



CO2 Footprint Management

Case Study: Umbrella Company

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Valuation area	0001	general
Company	0001	general
Controlling area	0001	general
Ledger	01	general
Plants	PL01 PL02 ...	specific
Cost centres	PLXX-ASSB PLXX-CUT PLXX-QA PLXX-HEAT PLXX-MTN PLXX-STOR PLXX-PP	Specific
Resources	PLXX-ASSB PLXX-CUT PLXX-QA PLXX-TRUCK	Specific
Facilities	PLXX-01 Production PLXX-02 Storage PLXX-03 Offices	Specific, manual entry in <i>Model Energy Flows</i>

2.2 Plant Assignments to Footprint Scope Definition, Calculation Variant

Go to Manage Footprint Inventory Scopes and create a scope XX for your plant PLXX in Company 0001 (Umbrellas & Co). Figure 1a shows the entities. The entities in grey have already been introduced in Figure 1.

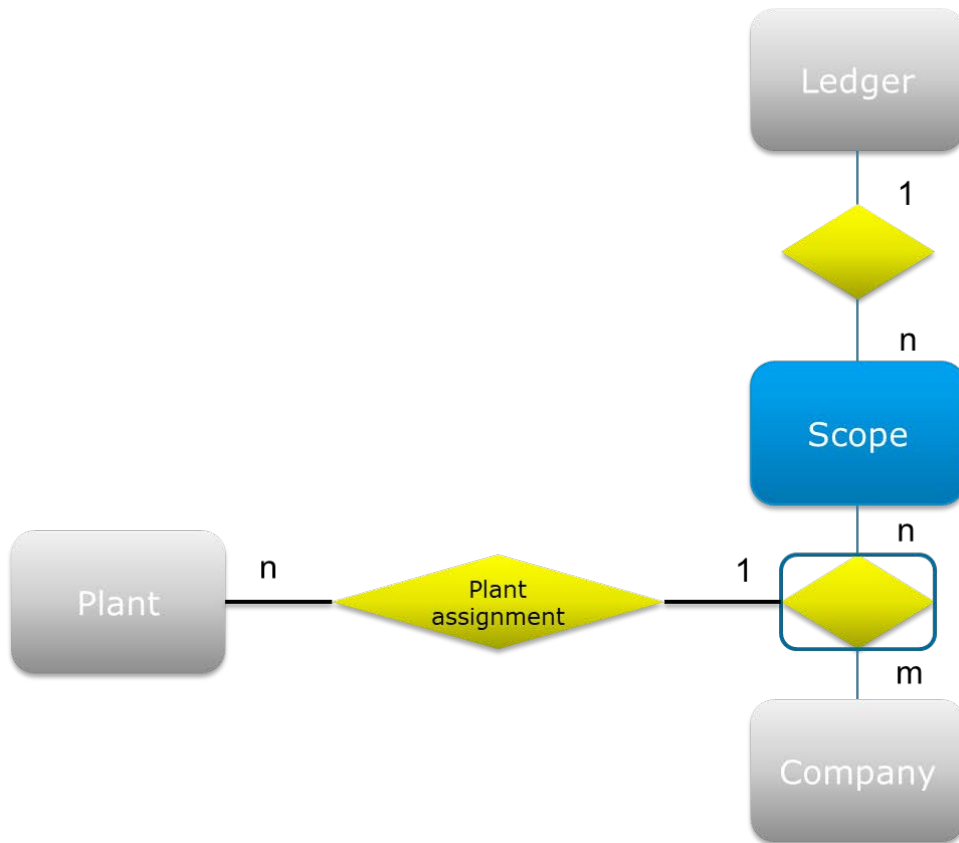


Figure 1a: Footprint Inventory Scope and organisational assignment

Select the following scope:

- Product acquisition
- Product inventory
- Direct emissions and energy consumption
- Purchased product transportation

Internal transports are not part of the scope.

Finally check the adapted default calculation variant.

2.3 Products

Figure 2 shows the product data, the following data is uploaded from files.

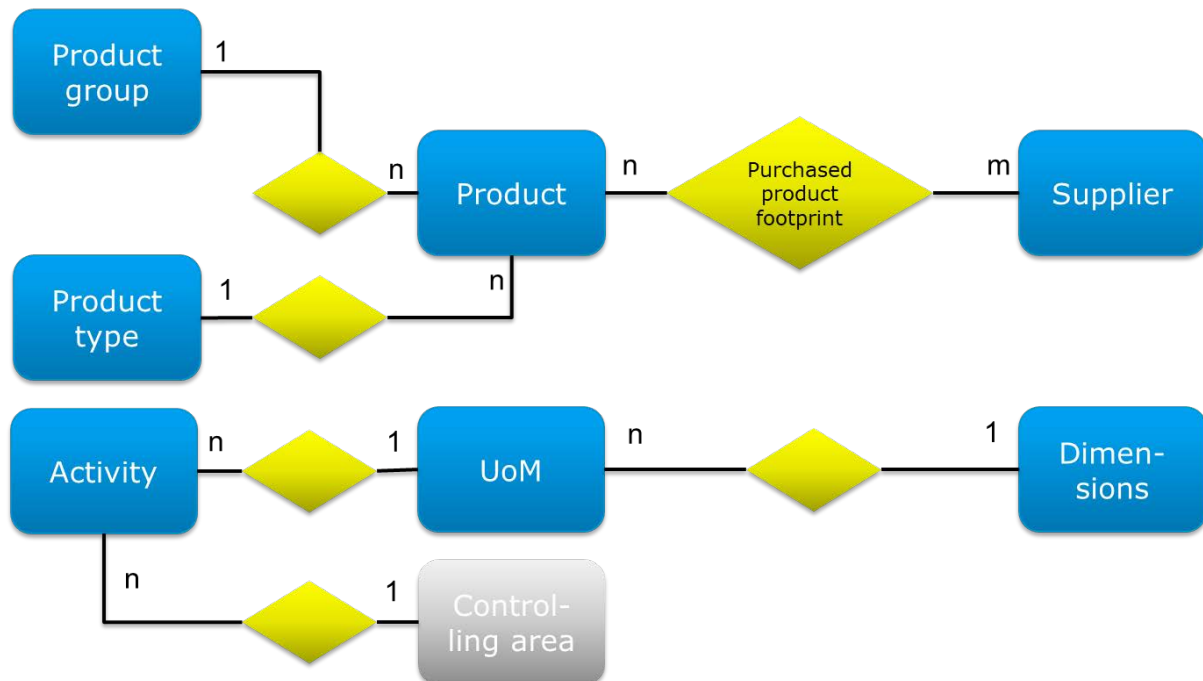


Figure 2: Products and Activities

Product groups	01	general
Product types	0000 raw materials 0001 semi-finished product 0002 finished product 0010 transportation by truck	general
Products	See list in file	specific
Suppliers	PLXX-V1 PLXX-V2 PLXX-V3 PLXX-V4	specific

Then add the purchased product footprint, all supplier-specific. Add the following combinations:

PLXX-V1	Ring	Metal part 1000 units = 100 kg Based on 10.5 kg CO2 per 1000 units Footprint includes transport from Graz (199 km in 10 t batches) 174 kg / 10,000 kg per delivery => 1740 g per batch (1000 units)
PLXX-V1	Rib	Metal part 1000 units = 100 kg Based on 10.5 kg CO2 per 1000 units Footprint includes transport from Graz (199 km in 10 t batches) 174 kg / 10,000 kg per delivery => 1740 g per batch (1000 units)
PLXX-V1	Spreader	Metal part 1000 units = 50 kg Based on 4.5 kg CO2 per 1000 units Footprint includes transport from Graz (199 km in 10 t batches) 174 kg / 10,000 kg per delivery => 870 g per batch (1000 units)
PLXX-V1	Catch	Metal part 1000 units = 100 kg Based on 10.5 kg CO2 per 1000 units Footprint includes transport from Graz (199 km

		in 10 t batches) 174 kg / 10,000 kg per delivery => 1740 g per batch (1000 units)
PLXX-V1	Cover	Nylon Based on 3.7 CO2e / m2 Footprint includes transport from Graz 174 kg / 10,000 kg per delivery 150 g/m2 fabric => 2.6 g / m2
PLXX-V3	Cover	Acrylic Based on 5.7 CO2e per m2 Footprint includes transport from Bregenz 624 km 517 kg / 10,000 kg per delivery 150 g/m2 fabric => 5.1 g / m2
PLXX-V2	Handle	Plastic part 200 g per pc. Based on 14 g CO2 per pc. Footprint includes transport from Linz (207 km in 10 t batches) 187 kg / 10,000 kg per delivery => 3.7 g per pc.
PLXX-V4	Handle	Plastic part 1000 units = 200 kg Based on 14 kg CO2 per 1000 units Footprint includes transport from Shenzhen in 10 t batches: Shenzhen - Trieste by sea Trieste - Vienna by road Sum: 7,158 kg for 10,000 143.2 g per pc.

Then check out dimensions and units of measure (UoM) as well as the activity.

Dimensions	See list	general
Units of measure	See list	general
Activity	manu-h	general

2.4 Planned Energy Consumption Rates

These rates are entered for the work centres: Assembly, Cutting and QA. Figure 3 shows the entities.

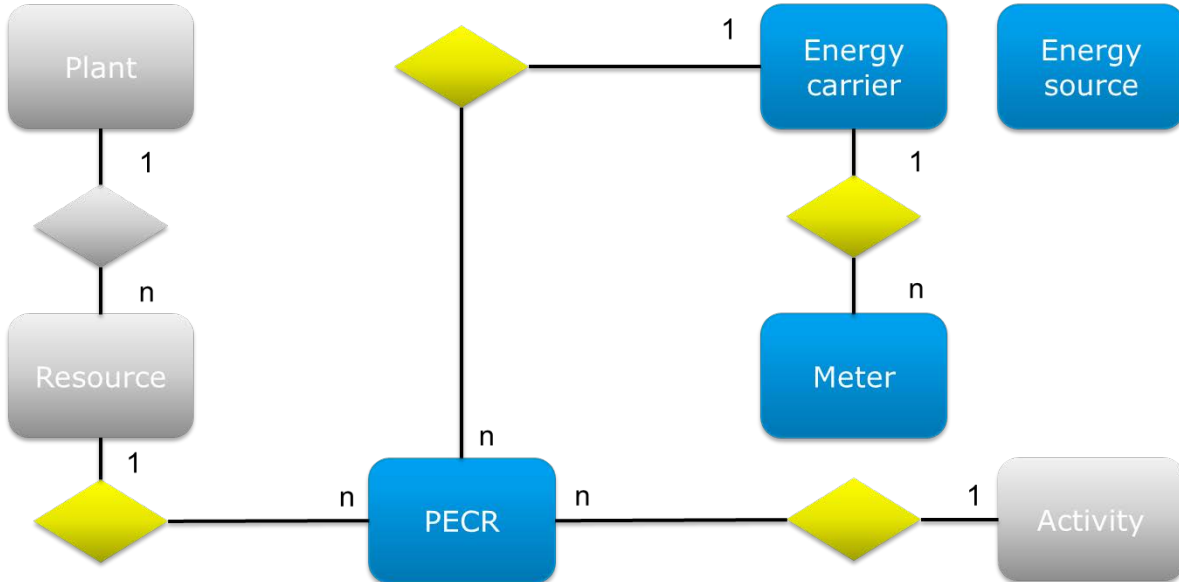


Figure 3: Planned Energy Consumption Rates

However, first we have to define which energy carriers are used for these consumption rates and how they are metered.

In “Model Energy Flows”, electricity is already defined as an energy carrier. Also, the energy source “Verbund” is pre-defined. Both are generally used.

Create the following meters plant-specific in PLXX:

PLXX-01.01	Assembly meter
PLXX-01.02	Cutting and QA joint meter
PLXX-01	Production Facility
PLXX-02	Offices
PLXX-03	Storage

Then the planned consumption rates can be entered.

Assembly	100 kW
Cutting	15 kW
QA	10 kW

2.5 Modelling the Energy Flow

Model the energy flow using the following data:

- Energy sources
- Meters
- Facilities
- Resources

Model the respective meters energy source and facilities/resources.

3 Business Transactions

Unless mentioned otherwise, the data is uploaded from files distributed to students.

3.1 Material Flow and Production/Service Confirmations (Import Business Transactions)

3.1.1 Upload the production documents (ie, production or service orders) in the Master Data function.

3.1.2 Then consider file TransactionalDataWithAmountWithDescriptions.xlsx which contains the following elements:

Type	Measure
Opening stock level	Quantities
Goods receipts from suppliers	Quantities
Goods returned to suppliers	n/a
Goods issues for production	Quantities with production document references
Goods receipts from production	Quantities with production document references
Internal Service confirmation	Times with production document references
Customer returns	Quantities
Goods issues for customer	Quantities, no customer references
Goods issue without reference	n/a
Goods receipt without reference	n/a
Goods transfers	n/a
Goods issue for cost center	n/a
Goods return from cost center	n/a
Goods issue for project	n/a
Goods return from project	n/a

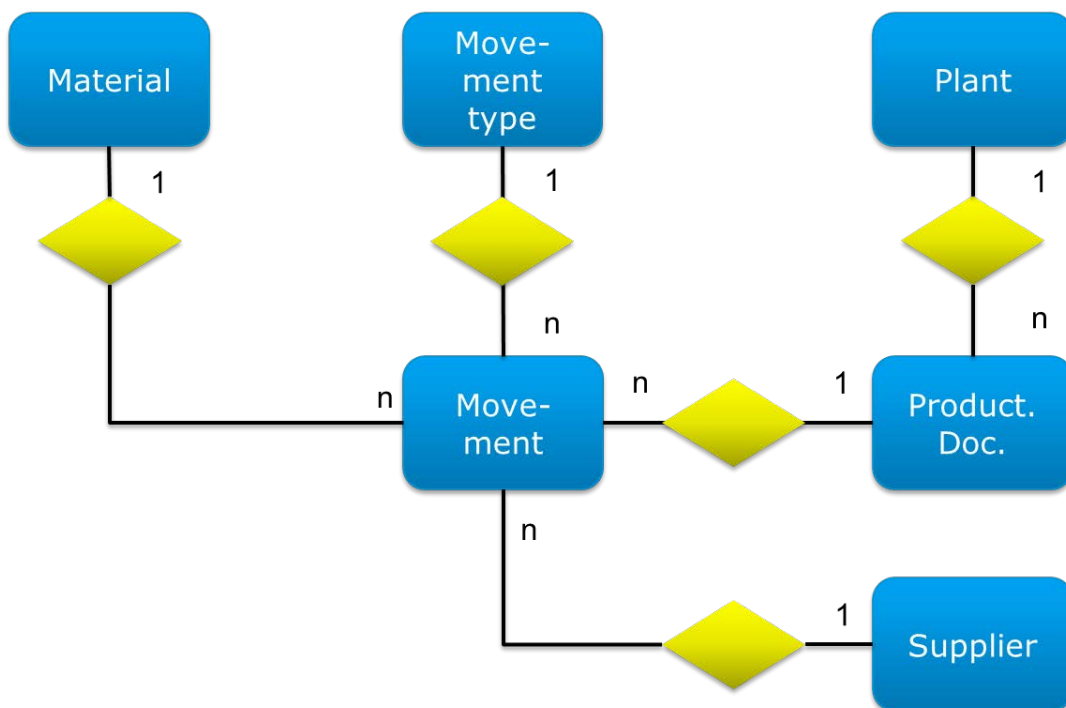


Figure 4a: Material flow

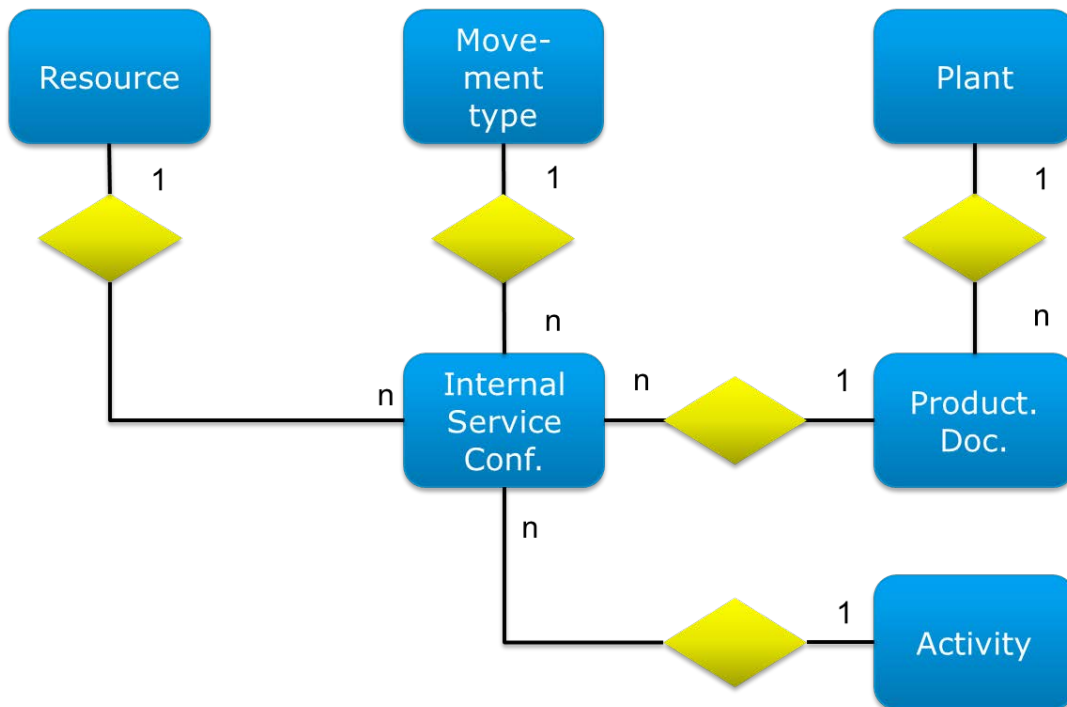


Figure 4b: Internal service confirmation

3.2 Manage Business Activities

Enter the following business activities directly in the respective app. In doing so refer to Manage Emission Factors.

PLXX-01	Heating	2024	Gas heating the facilities
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Question: What are the necessary adaptations to the existing data?

Adapt the energy flow model accordingly, hint: you will need three gas meters, one per facility.

3.3 Allocation of Facilities

Create the following allocations for the facilities created:

Facility (sender)	Recipient	%
Offices	Production facility	100
Production	Assembly	50
	Cutting	25
	QA	25
Storage	Assembly	80
	Cutting	20

3.4 Define Waste Types and Waste Disposal Footprints

Find the waste types in the respective file and the corresponding disposal method. The methods available can be seen in the master data app.

ID	Description	UoM	Disposal
PLXX-01	Cover fabric residue	KG	LANDFILLING
PLXX-02	Metal scrap	KG	LANDFILLING
PLXX-03	Cardboard packaging material	KG	RECYCLING

The waste classification code is NON-HAZARDOUS in all three cases. These waste types are now referenced in the Waste Disposal Footprint app. with the data below. Note that per waste type we have only one disposal type.

ID	Year	Emissions in kg	per	Method
PLXX-01	2024	10	1,000 kg	Landfill
PLXX-02	2024	10	1,000 kg	Landfill
PLXX-03	2024	20	1,000 kg	Recycling

All values for Austria and waste type-specific.

3.5 Calculate Footprints

Go to the app and create a footprint calculation. The footprint inventory is created for the combination of entities shown in Figure 5.

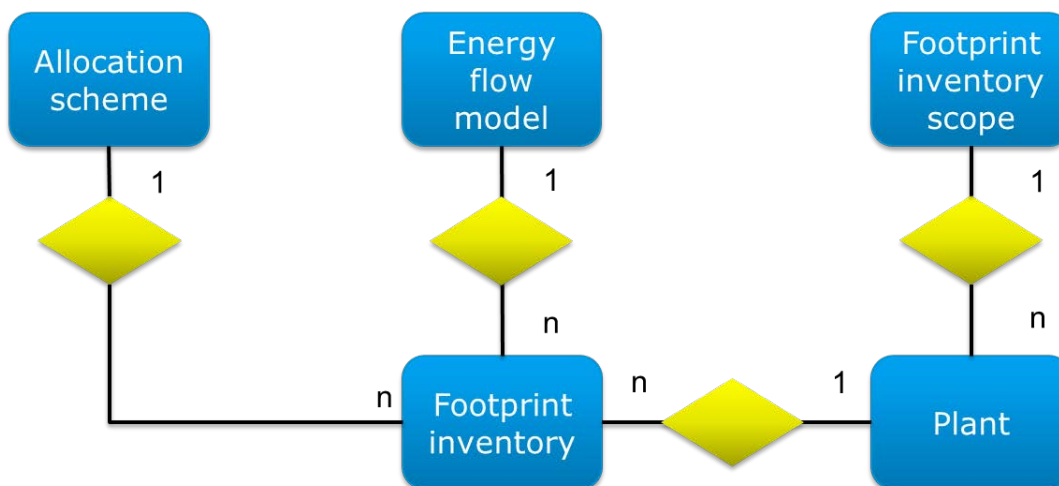


Figure 5: Footprint inventory

Create entries for December 2024 with

- 100 m3 natural gas, 26,000 kWh of electricity and 1600 l of Diesel.
- The following meter readings (8 hrs, one shift and 20 workdays assumed)¹

Meter	Value	Previous value
Gas production facility	1,050	1,000
Gas offices facility	360	340
Gas storage facility	510	480
Electricity production facility	78,000	75,000
Electricity offices facility	17,000	16,000
Electricity storage facility	32,000	30,000
Electricity assembly	116,000	100,000
Electricity Cutting and QA	74,000	70,000
Fuel gauge	76,600	75,000

- Skip manual emissions.
- Go to the data readiness tab and enter the missing form-based data as follows:
 - Any GHG data in operations:
 - Waste emissions (Scope 3.5): Get data from file.

Hint: These were the scopes defined in the inventory scopes.

- Transport and external emission data are not relevant.

Create the entries and calculate the footprint.

¹ It is assumed that each facility has its own boiler and meter.