RENAULT TRUCKS E-TECH C 8X4

Environmental product information

RENAULT TRUCKS

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Renault Trucks

Renault Trucks is committed to improving sustainable goods mobility and is striving to reduce the effects its products have on the environment. Renault Trucks vehicles are designed to comply with legislation limiting atmospheric pollution and also to continue lowering fuel consumption which results in reducing carbon dioxide emissions.

Together with ever more fuel efficient transport solutions, Renault Trucks offers a full range of vehicles powered by alternatives to diesel fuel to enable operation in any environment: 100% electric; compressed natural gas; biofuels.

Renault Trucks implements an environmental policy based on specific commitments and a stringent management system that covers its dealer network, suppliers and partners. Its vehicles are manufactured in ISO 14001 certified production plants. It is geared to limiting its consumption of energy, water and raw materials but also to reducing waste production. Its products are designed to allow maximum reuse of the materials that have gone into their production.

Environmental product information

Environmental product information is drawn from life cycle analyses (LCAs) carried out on our vehicles. These cover all phases in a truck's life, from the production of raw materials right through to final dismantling and recycling. It provides data concerning the environmental impact of each one of these phases. In some cases, the LCA, which is far-reaching and complex, includes approximations. The results reveal the most important environmental parameters in the product life cycle.

THE THEMES

The environmental product information studies the impact of:

- **materials:** extraction and processing of raw materials used to produce the vehicle.
- **production:** manufacturing processes used by the plants, component production at suppliers and on site transport of parts.
- **use phase:** production and consumption of electric energy. Homologation trials carried out for each type of engine as well as on-road tests make it possible to ascertain the effects of energy consumption. Depending on the conditions of use, a truck's actual energy consumption can differ from the published results.
- **maintenance:** consumables and materials used in preventive maintenance and the production of parts (impact calculated on the basis of average values).
- **end of life management:** dismantling of products, management of waste and recycling the truck's materials. After their usage on the vehicle, the batteries for electric vehicles, will have a second life as stationary electricity storage, before to be recycled.

THE RESULTS

The results shown include:

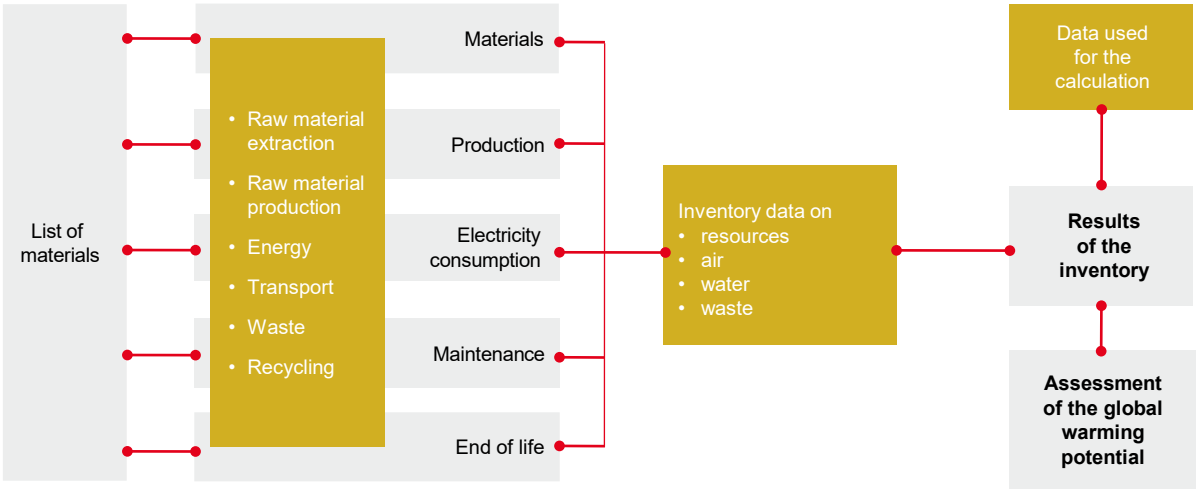
- the vehicle's bill of materials
- the rates of recyclability and recoverability as defined by the IS0 22628 standard
- the inventory results which show the data for the resources used and the emissions produced (pollution and waste).
- the assessment of the potential contribution to global warming. al.

BENCHMARK VALUES

Life cycle analysis results vary considerably depending on the data used for the calculations, the most important being country and energy source, energy consumption an mileage. The results shown here are based on the benchmark values for a **Renault Trucks E-Tech C**, **a 8x4 rigid** designed for light construction, throughout its entire life cycle.

Environmental product information

METHOD



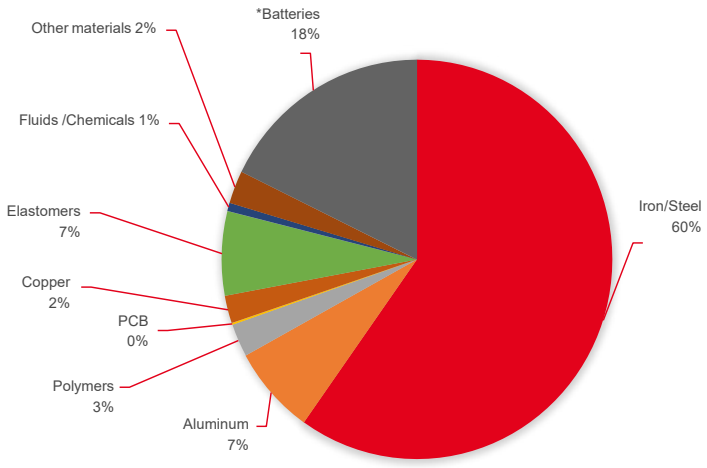
DATA USED FOR THE CALCULATION

Vehicle model	Power	Number of batteries	Vehicle type	Distance (km)	Initial date	Updated date
Renault Trucks E-Tech C	330 kW	4x90 kWh	Rigid 8x4	675 000	2022	2023

BILL OF MATERIALS

Bill of materials used in the vehicle and taken into account for calculating the life cycle analyses.

Materials	kg
iron/Steel	6736
Aluminum	810
Polymers	302
PCB	17
Copper	252
Elastomers	768
Fluids/Chemicals	76
Other materials	300
*Batteries	2000
TOTAL	**11261**



*Li-ion NCA batteries

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RATE OF RECYCLABILITY AND RECOVERABILITY

The vehicles are designed to ensure that the maximum amount of materials used in their construction can be reused.

Rate of recyclability* 95.1%
Rate of recoverability* 98.1%

* Calculations according to the ISO 22628 standard: The rate of recoverability is the percentage of the vehicle's mass potentially able to be reused, recycled or recovered as energy (incineration with energy recovery); it is therefore always higher than the rate of recyclability.

INVENTORY RESULTS

	Unit	Materials	Production	Use phase	Maintenance	End of life	Total
Electricity - renewable*	Mwh	16.82	6.73	According to country and energy source	9.74	-1.3	1371
Electricity - non-renewable*	Mwh	0,07	3.79		3.733	-0.23	8
Other energy - renewable*	Mwh	0.002	0		0	0.0038	0
Other energy - non -renewable*	Mwh	113.1	202		39.9	-25.9	336
Materials	kg	11184	0		2029	-7999	5214
CO*	kg	103.6	20.6		4.1	-55.7	85
CO_2*	kg	26943	672		6877	-7926	33266
HC/VOC*	kg	68.6	7.4		20.6	-20.9	79
NOx*	kg	59.8	4.3		16.2	-15.75	69
SO_2*	kg	66.2	2.6		11	-17.1	66
Particulates*	kg	18.46	0.86		2.96	-6.87	19
Biological oxygen demand*	kg	0.82	0.13		0.36	0.01	1
Chemical oxygen demand*	kg	14.2	3.25		3.67	-0.2	22
CO_2 eq.*	kg	29880	5450		8094	-8340	41880
CO_2 eq.	**kg**	**50717**	**5450**		**8094**	**-22862**	**101525**
Use of water (excluding cooling)	m3		8,66				
Use of water for cooling	m3		2,17				
Non-hazardous waste treated	kg		339,16				
Non-hazardous waste to landfill	kg		10,21				
Hazardous waste treated	kg		193,54				
Hazardous waste to landfill	kg		4,7				

*Batteries excluded

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INVENTORY RESULTS – Usage phase

By country	Unit	BE	CH	SP	FR	GB	IT	LU	NL	NO	SW	DE	EU28
Electricity - renewable	MWh	702	1176	1216	493	1139	1405	1281	641	1429	1107	1367	1008
Electricity - non renewable	MWh	1327	1005	776	2092	734	181	641	156	32	1167	424	820
Other renewable energy	MWh	0	0	0	0	0	0	0	0	0	0	0	0
Other non-renewable energy	MWh	835	536	1503	385	1331	1803	1403	1963	68	75	1672	1368
Materials	kg	0	0	0	0	0	0	0	0	0	0	0	0
CO	kg	159	131	292	82	410	327	293	188	21	214	343	338
CO_2	kg	200277	129039	313316	57120	251977	353625	353625	421098	33435	44739	447386	324708
HC/VOC	kg	379	305	1042	220	803	1496	725	1040	26	62	858	825
NOx	kg	255	224	693	173	462	454	508	482	18	92	599	503
SO_2	kg	68	103	517	98	218	200	222	126	8	47	264	393
Particulates	kg	19	24	60	17	32	38	55	55	5	20	67	55
Biological oxygen demand	kg	0	0	0	0	0	1	0	0	0	0	0	0
Chemical oxygen demand	kg	120	186	549	74	57	298	557	569	6	8	703	454
CO_2 eq.	**kg**	**210818**	**135831**	**329807**	**60126**	**265239**	**372237**	**372237**	**443261**	**35194**	**47093**	**470933**	**341798**

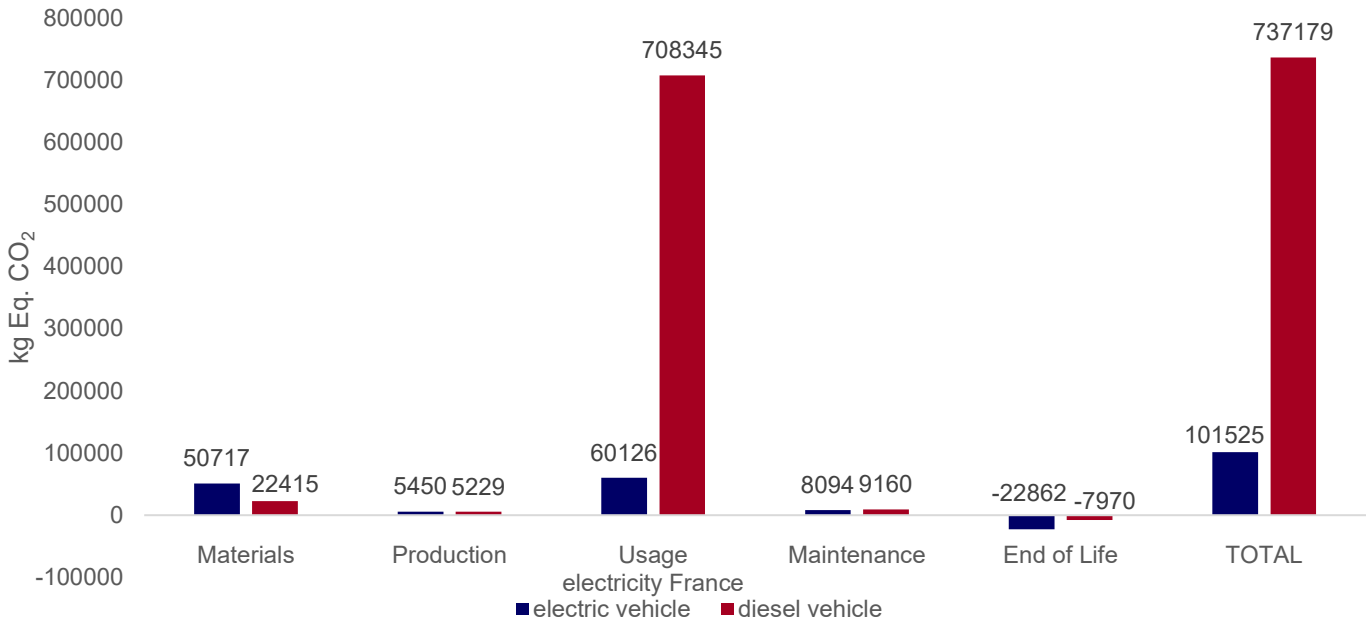
Assesment of the impact on the environment

Assessing a product's environmental impact throughout its lifetime makes it possible to determine which aspects must be studied to improve its overall environmental performance. This assessment may be qualitative but also quantitative by using appropriate methods and tools

GLOBAL WARMING POTENTIAL

Life cycle analysis makes it possible to determine a vehicle's global warming potential throughout its operational life. This potential consists of the various greenhouse gas emissions it produces that affect the climatic system. It is expressed as the equivalent quantitiy of Carbon Dioxide (kg CO_2 eq.).

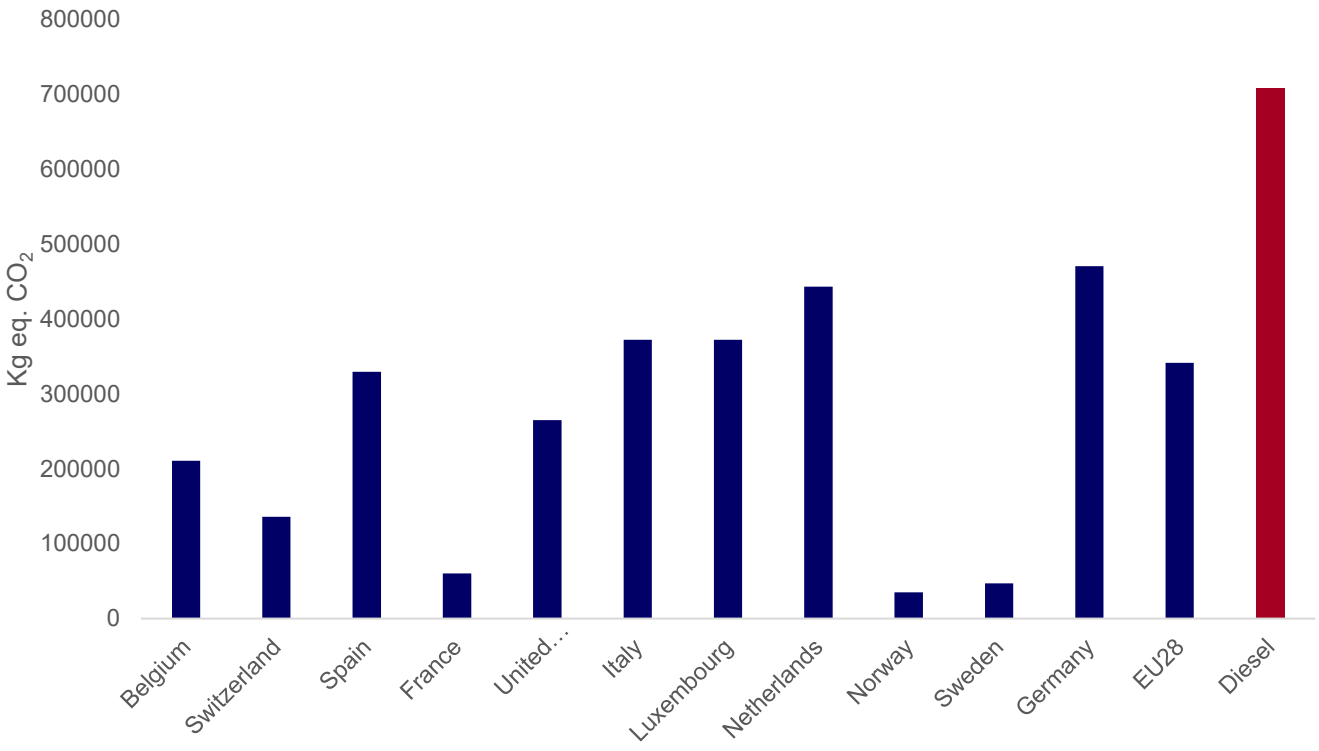
LIFE CYCLE EMISSIONS - CO_2EQ.



Global warming potential for the different life cycles of Renault Trucks E-Tech C 8x4.

Assessment of the impact on the environment

Use phase emissions from production of electricity - CO_2eq.
National average and comparison with Diesel



Main markets for Renault Trucks E-Tech C 8x4

Assesment of the impact on the environment

COMMENTS

Over the entire life cycle of an electric truck, materials, including batteries, account for most of the greenhouse gases emissions, while the use phase, which is very predominant for a diesel vehicle, is less.

By switching to electric power, the reduction of the truck's climate impact during this use phase can be extremely important depending on the selection of the primary source of this energy and its production origin.

The analyses show that electricity produced from coal will have a high carbon impact, unlike electricity produced from nuclear or renewable energy sources. The results on the whole life cycle differ according to the national energy mixes within the European Union but show a gain in all countries that should increase as decarbonization progresses.

Powered by low-carbon electricity, of hydraulic origin at best, the **Renault Trucks E-Tech C 8x4** rigid shows a significant reduction in CO_2 emissions equivalent of its life cycle of over 91%.

By developing its 100% E-Tech electric range of vehicles Renault Trucks is substantially reducing the CO_2 emissions from products over their entire life. Renault Trucks is continuing its efforts to reduce batteries environmental impact by securing materials supply and recycling and by using new technologies.

Renault Trucks is preparing battery management in line with the principles of the circular economy. After their first service life, batteries can be reconditioned and reused on trucks. Then, they will be converted to applications other than mobility, in particular stationary electricity storage and then recycled at the end of their life, with the recovered materials being reinjected into the manufacture of new units.

Find out more about sustainability at Renault Trucks:
Sustainability | Renault Trucks Corporate (renault-trucks.com)

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