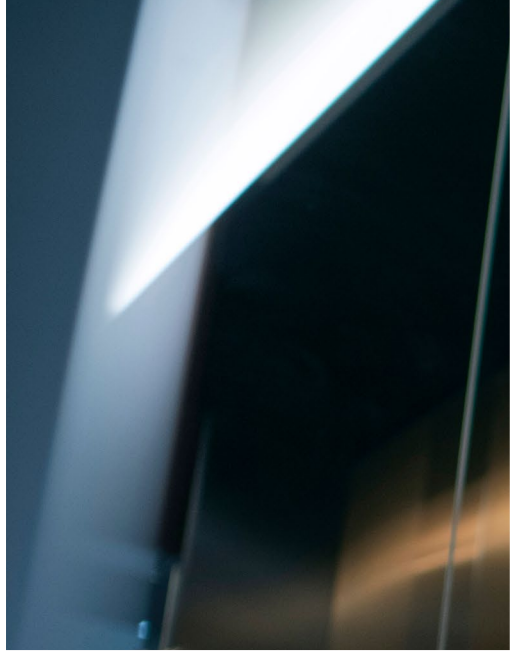
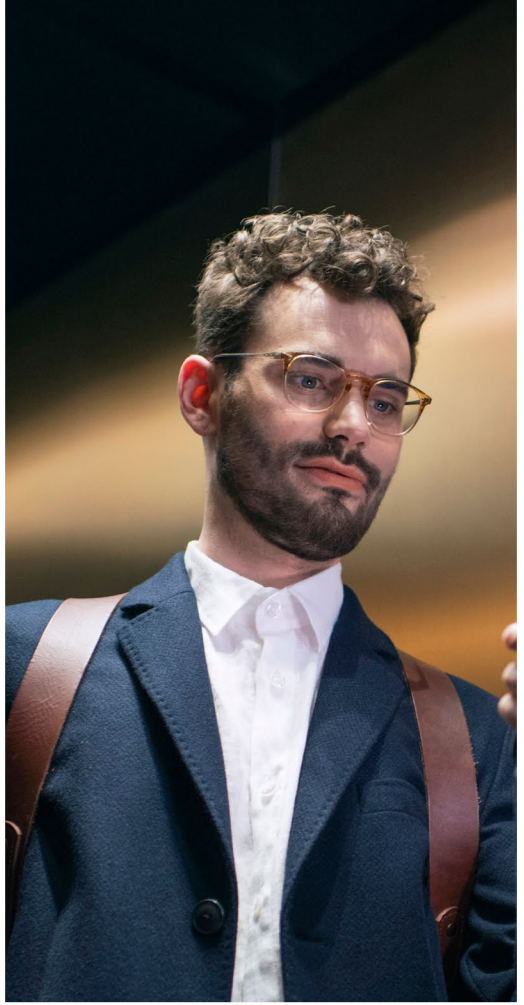




Environmental Product Declaration

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

Elevator with KONE ReSolve™ 200 DX & ReSolve™ 400 DX

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.
EPD of multiple products, based on a representative product.

EPD®

ECO PLATFORM EPD VERIFIED

Program:	The International EPD® System EPD International AB www.environdec.com
EPD registration number:	S-P-11800
Date of Issue:	2024-01-02
Validity date:	2028-12-29
Revision date:	2024-04-04
Verification date:	2023-12-29

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.

Program information and declaration scope

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

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 23 elevator models from KONE are certified with ISO 25745 highest energy efficiency rating of A class, 8 escalators and autowalks with the best A+++ classification.

Climate leadership
In 2022 KONE achieved a CDP Climate leadership score of A or A- for ten consecutive years, which shows our long term commitment to environmental work and sustainability. KONE also achieved A score for supplier engagement for the fourth year running in 2021.

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.

Headline	
Owner of the EPD, manufacturer	Kone Corporation Keilasatama 3 02150 Espoo, Finland The EPD owner has sole ownership, liabilty and responsibility for the data contained within this EPD.
Program Operator	EP International AB Box 60, SE-100 31 Stockholm, Sweden info@environdec.com
Author of the LCA and declaration	Vishnuraj Naganathan KONE Corporation vishnuraj.naganathan@kone.com
Product Category Rules and the scope of the declaration	This Environmental Product Declaration (EPD) has been prepared in accordance with EN 15804:2012+A2:2019 and ISO 14025 standards. PCR 2019:14 Construction Products version 1.3.2 is used for the declaration. EPDs within the same product category but from different programmes may not be comparable. EPDs of construction products may not be comparable if they do not comply with EN 15804.
Geographical scope	Europe
Reference year for data	2022
Additional information	www.kone.com

Verification	
CEN standard EN 15804 serves as the core Product Category Rules (PCR).	
PCR review was conducted by: The Technical Committee of the International EPD® System. See www.environdec.com/TC 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.	
Independent verification of the declaration and data according to ISO 14025:2010	○ Internal ● External
Procedure for follow-up during EPD validity involves third party verifier	○ Yes ● No
Third party verifier: Anni Oviir, Rangi Maja OÜ	

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

CDP
DISCLOSURE INSIGHT ACTION

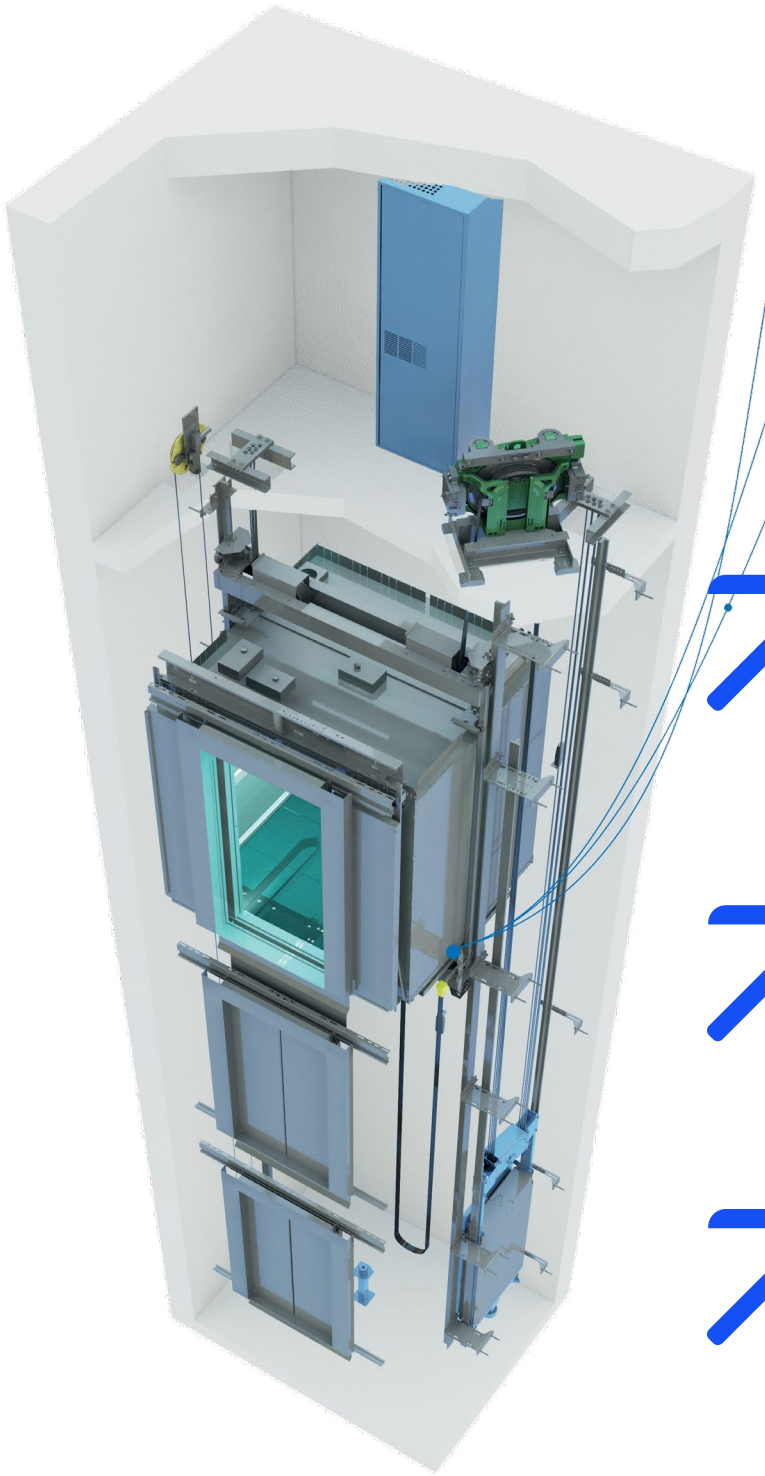
Product information

Product description
KONE ReSolve™ DX is a comprehensive controller modernization solution that can significantly cut your elevator's operating costs and also improve its reliability. With fewer repairs and much lower energy consumption, you can save a considerable amount of money over the elevator's lifetime. KONE ReSolve™ DX also improves safety and accessibility by making sure your elevator levels accurately with landing floors, preventing people from tripping on the elevator sill.

Table 1. Product specification for KONE ReSolve™ 400 DX

Index	Possible values		Representative values chosen in case of ranges
Type of installation	Partial modernization		
Commercial name	ReSolve™ 200 DX	ReSolve™ 400 DX	ReSolve™ 400 DX
Main purpose	Transport of passengers		
Type of lift	Electric		
Type of drive system	Non-KONE Geared machine driven by V3F10/KDM drive	KONE Gearless machine driven by KDL/ KDM drive	KDM40 drive
Rated load	320-4000 kg	320-4000 kg	1000 kg
Rated speed	Max. 1m/s	Max. 2.5m/s	1m/s
Number of stops	Max. 24	Max. 32	6
Travel height	Max. 70m	Max. 90m	18.42m

KONE production plant in Slimpa (Italy) produces ReSolve™ 200 DX & ReSolve™ 400 DX with similar material composition and production processes, in such way that the variation in environmental impacts remains below 10% for all categories.



Easy to upgrade

Connectivity gives you the possibility to upgrade in the future as your needs change by adding new connected services and features whenever you need them.

Improve Energy-efficiency

Save energy and cut your building's carbon footprint with our lighting and standby solutions.

Upgrade performance and reliability

By refreshing your elevator's mechanical and electrical components you can significantly improve its performance and reliability.

Content declaration

Product

The Table below shows the material summary of the ReSolve™ 400 DX package studied, as delivered and installed in a building and handed over to customer. The total mass of the elevator Resolve package is 247 kg and is mainly composed of metals and electronic components. 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 44 kg where cardboard and wood are the most common material. Majority of the packaging components can either be reused or recycled at the end of life. According to section 6.4.4 of the EN15804 standard, the mass of the biogenic carbon containing materials in the product is less than 5% of the mass of the product and therefore has not been declared.

KONE is constantly striving to remove SVHC substances from its components. However, please note that the ReSolve™ 400 DX package contains lead. This is present in the batteries. The elevator users are not in direct contact with it. Therefore, any hazards associated with the SVHC can be considered irrelevant to the elevator users.

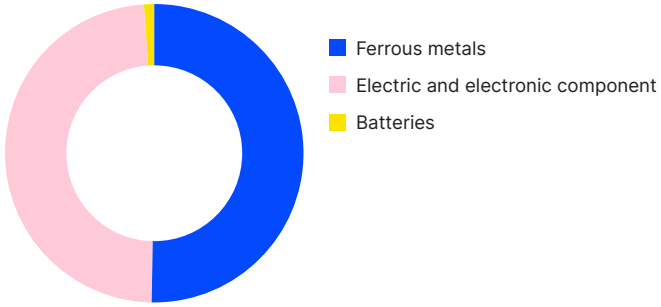
Table 2. Raw materials used in KONE ReSolve™ 400 DX

Materials	Weight %
Ferrous metals	50.31
Electric and electronic component	48.81
Batteries	0.87

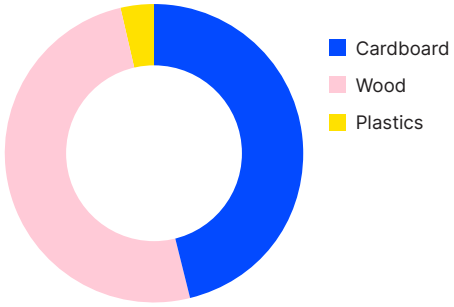
Table 3. Raw materials used in KONE ReSolve™ 400 DX

Materials	Weight %	Biogenic carbon (kg)
Cardboard	46.33	8.15
Wood	50.14	9.87
Plastics	3.53	0.00

Material summary of KONE ReSolve™ 400 DX



Material summary of KONE ReSolve™ 400 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 manufactring 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 Maintainance (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.

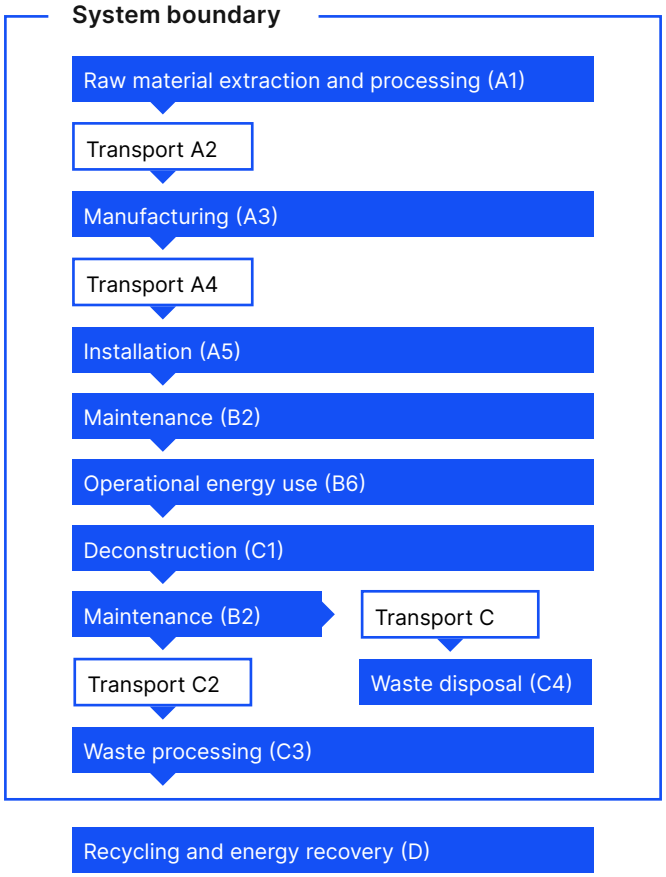
The end of life stage (C1-C4) includes dismantling, transportation of waste to processing sites, waste processing and disposal. Elevators once installed in the building, building owners are responsible for appropriate waste disposal. The impacts modeled for end of life in this LCA is based on most appropriate 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.

Declared Unit

The results in the EPD are presented for a declared unit of 1 unit of Resolve 200/400 DX.

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, transportationand manufacturing data from the factory was received for the ReSolve™ 400 DX package.However, the material classification was not possible for 4.87 kg of the material used in the product. The missing material data represents only 1.98% of the total weightof the package and their production is left out from the production analysis. Other materials with negligible quantities (kg) in the product that are excluded from the analysis are knots, bolts, screws, and labels and stickers. A4 transportation has been calculated but the return trip is not considered. 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 (example; gloves, adhesive tapes and cleaning agents) is excluded from the analysis since both their usage quantity and impacts are considered negligible. The waste material resulting from B2 replacement, as the contribution to overall impacts is negligible, they meet cut-off criteria.



Scope of the life cycle assessment

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

Cradle to gate with options, modules A4-A5, modules B, modules C1-C4 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 related). >90% of data is specific i.e the share of GWP-GHG impacts are coming from specific data.

Environmental impact

The results of a life cycle assessment are relative. They do not predict impact on category endpoints, exceeding of limit values, safety margins, or risks. The CML impact assessment method and its related characterization factors were employed at the midpoint level in this study. The global warming potential of modules A1-A3 is mainly caused by material manufacturing, with PCBA, Steel and cable production having the share of 67%. The elevator of this study is in use in Europe. The annual energy consumption of 2353 kWh* was calculated with ISO 25745-2 methodology. The impacts for operational energy usage (B6) were calculated using the energy production fuel mixes for Europe. The scenario for Belgium energy use represents average grid factor of 0.26 kg CO2 per kWh. The results of life cycle impact assessment are divided by life cycle stage per entire life cycle and per tkm. Carbon footprint for the entire life cycle of the product is 11.3 tons of CO2e. Detailed results for all the impact categories can be seen from the tables below.

Table 4. Potential environmental impacts per entire life cycle of KONE ReSolve™ 400 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	1.83E+03	1.87E+03	-4.84E+01	3.63E+00	1.68E-04	3.74E+01	2.98E-01	4.97E+00	3.84E+01	1.14E+01	1.01E+00	2.51E+04	1.03E+03	1.87E+03
A4 Transport to building site	4.45E+01	4.45E+01	1.80E-02	1.73E-02	1.05E-05	1.45E-01	3.77E-04	3.19E-02	3.54E-01	1.37E-01	1.08E-04	6.97E+02	3.11E+00	4.45E+01
A5 Installation into the building	5.15E+01	2.11E+00	4.94E+01	1.92E-03	2.66E-07	7.94E-03	4.66E-05	1.68E-03	1.75E-02	5.89E-03	1.63E-05	2.50E+01	2.83E-01	2.11E+00
B2 Maintenance	1.75E+01	1.75E+01	1.34E-03	4.66E-02	1.93E-06	2.14E-01	8.24E-04	1.75E-02	1.93E-01	7.02E-02	6.64E-03	2.52E+02	1.07E+01	1.75E+01
B6 Operational energy usage	9.32E+03	9.26E+03	3.57E+01	2.01E+01	8.71E-04	1.73E+01	1.97E-01	4.42E+00	5.17E+01	1.37E+01	3.23E-02	3.17E+05	3.17E+03	9.26E+03
C1 Deconstruction	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	0.00E+00	0.00E+00	0.00E+00
C2 Waste transportation	5.55E+00	5.55E+00	2.24E-03	2.16E-03	1.31E-06	1.81E-02	4.70E-05	3.97E-03	4.41E-02	1.71E-02	1.35E-05	8.69E+01	3.88E-01	5.55E+00
C3 Waste processing	5.75E+01	5.74E+01	6.17E-02	2.27E-02	1.27E-06	9.52E-02	6.11E-04	2.09E-02	2.33E-01	6.27E-02	4.17E-04	1.75E+02	5.38E+00	5.74E+01
C4 Waste disposal	5.75E-01	5.70E-01	4.41E-04	4.45E-03	7.28E-08	2.98E-03	1.99E-05	8.16E-04	8.97E-03	3.41E-03	1.22E-06	8.33E+00	1.50E-01	5.70E-01
D Benefits	-1.13E+02	-5.22E+01	-6.07E+01	3.04E-02	-1.53E-06	-2.17E-01	-2.00E-04	-2.67E-03	-5.44E-01	-3.10E-01	-1.65E-03	-4.42E+02	2.19E+01	-5.22E+01

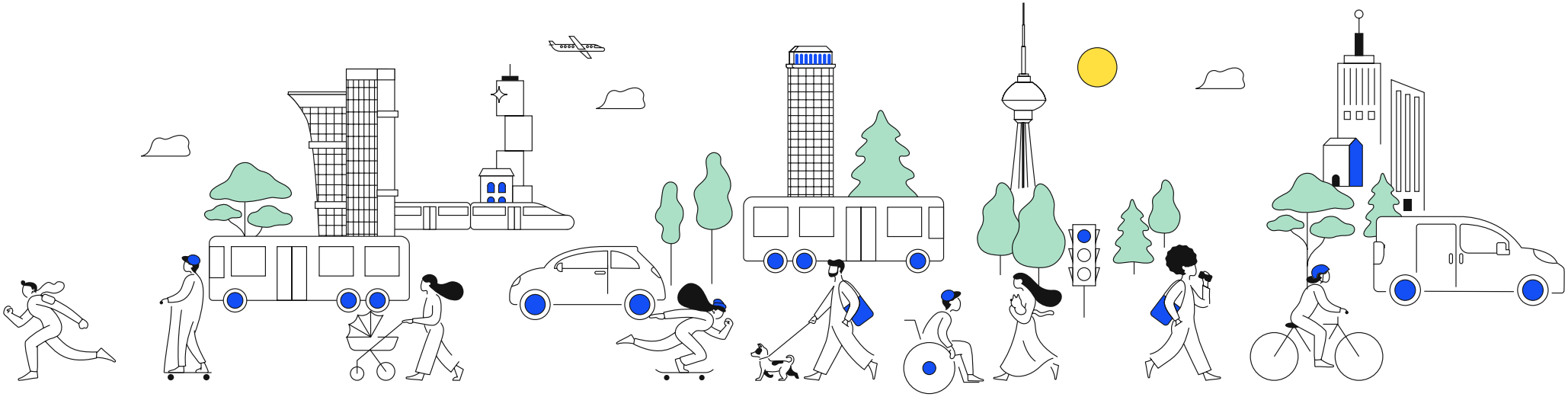
* The results of the energy calculation are based on the typical energy consumption of the selected reference.
The results are KONE's best estimates of the annual energy consumption but the real-life values may vary depending on the actual installation.

** 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 ReSolve™ 400 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	4.05E+03	4.09E+02	4.46E+03	2.33E+04	5.86E+01	2.34E+04	8.46E+01	6.36E-01	0.00E+00	2.74E+01
A4 Transport to building site	7.85E+00	0.00E+00	7.85E+00	6.97E+02	0.00E+00	6.97E+02	1.93E-01	1.95E-03	0.00E+00	9.00E-02
A5 Installation into the building	1.15E+00	-4.09E+02	-4.08E+02	2.50E+01	-5.86E+01	-3.36E+01	2.53E-02	2.09E-04	0.00E+00	7.02E-03
B2 Maintenance	1.91E+01	0.00E+00	1.91E+01	2.13E+02	0.00E+00	2.13E+02	4.33E+00	4.07E-03	0.00E+00	2.57E-01
B6 Operational energy usage	3.18E+04	0.00E+00	3.18E+04	3.17E+05	0.00E+00	3.17E+05	1.74E+01	7.45E-02	0.00E+00	9.08E+01
C1 Deconstruction	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
C2 Waste transportation	9.78E-01	0.00E+00	9.78E-01	8.69E+01	0.00E+00	8.69E+01	2.41E-02	2.43E-04	0.00E+00	1.12E-02
C3 Waste processing	2.11E+01	0.00E+00	2.11E+01	1.75E+02	0.00E+00	1.75E+02	6.84E-02	6.62E-03	0.00E+00	7.56E-01
C4 Waste disposal	1.73E+00	0.00E+00	1.73E+00	8.33E+00	0.00E+00	8.33E+00	5.08E-02	3.41E-04	0.00E+00	6.81E-03
D Benefits	-6.22E+01	0.00E+00	-6.22E+01	-4.42E+02	0.00E+00	-4.42E+02	3.64E+01	-8.63E-03	0.00E+00	-1.49E+00



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 8 and table 9 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 package for modernization and packaging was collected from the module manufacturing unit.

Table 6. Amount of waste disposed per entire lifecycle of KONE ReSolve™ 400 DX

Section	Hazardous waste disposed [kg]	Non hazardous waste disposed [kg]	Radioactive waste disposed [kg]
A1-A3 Raw material extraction to manufacturing	4.07E+02	1.07E+04	1.39E-01
A4 Transport to building site	9.18E-01	1.51E+01	4.70E-03
A5 Installation into the building	1.30E-01	1.99E+00	1.26E-04
B2 Maintenance	1.06E+01	1.75E+01	6.16E-04
B6 Operational energy usage	3.77E+02	9.36E+03	2.93E+00
C1 Deconstruction	0.00E+00	0.00E+00	0.00E+00
C2 Waste transportation	1.14E-01	1.88E+00	5.86E-04
C3 Waste processing	0.00E+00	0.00E+00	0.00E+00
C4 Waste disposal	2.16E+00	2.45E+01	0.00E+00
D Benefits	-3.28E+01	-1.26E+02	3.15E-04

End of life – output flows

The data for the output flows of the process is presented in table 10 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 ReSolve™ 400 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	3.04E+01	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	0.00E+00	4.38E+01	0.00E+00
B2 Maintenance	0.00E+00	0.00E+00	4.84E-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	2.20E+02	0.00E+00	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

Majority of the electricty is used in KONE's supplier's location in Europe and China for the Resolve package and its component manufacturing. KONE Slimpa factory in Italy, Also KONE suppliers from Italy and Switzerland have been using 100% renewable electricity. The impacts of electricity for manufacturing locations have been calculated using the electricity fuel mixes for each country (kg CO2e / kWh) as shown below. The manufacturing data represents the production year of 2022.

Country	kg CO2e/ kWh
Italy	0.41
Finland	0.26
Slovak Republic	0.48
United Kingdom	0.31
China	1.09

Transport from production place to user

The table below shows the transportation scenario applied from KONE Slimpa factory to distribution centre in Hamburg and to building location in Belgium.

Vehicle type	Distance	Capacity utilization*
Freight, lorry>32 ton, Euro 6	1703	100 %

* Lorry and Ship is assumed to be fully loaded. Return trip is not considered

Installation into the building

InstallingInstalling the product into the building consumes electricty, generates waste from packaging materials and requires negligible quantity of ancilliary materials.

Resource	Consumption value
Ancilliary materials - glues and disposable gloves	Negligible quantities - Excluded
Water use	0 m3
Electricity consumption	0 kWh

Waste generation	
Wood	21.94 kg
Plastics	1.54 kg
Cardboard	20.27 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. The assessment takes into account recommended replacement of the necessary parts from the Resolve package. KONE cannot foresee the lifetime/condition of the other existing components in the elevator which may or may not require maintenance and are thus excluded from the analysis.

Scenarios	Value
Energy input	0 kWh
Transport	1526 km

Materials	
Battery	8.63 Kg

End of life

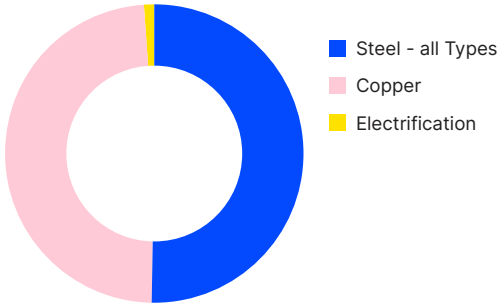
At its end-of-life, the product is dismantled from the building, which is also the location of its installation in Belgium. The ReSolve™ 400 DX is mainly composed of metals and electronic components. A realistic assumption is made that whole of the elevator and its parts are collected separately during the dismantling process. 10% of the elevator's material is assumed to be not recyclable with current technologies and therefore disposed. Ferrous metals, nonferrous metals as well as electronic components 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, coatings, 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	0.89
	kg for energy recovery	0.00
Disposal by type	kg for final deposition	0.11
Distance to treatment facilities	Lorry>32 ton	250 km

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

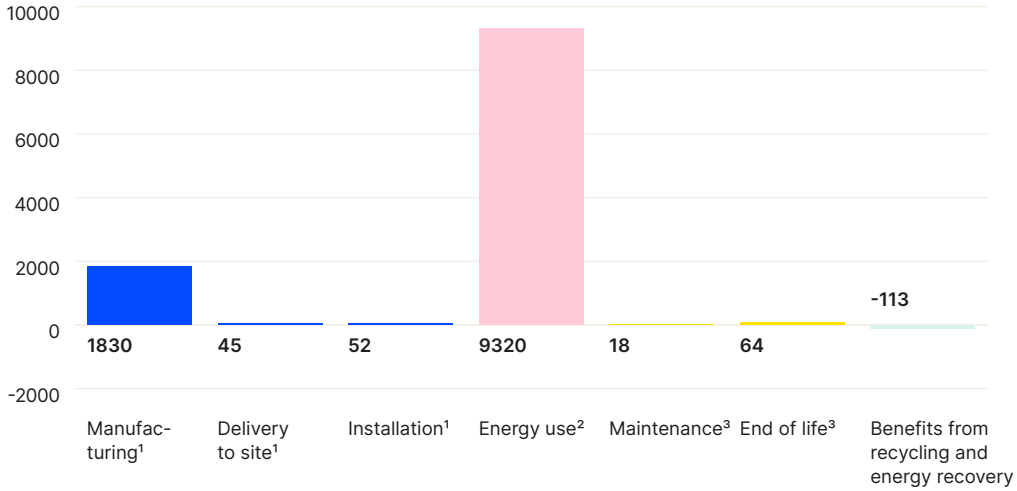
Summary

Origin of materials



Processes	kg
Steel - all Types 50%	124.17
Electrification 49%	120.48
Battery 1%	2.15

Carbon footprint distribution (kg CO2 eq.)



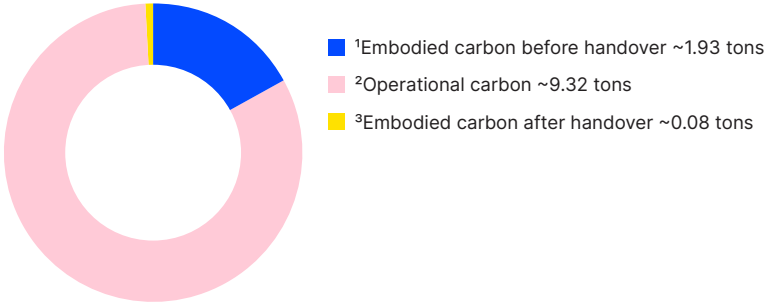
11,327
kg CO2e carbon emissions

-113
kg CO2e carbon saving

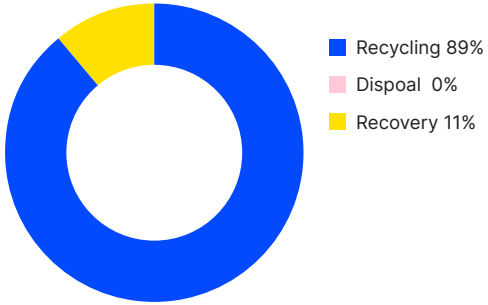
Carbon emission - GHG emission throughout lifecyle of product

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



Materials utilization potential after elevator usage



Glossary

ADP, Abiotic depletion potential, expressed in kg Antimony (Sb) equivalent. for non-fossil resources and in MJ for fossil resources. In the CML method the 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).

CML, a methodology for life cycle impact assessment created by University of Leiden in the Netherlands in 2001. It is publicly available and contains more than 1700 different flows. It includes impact categories of acidification, climate change, depletion of abiotic resources, ecotoxicity, eutrophication, human toxicity, ozone layer depletion and photochemical oxidation.

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. The CML method takes into account nitrogen and phosphorus related emissions.

Functional unit, The quantified performance of a product system for use as a reference unit.

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. The CML impact calculation method takes into account all different forms of CFC, HCFC and halons related emissions.

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. The CML method takes into account certain emissions to air, for example, carbon monoxide (CO), ethyne (C2H2) and formaldehyde (CH2O).

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.

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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 v3.8.

Life Cycle Assessment report of ReSolve™ 200 DX & ReSolve™ 400 DX as per EN 15804+A2:2019 and ISO 14025.

Differences versus previous versions

The results have been reported according to declared unit in the revision. The tables of results per tkm have been removed to reflect the changes. The entire life-cycle assessment design has remained the same as in the previously published version.

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