

ENVIRONMENTAL PRODUCT DECLARATION

IN ACCORDANCE WITH EN 15804+A2 & ISO 14025 / ISO 21930

SSAB W230-3 Side Barrier

SSAB Europe Oy



EPD HUB, EPD number HUB-1773

Published on 09.08.2024, last updated on 08.10.2024, valid until 09.08.2029

GENERAL INFORMATION

MANUFACTURER

Manufacturer	SSAB Europe Oy
Address	FI-13300 Hämeenlinna
Website	https://www.ssab.com

EPD STANDARDS, SCOPE AND VERIFICATION

Program operator	EPD Hub, hub@epdhub.com
Reference standard	EN 15804+A2:2019 and ISO 14025
PCR	EPD Hub Core PCR version 1.1, 5 Dec 2023
Sector	Construction product
Category of EPD	Third party verified EPD
Scope of the EPD	Cradle to gate with options, A4-A5, and modules C1-C4, D
EPD author	A. Rautavuori, Macon Oy
EPD verification	Independent verification of this EPD and data, according to ISO 14025: <input type="checkbox"/> Internal verification <input checked="" type="checkbox"/> External verification
EPD verifier	Imane Uald Lamkaddam as an authorized verifier for EPD Hub

The manufacturer has the sole ownership, liability, and responsibility for the EPD. EPDs within the same product category but from different programs may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804 and if they are not compared in a building context.

PRODUCT

Product name	SSAB W230-3 Side Barrier
Place of production	Akaa, Finland
Period for data	2023
Averaging in EPD	No averaging

ENVIRONMENTAL DATA SUMMARY

Declared unit	1 m
Declared unit mass	11,42 kg
GWP-fossil, A1-A3 (kgCO ₂ e)	26,2
GWP-total, A1-A3 (kgCO ₂ e)	26,2
Secondary material, inputs (%)	2,68
Secondary material, outputs (%)	99
Total energy use, A1-A3 (kWh)	85,1
Net fresh water use, A1-A3 (m ³)	0,15

PRODUCT AND MANUFACTURER

ABOUT THE MANUFACTURER

SSAB is the leading steel tube manufacturer in the Nordic countries with a broad selection of products to meet the needs of the construction, automotive and manufacturing industries. SSAB is also one of the leading suppliers of steel infrastructure products in Europe especially for foundation construction. Extensive range of products include structural hollow sections, precision tubes, open sections, steel piles, retaining walls, safety barrier, trapezoidal sections and water mains. We expertise in high-strength steels and aim at exceeding expectations by continuously developing our operations and products keeping customer's business on focus.

PRODUCT DESCRIPTION

The side barrier is suitable for a wide variety of purposes including roads, pedestrian and bicycle ways, parking areas, ports and industrial buildings. The zinc coating of the product considers the special requirements related to the use of the product.

Product thickness is 3mm, widths 359mm and actual length 12,33m. Post interval varies between 1 to 6 m by meters. This calculation is based on a 6 m post spacing product data.

Further information can be found at <https://www.ssab.com>.

PRODUCT RAW MATERIAL MAIN COMPOSITION

Raw material category	Amount, mass- %	Material origin
Metals	100	Finland, Republic of China and Poland
Minerals	-	-
Fossil materials	-	-
Bio-based materials	-	-

BIOGENIC CARBON CONTENT

Product's biogenic carbon content at the factory gate

Biogenic carbon content in product, kg C	0
Biogenic carbon content in packaging, kg C	0

FUNCTIONAL UNIT AND SERVICE LIFE

Declared unit	1 m
Mass per declared unit	11,42 kg

SUBSTANCES, REACH - VERY HIGH CONCERN

The product does not contain any REACH SVHC substances in amounts greater than 0,1 % (1000 ppm).

PRODUCT LIFE-CYCLE

SYSTEM BOUNDARY

This EPD covers the life-cycle modules listed in the following table.

Product stage			Assembly stage		Use stage							End of life stage				Beyond the system boundaries		
A1	A2	A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4	D		
X	X	X	X	X	MND	MND	MND	MND	MND	MND	MND	X	X	X	X	X		
Raw materials	Transport	Manufacturing	Transport	Assembly	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	Deconst./demol.	Transport	Waste processing	Disposal	Reuse	Recovery	Recycling

Modules not declared = MND. Modules not relevant = MNR.

MANUFACTURING AND PACKAGING (A1-A3)

The environmental impacts considered for the product stage cover the manufacturing of raw materials used in the production as well as packaging materials and other ancillary materials. Also, fuels used by machines, and handling of waste formed in the production processes at the manufacturing facilities are included in this stage. The study also considers the material losses occurring during the manufacturing processes as well as losses during electricity transmission.

Steel production is based on the use of iron ore as a raw material. However, SSAB uses approximately 20 % of recycled steel in conjunction with steel production in the Nordics. The use of raw materials has been optimized in steel production.

Transport distances for raw materials are calculated based on distances between known raw material manufacturers and product manufacturing site.

LCA study for country specific electricity mixes (Finland) based on IEA (OneClickLCA 2024) were used as energy sources profile. The use of energy has been optimized in steel product production.

TRANSPORT AND INSTALLATION (A4-A5)

Transportation impacts occurred from final products delivery to construction site (A4) cover fuel direct exhaust emissions, environmental impacts of fuel production, as well as related infrastructure emissions.

Weighted average of transport distances to customers is used in A4. The transports are assumed to take place by truck. In installation only packaging waste impacts are shown in Environmental Impact Data tables (A5). Metal packing materials will be recycled as materials for metal recycling.

PRODUCT USE AND MAINTENANCE (B1-B7)

This EPD does not cover the use phase. Air, soil, and water impacts during the use phase have not been studied.

PRODUCT END OF LIFE (C1-C4, D)

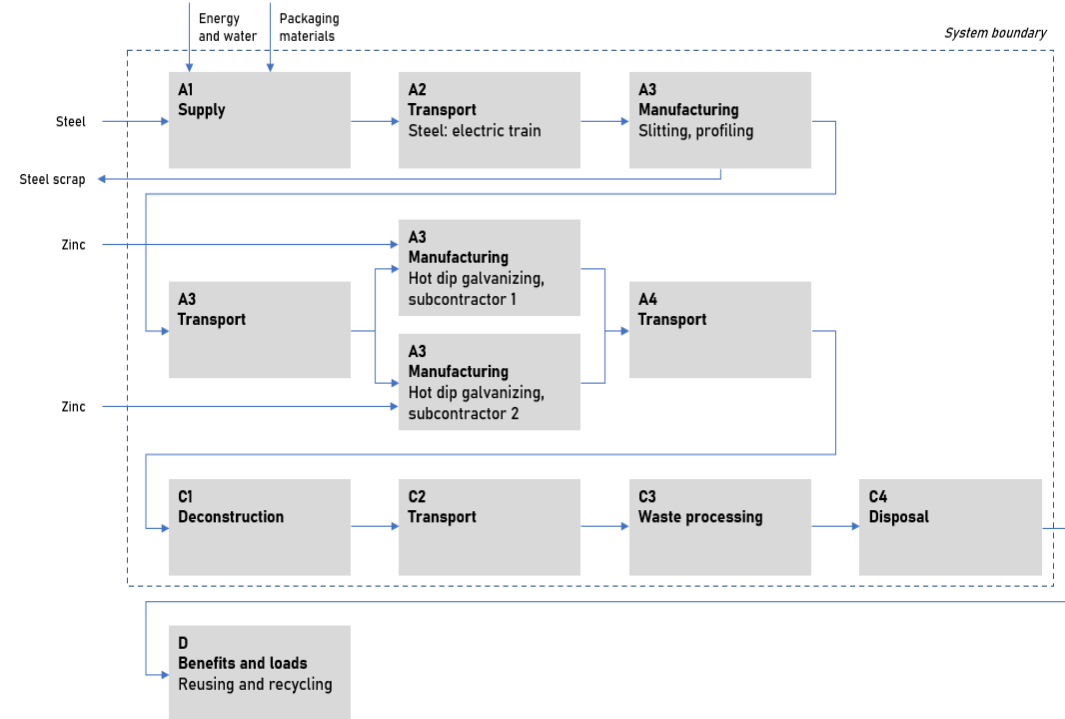
Module D is based on Worldsteel Recycling methodology. The methodology is presented more precisely in Worldsteel Association’s Life Cycle Inventory methodology report. This is listed in the references at the end of this report. Reuse of the product is assumed to substitute primary hot rolled steel production.

MANUFACTURING PROCESS

We source materials for Side Barriers exclusively from our approved suppliers. The selection of these suppliers is guided by stringent criteria, emphasizing reliability and product integrity. This focused approach ensures that our products consistently meet an industry standards.

We prioritize the use of secure transportation methods to uphold the integrity of materials destined for Side Barrier products from approved suppliers.

Manufacturing process includes essential steps slitting and profiling in Akaa facility. Then ready-made products are sent to hot dip galvanizing, which is taken care of our subcontractors. Wooden beams and metal straps are used as packing materials during transport. End customer packaging consists of metal straps and packing will be conducted by galvanizing subcontractors. Through careful execution of these processes, we ensure the production of high-quality goods.



LIFE-CYCLE ASSESSMENT

CUT-OFF CRITERIA

The study does not exclude any modules or processes which are stated mandatory in the reference standard and the applied PCR. The study does not exclude any hazardous materials or substances. The study includes all major raw material and energy consumption. All inputs and outputs of the unit processes, for which data is available for, are included in the calculation. There is no neglected unit process more than 1% of total mass or energy flows. The module specific total neglected input and output flows also do not exceed 5% of energy usage or mass.

ALLOCATION, ESTIMATES AND ASSUMPTIONS

Allocation is required if some material, energy, and waste data cannot be measured separately for the product under investigation. All allocations are done as per the reference standards and the applied PCR. In this study, allocation has been done in the following ways:

Data type	Allocation
Raw materials	No allocation
Packaging materials	No allocation
Ancillary materials	Allocated by mass or volume
Manufacturing energy and waste	Allocated by mass or volume

AVERAGES AND VARIABILITY

Primary data represents the manufacturing site in Akaa, Finland. Different barrier post interval with similar material composition but different weights are covered by scaling. The kg-based results for products and packaging can be scaled to the weight of each post interval. The different intervals are listed in Annex 1. The data of 6 meter interval was used to calculate the impacts for the product. The primary data has calculated of the 6 m product's consumption of raw materials and energy, and production of waste.

Type of average	No averaging
Averaging method	Not applicable

This EPD is product and factory specific and does not contain average calculations.

LCA SOFTWARE AND BIBLIOGRAPHY

This EPD has been created using One Click LCA EPD Generator. The LCA and EPD have been prepared according to the reference standards and ISO 14040/14044. The EPD Generator uses Ecoinvent v3.8, Plastics Europe, Federal LCA Commons and One Click LCA databases as sources of environmental data.

ENVIRONMENTAL IMPACT DATA

CORE ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
GWP – total ¹⁾	kg CO ₂ e	2,54E+01	2,59E-01	5,45E-01	2,62E+01	7,69E-02	2,07E-04	3,31E-03	4,97E-02	1,30E-01	6,01E-04	-1,66E+01
GWP – fossil	kg CO ₂ e	2,54E+01	2,58E-01	5,44E-01	2,62E+01	7,68E-02	2,07E-04	3,31E-03	4,97E-02	2,53E-01	6,00E-04	-1,66E+01
GWP – biogenic	kg CO ₂ e	0,00E+00	0,00E+00	5,42E-07	5,42E-07	0,00E+00	0,00E+00	0,00E+00	2,06E-05	-1,23E-01	3,91E-07	-2,38E-06
GWP – LULUC	kg CO ₂ e	6,09E-03	5,23E-04	2,50E-04	6,86E-03	2,88E-05	1,73E-07	3,30E-07	1,86E-05	2,10E-04	5,67E-07	-7,22E-03
Ozone depletion pot.	kg CFC ₁₁ e	4,12E-09	2,46E-08	8,14E-08	1,10E-07	1,92E-08	1,25E-11	7,07E-10	1,24E-08	1,16E-08	2,43E-10	-6,85E-07
Acidification potential	mol H ⁺ e	5,60E-02	1,50E-03	3,85E-03	6,13E-02	2,45E-04	9,95E-07	3,44E-05	1,58E-04	1,16E-03	5,64E-06	-7,52E-02
EP-freshwater ²⁾	kg Pe	2,22E-05	1,57E-05	7,43E-05	1,12E-04	5,49E-07	7,91E-09	1,10E-08	3,55E-07	9,93E-06	6,29E-09	-7,72E-04
EP-marine	kg Ne	1,38E-02	3,24E-04	5,03E-04	1,46E-02	5,40E-05	3,78E-07	1,52E-05	3,49E-05	4,45E-04	1,95E-06	-1,56E-02
EP-terrestrial	mol Ne	1,50E-01	3,61E-03	9,70E-03	1,63E-01	5,99E-04	2,63E-06	1,67E-04	3,87E-04	2,96E-03	2,15E-05	-1,80E-01
POCP (“smog”) ³⁾	kg NMVOCe	4,26E-02	1,06E-03	1,63E-03	4,53E-02	2,36E-04	7,43E-07	4,59E-05	1,53E-04	8,33E-04	6,25E-06	-8,32E-02
ADP-minerals & metals ⁴⁾	kg Sbe	6,15E-05	1,43E-06	1,24E-06	6,41E-05	1,88E-07	6,23E-09	1,68E-09	1,22E-07	7,89E-06	1,38E-09	-1,01E-03
ADP-fossil resources	MJ	2,74E+02	4,21E+00	5,03E+00	2,84E+02	1,23E+00	1,71E-03	4,45E-02	7,94E-01	1,88E+00	1,65E-02	-1,54E+02
Water use ⁵⁾	m ³ e depr.	5,13E+00	9,18E-02	1,10E+00	6,33E+00	5,67E-03	4,88E-05	1,20E-04	3,66E-03	6,11E-02	5,22E-05	-4,63E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator.

ADDITIONAL (OPTIONAL) ENVIRONMENTAL IMPACT INDICATORS – EN 15804+A2, PEF

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Particulate matter	Incidence	3,88E-09	1,64E-08	3,33E-08	5,36E-08	8,92E-09	1,70E-11	9,22E-10	5,77E-09	1,95E-08	1,14E-10	-1,09E-06
Ionizing radiation ⁶⁾	kBq U235e	9,07E-03	7,40E-02	3,89E-01	4,72E-01	6,33E-03	2,47E-05	2,05E-04	4,09E-03	3,01E-02	7,45E-05	1,03E-01
Ecotoxicity (freshwater)	CTUe	1,17E+01	4,40E+00	9,65E+00	2,57E+01	1,02E+00	2,66E-02	2,68E-02	6,60E-01	3,36E+01	1,07E-02	-9,29E+02
Human toxicity, cancer	CTUh	3,47E-10	3,13E-10	3,69E-10	1,03E-09	2,65E-11	4,19E-13	1,03E-12	1,72E-11	5,28E-10	2,68E-13	9,55E-08
Human tox. non-cancer	CTUh	7,42E-09	4,09E-09	5,86E-09	1,74E-08	1,04E-09	6,70E-12	1,94E-11	6,72E-10	8,39E-09	7,02E-12	-5,83E-07
SQP ⁷⁾	-	3,38E-01	3,12E+00	3,66E+00	7,11E+00	1,43E+00	8,06E-03	5,79E-03	9,25E-01	9,62E+00	3,52E-02	-5,73E+01

6) EN 15804+A2 disclaimer for ionizing radiation, human health. This impact category deals mainly with the eventual impact of low dose ionizing radiation on human health of the nuclear fuel cycle. It does not consider effects due to possible nuclear accidents, occupational exposure nor due to radioactive waste disposal in underground facilities. Potential ionizing radiation from the soil, from radon and from some construction materials is also not measured by this indicator; 7) SQP = Land use related impacts/soil quality.

USE OF NATURAL RESOURCES

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Renew. PER as energy ⁸⁾	MJ	9,85E+00	5,08E-01	2,11E+00	1,25E+01	1,59E-02	2,42E-04	2,54E-04	1,03E-02	3,05E-01	1,43E-04	-1,43E+01
Renew. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of renew. PER	MJ	9,85E+00	5,08E-01	2,11E+00	1,25E+01	1,59E-02	2,42E-04	2,54E-04	1,03E-02	3,05E-01	1,43E-04	-1,43E+01
Non-re. PER as energy	MJ	2,76E+02	4,20E+00	1,39E+01	2,94E+02	1,23E+00	1,71E-03	4,45E-02	7,94E-01	1,87E+00	1,65E-02	-1,54E+02
Non-re. PER as material	MJ	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Total use of non-re. PER	MJ	2,76E+02	4,20E+00	1,39E+01	2,94E+02	1,23E+00	1,71E-03	4,45E-02	7,94E-01	1,87E+00	1,65E-02	-1,54E+02
Secondary materials	kg	3,06E-01	5,36E-03	3,37E-03	3,15E-01	3,46E-04	2,71E-06	1,74E-05	2,24E-04	3,38E-03	3,46E-06	7,58E+00
Renew. secondary fuels	MJ	2,56E-04	1,47E-05	7,14E-05	3,42E-04	3,05E-06	2,17E-07	5,70E-08	1,97E-06	2,74E-04	9,04E-08	-1,50E-03
Non-ren. secondary fuels	MJ	1,96E-02	0,00E+00	5,20E-04	2,01E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Use of net fresh water	m ³	1,34E-01	2,70E-03	9,99E-03	1,47E-01	1,63E-04	1,50E-06	2,70E-06	1,05E-04	1,58E-03	1,80E-05	-7,97E-02

8) PER = Primary energy resources.

END OF LIFE – WASTE

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Hazardous waste	kg	3,61E-02	2,36E-02	2,71E-02	8,68E-02	1,32E-03	1,93E-05	5,96E-05	8,51E-04	2,45E-02	0,00E+00	-5,48E+00
Non-hazardous waste	kg	7,19E-01	7,06E-01	5,70E-01	1,99E+00	2,29E-02	2,22E-03	4,19E-04	1,48E-02	7,85E-01	1,14E-01	-2,99E+01
Radioactive waste	kg	2,25E-03	2,61E-05	1,72E-04	2,44E-03	8,47E-06	8,63E-09	3,13E-07	5,47E-06	1,10E-05	0,00E+00	-9,06E-05

END OF LIFE – OUTPUT FLOWS

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Components for re-use	kg	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	8,68E-01	0,00E+00	0,00E+00
Materials for recycling	kg	3,82E-03	0,00E+00	5,31E-01	5,35E-01	0,00E+00	0,00E+00	0,00E+00	0,00E+00	1,04E+01	0,00E+00	0,00E+00
Materials for energy rec	kg	3,49E-06	0,00E+00	8,40E-03	8,40E-03	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00
Exported energy	MJ	0,00E+00	0,00E+00	8,60E-02	8,60E-02	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00	0,00E+00

ENVIRONMENTAL IMPACTS – EN 15804+A1, CML / ISO 21930

Impact category	Unit	A1	A2	A3	A1-A3	A4	A5	C1	C2	C3	C4	D
Global Warming Pot.	kg CO ₂ e	2,47E+01	2,42E-01	5,67E-01	2,55E+01	7,61E-02	3,28E-04	3,27E-03	4,92E-02	4,06E-01	5,88E-04	-1,58E+01
Ozone depletion Pot.	kg CFC-11e	8,81E-09	1,80E-08	6,50E-08	9,18E-08	1,52E-08	1,03E-11	5,60E-10	9,81E-09	9,65E-09	1,92E-10	-7,35E-07
Acidification	kg SO ₂ e	4,54E-02	1,13E-03	2,91E-03	4,94E-02	1,99E-04	7,86E-07	2,45E-05	1,28E-04	9,23E-04	4,27E-06	-6,08E-02
Eutrophication	kg PO ₄ ³ e	5,22E-03	6,10E-04	7,64E-04	6,60E-03	4,21E-05	1,22E-06	5,69E-06	2,72E-05	1,54E-03	9,20E-07	-3,24E-02
POCP ("smog")	kg C ₂ H ₄ e	5,04E-03	5,38E-05	1,30E-04	5,22E-03	9,26E-06	7,46E-08	5,36E-07	5,98E-06	9,16E-05	1,79E-07	-8,88E-03
ADP-elements	kg Sbe	3,88E-05	1,37E-06	2,23E-06	4,24E-05	1,83E-07	6,20E-09	1,65E-09	1,18E-07	7,86E-06	1,36E-09	-1,01E-03
ADP-fossil	MJ	2,70E+02	4,02E+00	1,39E+01	2,88E+02	1,23E+00	1,71E-03	4,45E-02	7,94E-01	1,87E+00	1,65E-02	-1,54E+02

VERIFICATION STATEMENT

VERIFICATION PROCESS FOR THIS EPD

This EPD has been verified in accordance with ISO 14025 by an independent, third-party verifier by reviewing results, documents and compliance with reference standard, ISO 14025 and ISO 14040/14044, following the process and checklists of the program operator for:

- This Environmental Product Declaration
- The Life-Cycle Assessment used in this EPD
- The digital background data for this EPD

Why does verification transparency matter? [Read more online](#)

This EPD has been generated by One Click LCA EPD generator, which has been verified and approved by the EPD Hub.

THIRD-PARTY VERIFICATION STATEMENT

I hereby confirm that, following detailed examination, I have not established any relevant deviations by the studied Environmental Product Declaration (EPD), its LCA and project report, in terms of the data collected and used in the LCA calculations, the way the LCA-based calculations have been carried out, the presentation of environmental data in the EPD, and other additional environmental information, as present with respect to the procedural and methodological requirements in ISO 14025:2010 and reference standard.

I confirm that the company-specific data has been examined as regards plausibility and consistency; the declaration owner is responsible for its factual integrity and legal compliance.

I confirm that I have sufficient knowledge and experience of construction products, this specific product category, the construction industry, relevant standards, and the geographical area of the EPD to carry out this verification.

I confirm my independence in my role as verifier; I have not been involved in the execution of the LCA or in the development of the declaration and have no conflicts of interest regarding this verification.

Imane Uald Lamkaddam, as an authorized verifier for EPD Hub
09.08.2024



ANNEX 1. ARTICLES COVERED BY THIS EPD.

CORE ENVIRONMENTAL IMPACT INDICATORS SCALING TABLE A1-A3 FOR DIFFERENT POST INTERVALS (EN 15804 +A2, PEF)

Post interval in meters		1 m	2 m	3 m	4 m	5 m	6 m
Weight of Side Barrier per 1 m	kg	22,8	15,97	13,7	12,56	11,88	11,42
Impact category	Unit	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3	A1-A3
GWP – total ¹⁾	kg CO ₂ e	5,23E+01	3,67E+01	3,15E+01	2,89E+01	2,74E+01	2,62E+01
GWP – fossil	kg CO ₂ e	5,22E+01	3,66E+01	3,14E+01	2,88E+01	2,73E+01	2,62E+01
GWP – biogenic	kg CO ₂ e	9,48E-02	9,48E-02	9,48E-02	9,48E-02	9,48E-02	5,42E-07
GWP – LULUC	kg CO ₂ e	1,35E-02	9,53E-03	8,19E-03	7,52E-03	7,12E-03	6,86E-03
Ozone depletion pot.	kg CFC-11e	1,75E-07	1,40E-07	1,28E-07	1,22E-07	1,18E-07	1,10E-07
Acidification potential	mol H ⁺ e	1,20E-01	8,47E-02	7,30E-02	6,72E-02	6,37E-02	6,13E-02
EP-freshwater ²⁾	kg Pe	1,50E-04	1,27E-04	1,20E-04	1,16E-04	1,13E-04	1,12E-04
EP-marine	kg Ne	2,89E-02	2,04E-02	1,75E-02	1,61E-02	1,52E-02	1,46E-02
EP-terrestrial	mol Ne	3,18E-01	2,25E-01	1,94E-01	1,79E-01	1,69E-01	1,63E-01
POCP (“smog”) ³⁾	kg NMVOCe	8,97E-02	6,31E-02	5,42E-02	4,98E-02	4,71E-02	4,53E-02
ADP-minerals & metals ⁴⁾	kg Sbe	1,27E-04	8,93E-05	7,67E-05	7,06E-05	6,68E-05	6,41E-05
ADP-fossil resources	MJ	5,66E+02	3,97E+02	3,40E+02	3,12E+02	2,95E+02	2,84E+02
Water use ⁵⁾	m ³ e depr.	1,16E+01	8,43E+00	7,38E+00	6,85E+00	6,53E+00	6,33E+00

1) GWP = Global Warming Potential; 2) EP = Eutrophication potential. Required characterisation method and data are in kg P-eq. Multiply by 3,07 to get PO4e; 3) POCP = Photochemical ozone formation; 4) ADP = Abiotic depletion potential; 5) EN 15804+A2 disclaimer for Abiotic depletion and Water use and optional indicators except Particulate matter and Ionizing radiation, human health. The results of these environmental impact indicators shall be used with care as the uncertainties on these results are high or as there is limited experience with the indicator