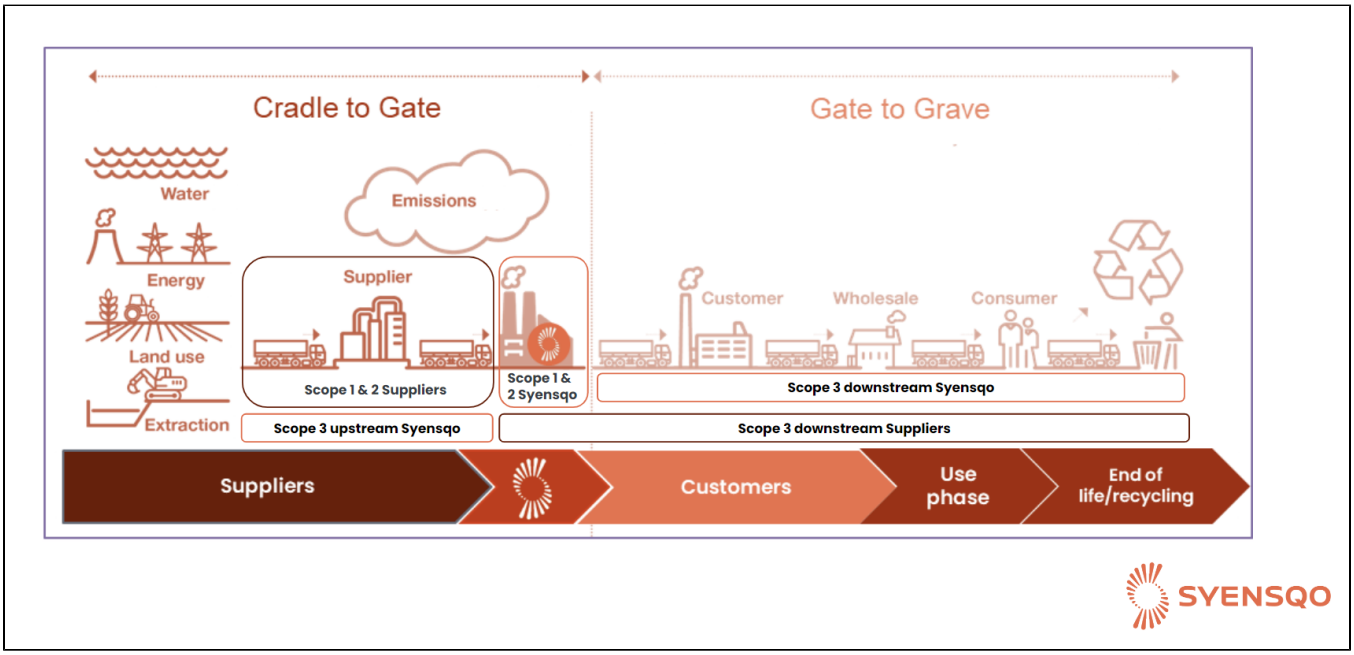
Product Carbon Footprint (PCF) is the quantity of greenhouse gas emitted to manufacture a product from cradle to the exit gate of the Syensqo plants. Due to complexity of acquiring information on the downstream part Syensqo typically provides cradle to gate PCF rather than cradle to grave. The related frameworks are mainly GHG protocol, over and above the International Organization for Standardisation (ISO) and Together for Sustainability (TfS), a joint initiative of chemical companies. Sustainability footprint management in Syensqo is split as follows:

- Emissions management
- Water management
- Energy management
- Land use (out of scope for this KDD)

Whilst the KDD is driven by the requirements for direct emissions as part of Scope 3, the SAP SFM solution also extends to Scope 1 and 2. Hence, the following activities are to be considered as part of the scope for this KDD:

- Upstream activities - reported 1.6Mt of GHG emissions for 2023. (Scope 1 and 2)
  - Energy provider operations (Scope 2)
    - Purchased electricity
    - Purchased heating and cooling
    - Purchased steam
  - Company premises (Scope 1)
    - Production

        - Company cars
- Upstream activities - reported 4.2Mt of GHG emissions in 2023 (Scope 3)
    - Raw materials and fuels
        - Extraction
        - Processing
        - Transport and distribution
    - Waste
- Downstream activities - reported 1.9Mt of GHG emissions in 2023
    - Processing of products sold
    - Use of products sold
    - End-of-life treatment




Scope 3 emissions encompass 15 different categories of emissions generated throughout the organisation's value chain, from the extraction of raw materials to the disposal of products. Scope 3.1, one of those 15 categories, specifically refers to the carbon emissions associated with the procurement of products or services. These emissions are brought in from suppliers and are often beyond the company's immediate control. Syensqo currently relies on industry data where no supplier data has been requested or supplied. Collecting PCF data from suppliers is instrumental to understand Syensqo's upstream Scope 3 baseline and measure progress. Stakeholders, including investors, customers, and regulatory bodies, increasingly demand transparency and action on Scope 3.1 emissions. PCF also needed for corporate ESG disclosures, especially 3.1. Failure to comply can lead to reputational damage and financial consequences. There is an ongoing procurement initiative in Syensqo for pressuring vendors as part of scope 3.1 emissions (purchased goods an services). Digital sustainability of the current Syensqo solution is supporting product level accounting for Sustainability. Few other companies are at the same stage. Historically PCF accounting was executed at plant or group level only, which was changed with the launch of the custom built digital PCF tool in 2022.

Syensqo carries out a cradle-to-gate Life Cycle Analysis (LCA) for most of their products, representing 93% of total sales. The calculated greenhouse gas emissions are extrapolated to reach the totality of Syensqo's purchases. They include all emissions related to raw material extraction and precursor processing, indirect emissions from energy use for these operations, and transport between suppliers and to our plants.

The 2023 Syensqo Annual Integrated Report reflects the drive to manage and reduce the footprint (see References, Chapter 4. Climate and Nature - 4.1.2 Management approach). Syensqo has set a 2030 target to reduce by 23% Scope 3 greenhouse gas emissions as compared to 2021 from its 'Focus 5' categories both upstream and downstream in the value chain, which represents over 73% of the total Scope 3 emissions. Syensqo's 'Focus 5' categories of Scope 3 GHG emissions are:

1. Purchased goods and services (Category 1) which includes
    a. impacts of upstream transportation and distribution (Category 4)
    b. waste generated in operations (Category 5)
2. Fuel- and energy-related activities (Category 3)
3. Processing of sold products (Category 10)
4. Use of sold products (Category 11)
5. End-of-life treatment of sold products (Category 12)

The list of all categories relating to Scope 3 is as follows:

| CATEGORY | DESCRIPTION |
|---|---|
| 3.1 | Purchased goods and services: we carry out a cradle-to-gate Life Cycle Analysis (LCA) for most of our products, representing 93% of our total sales. The calculated greenhouse gas emissions are extrapolated to reach the totality of our purchases. They include all emissions related to raw material extraction and precursor processing, indirect emissions from energy use for these operations, and transport between suppliers and to our plants. |
| 3.2 | Capital goods: we have used the emission factors of the WBCSD Guidance for Accounting & Reporting Corporate GHG Emissions in the Chemical Sector Value Chain, assuming that capital goods are a mix of concrete and steel. |
| 3.3 | Fuel- and energy-related activities not included in Scope 1 or Scope 2: they represent GHG emissions that occur during the extraction and transport of energy. |
| 3.4 | Upstream transportation and distribution: this is included in category 1 (see above), purchased goods and services. |
| 3.5 | Waste generated in operations: this is included in category 1 (see above). |
| 3.6 | Business travel: business travel undertaken by Syensqo employees is recorded by our travel agency and monitored by our purchasing department. For air and rail travel, travel mileage is recorded. This covers more than 95% of our air and rail travel. The calculated greenhouse gas emissions are extrapolated to represent the totality of our travel. For each transportation mode, mileage is converted into CO2 equivalent using emission factors from ecoInvent. |
| 3.7 | Employee commuting: the estimation is based on an assumption that all employees commute every day in an average diesel or petrol car, except on homeworking days. |
| 3.8 | Upstream leased assets: this is not applicable as we have no upstream leased assets. |
| 3.9 | Downstream transportation and distribution: greenhouse gas emission during transportation of our products from our plants to our customers are reported and monitored by our supply chain excellence department. Emissions factors from the European Chemical Industry Council (Cefic) are used to calculate total emissions. |
| 3.10 | Processing of sold products. |
| 3.11 | Use of sold products. |
| 3.12 | End-of-life treatment of sold products: the computation principles for these three categories are the same. The emissions due to product processing and transformation by third parties subsequent to sale by Syensqo are calculated according to product chemical composition and expected chemical reactions likely to generate emissions during the transformation, the usage and end-of-life of our products. |
| 3.13 | Downstream leased assets: this is not applicable as Syensqo has no leased assets. |
| 3.14 | Franchises: this is not applicable as Syensqo has no franchises. |
| 3.15 | Investments: Scope 1 and 2 emissions from non-consolidated entities (that are not consolidated in Syensqo's Scope 1 and 2) are reported according to Syensqo's financial interest in these entities, to ensure consistency with our financial statements. |

In Syensqo Scope 3 greenhouse gas emissions are estimated as follows:

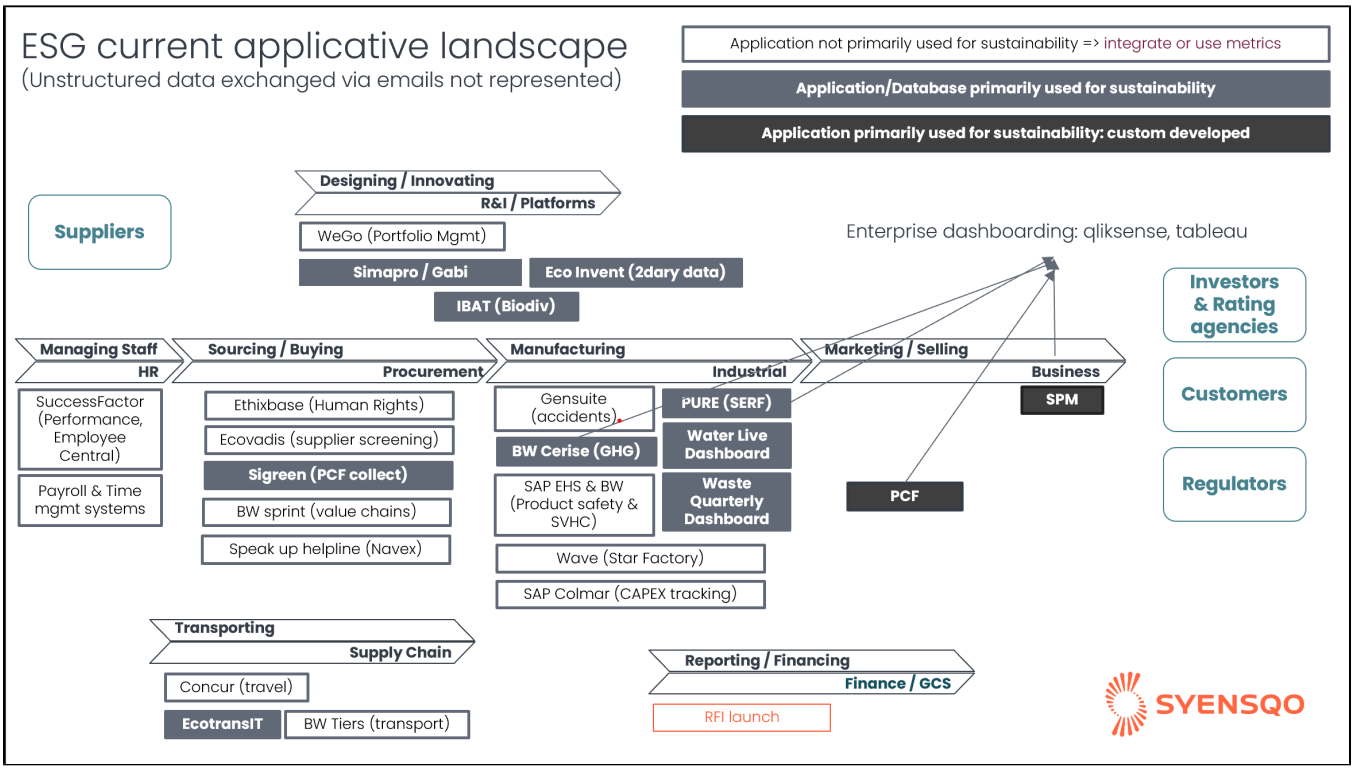
- Emissions reported under category 3.1 (purchased goods and services) include emissions from the following two categories:
  - 3.4 (upstream transportation and distribution)
  - 3.5 (waste generated in operations).
- Emissions are calculated by the difference between (until 2023, methodology will change from 2024):
  - Cradle-to-gate emissions of products (including manufacturing) and
  - Scope 1, Scope 2 and emissions from category 3 (fuel and energy-related activities)
- Syensqo has identified a limit in the accuracy of the methodology with the reconciliation between energy bills of materials in life cycle assessments and energy in Scope 1 and 2 emissions which affects the categories of emissions Scope 3.1, Scope 3.4 and Scope 3.5 (purchased goods and services, upstream transportation, distribution and waste generated in operations).
- The revision of the methodology for the three categories by end of 2024 builds upon progress of the Product Carbon Footprint project in 2023 and will include their direct determination (based on raw materials quantities purchased x emission factor), address the identified limitation in accuracy, disaggregate emissions in the inventory for these categories and increase the use of suppliers' specific emission factors.
- The calculation of Scope 3.4 and 3.9 emissions for chemical shippers generally use and activity-based calculation method to estimate transport carbon emissions. This calculation method is based on volumes, distances and emission factors for the different modes of transport. It is important to select the most appropriate emission factor values for each mode of transport. The shipper can use either a default average emission factor for each mode or emission factors specific for his operation. The default average emission factors used could be based on the average recommended emission factors (e.g. by Alan McKinnon, Heriot-Watt University, Edinburgh, UK in his report "Measuring and Managing CO2 emissions" prepared for the European Chemical Industry Council (Cefic), see references). Syensqo uses recommended average emission factors as a default for the calculation of their transport emissions (see also references 'Guidelines for Measuring and Managing CO2 Emissions from Freight Transport Operations' by the European Chemical Transport Association (ECTA)). Currently Syensqo has engaged in a one year contract with EcoTransIT to support these calculations. Syensqo uses the GLEC framework for default emission factors, which is the de facto standard and is ISO certified as well as recommended by CEFIC. The EcoTransIT tool complies with the GLEC framework.

**Calculation**

The calculations are fully manual today for Scope 3 with some queries developed. The calculation of Scope 3.1 emissions according to GHG Protocol can be a complex task. There is a choice of four different methods:

- Spend-based method
- Average-data method
- Supplier-specific method

**Current ESG Landscape**




There are a number of applications currently in use, which support to carbon footprint management in Syensqo.

For Integration:

- SPM
  - Syensqo specific bespoke solution.
  - Monetises carbon footprint and looks at the market regarding sustainability grading.
  - Integration should feed carbon footprint management to LCA tool, which should feed SPM (target state).
  - Used for downstream as part of Scope 3 only.
- LCA tool
  - RFI for LCA space should be launched, sent out to vendors. Proof of concept Q4 2024 before decision. SAP will be invited.
  - Should receive carbon footprint management data to forward to SPM tool.

- Ecovadis
  - Supplier assessments as part of Procurement processes.
  - Supports evaluation and scoring in relation to responsible sourcing.
  - Currently not used for carbon accounting.
- EcoInvent
  - SAP partner for SAP SFM emission factor management

  - Provides LCA content through the SAP Store, allowing easy import into the application.
- Sigreen
  - Exchange platform sourcing PCF for raw material mapping.
  - Exchange tool managing requests from suppliers with exchange to customer.
  - Customer connects to Sigreen for relevant data.
  - Future interfaces should be API.
  - Should be integrated with future SAP solution for Sustainability since it is a TfS commitment to use it for exchange in the value chain.

Other:

- EcotransIT (World)
  - Widely used software worldwide for the automatic calculation of energy consumption, carbon emissions, air pollutants, and external costs.
  - Supports carbon accounting as part of Scope 3 transport related emissions.
  - Uses Global Logistics Emissions Council (GLEC) framework.
  - Used by many competitors and 3PL providers.
  - Calculates distances based on the most logical routing and most likely mode of transport e.g. diesel-powered trains in US vs electric trains in Europe.
  - Database rather than software. Syensqo inputs shipment data once per month from SAP, which then breaks down carbon footprint.
  - Optimisation possible based on automated calculation via API. API not currently implemented, hence manual feed currently.

    - Comprehensive tool should replace it going forward.  Syensqo prefers API connection with EcoTransIT as SAP TM solution may be too basic.  To be confirmed as part of detailed design.
    - One year contract recently signed.
- PCF
    - Currently tool for managing PCF for Syensqo products.
    - Manual process using Google forms etc for carbon footprint of the purchased raw materials.
    - Manually forwards data to Sigreen (currently no API implemented).  Customer connects to Sigreen for relevant data.
    - Current tool should be replaced.
    - Future interfaces should be API.
- PURE
    - Emissions reporting and survey platform.
    - Annual survey to collect water and emissions KPIs.
    - Site results are entered in PURE.
    - PURE SERF contract under negotiation.  Current contract until April 2027 with the option of 3rd year extension.  Could be moved to Gensuite in the future.
    - SAP EHS emissions/SAP SFM module could potentially replace the need for PURE SERF.

- BW Cerise (CO2 Energy Report Improvement Software Efficiency)
    - Automatic reporting of greenhouse gases (GHG) and ETS (Emissions Trading System) allocations for all sites.
    - Carbon accounting uses Cerise, which is closely linked to Finance.
    - Cerise is not an SAP module, but custom solution in BW where master data is directly maintained in BW.  It uses BW outside of its original purpose of consolidating relevant business information from productive SAP applications.
    - Currently the solution only covers scope 1 and 2 at site level.  Scope 3 requirements with 15 subcategory e.g. GHG protocol 3.1 are not covered.
    - New carbon accounting solution e.g. SAP Green Ledger needed to cover all categories, rather than a patchwork solution (separate KDD Sustainability Carbon Accounting)

# Assumptions

The following assumptions are underlying the SAP SFM solution recommendation to be a valid design:

- All SAP deliveries require transportation and are covered by carbon footprint management upstream and downstream via SAP Transport Management.
- The SAP licence for SAP S/4HANA Cloud for Environment Management (private edition) is covered as per implementation of SAP EHS Waste Management (separate KDD).
- Footprint management and calculation is required on product level.  The solution for transactional carbon accounting requires more precise and granular tracking of emissions across business operations and supply chains.
- Rigorous rules for footprint management as well as related accounting data across the value chain are required to comply with regulatory and Financial Accounting standards.
- Enhanced data capture, acquisition and governance is required throughout the organisation e.g. data related to Scope 3.1 carbon emissions associated with the procurement of products or services.
- The solution impacts various processes and stakeholders outside of Sustainability.  Appropriate business and stakeholder support is required on all levels due to the significant process and supply chain changes.
- All impacts and assumptions of the SAP SFM solution need to be understood by all impacted business processes and stakeholders.
- SAP SFM impacts need to be included in relevant business roadmaps e.g. Procurement, Finance, Logistics etc.
- All management across the supply chain needs to be invested in supporting the SAP SFM solution.
- Appropriate system and process training will be conducted with all relevant users as part of the implementation process.
- Which of the current applications in the ESG landscape will be replaced by the SAP SFM solution will be confirmed as part of detailed design.  It may require a 'parallel' phasing out period of non-SAP applications, which are covered by the SAP SFM solution forward.
- A contingency plan as part of the SAP SFM will be included in the implementation to ensure continuity when switching from related SAP and non-SAP applications.

# Constraints

- This KDD covers the carbon footprint management only.  The creation of further KDDs may be required to cover other areas of Sustainability.
- Resource and time constraints are currently hindering to go beyond Product Carbon Footprint (PCF) whilst striving for Life Cycle Assessment (LCA).
- The following areas of Sustainability footprint management for Syensqo are out of scope for this KDD:
    - Water management
    - Energy management
    - Land use
- SAP SFM - Roadmap:
    - Inclusion of downstream emissions (product use and end-of-life) in future releases to complete the cradle to grave life cycle.
    - Integration of carbon footprints into Purchase Orders to assess environmental impacts.
    - Connecting SAP Sustainability Footprint Management and its Footprint Inventory to SAP Sustainability Control Tower for including product and corporate footprints.
    - Integration with EHS Environment Management enables the incorporation and allocation of calculated GHG Scope 1 & 2 emissions into the footprint calculation.
    - SAP Roadmap for 2025 includes footprint breakdown for fossil and biogenic emissions product footprints.
    - Inbound and outbound integration options for collecting supplier-specific product footprint data and for sharing calculated footprints with customers – supporting common standards like PACT.  It also includes the integration with SAP Sustainability Data Exchange.
    - Incorporation of calculated footprints from SAP SFM into the preferred analytical application e.g. SAP Analytics Cloud or non-SAP solutions, an updated version of the OData API on SAP Business Accelerator Hub will be available soon. For future releases, SAP plans to provide simulation capabilities for various footprint scenarios and what-if analyses, enabling sensitivity analysis and

comparison of product carbon footprints. It assists in sustainable decision-making regarding product design, production efficiency, and supply sourcing.
    - Inclusion of calculated transport footprints in organisational footprint inventories and overall product footprints in future releases, and further, plan to reuse the replicated ERP data for the calculation itself.
    - Replicating product cost estimates for carbon footprint calculations and reusing master data in freight transport calculations.
    - Connections to Business Networks like SAP Ariba and Catena-X for data collection and sharing, supporting the PACT-Standard.
    - Importing and managing emission factors to be extended to other impact categories, like water or land use.
    - To support the move from average to actual footprint calculation SAP plans to launch an API for sharing product footprints along the value chain, adhering to global standards like the World Business Council for Sustainable Development's Partnership for Carbon Transparency (WBCSD PACT) and the Together for Sustainability (TfS) initiative. It will provide direct access to supplier footprints, simplifying the mapping process and improving data quality with primary data.
    - Introduction of automated mapping recommendations, a mapping wizard with validation checks, and an API for external providers for emission factors mapping of purchased products.
    - More Scope 3 categories associated to downstream emissions and people transport are planned for future releases beyond current release scope of GHG Scope 1, 2, and 3 categories related to material, freight transport, and facilities.
    - Further automation on emissions distribution e.g. based on product mass (rather than fixed factors) is planned for future releases.
    - Integration of the footprints into the Business Networks and SAP Sustainability Data Exchange is planned to leverage its carbon sharing capabilities.
    - Updated version of the existing Analytical API will be available to integrate the calculated footprints into any other analytical application for analytics, disclosure, or other purposes..
    - For simulating and modelling alternative scenarios we plan to provide simulation capabilities, such as what-if analyses
- SAP EHS Emissions and GHG Emissions Management - Roadmap
    - SAP plans an integration of SAP SFM with SAP EHS Environment Management for incorporating GHG emissions calculations, and connections to Business Networks like SAP Ariba and Catena-X for data collection and sharing, supporting the PACT-Standard.

# Impacts

- The solution for carbon footprint management impacts the following processes
    - Procurement - Product footprints are integrated into Purchase Requisitions (PR). It allows approvers and operational purchasers to assess the environmental impact of PRs.
    - Warehouse Management - Integration of footprints in Inventory Management.
    - Transportation Management (TM) - calculation of greenhouse gas (GHG) emissions during manual planning and vehicle scheduling and routing (VSR) optimization. $CO_2$ emissions are taken into account during manual and automatic planning and displayed in road freight orders.
    - Waste management including recycling.
    - Data governance - enhanced data capture, acquisition and governance is required throughout the organisation e.g. data related to Scope 3.1 carbon emissions associated with the procurement of products or services.
- Integration of footprints into Logistic Business Network – Material Traceability (LBN-MT). More is planned to publish product footprints into networks and portals, for improved customer relationships, streamlined processes, and better information transparency.
- Integration with SAP Sustainability Control Tower is planned.
- Carbon footprints are available in SAP Integrated Business Planning (IBP), enabling users to track greenhouse gas emissions according to supply planning results.
- To be confirmed as part of detailed design, which of the current applications in the ESG landscape will be replaced by the SAP SFM solution. It may require a 'parallel' phasing out period of non-SAP applications, which are covered by the SAP SFM solution forward.

# Business Rules

# Options considered

## Option A: Continue As Is

Currently this data is built up by experts (internally and externally) or sourced from external databases. There is no one version of the truth. Syensqo needs to act with its suppliers to reduce Scope 3 emissions to reach Syensqo's climate commitment and support product competitiveness. The future solution for footprint management in Syensqo needs to be determined as part of Scope 3 aligning with ERP project principles.

- Lack of integration with S/4HANA.
- Large variety of non-SAP tools.
- Lack of granularity.
- Lack of system and data integrity.
- Not future-proof.

## Option B: SAP Sustainability Footprint Management (SFM)

SAP SFM calculates and manages carbon flows across GHG Scope 1, 2, and 3 emissions, integrating with SAP S/4HANA for accurate and efficient emissions calculations. The solution tracks the flows of product footprints in and out of the business, the materials used to produce it, the packaging and the transportation. As a solution for transactional carbon accounting it enables more precise and granular tracking of emissions across business operations and supply chains. SAP SFM functionality is required to:

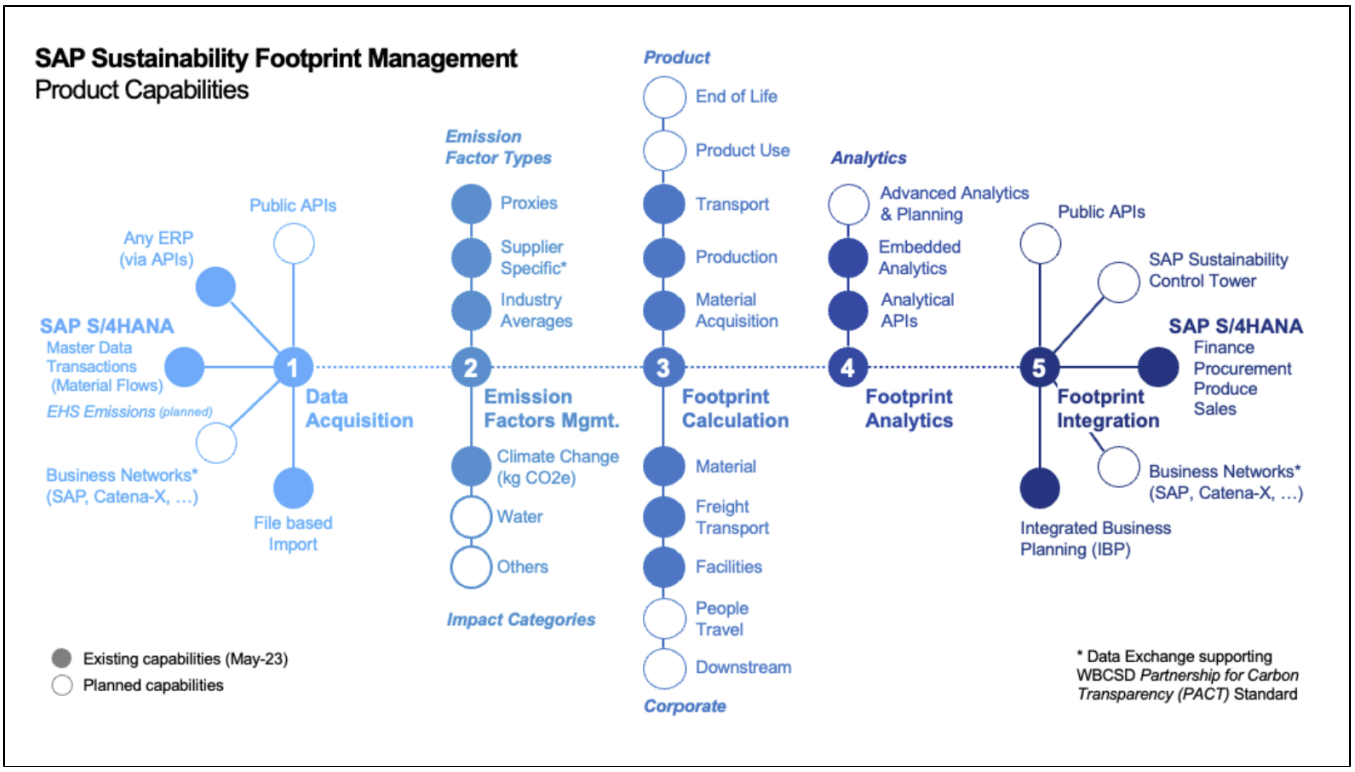
1. Manage supplier product footprint according to World Business Council for Sustainable Development Partnership for Carbon Transparency ( WBCSD PACT), Together for Sustainability (TfS) - chemical company collaborative.
2. Calculate Scope 3 categories on activity level e.g. transport of purchased goods.
3. Calculate product and organisation footprint according to material flow and production network on CO2e (carbon dioxide equivalent) level based on global warming potential (GWP).

**Product Capabilities**

The capabilities of SAP Sustainability Footprint Management can be broken down as follows:

1. Acquiring master and transactional data from connected business system.
2. Combine the data with emission factors to evaluate the environmental impact.
3. Calculating of the sustainability footprints in the application.
4. Calculated footprints can be integrated back into connected business systems.

SAP PFM capabilities and their availability as per current release:



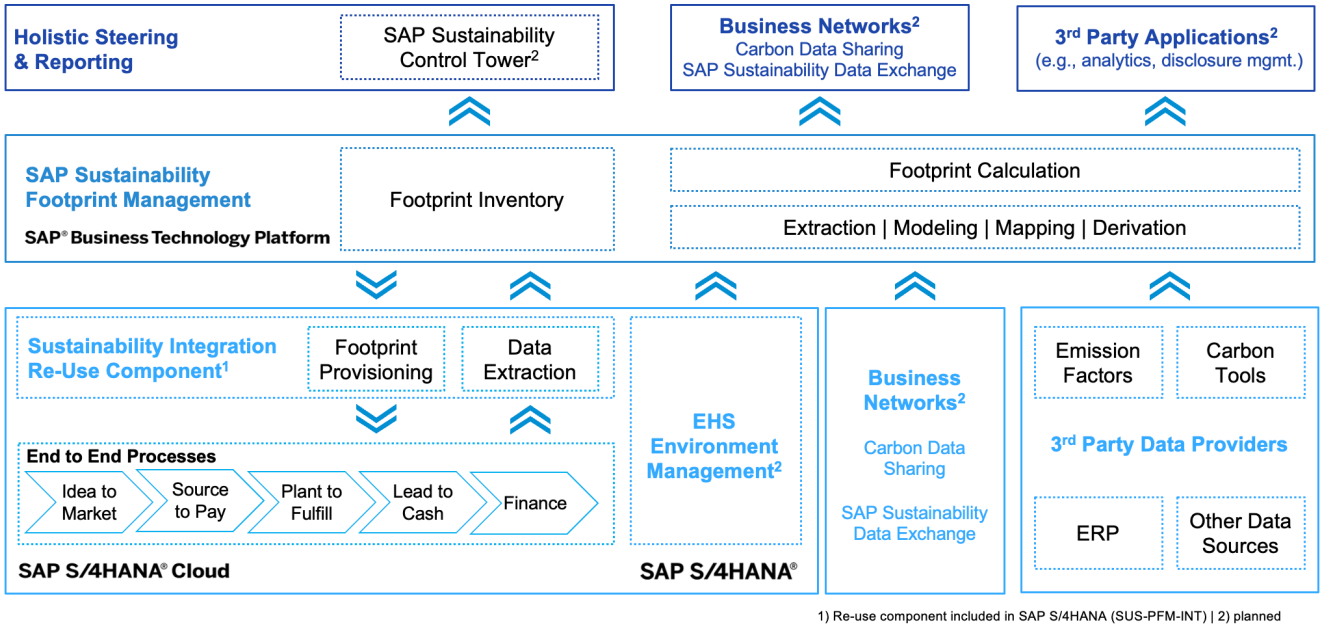

**Business Architecture**

SAP Sustainability Footprint Management is a cloud application that is built on the SAP Business Technology Platform (BTP). In the application the import of data is managed calling the Data Extractor in the Sustainability Integration Component in ABAP. This reuse component is included in SAP S /4HANA and pulls the relevant business and master data from SAP S/4HANA Cloud or SAP S/4HANA system and sends the aggregated data back. Alternatively APIs can be leveraged to import data from ECC or other ERP sources, and data can further be imported via file upload. Emission Factors from own or third-party databases can be imported via file upload as well. For future releases, SAP plans an integration with SAP S/4HANA EHS Environment Management for leveraging GHG Scope 1 & 2 emission as well as waste data. Further, SAP plans an integration with the Business Networks and SAP Sustainability Data Exchange for collecting primary and actual footprint data from suppliers.

Based on the extracted and imported data the inventory scope, mappings, energy flow models, allocations, and derivations are defined and footprint calculation initiated. The calculated footprints are stored in the Footprint Inventory and can be viewed and monitored.

The Footprint Inventory is also connected back to your SAP S/4HANA Cloud and SAP S/4HANA system, so that business users can access the footprints directly in their end-to-end processes and applications. In the future, SAP plans to deliver holistic steering and analytics capabilities by connecting SAP Sustainability Footprint Management and its Footprint Inventory to SAP Sustainability Control Tower. Further, an integration of the footprints into the Business Networks and SAP Sustainability Data Exchange is planned, as well as Public APIs to connect to third-party applications for analytics, disclosure, or other purposes. An updated version of the existing Analytical API will be available to integrate the calculated footprints into any analytical application of your choice.

**SAP Sustainability Footprint Management**
Business Architecture (simplified)




1) Re-use component included in SAP S/4HANA (SUS-PFM-INT) | 2) planned

## Data Acquisition

SAP Sustainability Footprint Management offers various options to reuse ERP data, including master data and transactional activity data (material movements). It integrates with SAP S/4HANA Cloud and SAP S/4HANA (2021 and later) out-of-the-box, while other ERP systems can be connected via public APIs. Additionally, data can be imported via flat-file uploads using templates. Freight-transport specific master data entities like plant or supplier locations can be imported via file upload. The system further offers a starter package, including location information for various transportation hubs and vehicle data for different transport modes.

SAP plans to enhance the SAP S/4HANA integration in future releases, including replicating product cost estimates for footprint calculations and reusing master data in freight transport calculations. Further, SAP plans an integration with SAP EHS Environment Management for incorporating GHG emissions calculations, and connections to Business Networks like SAP Ariba and Catena-X for data collection and sharing, supporting the PACT-Standard.

## Emission Factors Management

After importing business data from the ERP system, SAP SFM allows importing and managing of emission factors. The current focus is on climate change impact through Global Warming Potential (GWP) in CO2-equivalents (CO2e). TheSAP plan is to extend to other impact categories, like water or land use in the future.

- Increase accuracy with emission factor mapping powered by AI and include supplier specific footprints
- Map emission factors with AI: Use SAP Business AI to automate the mapping of emission factors to ERP data to minimise manual effort and enhance the accuracy of result.
- Include actual supplier data: Increase the share of primary data by directly importing footprints from your suppliers. Leverage the integration with SAP Sustainability Data Exchange (PACT V2) or use direct entry, file upload, and push API.
- Use lifecycle assessment (LCA) data: Use industry averages from third-party content providers, upload your own data packages, or use preconfigured data packages (e.g. EPA, GLEC) for maximum flexibility and consistency status.

Emission factors can be imported via Excel-file from primary sources, representing actual data directly from suppliers, or secondary sources, such as lifecycle assessment (LCA) databases, representing industry averages. SAP partners with ecoinvent and Carbon Minds, to provide LCA content through the SAP Store, allowing easy import into the application. Custom data can be utilised from operations or LCA software tools or estimated proxies for specific materials or activities can be used. To support the move from average to actual footprint calculation SAP plans to launch an API for sharing product footprints along the value chain, adhering to global standards like the World Business Council for Sustainable Development's Partnership for Carbon Transparency (WBCSD PACT) and the Together for Sustainability (TfS) initiative. This will provide direct access to supplier footprints, simplifying the mapping process and improving data quality with primary data. SAP further plan to integrate with SAP Sustainability Data Exchange to leverage its carbon sharing capabilities.

The application further provides a functionality to map emission factors to purchased products, based on imported ERP data, at different granularity. It auto-generates a mapping template with prefilled information like products, commodity codes, and suppliers. The template can be edited in-app or via a CSV file, and associate emission factors to each item via filtering and searching your imported emission factor databases for the best match. For improving this process, SAP plans to introduce automated mapping recommendations, a mapping wizard with validation checks, and an API for external providers. These improvements aim to boost user experience and automation. The goal is to achieve intelligent emission factor mapping using AI technology, allowing automatic and transparent mapping.

Changes to carbon footprint could reduce the emission factor. Optimisation of the process can lead to less consumption, measured at plant, and change of BOM based on lower conception. Otherwise it is possible to change provider for energy supplies to reduce emissions factor. Selecting suppliers with lower footprint.

**Footprint Calculation**

SAP SFMs goal is to address the entire product lifecycle, from cradle to grave. With the current release, SAP covers cradle-to-gate, therefore including upstream emissions from material acquisition & pre-processing and transport, as well as direct emissions related to own production activities. SAP plans to include downstream emissions (product use and end-of-life) in future releases.

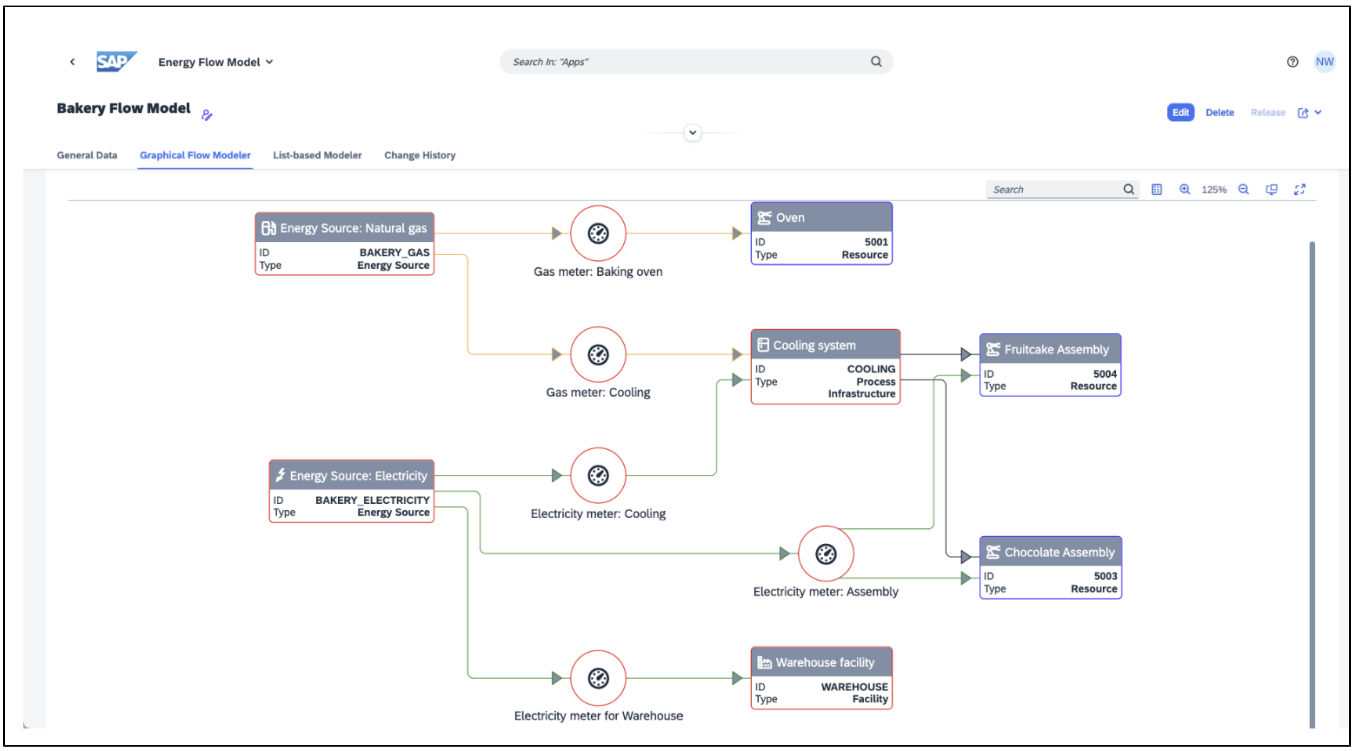
Reflected on the corporate footprint, the solutions covers the corresponding GHG Scope 1, 2, and 3 categories related to material, freight transport, and facilities. More Scope 3 categories associated to downstream emissions and people transport are planned for future releases.
It is possible to maintain individual inventory scopes in the system to define the organisational boundaries of the footprint calculation, including companies, plants, and value chain steps.

- Calculate and manage Scope 1, 2, and 3 corporate, value-chain, and product footprint data.
- Calculate product and corporate carbon footprint: Calculate footprints on product and corporate level at scale by integrating transactional and master data using flexible calculation methods.
- Model energy flows per energy carrier and resource in the production line or facility to allocate energy consumption and assign emissions to manufactured products.
- Maintain individual inventory scopes to define the organisational boundaries of the footprint calculation. Define and list all data sources to be used for the calculation and monitor its progress.

Embedding sustainability data into core business processes support performance capabilities. The calculations integrate supplier data and existing ERP business data, which improves the speed, accuracy, and efficiency of emissions calculation and management.

The application uses energy flow models to connect energy-related elements with the resources replicated from the ERP system, which may become relevant at a future point for Syensqo. It includes energy carriers, energy sources, resources (e.g. assembly line or oven) and infrastructure (meters, process infrastructure, and facilities). These elements can be fully modelled and updated, allowing for the creation of models using a list display or a graphical flow modeler with drag-and-drop functionality. When a direct energy flow connection is unavailable, it can be set allocation rules to distribute emissions to products and GHG Scopes and Categories.

Energy Flow Model:



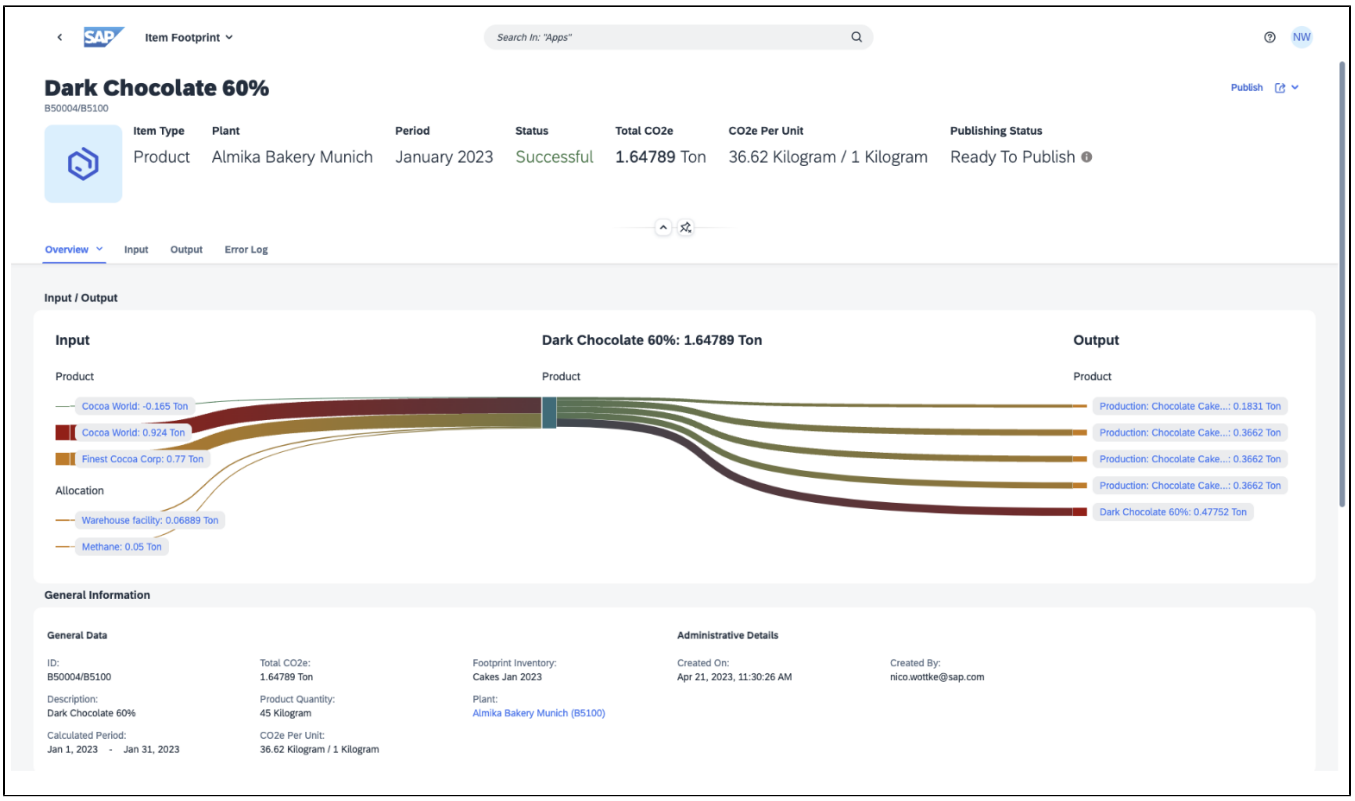

SAP Sustainability Footprint Management calculates a company's total carbon footprint and attributes emissions to products and corporate overhead, aiming to achieve a balanced emission level throughout all production stages. Two methods are provided:

1. Calculating Organizational Footprint Inventories, which considers GHG Protocol Scope 1, 2, and 3 emissions and requires input data like energy bills, meter readings, and manual emissions. It's leveraging the imported master and transactional activity data, the mapped emission factors, as well as the energy flow model and allocation rules that have been set up previously, to calculate the footprints.
2. The second option is Calculating Product Footprints, which provides insights into a plant's product footprints by uploading a Bill of Material (BOM)-like Excel file. The calculated footprints can be monitored in an easy-to-read graphical format with drill-down possibilities into main emission drivers.

Syensqo currently uses a mix of both methods. Both methods are available for calculations as part of SAP standard.

A Sankey Diagram is the core tool for investigating emission results, offering transparency on input factors, such as purchased energy. It gives visibility to various levels of detail, including calculation data and formulas, to understand the carbon footprint emissions. The app allows publishing results to connected SAP S/4HANA Cloud or SAP S/4HANA systems.

Sankey-Diagram:



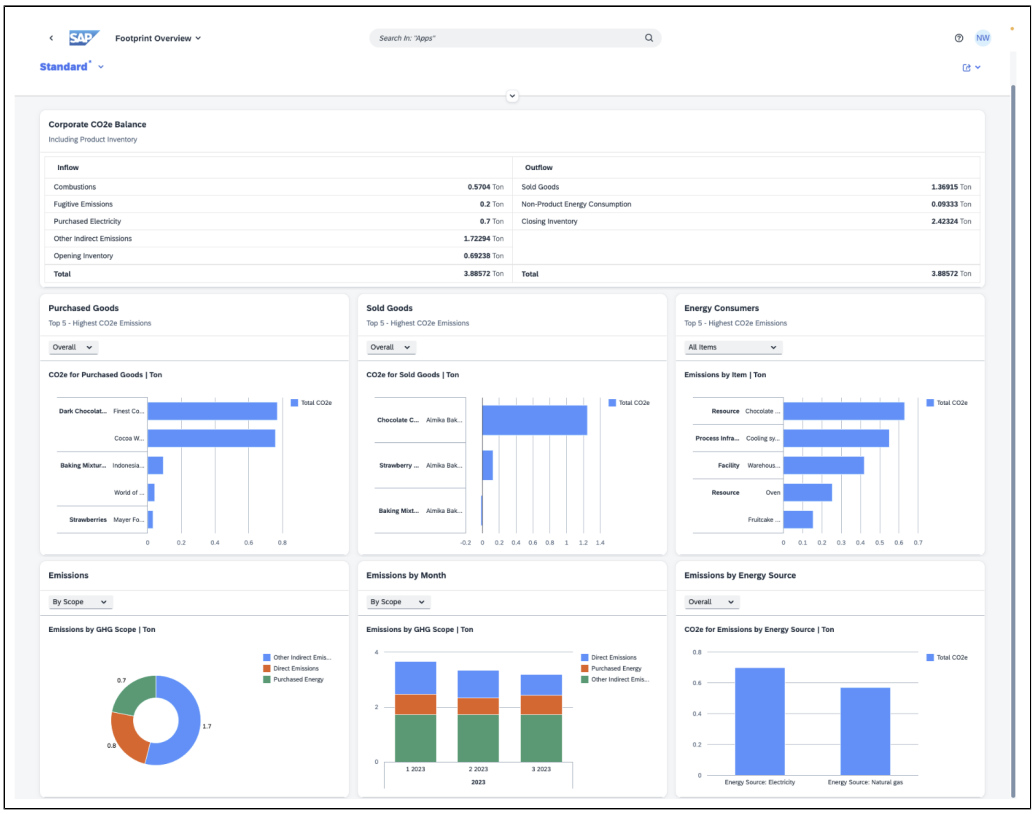

The calculation of inbound and outbound transport footprints is done by uploading CSV files containing transport information. The application uses client-specific routes or automated calculation logic based on distances to determine emissions. Data is validated, and feedback is provided for any issues. SAP plans to include calculated transport footprints in organisational footprint inventories and overall product footprints in future releases, and further plans to reuse the replicated ERP data for the calculation itself. The 'Calculate Transport Footprints - Lite' app enables quick calculations and assessments for single shipments without importing data, with results visualized in charts, tables and maps. It allows a quick comparison of emissions related to different transport mode choices (e.g. plane vs. train) and helps to make informed decisions on how to reduce your transport related carbon footprint.

## Footprint Analytics

Footprint Analytics is built-in for analysing the calculated footprints and gaining new insights with various dashboards including all emission inflows and outflows as well as emissions per purchased and sold products and energy consumers.

- Gain full transparency into carbon footprint data across your entire value chain on a granular level.
- Dashboards with granular breakdowns showing carbon footprints across all GHG-P scopes, providing analysis of hotspots and various breakdowns.
- Advanced transport visualisation allowing to analyse and visualise all inbound and outbound transport routes and legs and respective emissions on various charts and a word map.
- Integrate footprint data into analytical application via APIs .

It is possible to drill down into emissions by GHG scope, category and energy source. For transport footprints there are own dynamic dashboards available with customisable charts and detailed reports on various transport relevant KPIs. Inbound & outbound transport flows and emissions can be visualised on a world map, including a heatmap to display emission hotspots.




To incorporate calculated footprints into a preferred analytical application, such as SAP Analytics Cloud or non-SAP solutions, an updated version of the OData API on SAP Business Accelerator Hub will be available going forward. For future releases, SAP plans to provide simulation capabilities for various footprint scenarios and what-if analyses, enabling sensitivity analysis and comparison of product carbon footprints. It assists in sustainable decision-making regarding product design, production efficiency, and supply sourcing.

## Footprint Integration

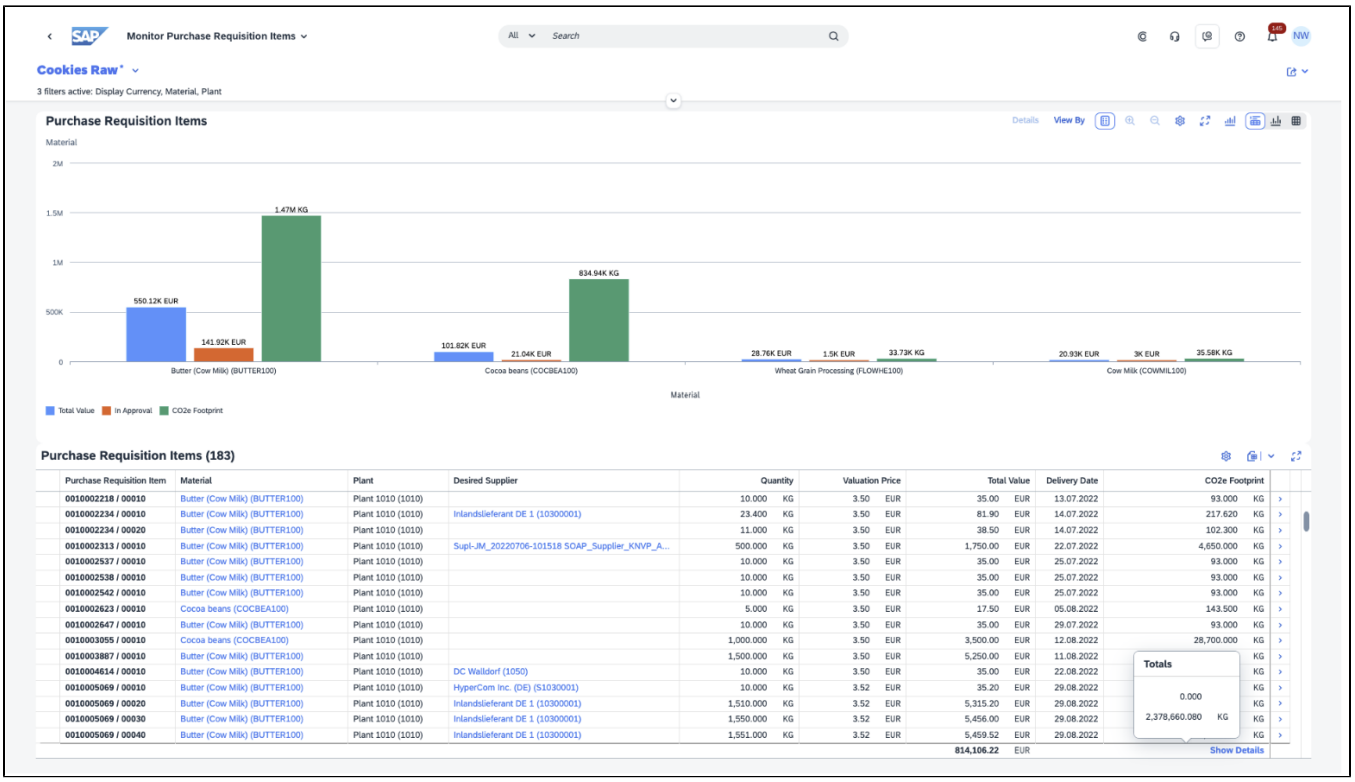
The integration of the calculated footprints into the end-to-end business processes provides transparency and insights into sustainability metrics for all business users. From SAP SFM the footprints can be published into the connected SAP S/4HANA Cloud or SAP S/4HANA (2021 and later) system to make the information accessible to users, enabling them to incorporate these criteria into the decision-making processes.

- Reuse of existing ERP data for calculation and embed footprint results back into business processes to influence decision-making.
- Reuse existing business data, structures, and logic from SAP S/4HANA Cloud and import transactional activity data for your footprint calculation (e.g. material movements) and connect any ERP system via public APIs.
- Embedding footprint results into business processes, like supply chain planning or sourcing and procurement.
- Leverage full sustainability portfolio through direct integrations with SAP Sustainability Control Tower, SAP Sustainability Data Exchange, and SAP S/4HANA Cloud for EHS environment management.

In **Purchasing**, product footprints are integrated into Purchase Requisitions (PR). It allows approvers and operational purchasers to assess the environmental impact of PRs. The 'Monitor Purchase Requisition Items' app provides insights into current and future emissions, enabling proactive optimisation of the environmental footprint.

Future releases plan to integrate footprints into Purchase Orders as well. Footprints are also available in Inventory Management, starting with the 'Stock - Multiple Materials app' to provide insights into the environmental impact of stocks. Previously used for stock quantities and financial values, the app now allows for sustainability criteria in decision-making processes.

Footprints in S/4HANA Monitor Purchase Requisition App:




**Transportation Management** (TM) allows to calculate GHG emissions during manual planning and vehicle scheduling and routing (VSR) optimization. It is possible to specify carbon dioxide ($CO_2$) emissions per weight and distance unit for your trucks. These $CO_2$ emissions are taken into account during manual and automatic planning and displayed in road freight orders.

**Warehouse Management** - Integration of footprints in Inventory Management with Stock - Multiple Materials app to provide insights into the environmental impact of stocks. Previously used for stock quantities and financial values, the app now allows for sustainability criteria in decision-making processes.

## Option C: SAP EHS Emissions Management

SAP EHS Environment Management tracks various aspects of environmental impacts. It primarily focuses on tracking and managing emissions and pollutants released into the environment. Whilst only SAP EHS Emissions Management and GHG Emissions Management are relevant for the purpose of this KDD, it generally includes the following components:

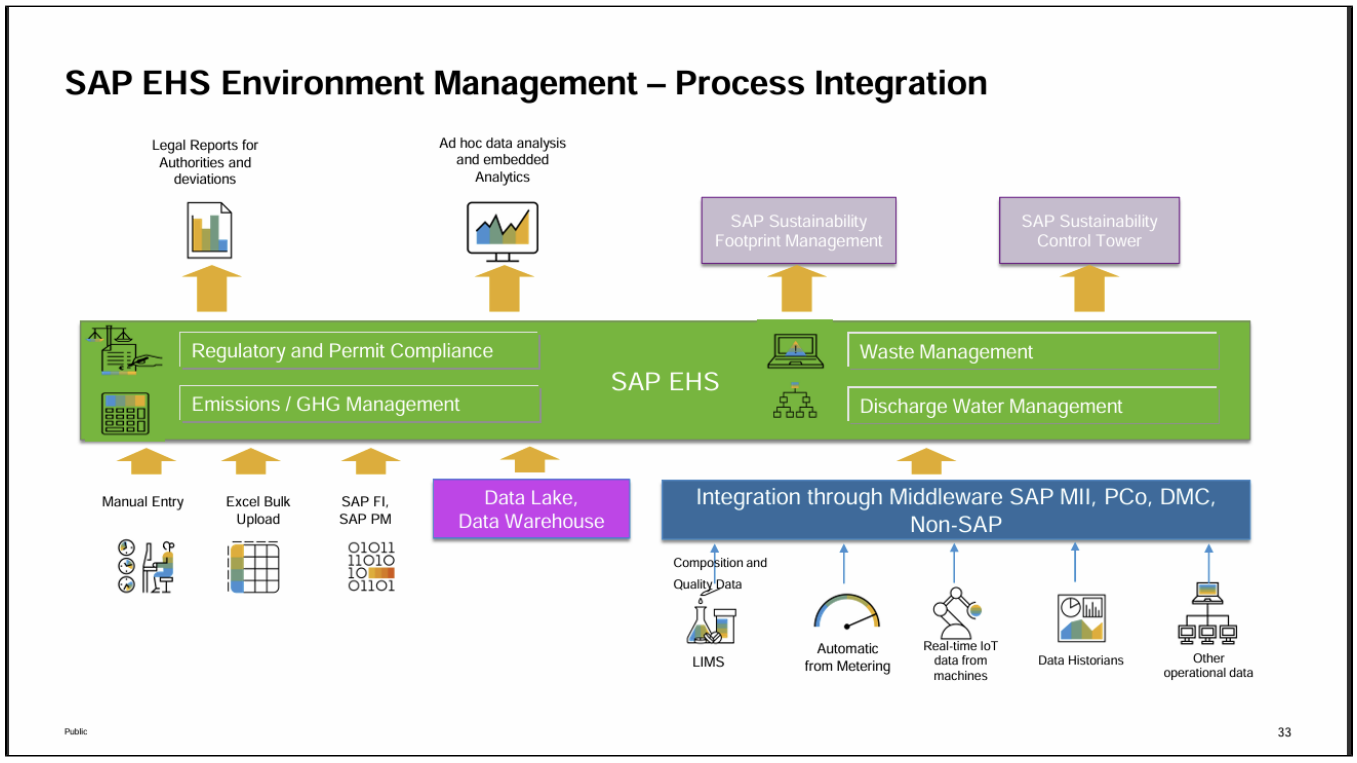
- Waste Management (separate KDD)
- Emissions Management (EM)
    - Manages all types of emissions resulting from operation to fulfil legal requirements e.g.
        - Hazardous air pollutants
        - Significant air pollutants (NOx and SOx)
        - Greenhouse gases (GHG)
        - Air or water emissions
- GHG Emissions Management
- Water/Wastewater Management

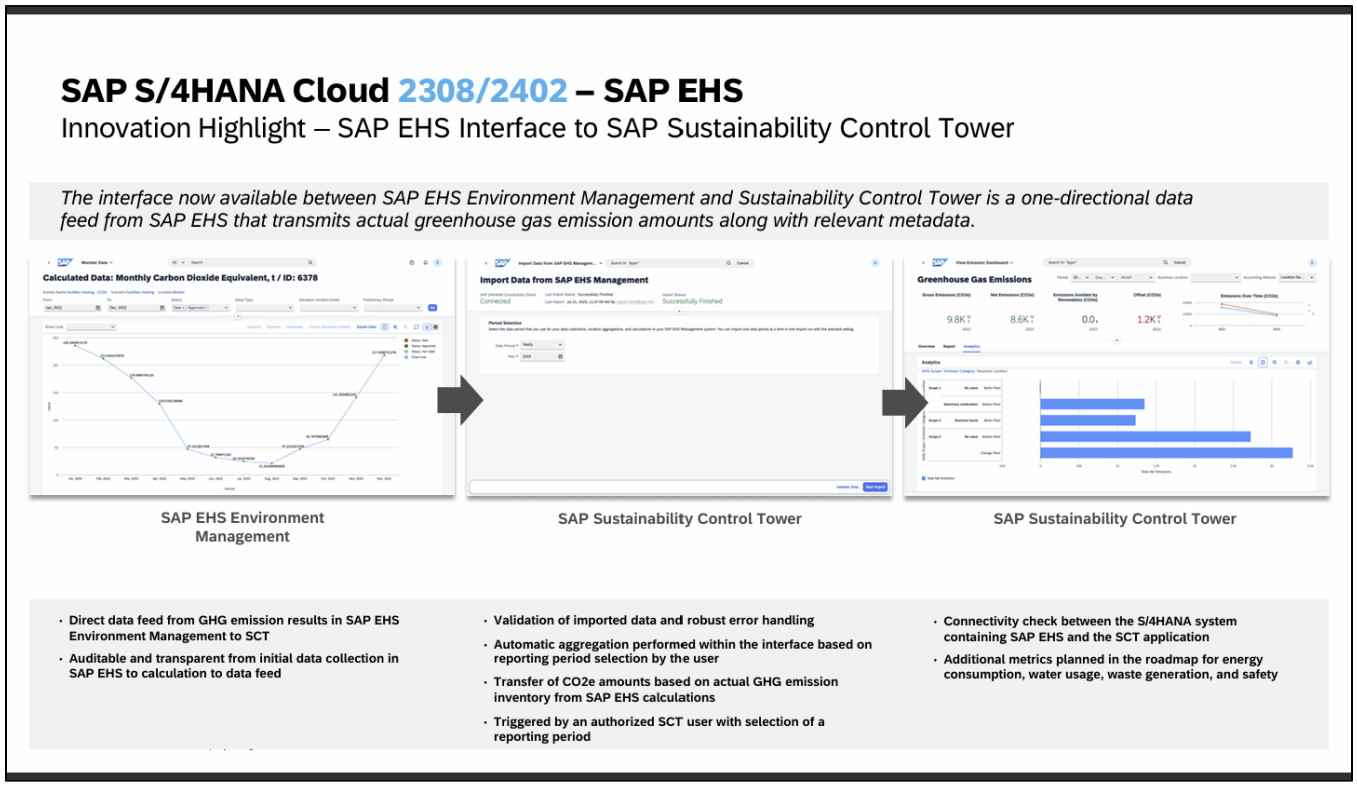
Capabilities:

- Compliance management with environmental regulations.
- Monitoring and reporting of emissions data. Required to report on
    - GHG emissions more frequently than monthly
    - Over and above GHG equivalents i.e. other major/mandatory GHG emissions e.g.
        - CO2 (carbon dioxide)
        - CH4 (methane)
        - N2O (nitrous oxide)
        - HFCs (hydrofluorocarbons)
        - PFCs (perfluorocarbons)
        - SF6 (sulfur hexafluoride)
        - NF3 (nitrogen trifluoride)
    - Other kind of emissions beside GHG emissions.

- Flexible and auditable calculator for hazardous air pollutant and GHG emissions inventories.
- Calculates and aggregates emissions through data transparency and monitoring.
- Various options for collecting data and sampling to be used for compliance tracking and emission calculations.
- Data collection from various sources such as manufacturing processes, energy consumption, and waste management.
- Emission forecasting tools, real-time and analytical.

SAP Standard Integration:

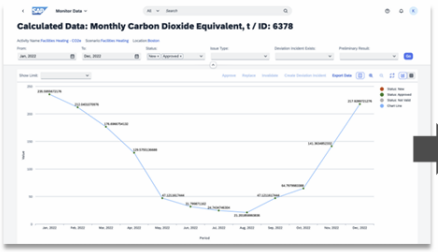


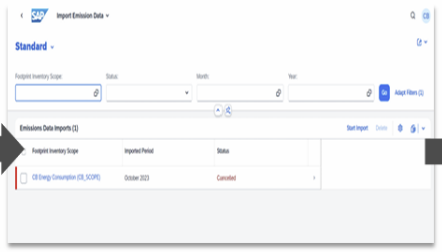
## SAP S/4HANA Cloud 2308/2402 – SAP EHS

Innovation Highlight – SAP EHS Interface to SAP Sustainability Footprint Management

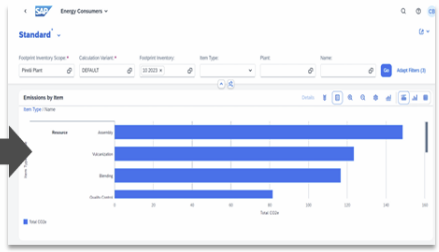
*The interface now available between SAP EHS Environment Management and Sustainability Footprint Management is a one-directional data feed from SAP EHS that transmits actual greenhouse gas emission amounts along with relevant metadata.*




SAP EHS Environment Management




SAP Sustainability Control Tower

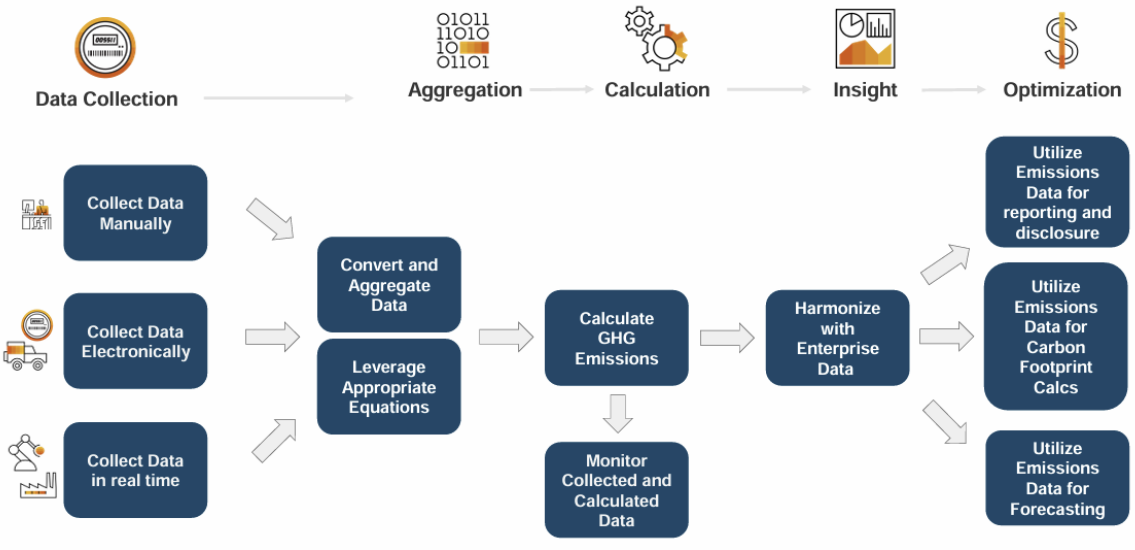



SAP Sustainability Control Tower

- Direct data feed from GHG emission results in SAP EHS Environment Management to SFM
- Transfer of CO2e amounts based on actual GHG emission inventory from SAP EHS calculations
- Transfer of relevant master data such as Locations and Activities
- EHS data can be used to model energy flow within SFM
- Triggered by an SFM authorized user in the Import Master Data app and the Import Emission Data app
- Validation of imported data and robust error handling
- Auditable and transparent from initial data collection in SAP EHS to calculation to data feed

SAP Standard Process:

## SAP EHS EM – Solution Scope - Process






SAP EHS Emissions Data supporting the process:

- Compliance requirements: The calculation of GHG emissions should be set up according to regulatory requirements. These regulations contain regulatory lists with tables for global warming potentials, average high heating values, general emission factors and equations. Using

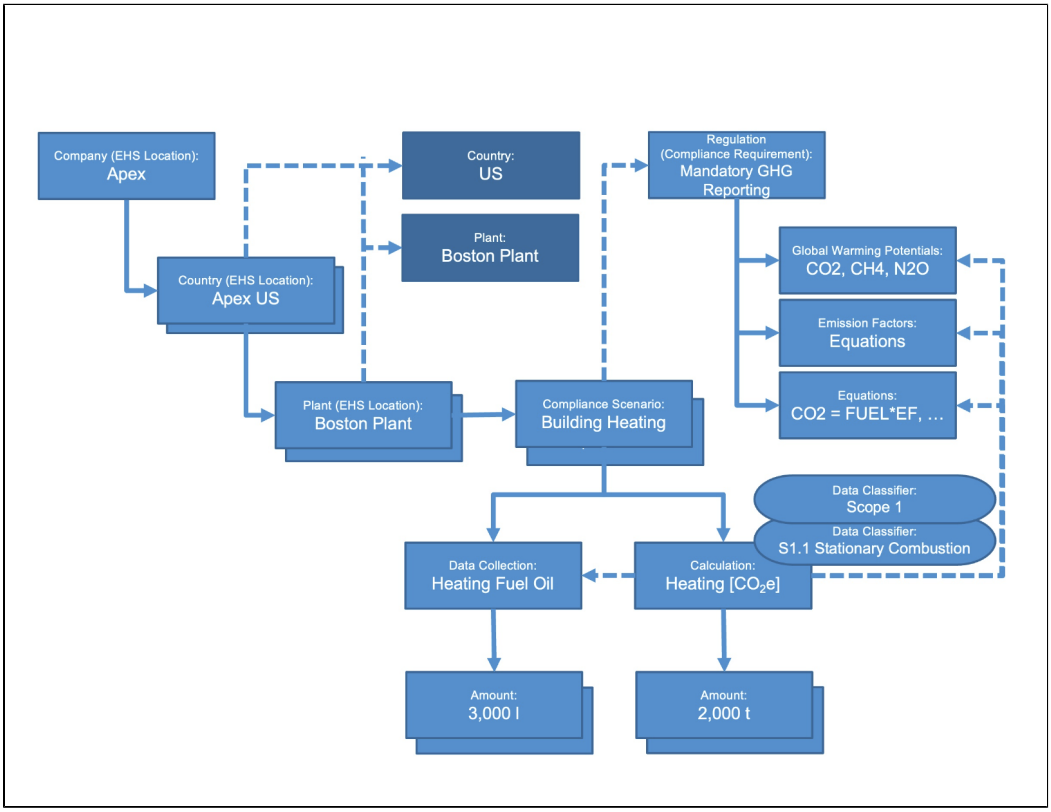
the compliance requirements optimises the setup of calculations for emission data. It allows to reuse the setup (emission factors and equations) for multiple scenarios.

- Compliance scenarios: It is recommended to create a compliance scenario for each GHG relevant activity. The compliance scenario allows to link all relevant objects for the emission calculation and to centralise the setup of all needed activities.
- Location hierarchy: The hierarchy for GHG emissions should consist of minimum locations representing the company, countries, and plants. The assignment of the location properties (like company code, org, unit, cost center, etc.) should be driven by the logic of the required report output. The assignment needs to be maintained for the levels of the location hierarchy that will be queried for the GHG emissions calculations. On top of the location hierarchy is a location for the company, that is assigned to the company code. Underneath the company there are locations for each country with the company code and country assigned. Plants and sites with the company code, country code and the plant id assigned are below their country of location.

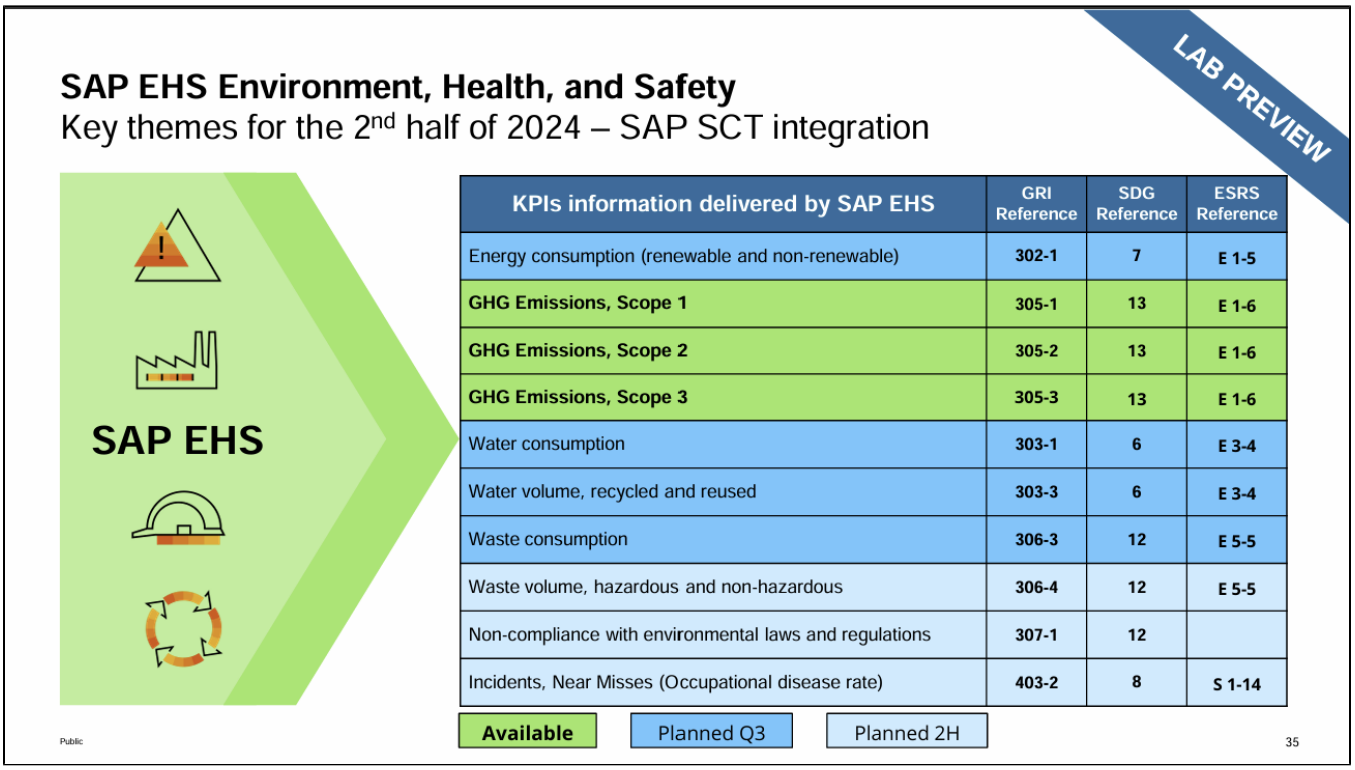
| LEVEL | LOCATION TYPE | ASSIGNED CORPORATE ENTITIES | USAGE |
|---|---|---|---|
| 1 | Company | Company Code | Emissions not assignable to a specific country only |
| 2 | Country | Company Code, Country | Emissions not assignable to a specific plant / site only |
| 3 | Plant / Site | Company Code, Country, Plant Id (optional: Org Unit, Address, Cost Center) | Emissions assignable to a plant / site or aggregated from below |
| 4 | Other (Equipment, etc.) | - | Emissions to be aggregated by a plant / site |

- Data classifiers (standard and additional): Standard classifiers include scope 1 to 3. Additional classifiers could be e.g. energy carriers, carbon origin
- Activities: based on listed substances, unit of measures (t), data classifiers, activities, periodicity.

Example:




SAP Roadmap:




It is possible to transfer emissions data from the recorded activities in SAP EHS Management, Environment Management (SAP EHS) to SAP Sustainability Control Tower to use it in GHG recordings. When the emission data from SAP EHS is imported, SAP SCT uses the following information to read the data:

- The standard classifiers defined in SAP EHS Management, environment management, for example the data classifier Scope 1.
- User-defined classifiers created in SAP SCT for activity types e.g. heating.

These classifiers are then mapped onto the categories available in SAP SCT to enable further processing of the data.

### Option D: SAP Sustainability Footprint Management (SFM) and SAP EHS Emissions Management - combination

In standard SAP the holistic Sustainability solution for Footprint Management combines various components in its architecture, which are intrinsically integrated. Whilst some of these components may be implemented in isolation, the Syensqo Sustainability Roadmap requires a combination of tools to create 'one truth'. It supports Syensqo's long-term goal to adopt a mainstream integrated solution for carbon footprint management and supports achieving group targets by understanding where emissions come from at operational, procurement and market level.

SAP SFM can be supplemented by the integration with SAP EHS Emissions Management with SAP SFM (see SAP SFM Product Capabilities and Business Architecture diagrams). There is no additional SAP licence requirements (SAP licence same as SAP EHS Waste Management, covered by separate KDD). The recommendation is for the business to implement SAP EHS Emissions Management for Scope 1 and 2 as well as SAP SFM to cover current and future Scope 3 requirements from the outset as part of an integrated ERP solution. Please refer to option B and C for capabilities and benefits for each solution.

SAP SFM can be integrated with SAP EHS Management, environment management, to read direct and indirect emission data to calculate the corporate and product footprints in a legal and regulatory compliance driven manner.

## Evaluation

| | Option A - Continue As Is | Option B - SAP SFM | Option C - SAP Emissions Management | Option D - SAP SFM and SAP EHS Emissions Management |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Compliance | ⊖ No one version of the truth.<br><br>⊖ Lack of granularity.<br><br>⊖ Lack of system and data integrity.<br><br>⊖ Not future-proof. | ⊕ Integrated SAP standard solution to calculate and manage the full range of corporate, value chain and product-level GHG emissions. Upstream and downstream (as per SAP Roadmap).<br><br>⊕ Long-term and more future-proof ERP solution.<br><br>⊕ Tracks and manages Scope 3 emissions.<br><br>⊕ Calculate Scope 3 categories on activity level e.g. transport of purchased goods.<br><br>⊕ Calculate product and organisation footprint according to material flow and production network on CO2e level.<br><br>⊕ Auditable corporate and product carbon footprints at scale.<br><br>⊕ Manage Supplier product footprint according to WBCSD PACT and TfS.<br><br>⊕ Assesses footprint with granular cradle to gate carbon footprint calculations that consider materials, transportation, and production.<br><br>⊕ Broader focus on overall sustainability metrics, including carbon footprint, water usage, etc.<br><br>⊖ Capability for monthly reporting only. | ⊕ Compliance and management of direct and indirect emissions within the operational boundaries of the organisation.<br><br>⊕ Primarily focuses on tracking and managing direct emissions from owned or controlled sources (Scope 1).<br><br>⊕ Tracks indirect emissions from purchased electricity, steam, heating, and cooling (Scope2).<br><br>⊕ Auditable process for calculations of emissions.<br><br>⊕ Could include monitoring emissions from manufacturing processes.<br><br>⊕ Could track emissions from company-owned vehicles.<br><br>⊕ Reporting over and above GHG equivalents i.e. also on major /mandatory GHG emissions e.g. CO2, CH4, N2O, HFCs, PFCs, SF6, NF3.<br><br>⊕ Reporting other kind of emissions beside GHG emissions.<br><br>⊕ Capability for reporting GHG emissions more frequently (than monthly).<br><br>⊖ Does not fully cover the extensive range of Scope 3 emissions, which include upstream and downstream activities. Primarily focuses on tracking and managing emissions and pollutants.<br><br>⊖ While SAP EHS Emissions Management can track direct emissions, it does not provide the granular level of data collection needed for highly specific or complex emission sources without additional customisation (Scope 1).<br><br>⊖ While it can track emissions from company-owned vehicles, it does not fully account for emissions from third-party logistics providers without additional data integration. (Scope 3)<br><br>⊖ Tracking emissions from employee commuting and business travel would require additional data collection mechanisms and integrations with travel management systems. (Scope 3) | ⊕ Combines benefits of both solutions for Compliance.<br><br>⊕ Reduces disadvantages of each solution for Compliance e. g. Sustainability Scope coverage.<br><br>⊕ Required to cover Scope 1, 2 and 3 comprehensively across the business as integrated ERP solution.<br><br>⊕ Combines EHS EM built for legal reporting and compliance management and SAP SFM for footprint calculations. |
| Integration | ⊖ No mainstream integrated solution for carbon footprint management.<br><br>⊖ Lack of integration with S /4HANA.<br><br>⊖ Large variety of non-SAP tools.<br><br>⊖ Lack of system and data integrity. | ⊕ Calculations integrate supplier data and existing ERP business data, which improves the speed, accuracy, and efficiency of emissions calculation and management.<br><br>⊕ Available as SaaS, hence access from any Web browser.<br><br>⊕ Leverages existing data with seamless integration and automation – from SAP S/4HANA, 3rd party data, supplier data, and facility energy flows for data acquisition and footprint distribution.<br><br>⊕ Harmonisation of ESG landscape. To be confirmed as part of detailed design, which of the current applications in the ESG landscape will be replaced by the SAP SFM solution.<br><br>⊕ Standard integration with SAP EHS Environment Management including Emissions Management and SAP Green Ledger as well as SAP Sustainability Control Towers.<br><br>⊖ For reuse of ERP data it integrates with SAP S/4HANA Cloud and SAP S/4HANA (2021 and later) out-of-the-box, while other ERP systems can be connected via public APIs. An IT project is needed for this integration. | ⊕ Standard integration with SAP SFM as well as SAP Sustainability Control Towers.<br><br>⊖ To fully leverage SAP EHS Emissions Management for comprehensive emissions tracking, significant customization and integration with other systems (e.g., IoT devices, energy management systems, supply chain management systems) would be required.<br><br>⊖ No built-in capabilities to easily integrate data from suppliers and customers, essential for comprehensive Scope 3 emissions analysis. | ⊕ SAP standard integration between SAP EHS EM and SAP SFM.<br><br>⊕ Further harmonises the current ESG landscape.<br><br>⊕ Data acquisition to support SAP SFM from S/4HANA EHS Emissions Management.<br><br>⊕ Combines benefits of both solutions for Integration.<br><br>⊕ Reduces disadvantages of each solution for Integration. |
| Business Impact | ⊖ No one version of the truth. | ⊕ Includes tools for calculating and analysing various sustainability metrics, integrating supply chain data and tracking sustainability goals.<br><br>⊕ Generates analytical insights from footprint data.<br><br>⊕ Integration with Green Ledger is planned for carbon emission accounting at transaction level allowing for correlative reporting of financial results with carbon emission performance at the various reporting hierarchy levels of the organizations.<br><br>⊕ Provides a comprehensive view of the organisation's environmental impact and supports strategic sustainability initiatives.<br><br>⊕ Encompasses a wider range of sustainability metrics beyond just emissions, aiming to provide a holistic view of the organization's environmental impact.<br><br>⊕ Various options to reuse ERP data, including master data and transactional activity data (material movements).<br><br>⊖ Limited scope as per S/4HANA 2023 release with extensive roadmap going forward. | ⊕ No additional licence requirement.<br><br>⊖ No real-time monitoring capabilities for all types of direct emissions, especially if the necessary sensors and IoT integrations are not in place (Scope 1).<br><br>⊖ No capability to verify the source of purchased energy (e.g. renewable vs non-renewable) without additional data inputs from energy providers (Scope 2).<br><br>⊖ No detailed analysis and optimisation recommendations for energy consumption without integration with specialised energy management systems. (Scope 2) | ⊕ Various options for collecting data and sampling to be used for compliance tracking and emission calculations.<br><br>⊕ Combines benefits of both solutions and reduces disadvantages of each solution. |

# See also

1. 2023cSyensqo Annual Integrated Report
2. McKinnon Report
3. SAP Roadmap Sustainability Footprint Management (SFM)

# Change log

| Version | Published | Changed By | Comment |
|---|---|---|---|
| **CURRENT (v. 201)** | **May 04, 2026 14:10** | **FLOURIE, Marie** | |
| v. 200 | May 04, 2026 13:16 | **FLOURIE, Marie** | |
| v. 199 | May 04, 2026 08:28 | **CHOUDHARY-ext, Tanvi** | |
| v. 198 | May 04, 2026 08:23 | **FLOURIE, Marie** | |
| v. 197 | May 04, 2026 08:21 | **FLOURIE, Marie** | |
| v. 196 | Apr 28, 2026 09:48 | **FLOURIE, Marie** | |
| v. 195 | Apr 28, 2026 09:04 | **FLOURIE, Marie** | |
| v. 194 | Apr 28, 2026 08:42 | **FLOURIE, Marie** | |
| v. 193 | Apr 28, 2026 08:41 | **FLOURIE, Marie** | |
| v. 192 | Apr 28, 2026 08:14 | **FLOURIE, Marie** | |
| v. 191 | Apr 24, 2026 14:18 | **NUNEZ-ext, Paloma** | |
| v. 190 | Apr 24, 2026 14:05 | **NUNEZ-ext, Paloma** | |
| v. 189 | Apr 24, 2026 09:54 | **NUNEZ-ext, Paloma** | |
| v. 188 | Apr 24, 2026 08:27 | **NUNEZ-ext, Paloma** | |
| v. 187 | Apr 24, 2026 08:10 | **NUNEZ-ext, Paloma** | |
| v. 186 | Apr 24, 2026 07:53 | **NUNEZ-ext, Paloma** | |
| v. 185 | Oct 11, 2024 14:25 | **SCHWARTZ-ext, Stefanie** | |
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| v. 183 | Oct 11, 2024 14:24 | **SCHWARTZ-ext, Stefanie** | |
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| v. 181 | Oct 11, 2024 14:06 | **SCHWARTZ-ext, Stefanie** | |
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| v. 169 | Oct 10, 2024 10:13 | **SCHWARTZ-ext, Stefanie** |
| v. 168 | Oct 10, 2024 10:09 | **SCHWARTZ-ext, Stefanie** |
| v. 167 | Oct 09, 2024 10:52 | **SCHWARTZ-ext, Stefanie** |
| v. 166 | Oct 09, 2024 08:25 | **SCHWARTZ-ext, Stefanie** |
| v. 165 | Oct 08, 2024 13:31 | **SCHWARTZ-ext, Stefanie** |
| v. 164 | Oct 08, 2024 13:25 | **SCHWARTZ-ext, Stefanie** |
| v. 163 | Oct 08, 2024 13:23 | **SCHWARTZ-ext, Stefanie** |
| v. 162 | Oct 08, 2024 13:18 | **SCHWARTZ-ext, Stefanie** |
| v. 161 | Oct 08, 2024 13:15 | **SCHWARTZ-ext, Stefanie** |
| v. 160 | Oct 08, 2024 13:11 | **SCHWARTZ-ext, Stefanie** |
| v. 159 | Oct 08, 2024 13:10 | **SCHWARTZ-ext, Stefanie** |
| v. 158 | Oct 08, 2024 13:07 | **SCHWARTZ-ext, Stefanie** |
| v. 157 | Oct 08, 2024 13:06 | **SCHWARTZ-ext, Stefanie** |
| v. 156 | Oct 08, 2024 13:05 | **SCHWARTZ-ext, Stefanie** |
| v. 155 | Oct 08, 2024 13:02 | **SCHWARTZ-ext, Stefanie** |
| v. 154 | Oct 08, 2024 13:01 | **SCHWARTZ-ext, Stefanie** |
| v. 153 | Oct 08, 2024 12:59 | **SCHWARTZ-ext, Stefanie** |
| v. 152 | Oct 08, 2024 12:59 | **SCHWARTZ-ext, Stefanie** |
| v. 151 | Oct 08, 2024 12:56 | **SCHWARTZ-ext, Stefanie** |
| v. 150 | Oct 02, 2024 16:11 | **SCHWARTZ-ext, Stefanie** |
| v. 149 | Oct 02, 2024 16:07 | **SCHWARTZ-ext, Stefanie** |
| v. 148 | Oct 02, 2024 16:03 | **SCHWARTZ-ext, Stefanie** |
| v. 147 | Sept 28, 2024 06:12 | **WENNINGER-ext, Sascha** |
| v. 146 | Sept 27, 2024 16:11 | **SCHWARTZ-ext, Stefanie** |
| v. 145 | Sept 27, 2024 12:20 | **SCHWARTZ-ext, Stefanie** |
| v. 144 | Sept 27, 2024 12:10 | **SCHWARTZ-ext, Stefanie** |
| v. 143 | Sept 27, 2024 11:20 | **SCHWARTZ-ext, Stefanie** |
| v. 142 | Sept 26, 2024 16:15 | **SCHWARTZ-ext, Stefanie** |
| v. 141 | Sept 26, 2024 14:03 | **SCHWARTZ-ext, Stefanie** |
| v. 140 | Sept 26, 2024 13:53 | **SCHWARTZ-ext, Stefanie** |
| v. 139 | Sept 26, 2024 13:51 | **SCHWARTZ-ext, Stefanie** |
| v. 138 | Sept 26, 2024 13:41 | **SCHWARTZ-ext, Stefanie** |

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|---|---|---|
| v. 137 | Sept 26, 2024 13:28 | **SCHWARTZ-ext, Stefanie** |
| v. 136 | Sept 26, 2024 13:10 | **SCHWARTZ-ext, Stefanie** |
| v. 135 | Sept 25, 2024 10:49 | **SCHWARTZ-ext, Stefanie** |
| v. 134 | Sept 25, 2024 10:23 | **SCHWARTZ-ext, Stefanie** |
| v. 133 | Sept 19, 2024 16:47 | **SCHWARTZ-ext, Stefanie** |
| v. 132 | Sept 19, 2024 16:44 | **SCHWARTZ-ext, Stefanie** |
| v. 131 | Sept 19, 2024 16:40 | **SCHWARTZ-ext, Stefanie** |
| v. 130 | Sept 19, 2024 16:32 | **SCHWARTZ-ext, Stefanie** |
| v. 129 | Sept 19, 2024 16:28 | **SCHWARTZ-ext, Stefanie** |
| v. 128 | Sept 19, 2024 16:28 | **SCHWARTZ-ext, Stefanie** |
| v. 127 | Sept 19, 2024 16:25 | **SCHWARTZ-ext, Stefanie** |
| v. 126 | Sept 19, 2024 16:23 | **SCHWARTZ-ext, Stefanie** |
| v. 125 | Sept 19, 2024 16:20 | **SCHWARTZ-ext, Stefanie** |
| v. 124 | Sept 19, 2024 16:15 | **SCHWARTZ-ext, Stefanie** |
| v. 123 | Sept 19, 2024 16:09 | **SCHWARTZ-ext, Stefanie** |
| v. 122 | Sept 19, 2024 16:01 | **SCHWARTZ-ext, Stefanie** |
| v. 121 | Sept 19, 2024 15:50 | **SCHWARTZ-ext, Stefanie** |
| v. 120 | Sept 19, 2024 15:48 | **SCHWARTZ-ext, Stefanie** |
| v. 119 | Sept 19, 2024 15:30 | **SCHWARTZ-ext, Stefanie** |
| v. 118 | Sept 19, 2024 15:27 | **SCHWARTZ-ext, Stefanie** |
| v. 117 | Sept 19, 2024 15:21 | **SCHWARTZ-ext, Stefanie** |
| v. 116 | Sept 19, 2024 15:14 | **SCHWARTZ-ext, Stefanie** |
| v. 115 | Sept 19, 2024 15:08 | **SCHWARTZ-ext, Stefanie** |
| v. 114 | Sept 19, 2024 15:06 | **SCHWARTZ-ext, Stefanie** |
| v. 113 | Sept 19, 2024 14:34 | **SCHWARTZ-ext, Stefanie** |
| v. 112 | Sept 19, 2024 14:29 | **SCHWARTZ-ext, Stefanie** |
| v. 111 | Sept 19, 2024 14:26 | **SCHWARTZ-ext, Stefanie** |
| v. 110 | Sept 19, 2024 14:20 | **SCHWARTZ-ext, Stefanie** |
| v. 109 | Sept 19, 2024 14:19 | **SCHWARTZ-ext, Stefanie** |
| v. 108 | Sept 19, 2024 14:16 | **SCHWARTZ-ext, Stefanie** |
| v. 107 | Sept 19, 2024 14:13 | **SCHWARTZ-ext, Stefanie** |
| v. 106 | Sept 19, 2024 14:10 | **SCHWARTZ-ext, Stefanie** |
| v. 105 | Sept 19, 2024 14:02 | **SCHWARTZ-ext, Stefanie** |
| v. 104 | Sept 19, 2024 13:56 | **SCHWARTZ-ext, Stefanie** |

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|---|---|---|
| v. 103 | Sept 19, 2024 13:51 | **SCHWARTZ-ext, Stefanie** |
| v. 102 | Sept 19, 2024 13:46 | **SCHWARTZ-ext, Stefanie** |
| v. 101 | Sept 19, 2024 13:44 | **SCHWARTZ-ext, Stefanie** |
| v. 100 | Sept 19, 2024 13:41 | **SCHWARTZ-ext, Stefanie** |
| v. 99 | Sept 19, 2024 13:34 | **SCHWARTZ-ext, Stefanie** |
| v. 98 | Sept 19, 2024 13:14 | **SCHWARTZ-ext, Stefanie** |
| v. 97 | Sept 19, 2024 12:34 | **SCHWARTZ-ext, Stefanie** |
| v. 96 | Sept 19, 2024 12:21 | **SCHWARTZ-ext, Stefanie** |
| v. 95 | Sept 19, 2024 12:18 | **SCHWARTZ-ext, Stefanie** |
| v. 94 | Sept 19, 2024 12:04 | **SCHWARTZ-ext, Stefanie** |
| v. 93 | Sept 19, 2024 10:22 | **SCHWARTZ-ext, Stefanie** |
| v. 92 | Sept 19, 2024 09:25 | **SCHWARTZ-ext, Stefanie** |
| v. 91 | Sept 19, 2024 08:28 | **SCHWARTZ-ext, Stefanie** |
| v. 90 | Sept 18, 2024 22:27 | **SCHWARTZ-ext, Stefanie** |
| v. 89 | Sept 18, 2024 22:24 | **SCHWARTZ-ext, Stefanie** |
| v. 88 | Sept 18, 2024 22:14 | **SCHWARTZ-ext, Stefanie** |
| v. 87 | Sept 18, 2024 22:04 | **SCHWARTZ-ext, Stefanie** |
| v. 86 | Sept 18, 2024 22:01 | **SCHWARTZ-ext, Stefanie** |
| v. 85 | Sept 18, 2024 21:44 | **SCHWARTZ-ext, Stefanie** |
| v. 84 | Sept 18, 2024 21:41 | **SCHWARTZ-ext, Stefanie** |
| v. 83 | Sept 18, 2024 21:33 | **SCHWARTZ-ext, Stefanie** |
| v. 82 | Sept 18, 2024 21:15 | **SCHWARTZ-ext, Stefanie** |
| v. 81 | Sept 18, 2024 20:22 | **SCHWARTZ-ext, Stefanie** |
| v. 80 | Sept 18, 2024 20:21 | **SCHWARTZ-ext, Stefanie** |
| v. 79 | Sept 18, 2024 20:07 | **SCHWARTZ-ext, Stefanie** |
| v. 78 | Sept 18, 2024 19:59 | **SCHWARTZ-ext, Stefanie** |
| v. 77 | Sept 18, 2024 19:58 | **SCHWARTZ-ext, Stefanie** |
| v. 76 | Sept 18, 2024 19:51 | **SCHWARTZ-ext, Stefanie** |
| v. 75 | Sept 18, 2024 16:57 | **SCHWARTZ-ext, Stefanie** |
| v. 74 | Sept 18, 2024 16:37 | **SCHWARTZ-ext, Stefanie** |
| v. 73 | Sept 18, 2024 16:31 | **SCHWARTZ-ext, Stefanie** |
| v. 72 | Sept 18, 2024 16:30 | **SCHWARTZ-ext, Stefanie** |
| v. 71 | Sept 18, 2024 16:20 | **SCHWARTZ-ext, Stefanie** |
| v. 70 | Sept 18, 2024 16:09 | **SCHWARTZ-ext, Stefanie** |

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| v. 69 | Sept 18, 2024 14:28 | **SCHWARTZ-ext, Stefanie** |
| v. 68 | Sept 18, 2024 14:26 | **SCHWARTZ-ext, Stefanie** |
| v. 67 | Sept 18, 2024 13:40 | **SCHWARTZ-ext, Stefanie** |
| v. 66 | Sept 18, 2024 12:25 | **SCHWARTZ-ext, Stefanie** |
| v. 65 | Sept 18, 2024 12:21 | **SCHWARTZ-ext, Stefanie** |
| v. 64 | Sept 18, 2024 12:17 | **SCHWARTZ-ext, Stefanie** |
| v. 63 | Sept 18, 2024 12:13 | **SCHWARTZ-ext, Stefanie** |
| v. 62 | Sept 18, 2024 12:09 | **SCHWARTZ-ext, Stefanie** |
| v. 61 | Sept 18, 2024 12:06 | **SCHWARTZ-ext, Stefanie** |
| v. 60 | Sept 18, 2024 11:04 | **SCHWARTZ-ext, Stefanie** |
| v. 59 | Sept 18, 2024 08:30 | **SCHWARTZ-ext, Stefanie** |
| v. 58 | Sept 18, 2024 08:29 | **SCHWARTZ-ext, Stefanie** |
| v. 57 | Sept 18, 2024 08:24 | **SCHWARTZ-ext, Stefanie** |
| v. 56 | Sept 18, 2024 08:14 | **SCHWARTZ-ext, Stefanie** |
| v. 55 | Sept 17, 2024 20:29 | **SCHWARTZ-ext, Stefanie** |
| v. 54 | Sept 17, 2024 20:16 | **SCHWARTZ-ext, Stefanie** |
| v. 53 | Sept 17, 2024 20:12 | **SCHWARTZ-ext, Stefanie** |
| v. 52 | Sept 17, 2024 19:47 | **SCHWARTZ-ext, Stefanie** |
| v. 51 | Sept 17, 2024 19:31 | **SCHWARTZ-ext, Stefanie** |
| v. 50 | Sept 17, 2024 19:15 | **SCHWARTZ-ext, Stefanie** |
| v. 49 | Sept 17, 2024 18:52 | **SCHWARTZ-ext, Stefanie** |
| v. 48 | Sept 17, 2024 18:43 | **SCHWARTZ-ext, Stefanie** |
| v. 47 | Sept 17, 2024 18:36 | **SCHWARTZ-ext, Stefanie** |
| v. 46 | Sept 17, 2024 18:16 | **SCHWARTZ-ext, Stefanie** |
| v. 45 | Sept 17, 2024 18:09 | **SCHWARTZ-ext, Stefanie** |
| v. 44 | Sept 17, 2024 07:55 | **SCHWARTZ-ext, Stefanie** |
| v. 43 | Sept 16, 2024 17:58 | **SCHWARTZ-ext, Stefanie** |
| v. 42 | Sept 16, 2024 17:50 | **SCHWARTZ-ext, Stefanie** |
| v. 41 | Sept 16, 2024 16:41 | **SCHWARTZ-ext, Stefanie** |
| v. 40 | Sept 16, 2024 16:38 | **SCHWARTZ-ext, Stefanie** |
| v. 39 | Sept 16, 2024 16:34 | **SCHWARTZ-ext, Stefanie** |
| v. 38 | Sept 16, 2024 16:16 | **SCHWARTZ-ext, Stefanie** |
| v. 37 | Sept 16, 2024 16:14 | **SCHWARTZ-ext, Stefanie** |
| v. 36 | Sept 16, 2024 16:09 | **SCHWARTZ-ext, Stefanie** |

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|---|---|---|
| v. 35 | Sept 16, 2024 15:56 | **SCHWARTZ-ext, Stefanie** |
| v. 34 | Sept 16, 2024 15:40 | **SCHWARTZ-ext, Stefanie** |
| v. 33 | Sept 16, 2024 15:08 | **SCHWARTZ-ext, Stefanie** |
| v. 32 | Sept 16, 2024 15:02 | **SCHWARTZ-ext, Stefanie** |
| v. 31 | Sept 12, 2024 16:24 | **SCHWARTZ-ext, Stefanie** |
| v. 30 | Sept 12, 2024 16:17 | **SCHWARTZ-ext, Stefanie** |
| v. 29 | Sept 12, 2024 16:13 | **SCHWARTZ-ext, Stefanie** |
| v. 28 | Sept 12, 2024 16:05 | **SCHWARTZ-ext, Stefanie** |
| v. 27 | Sept 12, 2024 16:04 | **SCHWARTZ-ext, Stefanie** |
| v. 26 | Sept 12, 2024 10:23 | **SCHWARTZ-ext, Stefanie** |
| v. 25 | Sept 12, 2024 10:02 | **SCHWARTZ-ext, Stefanie** |
| v. 24 | Sept 12, 2024 09:57 | **SCHWARTZ-ext, Stefanie** |
| v. 23 | Sept 11, 2024 17:45 | **SCHWARTZ-ext, Stefanie** |
| v. 22 | Sept 11, 2024 15:39 | **SCHWARTZ-ext, Stefanie** |
| v. 21 | Sept 11, 2024 10:56 | **SCHWARTZ-ext, Stefanie** |
| v. 20 | Sept 11, 2024 10:55 | **SCHWARTZ-ext, Stefanie** |
| v. 19 | Sept 11, 2024 10:30 | **SCHWARTZ-ext, Stefanie** |
| v. 18 | Sept 04, 2024 17:46 | **SCHWARTZ-ext, Stefanie** |
| v. 17 | Sept 04, 2024 17:40 | **SCHWARTZ-ext, Stefanie** |
| v. 16 | Sept 04, 2024 17:22 | **SCHWARTZ-ext, Stefanie** |
| v. 15 | Sept 04, 2024 16:56 | **SCHWARTZ-ext, Stefanie** |
| v. 14 | Sept 04, 2024 16:44 | **SCHWARTZ-ext, Stefanie** |
| v. 13 | Sept 04, 2024 16:24 | **SCHWARTZ-ext, Stefanie** |
| v. 12 | Sept 04, 2024 16:09 | **SCHWARTZ-ext, Stefanie** |
| v. 11 | Sept 04, 2024 16:05 | **SCHWARTZ-ext, Stefanie** |
| v. 10 | Sept 04, 2024 16:00 | **SCHWARTZ-ext, Stefanie** |
| v. 9 | Sept 04, 2024 15:53 | **SCHWARTZ-ext, Stefanie** |
| v. 8 | Sept 04, 2024 14:57 | **SCHWARTZ-ext, Stefanie** |
| v. 7 | Sept 04, 2024 14:48 | **SCHWARTZ-ext, Stefanie** |
| v. 6 | Sept 04, 2024 14:41 | **SCHWARTZ-ext, Stefanie** |
| v. 5 | Sept 04, 2024 14:41 | **SCHWARTZ-ext, Stefanie** |
| v. 4 | Sept 04, 2024 14:41 | **SCHWARTZ-ext, Stefanie** |
| v. 3 | Jul 25, 2024 10:18 | **SCHWARTZ-ext, Stefanie** |
| v. 2 | Jul 05, 2024 11:49 | **SCHWARTZ-ext, Stefanie** |

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|---|---|---|
| v. 1 | Jul 05, 2024 11:49 | **SCHWARTZ-ext, Stefanie** |

# Workflow history

| Title | Last Updated By | Updated | State | Status |
|---|---|---|---|---|
| KDD063 - Sustainability Footprint Management | FLOURIE, Marie | May 04, 2026 14:10 | Edited following Approval | |

# Workflow history

This view shows the 5 most recent entries. The complete workflow log is available from the 'Document Activity' menu item.

| From Apr 24, 2026 to May 04, 2026 | Actor | Type | Activity | Version |
|---|---|---|---|---|
| Approved | NUNEZ-ext, Paloma , CHOUDHARY-ext, Tanvi and FLOURIE, Marie | Edit | multiple updates from NUNEZ-ext, Paloma , CHOUDHARY-ext, Tanvi and FLOURIE, Marie | |
| **Oct 21, 2024** | | | | |
| | FALL-ext, Cheikh | State | changed state to Approved at 7:39 am | v185 |
| Pending SteerCo Review | FALL-ext, Cheikh | State | gave *Final Approval* approval at 7:39 am | |
| | | State | changed expiry date to '04 Nov, 2024 08:39 am' at 7:39 am | |
| | | State | changed state to Pending SteerCo Review at 7:39 am | v185 |
| Edited following Stakeholder Review | FALL-ext, Cheikh | State | gave *Minor change* approval at 7:39 am | |
| **From Oct 08, 2024 to Oct 11, 2024** | | | | |
| | SCHWARTZ-ext, Stefanie | Edit | updated the page at 12:56 pm | |