

# Environmental Data Sheet | Self-declaration

Self-declaration based on Environdec c-PCR-003 Concrete and concrete elements (EN 16757)

## 15344400\_24

|                         |  |
|-------------------------|--|
| Manufacturer:           | Waibel Frankfurt GmbH, Franziusstraße 24, 60314, Frankfurt (DE)              |
| Declared unit:          | m <sup>3</sup>   |
| Product identification: | 15344400_24, Frankfurt   |
| Production site(s):     | Werk Frankfurt   |
| Density:                | 2,308 kg/m <sup>3</sup> e  |
| Reference service life: | -  |
| Recycling rate at EoL:  | 0%   |
| Scope:                  | A1-A3 + A4-A5 + B1-B7 + C1-C4 + D, cradle-to-grave                           |
| Methodology:            | GCCA's Industry EPD Tool for Cement and Concrete (V4), International version |
| Date of issue:          | 2024-03-08 09:23   |
| Comment:                |  |

This document is NOT a verified EPD but a self-declaration in EPD format. All information about goal and scope necessary for results interpretation by the EPD verifier are present in the latest version of the "LCA Model" report, available in GCCA's Industry EPD Tool.

Materials incorporated to the product and packaging materials available in the tool are pre-defined. For a given material, for instance, the share of primary versus secondary cannot be specified. Any give material is either 'primary' or 'secondary, product' or 'secondary, co-product' or 'secondary, waste'. The indicator 'Use of secondary materials' is computed as 'secondary materials, product' + 'secondary, co-product' + 'secondary, waste'. 'Secondary materials, waste' coming into the system are considered as a waste stream and are accepted as such. Therefore, no impact from the former life is considered. 'Secondary materials, product' and 'secondary materials, co-products' however inherit the impact of pre-processing (processing from 'end-of-waste' state to 'fit-for-use' state), consistently with the requirements of EN15804.

The PCR requires that the biogenic carbon content of the product and packaging should be reported in an EPD. It is mandatory when the biogenic carbon content exceeds 5% wt. (product or packaging). The latter is calculated and reported in the tool based on the default biogenic carbon content of input materials and is taken into account in the calculation of the GWP-bio indicator as per the requirements of the PCR. **It is the responsibility of the EPD owner to report the biogenic content of the product and packaging in the EPD.**

The removals and emissions associated with biogenic carbon content of the product and packaging are taken into consideration in the calculation of the GWP-bio indicator, as per the PCR. The uptake of CO<sub>2</sub> in A1-A3 (e.g. bio-based insulation materials in precast elements or bio-based packaging materials) and reemission in A5 (packaging end-of-life) or C3-C4 (product end-of-life).

The tool does not calculate the 'Radioactive waste disposed' (RWD) indicator. This is due to the absence of any readily available data in LCA databases for the corresponding indicator. The latter is considered not to be significant for the sector.

The 'Water deprivation potential' (WDP) indicator is characterized according to global characterization factors and not local ones.

The results of the impact categories abiotic depletion of minerals and metals, land use, human toxicity (cancer), human toxicity, non-cancer and ecotoxicity (freshwater) may be highly uncertain in LCAs that include capital goods/infrastructure in generic datasets, in case infrastructure/capital goods contribute greatly to the total results. This is because the LCI data of infrastructure/capital goods used to quantify these indicators in currently available generic datasets sometimes lack temporal, technological and geographical representativeness. Caution should be exercised when using the results of these indicators for decision-making purposes.

The energy balancing as per PCR 2019:14 Construction Products v1.3.2 is performed according to Option B (see Annex 3 of the PCR).

The following hypotheses apply to waste streams at the end-of-life: 1) The only materials sent to recycling are the concrete itself and the reinforcement steel when applicable. Other materials (e.g. insulation, void formers) are considered to be either incinerated (incinerable fraction) or landfilled (non-incinerable fraction). We assume the recycled materials are actually recycled and accounted for as recycled material. 2) The potential credits in module D therefore apply to i) the recycling of concrete at the end of life, ii) the recycling of reinforcing steel at the end of life and iii) the incineration with energy recovery of (a fraction of) packaging and/or product waste. This methodological choice is consistent with the reality of the cement and concrete industry.

No allocation is applied in the GCCA tool. For instance, no allocation of impacts will be applied to excess electricity or excess heat which may result from the production of concrete or precast. Such situations are considered to be marginal and negligible when they take place.

**The limitations and non-conformities above should be explicitly stated in any EPD report when applicable.**

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GWP-GHG intensity of electricity: 4.5E-1 kg CO<sub>2</sub> eq./kWh

It is the responsibility of EPD owners to report this emission factor in the EPD report (mandatory).

GWP-GHG intensity of scraps:

no secondary material is used in this EPD

If the scrap inputs contribute more than 10% to the GWP-GHG results of modules A1-A3, the (weighted-average) GWP-GHG intensity of that scrap (in kg CO<sub>2</sub> eq./tonne) shall be declared in the EPD, as well as the percentage of scrap that was assumed to come with, and without, an environmental burden.

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## Core environmental impact indicators

| Indicator | Unit                              | A1      | A2      | A3      | A1-A3     | A4      | A5      | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1      | C2      | C3  | C4      | D   |
|-----------|-----------------------------------|---------|---------|---------|-----------|---------|---------|-----|-----|-----|-----|-----|-----|-----|---------|---------|-----|---------|-----|
| GWP-GHG   | kg CO <sub>2</sub> eq.            | 1.45E2  | 6.65E0  | 1.89E0  | 1.53E2 ** | 1.01E1  | 1.3E1   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 8.99E0  | 8.62E0  | 0E0 | 1.27E1  | 0E0 |
| GWP-tot   | kg CO <sub>2</sub> eq.            | 6.25E0  | 6.65E0  | 1.89E0  | 1.48E1 *  | 1.01E1  | 8.88E0  | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 8.99E0  | 8.62E0  | 0E0 | 1.27E1  | 0E0 |
| GWP-fos   | kg CO <sub>2</sub> eq.            | 6.23E0  | 6.65E0  | 1.89E0  | 1.48E1 *  | 1.01E1  | 8.87E0  | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 8.99E0  | 8.6E0   | 0E0 | 1.27E1  | 0E0 |
| GWP-bio   | kg CO <sub>2</sub> eq.            | 1.67E-2 | 3.91E-3 | 9.82E-4 | 2.16E-2 * | 4.1E-3  | 4.91E-3 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.6E-3  | 6.31E-3 | 0E0 | 8.37E-3 | 0E0 |
| GWP-luc   | kg CO <sub>2</sub> eq.            | 3.48E-3 | 3.17E-3 | 1.52E-3 | 8.17E-3   | 3.54E-3 | 3.66E-3 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.13E-3 | 5.13E-3 | 0E0 | 6.8E-3  | 0E0 |
| ODP       | kg CFC 11 eq.                     | 1.38E-6 | 1.19E-6 | 1.74E-7 | 2.73E-6   | 2E-6    | 1.57E-6 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.62E-6 | 1.49E-6 | 0E0 | 4.13E-6 | 0E0 |
| AP        | mol H+ eq.                        | 6.63E-2 | 7.74E-2 | 1.07E-2 | 1.54E-1   | 3.34E-2 | 8.19E-2 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 9.42E-2 | 4.02E-2 | 0E0 | 1.21E-1 | 0E0 |
| EP-fw     | kg P eq.                          | 1.71E-3 | 6.82E-4 | 6.26E-4 | 3.01E-3   | 7.81E-4 | 1.27E-3 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 4.02E-4 | 1.18E-3 | 0E0 | 1.48E-3 | 0E0 |
| EP-mar    | kg N eq.                          | 1.38E-4 | 5.35E-5 | 5.03E-5 | 2.42E-4   | 6.79E-5 | 6.45E-4 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 3.34E-5 | 8.73E-5 | 0E0 | 1.4E-4  | 0E0 |
| EP-ter    | mol N eq.                         | 2.18E-1 | 1.03E-1 | 1.68E-2 | 3.38E-1   | 7.4E-2  | 3.26E-1 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 4.44E-1 | 1.12E-1 | 0E0 | 4.35E-1 | 0E0 |
| POCP      | kg NMVOC eq.                      | 4.66E-2 | 3.31E-2 | 4.69E-3 | 8.44E-2   | 3.01E-2 | 9.05E-2 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.22E-1 | 3.71E-2 | 0E0 | 1.28E-1 | 0E0 |
| ADPE      | kg Sb eq.                         | 4.22E-5 | 1.14E-5 | 2.05E-6 | 5.56E-5   | 1.95E-5 | 8.57E-6 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 2.66E-6 | 1.56E-5 | 0E0 | 1.38E-5 | 0E0 |
| ADPF      | MJ, net calorific value           | 1.35E2  | 1.01E2  | 2.76E1  | 2.63E2    | 1.65E2  | 1.4E2   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.3E2   | 1.32E2  | 0E0 | 3.53E2  | 0E0 |
| WDP       | m <sup>3</sup> world eq. deprived | 1.08E1  | 7.56E-1 | 4.16E-1 | 1.2E1     | 1.22E0  | -1.23E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 7.67E-1 | 1.14E0  | 0E0 | 1.7E1   | 0E0 |

\* The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production. The net GWP-tot (excluding the emissions from the incineration of secondary fuels at clinker production) is 1.48E1 kg CO<sub>2</sub>-eq. The net GWP-fos is 1.48E1 kg CO<sub>2</sub>-eq. The net GWP-bio is 2.16E-2 kg CO<sub>2</sub>-eq.

\*\* The indicated values (gross values) include the greenhouse gas emissions from the incineration of secondary fuels at clinker production. The net GWP-GHG (excluding the emissions from the incineration of secondary fuels at clinker production) is 1.53E2 kg CO<sub>2</sub>-eq.

It should be noted that the net/gross differentiation applies to GWP indicators only and is ignored for other indicators where gross is applied by default.

Core environmental impact indicators • **GWP-GHG** (Global Warming Potential, GHG) • **GWP-tot** (Global Warming Potential, total) • **GWP-fos** (Global Warming Potential, fossil fuels) • **GWP-bio** (Global Warming Potential, biogenic) • **GWP-luc** (Global Warming Potential, land use and land use change) • **ODP** (Depletion potential of the stratospheric ozone layer) • **AP** (Acidification potential, Accumulated Exceedance) • **EP-fw** (Eutrophication potential, fraction of nutrients reaching freshwater end compartment) • **EP-mar** (Eutrophication potential, fraction of nutrients reaching marine end compartment) • **EP-ter** (Eutrophication potential, Accumulated Exceedance) • **POCP** (Formation potential of tropospheric ozone) • **ADPE** (Abiotic depletion potential for non- fossil resources) • **ADPF** (Abiotic depletion potential for fossil resources potential) • **WDP** (Water (user) deprivation potential, deprivation-weighted water consumption)

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## Additional environmental impact indicators

| Indicator | Unit              | A1      | A2      | A3      | A1-A3   | A4      | A5      | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1      | C2      | C3  | C4      | D   |
|-----------|-------------------|---------|---------|---------|---------|---------|---------|-----|-----|-----|-----|-----|-----|-----|---------|---------|-----|---------|-----|
| PM        | Disease incidence | 9.49E-7 | 4.17E-7 | 2.55E-8 | 1.39E-6 | 8.79E-7 | 1.74E-6 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 2.45E-6 | 7.69E-7 | 0E0 | 2.26E-6 | 0E0 |
| IRP       | kBq U235 eq.      | 2.6E3   | 5.56E2  | 6.81E2  | 3.84E3  | 8.69E2  | 1.26E3  | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 6.08E2  | 7.55E2  | 0E0 | 1.63E3  | 0E0 |
| ETP       | CTUe              | 3.54E0  | 1.33E1  | 3.48E-1 | 1.72E1  | 3.48E1  | 5.78E0  | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.76E0  | 2.31E1  | 0E0 | 6.65E0  | 0E0 |
| HTPC      | CTUh              | 1.71E-7 | 4.48E-8 | 1.29E-8 | 2.28E-7 | 6.7E-8  | 1.94E-7 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 6.36E-8 | 1E-7    | 0E0 | 1.11E-7 | 0E0 |
| HTPNC     | CTUh              | 8.5E-7  | 8E-7    | 1.1E-7  | 1.76E-6 | 1.87E-6 | 9.23E-7 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 2.46E-7 | 1.38E-6 | 0E0 | 7.09E-7 | 0E0 |
| SQP       | dimensionless     | 2.02E2  | 1.08E2  | 2.68E1  | 3.37E2  | 2.93E2  | 7.79E1  | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 7.71E0  | 2.15E2  | 0E0 | 6.57E2  | 0E0 |

Additional environmental impact indicators • **PM** (Potential incidence of disease due to PM emissions) • **IRP** (Potential Human exposure efficiency relative to U235) • **ETP** (Potential Comparative Toxic Unit for ecosystems) • **HTPC** (Potential Comparative Toxic Unit for humans - cancer) • **HTPNC** (Potential Comparative Toxic Unit for humans - non-cancer) • **SQP** (Potential soil quality index)

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## Parameters describing resource use

| Indicator | Unit                    | A1     | A2      | A3      | A1-A3  | A4      | A5      | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1      | C2      | C3  | C4      | D   |     |
|-----------|-------------------------|--------|---------|---------|--------|---------|---------|-----|-----|-----|-----|-----|-----|-----|---------|---------|-----|---------|-----|-----|
| PERE      | MJ, net calorific value | 1.07E1 | 1.81E0  | 6.32E0  | 1.88E1 | 2.37E0  | 7.68E0  | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 7.59E-1 | 3.3E0   | 0E0 | 9.16E0  | 0E0 |     |
| PERM      | MJ, net calorific value | 0E0    | 0E0     | 0E0     | 0E0    | 0E0     | 0E0     | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0     | 0E0 | 0E0 |
| PERT      | MJ, net calorific value | 1.07E1 | 1.81E0  | 6.32E0  | 1.88E1 | 2.37E0  | 7.68E0  | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 7.59E-1 | 3.3E0   | 0E0 | 9.16E0  | 0E0 |     |
| PENRE     | MJ, net calorific value | 1.35E2 | 1.01E2  | 2.76E1  | 2.63E2 | 1.65E2  | 1.4E2   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.3E2   | 1.32E2  | 0E0 | 3.53E2  | 0E0 |     |
| PENRM     | MJ, net calorific value | 0E0    | 0E0     | 0E0     | 0E0    | 0E0     | 0E0     | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0     | 0E0 | 0E0 |
| PENRT     | MJ, net calorific value | 1.35E2 | 1.01E2  | 2.76E1  | 2.63E2 | 1.65E2  | 1.4E2   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.3E2   | 1.32E2  | 0E0 | 3.53E2  | 0E0 |     |
| SM        | kg                      | 0E0    | 0E0     | 0E0     | 0E0    | 0E0     | 0E0     | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0     | 0E0 | 0E0 |
| RSF       | MJ, net calorific value | 0E0    | 0E0     | 0E0     | 0E0    | 0E0     | 0E0     | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0     | 0E0 | 0E0 |
| NRSF      | MJ, net calorific value | 0E0    | 0E0     | 0E0     | 0E0    | 0E0     | 0E0     | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0     | 0E0     | 0E0 | 0E0     | 0E0 | 0E0 |
| NFW       | m <sup>3</sup>          | 2.75E0 | 2.25E-2 | 1.11E-2 | 2.79E0 | 3.64E-2 | 1.92E-1 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 1.99E-2 | 3.52E-2 | 0E0 | 3.97E-1 | 0E0 |     |

Parameters describing resource use • **PERE** (Use of renewable primary energy excluding renewable primary energy resources used as raw materials) • **PERM** (Use of renewable primary energy resources used as raw materials) • **PERT** (Total use of renewable primary energy resources) • **PENRE** (Use of non-renewable primary energy excluding non-renewable primary energy resources used as raw materials) • **PENRM** (Use of non-renewable primary energy resources used as raw materials) • **PENRT** (Total use of non-renewable primary energy resources) • **SM** (Use of secondary materials) • **RSF** (Use of renewable secondary fuels) • **NRSF** (Use of non-renewable secondary fuels) • **NFW** (Net use of fresh water)

## Other environmental information describing waste categories

| Indicator | Unit | A1  | A2  | A3  | A1-A3 | A4  | A5     | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1  | C2  | C3  | C4     | D   |     |
|-----------|------|-----|-----|-----|-------|-----|--------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|--------|-----|-----|
| HWD       | kg   | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0    | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0    | 0E0 | 0E0 |
| NHWD      | kg   | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 6.92E1 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 2.31E3 | 0E0 |     |
| RWD       | kg   | ND  | ND  | ND  | ND    | ND  | ND     | ND  | ND  | ND  | ND  | ND  | ND  | ND  | ND  | ND  | ND  | ND     | ND  | ND  |

Other environmental information describing waste categories • **HWD** (Hazardous waste disposed) • **NHWD** (Non-hazardous waste disposed) • **RWD** (Radioactive waste disposed)

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## Environmental information describing output flows

| Indicator | Unit                  | A1  | A2  | A3  | A1-A3 | A4  | A5  | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1  | C2  | C3  | C4  | D   |     |
|-----------|-----------------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| CRU       | kg                    | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| MFR       | kg                    | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| MER       | kg                    | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| EE        | MJ per energy carrier | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |

Environmental information describing output flows • **CRU** (Components for re-use) • **MFR** (Materials for recycling) • **MER** (Materials for energy recovery) • **EE** (Exported energy)

## Extra indicators

| Indicator | Unit                   | A1  | A2  | A3  | A1-A3 | A4  | A5  | B1  | B2  | B3  | B4  | B5  | B6  | B7  | C1  | C2  | C3  | C4  | D   |
|-----------|------------------------|-----|-----|-----|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| CC        | kg CO <sub>2</sub> eq. | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| CWRS      | kg CO <sub>2</sub> eq. | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| GWP-prod  | kg CO <sub>2</sub>     | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |
| GWP-pack  | kg CO <sub>2</sub>     | 0E0 | 0E0 | 0E0 | 0E0   | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 | 0E0 |

Extra indicators • **CC** (Emissions from calcination and removals from carbonation) • **CWRS** (Emissions from combustion of secondary fuels from renewable sources used in production processes) • **GWP-prod** (Removals and emissions associated with biogenic carbon content of the bio-based product) • **GWP-pack** (Removals and emissions associated with biogenic carbon content of the bio-based packaging)