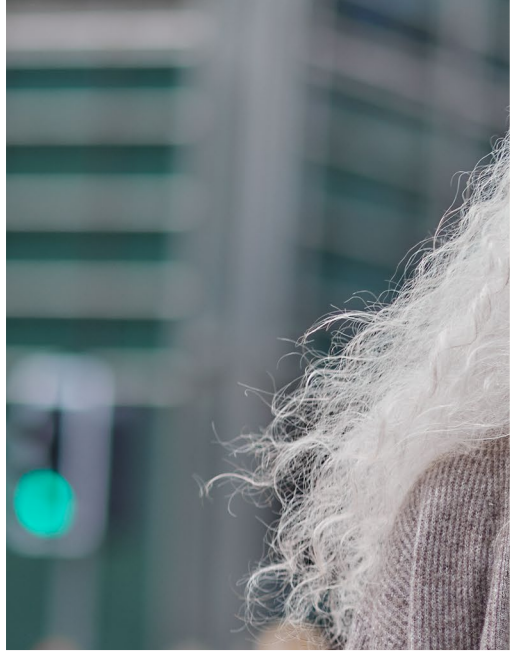


Environmental Product Declaration

in accordance with ISO 14025:2006 and EN 15804:2012+A2:2019/AC:2021

KONE MonoSpace® 700 DX

Program:	The International EPD® System EPD International AB www.environdec.com
EPD registration number:	EPD-IES-0016555
Version date:	2024-10-17
Validity date:	2029-10-17

An EPD should provide current information and may be updated if conditions change. The stated validity is therefore subject to continued registration and publication at www.environdec.com.

Program information

Program Operator
EPD International AB, Box 210 60, SE-100 31 Stockholm, Sweden, E-mail: info@environdec.com
Accountabilities for PCR, LCA and independent, third-party verification
Product category rules (PCR)
CEN standard EN 15804 serve as the core Product Category Rules (PCR).
Product category rules (PCR): PCR 2019:14 Construction products, version 1.3.2 C-PCR-008 (to PCR 2019:14) Version 2024-04-30 for Lifts (Elevators). Product classification: UN CPC 4354.
PCR review was conducted by: The Technical Committee of the International EPD System. See www.environdec.com for a list of members. Review chair: Claudia A. Peña, University of Concepción, Chile. The review panel may be contacted via the Secretariat www.environdec.com/contact.
Life Cycle Assessment (LCA)
LCA accountability: N. Nikkilä, KONE Corporation
Third-party verification
Independent third-party verification of the declaration and data, according to ISO 14025:2006, via:
EPD verification by individual verifier ● Yes ○ No
Third-party verifier: Anni Oviir, LCA support, https://www.lcasupport.com
Approved by: The International EPD System
Procedure for follow-up of data during EPD validity involves third-party verifier: ○ Yes ● No

EPD Owner
KONE Corporation Keilasatama 3 02150 Espoo, Finland

EPDs within the same product category but registered in different EPD programmes may not be comparable.

For two EPDs to be comparable, they shall be based on the same PCR (including the same version number up to the first two digits) or be based on fully-aligned PCRs or versions of PCRs; cover products with identical functions, technical performances and use (e.g. identical declared/functional units); have equivalent system boundaries and descriptions of data; apply equivalent data quality requirements, methods of data collection, and allocation methods; apply identical cut-off rules and impact assessment methods (including the same version of characterisation factors); have equivalent content declarations; and be valid at the time of comparison.

The EPD owner has the sole ownership, liability, and responsibility of the EPD.

KONE MONOSPACE® 700 DX

KONE in brief

At KONE, our mission is to improve the flow of urban life. As a global leader in the elevator and escalator industry, KONE provides elevators, escalators and automatic building doors, as well as solutions for modernization and maintenance to add value to buildings throughout their life cycle. KONE's equipment moves over 1 billion users each day. Through more effective People Flow®, we make people's journeys safe, convenient and reliable in taller, smarter buildings.

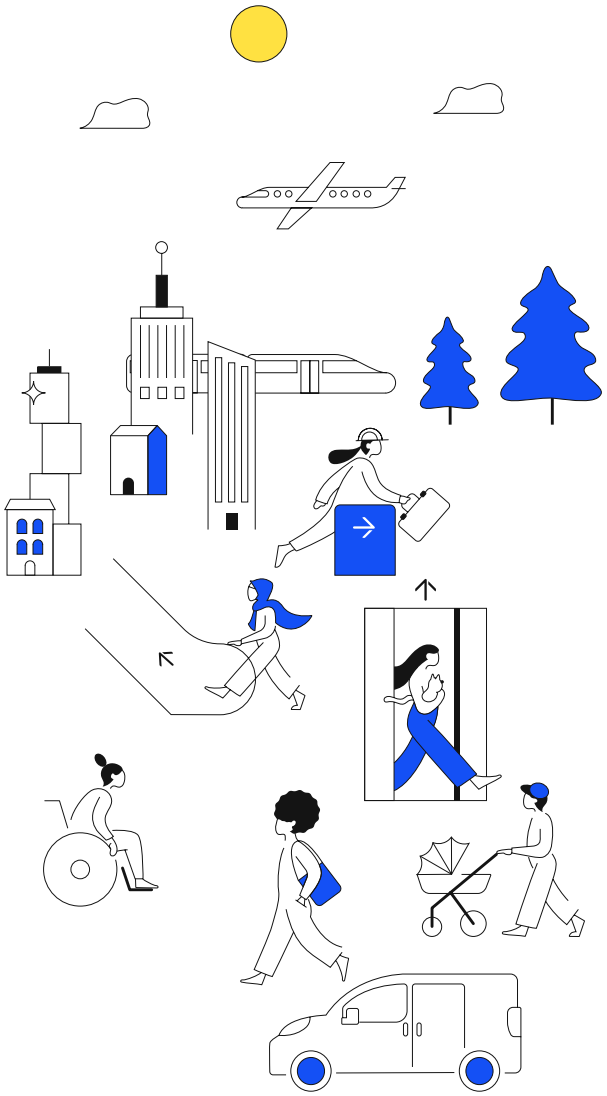
We serve more than 450,000 customers across the globe, and have more than one million elevators and escalators in our service base. Key customer groups include builders, building owners, facility managers and developers. The majority of these are maintenance customers. Architects, authorities and consultants are also key influencers in the decision-making process regarding elevators and escalators.

Driving innovation and improving resource efficiency

At KONE, innovation means putting the customer and the equipment user at the center. Innovations can have an important role in addressing climate change. Increasing resource efficiency is among our top priorities with regards to both our solutions and our operations. Our solution design contributes to the circular economy with a long lifetime and modularity as key features of our products, supported by our maintenance and modernization services.

Leader in sustainability

At KONE, sustainability is embedded in our organizational culture. It is how we treat each other and our stakeholders, how we take the environment into account in all of our actions, and how we foster economic performance now and in the future. Our vision is to deliver the best People Flow experience. Sustainability is a source of innovation and a competitive advantage for us. KONE is committed to conducting our business in a responsible and sustainable way and we expect the same commitment from our partners.



Environmental management

KONE'S corporate units, manufacturing and R&D units are ISO 14001 and ISO 9001 certified.

The majority of KONE's key suppliers are ISO 14001 certified.

KONE supports sustainable construction practices with efficient operations and guidelines for waste & chemical management and overall environmental excellence.

Our manufacturing unit in Finland have the FSC Chain of Custody certification for elevator car wood materials.

A class energy rating

More than 24 elevator models from KONE are certified with ISO 25745 highest energy efficiency rating of A class, 10 escalators and autowalks with the best A+++ classification.

Climate leadership

In 2023 KONE achieved a CDP Climate leadership score of A or A- for eleven consecutive years, which shows our long term commitment to environmental work and sustainability. KONE has been awarded a position on the CDP 2023 Supplier Engagement Rating Leaderboard in 2023.

Climate pledge

KONE has set science-based targets for significant reductions in its greenhouse gas (GHG) emissions by the year 2030.

KONE commits to a 50% cut in the emissions from its own operations (scope 1 and 2 emissions) by 2030, compared to a 2018 baseline. This target is in line with limiting global warming to 1.5°C.

In addition, KONE targets a 40% reduction in the emissions related to its products' materials and lifetime energy use (scope 3 emissions) over the same target period, relative to orders received.

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

CDP
DISCLOSURE INSIGHT ACTION

Product information

Product description

KONE MonoSpace® 700 DX is a machine room-less lift for mid-rise and low-rise residential and commercial buildings. With built-in connectivity, improved people flow, and an inspiring passenger experience, it redefines what a lift can be.

Powered by the compact, energy-efficient KONE EcoDisc® hoisting motor, the KONE MonoSpace® 700 DX saves valuable space in buildings by completely removing the need for a machine room.

Product standards

EN 81-20 Safety rules for the construction and installation of lifts Part 20: Passenger and goods passenger lifts. In addition to the EN81-20 standard, the MonoSpace 700® DX also complies with other relevant standards in the EN 81 series related to safety rules for the construction and installation of lifts.

Comparability between EPDs based on this c-PCR-008 (to PCR 2019:14) and EPDs based on PCR 2015:05 is not conceivable and shall be avoided. Any comparability of this kind shall be considered as false and misleading the EPD user. Comparability between EPDs based on this c-PCR-008 (to PCR 2019:14) is only achievable, if the following performance characteristics are equivalent: Functional unit, Reference Service Lifetime, Usage Category, travel height, number of stops, rated load, rated speed and geographic region.

Table 1. Product specification for KONE MonoSpace® 700 DX

Index	Possible values	Representative values chosen for LCA
Product classification	UN CPC 4354	
Production sites	Austria, China, Czech Republic, Estonia, Finland, Germany, Italy, Poland	
Type of installation	New generic lift	
Main purpose	Transport of passengers	
Type of lift	Electric	
Type of drive system	Gearless traction	
Commercial name	KONE MonoSpace® 700 DX	
Rated speed	1 - 3 m/s	1 m/s
Rated load	630 kg - 1600 kg	1600 kg
Number of stops	Max. 36	5
Travel height	Max. 90 m	14 m
Number of operating days per year	60-365	365
Applied usage Category (UC according to ISO 25745-2	1-6	3
Designed reference service life	25 years	
Geographic region of intended installation	Europe Electricity mix from Belgium is used to model use stage impacts	
Recommended application	Low-, mid- and high-rise residential and commercial	
Optional equipment	-	
Additional requirements	-	

Content declaration

Product

The Table below shows the material summary of the elevator studied, as delivered and installed in a building and handed over to customer. The total mass of the elevator is approximately 6780 kg and is mainly composed of ferrous metals, the majority of which can be recycled after use. Product-specific (pre-consumer and post-consumer) recycled content is unknown. Global average of recycled content in metals is considered in calculations. KONE continues to focus on optimizing material usage including packaging, avoiding the use of hazardous substances and maximizing recycled content and recyclability of our products.

Packaging

The table below shows the content of packaging materials used for packaging the reference elevator and its components as delivered to the site. The total amount of packaging components is approximately 875 kg where wood is the most common material. Majority of the packaging components can either be reused or recycled at the end of life.

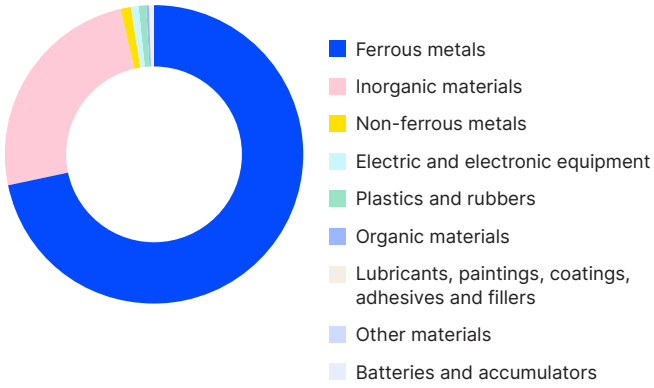
Table 2. Raw materials used in KONE MonoSpace® 700 DX

Materials	Weight %
Ferrous metals	71.8%
Inorganic materials (e.g. concrete)	24.7%
Non-ferrous metals	1.2%
Electric and electronic equipment	1.0%
Plastics and rubbers	0.7%
Organic materials (e.g. wood)	0.3%
Lubricants, paintings, coatings, adhesives and fillers	0.2%
Other materials	0.1%
Batteries and accumulators	0.1%

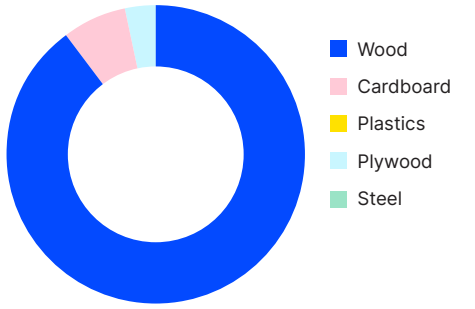
Table 3. Raw materials used in KONE MonoSpace® 700 DX packaging

Materials	Weight %	Biogenic carbon (kg)
Wood	82.3%	450
Cardboard	9.5%	35
Plastics	4.1%	0
Plywood	3.8%	16
Steel	0.3%	0

Material summary of KONE MonoSpace® 700 DX



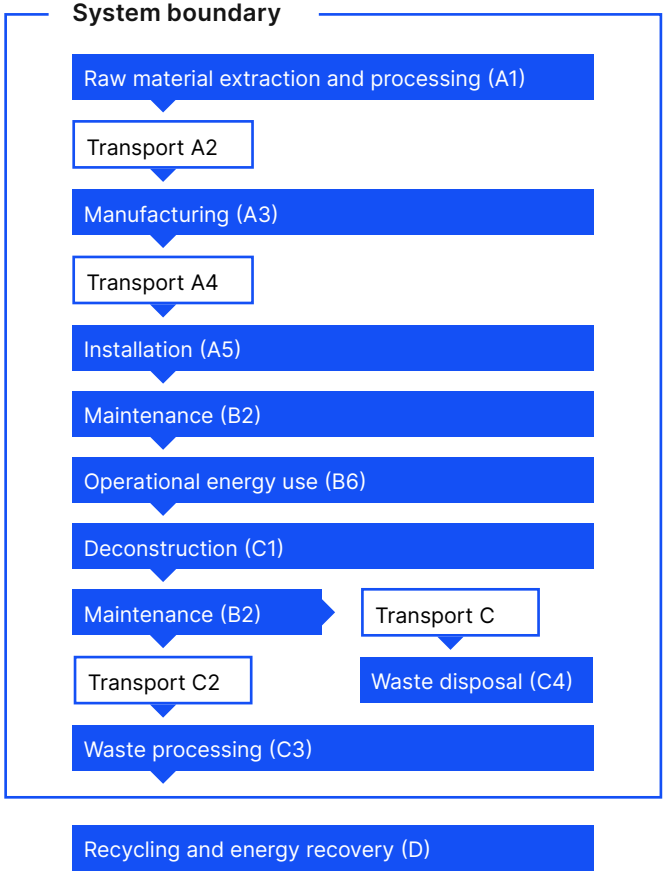
Material summary of KONE MonoSpace® 700 DX packaging



System Boundary

This EPD covers the full life cycle stages from cradle to grave. In the product stage (A1-A3) raw material extraction, processing of materials, transportation to the manufacturing site and manufacturing of components are considered. The different components of the product, also known as elevator modules are manufactured at specific sites in different parts of the world.

The construction process stage (A4-A5) includes transportation of the modules from manufacturing sites to a common distribution center and from there to the installation site by truck, installation activities and waste treatment of the packaging components.



In the use stage (B1-B7) only Maintenance (B2) and operational energy use (B6) are included as other stages within the usage phase are irrelevant for the product. Replacement component production, transportation involved, waste treatment and energy usage for products lifetime are included.

The end of life stage (C1-C4) includes dismantling, transportation of waste to processing sites, waste processing and disposal. Elevators once installed in the building, building owners are responsible for appropriate waste disposal. The impacts modeled for end of life in this LCA is based on most appropriate treatment scenarios for the materials. In addition, module D includes benefits and loads beyond the system boundary as a result of recycling and energy recovery through incineration.

Functional unit

Since the purpose of the elevator is to transport people and goods over multi-floor buildings, the functional unit (FU) for the study is defined as the transportation of the load over distance, expressed in tonne [t] over a kilometer [km], i.e. tonne-kilometer [tkm]. The total amount of tkm (also called as Transportation performance (TP)) shall be calculated to obtain the results per FU. The TP for KONE MonoSpace® 700 DX with Usage Category 3 in its lifetime 25 years was calculated to be 901.4 tkm. The term “transportation performance (TP)” used to indicate the total amount of tkm is identical both in meaning and in calculation approach to the term “total number of FU” used in EPDs based on PCR 2015:05.

Cut-Off Criteria

This study follows the cut-off criteria stated in the PCR and EN 15804 standard and does not exclude any modules or processes which are stated mandatory in the EN 15804 standard and in the PCR. For A1-A3, amount of material consumption, packaging, transportation and manufacturing data from the supply chain was received. However, the material classification was not possible for a fraction of the material used in the product. The missing material data represents only less than 0.5% of the total weight of the lift and their production is left out from the production analysis.

A4 transportation from supplier and KONE production locations to KONE distribution center in Pardubice, Czech Republic, and from the distribution center to the building location in Brussels, Belgium has been calculated. The return trip is not considered.

LCA software and generic data database

The LCA was modelled in Umberto and the Ecoinvent 3.10 database used for generic data.

Potential energy usage in distribution center per elevator delivered is negligible and are not included in the analysis. Similarly, the impacts of the auxiliary materials used for the installation and replacement in A5 and B2 (e.g. gloves, adhesive tapes and cleaning agents) are excluded from the analysis since both their usage quantity and impacts are considered negligible.

Scope of the life cycle assessment

		Module	Modules declared	Geography
Product stage	Raw material supply	A1	X	Global
	Transport	A2	X	Global
	Manufacturing	A3	X	Global
Construction process stage	Transport	A4	X	Global
	Construction installation	A5	X	BE
Use stage	Use	B1	ND	
	Maintenance	B2	X	Global
	Repair	B3	ND	
	Replacement	B4	ND	
	Refurbishment	B5	ND	
	Operational energy use	B6	X	BE
	Operational water use	B7	ND	
End of life stage	Deconstruction	C1	X	BE
	Transport	C2	X	Global
	Waste processing	C3	X	Global
	Disposal	C4	X	Global
Resource recovery stage	Reuse-Recovery-Recycling-potential	D	X	Global

This declaration covers “cradle to grave” and Module D. All mandatory modules covered in the EPD are marked with “X”. For non-relevant fields, ND is marked in the table (module not declared). >90% of data is specific i.e. the share of GWP-GHG impacts are coming from specific data.

Environmental performance

Environmental impact

The environmental performance results are relative expressions and do not predict impacts on category endpoints, the exceeding of thresholds, safety margins or risks. The EF 3.1 impact assessment method and its related characterization factors were employed at the midpoint level in this study. Based on different interpretations of EN 15804, option A (according to Annex 3 of the PCR) is assumed to separate the use of primary energy into energy used as raw material and energy used as an energy carrier. The global warming potential of modules A1-A3 is mainly caused by material manufacturing, with steel production activity responsible for over 75% of the impacts.

The elevator of this study is in use in Belgium. The annual energy consumption of 1457 kWh* was calculated with ISO 25745-2 methodology. The impacts for operational energy usage (B6) were calculated using the energy production fuel mixes for Belgium. The scenario for Belgium energy use represents an average grid factor of 0.21 kg CO2 per kWh. The results of life cycle impact assessment are divided by life cycle stage per entire life cycle and per tkm. The carbon footprint for the entire life cycle of the product is 36 tons of CO2e. Detailed results for all the impact categories can be seen from the tables below.

Environmental performance results - complete product over reference service life

Table 4. Potential environmental impacts per entire life cycle of KONE MonoSpace® 700 DX

Section	Global Warming Potential total [kg CO2 eq.]	Global Warming Potential fossil total [kg CO2 eq.]	Global Warming Potential biogenic [kg CO2 eq.]	Global Warming Potential luluc [kg CO2 eq.]	Ozone depletion potential [kg CFC11 eq.]	Acidification potential [mol H+ eq.]	Eutrophication aquatic freshwater [kg P eq.]	Eutrophication aquatic marine [kg N eq.]	Eutrophication terrestrial [mol N eq.]	Formation potential of tropospheric ozone [kg NMVOC eq.]	Abiotic depletion potential - elements [kg Sb eq.]**	Abiotic depletion potential - fossil [MJ]**	Water use [m3 depriv.]**	Global Warming Potential-GHG [kg CO2 eq.]
A1-A3 Raw material extraction to manufacturing	2.10E+04	2.28E+04	-1.80E+03	2.61E+01	2.99E-04	1.75E+02	1.27E+01	3.15E+01	4.07E+02	8.78E+01	1.60E+00	2.59E+05	8.68E+03	2.29E+04
A4 Transport to building site	1.29E+03	1.29E+03	0.00E+00	5.52E-01	2.04E-05	6.72E+00	9.80E-02	1.68E+00	1.85E+01	7.25E+00	3.52E-03	1.90E+04	8.73E+01	1.29E+03
A5 Installation into the building	1.83E+03	7.00E+01	1.76E+03	1.16E-01	1.02E-06	2.81E-01	1.14E-02	9.21E-02	9.00E-01	3.22E-01	2.65E-04	1.06E+03	8.84E+00	7.31E+01
B2 Maintenance	3.79E+03	3.78E+03	0.00E+00	4.13E+00	9.34E-05	2.63E+01	2.76E+00	4.31E+00	5.49E+01	1.58E+01	5.54E-01	4.63E+04	1.26E+03	3.79E+03
B6 Operational energy usage	7.58E+03	7.58E+03	0.00E+00	1.20E+00	3.53E-04	2.33E+01	8.54E-01	5.67E+00	5.28E+01	1.67E+01	2.67E-02	4.08E+05	3.59E+03	7.58E+03
C1 Deconstruction	3.12E+00	3.12E+00	0.00E+00	4.96E-04	1.45E-07	9.61E-03	3.52E-04	2.34E-03	2.17E-02	6.88E-03	1.10E-05	1.68E+02	1.48E+00	3.12E+00
C2 Waste transportation	3.42E+02	3.42E+02	0.00E+00	1.37E-01	4.91E-06	7.73E-01	2.76E-02	1.72E-01	1.86E+00	1.04E+00	1.19E-03	4.71E+03	2.08E+01	3.42E+02
C3 Waste processing	1.86E+02	1.53E+02	3.21E+01	1.30E-01	1.38E-06	1.36E+00	7.02E-02	3.08E-01	3.38E+00	9.98E-01	7.32E-03	1.56E+03	2.43E+01	1.56E+02
C4 Waste disposal	7.94E+01	7.58E+01	3.57E+00	3.49E-02	6.25E-07	1.83E-01	7.61E-03	6.86E-02	6.18E-01	2.13E-01	1.01E-04	5.44E+02	2.46E+01	7.60E+01
D Benefits	-5.81E+03	-5.81E+03	0.00E+00	-1.63E+00	-1.54E-05	-4.87E+01	-2.76E+00	-5.38E+00	-6.82E+01	-2.04E+01	-2.20E-01	-5.46E+04	4.13E+01	-5.81E+03

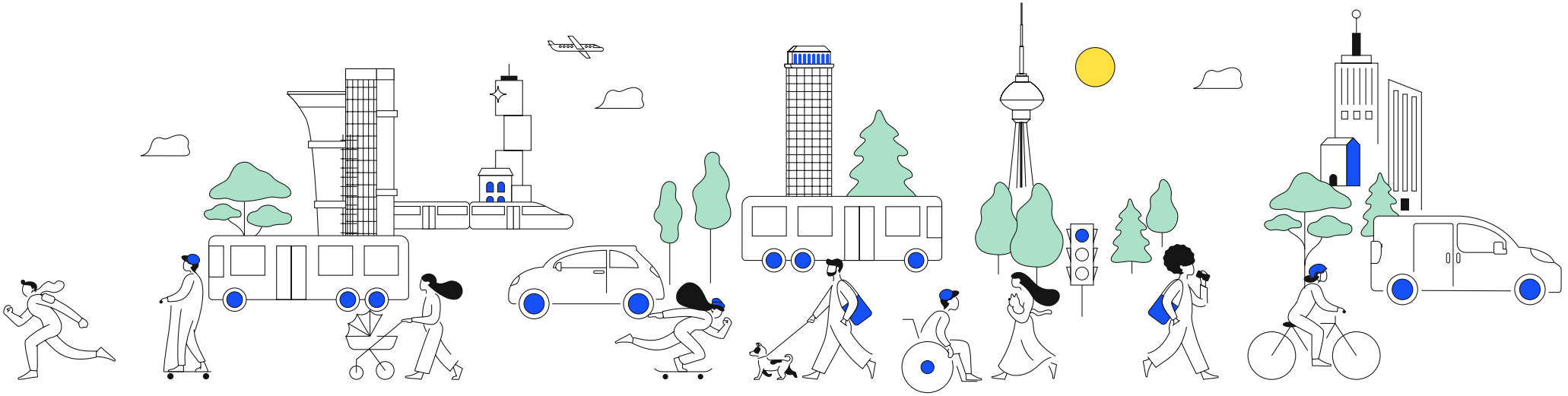
* The results of the energy calculation are based on the typical energy consumption of the selected reference KONE MonoSpace® 700 DX elevator. The results are KONE's best estimates of the annual energy consumption but the real-life values may vary depending on the actual installation.

** The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Disclaimer: considering that Module C is included in this EPD, it is discouraged to use the results of modules A1-A3 without considering the results of module C.

Table 5. The use of resources per entire life cycle of KONE MonoSpace® 700 DX

Section	Use of renewable primary energy resources as energy [MJ]	Use of renewable primary energy resources as raw materials [MJ]	Total use of renewable primary energy [MJ]	Use of non renewable primary energy as energy [MJ]	Use of non renewable primary energy as raw materials [MJ]	Total use of non renewable primary energy [MJ]	Use of secondary materials [kg]	Use of renewable secondary fuels [MJ]	Use of non renewable secondary fuels [MJ]	Use of net fresh water [m3]
A1-A3 Raw material extraction to manufacturing	4.59E+04	1.58E+04	6.17E+04	2.55E+05	3.45E+03	2.59E+05	2.34E+03	1.33E+01	0.00E+00	1.71E+02
A4 Transport to building site	2.40E+02	0.00E+00	2.40E+02	1.90E+04	0.00E+00	1.90E+04	8.16E+00	9.58E-02	0.00E+00	2.65E+00
A5 Installation into the building	1.56E+04	-1.56E+04	4.04E+01	2.55E+03	-1.49E+03	1.07E+03	6.58E-01	7.41E-03	0.00E+00	2.36E-01
B2 Maintenance	8.32E+03	0.00E+00	8.32E+03	4.63E+04	0.00E+00	4.63E+04	2.40E+02	1.35E+00	0.00E+00	2.75E+01
B6 Operational energy usage	1.01E+04	0.00E+00	1.01E+04	4.08E+05	0.00E+00	4.08E+05	1.76E+01	5.93E-02	0.00E+00	8.58E+01
C1 Deconstruction	4.17E+00	0.00E+00	4.17E+00	1.68E+02	0.00E+00	1.68E+02	7.27E-03	2.44E-05	0.00E+00	3.53E-02
C2 Waste transportation	6.77E+01	0.00E+00	6.77E+01	4.71E+03	0.00E+00	4.71E+03	2.11E+00	2.57E-02	0.00E+00	6.07E-01
C3 Waste processing	4.10E+02	-1.80E+02	2.30E+02	2.80E+03	-1.24E+03	1.56E+03	1.84E+00	7.92E-02	0.00E+00	6.67E-01
C4 Waste disposal	6.34E+01	-3.69E+01	2.64E+01	1.27E+03	-7.22E+02	5.44E+02	2.92E-01	9.38E-03	0.00E+00	7.22E-01
D Benefits	-6.54E+03	0.00E+00	-6.54E+03	-5.46E+04	0.00E+00	-5.46E+04	1.95E+03	-1.52E+00	0.00E+00	-1.01E+02



End of life - waste

In addition to the waste reported by the manufacturing units during the production process (specific data), the data on the amount of waste disposed reported in the table 6 and table 10 below also includes the waste data from the Ecoinvent database for all the life cycle stages. The amount of specific waste generated including the material losses during the production of elevator modules and packaging was collected from the module manufacturing units.

Table 6. Amount of waste disposed per entire lifecycle of KONE MonoSpace® 700 DX

Section	Hazardous waste disposed [kg]	Non hazardous waste disposed [kg]	Radioactive waste disposed [kg]
A1-A3 Raw material extraction to manufacturing	7.34E+03	8.94E+04	4.80E-01
A4 Transport to building site	3.16E+01	5.77E+02	3.91E-03
A5 Installation into the building	3.24E+00	8.35E+01	2.29E-03
B2 Maintenance	7.20E+02	1.26E+04	5.91E-02
B6 Operational energy usage	3.16E+02	4.99E+03	3.90E+00
C1 Deconstruction	1.30E-01	2.06E+00	1.61E-03
C2 Waste transportation	8.41E+00	1.63E+02	9.94E-04
C3 Waste processing	1.42E+01	3.59E+02	1.46E-03
C4 Waste disposal	1.42E+01	3.00E+02	3.77E-04
D Benefits	-2.12E+03	3.20E+04	-2.90E-02

End of life – output flows

The data for the output flows of the process is presented in table 7 and table 11 for the entire life cycle and per tkm respectively. The parameters in the tables are calculated on the gross amounts leaving the system boundary when they have reached the end-of-waste state. None of the components are reused after the end of the waste state, possible exported energy is not reported in the LCI datasets of Ecoinvent and there is no amount of exported energy from the manufacturing units.

Table 7. Amount of materials leaving the system boundary per entire life cycle of KONE MonoSpace® 700 DX

Section	Components for re-use kg	Materials for recycling kg	Materials for energy recovery kg	Exported Energy MJ
A1-A3 Raw material extraction to manufacturing	0.00E+00	0.00E+00	0.00E+00	0.00E+00
A4 Transport to building site	0.00E+00	0.00E+00	0.00E+00	0.00E+00
A5 Installation into the building	0.00E+00	2.85E+00	8.70E+02	0.00E+00
B2 Maintenance	0.00E+00	1.31E+02	4.61E+02	0.00E+00
B6 Operational energy usage	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C1 Deconstruction	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C2 Waste transportation	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C3 Waste processing	0.00E+00	4.44E+03	5.88E+01	0.00E+00
C4 Waste disposal	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D Benefits	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Environmental performance results - functional unit

Table 8. Potential environmental impacts per tkm of KONE MonoSpace® 700 DX

Section	Global Warming Potential total [kg CO2 eq.]	Global Warming Potential fossil total [kg CO2 eq.]	Global Warming Potential biogenic [kg CO2 eq.]	Global Warming Potential luluc [kg CO2 eq.]	Ozone depletion potential [kg CFC11 eq.]	Acidifi-cation potential [mol H+ eq.]	Eutrophica-tion aquatic freshwater [kg P eq.]	Eutrophica-tion aquatic marine [kg N eq.]	Eutro-phication terrestrial [mol N eq.]	Formation potential of tropospher-ic ozone [kg NMVOC eq.]	Abiotic depletion potential - elements [kg Sb eq.]**	Abiotic depletion potential - fossil [MJ]**	Water use [m3 depriv.]**	Global Warming Potential-GHG [kg CO2 eq.]
A1-A3 Raw material extraction to manufacturing	2.33E+01	2.53E+01	-1.99E+00	2.89E-02	3.32E-07	1.94E-01	1.41E-02	3.49E-02	4.51E-01	9.74E-02	1.78E-03	2.87E+02	9.62E+00	2.54E+01
A4 Transport to building site	1.43E+00	1.43E+00	0.00E+00	6.12E-04	2.27E-08	7.46E-03	1.09E-04	1.87E-03	2.05E-02	8.05E-03	3.91E-06	2.11E+01	9.69E-02	1.43E+00
A5 Installation into the building	2.03E+00	7.76E-02	1.95E+00	1.28E-04	1.13E-09	3.12E-04	1.27E-05	1.02E-04	9.98E-04	3.58E-04	2.94E-07	1.18E+00	9.81E-03	8.11E-02
B2 Maintenance	4.20E+00	4.20E+00	0.00E+00	4.58E-03	1.04E-07	2.92E-02	3.06E-03	4.78E-03	6.09E-02	1.75E-02	6.14E-04	5.14E+01	1.40E+00	4.21E+00
B6 Operational energy usage	8.41E+00	8.41E+00	0.00E+00	1.34E-03	3.91E-07	2.59E-02	9.48E-04	6.29E-03	5.86E-02	1.85E-02	2.96E-05	4.53E+02	3.98E+00	8.41E+00
C1 Deconstruction	3.46E-03	3.46E-03	0.00E+00	5.50E-07	1.61E-10	1.07E-05	3.90E-07	2.59E-06	2.41E-05	7.64E-06	1.22E-08	1.86E-01	1.64E-03	3.46E-03
C2 Waste transportation	3.79E-01	3.79E-01	0.00E+00	1.52E-04	5.45E-09	8.58E-04	3.06E-05	1.91E-04	2.06E-03	1.15E-03	1.32E-06	5.23E+00	2.31E-02	3.79E-01
C3 Waste processing	2.06E-01	1.70E-01	3.56E-02	1.45E-04	1.54E-09	1.51E-03	7.79E-05	3.42E-04	3.75E-03	1.11E-03	8.12E-06	1.73E+00	2.70E-02	1.73E-01
C4 Waste disposal	8.81E-02	8.41E-02	3.96E-03	3.87E-05	6.93E-10	2.03E-04	8.44E-06	7.61E-05	6.85E-04	2.36E-04	1.12E-07	6.03E-01	2.73E-02	8.43E-02
D Benefits	-6.44E+00	-6.44E+00	0.00E+00	-1.81E-03	-1.71E-08	-5.41E-02	-3.06E-03	-5.97E-03	-7.56E-02	-2.27E-02	-2.44E-04	-6.05E+01	4.58E-02	-6.44E+00

* The results of the energy calculation are based on the typical energy consumption of the selected reference KONE MonoSpace® 700 DX elevator. The results are KONE's best estimates of the annual energy consumption but the real-life values may vary depending on the actual installation.

** The results of this environmental impact indicator shall be used with care as the uncertainties on these results are high or as there is limited experienced with the indicator.

Disclaimer: considering that Module C is included in this EPD, it is discouraged to use the results of modules A1-A3 without considering the results of module C.

Table 9. The use of resources per tkm of KONE MonoSpace® 700 DX

Section	Use of renewable primary energy resources as energy [MJ]	Use of renewable primary energy resources as raw materials [MJ]	Total use of renewable primary energy [MJ]	Use of non renewable primary energy as energy [MJ]	Use of non renewable primary energy as raw materials [MJ]	Total use of non renewable primary energy [MJ]	Use of secondary materials [kg]	Use of renewable secondary fuels [MJ]	Use of non renewable secondary fuels [MJ]	Use of net fresh water [m3]
A1-A3 Raw material extraction to manufacturing	5.10E+01	1.75E+01	6.85E+01	2.83E+02	3.82E+00	2.87E+02	2.60E+00	1.48E-02	0.00E+00	1.90E-01
A4 Transport to building site	2.67E-01	0.00E+00	2.67E-01	2.11E+01	0.00E+00	2.11E+01	9.06E-03	1.06E-04	0.00E+00	2.94E-03
A5 Installation into the building	1.73E+01	-1.73E+01	4.48E-02	2.83E+00	-1.65E+00	1.18E+00	7.30E-04	8.22E-06	0.00E+00	2.62E-04
B2 Maintenance	9.23E+00	0.00E+00	9.23E+00	5.14E+01	0.00E+00	5.14E+01	2.67E-01	1.50E-03	0.00E+00	3.05E-02
B6 Operational energy usage	1.12E+01	0.00E+00	1.12E+01	4.53E+02	0.00E+00	4.53E+02	1.96E-02	6.58E-05	0.00E+00	9.52E-02
C1 Deconstruction	4.63E-03	0.00E+00	4.63E-03	1.86E-01	0.00E+00	1.86E-01	8.06E-06	2.71E-08	0.00E+00	3.92E-05
C2 Waste transportation	7.51E-02	0.00E+00	7.51E-02	5.23E+00	0.00E+00	5.23E+00	2.34E-03	2.86E-05	0.00E+00	6.73E-04
C3 Waste processing	4.55E-01	-1.99E-01	2.55E-01	3.10E+00	-1.37E+00	1.73E+00	2.04E-03	8.79E-05	0.00E+00	7.40E-04
C4 Waste disposal	7.03E-02	-4.10E-02	2.93E-02	1.40E+00	-8.00E-01	6.03E-01	3.24E-04	1.04E-05	0.00E+00	8.01E-04
D Benefits	-7.25E+00	0.00E+00	-7.25E+00	-6.05E+01	0.00E+00	-6.05E+01	2.16E+00	-1.68E-03	0.00E+00	-1.12E-01

Table 10. Amount of waste disposed per tkm of KONE MonoSpace® 700 DX

Section	Hazardous waste disposed [kg]	Non hazardous waste disposed [kg]	Radioactive waste disposed [kg]
A1-A3 Raw material extraction to manufacturing	8.14E+00	9.92E+01	5.32E-04
A4 Transport to building site	3.51E-02	6.40E-01	4.34E-06
A5 Installation into the building	3.59E-03	9.27E-02	2.54E-06
B2 Maintenance	7.99E-01	1.40E+01	6.55E-05
B6 Operational energy usage	3.51E-01	5.54E+00	4.32E-03
C1 Deconstruction	1.44E-04	2.28E-03	1.78E-06
C2 Waste transportation	9.33E-03	1.80E-01	1.10E-06
C3 Waste processing	1.58E-02	3.99E-01	1.62E-06
C4 Waste disposal	1.57E-02	3.33E-01	4.18E-07
D Benefits	-2.35E+00	3.54E+01	-3.21E-05

Table 11. Amount of materials leaving the system boundary per tkm of KONE MonoSpace® 700 DX

Section	Components for re-use kg	Materials for recycling kg	Materials for energy recovery kg	Exported Energy MJ
A1-A3 Raw material extraction to manufacturing	0.00E+00	0.00E+00	0.00E+00	0.00E+00
A4 Transport to building site	0.00E+00	0.00E+00	0.00E+00	0.00E+00
A5 Installation into the building	0.00E+00	3.16E-03	9.66E-01	0.00E+00
B2 Maintenance	0.00E+00	1.45E-01	5.11E-01	0.00E+00
B6 Operational energy usage	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C1 Deconstruction	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C2 Waste transportation	0.00E+00	0.00E+00	0.00E+00	0.00E+00
C3 Waste processing	0.00E+00	4.93E+00	6.52E-02	0.00E+00
C4 Waste disposal	0.00E+00	0.00E+00	0.00E+00	0.00E+00
D Benefits	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Scenarios

Scenarios support the application of product related data in the corresponding life cycle stage of the building assessment. Scenarios in this EPD are specified in the tables below for respective life cycle stages.

Electricity in the manufacturing stage

KONE's suppliers and KONE factory for manufacturing the studied elevator and its components are located in different European countries. The impacts of electricity have been calculated using the electricity residual or national mixes for different suppliers (kg CO2e/ KWh). The resulting carbon emission per kWh of electricity consumed for different locations are presented in the table below.

KONE factories in China (Kunshan), Czech Republic (Ústí nad Labem), Finland (Hyvinkää) and Italy (Cadrezzate con Osmate) use 100 % renewable electricity through on-site PV panels and purchasing renewable electricity. The manufacturing data represents the production year of 2021-2023.

Country	kg CO2e/ kWh
Austria	0.22
China	0.95
Czech Republic	0.76
Estonia	0.64
Germany	0.80
Italy	0.64
Poland	1.11

Installation into the building

Installing the product into the building consumes electricity, generates waste from packaging materials and requires negligible quantity of ancillary materials.

Resource	Consumption value
Ancilliary materials - glues and disposable gloves	Negligible quantities - Excluded
Water use	0 m3
Electricity consumption	15 kWh
Waste generation	
Wood and plywood	752 kg
Plastics	36 kg
Cardboard	83 kg
Metals	3 kg

Maintenance

The reference conditions for achieving the declared service life is primarily influenced by maintenance frequency/replacement of components and usage conditions such as frequency of use of the elevator. While corrective replacement activities depend on the building application, user's behavior and installed environment and cannot be foreseen by manufacturer, the assessment takes into account predictive replacement of the necessary parts.

Scenarios	Value
Ferrous metals	507 kg
Plastics and rubbers	32 kg
Lubricants	23 kg
Batteries and accumulators	19 kg
Electric and electronic equipment	18 kg
Non-ferrous metals	17 kg

End of life

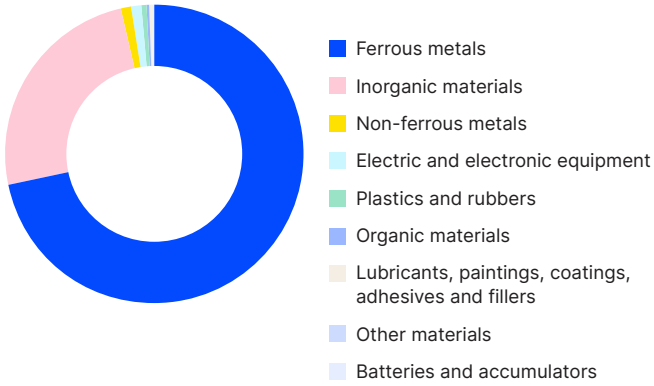
At its end-of-life, the product is dismantled from the building, which is also the location of its installation in Belgium. The KONE KONE MonoSpace® 700 DX is mainly composed of ferrous metals and concrete. A realistic assumption is made that whole of the elevator and its parts are collected separately during the dismantling process. Approximately 10% of the elevator's non-hazardous materials are assumed to be not recyclable with current technologies and therefore disposed of as landfill waste. The remaining fraction of ferrous and non-ferrous metals used in the elevator can all be recycled after the end of life. The recycled materials, mainly metals, replace the manufacture of virgin materials bringing substantial end of life benefits. Batteries, adhesives and lubricating oils used in the elevator are treated as hazardous waste and incineration is considered for small proportion of combustible materials (polymer and organic materials).

Processes	Unit	Amount kg/kg
Collection process specified by type	kg collected separately	1
	kg collected with mixed construction waste	0
Recovery system by type	kg for re-use	0
	kg for recycling	0.66*
	kg for energy recovery	0.01*
Disposal by type	kg for final deposition	0.34*
Distance to treatment facilities	Lorry >32 ton (recycling)	250 km
	Lorry 3.5-7.5 ton (energy recovery and landfilling)	50 km

* Values are calculated based on the most common treatment scenarios currently in use for the materials

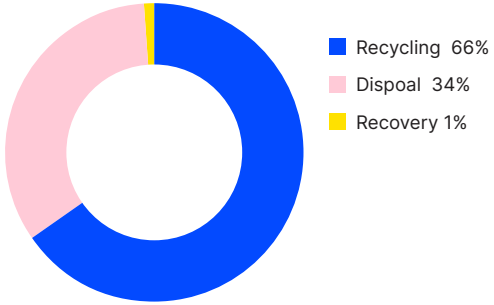
Summary

Origin of materials

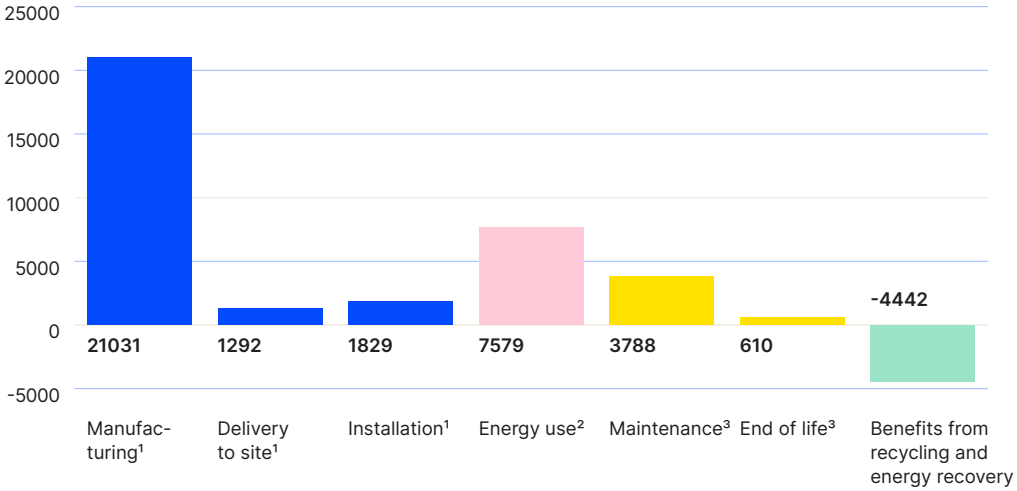


Materials	kg
Ferrous metals	4869
Inorganic materials (e.g. concrete)	1674
Non-ferrous metals	82
Electric and electronic equipment	67
Plastics and rubbers	45
Organic materials (e.g. wood)	21
Lubricants, paintings, coatings, adhesives and fillers	14
Other materials	6
Batteries and accumulators	4

Materials utilization potential after elevator usage



Carbon footprint distribution (kg CO2 eq.)



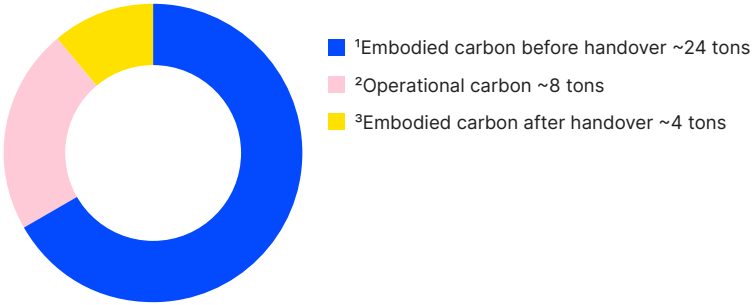
36 129
kg CO2e carbon emissions

-4 442
kg CO2e carbon saving

Carbon emission - GHG emission throughout lifecyle of product

Carbon saving - Recycling materials such as steel at the end of life avoids production of virgin materials ('negative emission').

Share of carbon emission over lifetime



Glossary

ADP, Abiotic depletion potential, expressed in kg Antimony (Sb) equivalent, for non-fossil resources and in MJ for fossil resources. Non-fossil resources include e.g. silver, gold, copper, lead, zinc and aluminium.

AP, acidification potential, expressed in kg sulphuric dioxide (SO2) equivalent. The indicator expresses acidification potential which originates from the emissions of sulphur dioxide and oxides of nitrogen. In the atmosphere, these oxides react and form acids which subsequently fall down to the earth in the form of rain or snow, or as dry depositions. Inorganic substances such as sulphates, nitrates, and phosphates change soil acidity. Major acidifying substances are nitrogen oxides (NOx), ammonia (NH3) and sulphate (SO4).

EF, Environmental Footprint. A method consisting of scientific tools and requirements developed by the European Commission to calculate the environmental impact of products and organizations using a Life Cycle Assessment approach.

EPD, environmental product declaration, provides numeric information about product's environmental performance and facilitates comparison between different products with the same function. EPDs for KONE are based on life cycle assessment.

EP, eutrophication potential, expressed in kg phosphate (PO43-) equivalent. Eutrophication describes emissions of substances to water that contribute to oxygen depletion. It means nutrient enrichment of an aquatic environment. Biomass growth in aquatic ecosystems may be limited by various nutrients. Most of the time, aquatic ecosystems are saturated with either nitrogen or phosphorus, and only the limiting factor can cause eutrophication.

GWP, global warming potential, expressed in kg carbon dioxide (CO2) equivalent. The indicator expresses global warming potential and refers to carbon footprint. It considers gaseous substances such as carbon dioxide (CO2), methane (CH4), laughing gas (N2O) over 100 years. These substances have an ability to absorb infrared radiation in the earth's atmosphere. They let sunlight reach the earth's surface and trap some of the infrared radiation emitted back into space causing an increase in the earth's surface temperature.

LCA, life cycle assessment, is a method which quantifies the total environment impact of products or activities over their entire life cycle and life cycle thinking. Life cycle assessment is based on ISO 14040 and ISO 14044 standards and comprises four phases: goal and scope definition, inventory data collection and analysis, environmental impact assessment and interpretation of results. The results of LCA are used in communication and product development purposes, for example.

ODP, Ozone depletion potential, expressed in kg trichlorofluoromethane (CFC-11) equivalent. Ozone-depleting gases cause damage to stratospheric ozone or the "ozone layer". Chlorofluorocarbons (CFCs), halons and hydrochlorofluorocarbon (HCFCs) are the potent destroyer of ozone, which protects life on earth from harmful UV radiation. Damage to the ozone layer reduces its ability to prevent ultraviolet (UV) light entering the earth's atmosphere, increasing the amount of carcinogenic UVB light reaching the earth's surface.

Product Category rules (PCR) define the rules and requirements for EPDs of a certain product category. They are a key part of ISO 14025 as they enable transparency and comparability between EPDs.

POCP, photochemical ozone creation potential, expressed in kg ethylene NMVOC equivalent. Photochemical ozone or ground level ozone is formed by the reaction of volatile organic compounds and nitrogen oxides in the presence of heat and sunlight. Ground-level ozone forms readily in the atmosphere, usually during hot summer weather. Photochemical oxidant formation is harmful to both humans and plants.

Additional technical information

www.kone.com

Contact your local KONE sales organization to learn more about the technical details of the products available in your region.

Additional information

All the impacts specified by EN 15804 have been studied for all the information modules.

Bibliography

ISO 14025:2010 Environmental labels and declarations – Type III environmental declarations Principles and procedures.

ISO 14040:2006 Environmental management. Life cycle assessment. Principles and frameworks.

ISO 14044:2006 Environmental management. Life cycle assessment. Requirements and guidelines.

EN 15804:2012+A2:2019 Sustainability in construction works – Environmental product declarations – Core rules for the product category of construction products.

International EPD system PCR 2019:14 Version 1.3.2 for Construction products.

International EPD system C-PCR-008 (TO PCR 2019:14) Version 2024-04-30 for Lifts (Elevators)

EN-ISO 25745-2 Energy performance of lifts, escalators and moving walks - Part 2: Energy calculation and classification for lifts (elevators).

ISO 21930: 2017 Sustainability in buildings and civil engineering works – Core rules for environmental product declarations of construction products and services.

Ecoinvent database v3.10. EF V3.1

Life Cycle Assessment report of KONE MonoSpace 700 DX as per EN 15804+A2:2019 and ISO 14025.

Version history

Original version of the EPD

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