ENVIRONMENTAL PRODUCT DECLARATION

In accordance with ISO 14025 for:

[SINOTRUK EV TRUCK]

From

[China National Heavy Duty Truck Group Co., Ltd.]

Declared product:

Programme operator:	EPD China
Registration number:	EPD-CN-P001
Issued date:	2025-12-16
Valid until:	2026-12-15

Programme Information

EPD Owner	China National Heavy Duty Truck Group Co., Ltd. Address: SINOTRUK FUJIAN HAIXI TRUCK CO., LTD. | No. 99 Puling Road, Yongan City, Fujian Province, China/366000 Website: www.sinotrukinternational.com
Product Name	SINOTRUK EV TRUCK
Production Site	Fujian, China
Identification of product	UNCPC code: 49114 GB/T 7635: 49114
Field of Application	Vehicle and transport equipment
Programme Operator	EPD China Programme Address of Headquarter: 3rd Floor, Lane 320, Tianping Road, Xuhui District, Shanghai, China Website: www.epdchina.cn Email: secretary@epdchina.cn
LCA Practitioner	招商车研 CMVR 检 致 精 · 行 致 远 Qian Yang and Qinyuan Li from China Merchants Testing Vehicle Technology Research Institute Co., Ltd.
Responsibility	The EPD owner has the sole ownership, liability, and responsibility for the EPD
Comparability	EPDs within same category of product in different programme operator are not suggested to be compared. Full conformance with a PCR allows EPD comparability only when all stages of a life cycle have been considered. However, variations and deviations are possible even applying the same PCR.
Liability	The EPD owner has the sole ownership, liability, and responsibility for the EPD.
Validity	The EPD is published on 2025-12-16 and valid to 2026-12-15
LCA Software (version)	Simapro version 10.2.0.0
LCI Dataset (version)	Ecoinvent version 3.11
Year(s) of Primary Data	This is an R&D-type EPD, which adopts production data of similar products within the workshop and extrapolated data based on the conservative principle. This EPD will be updated after its production data is accumulated for one year.
PCR	EPDCN-PCR-202511 - PCR FOR Goods Vehicle (Version 1.0)
Other Reference Document	LCA report for SINOTRUK EV TRUCK
Verification statement	

Independent verification of the declaration and data according to EN ISO 14025:2010

☐ internal ☑ external

Third-party institution verification: <Michael ZHU Jiang , DQS AP LTD.> is an approved certification body accountable for third-party verification

Approved by: EPD China
Procedure for follow-up of data during EPD validity involves a third-party certification body: ☑ Yes ☐ No

General Information

1.1 Company information

Owner of the EPD

China National Heavy Duty Truck Group Co., Ltd.

Address: SINOTRUK FUJIAN HAIXI TRUCK CO., LTD. | No. 99 Puling Road, Yongan City, Fujian Province, China/366000

Description of the company

China National Heavy Duty Truck Group Co., Ltd. (hereafter SINOTRUK), with its predecessor being Jinan Automobile Manufacturing Plant established in 1930, is recognized as the cradle of China's heavy-duty automotive industry. In 1960, SINOTRUK manufactured China's first heavy-duty truck - the Yellow River JN150 eight-ton truck - ending the history of China's inability to produce heavy-duty vehicles.

SINOTRUK boasts a comprehensive range of commercial vehicle brands, including the Yellow River, SITRAK, and HOWO, making it the enterprise with the most complete drive configurations and power coverage in China's heavy-duty truck industry. It has become the largest heavy-duty vehicle manufacturing base in China and has made outstanding contributions to the development of the country's heavy-duty automotive industry and national economic construction. SINOTRUK's products are exported to over 110 countries and regions, maintaining the top position in heavy-duty truck exports for 15 consecutive years. SINOTRUK is committed to enhancing its industry influence and brand value, with its comprehensive strength consistently recognized by authoritative rankings. Its position in relevant rankings has maintained a steady upward trend over the years.

The company is equipped with advanced R&D platforms and testing facilities, supporting the entire process from conceptual design to experimental validation. From test tracks simulating various road conditions to extreme environmental challenges, SINOTRUK's vehicles undergo rigorous testing to ensure consistent and reliable performance even under the most demanding conditions.

Leveraging production facilities and lean manufacturing processes, SINOTRUK has built a robust production capacity. Advanced intelligent and automated production lines have been deployed across multiple modern manufacturing bases, significantly enhancing production efficiency and product precision. Strict adherence to the ISO quality management system ensures comprehensive quality control - from precision machining of components to meticulous vehicle assembly - guaranteeing superior product quality. Through this series of high-standard production safeguards, SINOTRUK provides customers not only with high-quality products but also with trustworthy, stable, and reliable long-term value.

Qualifications obtained by SINOTRUK include: IATF16949 Quality Management System, ISO9001 Quality Management System.

1.2 Scope and type of EPD

The study of SINOTRUK EV TRUCK product is based on the LCA information from cradle to grave, including production stage, transportation stage, use stage, and end-of-life stage (EoL). The production stage includes raw materials and components processing, raw materials and components transportation, and product manufacturing. The transportation stage includes truck transporting from factory to the export port, from export port to import port, and the port to the operation site. The use stage considers the operation and maintenance information. The end-of-life stage includes transportation, dismantling, pre-treatment, landfilling, incineration, and disposal. The Burdens and benefits outside the system boundary of Module D are not declared in this report. This study does not consider packaging or biogenic carbon associated with packaging.

Table 1: Process stages and EPD modules.

STAGES	PRODUCTION STAGE			DISTRIBUTION STAGE	USE STAGE		END OF LIFE STAGE
Module	**Raw materials acquisition and components processing**	**Raw materials and components transportation**	**Product manufacturing**	**Vehicle distribution**	**Operation**	**Maintenance**	**End-of-Life treatment**
	A1	**A2**	**A3**	**A4**	**B1**	**B2**	**C**
Module Declared	X	X	X	X	X	X	X

- ✧ A1 Raw materials acquisition and components processing: Processes including resource extraction, processing and purification of raw materials, manufacturing, and component production. Data for this stage is assessed using the Bill of Material (BoM) covering the gross weights of SINOTRUK EV TRUCK product. For unavailable material information, extrapolated data is adopted in this study, with aluminum used as the substitute material in accordance with the conservative principle.

- ✧ A2 Raw materials and components transportation: The process of transporting raw materials and components to downstream suppliers' factories, and Tier 1 suppliers delivering them to vehicle assembly bases. Data for this phase is sourced from supplier records and secondary database.

- ✧ A3 Product manufacturing: Processes including vehicle stamping, welding, painting, and final assembly, as well as the disposal of waste generated during production. Energy consumption, resource usage and emissions at this stage are based on facility operation records of a comparable product from the reference year, which has a similar manufacturing process to the studied product.

- ✧ A4 Vehicle distribution: The transportation of completed product to the market for sale. This stage is modeled based on the studied product’s sales plan, including transportation from the manufacturing factory to the export port, from the export port to the import port, from the import port to the distributor’s warehouse, and final delivery to truck dealer.

- ✧ B1 Operation: Direct and indirect emissions during the use phase of commercial vehicles due to the consumption of electricity, including the production and utilization processes of energy sources. Energy consumption is calculated based on actual tests in accordance with the GB/T 18386.2 standard and Malaysian low-voltage grid mix dataset.

- B2 Maintenance: Material acquisition processes related to filter replacement, grease replacement and fluid replacement. Data for this phase is collected from the road vehicle preventive maintenance program for the studied product.
- C End-of-life: After a truck reaches its end-of-life and is decommissioned, it is transported to vehicle treatment facility and undergoes a series of procedures including dismantling, disassembly, sorting, landfilling, incineration, and final residue processing. End-of-life treatment assumptions are based on the “Polluter Pays Principle (PPP)” is applied.

2 Detailed Product Description

2.1 Product information

The SINOTRUK EV TRUCK product in this report is produced by SINOTRUK FUJIAN HAIXI TRUCK CO., LTD., which is SINOTRUK's new generation of new energy electric vehicles features a comprehensive upgrade in both exterior styling and interior design. Equipped with industry-leading integrated electric drive systems, it forges a premium electric powertrain: CATL 140.41 kWh battery, Inovance multi-integrated control system and Hande e-drive axle.

This product offers high load capacity, superior quality, long range, low maintenance costs, and reduced operating expenses. The battery comes with an 8-year or 600 000 km warranty, while the motor and electronic controls are covered by a 6-year or 500 000 km warranty. With a range of over 300 km, it ensures seamless and worry-free journeys.

The vehicle is equipped with a European-standard dual-gun 3C fast-charging system, allowing the battery to charge from 20% to 80% in just 20 minutes.

To be noted, the studied product is a fully functional chassis, integrating essential components including the cab, power system, transmission system, running gear, steering system, and braking system, etc. It excludes the superstructure, which customers can install onto the chassis base to suit their specific application scenarios.

The product is currently in the R&D pilot production phase. Relevant production process data temporarily adopts the statistical average of similar products in the factory, and the data will be updated after accumulating one year of actual production data.

Figure 1: Picture of SINOTRUK EV TRUCK

2.2 Description of the production process

The production process is divided into four main stages stamping, welding, painting, and final assembly.

Stamping process → Welding process → painting process → Vehicle assembly → Truck

Figure 2: Graphic diagram of manufacturing process

Body panels and body parts are externally sourced. The panels are stamped into body welding components. These components are then sent to the welding workshop, where they undergo the following process steps to form the body shell: sub-assembly welding of cab small parts → sub-assembly welding of cab sub-assemblies → main assembly welding of cab assembly → cab repair welding → grinding and polishing → cab finishing. Through these processes, the body shell is formed. It is then transferred to the painting workshop for electrophoretic coating and topcoat spraying, before finally being delivered to the final assembly workshop for interior and exterior trim assembly.

Components such as side member profiles and crossmember assemblies are procured externally. These components go through the following processes to produce the frame assembly: longitudinal beam processing → frame riveting → electrophoretic painting. The frame is then transported to the final assembly workshop for final integration.

The final assembly workshop receives externally procured components (delivered via logistics) as well as self-manufactured components (body and frame). It produces finished vehicles that roll off the production line through the following steps: laying of pre-installed pipelines → assembly of chassis parts → engine sub-assembly → engine mounting → cab mounting. Through these steps, a finished vehicle rolls off the assembly line. Finally, the finished vehicles are commissioned, inspected for quality, and then stored in the warehouse.

Table 2: Technical description of SINOTRUK EV TRUCK

General information		
Maximum payload		4 000 kg
Lifetime		600 000 km
Vehicle classification (according to GB/T 15089)		N2
UN CPC & GB/T 7635		49114
Functional unit		Transport of 1 ton of goods for 1 km
Technical information		
Driving cab		H3, Right-hand drive, cab-over, single-row, tiltable cab configuration
Dimensions	Length	6 884 mm
	Width	2 080 mm
	Wheelbase	3 800 mm
	Front Overhang	1 197 mm
	Rear Overhang	1 887 mm
Weight	Curb Weight	3 300 kg
	Gross Vehicle Weight (GVW)	7 500 kg
	Front axle loading capacity	3 500 kg
	Rear axle loading capacity	4 000 kg
Chassis/floor pan	Type	ZZ1088G3815Z2BEV

Powertrain and engine	Type	TZ228XS032, Permanent Magnet Synchronous Motor
	Fuel	Electricity
	Rated Power	60 kW
	Maximum Torque	340 Nm
	Engine Position	Vehicle rear drive axle
Motor Controller	Type	KTZ54X34SI30HX01
Battery	Brand	CATL
	Type	LFP
	Rated Capacity	237 Ah
	Rated Energy	140.41 kWh
Axles and wheels	Number of axles	2
	Number of wheels	6
Suspension system	Type	3/5+3 leaf spring
Steering system	Type	GC80, Hydraulically assisted
	Inner Turning Angle	40°
	Outer Turning Angle	29.6°
	Turning Diameter	13 m
Braking systems	Type	CM3XL-4S/3M(4SF), Air brake system
Safety systems	Type	ABS
Tyre	Type	215/75R17.5 16PR
Air conditioning system	Type	Controller: RC820007; Compressor: FG9806130224

The total weight of SINOTRUK EV TRUCK is 3300 kg according to the BOM and product technical manual. The subsystems of the truck are categorized based on the actual condition of the manufacturer. Although this classification differs from the system breakdown examples provided in the PCR, the raw material data for this product covers all components required by the PCR. The analyzed weight per vehicle group and percentage of total vehicle mass are shown in Table 3 and Figure 3. The product contains no substances of very high concern (SVHC) on the REACH Candidate List published by the European Chemicals Agency.

Table 3: Vehicle group mass and percentage of total vehicle mass

Vehicle group	Weight (kg)	Weight-% (versus the product)
Transmission Control	1.60	0.05%
Axle System	802.38	24.31%
Low-Voltage Electrical System	94.50	2.86%
High-Voltage Electrical System	959.00	29.06%
Powertrain System	0.57	0.02%
Cargo Box Protection System	16.58	0.50%
Cab System	450.60	13.65%
Cooling System	32.70	0.99%
Suspension System	264.10	8.00%
Vehicle System	489.57	14.84%
Braking System	107.00	3.24%

Steering System	50.80	1.54%
Auxiliary Materials	30.60	0.93%
Total (final vehicle)	**3300**	**100%**

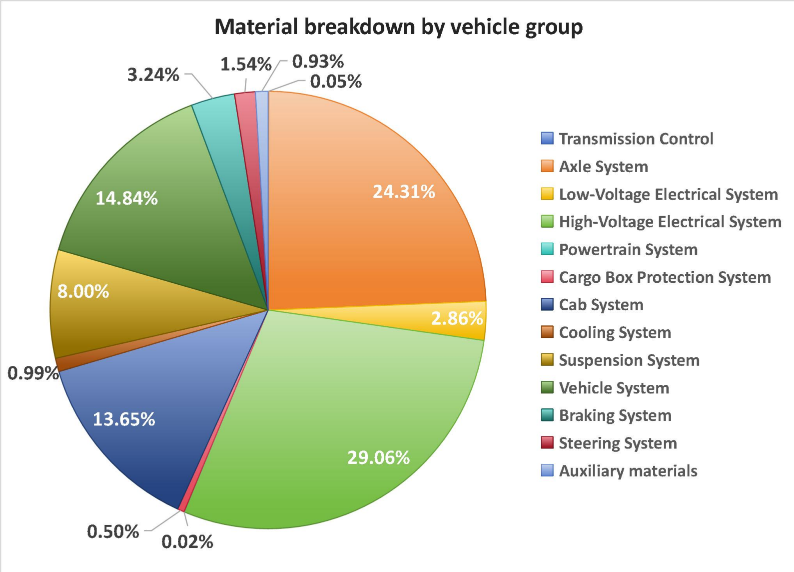

Figure 3: Material breakdown by vehicle group (No packaging)

3 LCA results

3.1 Environmental Impacts

The results of the underlying LCA is provided in this section as environmental impacts, resource use, waste categories and additional information.

Table 4: Environmental impacts

RESULTS OF THE LCA - ENVIRONMENTAL IMPACT per functional unit of SINOTRUK EV TRUCK								
Impact Categories	**Unit**	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**C**
Global Warming Potential total (GWP-total)	[kg CO_2 eq.]	1.11E-02	3.07E-04	1.42E-04	1.29E-04	4.23E-02	4.10E-03	7.37E-04
Global Warming Potential fossil fuels (GWP-fossil)	[kg CO_2 eq.]	1.08E-02	3.05E-04	1.41E-04	1.27E-04	4.14E-02	3.29E-03	6.90E-04
Global Warming Potential biogenic (GWP-biogenic)	[kg CO_2 eq.]	2.70E-04	1.50E-06	7.66E-07	1.28E-06	6.18E-04	8.14E-04	4.61E-05
Global Warming Potential land use and land use change (GWP-luluc)	[kg CO_2 eq.]	1.66E-05	1.41E-07	1.57E-07	4.21E-07	2.78E-04	2.10E-06	7.69E-07
Depletion potential of the stratospheric ozone layer (ODP)	[kg CFC 11 eq.]	2.20E-10	3.98E-12	1.20E-12	2.00E-12	7.20E-10	1.55E-10	3.86E-12
Acidification potential, Accumulated Exceedance (AP)	[mol H+ eq.]	1.31E-04	1.05E-06	5.69E-07	1.63E-06	2.14E-04	1.21E-05	3.09E-06
Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)	[kg P eq.]	6.84E-06	3.38E-08	2.12E-08	1.03E-08	2.12E-05	7.97E-07	1.36E-07
Eutrophication potential, fraction of nutrients reaching marine end compartment (EP-marine)	[kg N eq.]	1.45E-05	3.30E-07	1.27E-07	4.09E-07	3.11E-05	2.32E-06	3.82E-07
Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	[mol N eq.]	2.74E-04	3.59E-06	1.33E-06	4.49E-06	2.99E-04	2.42E-05	3.31E-06
Abiotic depletion potential for fossil resources (ADP-fossil)	MJ, net calorific value	1.33E-01	4.28E-03	1.91E-03	1.71E-03	4.68E-01	6.09E-02	4.10E-03
Water (user) deprivation potential, deprivation-weighted water consumption (WDP)	[m^3 world eq. Deprived]	2.83E-03	2.13E-05	1.61E-05	6.98E-06	5.13E-03	9.32E-04	8.66E-05
Formation potential of tropospheric ozone (POCP)	[kg NMVOC eq.]	4.71E-05	1.45E-06	4.85E-07	1.35E-06	8.92E-05	1.42E-05	1.19E-06
Abiotic depletion potential for non-fossil resources (ADP-minerals&metals)	[kg Sb eq.]	8.08E-07	9.59E-10	1.81E-10	3.16E-10	1.92E-07	6.57E-08	6.06E-09

Table 5: Additional environmental impacts

RESULTS OF THE LCA - ADDITIONAL ENVIRONMENTAL IMPACT per functional unit of SINOTRUK EV TRUCK								
Impact Categories	**Unit**	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**C**
Particulate matter	disease inc.	1.14E-09	2.62E-11	7.83E-12	7.90E-12	5.90E-10	2.20E-10	2.71E-11
Potential Human exposure efficiency relative to U235 (IRP)	[kBq U_{235} eq]	5.30E-04	3.66E-06	2.15E-05	1.23E-06	9.00E-05	1.31E-04	2.10E-05
Ecotoxicity, freshwater	CTUe	1.21E-01	7.67E-04	4.99E-04	2.73E-04	1.00E-01	1.95E-02	2.28E-03
Human toxicity, cancer	CTUh	1.15E-11	5.06E-14	2.84E-14	2.38E-14	4.91E-12	1.90E-12	2.92E-13
Human toxicity, non-cancer	CTUh	5.62E-10	2.69E-12	8.00E-13	8.61E-13	3.13E-10	5.79E-11	6.15E-12
Land use	Pt	5.36E-02	3.36E-03	3.19E-04	9.12E-04	6.21E-02	9.67E-03	1.39E-03

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

***For all environmental impact indicators, the estimated impact results are only relative statements, which do not indicate the endpoints of the impact categories, exceeding threshold values, safety margins and/or risks.*

3.2 Resource use and waste categories

Table 6: Resource use

RESULTS OF THE LCA - Resource use per functional unit of SINOTRUK EV TRUCK								
Impact Categories	**Unit**	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**C**
Use of renewable primary energy excluding renewable primary energy resources used as raw materials (PERE)	MJ	1.26E-02	5.91E-05	9.99E-05	2.10E-05	4.49E-02	2.02E-03	1.15E-03
Use of renewable primary energy resources used as raw materials (PERM)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Total use of renewable primary energy resources (PERT) (primary energy and primary energy resources used as raw materials)	MJ	1.26E-02	5.91E-05	9.99E-05	2.10E-05	4.49E-02	2.02E-03	1.15E-03
Use of non-renewable primary energy excluding non- renewable primary energy resources used as raw materials (PENRE)	MJ	1.29E-01	4.28E-03	1.91E-03	1.71E-03	4.68E-01	4.25E-02	3.86E-03
Use of non-renewable primary energy resources used as raw materials (PENRM)	MJ	4.53E-03	0.00E+00	0.00E+00	0.00E+00	0.00E+00	1.84E-02	2.37E-04
Total use of non-renewable primary energy resources (PENRT) (primary energy and primary energy resources used as raw materials)	MJ	1.33E-01	4.28E-03	1.91E-03	1.71E-03	4.68E-01	6.09E-02	4.10E-03
Net use of fresh water (FW)	m^3	3.18E-06	0.00E+00	1.35E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of secondary material (SM)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of renewable secondary fuels (RSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Use of non-renewable secondary fuels (NRSF)	MJ	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

Table 7: Waste categories

RESULTS OF THE LCA - Waste categories per functional unit of SINOTRUK EV TRUCK								
Impact Categories	**Unit**	**A1**	**A2**	**A3**	**A4**	**B1**	**B2**	**C**
Hazardous waste disposed (HWD)	kg	0.00E+00	0.00E+00	2.36E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Non-hazardous waste disposed (NHWD)	kg	0.00E+00	0.00E+00	3.59E-05	0.00E+00	0.00E+00	3.59E-05	4.80E-04
Radioactive waste disposed (RWD)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Components for re-use (CRU)	kg	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Materials for recycling (MR)	kg	0.00E+00	0.00E+00	3.59E-05	0.00E+00	0.00E+00	3.30E-05	7.85E-04
Materials for energy recovery (MER)	kg	0.00E+00	0.00E+00	2.36E-06	0.00E+00	0.00E+00	0.00E+00	0.00E+00
Exported energy (ETE)	MJ	0.00E+00	0.00E+00	2.98E-05	0.00E+00	0.00E+00	8.76E-04	6.79E-05
Exported electricity (EEE)	MJ	0.00E+00	0.00E+00	2.20E-06	0.00E+00	0.00E+00	4.45E-04	3.14E-05

4 Supplementary information

4.1 Calculation rules

Functional unit: Transport of 1 ton of goods for 1 km through the lifetime of the electric truck.

As the studied product is classified as a medium-duty truck according to GA 802:2019, its reference service life is 600,000 kilometers according to the PCR. Given that the actual payload mass of this product cannot be obtained and varies significantly across different practical application scenarios, the reference payload mass of this product is determined based on the maximum payload. This approach follows the requirements specified in the PCR for data comparability. Therefore, the reference payload mass of this product is defined as the maximum payload of 4 tons.

Reference service life: The reference service life of the truck is 600 000 km in accordance with battery warranty.

Time representativeness: Time boundary of data for product assessed in this report is 2024-05-01 to 2025-04-31.

Database and LCA software: Simapro version 10.2.0.0 and Ecoinvent version 3.11.

Allocation: Data for production and waste generation in the factory is collected at the workshop level, production volume allocation was applied, given the similar manufacturing processes across products.

Cut-off criteria: No cut-offs exceeding 5% environmental impacts has been applied. All the input and output flows have been considered. Production equipment, plant infrastructure, staff business travel, intermediate packaging and marketing activities are excluded from the product assessment. During the distribution stage of trucks, no packaging materials are used.

Assumptions

- Given that the manufacturing processes of all products in the plant are similar, the modelling for the product-manufacturing stage is based on the average per-vehicle actual production data from the same factory during the reference year. The total weight of SINOTRUK EV TRUCK is according to the BOM and product technical manual, covering the gross weights of raw materials, components input into production. For unavailable material data, extrapolated data is adopted in this study, with aluminum used as the substitute material in accordance with the conservative principle.

- All transportation distance for wastes generated from maintenance and EoL stages in the downstream are assumed to be 100 km.

- The modelling of operation and maintenance is based on SINOTRUK's road vehicle preventive maintenance program. Given that the designed warranty period of the traction battery is 600,000 km, this period ensures the normal operation of the truck within its 600,000 km RSL; thus, the traction battery will not be replaced during the whole life cycle. The waste treatment ways for the waste parts during maintenance are assumed to be incinerated.

- The modelling of electricity in operation for the studied product is based on Malaysia grid mix, which are the main destinations of the global market of the studied product in the reference year. Since relevant data on battery degradation of electric trucks during operation is unavailable, this variable is not considered in the study.

- The EoL process of the truck are modeled based on the most common process, which includes following steps:

transportation, pre-treatment, dismantling, metals separation, and non-metallic residue treatment processes according to the PCR.

- The dismantling and shredding processes of EOL vehicles are modeled using a 475 kW shredder operating for 15 minutes per unit, yielding an energy consumption of 118.75 kWh per vehicle.
- Based on industry research from Hua Jing Industrial Research Institute, a conservative assumption is made in this study that 30% of the traction battery from end-of-life trucks is for reuse. Due to the lack of relevant data on vehicle recycling-related materials in Malaysia, the recycling rates of metallic and non-metallic materials have been assumed and calculated with reference to relevant industrial recycling practices in China. Specifically, the recycling rates for metallic materials, polymers, and elastomers are adopted in accordance with *The Full Life Cycle Assessment and Scenario Simulation of Plug-in Hybrid Electric Vehicles*; meanwhile, the recycling rate of glass is assumed based on industry-specific conservative assumptions.
- The end-of-life treatment of batteries is modeled using a hydrometallurgical approach. The treatment of waste fluids and tyres is modeled as incineration. The non-recyclable fractions of separated metal and rubber waste streams are assumed to be sent to municipal incineration, whereas those of glass and plastic wastes are assumed to be disposed of in landfills.

Table 8. Information on EoL of the studied product

Recycling material	Rate	Recycling material	Rate
Aluminium	92%	Glass	30%
Copper	90%	Polymers (excl. Elastomers)	26%
Steel	85%	Elastomers	37%

Data quality: The report is based on data collected by SINOTRUK from the factory in Yongan City, Fujian Province, China, from the period 2024-05-01 to 2025-04-31. The product is currently in the R&D pilot production phase. Raw materials and components data are collected from the Bill of Material (BoM), based on gross weights for R&D pilot production. For unavailable material information, extrapolated data is adopted in this study, with aluminum used as the substitute material in accordance with the conservative principle. Although the studied product has not yet entered mass production, its manufacturing route - stamping, welding, painting and final assembly - is similar to that of other trucks in the same shop. Consequently, all input and output flows in Module A3 are simulated based on the per-vehicle average production data allocated from the entire workshop’s throughput, so as to derive the per-vehicle average emission/impact during the reference year. Relevant production process data will be updated after accumulating one year of actual production data for the studied product. The product is aimed to sold in Malaysia. The transportation data for the distribution phase is derived based on the multi-segment geographical distances during the product's transportation to Malaysia. For the operation phase, the actual tests according to GB/T 18386.2 standard is used for electricity consumption. The low voltage grid mix on the market for Malaysia is used for the operation process. The maintenance of all spare parts required in the user manual over the life cycle is considered. Given that the product’s actual payload mass is unavailable and varies substantially across practical application scenarios, its reference payload mass is simulated using the maximum payload (i.e., 4 tons). For those processes which primary data are not available, background data from the Ecoinvent 3.11 database, allocation cut-off by classification, are used. The quality of the relevant data used for the EPD in terms of its time, geography and technology representativeness using EN 15804:2012+A2:2019, Annex E, E2 is fair and conservative. No poor or very poor data are found during the assessment of relevant data according to PCR.

4.2 Scenarios and additional technical information

Transportation information:

Data on the transport of raw materials and components from tier-1 suppliers to the manufacturing plant and the transport of waste from the plant to the treatment site were gathered from supplier-specific records.

The finished vehicle is transported 250 km by heavy-duty freight truck from the manufacturing plant to Xiamen Port. It is then shipped 3041 km by sea to Pasir Gudang port in Malaysia. From there it continues 34 km by truck to the distributor's warehouse. The final transportation distance to the truck dealer is assumed to be 50 km.

The transportation of the end-of-life vehicle to the recycling facility and that of end-of-life unrecovered materials from their generation site to the final disposal site are included in this study, with the transportation distance assumed to be 100 km for both scenarios..

Electricity information:

According to the PCR, Fujian Province is a net electricity exporter that relies predominantly on its own generation and does not import from the regional grid. Consequently, the electricity consumption during product manufacturing stage is modeled based on Fujian's 2024 grid mix: 58.40 % hard coal, 24.91 % nuclear, 8.87 % hydro, 7.51 % wind (among which wind power is proportionally allocated based on three types of installed capacities) and 0.31 % solar PV. The represent datasets includes transmission losses and the pollutant emissions arising from power transmission and distribution. A province-specific electricity model, which is incorporated a 4.37% transmission loss rate derived from the 2024 national electric power industry statistics released by the National Energy Administration, was developed by integrating the corresponding grid mix ratios with the Ecoinvent datasets, yielding in a greenhouse gas (GHG) emission factor of 0.613 kg CO_2 eq./kWh.

For the use stage, the vehicle is aimed to be sold and operated in Malaysia. Therefore the electricity consumption is modeled based on the Malaysian low-voltage grid mix dataset "Electricity, low voltage {MY} | market for electricity, low voltage | Cut-off, U". The accounting for Malaysia's low-voltage power grid has incorporated direct air emissions and electricity losses during transmission (with a transmission loss rate of 4%), and its GHG emission factor is 0.932 kg CO_2 eq./kWh. A sensitivity analysis was performed to evaluate the influence of different solar-PV penetration levels on the national mix. Although the vehicle operates primarily in Malaysia, the absence of a local energy-consumption test standard for electric vehicles means that the figure from China's national standard was adopted for the calculation. The electricity consumption during use stage is calculated based on actual tests in accordance with the GB/T 18386.2 standard, resulting in a tested vehicle energy consumption rate of 0.18 kWh/km, with the value incorporating losses incurred between the grid and the battery as well as during battery charge-discharge cycling. According to the PCR, the reference service lifetime of the product is 600 000 km, and multiplying this value by the truck's energy consumption rate yields the electricity consumption during the operation stage.

References

EPD CHINA (2025).General Programme Instructions. Version 3.1.

EPD CHINA (2025). EPDCN-PCR-202511 PCR FOR Goods Vehicle (version 1.0).

F. Habermacher "Modeling material inventories and environmental impacts of electric passenger cars.

ZHANG Shuo (2025). Full life cycle assessment and scenario simulation of plug-in hybrid electric vehicles.

ISO (2006a). ISO 14025:2006, Environmental labels and declarations – Type III environmental declarations – Principles and procedures.

ISO (2006b). ISO 14040:2006, Environmental management – Life cycle assessment – Principles and framework.

ISO (2006c). ISO 14044: 2006, Environmental management – Life cycle assessment – Requirements and guidelines.

Ecoinvent (2024). LCA database published by the ecoinvent association originally known as the ecoinvent Centre, the Swiss Centre for Life Cycle Inventories. Since June 2013 ecoinvent is a not-for-profit association founded by institutes of the ETH Domain and the Swiss Federal Offices. The cut-off version 3.11 was used.

China National Heavy Duty Truck Group Co., Ltd.' s technical files (2025).

LCA report for SINOTRUK EV TRUCK (2025). China Merchants Testing Vehicle Technology Research Institute Co., Ltd.

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