

GCCA EPD TOOL · GUIDE 4 OF 7

Modelling reference

Every input section of the tool, in the order of the left-hand menu: what it asks for, what the defaults do, and the decisions a verifier will look at.

Keep this open beside the tool. Each section below matches one screen. Everything is entered **per declared unit**: 1 tonne of clinker, cement or aggregate; 1 m³ of concrete; your own declared unit for precast. Every quantity field has a unit selector, and every material, fuel and waste flow can carry one or more transport legs via **Add transport**. A comment icon beside a field is where you record the source of a number.

Primary data first. Every screen carries the same instruction: use primary data wherever possible, respect the PCR's cut-off rules, and treat defaults as placeholders. Every default you replace with an evidenced figure makes verification shorter.

A1 · A2 Materials

All product types.

The control box shows the **mass balance** and the **biogenic carbon** in product and packaging per declared unit. For a tonne of clinker or cement the balance should land near 1,000 kg once losses and calcination are accounted for; for a cubic metre of concrete it should match the density you declared.

Band	What to enter
Specific clinker / cement	Cement and concrete only. Pick a clinker or cement record from your own list, from an imported background report or from an imported third-party EPD. The upstream EPD's results flow in as A1.
Default clinker / cement	GCCA sector-average clinker or cement for the country. A fallback when no specific record exists.
Primary raw materials	Limestone, clay, marl, sand, gypsum, natural rock, calcined clay, and so on, each with quantity, transport mode and distance.
Secondary materials, co-product	Slag, fly ash and other co-products. Carries an allocation factor (%) where the PCR requires economic allocation; you calculate it, the tool applies it.
Secondary materials, waste	End-of-life concrete, recycled aggregate, waste alumina. Enter the transport; upstream burdens are not allocated to waste inputs.
Water, additives, admixtures	Plasticisers and other admixtures often in litres; grinding aids and pigments in kilograms.
Packaging	Plastic bags, paper sacks, wooden pallets, film, with transport. Feeds the A5 packaging waste and the biogenic carbon in packaging.


Back

Input data
 Product description
 A1-3. Product
 Materials
 Manufacturing
 Waste management

Analysis
 Results
 EPD results
 Detailed breakdown
 Export

Materials

[Show help](#)

In order to improve the quality and representativeness of the EPD, it is strongly recommended to use **primary data** whenever possible. This will also facilitate the verification process and improve the chances of success when filing for a verified EPD. The criteria for the exclusion of inputs and outputs or **cut-off rules** as per the PCR shall also be observed.

The declared unit is: **1 tonne of clinker.**

Mass balance: 100 kg per declared unit

Mass of biogenic carbon in the product: 0.0 kg per declared unit

Mass of biogenic carbon in the packaging: 0.0 kg per declared unit

Raw materials

Specific clinker

[+ Add exchange: Clinker, user-defined](#)

Default clinker

[+ Add exchange: Clinker, default](#)

Primary raw materials

	Quantity	Transport mode	Distance
Clay	100 kg	Truck	0 km

[+ Add exchange](#) [+ Add transport](#)

Secondary materials, co-product

Materials for a clinker record: control indicators top right, then specific clinker, default clinker and primary raw materials.

Third-party EPDs. The tool lets you import a published supplier EPD (product name, reference unit, mass per unit, validity, category, biogenic content, indicator results) and use it as an A1-A3 input. It warns you why that is risky: a different programme operator, a different PCR or a missing indicator can make the numbers inconsistent with the GCCA model. Compatibility is your responsibility; where it cannot be assured, say so explicitly in the declaration.

A3 Manufacturing

All product types; kiln bands appear for clinker only.

The control box shows **electricity** (kWh) and the **fuels balance** (MJ, all kiln and non-kiln fuels, excluding on-site transport fuels) per declared unit. Clinker records also offer **Show extra KPIs** for kiln emissions.

Band	What to enter
Electricity, purchased from the grid	kWh per declared unit and the voltage level. Tick Use custom values to replace the country default with your supplier's mix as percentages by source: coal and peat, oil, gas, biomass, waste, nuclear, hydro, geothermal, solar, wind. Percentages totalling between 99.9 and 100.1 are accepted and normalised.
Electricity, produced on site	Geothermal, solar or wind kWh generated and consumed on site.
Fuels, kiln · primary	Coal, petcoke, natural gas, diesel, heavy fuel oil, with transport. Click the pencil to open Edit fuel-specific values and override the default CO ₂ emission factor (kg CO ₂ /GJ) and lower heating value (MJ/kg) with laboratory figures.
Fuels, kiln · secondary	Alternative fuels: tyres, waste oil, solvents, biomass, RDF. Each needs a % biogenic . Custom heating value and emission factor as above.
Emissions, kiln	Calcination emissions (kg CO ₂) and fuel combustion emissions (fossil CO ₂ only) per declared unit, from your monitoring. Optional custom air emissions : NO _x , SO ₂ , dust, CO, HCl, HF, ammonia, metals, dioxins, VOCs.
Fuels, non-kiln	Fuels burned outside the kiln: dryers, generators, stationary plant.
On-site transport	Diesel and gasoline in loaders, quarry haulage and internal transport, with the fuel's own supply distance.
Ancillary materials and water	Water by source; explosives (aggregate), grinding aids, refractories, lubricants.
Co-products	Excess electricity (kWh) and excess heat (MJ) exported. Credited in module D.

electricity mix of the electricity supplier on the market, 3) residual electricity mix on the market. As such, the default regional average should NOT be used for EPDs to be verified and published. It is the responsibility of the user to comply with the above requirements. This will also facilitate the verification process and improve the chances of success when filing for a verified EPD. The criteria for the exclusion of inputs and outputs or **cut-off rules** as per the PCR shall also be observed.

The declared unit is: **1 tonne of clinker.**

Electricity: 0 kWh per declared unit

Fuels balance: 0 MJ per declared unit

Electricity, purchased from the grid

Electricity

kWh

Electricity mix:

☒ Use custom values

Source of electricity	Custom value (%)
Coal and peat	20
Oil	20
Gas	0
Biomass	10
Waste	0
Nuclear	10
Hydro	40
Geothermal	0
Solar	0
Wind	0

Electricity, produced on site

Electricity, produced

Add exchange

Electricity, geothermal

Electricity, solar

Electricity, wind

Fuels, kiln

Custom electricity mix by source, and the on-site generation options.

The electricity rule. The PCR ranks electricity data: 1) the specific mix generated or purchased, demonstrated by a Guarantee of Origin or similar; 2) the supplier's residual mix; 3) the residual mix on the market. The default regional average is **not** acceptable for an EPD to be verified and published. For a screening study it is fine; for anything that will be verified, tick custom values and enter an evidenced mix.

Toggle and compare. Untick **Use custom values** on the electricity mix or a fuel and read the results again. The size of the swing tells you how much the claim is worth and how much evidence the verifier will want for it.

A3 Waste management

All product types.

Band	What to enter
Non-hazardous waste	By route: landfill, incineration, wastewater. Quantity, transport mode and distance.
Hazardous waste	By route: incineration, underground deposit. Quantity and transport.
Other environmental information	Components for re-use, materials/waste to recycling (with transport) and materials for energy recovery . These are reported as output-flow indicators, not burdens.

Check the mass balance after entering waste. Waste leaves the product system, so a large waste figure with an unchanged input recipe means the balance no longer closes.

A4 · A5 Construction

Concrete and precast only. Values are entered for 1 m³ of concrete.

Band	What to enter
Transport · conventional	Delivery of the product to site: mode and distance. Default 50 km by truck.
Transport · in mixing truck	Diesel, CNG or LPG consumption of the mixing truck, if you have it.
Construction · material losses	Concrete losses, default 3%.
Construction · installation	Electricity, diesel in building machines, water and wastewater per m ³ . Defaults are supplied.
End-of-life treatment · packaging	% of packaging to incineration, % of that with energy recovery. Energy efficiency of recovery is fixed at 70%.

Transport

Conventional transport

Concrete

Quantity

1

m³

Transport mode

Truck

Distance

20

km

➕Add transport

Transport in mixing truck

➕Add exchange

Construction (values should be entered for 1 m³ of concrete)

Material losses

Concrete losses

Quantity

3

%

Construction

Electricity

Quantity

2.776

kWh

Diesel, in building machine

Quantity

1.669

L

Water

Quantity

669

kg

Wastewater

Quantity

0.669

m³

End of life treatment

Packaging

% of packaging to incineration

Quantity

80

%

% of incineration with energy recovery

Quantity

40

%

Energy efficiency of energy recovery

Quantity

70

%

A4-5 for ready-mix concrete with training values: 20 km delivery, 3% losses, default installation inputs, 80% of packaging incinerated.

Only the default scenarios are justified in the LCA model report. If you change them, the justification becomes yours and the verifier will ask for it.

B1 Use

Concrete and precast only.

Recarbonation is the uptake of CO₂ by hardened concrete over its service life, as atmospheric CO₂ reacts with the hydrated cement on exposed surfaces. Module B1 carries it as a negative GWP; the other use-stage modules are zero for concrete. Three approaches are offered:

Approach	Inputs and when to use it
Default value (less detailed)	Pick a type of construction (or "unknown"). Conservative defaults; use when little is known about the application.
Calculation (more detailed)	Service life (years), average exposed surface per declared unit (m²/m³) and exposure conditions (e.g. exposed to rain, sheltered, indoor). Use when the application is known.
User-specific recarbonation	Service life and your own specific recarbonation amount (kg CO ₂ /m³) from a separate study. You carry the evidence.

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B. Use

Show help

The declared unit is: 1 m³ of ready-mix concrete.

Recarbonation approach

Calculation (more detailed)

Service life

100

years

Average exposed surface during service life, per declared unit

5

m²/ m³ of ready-mix concrete

Exposure conditions

Exposed to rain

Resulting recarbonation:

8.76 kg CO₂ eq/ m³ of ready-mix concrete

Calculation approach: 100-year service life, 5 m²/m³ exposed, exposed to rain, giving 8.76 kg CO₂ eq per m³.

c1 · c4 End of life

Concrete and precast only.

Module	What to enter
C1 Demolition	Fixed scenario: demolition fuels per tonne of concrete. Read-only.
C2 Transport	Fixed scenario: transport of demolished concrete to treatment. Read-only.
C3 Waste processing	Recycling rate (%) of the concrete; % of incineration with energy recovery for incinerable disposed materials. Recycling of reinforcement and non-concrete parts, recovery and landfill shares are fixed. Then an end-of-life recarbonation approach for the crushed concrete: default, calculation or user-specific.
C4 Disposal	Landfill of the non-recycled fraction, with its own recarbonation approach.

The declared unit is: **1 m³ of ready-mix concrete.**

Waste processing

Waste treatment	Quantity
% recycling of non-steel reinforcement	0 %
% recycling of non-concrete + non-reinforcement	0 %
% recovery of recycled materials	100 %
% of incinerable 'disposed materials'* going to incineration	100 %
% of non-incinerable 'disposed materials'* going to landfill	100 %
% of incineration with energy recovery	30 %
Energy efficiency of energy recovery	70 %

* 'disposed materials' refer to non-recyclable + recyclable-but-not-recycled materials

Recycling rate
80 %

Default value (less detailed)
Calculation (more detailed)
User-specific recarbonation
Select --

Required

C3: fixed treatment shares in grey, the editable recycling rate and energy-recovery share, and the recarbonation approach selector.

D Benefits and loads

Concrete and precast only. Read-only.

Module D is computed from what you entered upstream: **recycled concrete out** (from the C3 recycling rate and the declared density) against **recycled concrete in** (from secondary materials in A1), **recycled steel out** against **steel in** for precast, and **substituted heat** from incinerating packaging and product waste with energy recovery. If a D figure looks wrong, the fix is in A1, A4-5 or C3, not here.

ANALYSIS Results and breakdown

EPD results lists four groups of indicators per module: core environmental impact, resource use, output flows and waste (with biogenic carbon content), and the additional optional indicators. For clinker, cement and aggregate the table stops at A1-A3; for concrete and precast it runs to D with a total. The A1-A3 total is marked with asterisks and is the figure a cradle-to-gate declaration reports.

Detailed breakdown attributes each indicator to the materials and processes behind it. Read it in this order:

1. Find the three largest contributors to GWP-GHG. For clinker they should be calcination and kiln fuels; for cement, clinker; for concrete, cement. Anything else is worth a second look.
2. Look for a small input with a large share of any indicator. Admixtures, explosives and metals often do this; check the unit.

3. Tick **GWP is reported as net GWP** in the product description, re-read the results, and untick it unless the PCR allows it.

EXPORT **Three files**

Export the **background report** (Excel; every input, assumption and result; the verifier's working document and what a customer imports into their own record), the **self-declaration report** (PDF Environmental Data Sheet in GCCA format; not a verified EPD) and the **ILCD+EPD** file (machine-readable; needs the reference year and "valid until" date filled in). Keep all three together with the evidence pack from Guide 3.

Practise on the training figures. Guide 5 walks through an aggregate, a clinker, a cement and a concrete with the numbers used in GCCA training, touching every section above.