MAXION

LCA Studio

Global Life Cycle Assessment (LCA) Study for Iochpe-Maxion:

Aluminium, steel wheels and structural components

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EXECUTIVE SUMMARY

This report presents a comprehensive cradle-to-gate Life Cycle Assessment (LCA) of Iochpe-Maxion products, aluminium and steel wheels and structural components, produced across 24 global production sites. The study was conducted in accordance with standards ISO 14067 and ISO 14040/44 with Environmental Footprint 3.1 (EF 3.1, 16 impact categories), it uses a functional unit of 1 kg finished product at factory gate (packed). Data from 2024 cover primary foreground processes (electricity, gas, transport) with >96% Primary Data Share (PDS) for Product Carbon Footprint (PCF) based on ISO 14067 via supplier certificates. For EF 3.1, metal consumption is covered by secondary data (PDS ~6-13%).

Light vehicle aluminium (LVA) wheels average 10,86 kg CO_2 eq. - Americas 8,9 lowest; Europe, Middle East and Africa (EMEA) 11,40 and Asia 13,36 highest. Steel wheels average 3,80 for commercial vehicles (CV) and 3,17 kg CO_2 eq. for light vehicles (LVS) and structural components (MSC) average 3,34 kg CO_2 eq.

In the EF 3.1 normalized/weighted single score, aluminium's top categories are abiotic depletion of fossil resources (ADP-fossil, 19%), particulate matter (PM, 14%), acidification (AP, 7%), and photochemical ozone formation (POCP, 5%). The most prominent impact categories for steel are abiotic depletion of fossil resources (22%), particulate matter (20%), acidification (AP, 5%), and photochemical ozone formation (POCP, 4%). Water depletion (WDP, 2,5% for aluminium, 1,2% for steel) is included per company request. Global warming potential (GWP) is excluded in EF 3.1, because is covered by product carbon footprint based ISO 140 67 with higher PDS.

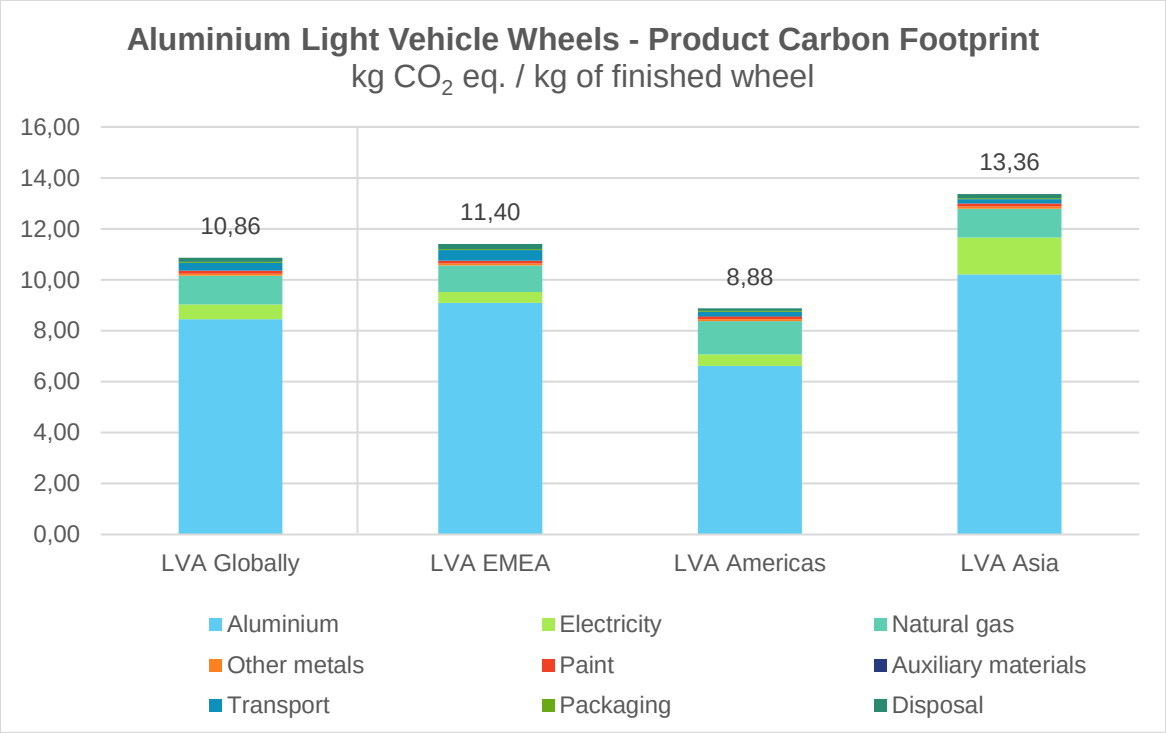
Upstream primary metals dominate cradle-to-gate impacts (75-90% of carbon footprint), with on-site energy secondary. Contribution of other processes to carbon footprint is rather marginal. Regional electricity grids amplify acidification/PM/water in coal/hydro-intensive areas and volatile organic emissions are prominent in photochemical ozone formation.

The exceptionally high Primary Data Share (>96% for carbon footprint) and data quality, mostly 3rd party verified, ensures a highly credible baseline for Maxion's Roadmap Zero decarbonization targets. As upstream metal production accounts for up to 90% of the cradle-to-gate carbon footprint, the study highlights that strategic engagement with supply chain partners to source lower-carbon steel and aluminium will be the most effective lever for future emission reductions.

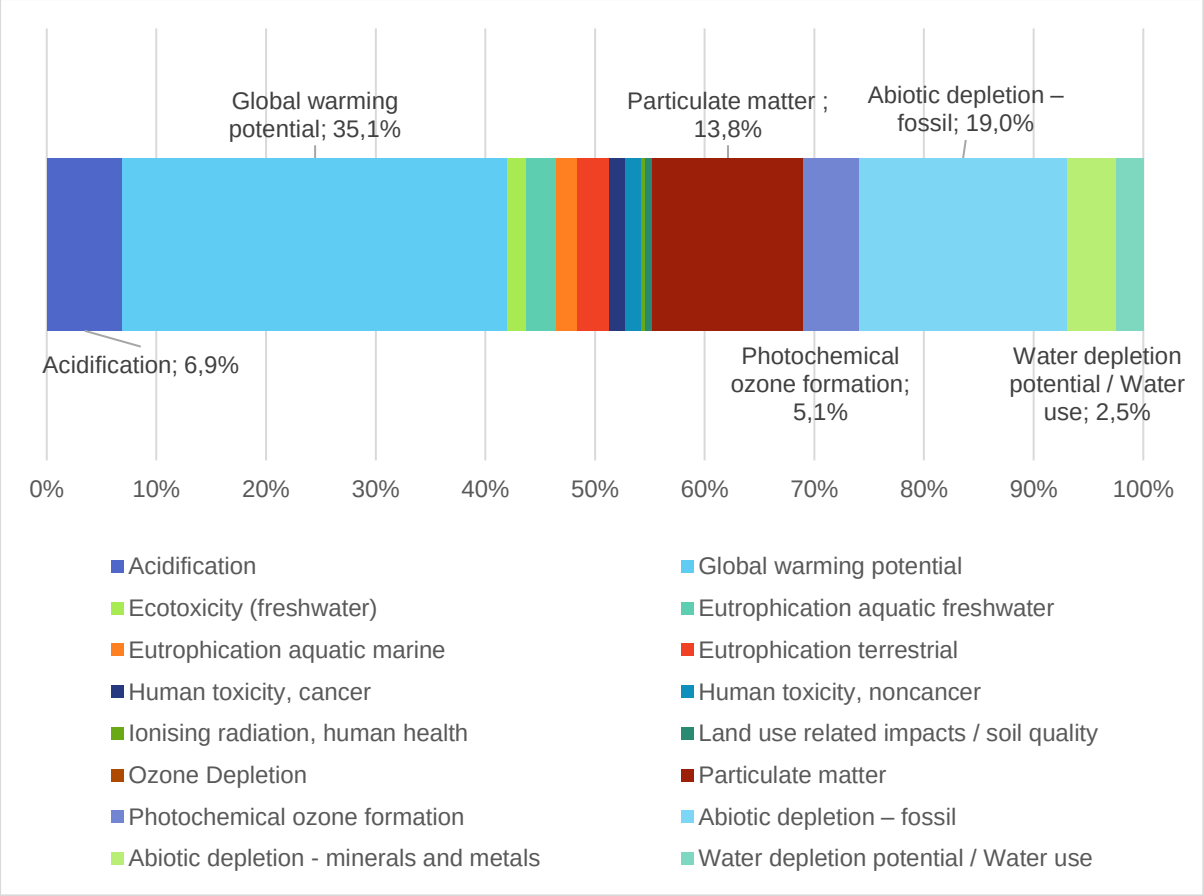
The study employs a conservative approach, evaluating environmental performance based on plant-level weighted averages for key inputs like steel and aluminium. While this establishes a robust and comparable baseline for the overall carbon footprint, it is important to note that individual facilities currently offer specific low-carbon products achieving up to a 60% emission reduction compared to these reported averages.

Aluminium products - highlights

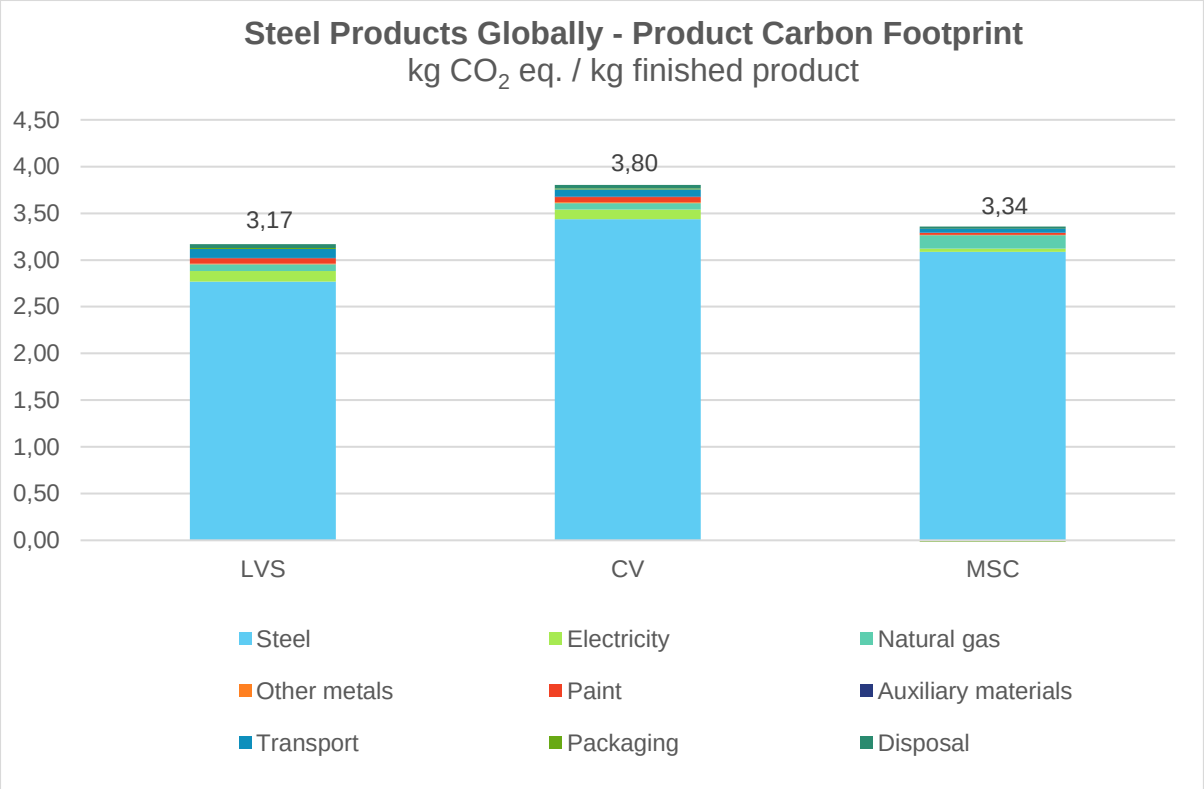
Product carbon footprint based on ISO 140 67 GWP 100 total:

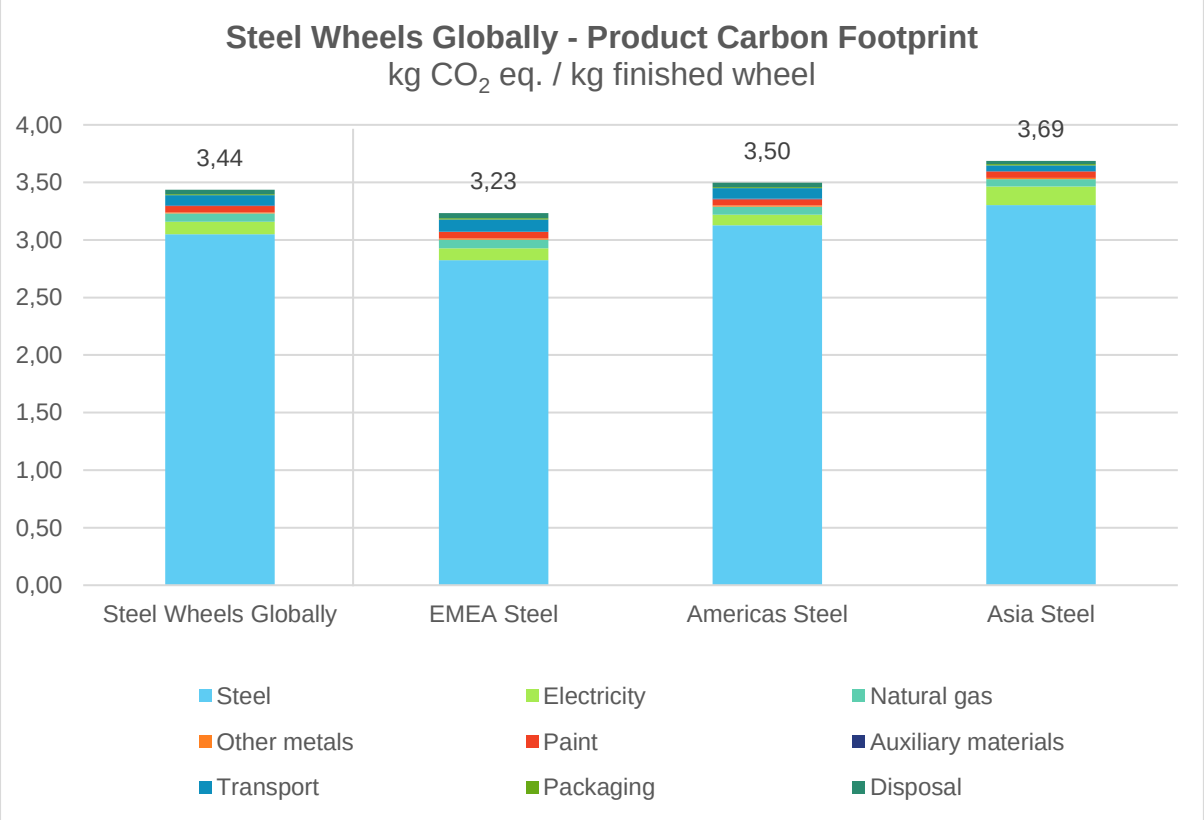


Environmental footprint 3.1 single score contribution for all aluminium plants:

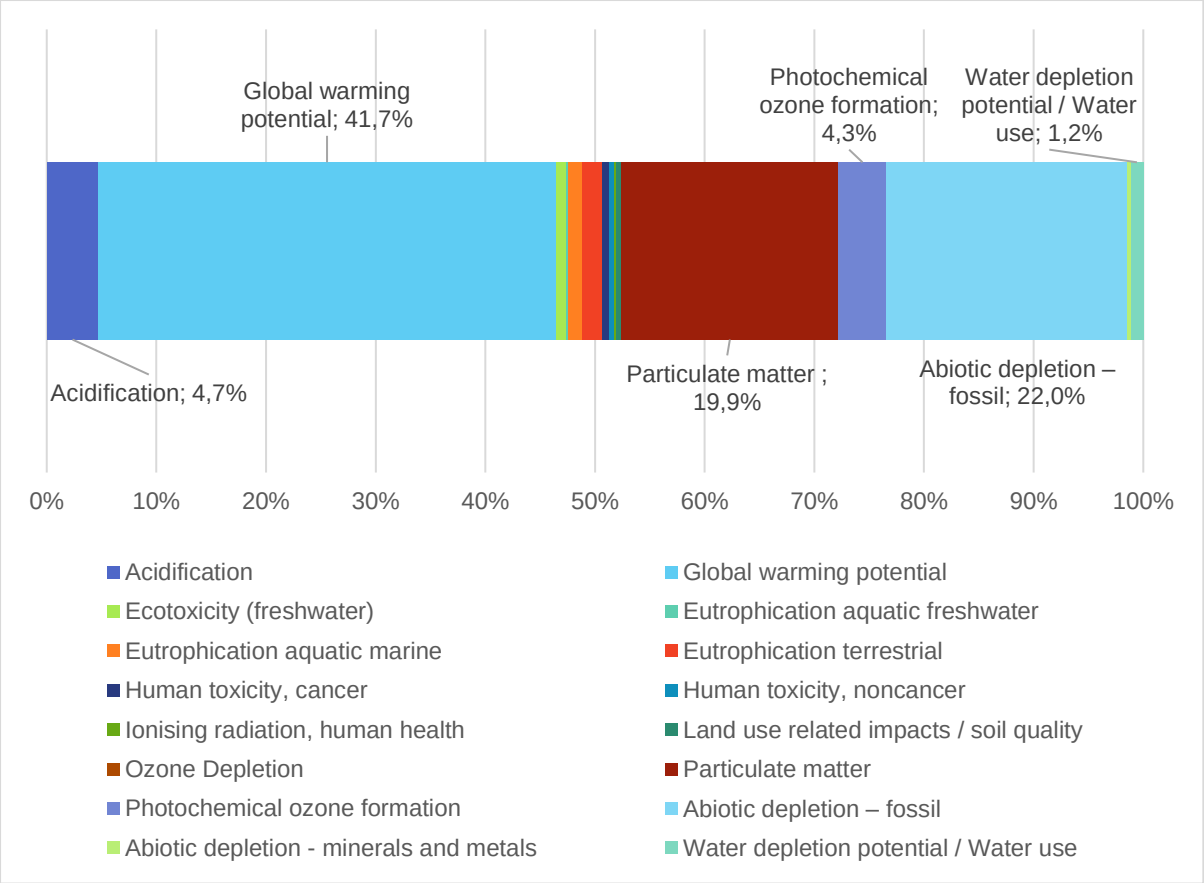


Steel products – highlights





Environmental footprint F 3.1 single score contribution for all steel plants:



1 GOAL OF THE STUDY

The study aims to calculate the cradle-to-gate environmental impacts, with focus on carbon footprint, of aluminium and steel wheels and structural components produced by Iochpe-Maxion S.A. (referred as Maxion), according to LCA standards ISO 14040/14044 and carbon footprint standard ISO 14067.

Maxion, a leading global manufacturer of aluminium and steel wheels and structural components for commercial vehicles, sought to evaluate their environmental performance through a comprehensive Life Cycle Assessment (LCA). Specifically, the study focuses on cradle-to-gate production processes for aluminium and steel wheels and structural components per 1 kg of finished product.

Maxion has engaged LCA Studio to assess the environmental impacts of these production systems, encompassing raw material extraction, metal production, smelting, casting, flow-forming and sheet metal stamping, finishing, and packaging. The analysis was performed as a cradle-to-gate LCA with a cut-off approach.

Study Goals

- Quantify the environmental performance of Maxion's aluminium and steel wheels and structural components production systems as a product carbon footprint based on ISO 140 67 and in Environmental Footprint 3.1 (EF 3.1) methodology.
- Identify primary impact categories (via single score and EF 3.1 category shares) for aluminium and steel, and interpret differences across scenarios.
- Identifying the main environmental aspects and burdens to create the right strategy for their gradual reduction and support the achievement of the Net zero goal Maxion "Roadmap Zero" strategy"

The intended audience of this study includes internal stakeholders at Iochpe-Maxion such as product designers, procurement teams, environmental and sustainability personnel, and senior management, as well as external stakeholders such as suppliers, regulators, nongovernmental organizations, investors, customers and the general public.

The intended applications cover Maxion business functions related to sustainable material procurement and component design, as well as marketing of wheels and structural components to inform customers and other external parties.

2 SCOPE OF THE STUDY

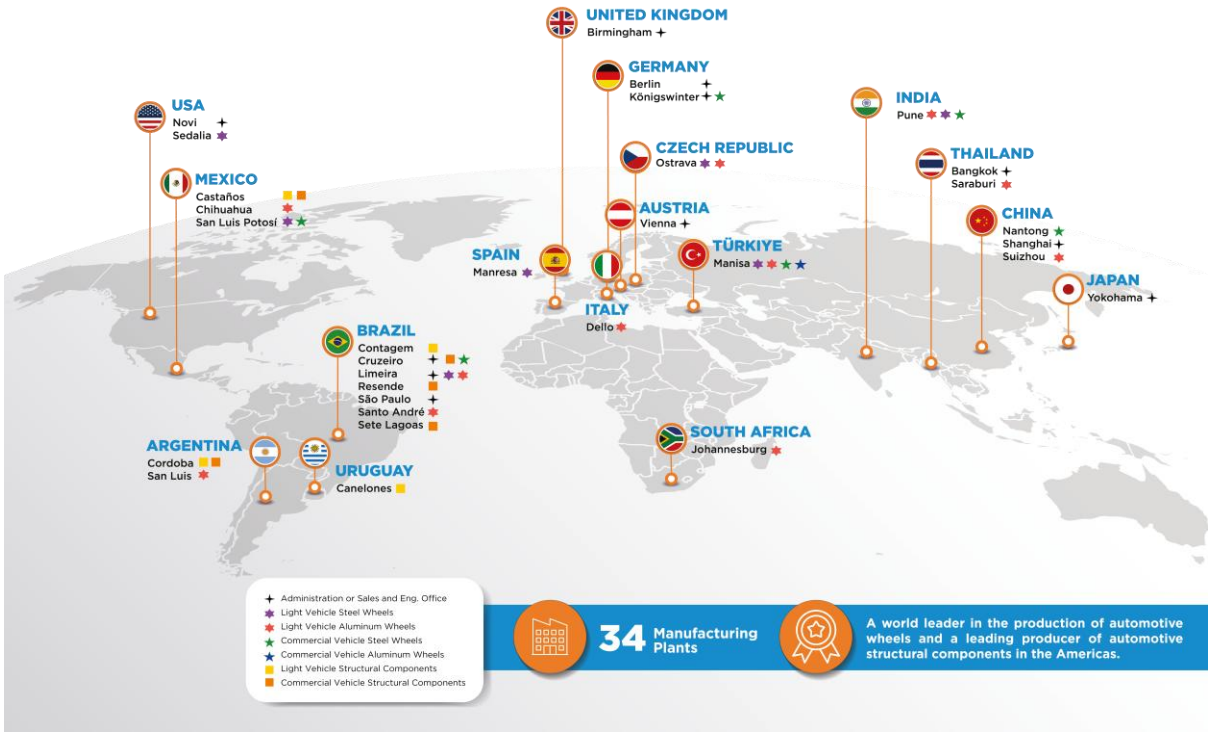
The next section outlines the overall project scope and the methodology applied to meet the defined objectives. It covers the description of specific manufacturing technologies under evaluation, the related product systems, the defined system boundaries of the study, as well as the applied allocation methods and cut-off criteria.

2.1 INFORMATION ABOUT THE ASSESSED PRODUCTS

2.1.1 IOCHPE-MAXION

Iochpe-Maxion, a publicly traded Brazilian multinational, is the global leader in automotive wheel production and a major supplier of structural components in the Americas, operating through Maxion Wheels and Maxion Structural Components businesses. Maxion Wheels manufactures steel and aluminium wheels for light vehicles, commercial trucks, and off-road/agricultural applications, producing 50 million units annually with a focus on innovative, lightweight solutions like new forged aluminium truck wheels launching in 2026. Key customers include Volkswagen Group, Ford, and Toyota, representing a diversified global portfolio. Maxion Structural Components delivers frames, rails, bumpers, and chassis elements for light, commercial, and off-highway vehicles across North and South America.

FIGURE 1MAXION GLOBAL FOOTPRINT



2.1.2 THE STRUCTURE OF PRODUCTION

Iochpe-Maxion's production network comprises 24 fully controlled plants across 12 countries on five continents, positioned near key customers and suppliers to optimize supply chain logistics. This global footprint supports diverse segments including light vehicle aluminium/steel, commercial vehicle steel, and off-road applications. A detailed list of the 24 environmentally relevant plants considered in this report, including countries, regions, and segments, is provided in Table 1.

TABLE 1 LIST OF PRODUCTION PLANTS AND RESPECTIVE REGIONS AND BUSINESSES, CONSIDERED IN THIS REPORT

Code	Plant	Country	Region	Segments
CZA	Ostrava Aluminium	Czech Rep.	EMEA	LVA
DEL	Dello	Italy	EMEA	LVA
JAWS	Manisa	Turkey	EMEA	LVA
JOH	Johannesburg	South Africa	EMEA	LVA
CHI	Chihuahua	Mexico	Americas	LVA
LMA	Limeira Aluminium	Brazil	Americas	LVA
SAN	Santo Andre	Brazil	Americas	LVA
PNA	Pune Aluminium	India	Asia	LVA
SAR	Saraburi	Thailand	Asia	LVA
CZS	Ostrava Steel	Czech Rep.	EMEA	LVS
MAN	Manresa	Spain	EMEA	LVS
INC	Manisa	Turkey	EMEA	LVS
LMS	Limeira Steel	Brazil	Americas	LVS
SLP	San Luis Potosi	Mexico	Americas	LVS
SED	Sedalia	USA	Americas	LVS
PNP	Pune Pass Car	India	Asia	LVS
KON	Konigswinter	Germany	EMEA	CV
JAN	Manisa	Turkey	EMEA	CV
CRZ-MX	Cruzeiro Maxion Wheel	Brazil	Americas	CV
PNT	Pune Truck	India	Asia	CV
NAN	Nantong	China	Asia	CV
CTG	Contagem	Brazil	Americas	MSC
CRZ-MSC	Cruzeiro + Resende MSC	Brazil	Americas	MSC
CST	Castaños	Mexico	Americas	MSC

Note: LVA = Light Vehicle Aluminium, LVS = Light Vehicle Steel, CV = Commercial Vehicle, MSC = Maxion Structural Components

2.1.3 NET ZERO EMISSION TARGET

Iochpe-Maxion's Roadmap Zero commits to net-zero Scope 1+2+3 emissions by 2040, validated by Science Based Targets initiative (SBTi) and aligned with 1.5°C pathways, featuring milestones like 30% Scope 1+2 reduction by 2025 and 100% renewable energy by 2030 vs. 2019 baseline. In 2024, progress included 39% Scope 1+2 intensity reduction, 74% renewable electricity, and Aluminium Stewardship Initiative (ASI) certification at Ostrava Aluminium (CZA), demonstrating the integration of decarbonization targets into core operations.

2.2 THE PRODUCTION PROCESS IN SCOPE

2.2.1 ALUMINIUM WHEELS

Maxion produces fully finished cast aluminium wheels for passenger cars, weighing 10-22 kg, designed for structural integrity, load-bearing performance and aesthetic appeal with painted surfaces meeting safety critical components' automotive standards.

The foundry process begins with melting aluminium ingots and chips in furnaces, its degassing, followed by wheel casting, 100% X-ray control, de-gating and de-flashing and finally the T6 heat treatment (solubilization, quenching and aging), to deliver rough wheels to machining process.

Machining encompasses three operations. Deburring, brushing and washing, 100% unbalance verification and helium leak testing with final shot blasting. Painting includes pre-treatment, a first powder coating and its curing followed by base coat and clear coat applications (liquid or powder), flash-off/curing and optional bright machining. These coating processes, particularly those involving liquid paints and solvents, are the primary source of volatile organic compounds (VOC) emissions within the facility boundary."

Final inspection covers GP-12 geometric checks, sorting of “Not OK” products, rework/stripping if required, additional fittings (labels, bushes) and runout testing before packaging.

For aluminium production, it is necessary to mention the positive effect of the installed capacities for processing waste material from production, which significantly helps to improve the environmental impact of the product and the resulting carbon footprint and ensures a solid content of recycled material in the final product.

2.2.2 STEEL WHEELS

Maxion manufactures steel wheels for passenger cars and commercial vehicles via stamping and roll-forming, consisting of a stamped disc (6-10 steps from blank) and roll-formed rim, assembled into durable, coated wheels for light-duty and truck applications.

Disc production starts with uncoiling/blank stamping, hoop/guide hole forming, back centre shaping, final draw/flange setting, ventilation/bolt hole cutting and deburring. Rim manufacturing involves uncoiling, straightening/rounding, sectioning/stacking, stamping, multi-stage profile rolling (expanding, pre-shaping, draws and calibrating), upset butt welding, deburring/smoothing and valve hole operations.

Assembly includes rim transport/rotation, production code stamping, disc prepositioning/pressing, disc leg height measurement, Metal Active Gas welding, brushing/cleaning and calibration. Final 100% inspection monitors weld seams, circumferences, runout and width via automated sorting (OK/NOK/scrap), with rework routing for non-conformities before painting and packaging.

2.2.3 STRUCTURAL COMPONENTS

Maxion Structural Components designs and manufactures structural parts for light, commercial, agricultural and specialty vehicles, such as frames, rails, crossmembers, bumpers, cabin structures, brackets and battery or tank supports. These components provide load-bearing performance and crash energy management for truck and bus chassis, pickups, passenger cars, off-highway equipment and electric vehicles, including dedicated structures for e-axles and battery systems.

Production is based mainly on cold stamping of high-strength steels up to 12 mm thickness and lengths of around 12 m, supported by one of the largest press parks in the Americas. Additional forming technologies include cutting and bending (tube bending, 2D laser cutting and Computer Numerical Control bending) and fixed or variable roll-forming for chassis rails, allowing flexible geometry and section variation with limited tooling needs.

The Company uses a wide range of welding technologies (spot, robotic, manual and projection welding) to assemble frames and complex structures, followed by mechanical assembly operations such as riveted and screwed chassis assemblies and heat deflector modules. Thermal treatment is applied to tailor mechanical properties (up to about 830 MPa), and surface protection is provided by e-coat and powder coating lines, while in-house laboratories and advanced measurement systems ensure dimensional and material quality.

FIGURE 2 LOOK INTO A WHEEL PRODUCTION FACILITY

2.3 LCA METHODOLOGY

The methodology used in this study follows ISO 14067 Greenhouse gases – Carbon footprint of products – Requirements and guidelines for quantification, combined with ISO 14040/14044 for full Life Cycle Assessment.

This study employs the Environmental Footprint (EF) 3.1 method, recommended by the European Commission for product life cycle impact assessment. This method includes 16 main impact categories alongside GWP, enabling a comprehensive evaluation of environmental impacts across the product life cycle. These categories, including abbreviations and units, are listed in Table 2. The calculation of the product's carbon footprint is also in line with the requirements of the industry standard of the Association of European Wheel Manufacturers - EUWA ES 1.13 Product Carbon Footprint.

To comprehensively evaluate different scenarios, all impact categories must be interpreted simultaneously, despite being expressed in varying units.

2.3.1 SINGLE SCORE CALCULATION

Joint assessment of multiple impact categories in LCA is enabled through normalization, which converts indicator results into dimensionless numbers by determining their share relative to total impacts in a defined scope, typically global. Different impact categories have varying severity for humans, so they are assigned weights in the final score. Weighting accounts for the current societal significance of individual categories by applying weights to normalized indicator results. For result interpretation, normalization and weighting were thus applied, yielding a single-score criterion that allows simple, transparent comparison of product systems and scenarios.

Individual impact categories use different units, enabling direct comparison within categories but not across multiple categories and systems in a straightforward manner. Normalization identifies which categories are most significant in a given case.

Normalization converts impact category indicator results into comparable values relative to larger areas, typically Europe-wide or global contributions. Its goal is a dimensionless number expressing the indicator's share of total impacts in the area, allowing summation for overall system environmental assessment via a single value. External normalization was used for this study, with EF 3.1-recommended parameters.

Weighting incorporates the significance of impact categories based on socioeconomic perspectives. Even if two normalized indicators have equal values, their societal impacts may differ. Weighting introduces a subjective element not based on natural laws, used only when justified in LCA. Methods and operations must be documented for transparency, with pre-weighting indicator or normalized results available alongside weighted outcomes.

EF 3.1 normalization and weighting factors are available on the European Platform on LCA website in the Environmental Footprint reference packages section.

TABLE 2 LIST OF EF 3.1 IMPACT CATEGORIES

Impact category	Abbreviation	Indicator	Unit
Climate change - total	GWP - total	Global Warming Potential total (GWP-total)	kg CO2 eq.
Climate change - fossil	GWP - fossil	Global Warming Potential total (GWP-fossil)	kg CO2 eq.
Climate change - biogenic	GWP - biogenic	Global Warming Potential total (GWP-biogenic)	kg CO2 eq.
Climate change - land use and land use change	GWP - luluc	Global Warming Potential total (GWP-luluc)	kg CO2 eq.
Ozone Depletion	ODP	Depletion potential of the stratospheric ozone layer (ODP)	kg CFC 11 eq.
Acidification	AP	Acidification potential, Accumulated Exceedance (AP)	mol H+ eq.
Eutrophication aquatic freshwater	EP - freshwater	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-freshwater)	kg P eq.
Eutrophication aquatic marine	EP - marine	Eutrophication potential, fraction of nutrients reaching freshwater end compartment (EP-marine)	kg N eq.
Eutrophication terrestrial	EP - terrestrial	Eutrophication potential, Accumulated Exceedance (EP-terrestrial)	mol N eq.
Photochemical ozone formation	POCP	Formation potential of tropospheric ozone (POCP);	kg NMVOC eq.
Depletion of abiotic resources - minerals and metals	ADP – minerals&metals	Abiotic depletion potential (ADPminerals& metals) for non-fossil resources	kg Sb eq.
Depletion of abiotic resources - fossil fuels	ADP – fossil	Abiotic depletion potential (ADP-fossil) for fossil resources	MJ (net calorific value)
Water use	WDP	Water (user) deprivation potential, deprivation weighted water consumption (WDP)	m3 world eq. deprived
Particulate matter emissions	PM	Potential incidence of disease due to PM emissions (PM)	Potential incidence of disease
Ionising radiation, human health	Irad	Potential Human exposure efficiency relative to U235 (IR)	kBq U235 eq.
Ecotoxicity (freshwater)	Ecotox - freshwater	Potential Comparative Toxic Unit for ecosystems (ETP-fw)	CTUe
Human toxicity, cancer effects	HT - cancer	Potential Comparative Toxic Unit for humans (HTP-c)	CTUh
Human toxicity, noncancer effects	HT - non-cancer	Potential Comparative Toxic Unit for humans (HTP-nc)	CTUh
Land use related impacts / soil quality	LU	Potential Soil quality index (SQP)	dimensionless

2.3.2 CHOICE OF EF 3.1 CATEGORIES FOR INTERPRETATION

The EF 3.1 characterisation method consists of 16 impact categories. Often it is not necessary to interpret all categories, since their contribution to total impact of the assessed product might be negligible. For further interpretation, four categories with the highest share on total single score result were chosen, with GWP excluded. On top of these four most contributing categories, water depletion potential was included, as per request of the company.

Among EF 3.1 categories, the GWP 100 total was not included into EF 3.1 categories for further interpretation, because the same impact is covered by ISO 14067 GWP 100, where the primary data share is much higher (over 96% for both aluminium and steel) compared to primary data share for EF 3.1 (12 % for aluminium and 8 % for steel).

2.3.3 PRIMARY DATA SHARE

Primary Data Share (PDS) quantifies the proportion of foreground processes in an LCA modelled with specific, site- or supplier-verified data (e.g., measurements, certificates), versus secondary data from generic databases like ecoinvent. PDS is calculated as the emissions-weighted percentage of primary data in key life cycle stages (cradle-to-gate), promoting transparency and data quality per ISO 14040/44 and ISO 14067.

Primary data cover transport, natural gas consumption, and electricity use across all assessments. For GWP100 (ISO 14067), emission factors for key metal inputs (aluminium/steel) are based on supplier carbon footprint certificates. For EF 3.1 multi-impact categories, metals rely on secondary database values due to lack of equivalent certificates.

ISO 14067 (product carbon footprint) accepts supplier-specific certificates for metals, yielding a high PDS. In contrast, EF 3.1 covers broader impact categories where supplier certificates lack certified multi-impact data for metals. Metals are thus modelled using database processes, resulting in lower PDS for EF 3.1. This difference reflects the methodological scopes: single-impact (GWP) vs. multi-impact assessment.

TABLE 3 MATRIX OF PRIMARY DATA SHARE CALCULATION

Data source	**GWP100 (ISO 14067)**	**EF 3.1 (Climate Change - total)**
Metal inputs (certificates)	Primary	Secondary (database)
Transport, natural gas, electricity	Primary	Primary
Other processes	Secondary (database)	Secondary (database)
Overall PDS	High (metals certified)	Low (metals secondary)

2.4 FUNCTIONAL UNIT

The functional unit of this study is:

- one kilogram of finished product, at the factory gate, packed.

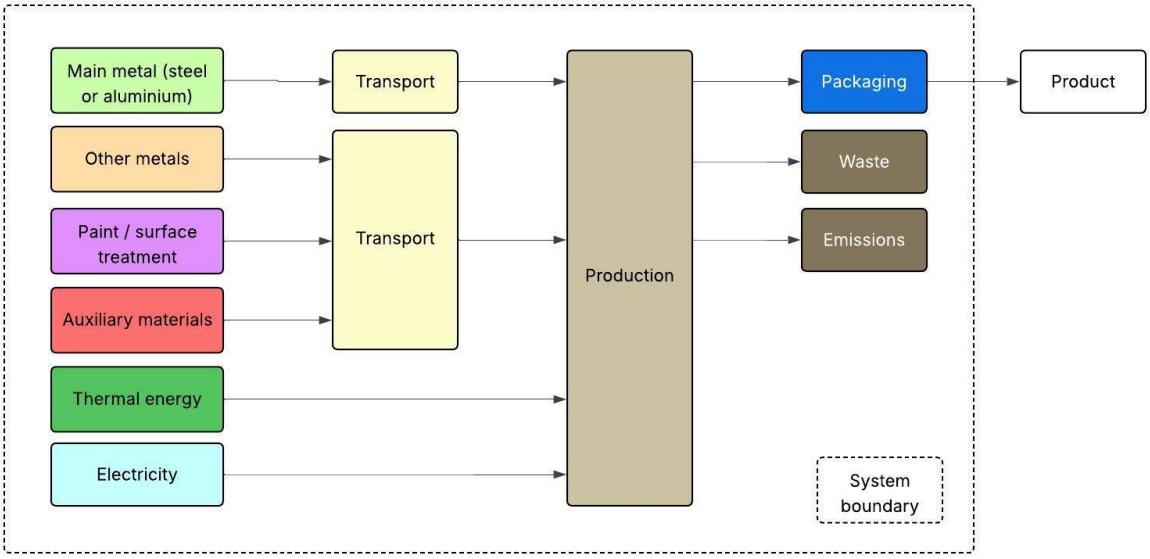
This functional unit represents the production of 1 kilogram of fully finished wheel for light vehicles, commercial vehicle wheels, or structural components, providing structural integrity (load-bearing and energy absorption per automotive standards) and aesthetic function (treated exterior surface) throughout the expected service life.

2.5 PRODUCT SYSTEM AND BOUNDARIES OF THE SYSTEM

The system in scope is evaluated under a cradle-to-gate system boundary covering the complete production chain for the products in scope. This includes upstream raw material extraction and supply (aluminium ingots and external recycled aluminium, steel coils and profiles, welding wire, alloys, paints), energy production, intra-factory transport, manufacturing stages (foundry/melting/casting for aluminium; stamping/roll-forming/welding for steel; cold stamping/welding/assembly for structural components), utilities, waste treatment and packaging at the factory gate.

Excluded are downstream use phase, end-of-life and customer transport, as well as capital goods construction, employee commuting and minor auxiliary materials below 1% cutoff.

FIGURE 3: SCHEME OF THE PRODUCT SYSTEM AND BOUNDARIES



2.6 ASSUMPTIONS FOR THE STUDY

For all production stages, the product system does not include the manufacturing processes of the capital goods or spare parts and/or maintenance. The environmental impact of infrastructure for general management, office, and headquarters operations is not included. Environmental impact of the on-site management and office as well as the heating or cooling of the production facility for the comfort of the staff is included.

For paint and auxiliary materials, transportation by truck is assumed. The distance for European plants is 500 km and for non-European plants 1000 km.

2.7 ALLOCATION AND CUT-OFF CRITERIA

In the study, no allocation is used.

A cut-off approach is used for scrap recycling, crediting only internal process scrap recovery without avoided burden from external loops. Overall, more than 99% of material and energy flows were included, ensuring comprehensive coverage of key inventory data.

2.8 TIME COVERAGE

Annual data from 2024 have been collected for the study. Primary foreground data covers the production of the wheels and components, surface treatment and packaging. Background data (electricity mix, transport fuels, auxiliary materials) are sourced from ecoinvent v3.11 and Sphera databases (European datasets, reference years 2020–2024).

2.9 GEOGRAPHICAL BOUNDARIES

For the EMEA region, all emission factors used for the calculation are specified for national conditions, if available. Otherwise, European or Global datasets are used. For Turkish plants, processes for renewable energy from Greece were used. For South Africa (JOH), an Indian process was used for electricity from biomass and the process for thermal energy from natural gas was from the United States of America.

For the Americas, all emission factors used for the calculation are specified for national conditions, if available. Otherwise, Global datasets are used. For Mexican plants, US electricity and heat processes were used.

For Asia, all emission factors used for the calculation are specified for national conditions, if available. Otherwise, Global datasets are used. For Nantong (NAN), Thai process for thermal energy was used. For Saraburi (SAR), Japanese process for photovoltaics was used.

2.10 DATA QUALITY ASSESSMENT

Primary (specific) data and secondary data were used to calculate the environmental impacts of Iochpe-Maxion´s production. All primary data used in the LCA study was provided by Iochpe-Maxion. The primary data was obtained directly from the company records and was used for modelling relevant production processes. Primary data are used for volumes of specific inputs, outputs, emissions, waste, and transport.

Main input metals, steel and aluminium, are for the product carbon footprint calculations covered by carbon footprint certificates and are considered as primary data.

For the dominant impact drivers—steel and aluminium—the model applies a production-weighted average of all supplied material variants to ensure comparability.

Also, electricity sources are covered by certificates - International Renewable Energy Certificate (iREC) or Guarantees of Origin (GO) - and emission factors for carbon footprint calculation are taken from these certificates. Both types of certificates are third party verified as data sources during calculation of company carbon footprint based on Greenhouse Gas (GHG) Protocol.

For accuracy assessment, data quality was assessed using the High, Good, Fair and Poor is assumed with the uncertainty level for High (+-5%), Good (+-15%), Fair (+-30%) and Poor (>30%) ranking.

The secondary data used in the calculations come from the Sphera Professional database, ecoinvent 3.11 database. General data were used mainly to model processes which are not under operational control of Iochpe-Maxion (production of raw materials, components, electricity and heat production, general transport processes, individual waste management methods etc.). Secondary data can be several years old, so the quality of the data can be considered as good.

Disclaimer: The LCA practitioner relied primarily on data provided by Iochpe-Maxion and assumed such data to be accurate and complete. The LCA practitioner did not have access to supporting documentation regarding guarantees of origin or carbon footprint certificates for suppliers; therefore, these aspects were not independently verified as part of the analysis.

Although the LCA practitioner did not audit the data provided, most of the data has undergone a Third-party certified limited assurance process

TABLE 4 DATA QUALITY ASSESSMENT OVERVIEW

Type of the data	Source of the data	Accuracy
Primary metal	Amounts based on company direct reporting. Emission factors for ISO 14067 based on supplier product carbon footprint certificates.	High
Electricity	Amounts based on company direct reporting Emission factors for ISO 14067 based on supplier product carbon footprint certificates / Guarantees of Origin / International Renewable Energy Certificates	High
Natural gas	Amounts based on company direct reporting	High
Other metals, paint, auxiliary materials, packaging, disposal	Amounts based on company direct reporting and engineering calculations.	Good
Transport	Transport distances for primary metals are calculated for each plant. For all other, assumption for average distance is used.	Good
Background data	Sphera Professional database, ecoinvent 3.11 database	Good

3 LIFE CYCLE INVENTORY (LCI) ANALYSIS

3.1 DATA SOURCES

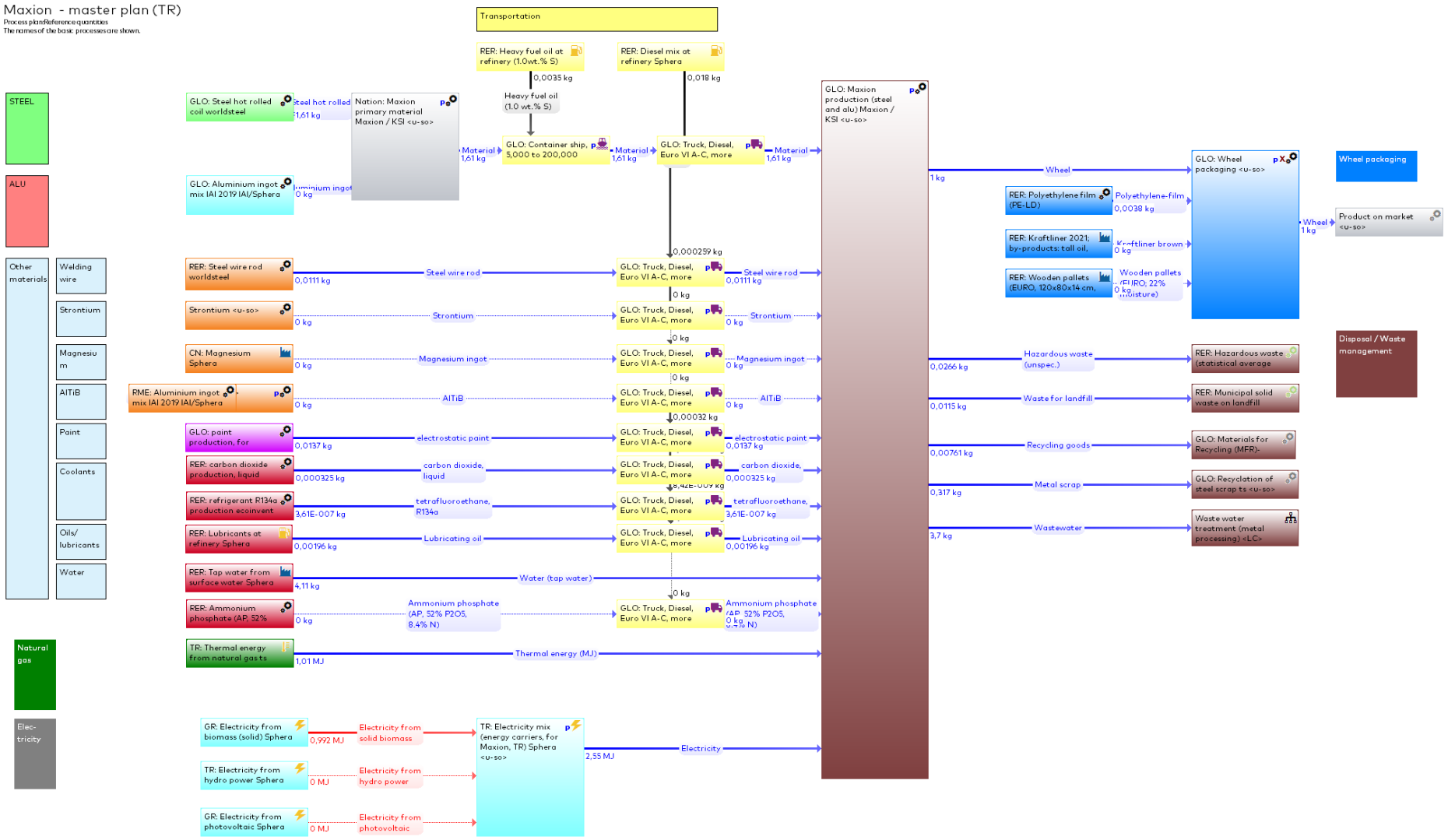
Site-specific data from production, were supplied by particular production facilities under the coordination of Global Safety and Sustainability team. The data is based on direct measurements, reporting and technological parameters of the considered production system. The LCA practitioner did not check the correctness of the data provided by the client.

General process data-sets used in the model were chosen from the ecoinvent 3.11 and Sphera database. This database is internationally used with process data-sets validated at the European level. This study used the professional LCA software LCA for Professionals 10, developed by Sphera. A time scope less than 10 years was applied for background data. Time scope of less than 2 years was applied for specific data. Processes used from the Sphera and ecoinvent 3.11 database are listed in Appendix 1.

3.2 INVENTORY

Full inventory is included in the appendix of the report, from table 28 to table 33.

FIGURE 4 SCREENSHOTS OF MODELS FROM SPHERA FOR EXPERTS SOFTWARE:



4 RESULTS AND INTERPRETATION

4.1 LIGHT VEHICLE WHEELS - ALUMINIUM

4.1.1 LIGHT VEHICLE WHEELS - ALUMINIUM GLOBALLY

The Light Vehicle Wheels - Aluminium segment consists of 9 plants divided into three regions. The yearly production of the plants is used to weight the average impacts for the regions and the production of the regions is used to weight the impacts for the whole segment.

TABLE 5 LIST OF LIGHT VEHICLE WHEEL – ALUMINIUM PLANTS

Code	Locations	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
LVA Globally		143 957 994		96,4%	11,5 %
LVA EMEA	CZA, DEL, JAWS, JOH	79 714 133	55,4%	96,2%	11,6 %
LVA Americas	CHI, LMA, SAN	45 395 812	31,5%	96,4%	10,4 %
LVA Asia	PNA, SAR	18 848 049	13,1%	97,0%	13,4 %

Product carbon footprint

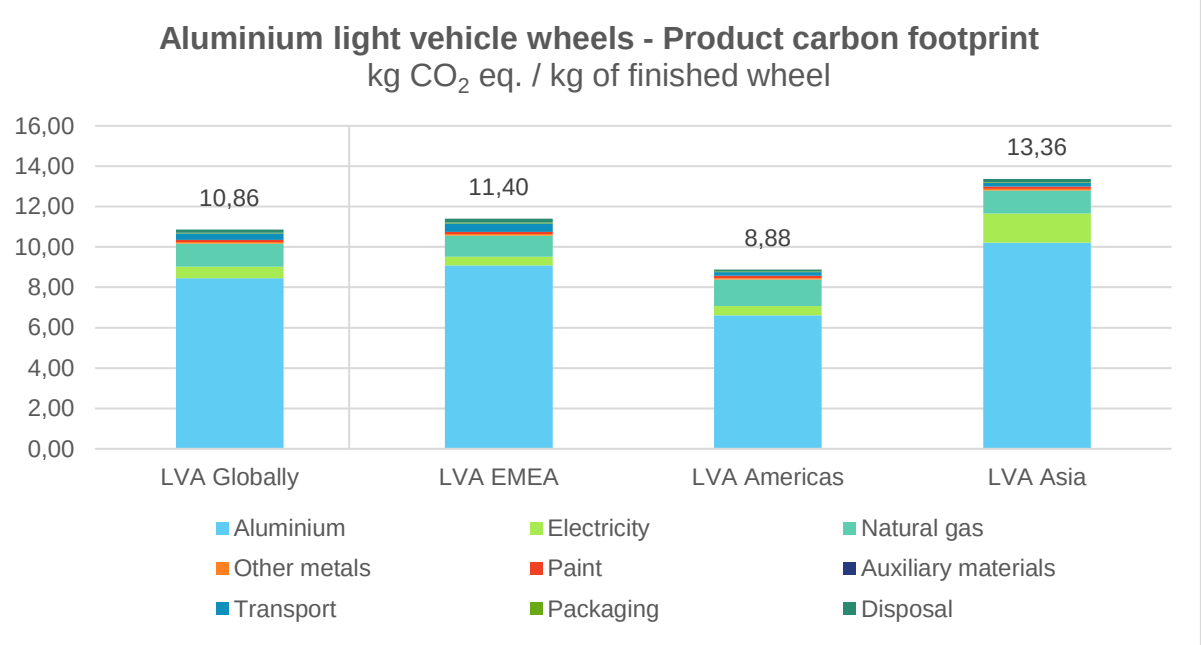
Primary aluminium production dominates the segment GWP with 78% of total, with regional variations depending on aluminium upstream. Asia exhibits the highest aluminium emissions at 10,86 kg CO_2 eq. / kg of finished wheel, elevating the global average, while Americas achieves 8,88 kg CO_2 eq. through lower-carbon primary aluminium sourcing.

Electricity consumption during wheel manufacturing contributes minimally to the total GWP, yet it highlights substantial regional differences in carbon intensity - Asia has more than three times higher emissions per unit electricity compared to EMEA/Americas, though its limited 13,1% production volume doesn't have a significant segment-level impact.

TABLE 6 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR LIGHT VEHICLE WHEEL – ALUMINIUM PLANTS (KG CO2 EQ. / KG OF FINISHED WHEEL)

	Total	Aluminium	Electricity	Natural gas	Other metal s	Paint	Auxiliary materials	Transport	Packaging	Disposal
LVA Globally	10,86	8,45	0,57	1,14	0,07	0,11	0,01	0,31	0,03	0,16
LVA EMEA	11,40	9,09	0,43	1,04	0,08	0,11	0,01	0,41	0,03	0,20
LVA Americas	8,88	6,62	0,45	1,32	0,07	0,11	0,01	0,17	0,03	0,10
LVA Asia	13,36	10,21	1,45	1,14	0,08	0,11	0,01	0,17	0,03	0,16

FIGURE 5 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR LIGHT VEHICLE WHEEL – ALUMINIUM PLANTS AND CONTRIBUTION OF PROCESS GROUPS



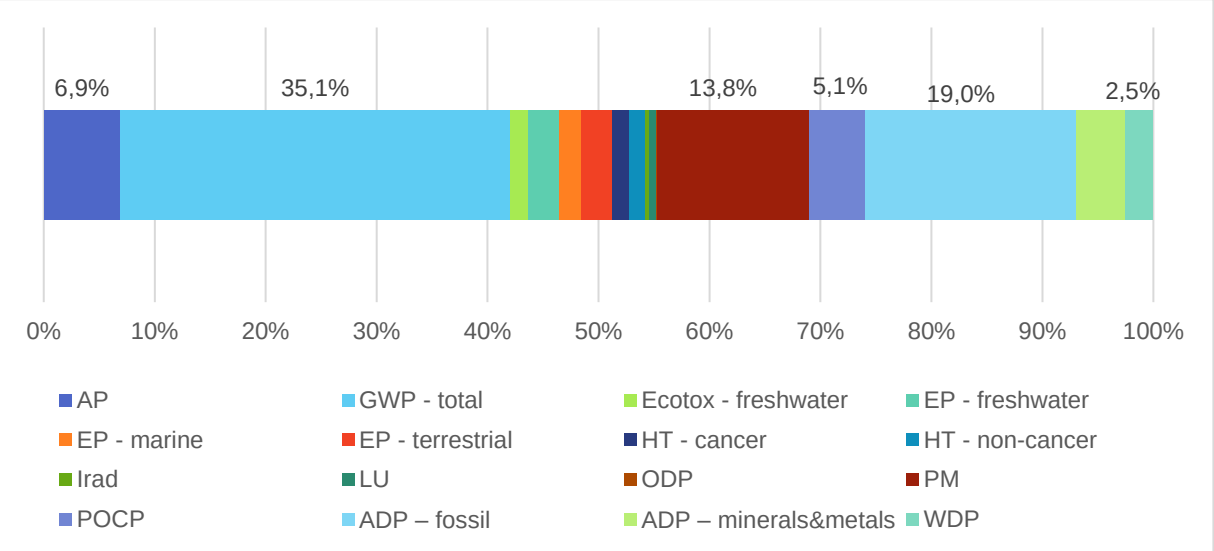
Normalised and weighted results for Environmental footprint 3.1

The share of all EF 3.1 categories on normalised and weighted results for aluminium processing plants are shown in Figure 4.

For further interpretation, 4 categories with the biggest share on EF 3.1 except for GWP total were chosen, which is Resource use, fossil (ADP fossil, 19 %), Particulate matter (PM, 13,8 %), Acidification (AP, 6,9 %) and Photochemical ozone formation, human health (POCP, 5,1 %). Water depletion potential (WDP) contributes with 2,5 %.

For full normalised and weighted results for all aluminium plants, see Table 37 in Appendix.

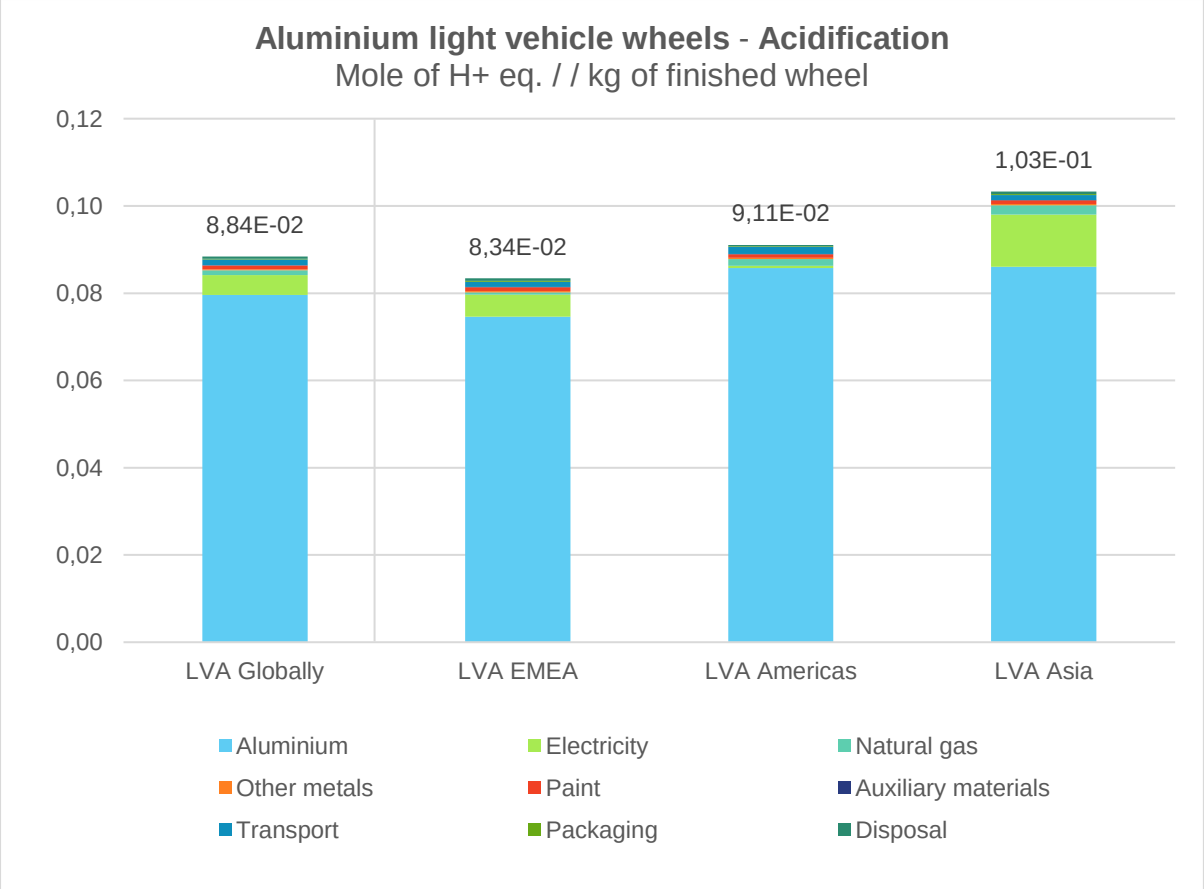
FIGURE 6 SHARE OF EF 3.1 IMPACT CATEGORIES ON SINGLE SCORE RESULT FOR ALL ALUMINIUM PROCESSING PLANTS

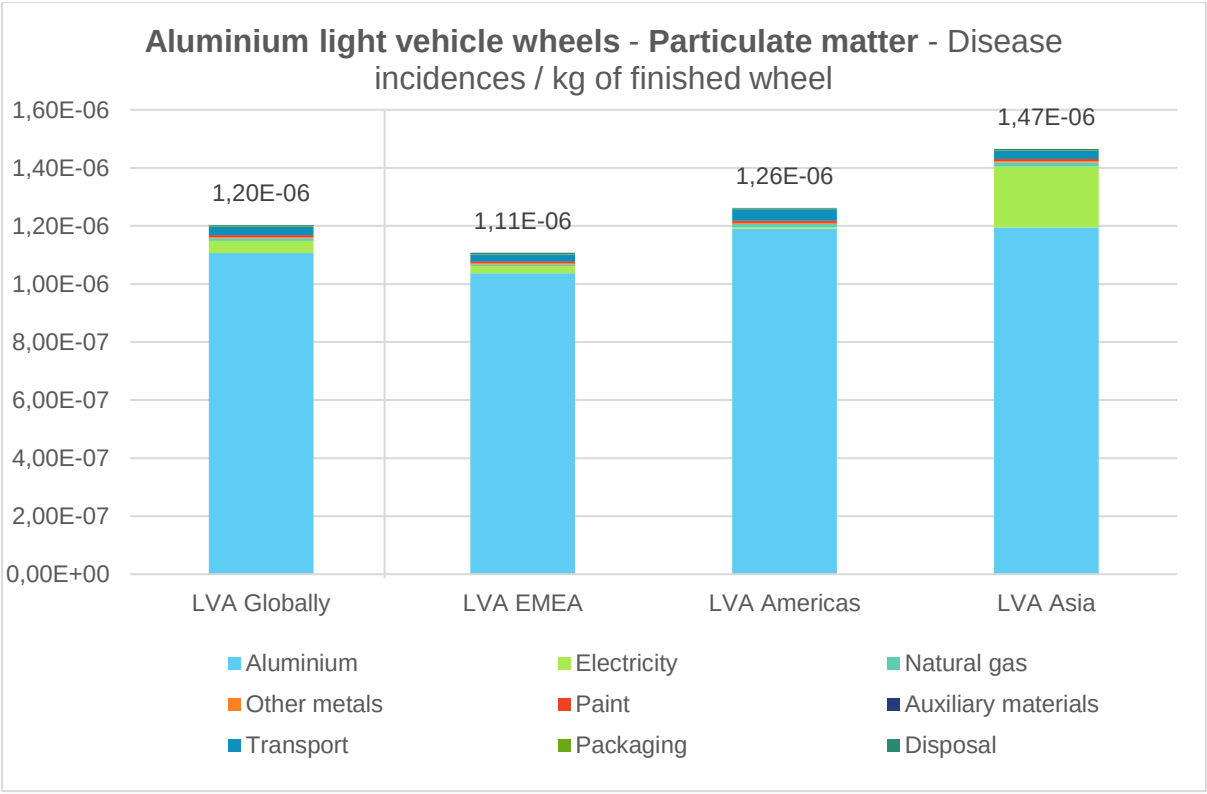


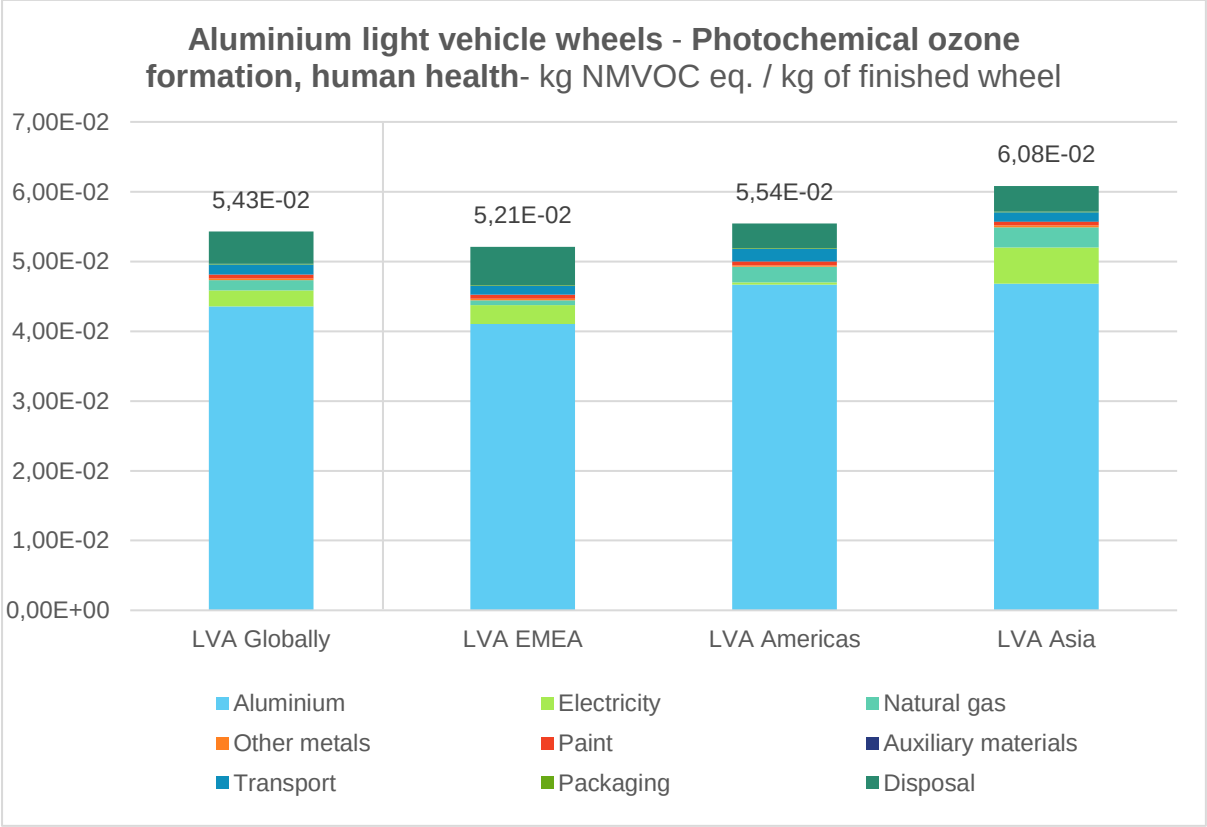
Environmental footprint EF 3.1 – selected impact categories

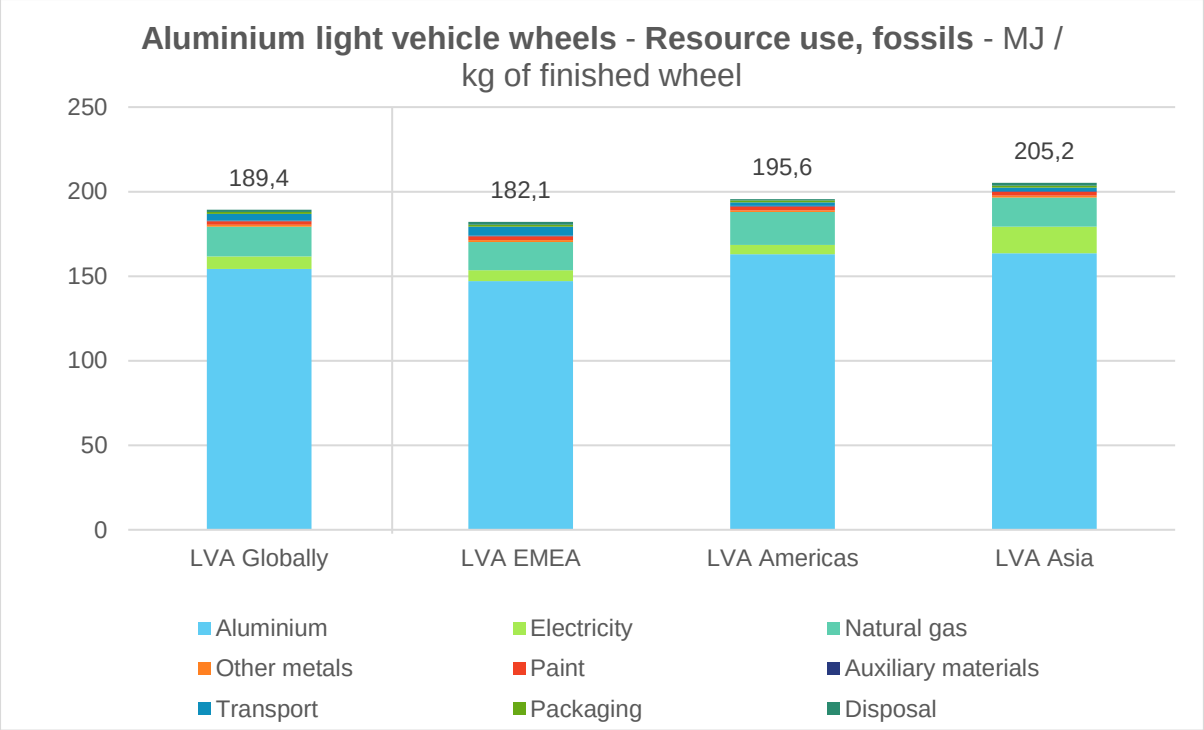
While the aluminium input consistently remains the dominant contributor to all evaluated impact categories, electricity shows a notably higher contribution to acidification and particulate matter in the Asian facilities. This trend reflects the emission-intensive nature of the regional power grids modelled in the underlying databases, which are heavily reliant on coal generation. However, Asia's low production share limits its global impact. In water use, electricity is more significant overall, driven by EMEA's higher evaporation of hydroelectric reservoirs (4,01 m³ world equiv.) versus Americas (3,48 m³) and Asia (3,60 m³).

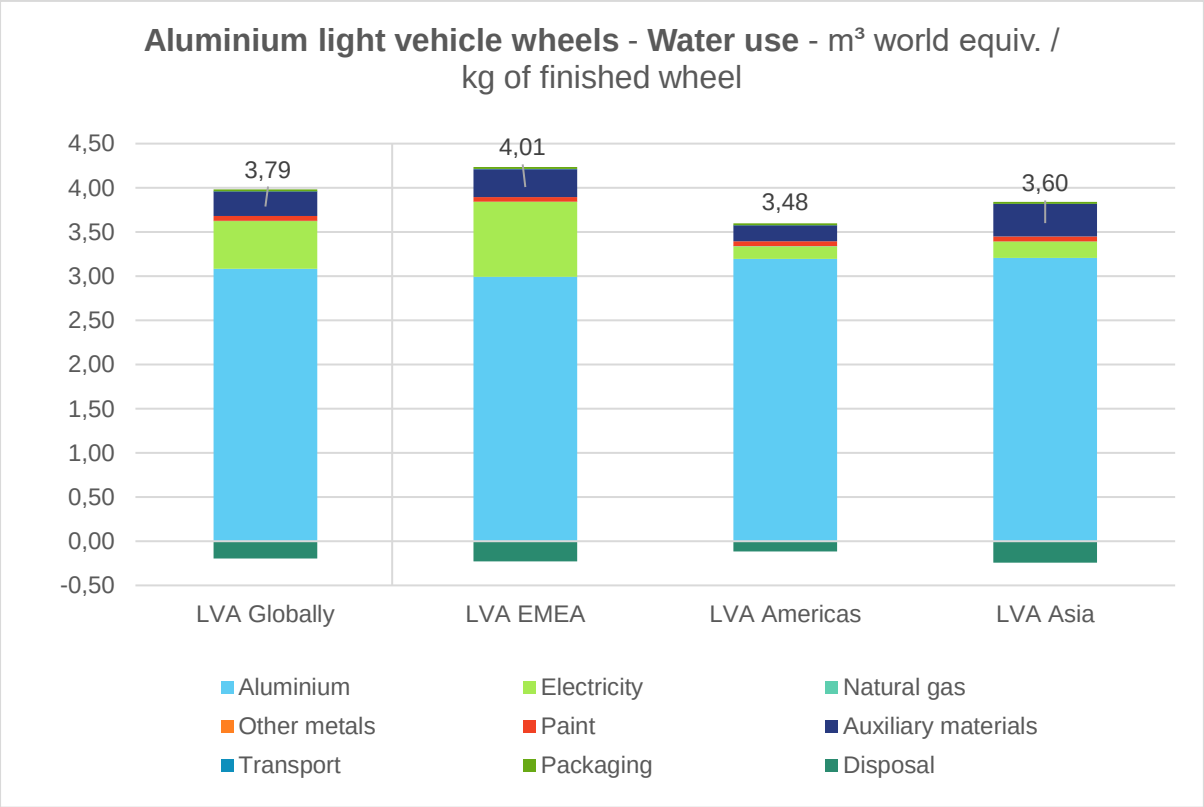
FIGURE 7 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR LIGHT VEHICLE WHEEL – ALUMINIUM PLANTS




Aluminium light vehicle wheels - Particulate matter - Disease incidences / kg of finished wheel
1,60E-06
1,40E-06
1,20E-06
1,00E-06
8,00E-07
6,00E-07
4,00E-07
2,00E-07
0,00E+00
1,20E-06
1,11E-06
1,26E-06
1,47E-06
LVA Globally
LVA EMEA
LVA Americas
LVA Asia
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Aluminium light vehicle wheels - Photochemical ozone formation, human health- kg NMVOC eq. / kg of finished wheel
7,00E-02
6,00E-02
5,00E-02
4,00E-02
3,00E-02
2,00E-02
1,00E-02
0,00E+00
5,43E-02
5,21E-02
5,54E-02
6,08E-02
LVA Globally
LVA EMEA
LVA Americas
LVA Asia
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Aluminium light vehicle wheels - Resource use, fossils - MJ / kg of finished wheel
250
200
150
100
50
0
189,4
182,1
195,6
205,2
LVA Globally
LVA EMEA
LVA Americas
LVA Asia
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Aluminium light vehicle wheels - Water use - m³ world equiv. / kg of finished wheel
4,50
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
0,00
-0,50
3,79
4,01
3,48
3,60
LVA Globally
LVA EMEA
LVA Americas
LVA Asia
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.1.2 LIGHT VEHICLE WHEELS - ALUMINIUM EMEA

LVA EMEA produces 79,7 million kg annually across four facilities. The region's output is heavily dominated by the Manisa (JAWS) plant in Turkey, which accounts for over half of the total volume (54,7%), while the remaining production is distributed primarily between the Czech (CZA) and Italian (DEL) sites. The South African plant (JOH) contributes only a marginal 7,2% share.

TABLE 7 LIST OF LVA EMEA PLANTS

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
LVA EMEA		79 714 133		96,2 %	11,6 %
CZA	Ostrava, Czech Republic	15 450 717	19,4 %	96,5 %	17,0 %
DEL	Dello, Italy	14 979 680	18,8 %	96,1 %	18,8 %
JAWS	Manisa, Turkey	43 568 852	54,7 %	95,8 %	7,4 %
JOH	Johannesburg, South Africa	5 714 884	7,2 %	97,5 %	21,6 %

Product carbon footprint

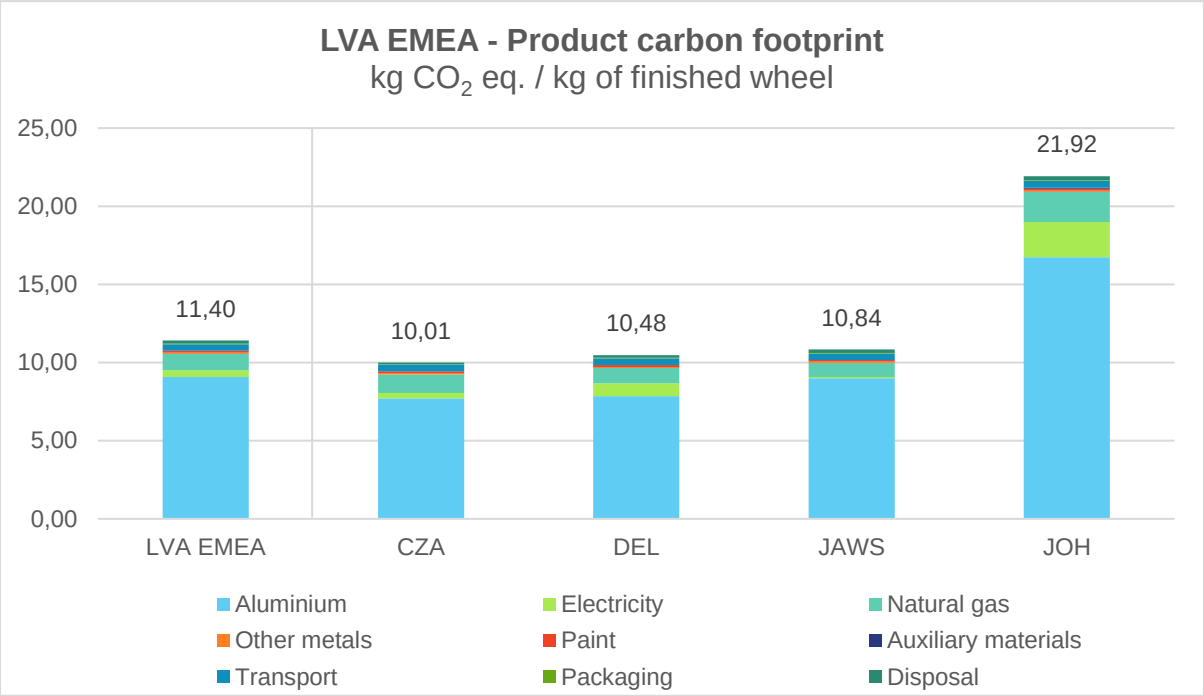
LVA EMEA averages 11,40 kg CO_2 eq. per kg of finished wheel, driven by primary aluminium (9,09 kg, 80% of total).

Most plants (CZA, DEL, JAWS) cluster between 10,0–10,8 kg CO_2 eq., while Johannesburg (JOH) stands out at 21,92 kg CO_2 eq. due to high aluminium and electricity related emissions. JOH's marginal production share minimally affects the regional average.

TABLE 8 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR LVA EMEA (KG CO2 EQ. KG OF FINISHED WHEEL)

	Total	Aluminium	Electricity	Natural gas	Other metals	Paint	Auxiliary materials	Transport	Packaging	Disposal
LVA EMEA	11,40	9,09	0,43	1,04	0,08	0,11	0,01	0,41	0,03	0,20
CZA	10,01	7,70	0,36	1,18	0,08	0,11	0,01	0,41	0,03	0,12
DEL	10,48	7,84	0,83	0,97	0,08	0,11	0,01	0,43	0,03	0,18
JAWS	10,84	9,00	0,08	0,90	0,07	0,11	0,01	0,40	0,03	0,23
JOH	21,92	16,73	2,27	1,92	0,10	0,11	0,07	0,45	0,03	0,24

FIGURE 8 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL OF LVA EMEA PLANTS AND CONTRIBUTION OF PROCESS GROUPS

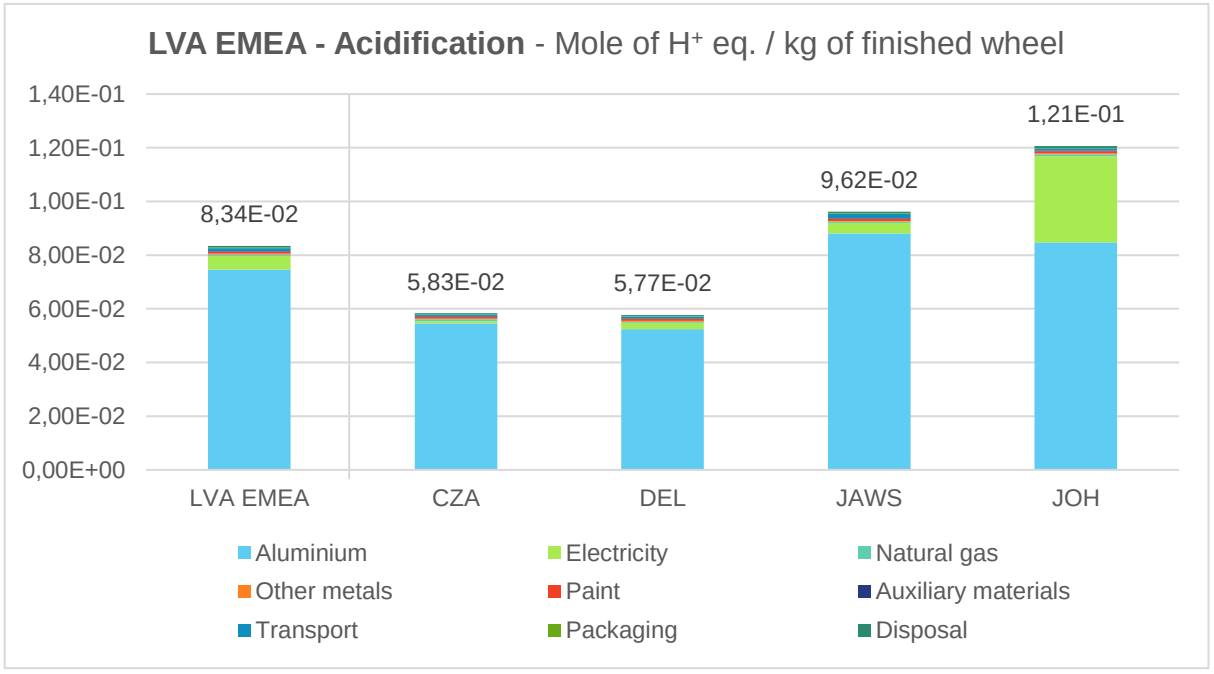


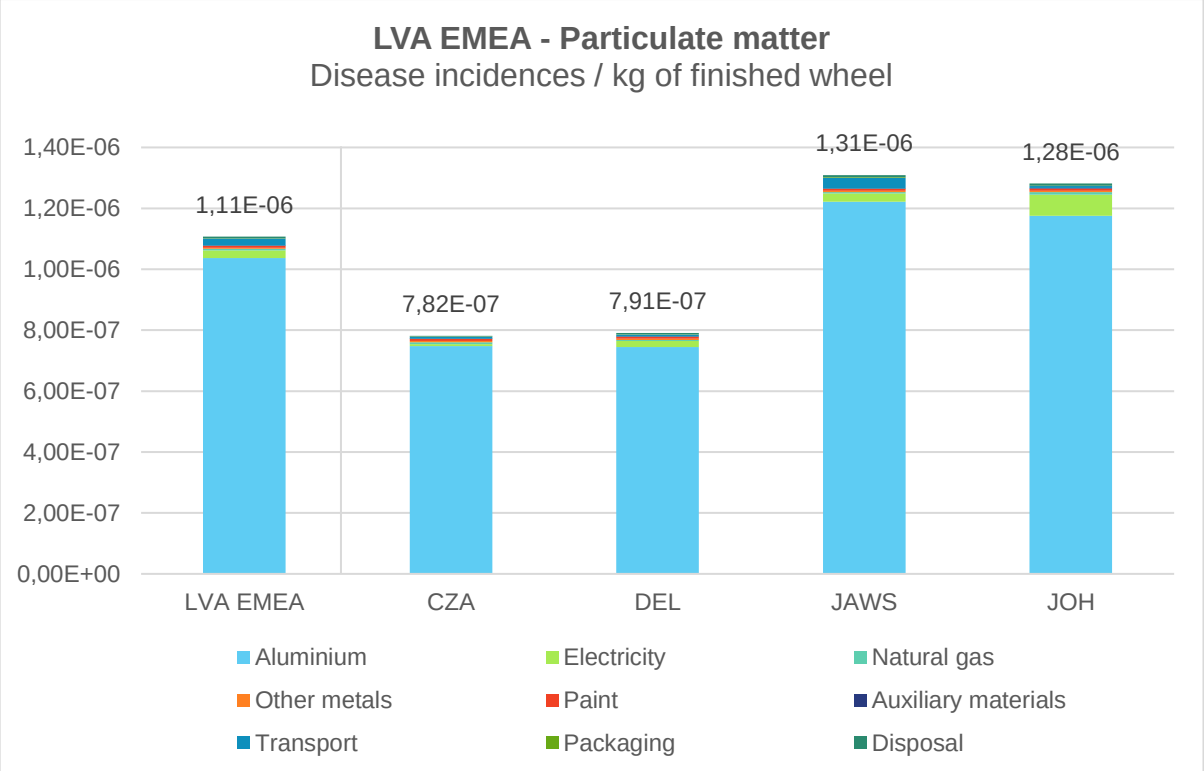
Environmental footprint EF 3.1 – selected impact categories

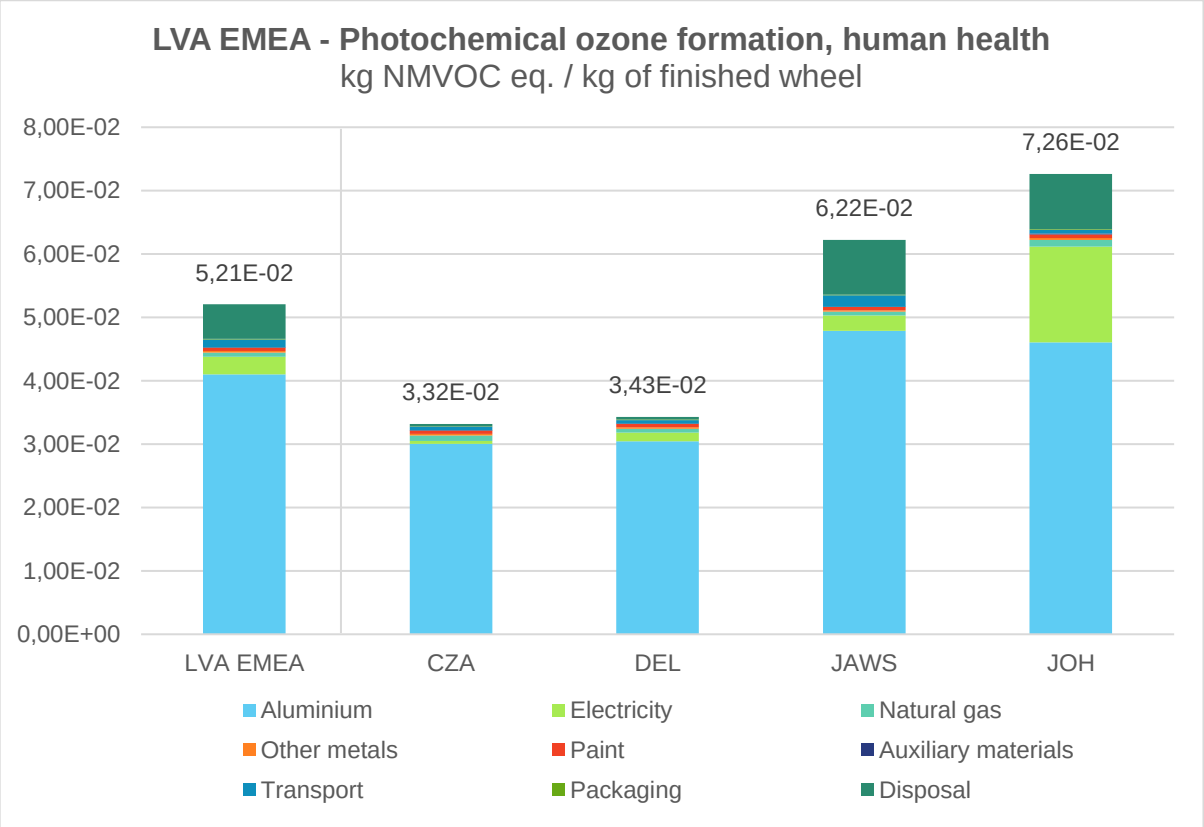
Primary aluminium dominates all EF 3.1 categories, with JOH highest across the board (acidification 1,21E-02 mol H^+ eq., photochemical ozone).

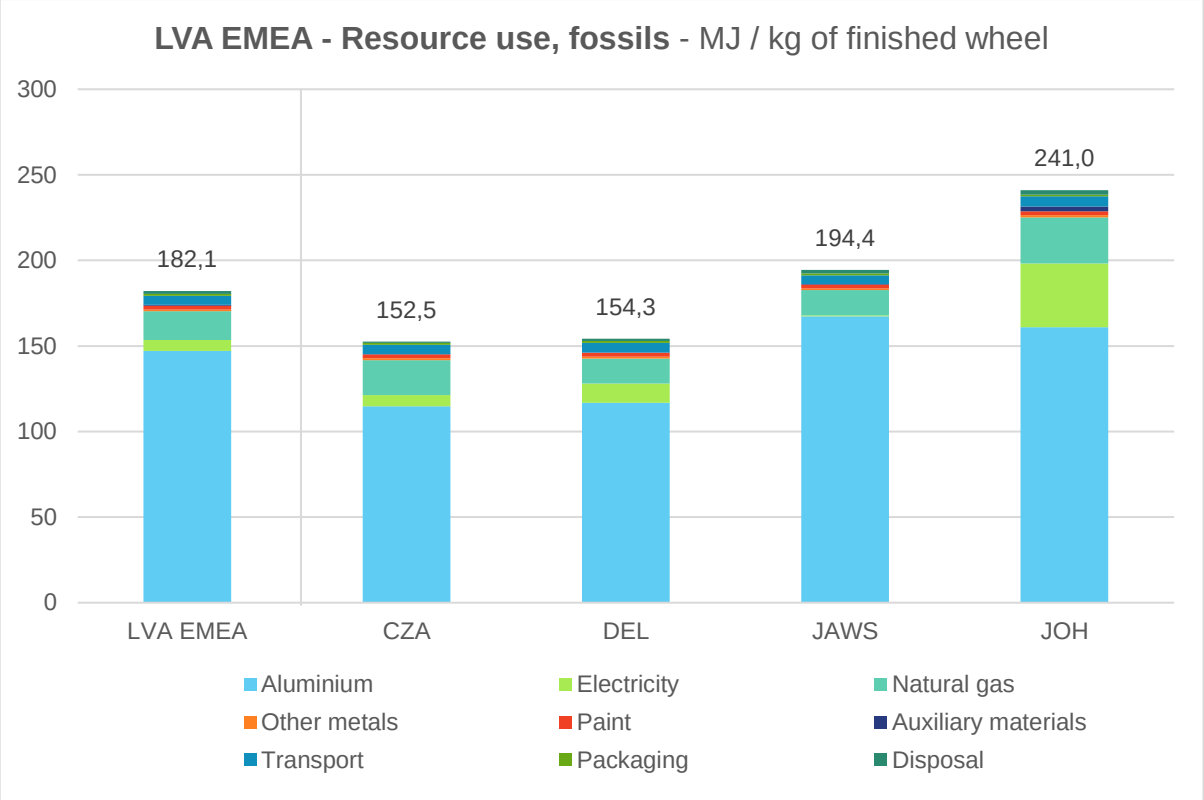
JAWS exceeds EMEA averages in acidification and water use, which is typically associated with the evaporation from hydroelectric reservoirs. In LCA methodologies, such elevated water depletion values for electricity typically reflect the reservoir evaporation associated with hydropower generation.

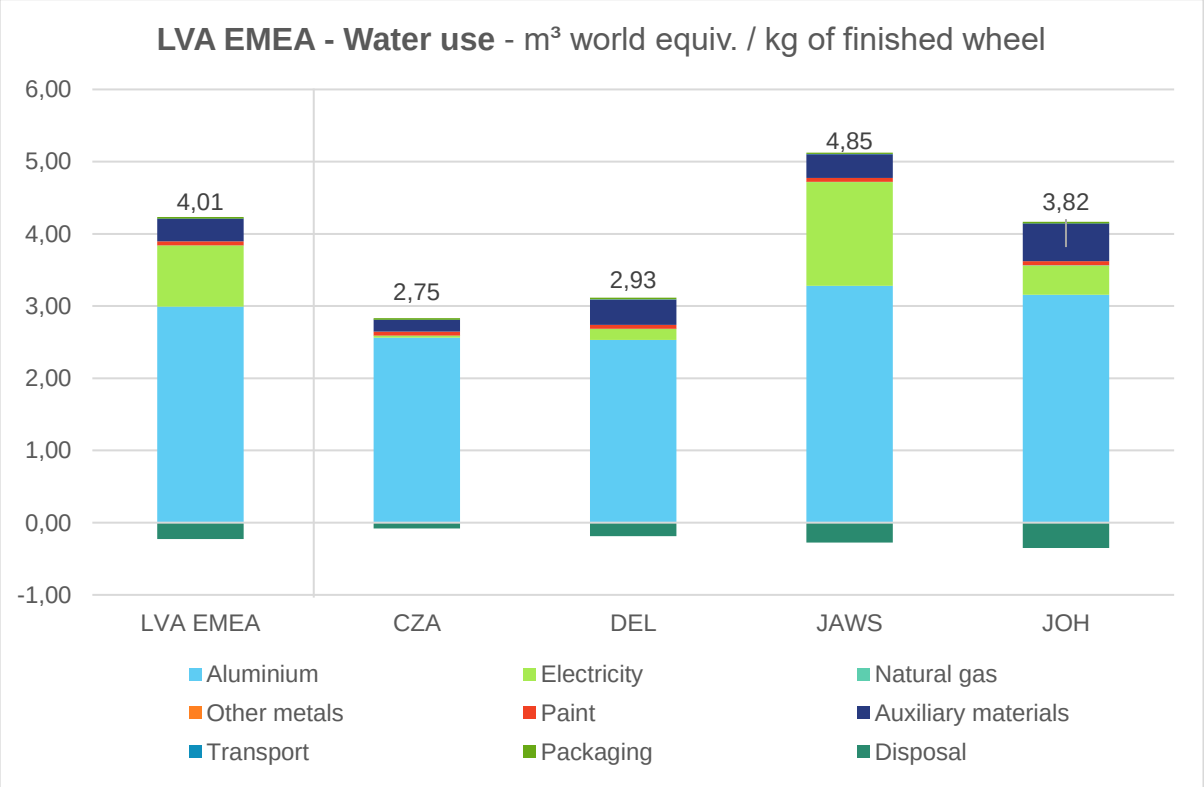
FIGURE 9 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR LVA EMEA




LVA EMEA - Particulate matter
Disease incidences / kg of finished wheel
1,40E-06
1,20E-06
1,00E-06
8,00E-07
6,00E-07
4,00E-07
2,00E-07
0,00E+00
1,11E-06
7,82E-07
7,91E-07
1,31E-06
1,28E-06
LVA EMEA
CZA
DEL
JAWS
JOH
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA EMEA - Photochemical ozone formation, human health
kg NMVOC eq. / kg of finished wheel
8,00E-02
7,00E-02
6,00E-02
5,00E-02
4,00E-02
3,00E-02
2,00E-02
1,00E-02
0,00E+00
5,21E-02
3,32E-02
3,43E-02
6,22E-02
7,26E-02
LVA EMEA
CZA
DEL
JAWS
JOH
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA EMEA - Resource use, fossils - MJ / kg of finished wheel
300
250
200
150
100
50
0
182,1
152,5
154,3
194,4
241,0
LVA EMEA
CZA
DEL
JAWS
JOH
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA EMEA - Water use - m³ world equiv. / kg of finished wheel
6,00
5,00
4,00
3,00
2,00
1,00
0,00
-1,00
4,01
2,75
2,93
4,85
3,82
LVA EMEA
CZA
DEL
JAWS
JOH
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.1.3 LIGHT VEHICLE WHEELS - ALUMINIUM AMERICAS

Operating three facilities, LVA Americas has a combined annual production of 45,4 million kg. Although the Chihuahua plant in Mexico leads individually with a 41,4% share, the two Brazilian sites (Santo Andre and Limeira) collectively generate the majority of the region's volume.

TABLE 9 LIST OF LVA AMERICAS PLANTS

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
LVA Americas		45 395 812		96,4 %	10,4 %
CHI	Chihuahua, Mexico	18 773 235	41,4%	97,4%	13,2%
SAN	Santo Andre, Brazil	14 148 002	31,2%	94,8%	8,1%
LMA	Limeira, Brazil	12 474 575	27,5%	94,5%	8,5%

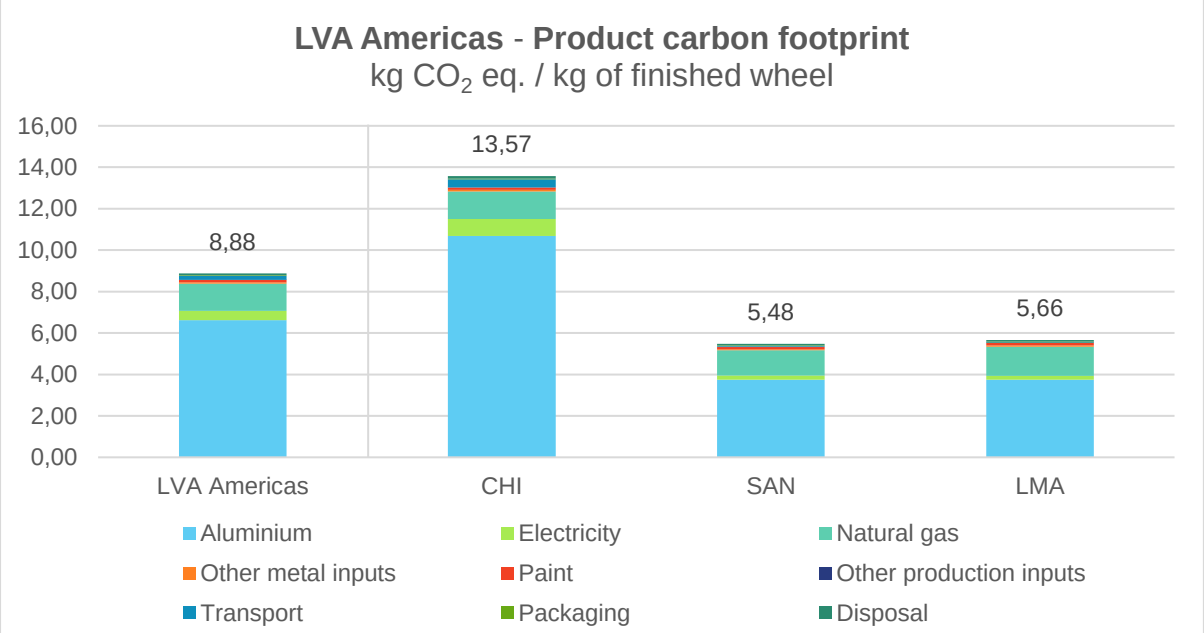
Product carbon footprint

LVA Americas achieves the lowest regional GWP average at 8,88 kg CO_2 eq. per kg of finished wheel, with primary aluminium driving 75 % of the total (6,62 kg CO_2 eq.). The two Brazilian plants (SAN, LMA) show the lowest impacts, while Chihuahua (CHI, Mexico) reports noticeably higher values. CHI's higher production output increases the regional average, an effect that is partially offset by Brazil's combined volume.

TABLE 10 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR LVA AMERICAS (KG CO2 EQ. KG OF FINISHED WHEEL)

	Total	Aluminium	Electricity	Natural gas	Other metals	Paint	Auxiliary materials	Transport	Packaging	Disposal
LVA Americas	8,88	6,62	0,45	1,32	0,07	0,11	0,01	0,17	0,03	0,10
CHI	13,57	10,68	0,82	1,34	0,08	0,11	0,01	0,38	0,03	0,12
SAN	5,48	3,75	0,20	1,22	0,05	0,11	0,01	0,03	0,03	0,08
LMA	5,66	3,75	0,19	1,40	0,08	0,11	0,01	0,02	0,03	0,08

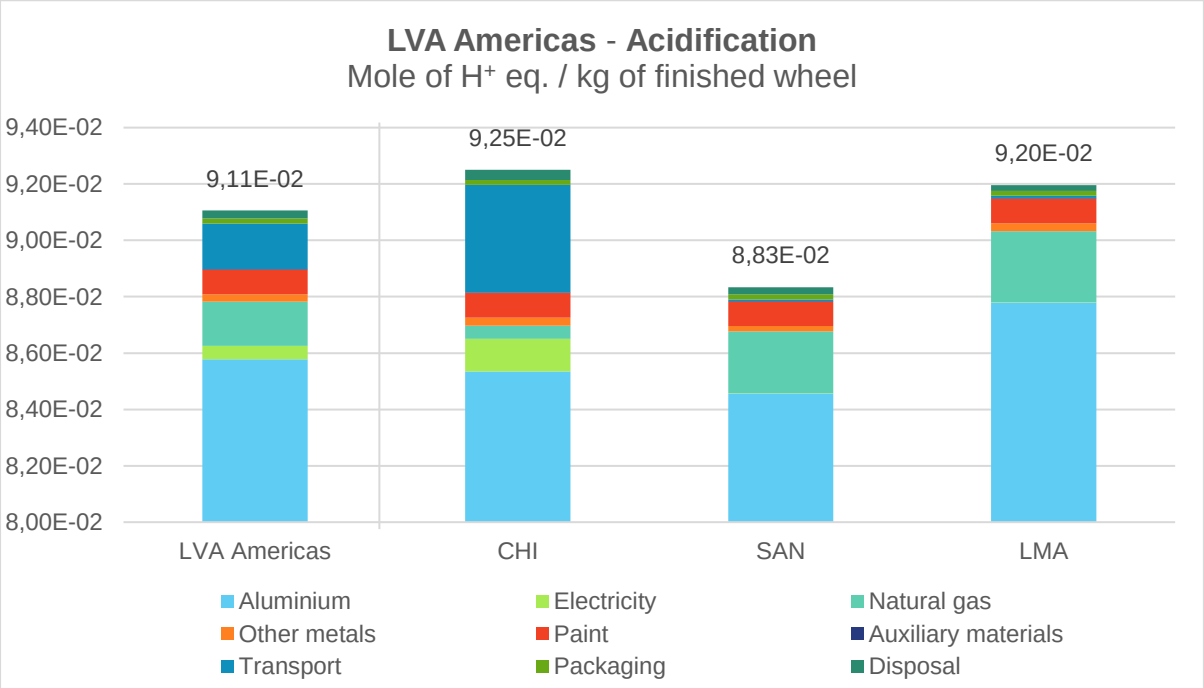
FIGURE 10 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL OF LVA AMERICAS PLANTS AND CONTRIBUTION OF PROCESS GROUPS

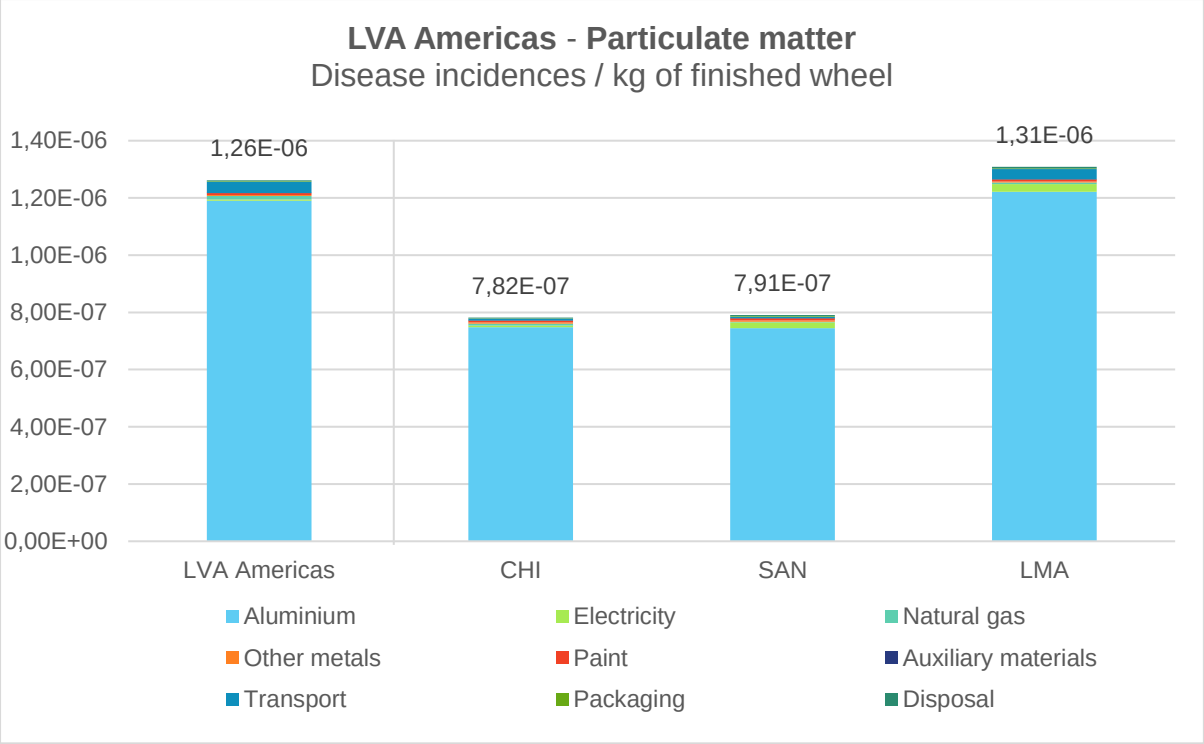


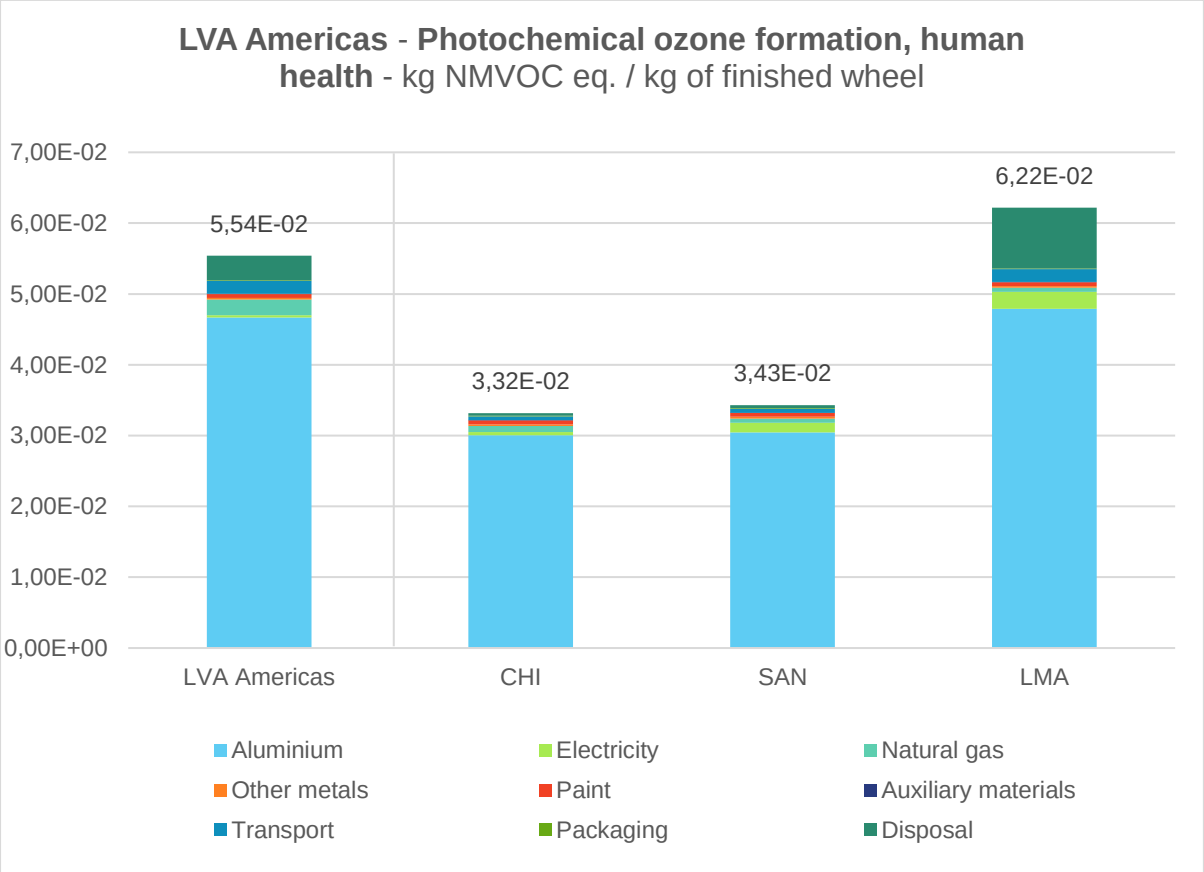
Environmental footprint EF 3.1 – selected impact categories

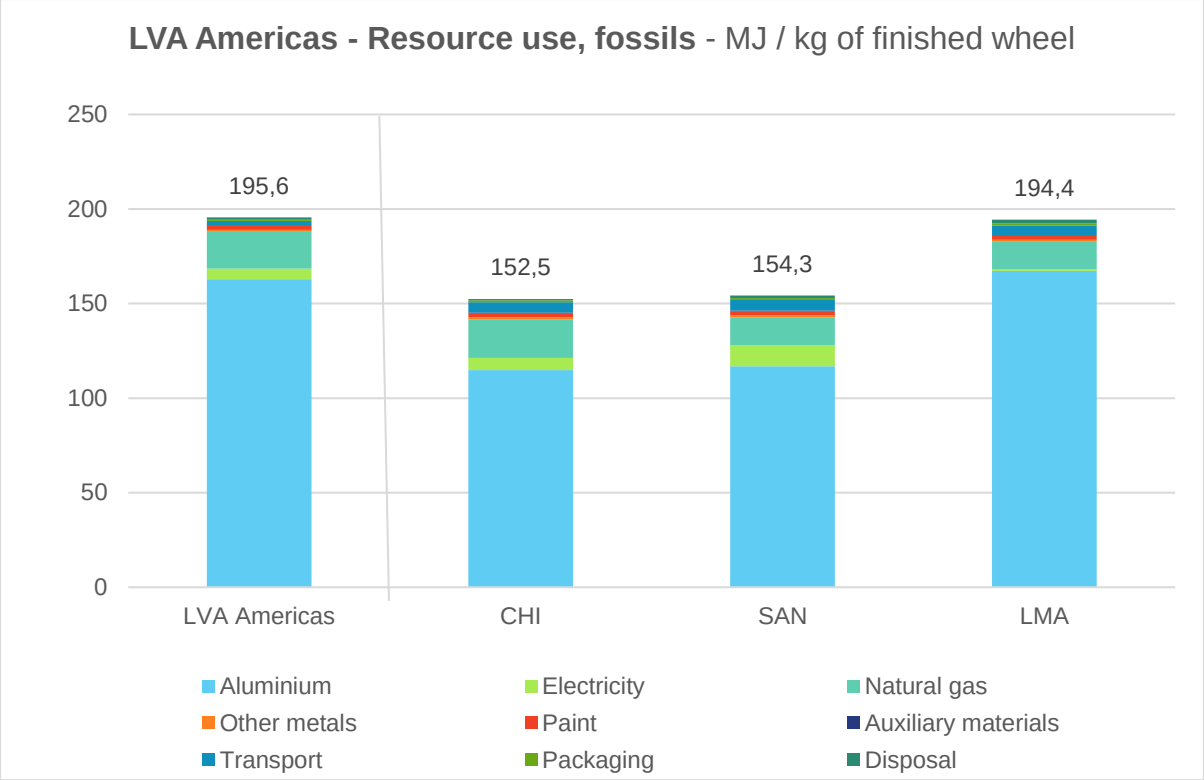
Aluminium dominates all categories. Brazilian plants (SAN/LMA) show lowest impacts in acidification, particulates, fossils and water use; CHI is consistently the highest. In the Americas region, water use is highly consistent across all facilities, ranging from 3.4 to 3.5 m³ world equiv. This impact is overwhelmingly driven by the upstream aluminium production itself (accounting for over 3.1 m³), whereas the local hydroelectric grid mix has only a minor influence.

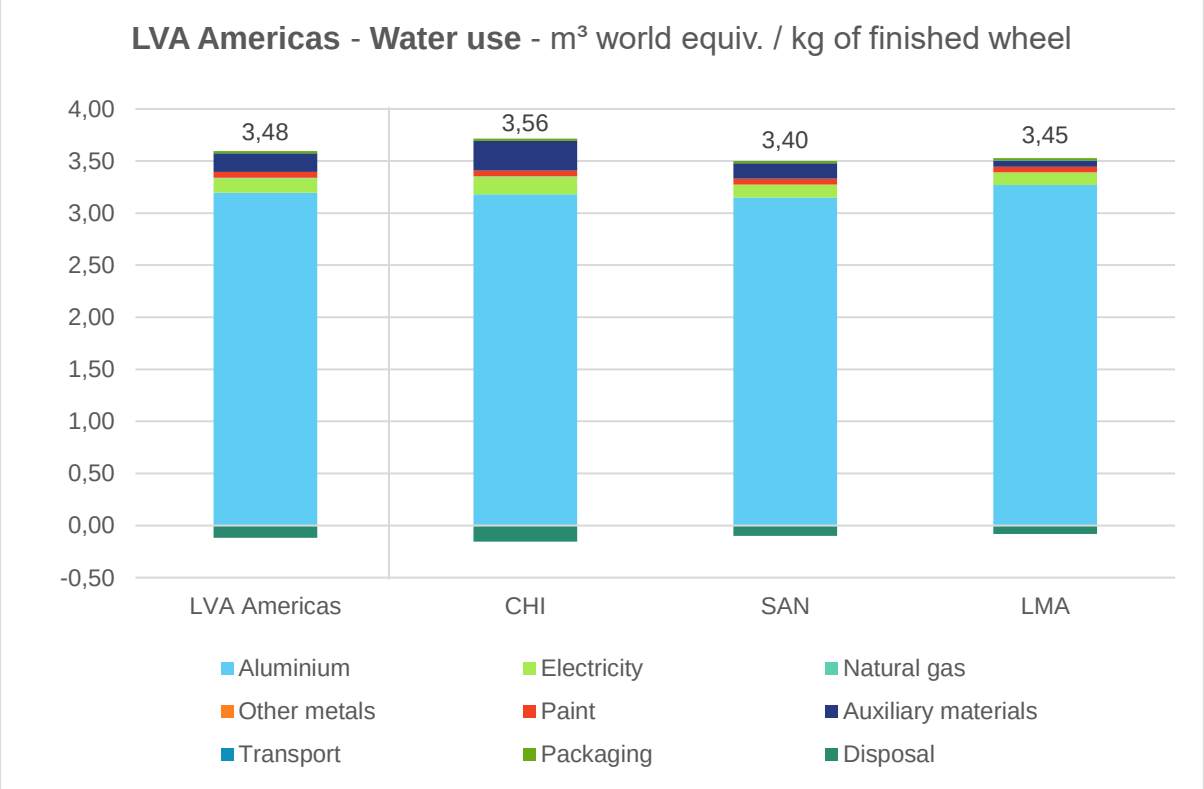
FIGURE 11 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR LVA AMERICAS




LVA Americas - Particulate matter
Disease incidences / kg of finished wheel
1,40E-06
1,20E-06
1,00E-06
8,00E-07
6,00E-07
4,00E-07
2,00E-07
0,00E+00
1,26E-06
7,82E-07
7,91E-07
1,31E-06
LVA Americas
CHI
SAN
LMA
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA Americas - Photochemical ozone formation, human health - kg NMVOC eq. / kg of finished wheel
7,00E-02
6,00E-02
5,00E-02
4,00E-02
3,00E-02
2,00E-02
1,00E-02
0,00E+00
5,54E-02
3,32E-02
3,43E-02
6,22E-02
LVA Americas
CHI
SAN
LMA
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA Americas - Resource use, fossils - MJ / kg of finished wheel
250
200
150
100
50
0
195,6
152,5
154,3
194,4
LVA Americas
CHI
SAN
LMA
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA Americas - Water use - m³ world equiv. / kg of finished wheel
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
0,00
-0,50
3,48
3,56
3,40
3,45
LVA Americas
CHI
SAN
LMA
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.1.4 LIGHT VEHICLE WHEELS - ALUMINIUM ASIA

LVA Asia represents the lowest-volume aluminium region, contributing 18,8 million kg annually. The production is split between two facilities, with the Pune plant in India managing the majority of the output (61,9%) compared to the Saraburi site in Thailand.

TABLE 11 LIST OF LVA ASIA PLANTS

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
LVA Asia		18 848 049		97,0 %	13,4 %
PNA	Pune, India	11 657 781	61,9%	97,6 %	13,5 %
SAR	Saraburi, Thailand	7 190 268	38,1%	96,0 %	13,4 %

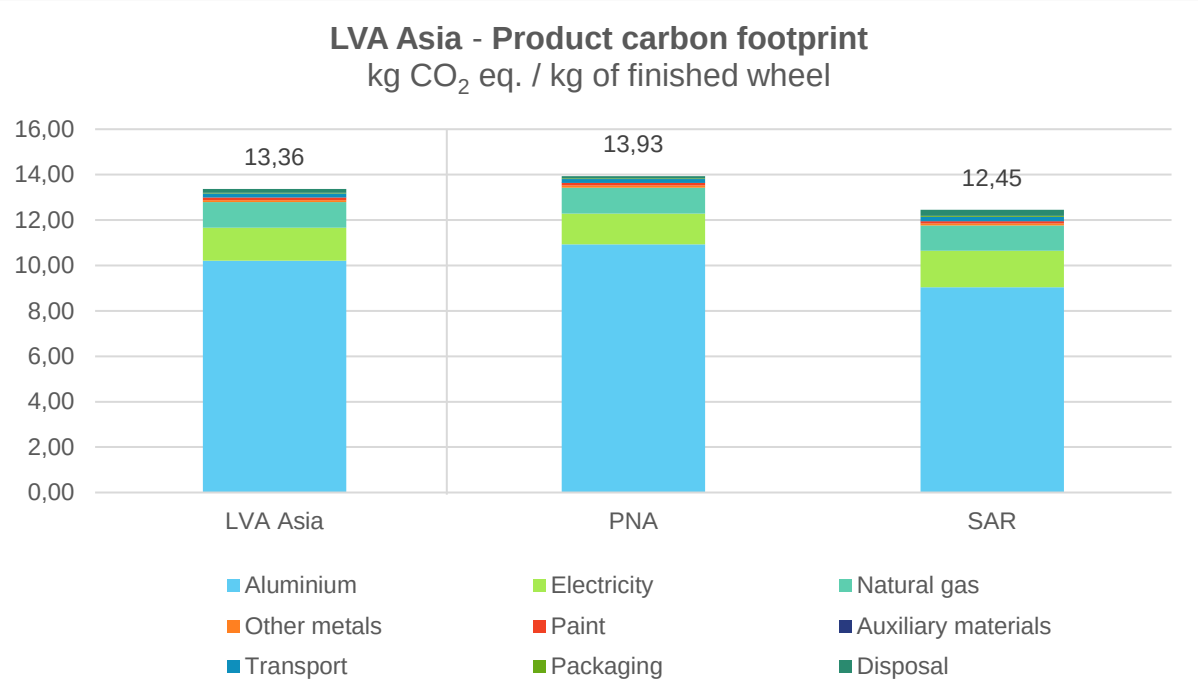
Product carbon footprint

LVA Asia shows the highest regional GWP average at 13,36 kg CO_2 eq. per kg of finished wheel, driven by primary aluminium. Pune (PNA, India) leads at 13,93 kg – reflecting elevated aluminium (10,93 kg) and electricity emissions (1,36 kg) – while Saraburi (SAR, Thailand) performs better at 12,45 kg with substantially lower aluminium sourcing impacts (9,04 kg). PNA's dominant production volume increases the overall regional average, an effect partially balanced by SAR's lower impact profile.

TABLE 12 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR LVA ASIA (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Aluminium	Electricity	Natural gas	Other metals	Paint	Auxiliary materials	Transport	Packaging	Disposal
LVA Asia	13,36	10,21	1,45	1,14	0,08	0,11	0,01	0,17	0,03	0,16
PNA	13,93	10,93	1,36	1,14	0,09	0,11	0,01	0,16	0,03	0,09
SAR	12,45	9,04	1,60	1,12	0,08	0,11	0,01	0,18	0,03	0,27

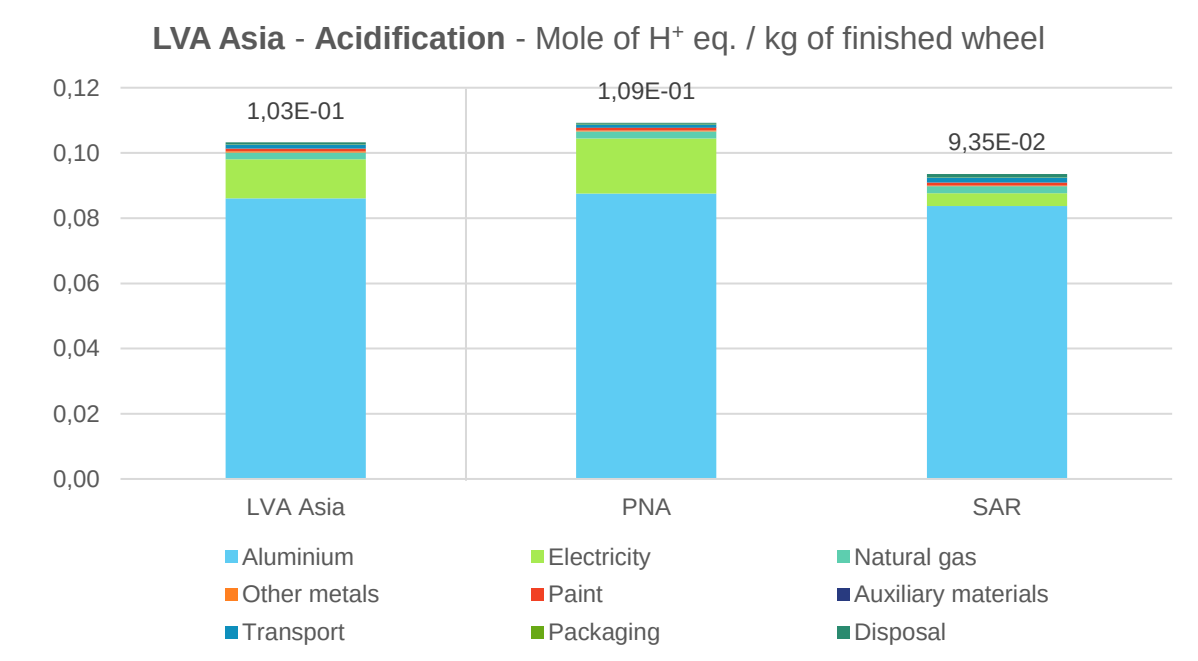
FIGURE 12 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL OF LVA ASIA PLANTS AND CONTRIBUTION OF PROCESS GROUPS

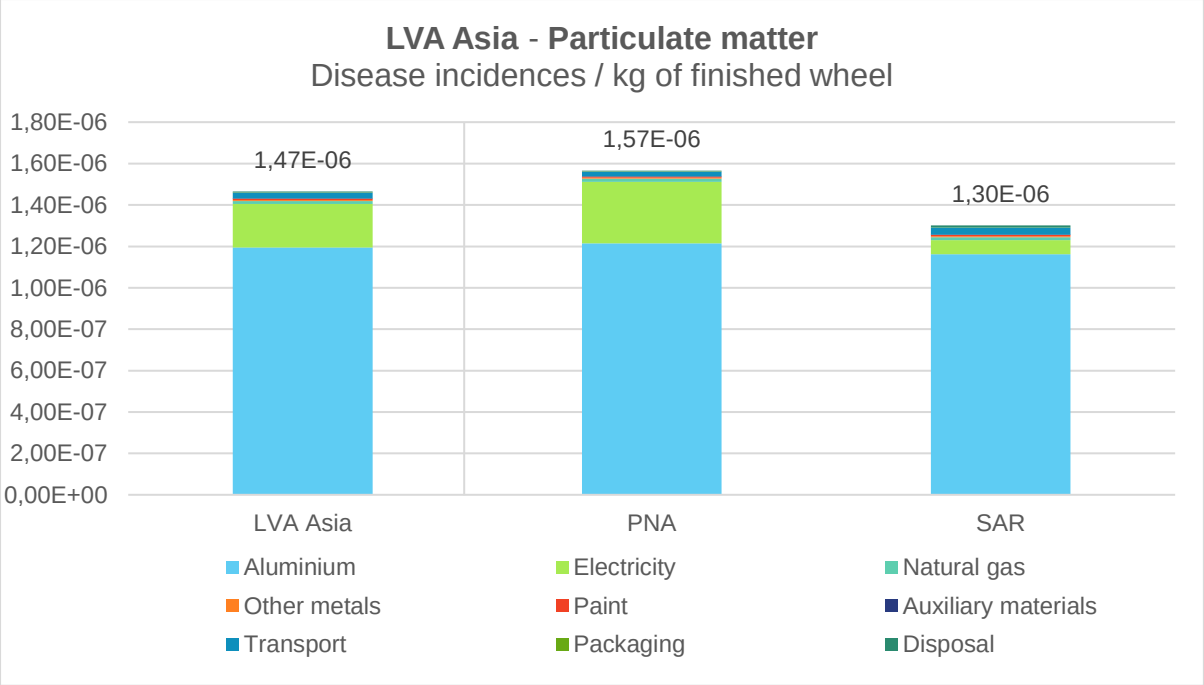


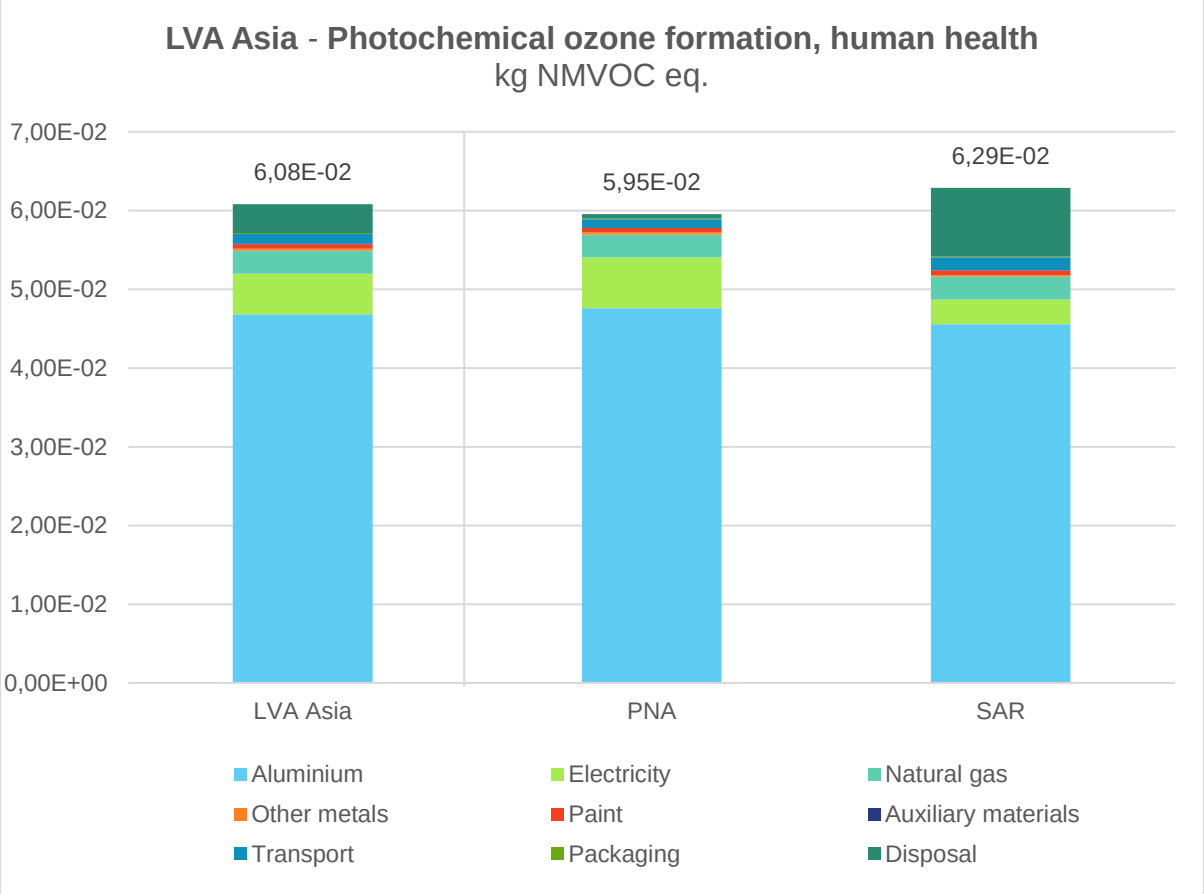
Environmental footprint EF 3.1 – selected impact categories

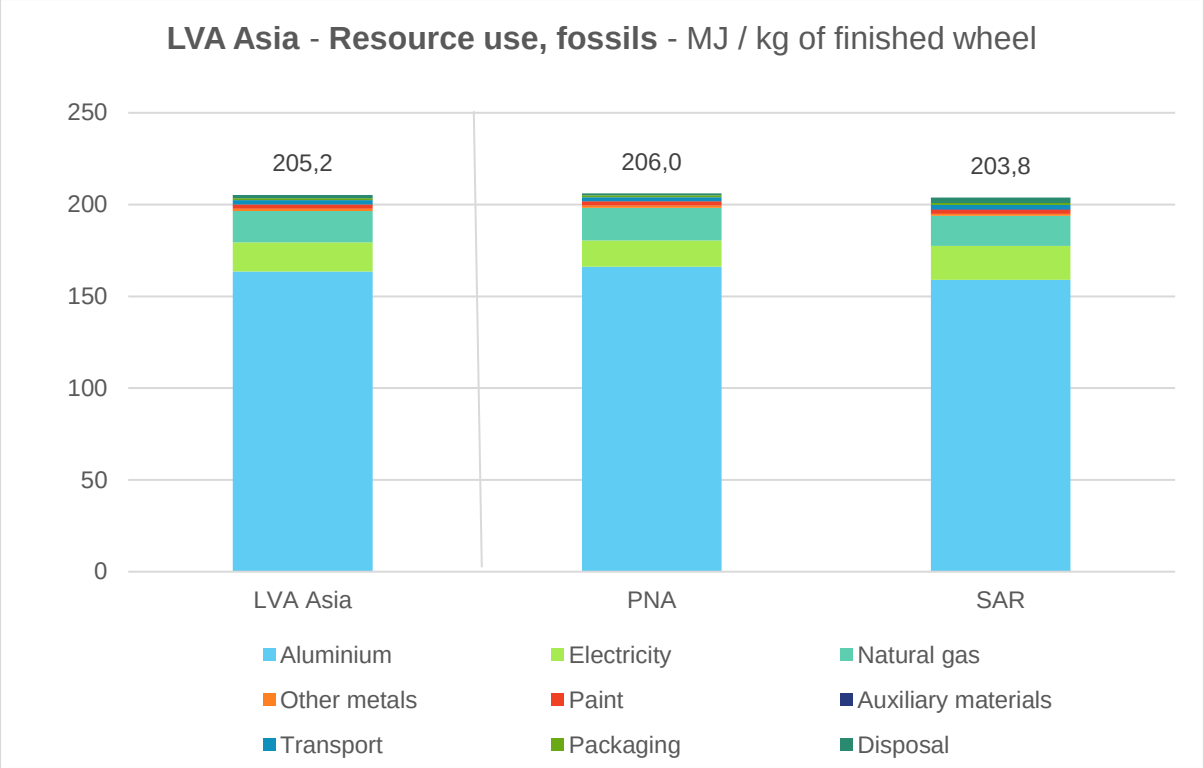
Aluminium dominates all categories. Pune (PNA) shows highest impacts – acidification (10,9E 02 mol H^+ eq.), PM (1,57E-06 incidences) – while Saraburi (SAR) performs below Asia averages. Electricity is more prominent in acidification (Asia avg. 1,03E-01 mol H^+ eq.) and particulates, driven by PNA's dominant share. Water use averages 3,60 m^3 world equiv., with auxiliary materials prominent; PNA leads at 3,64 m^3, followed by SAR at 3,54 m^3.

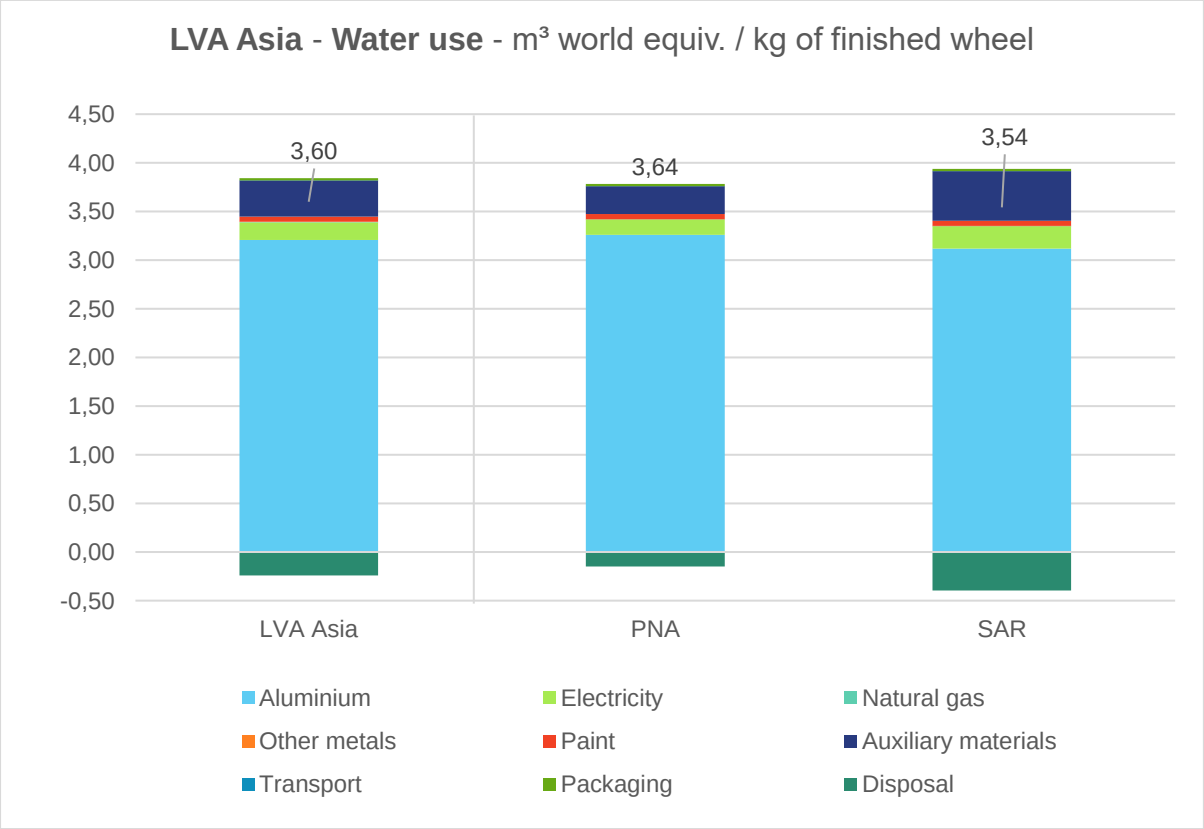
FIGURE 13 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR LVA ASIA




LVA Asia - Particulate matter
Disease incidences / kg of finished wheel
1,80E-06
1,60E-06
1,40E-06
1,20E-06
1,00E-06
8,00E-07
6,00E-07
4,00E-07
2,00E-07
0,00E+00
1,47E-06
1,57E-06
1,30E-06
LVA Asia
PNA
SAR
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA Asia - Photochemical ozone formation, human health
kg NMVOC eq.
7,00E-02
6,00E-02
5,00E-02
4,00E-02
3,00E-02
2,00E-02
1,00E-02
0,00E+00
6,08E-02
5,95E-02
6,29E-02
LVA Asia
PNA
SAR
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA Asia - Resource use, fossils - MJ / kg of finished wheel
250
200
150
100
50
0
205,2
206,0
203,8
LVA Asia
PNA
SAR
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


LVA Asia - Water use - m³ world equiv. / kg of finished wheel
4,50
4,00
3,50
3,00
2,50
2,00
1,50
1,00
0,50
0,00
-0,50
3,60
3,64
3,54
LVA Asia
PNA
SAR
Aluminium
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.2 STEEL SEGMENTS

Iochpe-Maxion's steel portfolio is divided into three segments with different product types and mass ranges: steel wheels for light vehicles, steel wheels for commercial vehicles, and structural components. Because these segments serve different applications and use different amounts of steel per piece, a single weighted average across all of them is not appropriate. Instead, primary data coverage and environmental results are reported separately for each segment and further broken down to plant level.

TABLE 13 LIST OF STEEL SEGMENTS AND PLANTS

Name	Locations / Codes
Light Vehicle Wheels (LVS)	CZS, INC, MAN, LMS, SLP, SED, PNP
Commercial Vehicle Wheels (CV)	KON, JAN, CRZ-MX, NAN, PNT
Structural Components (MSC)	CRZ-MSC, CTG, CST

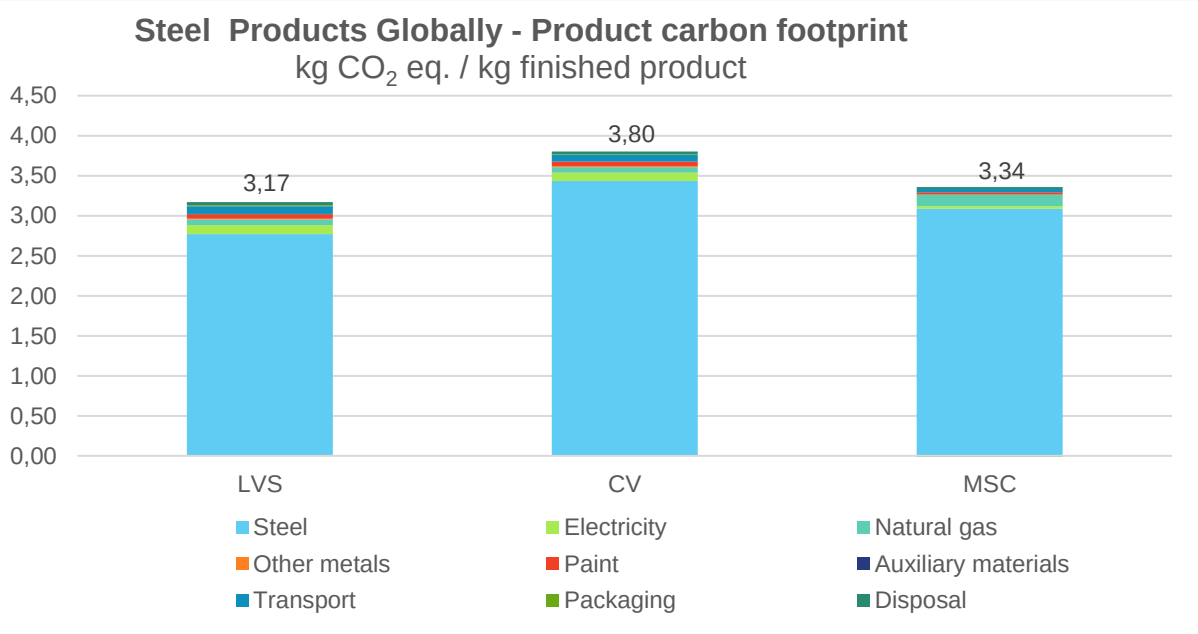
Product carbon footprint

The three steel segments show relatively low carbon footprints per kg of finished wheel compared with aluminium wheels, ranging between 2,80 and 3,80 kg CO_2 eq. per product. Light vehicle wheels - steel perform best at 2,80 kg CO_2 eq., followed by structural components at 3,34 kg, while commercial vehicle wheels exhibit the highest footprint at 3,80 kg CO_2 eq. Across all segments, the steel input itself dominates GWP, typically contributing over 85% of total emissions, with electricity and natural gas playing secondary roles and the remaining process groups having only minor influence.

TABLE 14 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR STEEL SEGMENTS (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary materials	Transport	Packaging	Disposal
LVS	3,17	2,77	0,11	0,07	0,01	0,06	0,00	0,10	0,01	0,04
CV	3,80	3,44	0,10	0,07	0,01	0,06	0,00	0,08	0,01	0,04
MSC	3,34	3,09	0,03	0,15	0,00	0,02	0,00	0,04	-0,01	0,02

FIGURE 14 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR STEEL SEGMENTS AND CONTRIBUTION OF PROCESS GROUPS



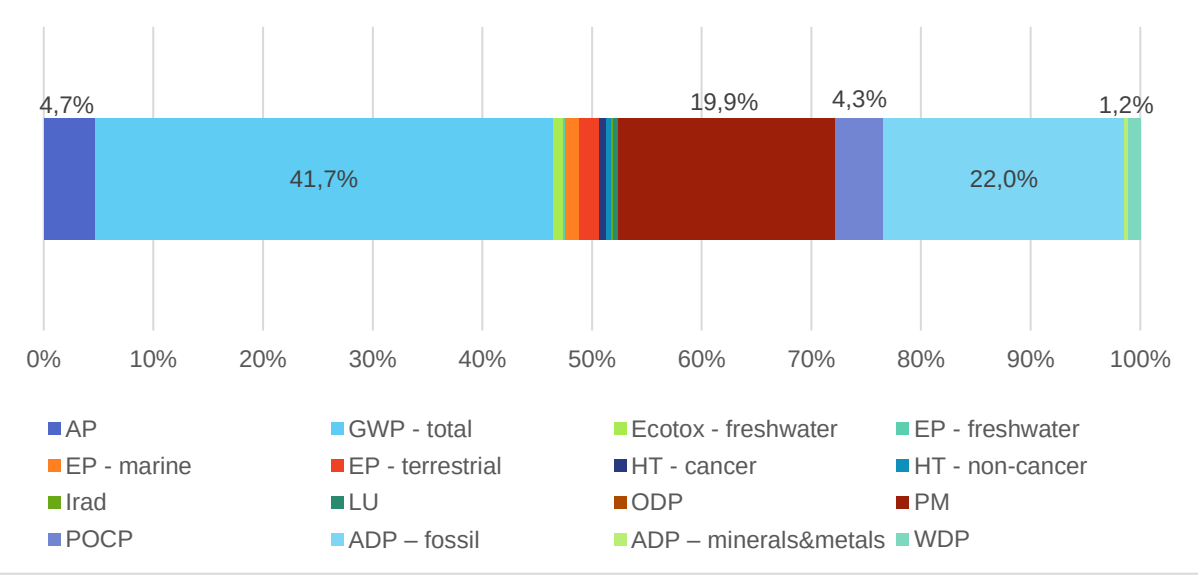
Normalised and weighted results for Environmental footprint 3.1

The share of all EF 3.1 categories on normalised and weighted results for steel processing plants are shown in Figure 13.

For further interpretation, four categories with the biggest share on EF 3.1 except for GWP total were chosen: Resource use, fossil (ADP fossil, 22 %), Particulate matter (PM, 19,9 %), Acidification (AP, 4,7 %) and Photochemical ozone formation, human health (POCP, 4,3 %). Water depletion potential (WDP) contributes with 1,2 %.

For full normalised and weighted results for all aluminium plants, see Table 38 in Appendix.

FIGURE 15 SHARE OF EF 3.1 IMPACT CATEGORIES ON SINGLE SCORE RESULT FOR ALL STEEL PROCESSING PLANTS



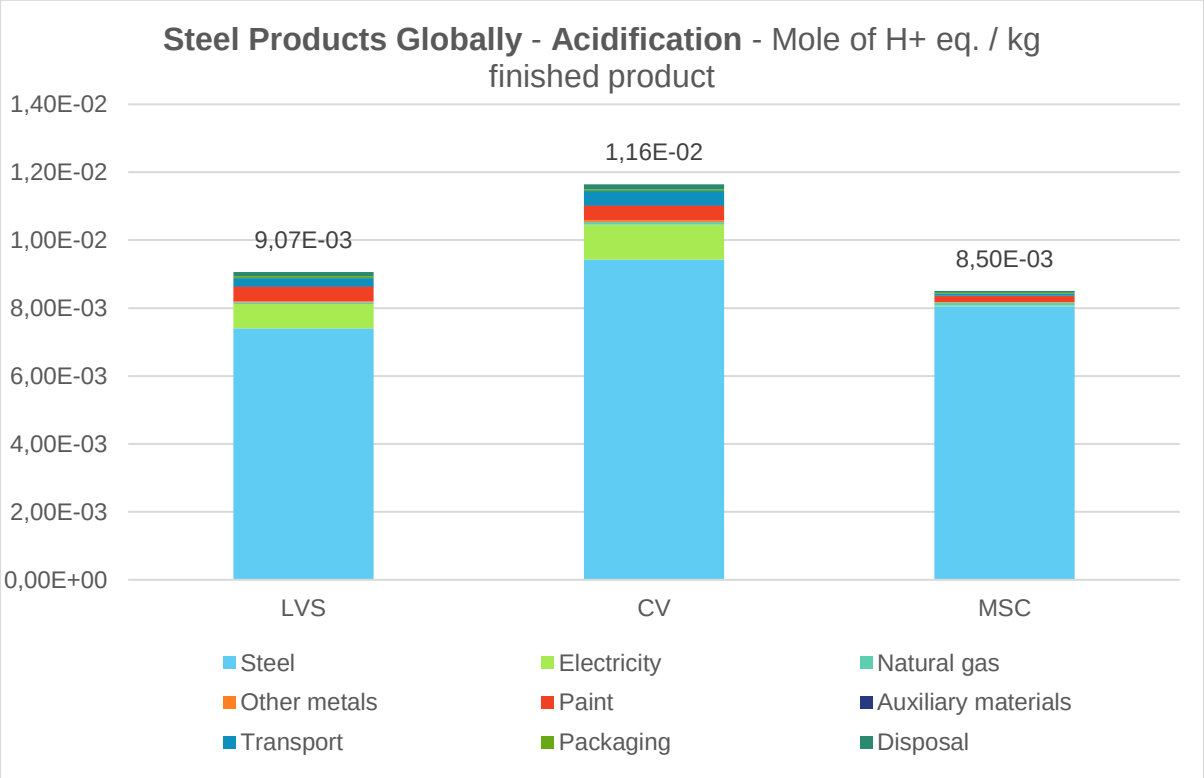
EF 3.1- Selected impact categories

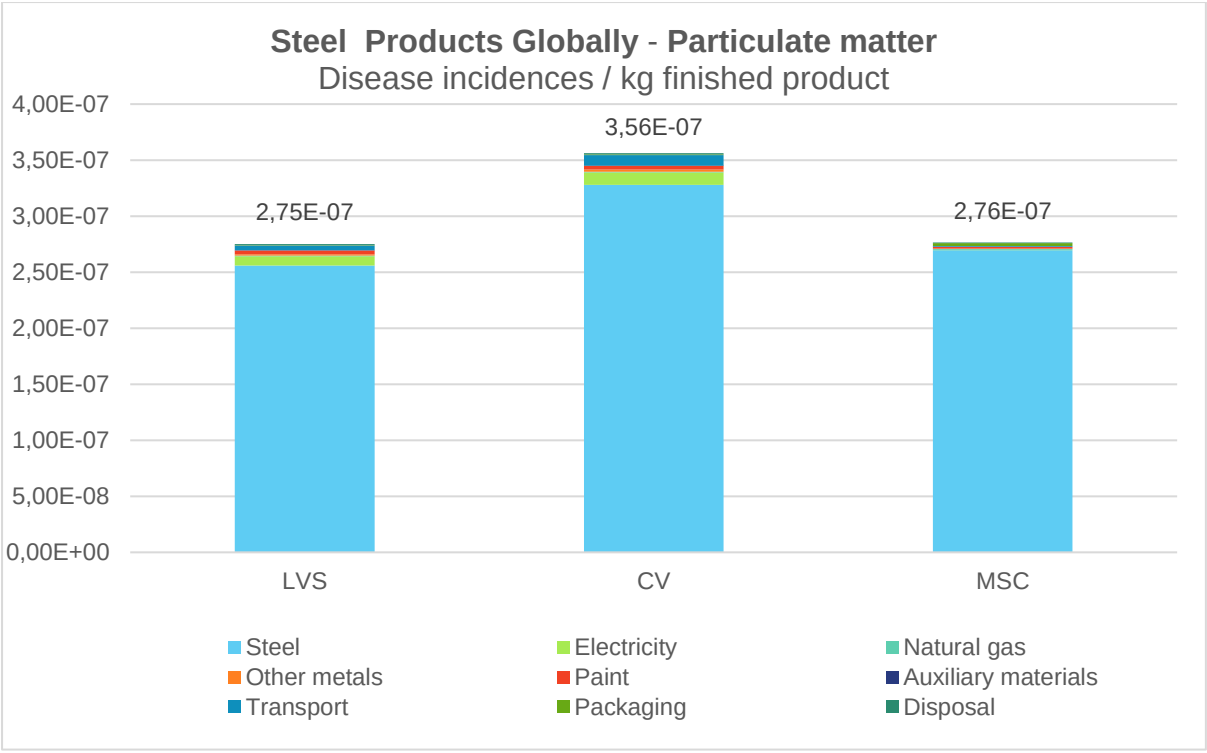
Across all steel segments and regions, the raw steel input consistently remains the dominant contributor to all evaluated impact categories, typically driving over 85% of total emissions.

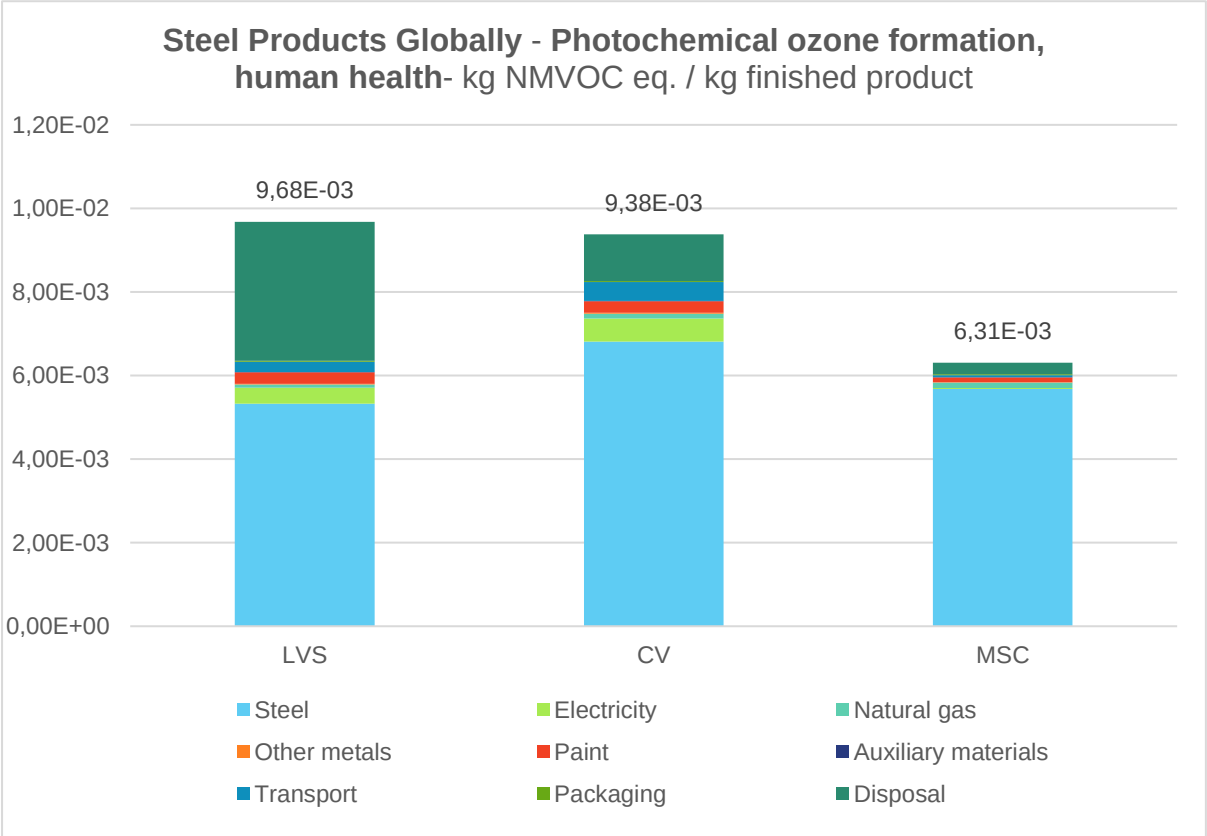
Commercial vehicle wheels show the highest values for acidification (1,16E-02 mol H^+ eq.), particulate matter (3,56E-07 disease incidences), and photochemical ozone formation (9,38E- 03 kg NMVOC eq.). Structural components perform best overall, while steel passenger car wheels fall between the two, except for photochemical ozone formation.

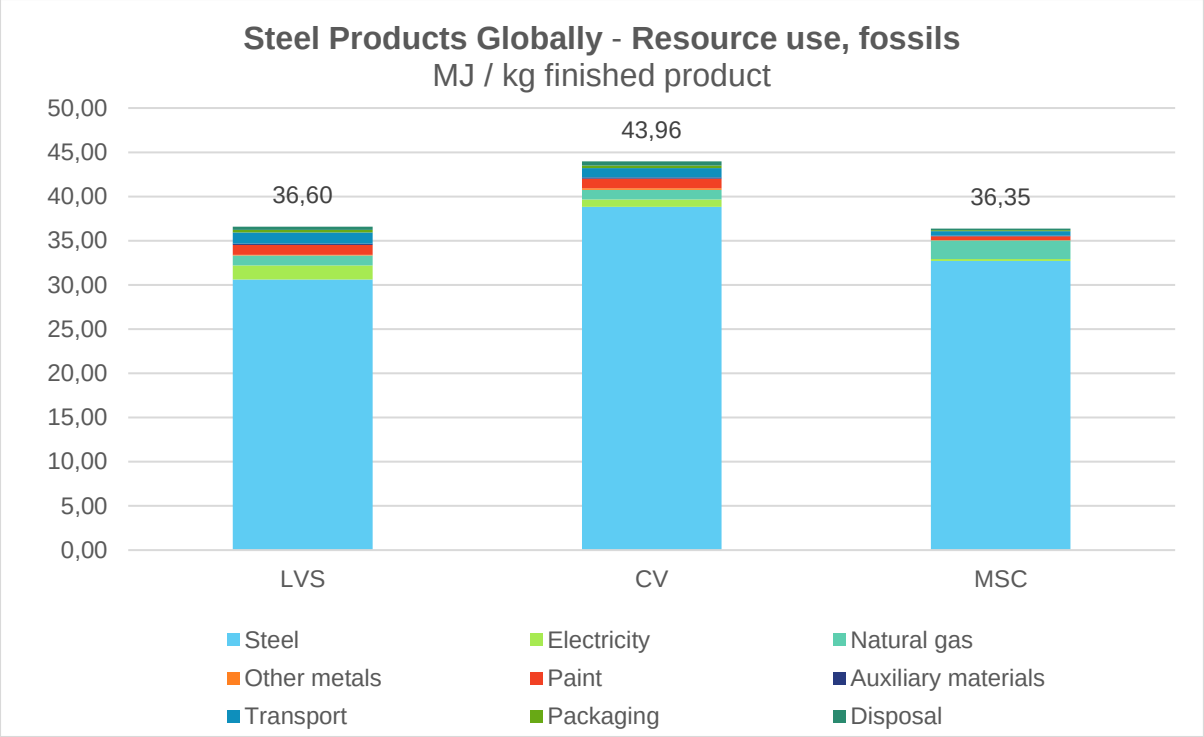
Fossil resource use is similar for all segments at 36–37 MJ per product and water use ranges from 0,31 to 0,49 m^3 world equivalent across segments, with auxiliary materials contributing more significantly than in other impact categories.

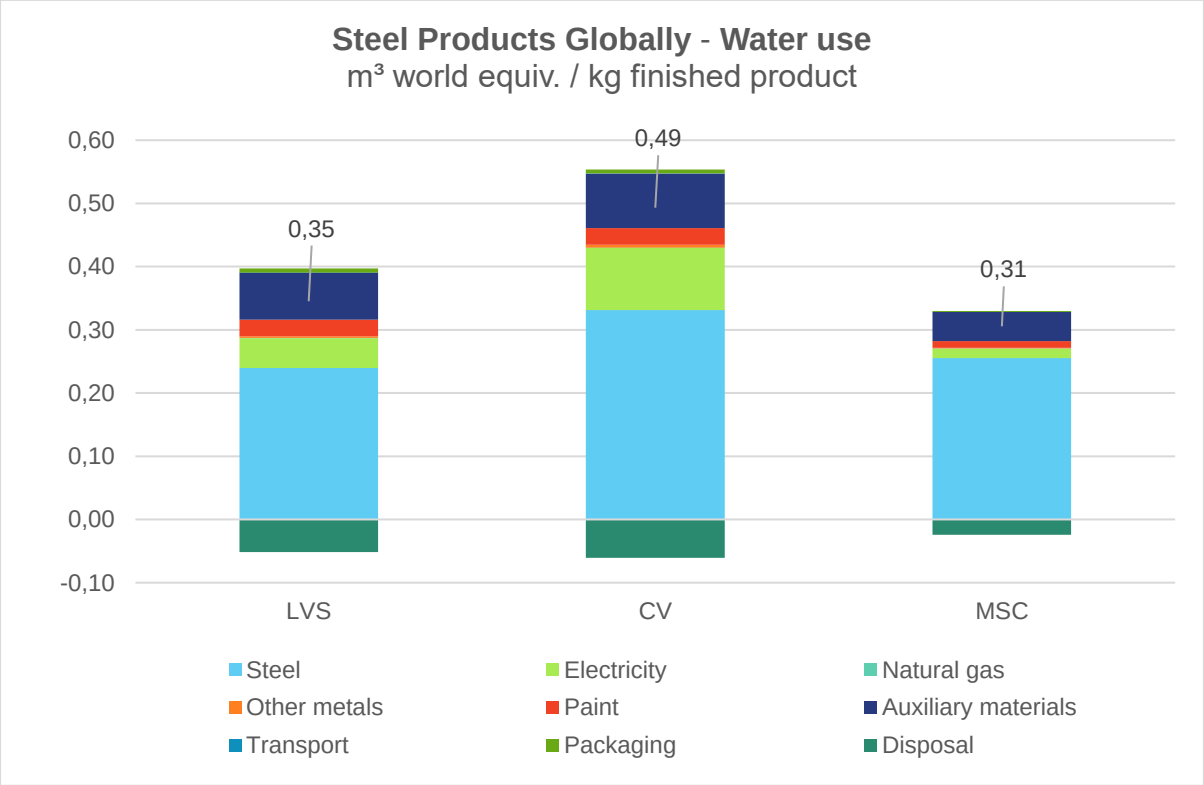
FIGURE 16 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR STEEL SEGMENTS




Steel Products Globally - Particulate matter
Disease incidences / kg finished product
4,00E-07
3,50E-07
3,00E-07
2,50E-07
2,00E-07
1,50E-07
1,00E-07
5,00E-08
0,00E+00
2,75E-07
3,56E-07
2,76E-07
LVS
CV
MSC
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Steel Products Globally - Photochemical ozone formation, human health- kg NMVOC eq. / kg finished product
1,20E-02
1,00E-02
8,00E-03
6,00E-03
4,00E-03
2,00E-03
0,00E+00
9,68E-03
9,38E-03
6,31E-03
LVS
CV
MSC
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Steel Products Globally - Resource use, fossils
MJ / kg finished product
50,00
45,00
40,00
35,00
30,00
25,00
20,00
15,00
10,00
5,00
0,00
36,60
43,96
36,35
LVS
CV
MSC
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Steel Products Globally - Water use
m³ world equiv. / kg finished product
0,60
0,50
0,40
0,30
0,20
0,10
0,00
-0,10
0,35
0,49
0,31
LVS
CV
MSC
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.2.1 LIGHT VEHICLE WHEELS -STEEL

The global production of light vehicle steel wheels reaches 326,1 million kg annually, distributed across seven facilities worldwide. The output is largely driven by the Americas region, with the San Luis Potosi (Mexico), Limeira (Brazil), and Sedalia (USA) plants collectively accounting for almost 60% of the total segment volume.

TABLE 15 LIST OF LIGHT VEHICLE WHEELS - STEEL

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
LVS Globally		**326 068 377**		96,2%	9,1%
CZS	Ostrava Steel, Czech R.	24 623 385	7,6%	94,9%	7,4%
MAN	Manresa, Spain	36 802 204	11,3%	96,2%	12,7%
INC	Manisa, Turkey	35 879 825	11,0%	93,6%	7,5%
LMS	Limeira Steel, Brazil	57 179 795	17,5%	96,5%	6,0%
SLP	San Luis Potosi, Mexico	82 757 605	25,4%	97,3%	9,0%
SED	Sedalia, USA	52 084 267	16,0%	95,8%	12,5%
PNP	Pune Pass Car, India	36 741 296	11,3%	97,0%	8,7%

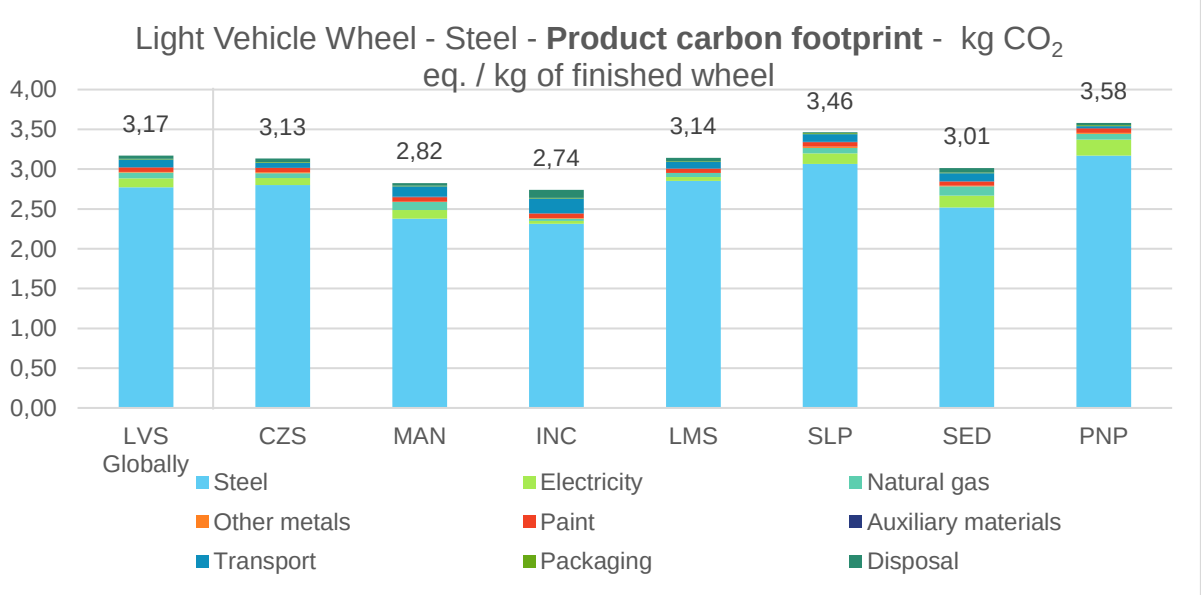
Product carbon footprint

Light vehicle wheels – steel have a carbon footprint of 3,17 kg CO_2 eq. per kg of finished wheel, with steel contributing 87% of the total. The best performer is INC at 2,74 kg CO_2 eq., while PNP has the highest values at 3,58 kg CO_2 eq. Electricity and natural gas add only a small share.

TABLE 16 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR LIGHT VEHICLE WHEELS - STEEL PLANTS (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metal s	Paint	Auxiliary materials	Transport	Packaging	Disposal
LVS Globally	3,17	2,77	0,11	0,07	0,01	0,06	0,00	0,10	0,01	0,04
CZS	3,13	2,80	0,09	0,06	0,01	0,06	0,00	0,06	0,01	0,04
MAN	2,82	2,38	0,11	0,10	0,00	0,06	0,01	0,13	0,01	0,03
INC	2,74	2,31	0,04	0,03	0,01	0,06	0,01	0,19	0,01	0,10
LMS	3,14	2,85	0,05	0,05	0,00	0,06	0,00	0,08	0,01	0,04
SLP	3,46	3,07	0,13	0,07	0,01	0,06	0,00	0,10	0,01	0,01
SED	3,01	2,52	0,15	0,12	0,01	0,06	0,00	0,10	0,01	0,05
PNP	3,58	3,17	0,20	0,07	0,01	0,06	0,00	0,03	0,01	0,03

FIGURE 17 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR LIGHT VEHICLE WHEELS - STEEL PLANTS AND CONTRIBUTION OF PROCESS GROUPS

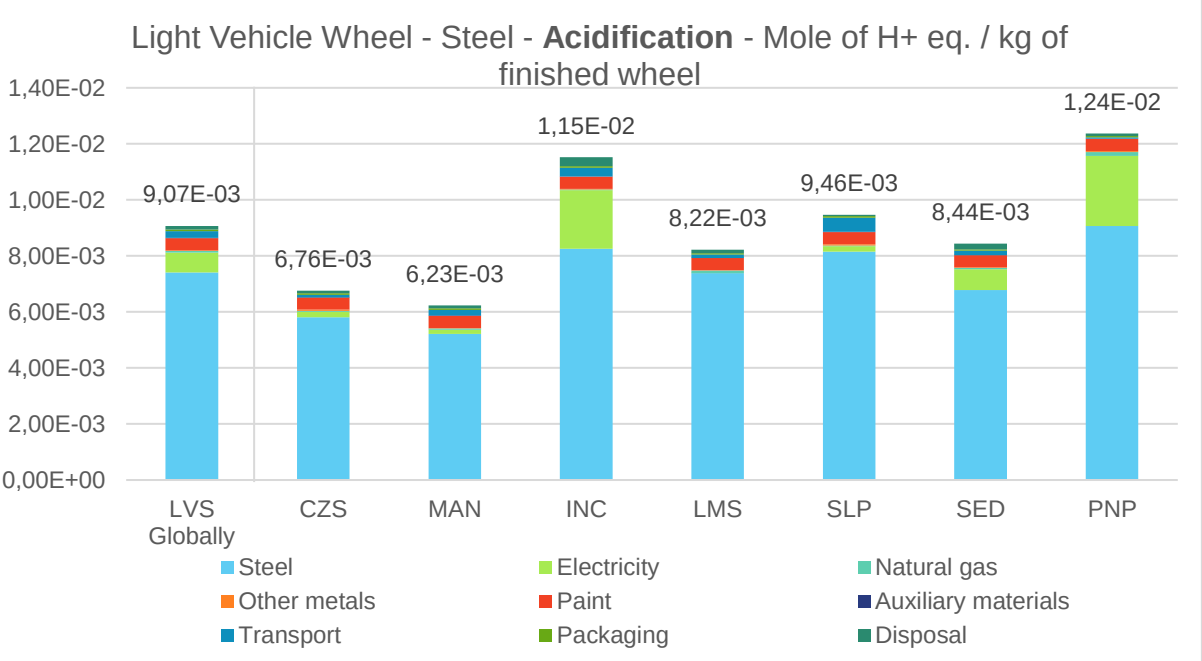


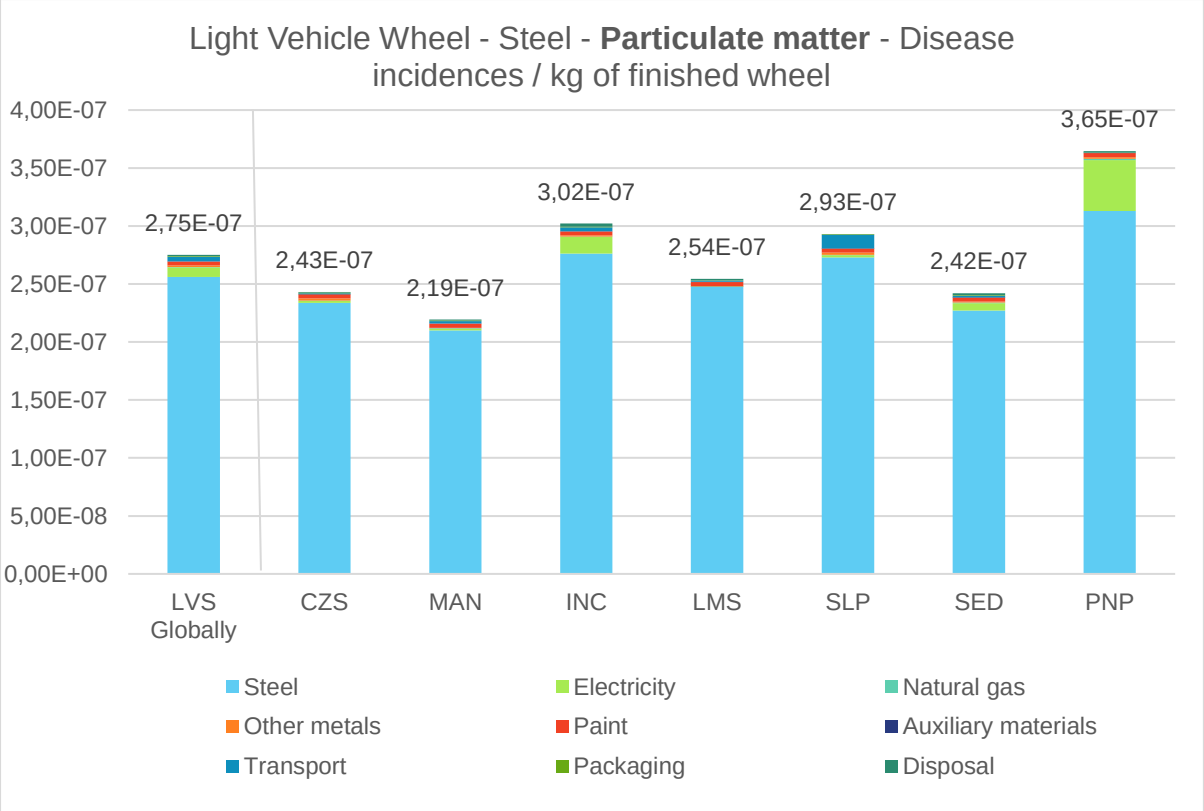
EF 3.1- Selected impact categories

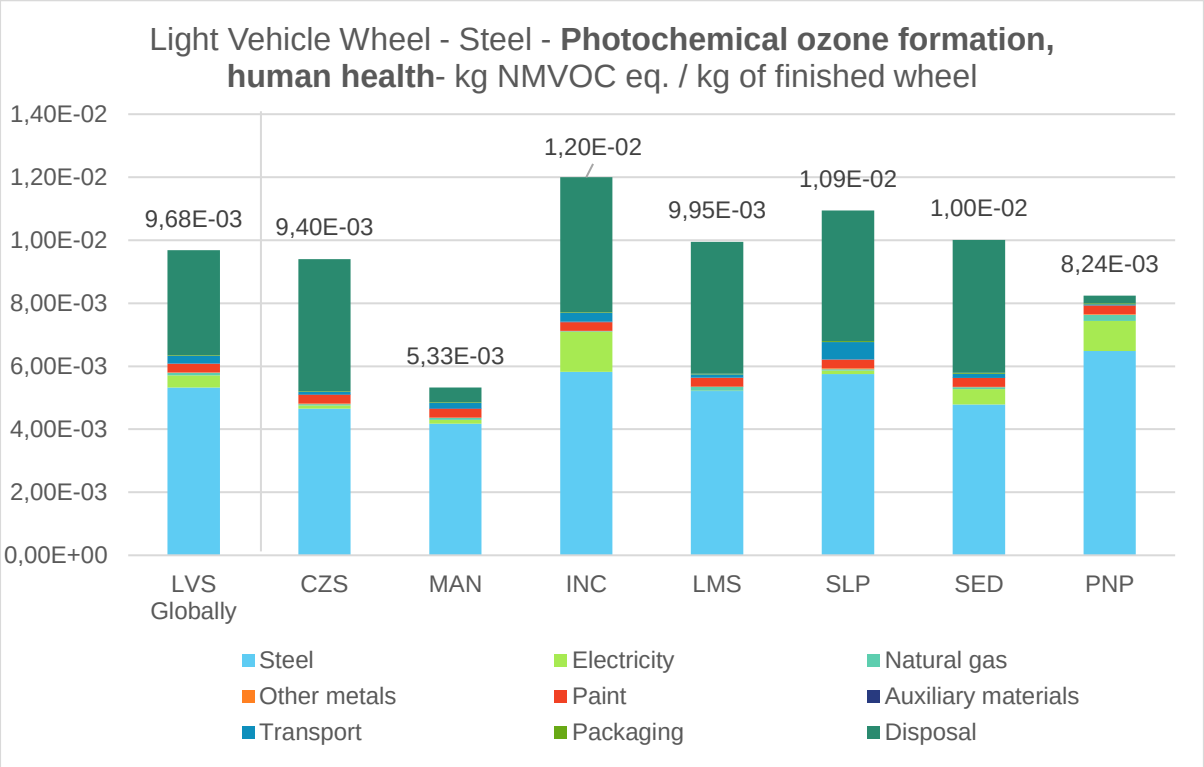
PNP and MAN show the highest values for acidification (1,24E-02 and 1,15E-02 mol H^+ eq.), particulate matter and photochemical ozone formation. In this category, also the impact of packaging is very prominent.

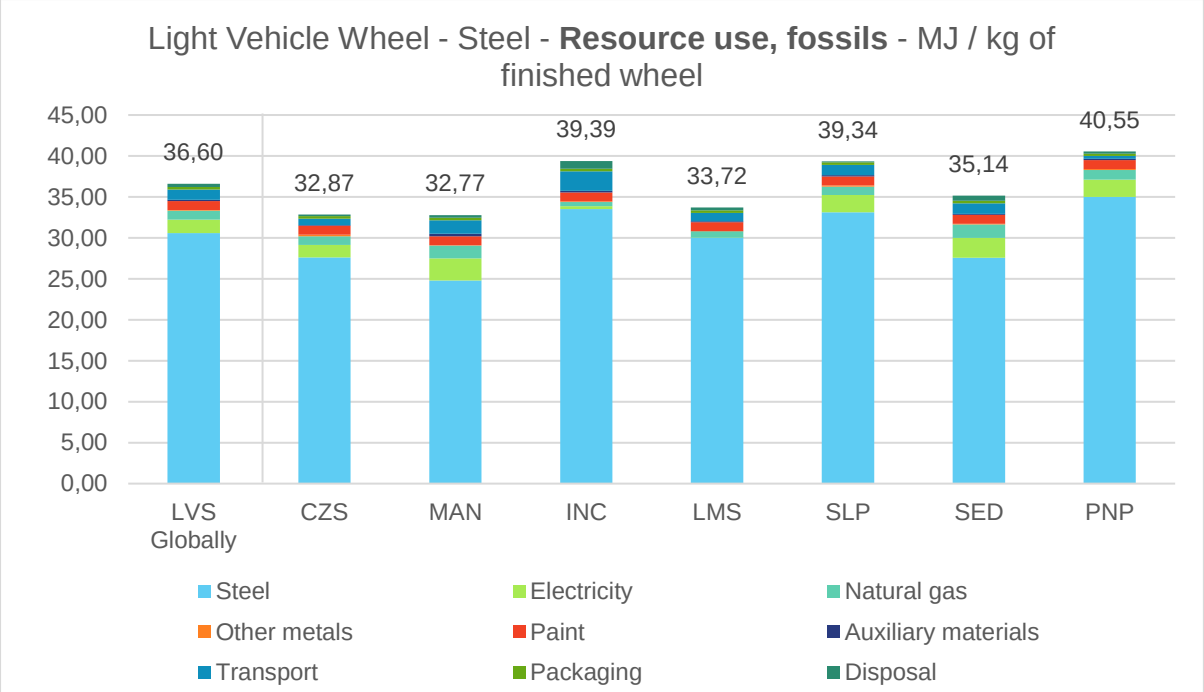
Fossil resource use is similar across plants at 33–41 MJ with an average value 36,6 MJ, while water use varies more strongly, from 0,12 m^3 at CZS and MAN to 0,64 m^3 at PNP. In water use, electricity, natural gas and auxiliary materials play a more visible role than in other categories.

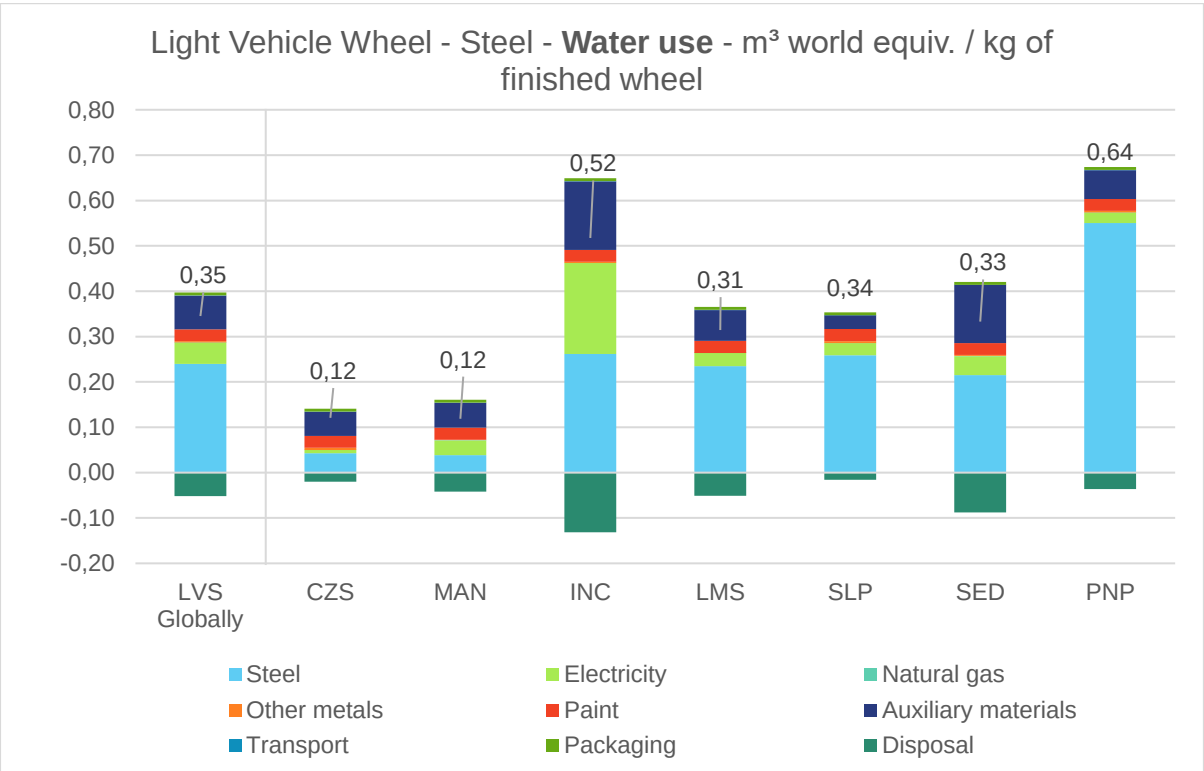
FIGURE 18 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR LIGHT VEHICLE WHEELS – STEEL




Light Vehicle Wheel - Steel - Particulate matter - Disease incidences / kg of finished wheel
4,00E-07
3,50E-07
3,00E-07
2,50E-07
2,00E-07
1,50E-07
1,00E-07
5,00E-08
0,00E+00
2,75E-07
2,43E-07
2,19E-07
3,02E-07
2,54E-07
2,93E-07
2,42E-07
3,65E-07
LVS Globally
CZS
MAN
INC
LMS
SLP
SED
PNP
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Light Vehicle Wheel - Steel - Photochemical ozone formation, human health- kg NMVOC eq. / kg of finished wheel
1,40E-02
1,20E-02
1,00E-02
8,00E-03
6,00E-03
4,00E-03
2,00E-03
0,00E+00
9,68E-03
9,40E-03
5,33E-03
1,20E-02
9,95E-03
1,09E-02
1,00E-02
8,24E-03
LVS Globally
CZS
MAN
INC
LMS
SLP
SED
PNP
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Light Vehicle Wheel - Steel - **Resource use, fossils** - MJ / kg of finished wheel
45,00
40,00
35,00
30,00
25,00
20,00
15,00
10,00
5,00
0,00
36,60
32,87
32,77
39,39
33,72
39,34
35,14
40,55
LVS Globally
CZS
MAN
INC
LMS
SLP
SED
PNP
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Light Vehicle Wheel - Steel - **Water use** - m³ world equiv. / kg of finished wheel
0,80
0,70
0,60
0,50
0,40
0,30
0,20
0,10
0,00
-0,10
-0,20
0,35
0,12
0,12
0,52
0,31
0,34
0,33
0,64
LVS Globally
CZS
MAN
INC
LMS
SLP
SED
PNP
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.2.2 COMMERCIAL VEHICLE WHEELS - STEEL

With a total annual output of 235,7 million kg, the commercial vehicle wheel segment operates five plants globally. The Cruzeiro-MX facility in Brazil is the core driver of this segment, manufacturing over a third of the total volume (34,7%), followed by significant contributions from the Manisa (JAN) plant in Turkey and the Konigswinter site in Germany.

TABLE 17 LIST OF COMMERCIAL VEHICLE WHEELS - STEEL

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
CV Globally		**235 657 121**		96,7%	**6,4%**
KON	Konigswinter, Germany	42 803 336	18,2%	97,9%	10,6%
JAN	Manisa, Turkey	55 400 535	23,5%	95,6%	4,8%
CRZ-MX	Cruzeiro, Brazil	81 793 314	34,7%	96,5%	4,9%
NAN	Nantong, China	12 311 149	5,2%	96,8%	7,5%
PNT	Pune Truck, India	43 348 787	18,4%	97,2%	5,4%

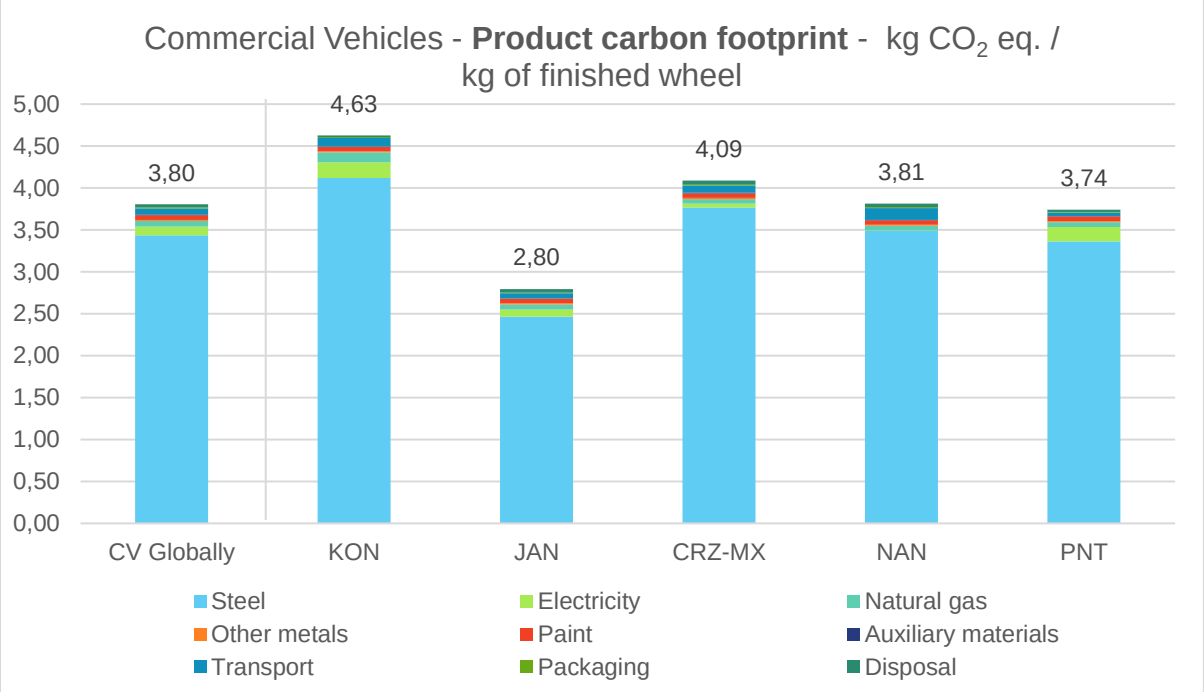
Product carbon footprint

Commercial vehicle wheels have a carbon footprint of 3,80 kg CO_2 eq. per kg of finished wheel, with steel itself driving 90% of the total. The best performer is JAN at 2,80 kg CO_2 eq., while KON has the highest value at 4,63 kg CO_2 eq. Electricity and natural gas add only a small share to the result.

TABLE 18 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR COMMERCIAL VEHICLE WHEELS - STEEL PLANTS (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metal s	Paint	Auxiliary materials	Transport	Packaging	Disposal
CV Globally	3,80	3,44	0,10	0,07	0,01	0,06	0,00	0,08	0,01	0,04
KON	4,63	4,12	0,19	0,12	0,01	0,06	0,00	0,11	0,01	0,02
JAN	2,80	2,46	0,09	0,06	0,01	0,06	0,00	0,06	0,01	0,04
CRZ-MX	4,09	3,77	0,05	0,05	0,01	0,06	0,01	0,08	0,01	0,05
NAN	3,81	3,49	0,00	0,06	0,01	0,06	0,00	0,14	0,01	0,04
PNT	3,74	3,36	0,17	0,06	0,01	0,06	0,00	0,04	0,01	0,02

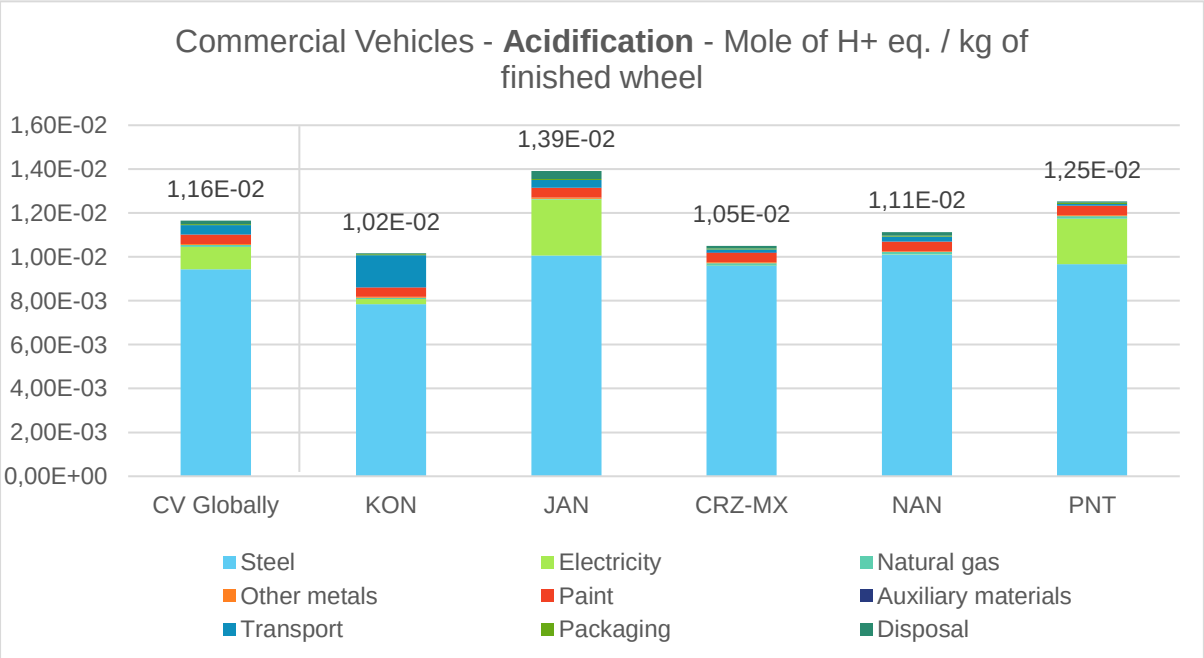
FIGURE 19 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR COMMERCIAL VEHICLE WHEELS - STEEL PLANTS AND CONTRIBUTION OF PROCESS GROUPS

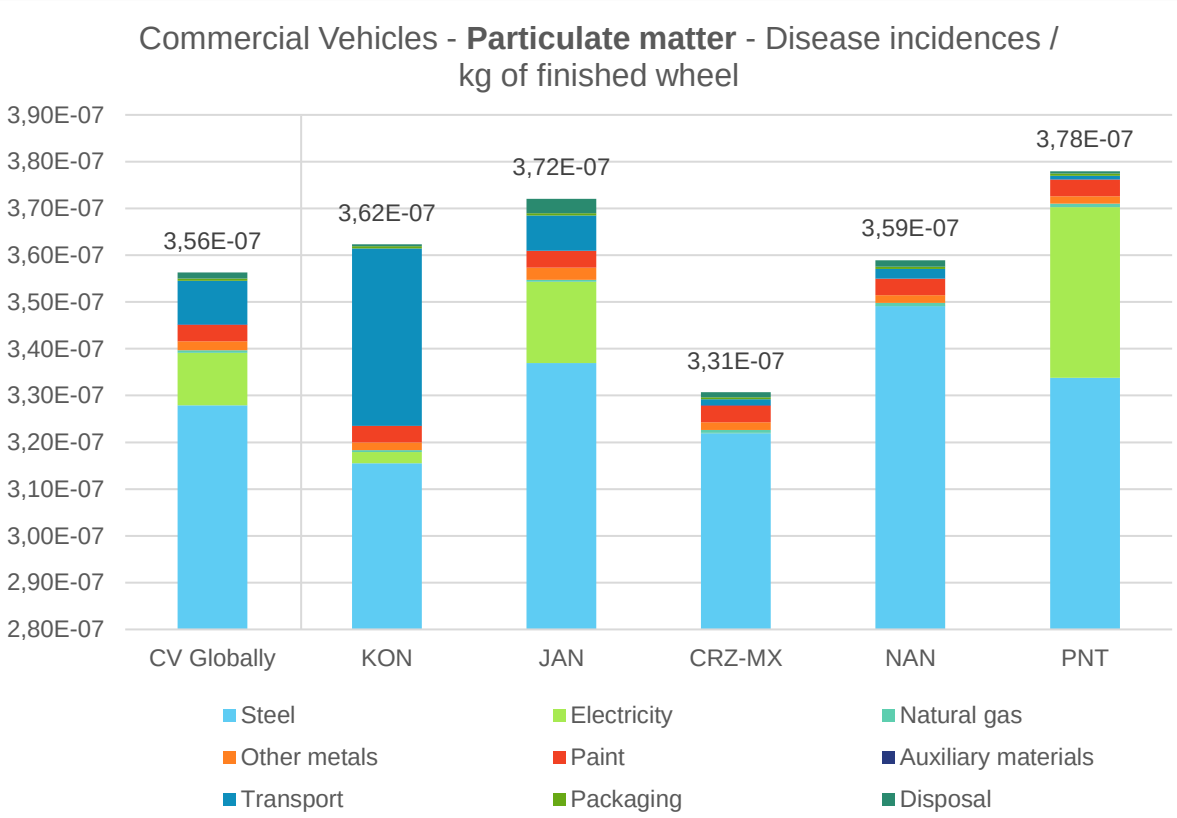


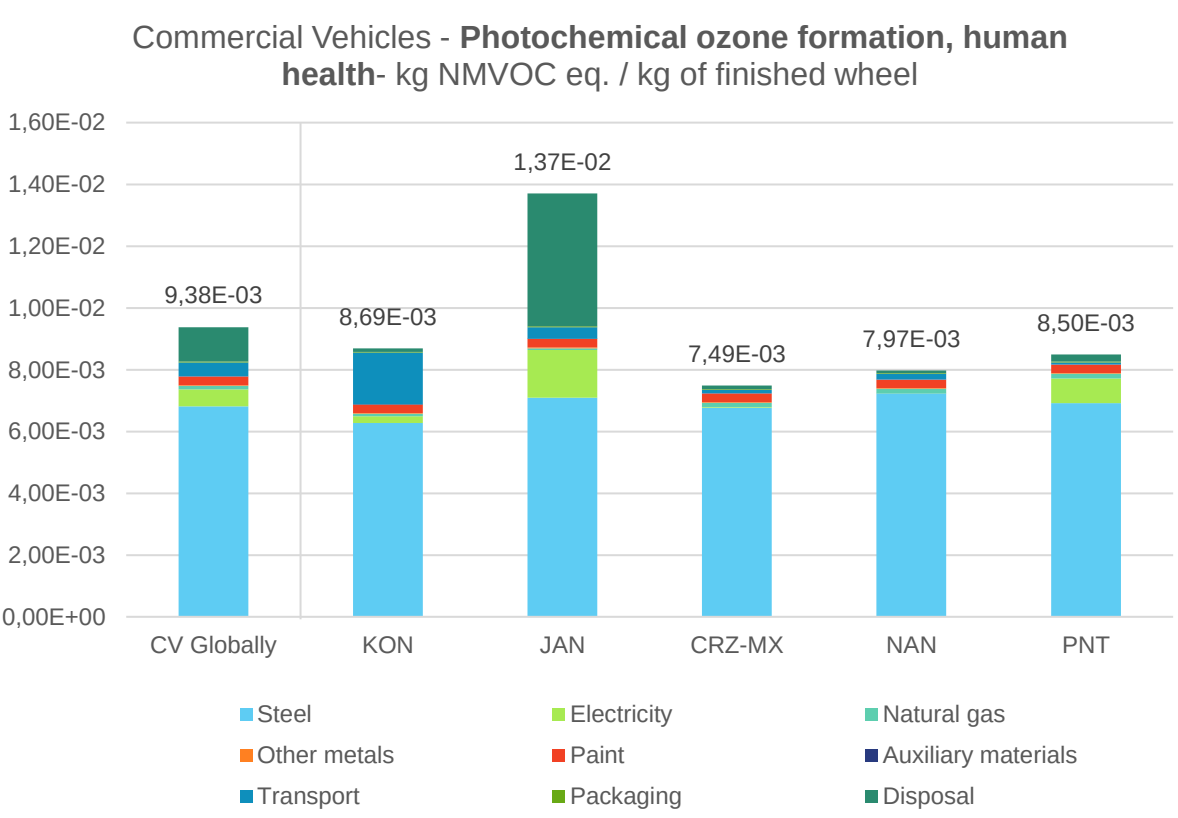
EF 3.1- Selected impact categories

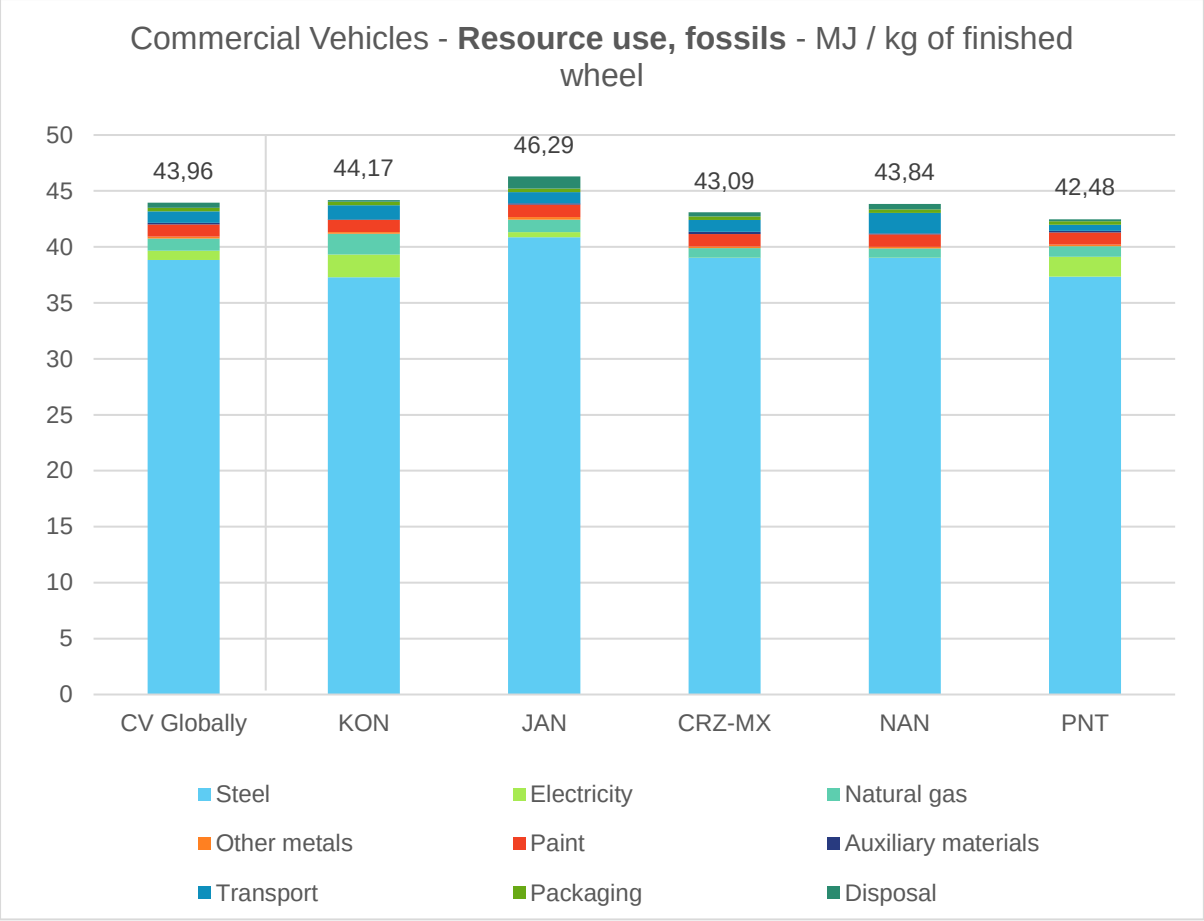
JAN shows the highest values for acidification (1,39E-02 mol H^+ eq.) and photochemical ozone (1,37E-02 kg NMVOC eq.), while PNT peaks in Particulate matter category at 3,78E-07 disease incidences. Fossil resource use is similar at 42–46 MJ (average 44,0 MJ), while water use varies from 0,11 m^3 at KON to 1,17 m^3 at NAN. In water use, electricity, natural gas and auxiliary materials play a more prominent role.

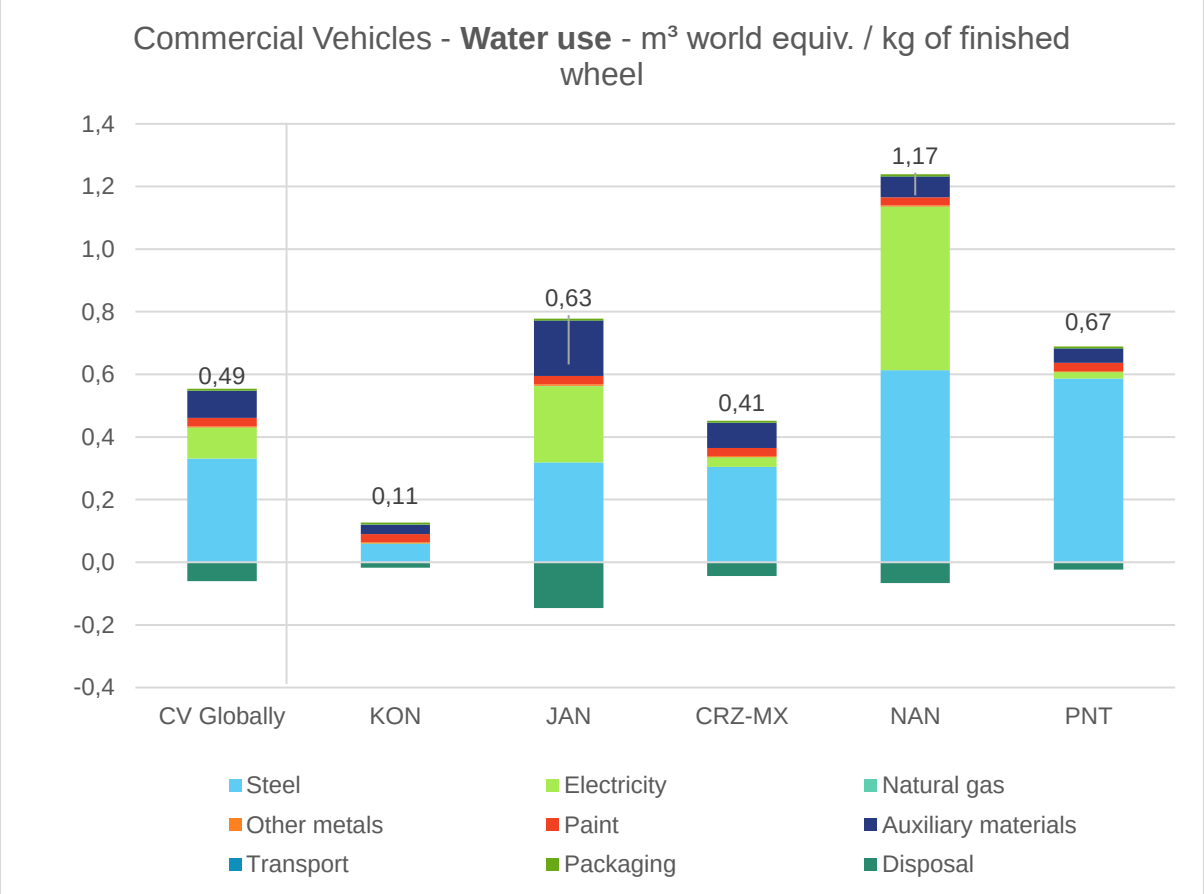
FIGURE 20 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR COMMERCIAL VEHICLE WHEELS - STEEL PLANTS




Commercial Vehicles - Particulate matter - Disease incidences / kg of finished wheel
3,90E-07
3,80E-07
3,70E-07
3,60E-07
3,50E-07
3,40E-07
3,30E-07
3,20E-07
3,10E-07
3,00E-07
2,90E-07
2,80E-07
3,56E-07
3,62E-07
3,72E-07
3,31E-07
3,59E-07
3,78E-07
CV Globally
KON
JAN
CRZ-MX
NAN
PNT
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Commercial Vehicles - Photochemical ozone formation, human health- kg NMVOC eq. / kg of finished wheel
1,60E-02
1,40E-02
1,20E-02
1,00E-02
8,00E-03
6,00E-03
4,00E-03
2,00E-03
0,00E+00
9,38E-03
8,69E-03
1,37E-02
7,49E-03
7,97E-03
8,50E-03
CV Globally
KON
JAN
CRZ-MX
NAN
PNT
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Commercial Vehicles - Resource use, fossils - MJ / kg of finished wheel
50
45
40
35
30
25
20
15
10
5
0
43,96
44,17
46,29
43,09
43,84
42,48
CV Globally
KON
JAN
CRZ-MX
NAN
PNT
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Commercial Vehicles - Water use - m³ world equiv. / kg of finished wheel
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
-0,2
-0,4
0,49
0,11
0,63
0,41
1,17
0,67
CV Globally
KON
JAN
CRZ-MX
NAN
PNT
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.2.3 STRUCTURAL COMPONENTS

The Structural Components segment, totalling 262,8 million kg annually, is concentrated entirely in the Americas across three facilities. The Castaños plant in Mexico is the dominant producer, responsible for 62,5 % of the volume, while the remaining output is supplied by the Cruzeiro-Resende and Contagem operations in Brazil.

TABLE 19 LIST OF MAXION STRUCTURAL COMPONENTS PLANTS

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
MSC		262 806 908		**98,41%**	6,81%
CRZ-MSC	Cruzeiro+Resende, Brazil	81 400 475	31,0%	97,6%	6,4%
CTG	Contagem, Brazil	17 049 767	6,5%	99,4%	2,8%
CST	Castaños, Mexico	164 356 666	62,5%	99,1%	7,7%

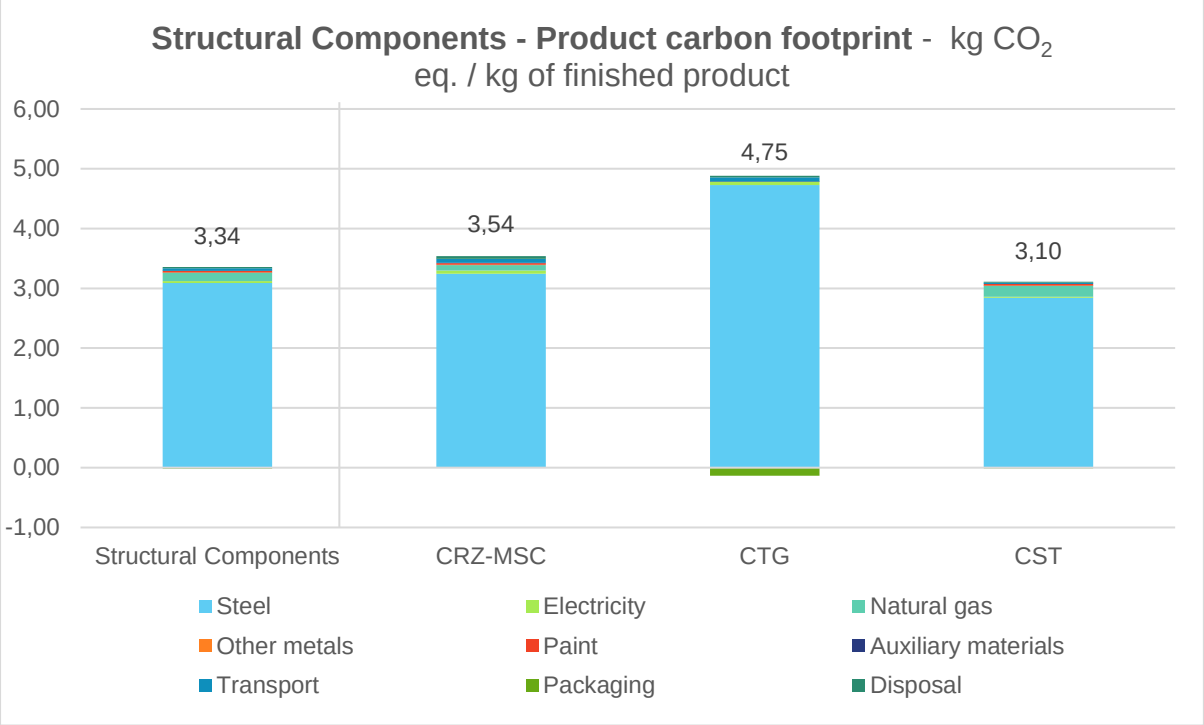
Product carbon footprint

Structural components have a carbon footprint of 3,34 kg CO_2 eq. per kg, with steel itself driving 92 % of the total. The best performers are CST at 3,10 kg CO_2 eq., while CRZ-MSC has the highest value at 4,75 kg CO_2 eq. Electricity and natural gas add only a small share to the result.

TABLE 20 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR STRUCTURAL COMPONENTS PLANTS (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metal s	Paint	Auxiliary materials	Transport	Packaging	Disposal
MSC	3,34	3,09	0,03	0,15	0,00	0,02	0,00	0,04	-0,01	0,02
CRZ-MSC	3,54	3,25	0,05	0,09	0,01	0,02	0,01	0,07	0,00	0,04
CTG	4,75	4,73	0,05	0,00	0,00	0,00	0,00	0,07	-0,13	0,02
CST	3,10	2,84	0,02	0,19	0,00	0,02	0,00	0,02	-0,01	0,01

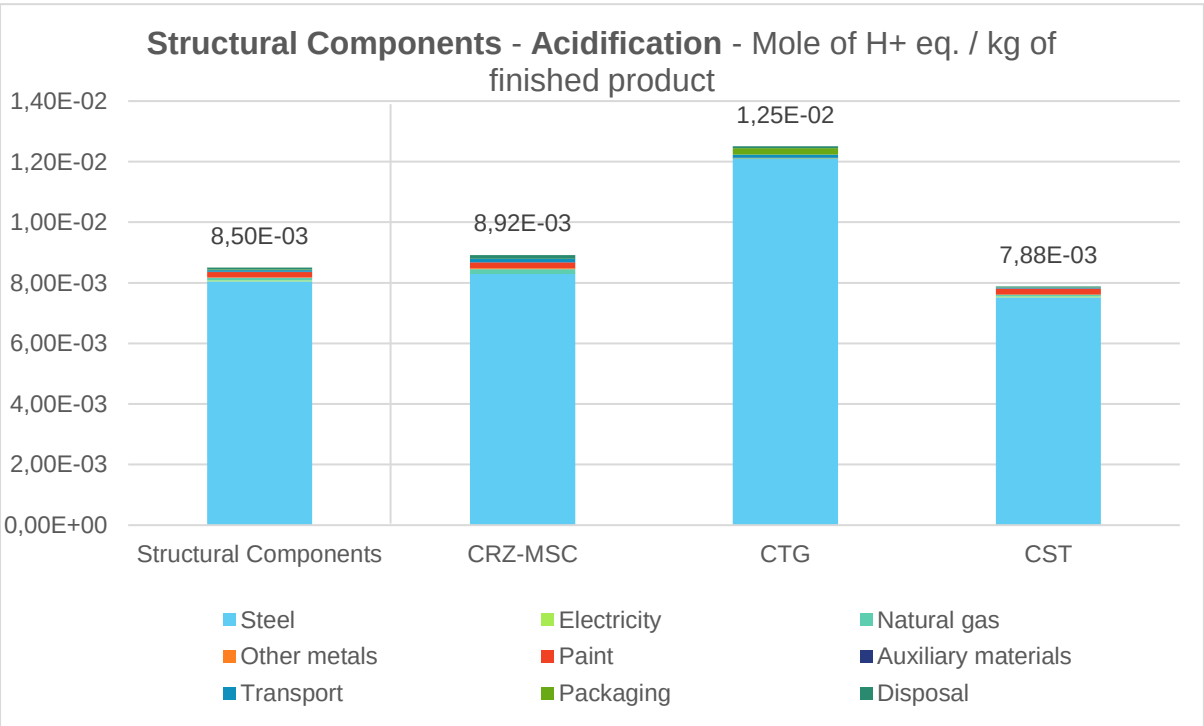
FIGURE 21 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR STRUCTURAL COMPONENT PLANTS AND CONTRIBUTION OF PROCESS GROUPS

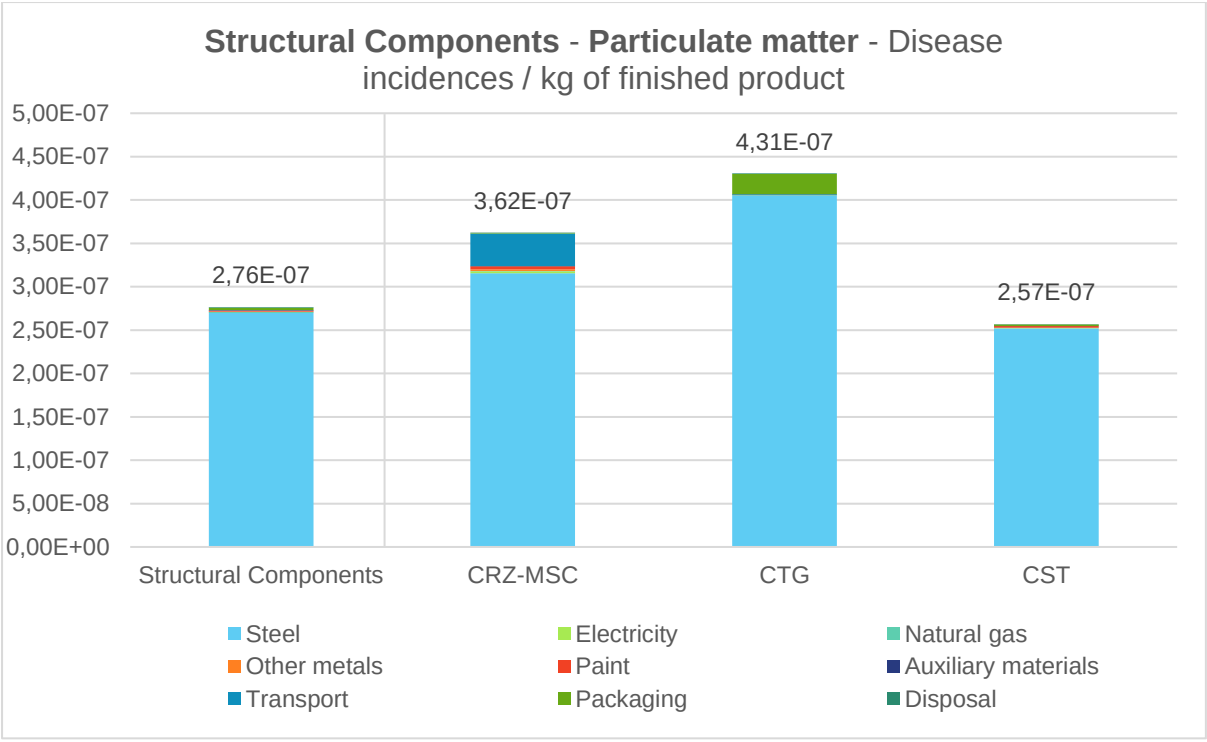


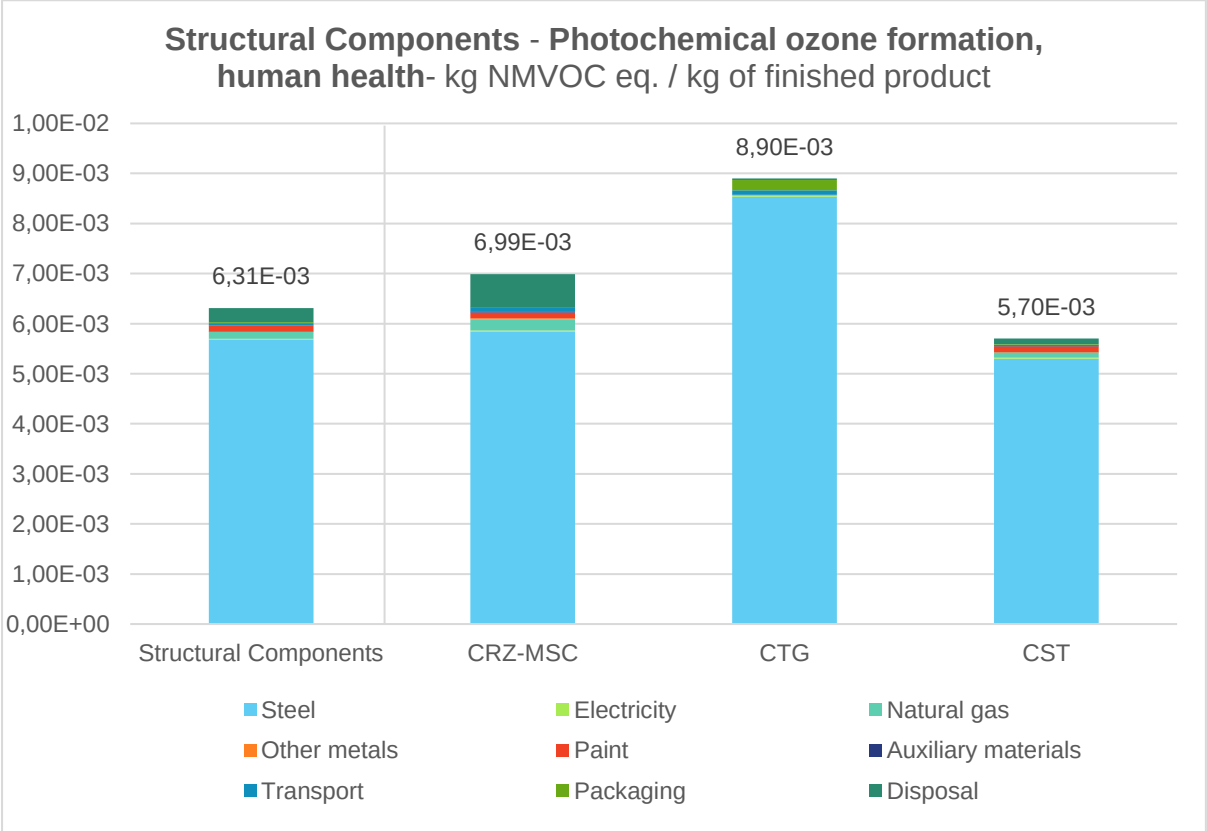
EF 3.1- Selected impact categories

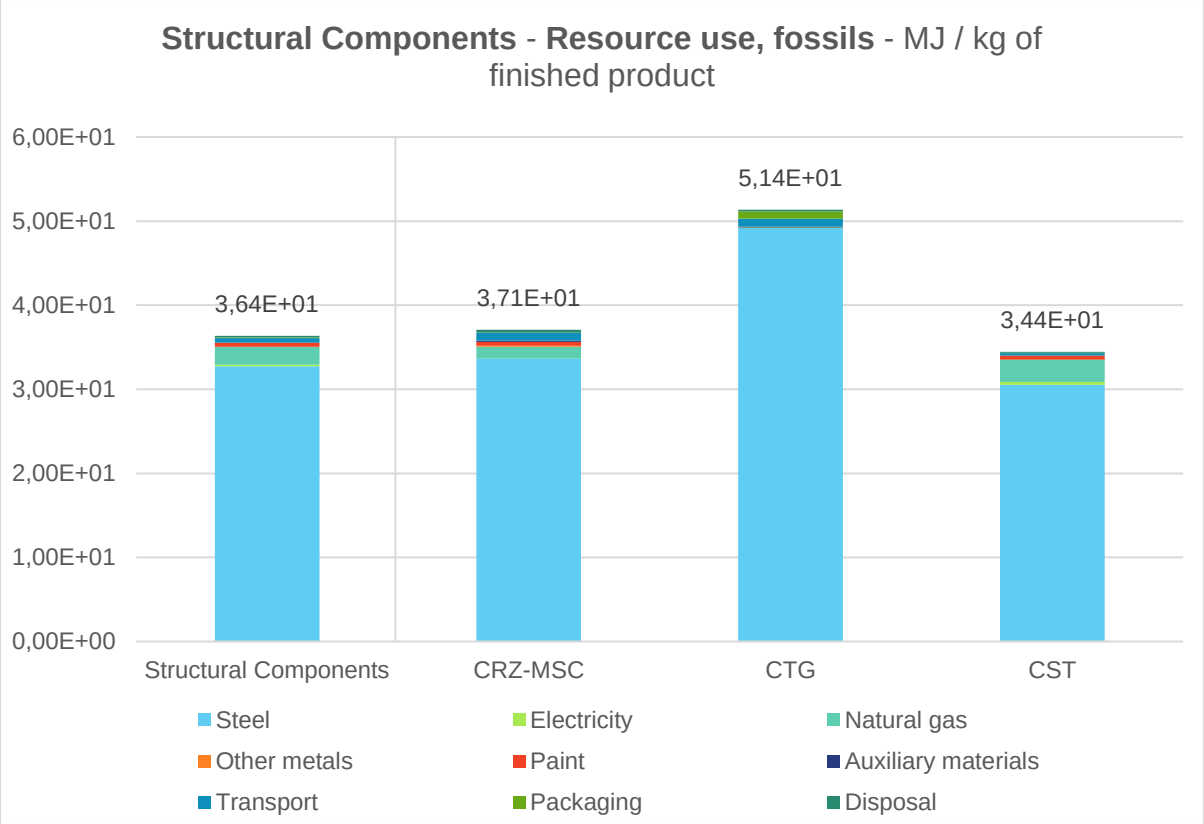
CTG shows the highest values for all assessed impact categories. Water use varies from 0,27 m³ at CST to 0,44 m³ at CTG. In water use, electricity, natural gas and auxiliary materials play a more prominent role.

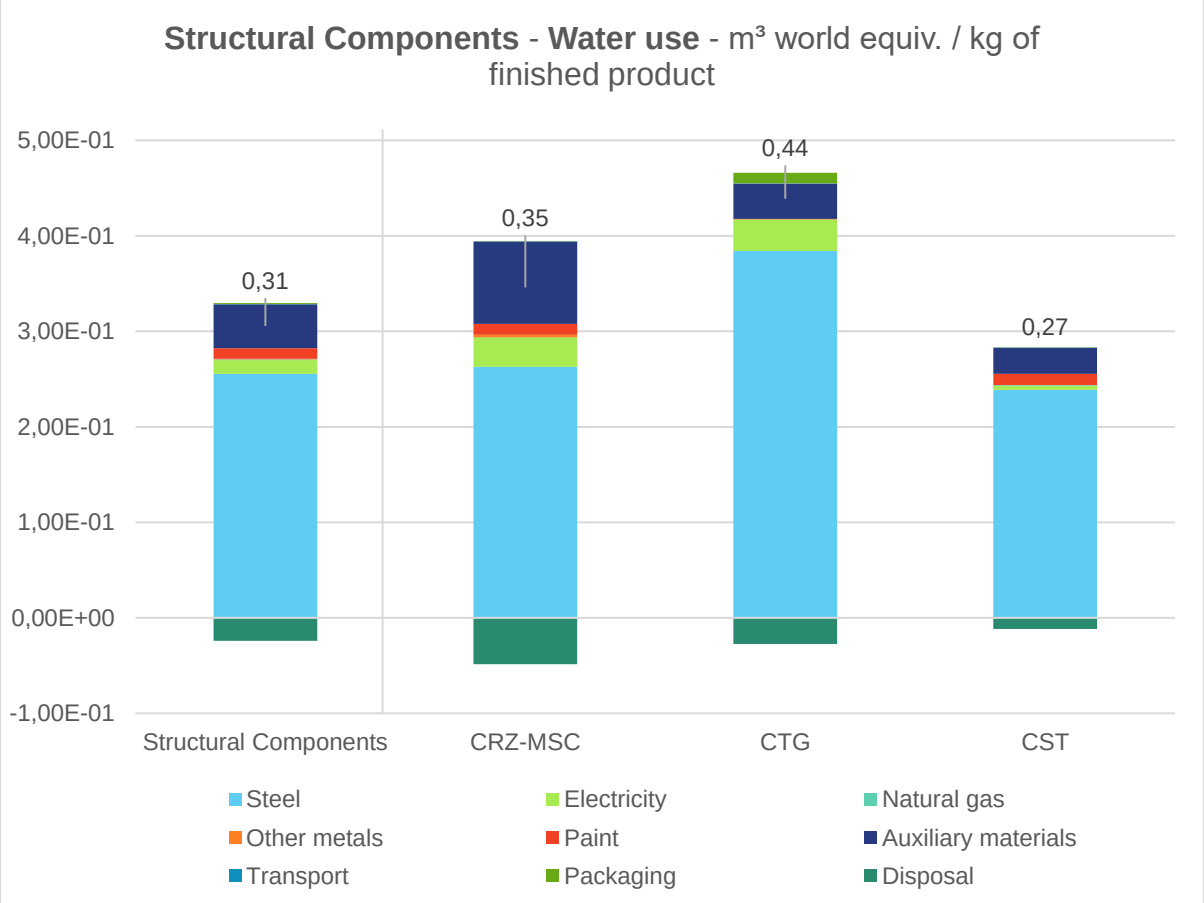
FIGURE 22 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR STRUCTURAL COMPONENT PLANTS




Structural Components - Particulate matter - Disease incidences / kg of finished product
5,00E-07
4,50E-07
4,00E-07
3,50E-07
3,00E-07
2,50E-07
2,00E-07
1,50E-07
1,00E-07
5,00E-08
0,00E+00
2,76E-07
3,62E-07
4,31E-07
2,57E-07
Structural Components
CRZ-MSC
CTG
CST
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Structural Components - Photochemical ozone formation, human health- kg NMVOC eq. / kg of finished product
1,00E-02
9,00E-03
8,00E-03
7,00E-03
6,00E-03
5,00E-03
4,00E-03
3,00E-03
2,00E-03
1,00E-03
0,00E+00
6,31E-03
6,99E-03
8,90E-03
5,70E-03
Structural Components
CRZ-MSC
CTG
CST
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Structural Components - Resource use, fossils - MJ / kg of finished product
6,00E+01
5,00E+01
4,00E+01
3,00E+01
2,00E+01
1,00E+01
0,00E+00
3,64E+01
3,71E+01
5,14E+01
3,44E+01
Structural Components
CRZ-MSC
CTG
CST
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Structural Components - Water use - m³ world equiv. / kg of finished product
5,00E-01
4,00E-01
3,00E-01
2,00E-01
1,00E-01
0,00E+00
-1,00E-01
0,31
0,35
0,44
0,27
Structural Components
CRZ-MSC
CTG
CST
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.3 STEEL WHEEL BUSINESS

The steel wheel business includes three regional groups: EMEA (34,8% share), Americas (48,7%) and Asia (16,4%), producing 561,7 million kg annually. This covers all steel wheel production and excludes the Structural Components segment. Americas Steel is the largest group, followed by EMEA Steel. Primary data coverage reaches 96,2% across all groups.

TABLE 21 LIST OF STEEL BUSINESSES

Code	Location / Codes	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
Steel Wheels Globally		**561 725 498**		96,5%	7,9%
EMEA Steel	CZS, INC, JAN, KON, MAN	195 509 285	34,8%	96,1%	8,1%
Americas Steel	CRZ-MX, LMS, SLP, SED	273 814 981	48,7%	96,6%	7,8%
Asia Steel	NAN, PNP, PNT	92 401 232	16,4%	97,1%	7,6%

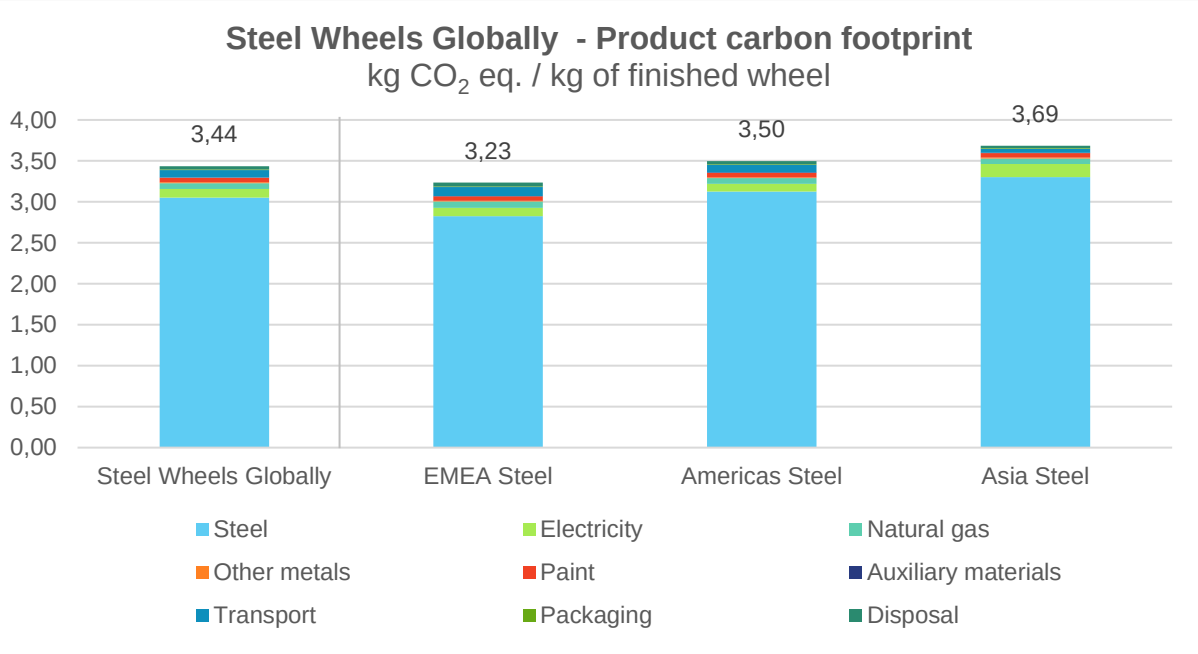
Product carbon footprint

The steel wheel business has an average carbon footprint of 3,44 kg CO_2 eq. per kg of finished wheel, with steel itself driving 88% of the total. Americas Steel performs best at 3,23 kg CO_2 eq., while Asia Steel has the highest value at 3,69 kg CO_2 eq. Electricity and natural gas add only a small share to the result.

TABLE 22 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR STEEL BUSINESSES (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metal s	Paint	Auxiliary materials	Transport	Packaging	Disposal
Steel Wheels Globally	3,44	3,05	0,11	0,07	0,01	0,06	0,00	0,09	0,01	0,04
EMEA Steel	3,23	2,82	0,10	0,08	0,01	0,06	0,00	0,11	0,01	0,05
Americas Steel	3,50	3,13	0,09	0,07	0,01	0,06	0,00	0,09	0,01	0,04
Asia Steel	3,69	3,30	0,16	0,07	0,01	0,06	0,00	0,05	0,01	0,03

FIGURE 23 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR STEEL BUSINESSES AND CONTRIBUTION OF PROCESS GROUPS

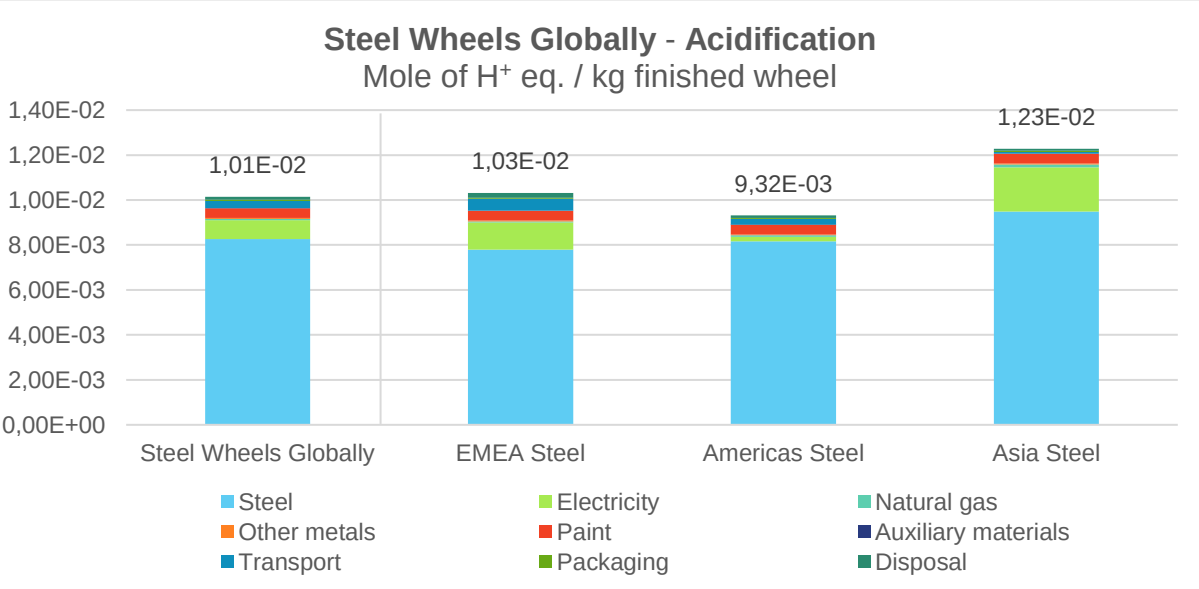


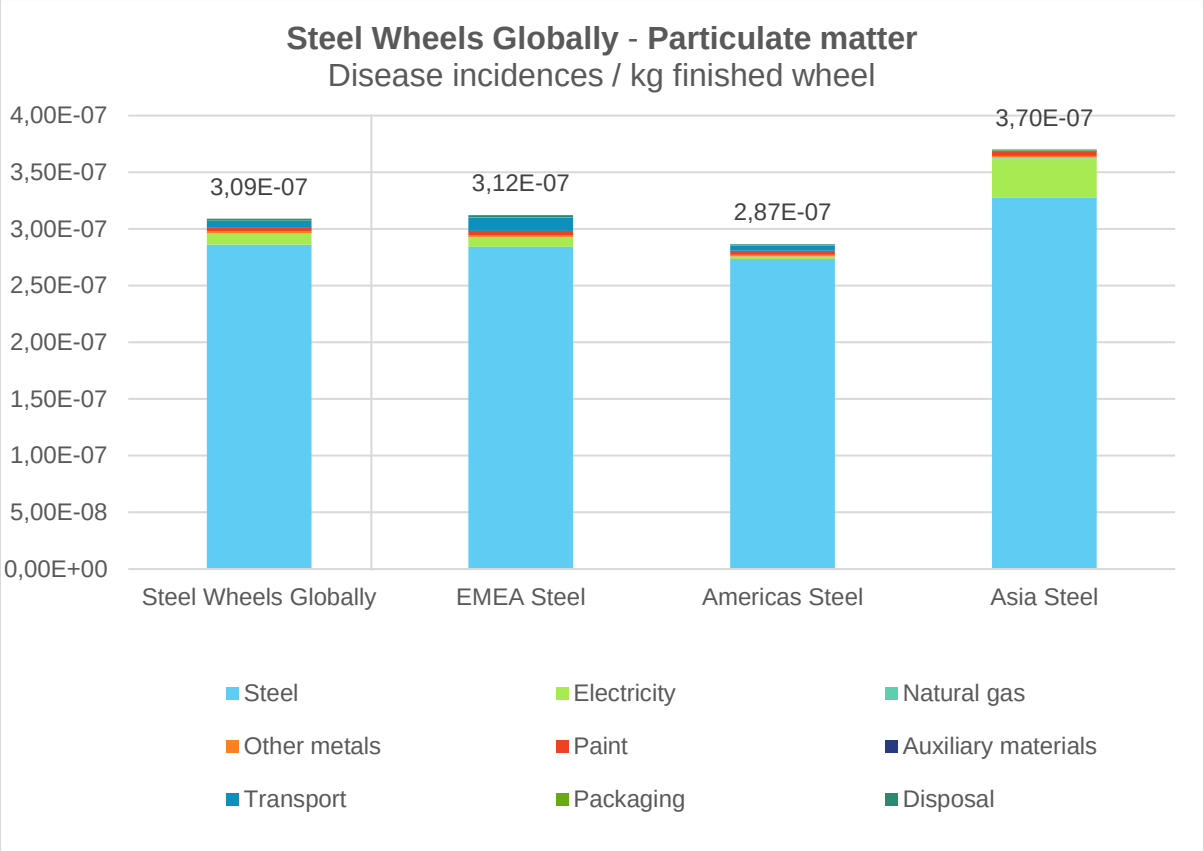
EF 3.1- Selected impact categories

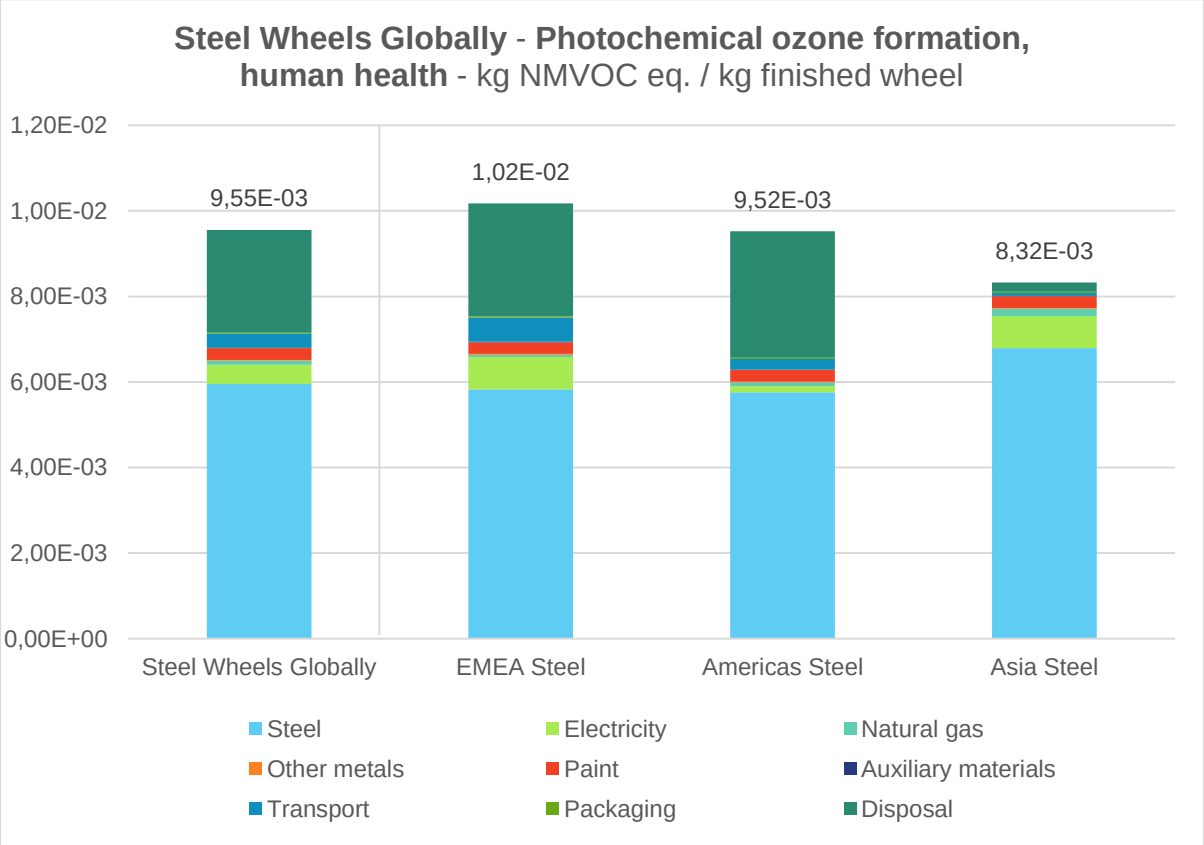
Across all steel segments and regions, the raw steel input consistently remains the dominant contributor to all evaluated impact categories, typically driving over 85% of total emissions.

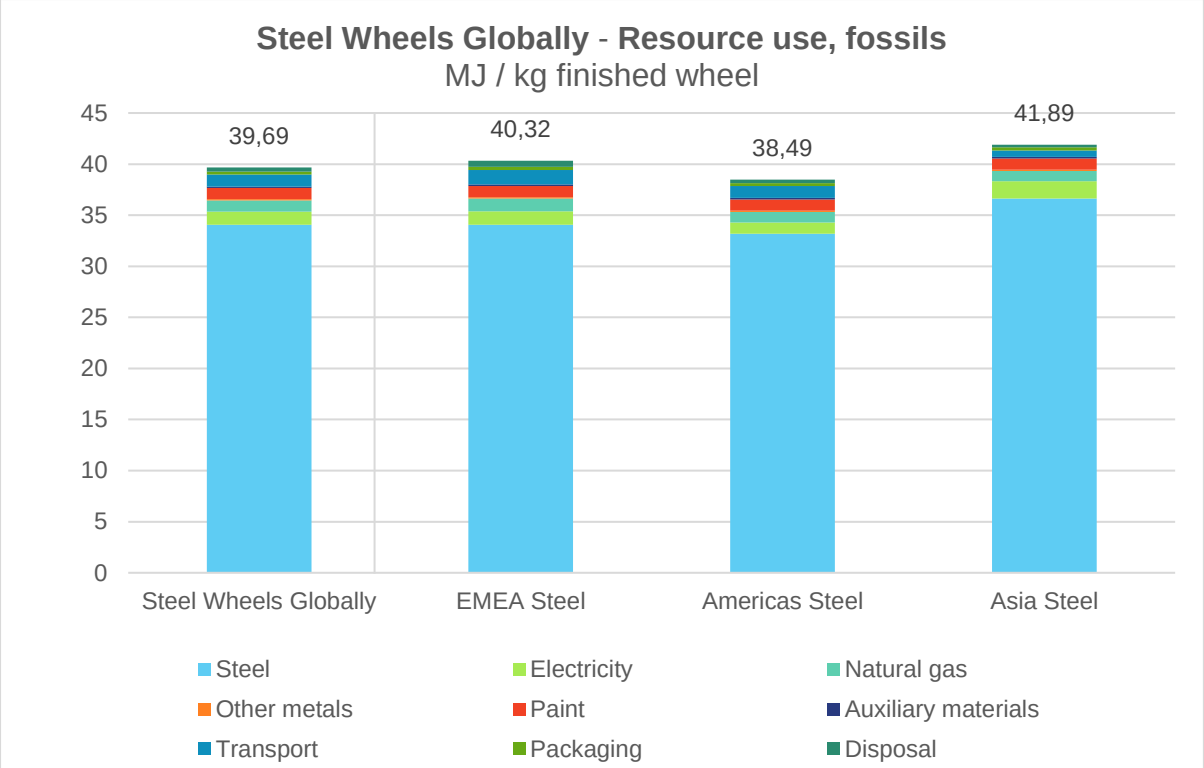
Asia Steel shows the highest values for acidification (1,23E-02 mol H^+ eq.), particulate matter (3,70E-07 incidences) and water use (0,72 m^3). In photochemical ozone formation, disposal is more prominent for EMEA and Americas. Fossil resource use varies from 38,5 MJ in Americas to 41,9 MJ in Asia Steel. In water use, electricity, natural gas and auxiliary materials play a more significant role.

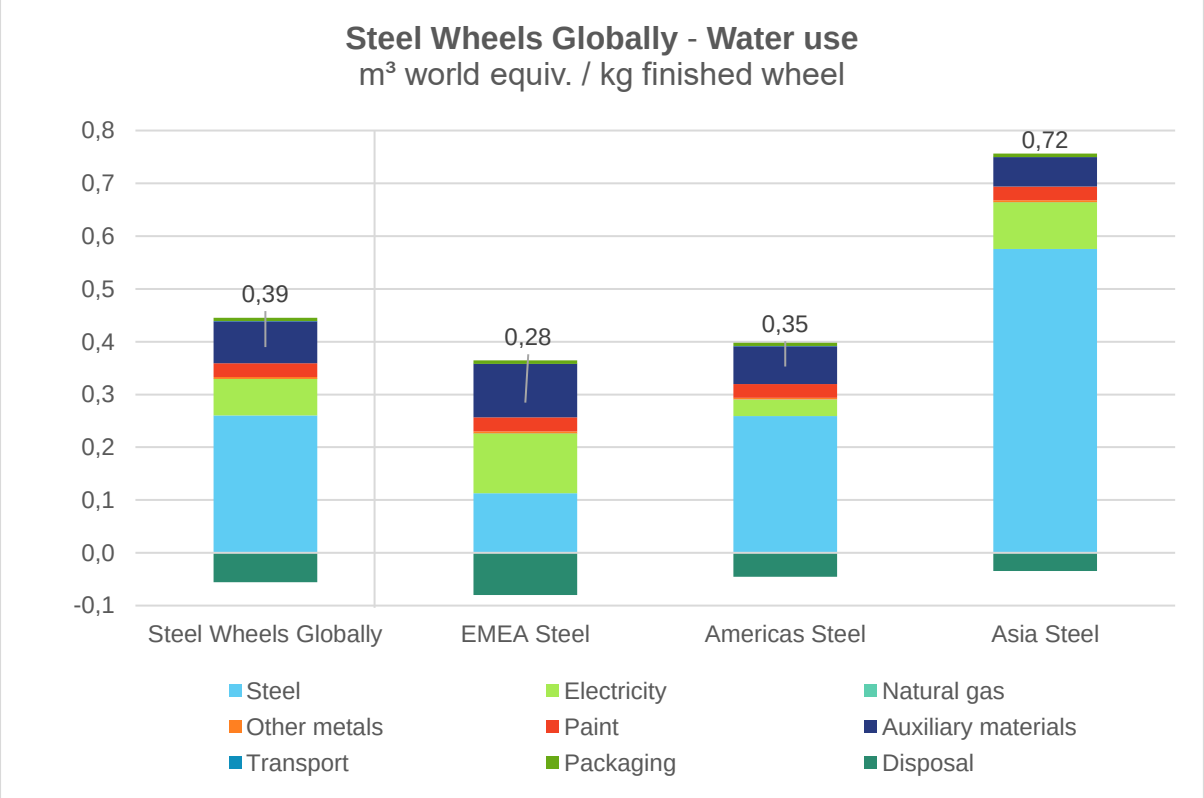
FIGURE 24 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR STEEL BUSINESSES




Steel Wheels Globally - Particulate matter
Disease incidences / kg finished wheel
4,00E-07
3,50E-07
3,00E-07
2,50E-07
2,00E-07
1,50E-07
1,00E-07
5,00E-08
0,00E+00
3,09E-07
3,12E-07
2,87E-07
3,70E-07
Steel Wheels Globally
EMEA Steel
Americas Steel
Asia Steel
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Steel Wheels Globally - Photochemical ozone formation, human health - kg NMVOC eq. / kg finished wheel
1,20E-02
1,00E-02
8,00E-03
6,00E-03
4,00E-03
2,00E-03
0,00E+00
9,55E-03
1,02E-02
9,52E-03
8,32E-03
Steel Wheels Globally
EMEA Steel
Americas Steel
Asia Steel
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Steel Wheels Globally - Resource use, fossils
MJ / kg finished wheel
45
40
35
30
25
20
15
10
5
0
39,69
40,32
38,49
41,89
Steel Wheels Globally
EMEA Steel
Americas Steel
Asia Steel
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Steel Wheels Globally - Water use
m³ world equiv. / kg finished wheel
0,8
0,7
0,6
0,5
0,4
0,3
0,2
0,1
0,0
-0,1
0,39
0,28
0,35
0,72
Steel Wheels Globally
EMEA Steel
Americas Steel
Asia Steel
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.3.1 EMEA STEEL WHEELS

The EMEA Steel business encompasses five plants generating 195,5 million kg annually. Production is relatively balanced among the top contributors, led by the Manisa (JAN) facility in Turkey (28.3%), closely followed by the Konigswinter plant in Germany and the Manresa site in Spain.

TABLE 23 LIST OF EMEA STEEL PLANTS

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
EMEA Steel		**195 509 285**		96,1%	8,1%
CZS	Ostrava, Czech Rep	24 623 385	12,6%	96,1%	7,4%
KON	Konigswinter, Germany	42 803 336	21,9%	97,9%	10,6%
MAN	Manresa, Spain	36 802 204	18,8%	96,2%	12,7%
INC	Manisa, Turkey	35 879 825	18,4%	93,6%	7,5%
JAN	Manisa, Turkey	55 400 535	28,3%	95,6%	4,8%

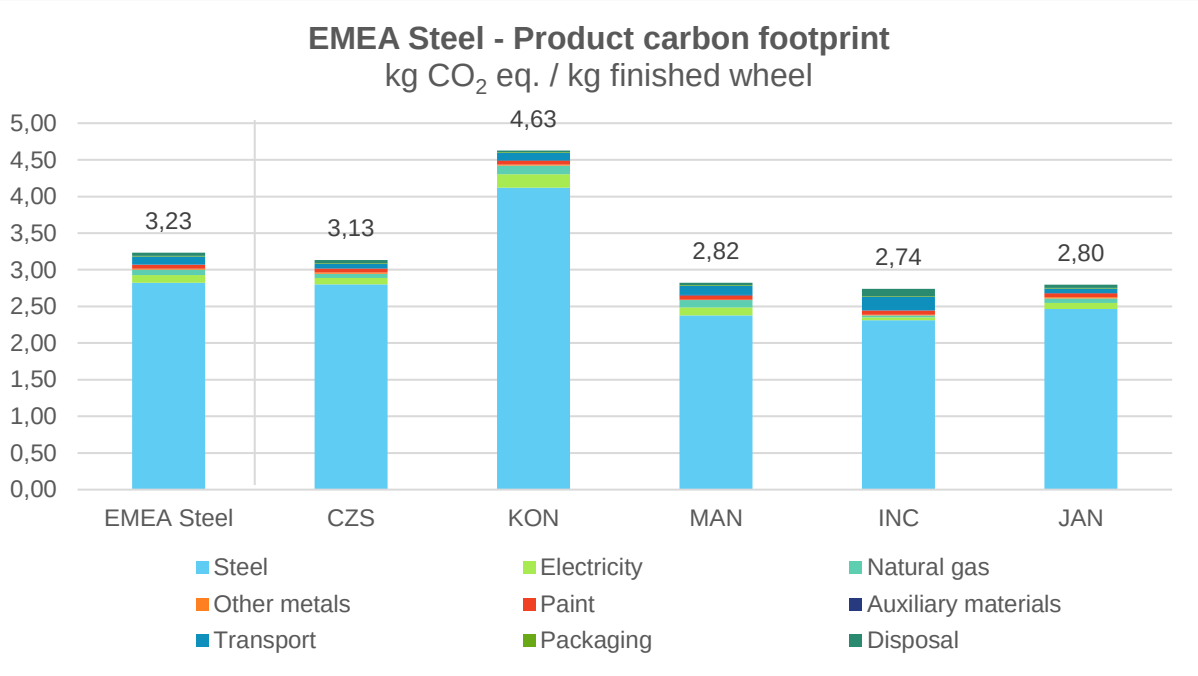
Product carbon footprint

EMEA Steel has a carbon footprint of 3,23 kg CO_2 eq. per kg, with steel itself driving 87% of the total. The best performer is INC at 2,74 kg CO_2 eq., follow by JAN and MAN at 2,80-2,82 kg CO_2 eq. while KON has the highest value at 4,63 kg CO_2 eq. Electricity and natural gas add only a small share to the result.

TABLE 24 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR EMEA STEEL PLANTS (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary materials	Transport	Packaging	Disposal
EMEA Steel	3,23	2,82	0,10	0,08	0,01	0,06	0,00	0,11	0,01	0,05
CZS	3,13	2,80	0,09	0,06	0,01	0,06	0,00	0,06	0,01	0,04
KON	4,63	4,12	0,19	0,12	0,01	0,06	0,00	0,11	0,01	0,02
MAN	2,82	2,38	0,11	0,10	0,00	0,06	0,01	0,13	0,01	0,03
INC	2,74	2,31	0,04	0,03	0,01	0,06	0,01	0,19	0,01	0,10
JAN	2,80	2,46	0,09	0,06	0,01	0,06	0,00	0,06	0,01	0,04

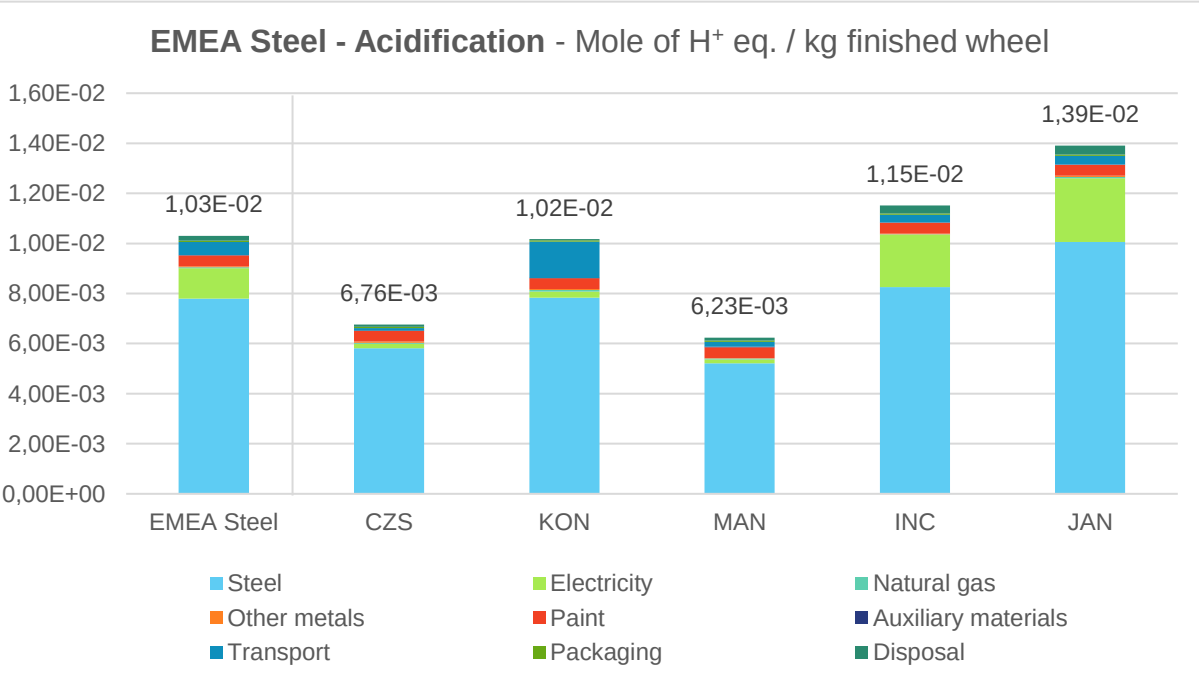
FIGURE 25 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR EMEA STEEL PLANTS AND CONTRIBUTION OF PROCESS GROUPS

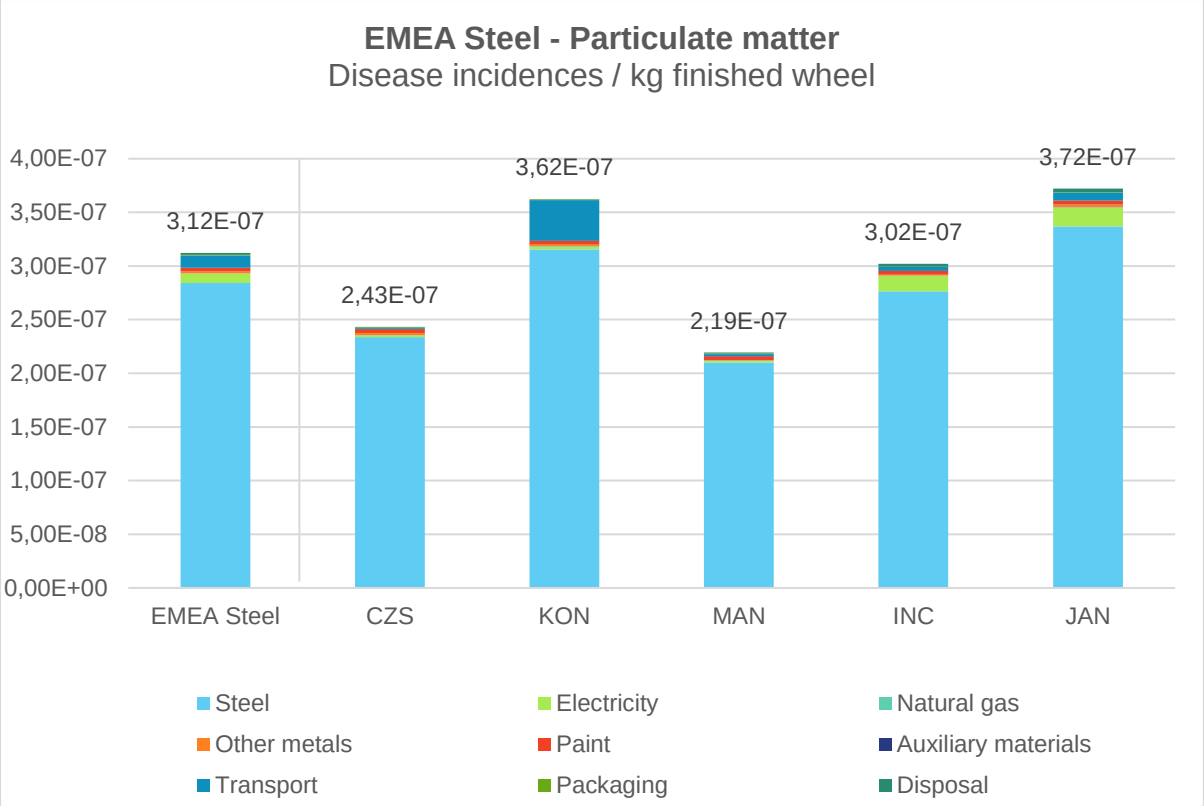


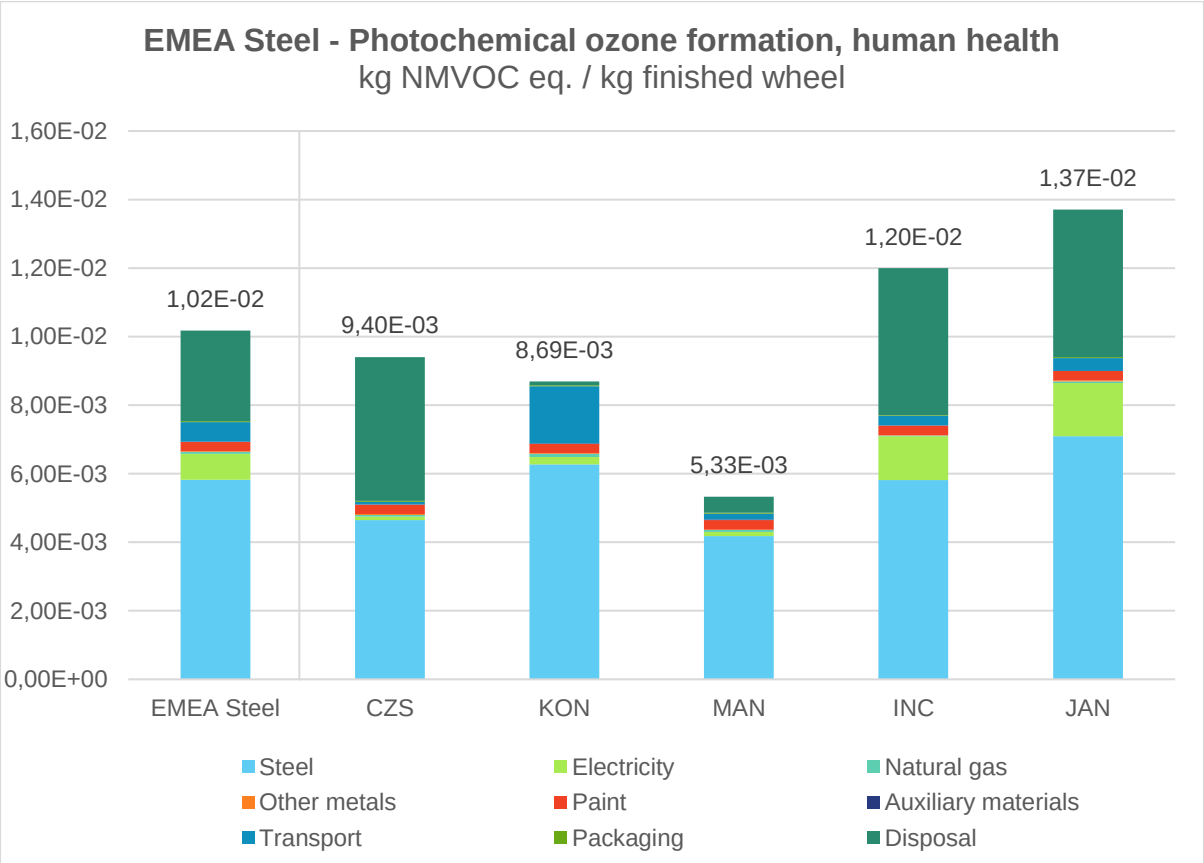
EF 3.1- Selected impact categories

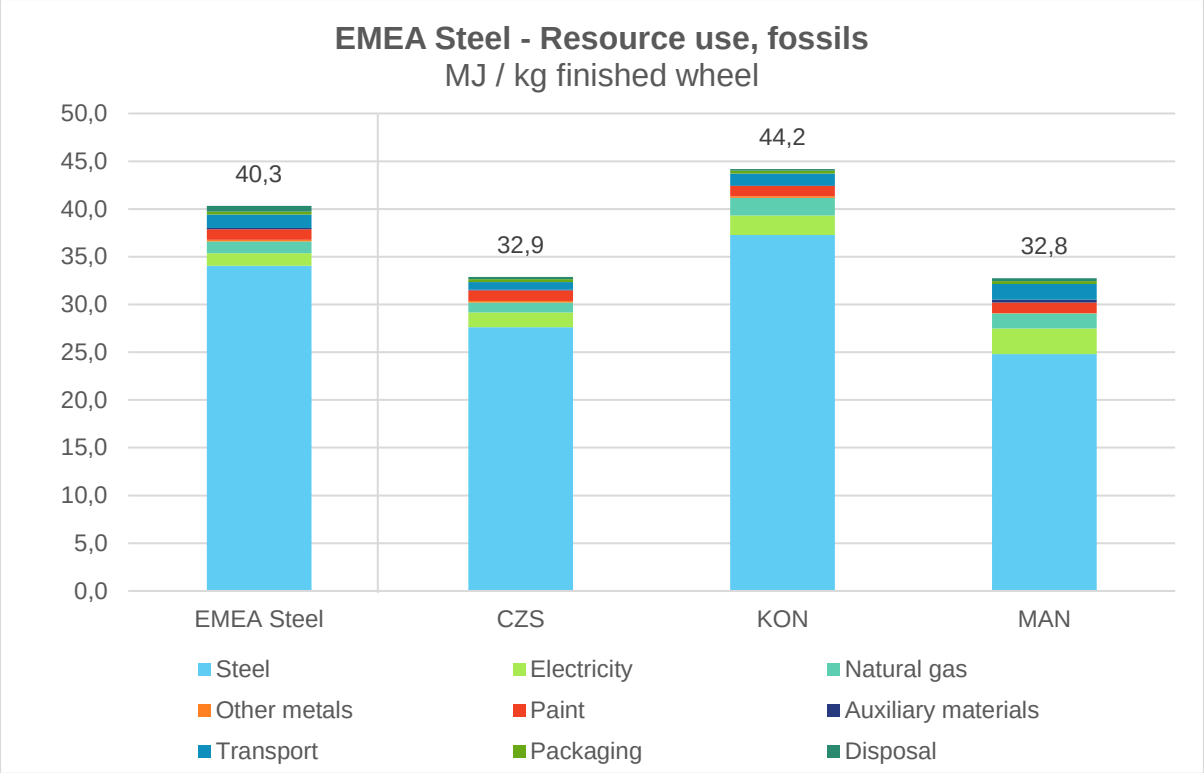
JAN shows the highest values for acidification (1,39E-02 mol H^+ eq.), photochemical ozone (1,37E-02 kg NMVOC eq.) and particulate matter (3,72E-07 incidences). In photochemical ozone category, disposal has a significant contribution. Fossil resource use varies from 32,8 MJ at INC/MAN to 44,2 MJ at KON. Water use ranges from -0,11 m^3 at KON to 0,63 m^3 at JAN. In water use, electricity, natural gas and auxiliary materials play a more prominent role.

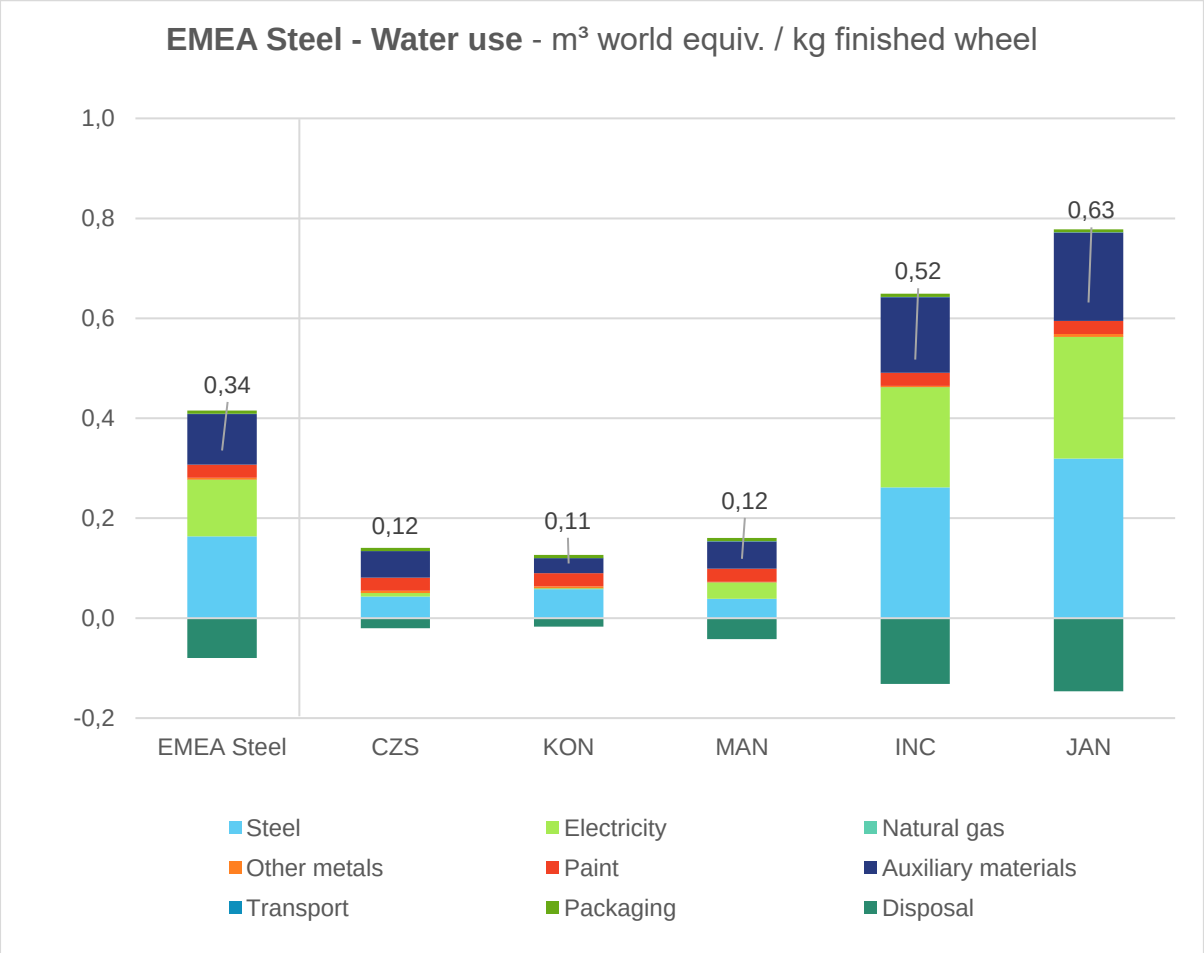
FIGURE 26 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR EMEA STEEL PLANTS




EMEA Steel - Particulate matter
Disease incidences / kg finished wheel
4,00E-07
3,50E-07
3,00E-07
2,50E-07
2,00E-07
1,50E-07
1,00E-07
5,00E-08
0,00E+00
3,12E-07
2,43E-07
3,62E-07
2,19E-07
3,02E-07
3,72E-07
EMEA Steel
CZS
KON
MAN
INC
JAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


EMEA Steel - Photochemical ozone formation, human health
kg NMVOC eq. / kg finished wheel
1,60E-02
1,40E-02
1,20E-02
1,00E-02
8,00E-03
6,00E-03
4,00E-03
2,00E-03
0,00E+00
1,02E-02
9,40E-03
8,69E-03
5,33E-03
1,20E-02
1,37E-02
EMEA Steel
CZS
KON
MAN
INC
JAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


EMEA Steel - Resource use, fossils
MJ / kg finished wheel
50,0
45,0
40,0
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
40,3
32,9
44,2
32,8
EMEA Steel
CZS
KON
MAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


EMEA Steel - Water use - m³ world equiv. / kg finished wheel
1,0
0,8
0,6
0,4
0,2
0,0
-0,2
0,34
0,12
0,11
0,12
0,52
0,63
EMEA Steel
CZS
KON
MAN
INC
JAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.3.2 AMERICAS STEEL WHEELS

Representing the largest regional steel group, Americas Steel produces 273,8 million kg annually across four facilities. The output is highly concentrated in Latin America, with the San Luis Potosi (Mexico) and Cruzeiro-MX (Brazil) plants contributing almost equally to 60 % of the regional total, supported by the Limeira and Sedalia sites.

TABLE 25 LIST OF AMERICAS STEEL PLANTS

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
Americas Steel		**273 814 981**		96,6%	7,8%
CRZ-MX	Cruzeiro, Brazil	81 793 314	29,9%	96,7%	4,9%
LMS	Limeira Steel, Brazil	57 179 795	20,9%	96,5%	6,0%
SLP	San Luis Potosi, Mexico	82 757 605	30,2%	97,3%	9,0%
SED	Sedalia, USA	52 084 267	19,0%	95,8%	12,5%

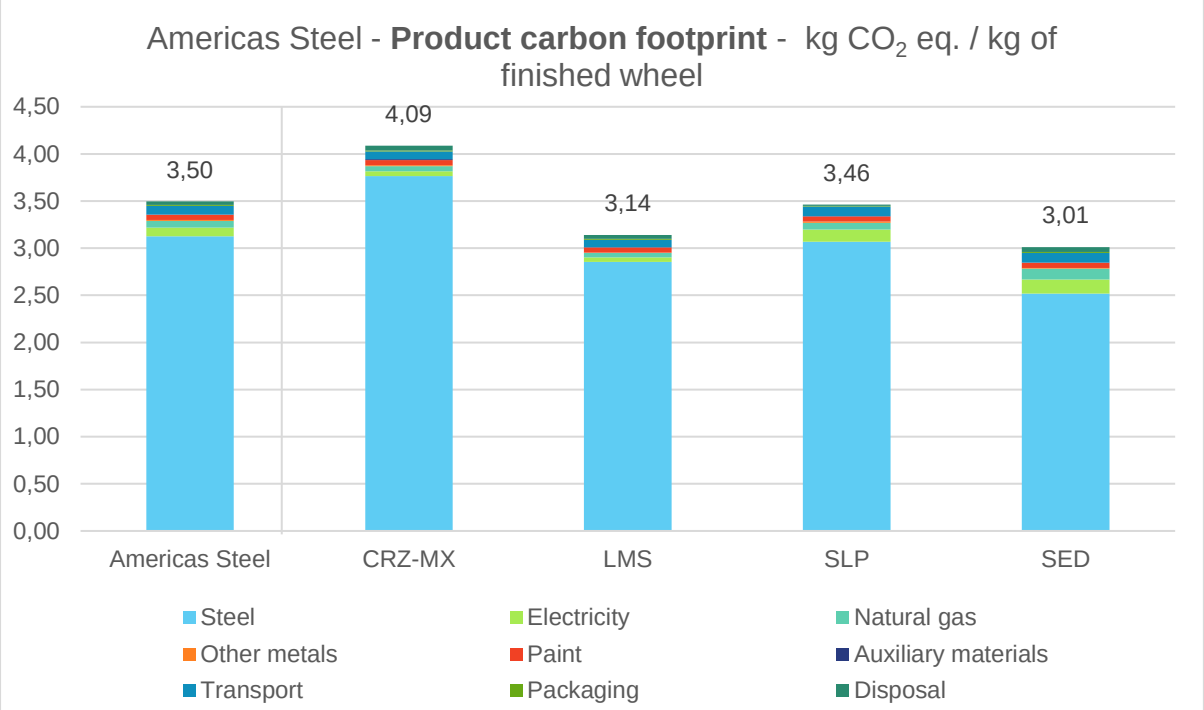
Product carbon footprint

Americas Steel has a carbon footprint of 3,06 kg CO_2 eq. per kg, with steel itself driving 88% of the total. The best performer is Sedalia at 2,10 kg CO_2 eq., while CRZ-MX and LMS have the highest values at 4,09 and 3,14 kg CO_2 eq. Electricity and natural gas add only a small share to the result.

TABLE 26 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR AMERICAS STEEL PLANTS (KG CO2 EQ. /KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metal s	Paint	Auxiliary materials	Transport	Packaging	Disposal
Americas Steel	3,50	3,13	0,09	0,07	0,01	0,06	0,00	0,09	0,01	0,04
CRZ-MX	4,09	3,77	0,05	0,05	0,01	0,06	0,01	0,08	0,01	0,05
LMS	3,14	2,85	0,05	0,05	0,00	0,06	0,00	0,08	0,01	0,04
SLP	3,46	3,07	0,13	0,07	0,01	0,06	0,00	0,10	0,01	0,01
SED	3,01	2,52	0,15	0,12	0,01	0,06	0,00	0,10	0,01	0,05

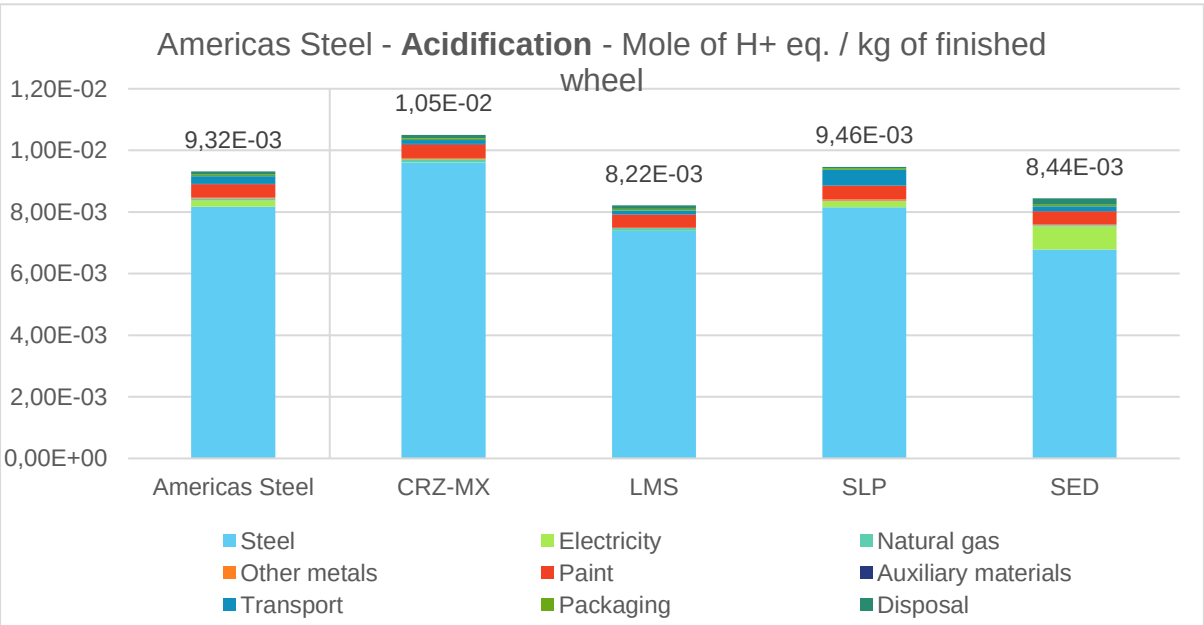
FIGURE 27 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR AMERICAS STEEL PLANTS AND CONTRIBUTION OF PROCESS GROUPS

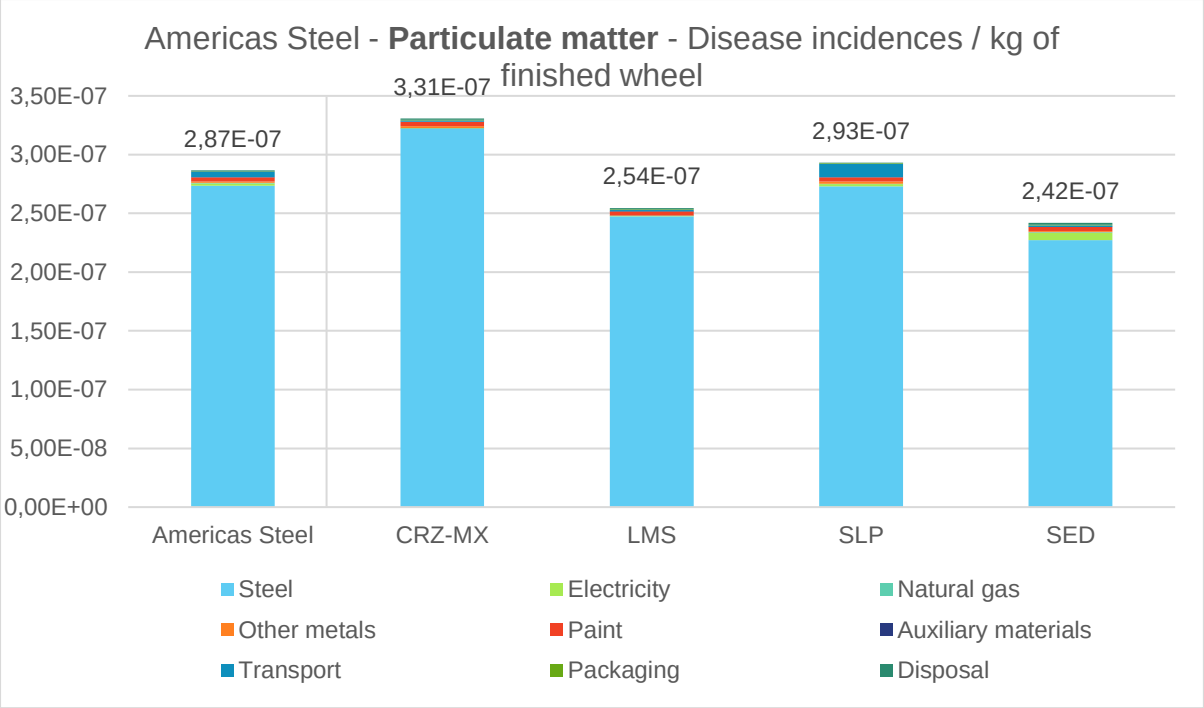


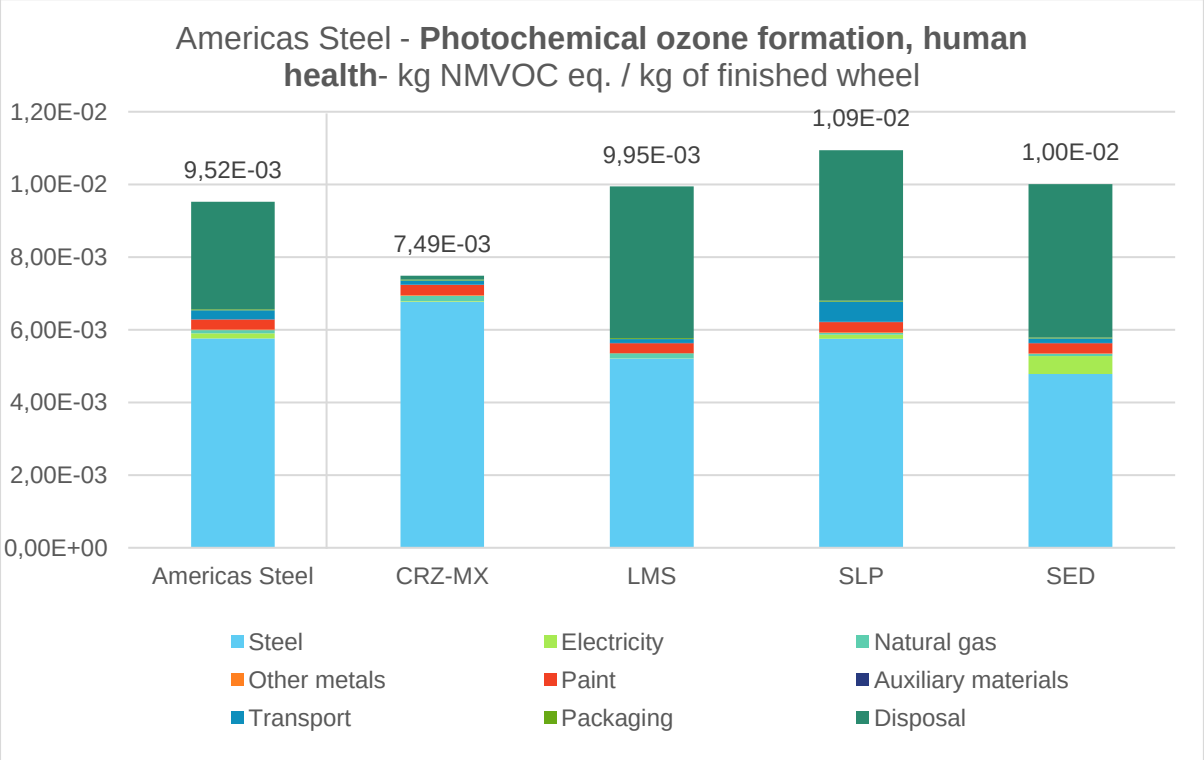
EF 3.1- Selected impact categories

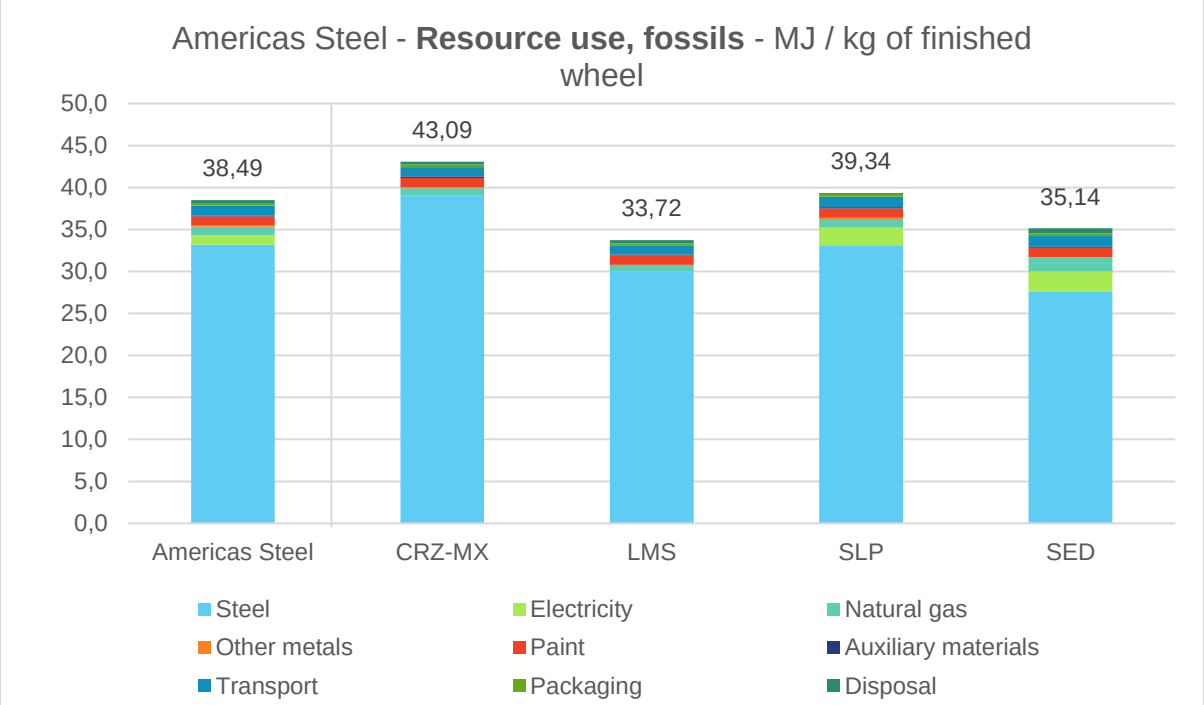
CRZ-MX shows the highest acidification (1,05E-02 mol H^+ eq.), particulate matter (3,31E-07 disease incidences), fossil resource use (43,1 MJ) and water use. SLP has the highest photochemical ozone (1,09E-02 kg NMVOC eq.) impact. In Photochemical ozone formation category, disposal is more prominent for all plants but CRZ-MX. Water use varies from 0,31 m^3 at LMS to 0,41 m^3 at CRZ-MX. In water use, electricity, natural gas and auxiliary materials play a more prominent role.

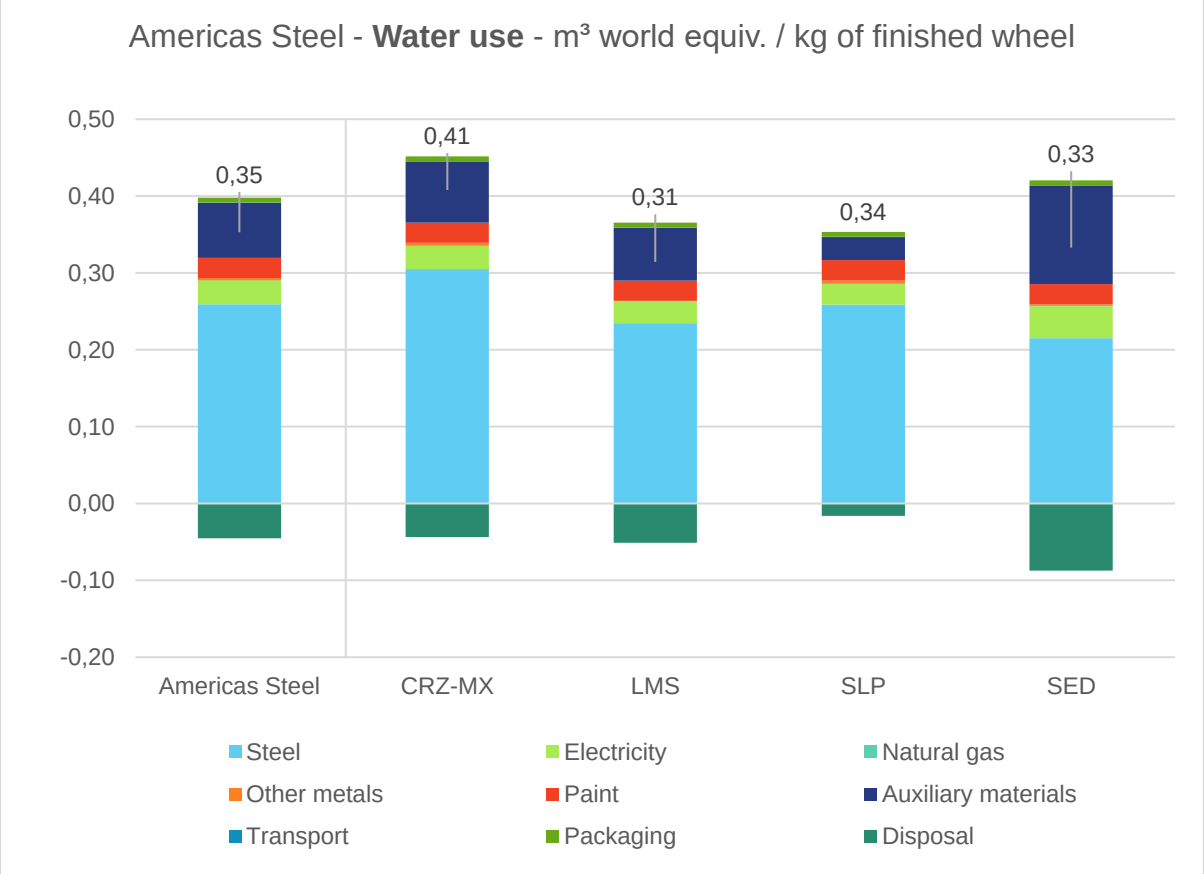
FIGURE 28 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR AMERICAS STEEL PLANTS




Americas Steel - Particulate matter - Disease incidences / kg of finished wheel
3,50E-07
3,00E-07
2,50E-07
2,00E-07
1,50E-07
1,00E-07
5,00E-08
0,00E+00
2,87E-07
3,31E-07
2,54E-07
2,93E-07
2,42E-07
Americas Steel
CRZ-MX
LMS
SLP
SED
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Americas Steel - Photochemical ozone formation, human health- kg NMVOC eq. / kg of finished wheel
1,20E-02
1,00E-02
8,00E-03
6,00E-03
4,00E-03
2,00E-03
0,00E+00
9,52E-03
7,49E-03
9,95E-03
1,09E-02
1,00E-02
Americas Steel
CRZ-MX
LMS
SLP
SED
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Americas Steel - Resource use, fossils - MJ / kg of finished wheel
50,0
45,0
40,0
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
38,49
43,09
33,72
39,34
35,14
Americas Steel
CRZ-MX
LMS
SLP
SED
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Americas Steel - Water use - m³ world equiv. / kg of finished wheel
0,50
0,40
0,30
0,20
0,10
0,00
-0,10
-0,20
0,35
0,41
0,31
0,34
0,33
Americas Steel
CRZ-MX
LMS
SLP
SED
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

4.3.3 ASIA STEEL WHEELS

Asia Steel produces 92,4 million kg annually, primarily centralized in India. The two Pune (India) facilities (Pass Car and Truck) collectively dominate the region with an 86,7 % share, leaving the Nantong plant in China with the remaining 13,3 % of the output.

TABLE 27 LIST OF ASIA STEEL PLANTS

Code	Location	Yearly production / kg	Share on yearly production	Primary data share ISO 140 67	Primary data share EF 3.1
Asia Steel		**92 401 232**		97,1%	7,6%
NAN	Nantong, China	12 311 149	13,3%	97,0%	8,7%
PNP	Pune Truck, India	36 741 296	39,8%	97,2%	7,5%
PNT	Pune Pass Car, India	43 348 787	46,9%	96,8%	5,4%

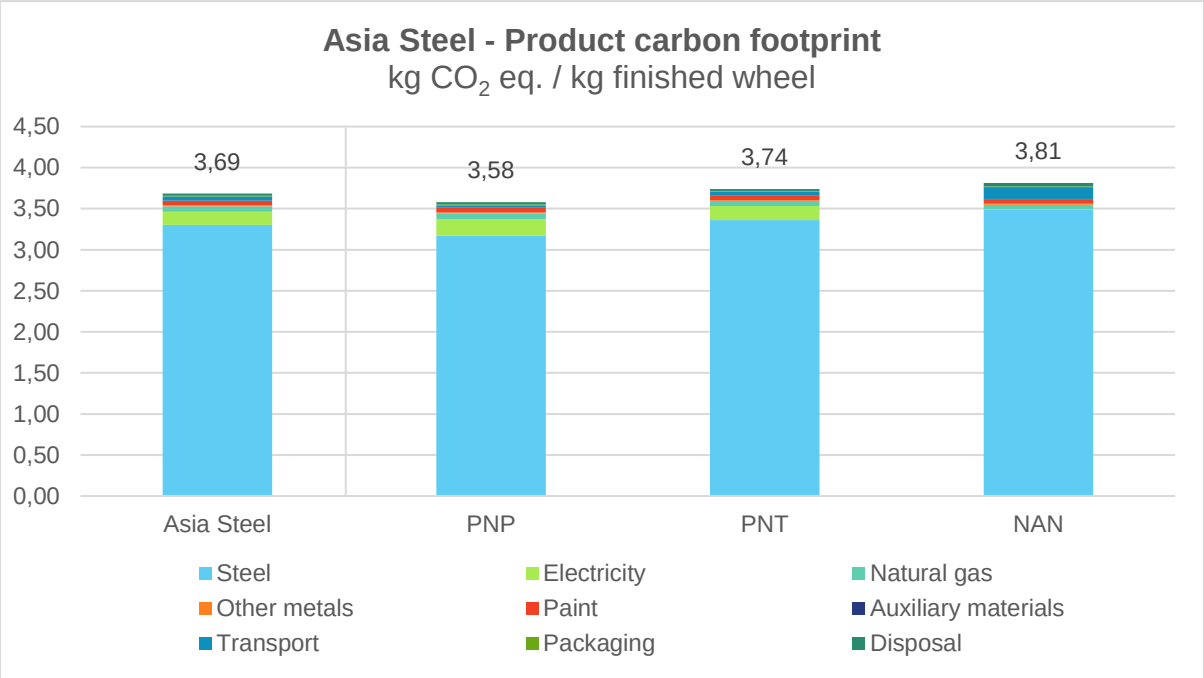
Product carbon footprint

Asia Steel has a carbon footprint of 3,69 kg CO_2 eq. per kg, with steel itself driving 89 % of the total. The best performer is PNP at 3,58 kg CO_2 eq., while PNT and NAN have higher values at 3,74 and 3,81 kg CO_2 eq. Electricity and natural gas add only a small share to the result.

TABLE 28 PRODUCT CARBON FOOTPRINT ISO 14067 GWP GHG RESULTS FOR ASIA STEEL PLANTS (KG CO2 EQ. / KG OF FINISHED WHEEL)

	Total	Steel	Electricity	Natural gas	Other metal s	Paint	Auxiliary materials	Transport	Packaging	Disposal
Asia Steel	3,69	3,30	0,16	0,07	0,01	0,06	0,00	0,05	0,01	0,03
PNP	3,58	3,17	0,20	0,07	0,01	0,06	0,00	0,03	0,01	0,03
PNT	3,74	3,36	0,17	0,06	0,01	0,06	0,00	0,04	0,01	0,02
NAN	3,81	3,49	0,00	0,06	0,01	0,06	0,00	0,14	0,01	0,04

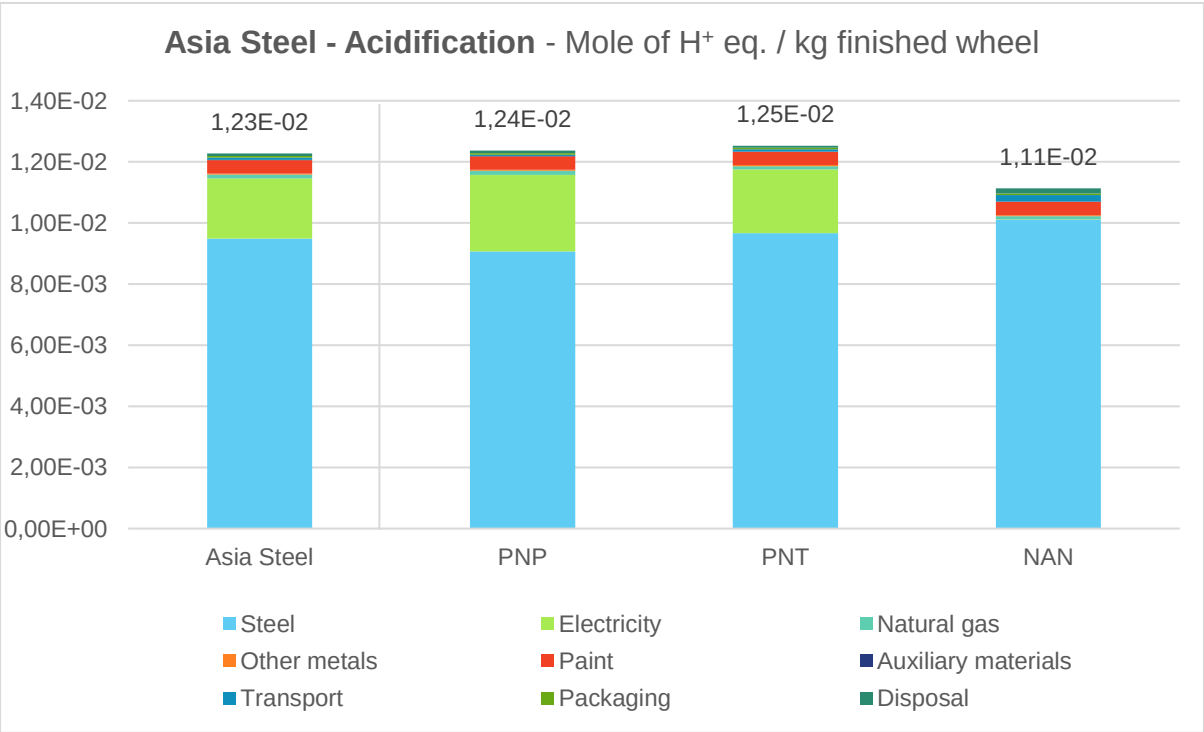
FIGURE 29 PRODUCT CARBON FOOTPRINT ISO 14067 GWP TOTAL FOR ASIA STEEL PLANTS AND CONTRIBUTION OF PROCESS GROUPS

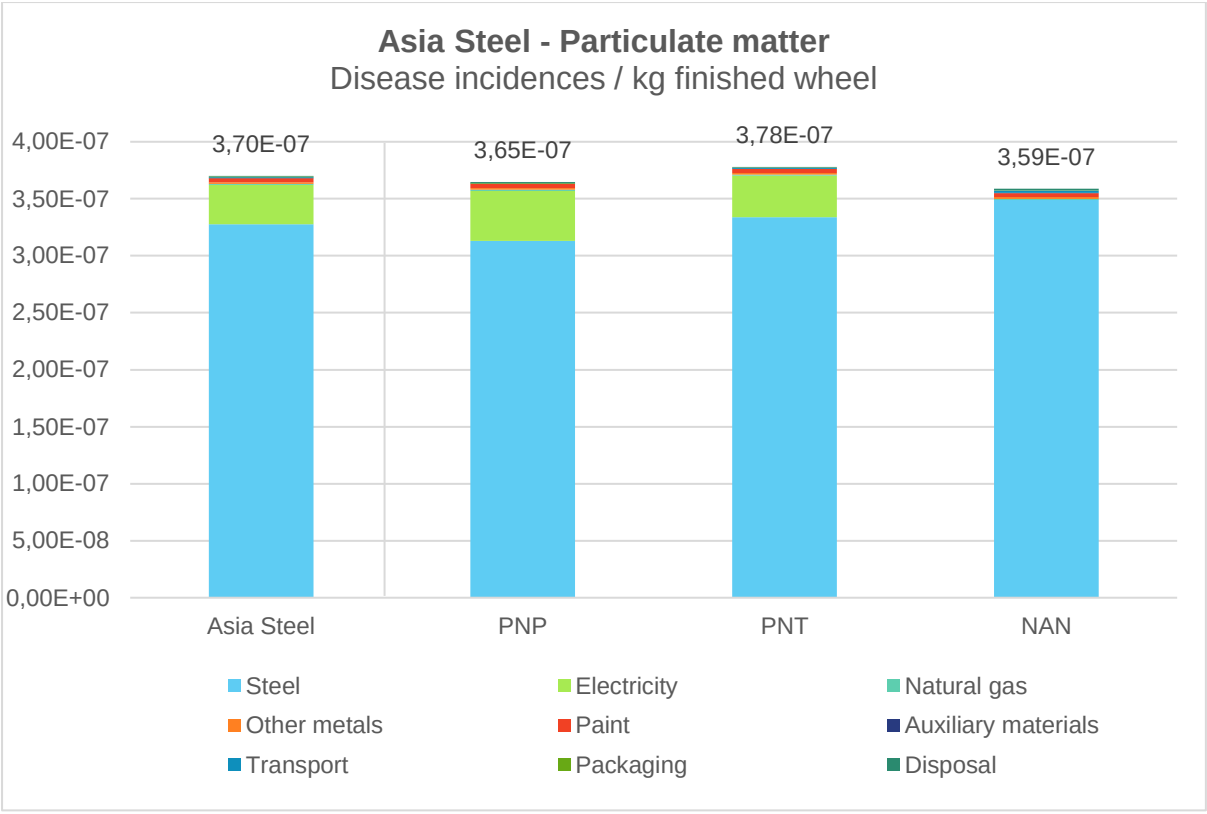


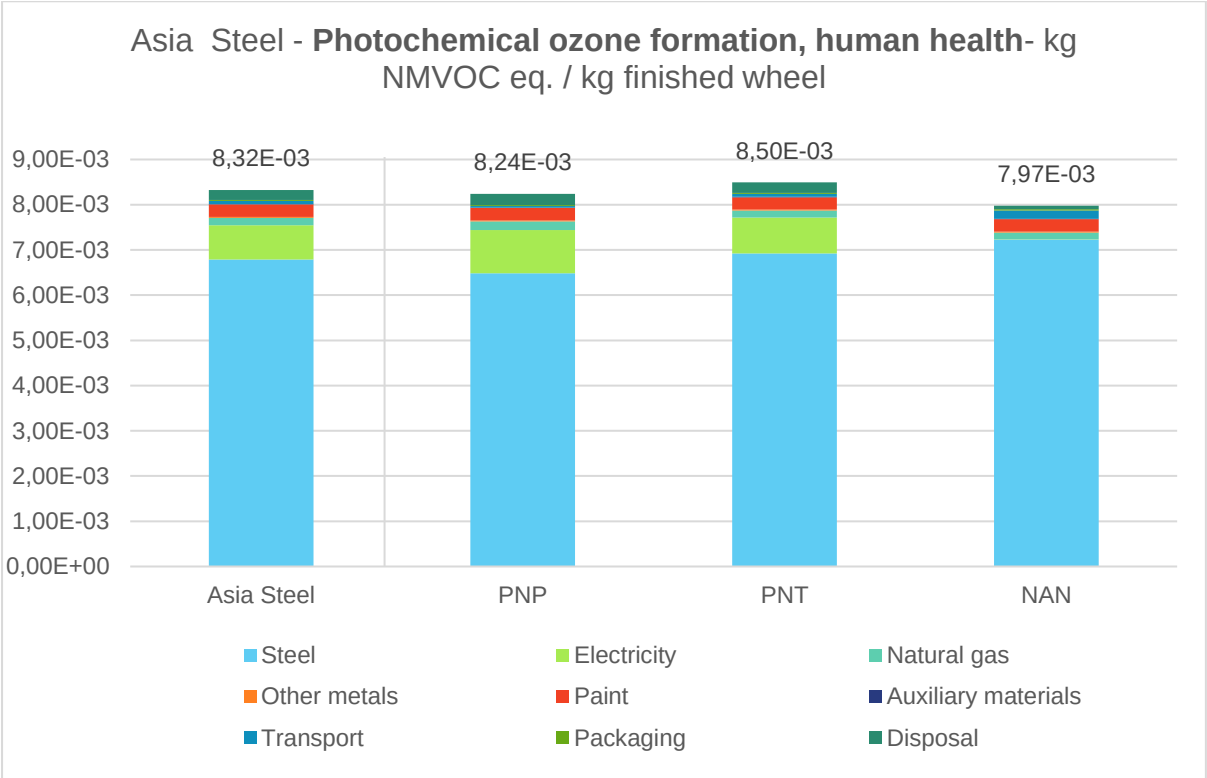
EF 3.1- Selected impact categories

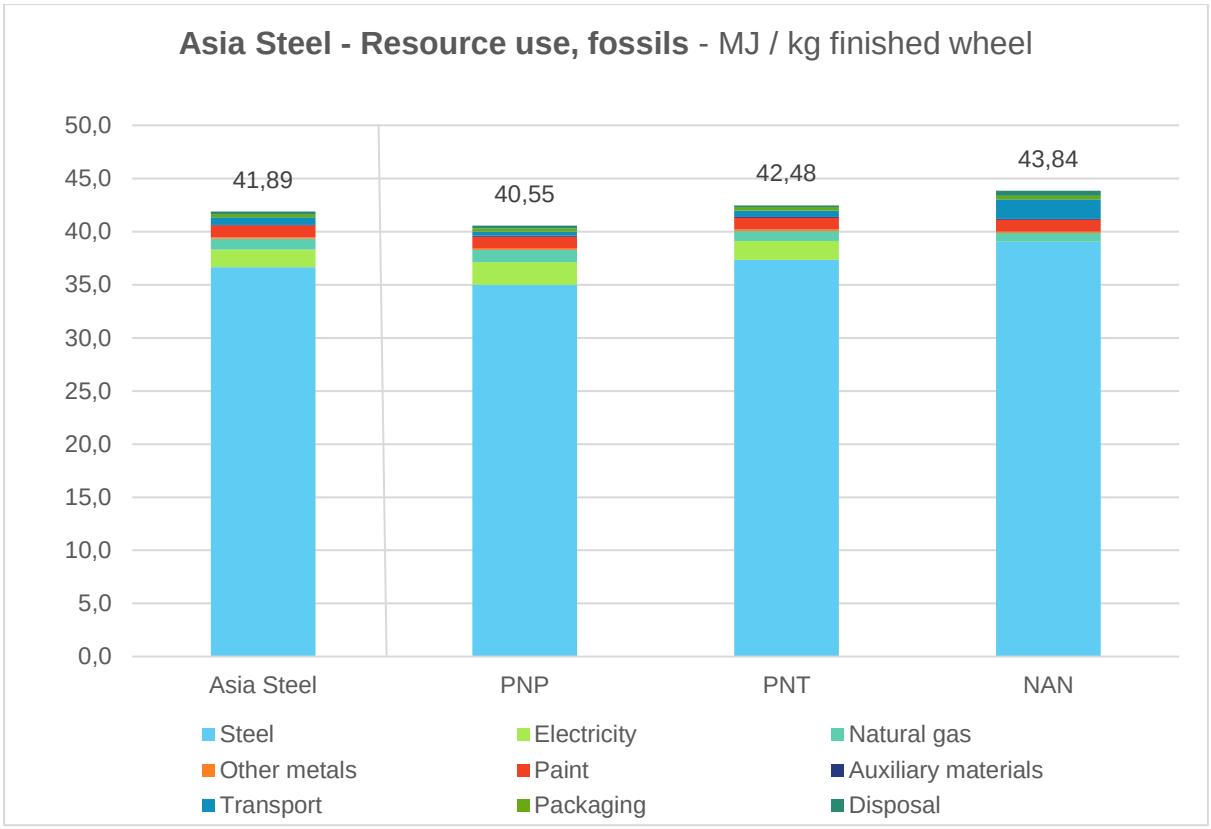
Acidification is very even between PNP and PNT, while NAN shows the lowest acidification. Particulate matter is similar for all plants, showing visible contribution of electricity for Indian plants. Photochemical ozone formation is the highest for PNT at 8,50E-3 kg NMVOC eq. Fossil resource use varies from 40,6 MJ at PNP to 43,8 MJ at NAN with average at 41,9 MJ. In water use, NAN is the highest at 1,17 m^3, with electricity contributing over 44%.

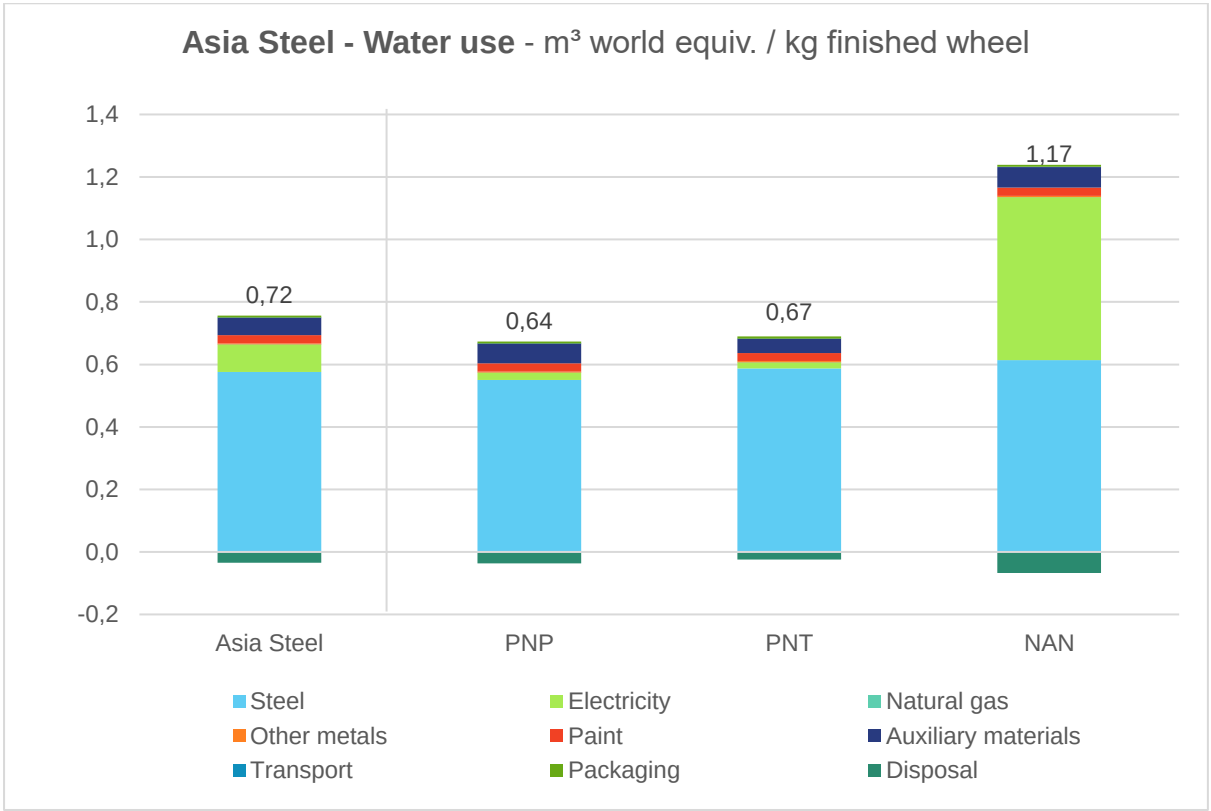
FIGURE 30 SELECTED EF 3.1 IMPACT CATEGORIES AND CONTRIBUTION OF PROCESS GROUPS FOR ASIA STEEL PLANTS




Asia Steel - Particulate matter
Disease incidences / kg finished wheel
4,00E-07
3,50E-07
3,00E-07
2,50E-07
2,00E-07
1,50E-07
1,00E-07
5,00E-08
0,00E+00
3,70E-07
3,65E-07
3,78E-07
3,59E-07
Asia Steel
PNP
PNT
NAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Asia Steel - Photochemical ozone formation, human health- kg NMVOC eq. / kg finished wheel
9,00E-03
8,00E-03
7,00E-03
6,00E-03
5,00E-03
4,00E-03
3,00E-03
2,00E-03
1,00E-03
0,00E+00
8,32E-03
8,24E-03
8,50E-03
7,97E-03
Asia Steel
PNP
PNT
NAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Asia Steel - Resource use, fossils - MJ / kg finished wheel
50,0
45,0
40,0
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
41,89
40,55
42,48
43,84
Asia Steel
PNP
PNT
NAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal


Asia Steel - Water use - m³ world equiv. / kg finished wheel
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
-0,2
0,72
0,64
0,67
1,17
Asia Steel
PNP
PNT
NAN
Steel
Electricity
Natural gas
Other metals
Paint
Auxiliary materials
Transport
Packaging
Disposal

5 CONCLUSION

This cradle-to-gate LCA assessed Iochpe-Maxion's aluminium and steel wheels plus structural components across 24 global sites, following ISO 14067 (Product carbon footprint based on GWP) and ISO 14040/44 with EF 3.1 (16 categories). Using 2024 site-specific data for main metal input, electricity, gas, and transport and production-weighted averages for calculation, it quantified impacts per 1 kg of finished products at factory gate - packed.

The high Primary Data Share (>96% for GWP), secured through supplier-verified certificates, significantly improves the study's representativeness compared to standard LCAs relying on generic data. This approach allows for precise hotspot identification and scenario comparisons aligned with Maxion's Roadmap Zero.

Key findings show light vehicle aluminium wheels' product carbon footprint at 10,86 kg CO_2eq/kg (range 8,88-13,36 by region) and steel products at 3,17-3,80 kg CO_2eq/kg. EF 3.1 single score highlights fossil resource use, particulate matter, acidification, and photochemical ozone as dominant. Upstream primary metals drive 80-95% product carbon footprint impacts; on-site energy is secondary, other processes contribute marginally. Regional grids impact mostly acidification/PM/water in coal/hydro intensive areas; VOCs in disposal process group contribute significantly to photochemical ozone formation.

The multi-impact assessment via the EF 3.1 methodology provides a critical secondary perspective to the standard carbon footprint. While optimizing facility-level energy consumption yields limited improvements in overall product carbon footprint, it remains crucial for mitigating localized environmental impacts. Transitioning away from coal- and hydro-intensive sources presents an opportunity to reduce acidification, particulate matter and water use.

Impacts depend on primary input metal for all impact categories: the product carbon footprint of aluminium is approximately three times higher than that of steel due to the energy intensity of electrolysis; steel scores lower but is sensitive to scrap rates (input/output ratio). Decarbonizing metal supply chain (e.g., low-carbon primaries, recycled content) offers largest gains.

5.1 RECOMMENDATIONS

- Consider pursuing Environmental Products Declarations (EPDs) or EF 3.1-compliant certificates from metal suppliers, which would raise PDS to over 90% and support multi-impact verification.
- Collaborate with key suppliers on Scope 3 emissions roadmaps, exploring low-carbon inputs or recycled blends to meaningfully reduce the 80-95% of impacts from metals.
- Monitor opportunities for regional electricity decarbonization - renewables at coal- or hydro-dependent sites, yielding improvements in acidification, PM, and water use.
- Conduct a future cradle-to-grave assessment to capture use-phase and end-of-life benefits, properly accounting for lightweighting advantages and recycling credits.

The results establish a solid baseline to support Maxion's sustainability reporting, procurement decisions, and future tracking of decarbonization progress.

6 LITERATURE

- ISO 14040:2006 Environmental management — Life cycle assessment — Principles and framework
- ISO 14044:2006 Environmental management — Life cycle assessment — Requirements and guidelines
- ISO 14067:2019 Greenhouse gases - Carbon footprint of products - Requirements and guidelines for quantification
- Ecoinvent: Ecoinvent Centre, www.Eco-invent.org
- Sphera: LCA for Experts, 2023, Sphera solutions.
- EC-JRC (2010). ILCD Handbook – Data Quality. JRC Reference Reports.

7 ACRONYMS

TABLE 29: LISTS OF ACRONYMS (EXCEPT FOR IMPACT CATEGORIES)

Acronym	Full Form
ASI	Aluminium Stewardship Initiative
CF	Carbon Footprint
CV	Commercial Vehicle (Wheels)
dLUC	Direct Land Use Change
EOL	End-of-Life
EPD	Environmental Product Declaration
FU	Functional Unit
GHG	Greenhouse Gas
GO	Guarantees of Origin
GWP100	Global Warming Potential 100-year
iREC	International Renewable Energy Certificate
ISO 14040	ISO 14040:2006 - Environmental management — Life cycle assessment — Principles and framework
ISO 14044	ISO 14044:2006 - Environmental management — Life cycle assessment — Requirements and guidelines
ISO 14067	ISO 14067:2018 - Greenhouse gases — Carbon footprint of products
LCA	Life Cycle Assessment
LCI	Life Cycle Inventory
LVA	Light Vehicle Aluminium (Wheels)
LVS	Light Vehicle Steel (Wheels)
MSC	Maxion Structural Components / Structural Components
OEM	Original Equipment Manufacturer
PCF	Product Carbon Footprint
PDS	Primary Data Share
PP-EPDM	Polypropylene-Ethylene Propylene Diene Monomer
Q	Substitution/Quality Factor
SBTi	Science Based Targets initiative
VOC	Volatile Organic Compounds

8 APPENDIX

8.1 LIST OF PROCESSES USED FOR MODELLING

TABLE 30: LIST OF DATABASE PROCESSES USED FOR MODELLING

- AlTiB <u-so>
- BR: Electricity from hydro power Sphera
- BR: Electricity mix (energy carriers, for Maxion, BR) Sphera <u-so>
- BR: Landfill (Municipal household waste) Sphera
- BR: Thermal energy from natural gas Sphera
- CN: Electricity from hydro power Sphera
- CN: Electricity mix (energy carriers, for Maxion, CN) Sphera <u-so>
- CN: Magnesium Sphera
- CZ: Electricity from hydro power Sphera
- CZ: Electricity mix (energy carriers, for Maxion, CZ) Sphera <u-so>
- CZ: Hazardous waste (statistical average composition) in waste incineration plant (7.2% H2O content) Sphera <p-agg>
- CZ: Residual grid mix Sphera
- CZ: Thermal energy from natural gas Sphera
- DE: Electricity from wind power Sphera
- DE: Electricity mix (energy carriers, for Maxion, DE) Sphera <u-so>
- DE: Residual grid mix Sphera
- DE: Thermal energy from natural gas Sphera
- ES: Electricity from photovoltaic Sphera
- ES: Electricity mix (energy carriers, for Maxion, ES) Sphera <u-so>
- ES: Residual grid mix Sphera
- ES: Thermal energy from natural gas Sphera
- GLO: Aluminium ingot mix IAI 2019 IAI/Sphera
- GLO: Container ship, 5,000 to 200,000 dwt payload capacity, deep sea Sphera <u-so>
- GLO: paint production, for electrostatic painting for aluminium ecoinvent 3.11
- GLO: Recyclation of steel scrap ts <u-so>
- GLO: Steel hot rolled coil worldsteel
- GLO: Truck, Diesel, Euro VI A-C, more than 32t gross weight Sphera <u-so>
- GLO: Wheel packaging <u-so>
- GR: Electricity from biomass (solid) Sphera
- GR: Electricity from photovoltaic Sphera
- IN: Electricity from biomass (solid) Sphera
- IN: Electricity from photovoltaic Sphera
- IN: Electricity grid mix Sphera
- IN: Electricity mix (energy carriers, for Maxion, IN) Sphera <u-so>
- IN: Thermal energy from natural gas Sphera
- IT: Electricity from biomass (solid) Sphera
- IT: Electricity mix (energy carriers, for Maxion, IT) Sphera <u-so>
- IT: Residual grid mix Sphera
- IT: Thermal energy from natural gas Sphera
- JP: Electricity from photovoltaic Sphera
- MX: Electricity mix (energy carriers, for Maxion, MX) Sphera <u-so>
- Product on market <u-so>
- RAS: Steel hot rolled coil worldsteel
- RER: Aluminium ingot mix - consumption mix Sphera
- RER: Ammonium phosphate (AP, 52% P2O5, 8.4% N) Fertilizers Europe
- RER: carbon dioxide production, liquid ecoinvent 3.11
- RER: Diesel mix at refinery Sphera
- RER: Hazardous waste (statistical average composition) treatment mix (incineration and landfill) Sphera
- RER: Heavy fuel oil at refinery (1.0wt.% S) Sphera
- RER: Kraftliner 2021; by-products: tall oil, turpentine; cut-off EoL; [mass allocation] Sphera/FEFCO <p-agg>
- RER: Lubricants at refinery Sphera
- RER: Municipal solid waste on landfill Sphera <p-agg>
- RER: Polyethylene film (PE-LD) PlasticsEurope
- RER: refrigerant R134a production ecoinvent 3.11
- RER: Steel hot rolled coil worldsteel
- RER: Steel wire rod worldsteel
- RER: Tap water from surface water Sphera
- RER: Wooden pallets (EURO, 120x80x14 cm, 22% moisture, 18% H2O content) Sphera
- RME: Aluminium ingot mix IAI 2019 IAI/Sphera
- Strontium <u-so>
- TH: Electricity mix (energy carriers, for Maxion, TH) Sphera <u-so>
- TH: electricity, high voltage, production mix ecoinvent 3.11
- TH: Thermal energy from natural gas Sphera
- TR: Electricity from hydro power Sphera
- TR: Electricity mix (energy carriers, for Maxion, TR) Sphera <u-so>
- TR: Thermal energy from natural gas ts
- US: Electricity from biomass (solid) Sphera
- US: Electricity from photovoltaic Sphera
- US: Electricity from wind power Sphera
- US: Electricity grid mix Sphera
- US: Thermal energy from natural gas Sphera
- Waste water treatment (metal processing) <LC>
- ZA: Electricity mix (energy carriers, for Maxion, ZA) Sphera <u-so>
- ZA: electricity production, wind, 1-3MW turbine, onshore ecoinvent 3.11
- ZA: market for electricity, high voltage ecoinvent 3.11

8.2 INVENTORY

TABLE 31: INVENTORY FOR LVA EMEA PLANTS

	Plant		Ostrava	Dello	Manisa	Johannesburg
	Code		CZA	DEL	JAWS	JOH
	Country	Units	Czech Rep.	Italy	Turkey	South Africa
Production	Produced Goods	kg				
Primary metal	Aluminium	kg				
Electricity	Electricity total	kWh				
	Biomass	kWh				
	Grid mix	kWh				
	Hydro + marine	kWh				
	Photovoltaic	kWh				
	Wind	kWh				
Natural gas	Natural Gas	kWh				
Other metals	Stroncium	kg				
	Magnesium	kg				
	AlTiB / Titanbor	kg				
Paint	Paint (e-coat + liquid)	kg				
Auxiliary materials	oils / lubricants	kg				
	CO2 from dried ice	kg				
	HFC |(as R410A)	kg				
	Process water use	kg				
Transport	Primary - sea	km				
	Primary - truck	km				
	Other - truck	km				
Packaging	Plastic - non returnable	kg				
Disposal	Hazardous waste	kg				
	Metals for recycling	kg				
	MSW for landfill	kg				
	Waste for recycling	kg				
	Waste water	kg				
	VOC emissions / air	kg				

TABLE 32: INVENTORY FOR LVA AMERICAS PLANTS

	Plant		Chihuahua	Limeira	Santo Andre
	Code		CHI	LMA	SAN
	Country	Units	Mexico	Brazil	Brazil
Production	Produced Goods	kg			
Primary metal	Aluminium	kg			
Electricity	Electricity total	kWh			
	Biomass	kWh			
	Grid mix	kWh			
	Hydro + marine	kWh			
	Photovoltaic	kWh			
	Wind	kWh			
Natural gas	Natural Gas	kWh			
Other metals	Stroncium	kg			
	Magnesium	kg			
	AlTiB / Titanbor	kg			
Paint	Paint (e-coat + liquid)	kg			
Auxiliary materials	oils / lubricants	kg			
	CO2 from dried ice	kg			
	HFC |(as R410A)	kg			
	Process water use	kg			
Transport	Primary - sea	km			
	Primary - truck	km			
	Other - truck	km			
Packaging	Plastic - non returnable	kg			
Disposal	Hazardous waste	kg			
	Metals for recycling	kg			
	MSW for landfill	kg			
	Waste for recycling	kg			
	Waste water	kg			
	VOC emissions / air	kg			

TABLE 33: INVENTORY FOR LVA ASIA PLANTS

	Plant	Units	Pune Aluminium	Saraburi
	Code		PNA	SAR
	Country		India	Thailand
Production	Produced Goods	kg		
Primary metal	Aluminium	kg		
Electricity	Electricity total	kWh		
	Biomass	kWh		
	Grid mix	kWh		
	Hydro + marine	kWh		
	Photovoltaic	kWh		
	Wind	kWh		
Natural gas	Natural Gas	kWh		
Other metals	Stroncium	kg		
	Magnesium	kg		
	AlTiB / Titanbor	kg		
Paint	Paint (e-coat + liquid)	kg		
Auxiliary materials	oils / lubricants	kg		
	CO2 from dried ice	kg		
	HFC |(as R410A)	kg		
	Process water use	kg		
Transport	Primary - sea	km		
	Primary - truck	km		
	Other - truck	km		
Packaging	Plastic - non returnable	kg		
Disposal	Hazardous waste	kg		
	Metals for recycling	kg		
	MSW for landfill	kg		
	Waste for recycling	kg		
	Waste water	kg		
	VOC emissions / air	kg		

TABLE 34: INVENTORY FOR LVS PLANTS

	Plant		Ostrava	Manresa	Manisa	Limeira	S. Luis Potosi	Sedalia	Pune Pass Car
	Code		CZS	MAN	INCI	LMS	SLP	SED	PNP
	Country	Units	Czech Rep.	Spain	Turkey	Brazil	Mexico	USA	India
Production	Produced Goods	kg							
Primary metal	Steel	kg							
Electricity	Electricity total	kWh							
	Biomass	kWh							
	Grid mix	kWh							
	Hydro + marine	kWh							
	Photovoltaic	kWh							
	Wind	kWh							
Natural gas	Natural Gas	kWh							
Other metals	Welding wire	kg							
Paint	Paint (e-coat + liquid)	kg							
Auxiliary materials	oils / lubricants	kg							
	CO2 from dried ice	kg							
	HFC |(as R410A)	kg							
	Process water use	kg							
Transport	Primary - sea	km							
	Primary - truck	km							
	Other - truck	km							
Packaging	Plastic - non returnable	kg							
Disposal	Hazardous waste	kg							
	Metals for recycling	kg							
	MSW for landfill	kg							
	Waste for recycling	kg							
	Waste water	kg							
	VOC emissions / air	kg							

TABLE 35: INVENTORY FOR CV PLANTS

	Plant		Konigswinter	Manisa	Cruzeiro-MX	Pune Truck	Nantong
	Code		KON	JAN	CRZ-MX	PNT	NAN
	Country	Units	Germany	Turkey	Brazil	India	China
Production	Produced Goods	kg					
Primary metal	Aluminium	kg					
Electricity	Electricity total	kWh					
	Biomass	kWh					
	Grid mix	kWh					
	Hydro + marine	kWh					
	Photovoltaic	kWh					
	Wind	kWh					
Natural gas	Natural Gas	kWh					
Other metals	Welding wire	kg					
Paint	Paint (e-coat + liquid)	kg					
Auxiliary materials	Oils / lubricants	kg					
	CO2 from dried ice	kg					
	HFC |(as R410A)	kg					
	Process water use	kg					
Transport	Primary - sea	km					
	Primary - truck	km					
	Other - truck	km					
Packaging	Plastic - non returnable	kg					
Disposal	Hazardous waste	kg					
	Metals for recycling	kg					
	MSW for landfill	kg					
	Waste for recycling	kg					
	Waste water	kg					
	VOC emissions / air	kg					

TABLE 36: INVENTORY FOR MSC PLANTS

	Plant	Units	Contagem	Cruzeiro+Resende	Castaños
	Code		CTG	CRZ-MSC	CST
	Country	Units	Brazil	Brazil	Mexico
Production	Produced Goods	kg			
Primary metal	Steel	kg			
Electricity	Electricity total	kWh			
	Biomass	kWh			
	Grid mix	kWh			
	Hydro + marine	kWh			
	Photovoltaic	kWh			
	Wind	kWh			
Natural gas	Natural Gas	kWh			
Other metals	Welding wire	kg			
Paint	Paint (e-coat + liquid)	kg			
Auxiliary materials	Phosphates	kg			
	Oils / lubricants	kg			
	CO2 from dried ice	kg			
	HFC |(as R410A)	kg			
	Process water use	kg			
	Primary - truck	km			
	Other - truck	km			
Packaging	Plastic - non returnable	kg			
Disposal	Hazardous waste	kg			
	Metals for recycling	kg			
	MSW for landfill	kg			
	Waste for recycling	kg			
	Waste water	kg			
	VOC emissions / air	kg			

8.3 NORMALISED AND WEIGHTED RESULTS - EF 3.1

TABLE 37: NORMALIZED AND WEIGHTED RESULTS FOR ALL LVA PLANTS

	CZA	DEL	CHI	JAWS	PNA	SAR	JOH	LMA	SAN
EF 3.1 Single score	1,06E-03	8,74E-04	1,31E-03	4,25E-04	1,35E-03	1,33E-03	1,53E-03	1,27E-03	1,23E-03
Acidification	6,51E-05	6,43E-05	1,03E-04	2,19E-05	1,12E-04	1,04E-04	1,35E-04	1,03E-04	9,86E-05
Climate Change - total	3,22E-04	3,33E-04	5,39E-04	1,14E-04	5,39E-04	5,35E-04	5,99E-04	5,24E-04	5,02E-04
Ecotoxicity, freshwater - total	1,55E-05	1,52E-05	1,81E-05	9,54E-06	1,93E-05	1,80E-05	2,00E-05	1,59E-05	1,54E-05
Eutrophication, freshwater	6,61E-07	7,46E-07	6,51E-07	3,66E-05	6,63E-07	1,37E-05	2,65E-05	6,32E-07	6,30E-07
Eutrophication, marine	1,68E-05	1,78E-05	2,72E-05	7,71E-06	2,85E-05	2,79E-05	3,36E-05	2,67E-05	2,55E-05
Eutrophication, terrestrial	2,55E-05	2,71E-05	4,11E-05	1,04E-05	4,31E-05	4,18E-05	5,08E-05	4,03E-05	3,85E-05
Human toxicity, cancer	1,21E-05	1,23E-05	1,83E-05	6,62E-06	1,90E-05	1,85E-05	1,90E-05	1,90E-05	1,83E-05
Human toxicity, non-cancer	1,23E-05	1,05E-05	1,12E-05	1,21E-05	1,23E-05	1,21E-05	1,98E-05	1,09E-05	1,07E-05
Ionising radiation, human health	5,26E-06	5,06E-06	2,98E-06	1,66E-06	1,94E-06	1,91E-06	2,81E-06	1,69E-06	1,65E-06
Land Use	1,05E-06	6,11E-06	7,34E-07	7,73E-06	8,19E-07	7,20E-07	8,57E-06	5,16E-07	5,12E-07
Ozone depletion	3,55E-09	1,38E-08	2,05E-08	2,57E-08	2,55E-08	5,06E-08	6,62E-09	1,66E-08	6,29E-09
Particulate matter	1,18E-04	1,19E-04	1,98E-04	5,54E-05	2,11E-04	1,96E-04	1,93E-04	1,88E-04	1,81E-04
Photochemical ozone formation, human health	3,88E-05	4,01E-05	6,24E-05	2,29E-05	7,51E-05	7,36E-05	8,50E-05	6,23E-05	7,04E-05
Resource use, fossils	1,95E-04	1,97E-04	2,62E-04	7,26E-05	2,56E-04	2,61E-04	3,08E-04	2,48E-04	2,37E-04
Resource use, mineral and metals	2,09E-04	2,73E-06	2,83E-06	3,06E-05	2,61E-06	3,49E-06	4,51E-06	2,37E-06	2,23E-06
Water use	2,04E-05	2,17E-05	2,64E-05	1,49E-05	2,58E-05	2,63E-05	2,83E-05	2,56E-05	2,52E-05

TABLE 38: NORMALIZED AND WEIGHTED RESULTS FOR EMEA AND ASIA STEEL PLANTS

	CZS	KON	MAN	INCI	JAN	PNP	PNT	NAN
EF 3.1 Single score	1,88E-04	2,58E-04	1,75E-04	2,46E-04	2,92E-04	2,49E-04	2,59E-04	2,62E-04
Acidification	7,54E-06	1,13E-05	6,95E-06	1,29E-05	1,55E-05	1,38E-05	1,40E-05	1,24E-05
Climate Change - total	7,90E-05	1,08E-04	7,52E-05	9,56E-05	1,13E-04	9,79E-05	1,03E-04	1,06E-04
Ecotoxicity, freshwater - total	2,02E-06	2,41E-06	2,28E-06	3,15E-06	2,87E-06	2,28E-06	2,36E-06	2,66E-06
Eutrophication, freshwater	3,17E-07	3,22E-07	3,19E-07	4,12E-07	4,24E-07	3,23E-07	3,25E-07	3,32E-07
Eutrophication, marine	2,07E-06	3,63E-06	1,95E-06	3,90E-06	4,73E-06	3,68E-06	3,79E-06	3,65E-06
Eutrophication, terrestrial	3,08E-06	5,44E-06	2,90E-06	5,65E-06	6,86E-06	5,02E-06	5,15E-06	4,91E-06
Human toxicity, cancer	1,37E-06	1,81E-06	1,22E-06	1,41E-06	1,66E-06	1,36E-06	1,43E-06	1,55E-06
Human toxicity, non-cancer	1,20E-06	1,21E-06	1,03E-06	3,09E-06	3,48E-06	7,92E-07	8,05E-07	8,63E-07
Ionising radiation, human health	4,08E-07	2,94E-07	5,28E-07	3,94E-07	4,66E-07	2,99E-07	3,02E-07	3,19E-07
Land Use	2,00E-07	1,87E-07	1,96E-07	5,62E-06	6,73E-06	3,10E-07	3,27E-07	3,67E-07
Ozone depletion	1,72E-09	1,72E-09	1,74E-09	1,85E-09	2,12E-09	7,55E-09	7,57E-09	1,72E-09
Particulate matter	3,66E-05	5,45E-05	3,30E-05	4,55E-05	5,60E-05	5,49E-05	5,69E-05	5,40E-05
Photochemical ozone formation, human health	1,10E-05	1,02E-05	6,23E-06	1,40E-05	1,60E-05	9,64E-06	9,94E-06	9,33E-06
Resource use, fossils	4,21E-05	5,65E-05	4,19E-05	5,04E-05	5,92E-05	5,19E-05	5,44E-05	5,61E-05
Resource use, mineral and metals	1,23E-06	1,51E-06	1,30E-06	6,15E-07	5,86E-07	1,62E-06	1,78E-06	1,64E-06
Water use	2,57E-07	5,14E-08	3,07E-07	3,84E-06	4,69E-06	4,73E-06	4,94E-06	8,69E-06

TABLE 39: NORMALIZED AND WEIGHTED RESULTS FOR AMERICAS AND MSC STEEL PLANTS

	SLP	SED	CRZ-MX	LMS	CTG	CRZ-MSC	CST
EF 3.1 Single score	8,28E+07	5,21E+07	8,18E+07	5,72E+07	3,30E+07	1,08E+08	1,98E+08
Acidification	2,27E-04	2,02E-04	2,49E-04	1,99E-04	3,05E-04	2,15E-04	1,94E-04
Climate Change - total	1,06E-05	9,42E-06	1,17E-05	9,17E-06	1,40E-05	9,95E-06	8,80E-06
Ecotoxicity, freshwater - total	9,37E-05	8,26E-05	1,06E-04	8,29E-05	1,28E-04	9,22E-05	8,37E-05
Eutrophication, freshwater	2,36E-06	2,38E-06	2,48E-06	2,09E-06	2,53E-06	2,02E-06	1,59E-06
Eutrophication, marine	3,22E-07	3,36E-07	3,49E-07	3,19E-07	4,52E-08	1,80E-07	1,53E-07
Eutrophication, terrestrial	2,99E-06	2,63E-06	3,21E-06	2,51E-06	3,87E-06	2,79E-06	2,41E-06
Human toxicity, cancer	4,18E-06	3,71E-06	4,45E-06	3,48E-06	5,36E-06	3,87E-06	3,34E-06
Human toxicity, non-cancer	1,19E-06	1,07E-06	1,42E-06	1,13E-06	1,61E-06	1,19E-06	1,06E-06
Ionising radiation, human health	9,85E-07	1,33E-06	1,10E-06	9,09E-07	1,17E-06	9,13E-07	7,05E-07
Land Use	4,92E-07	5,27E-07	3,68E-07	2,88E-07	4,16E-07	3,06E-07	2,78E-07
Ozone depletion	2,71E-07	1,76E-06	2,91E-07	2,37E-07	2,89E-06	2,40E-07	3,76E-07
Particulate matter	1,80E-09	1,73E-09	1,79E-09	9,47E-09	1,06E-09	8,33E-10	1,72E-09
Photochemical ozone formation, human health	4,41E-05	3,64E-05	4,98E-05	3,83E-05	6,48E-05	4,27E-05	3,87E-05
Resource use, fossils	1,28E-05	1,17E-05	8,76E-06	1,16E-05	1,04E-05	8,18E-06	6,67E-06
Resource use, mineral and metals	5,04E-05	4,50E-05	5,52E-05	4,32E-05	6,57E-05	4,75E-05	4,41E-05
Water use	6,67E-07	6,16E-07	6,28E-07	5,91E-07	6,77E-08	3,27E-07	3,51E-07

8.4 RESULTS FOR LVA PLANTS

TABLE 40: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR CZA

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	5,83E-02	5,46E-02	8,07E-04	6,81E-04	2,92E-04	8,73E-04	1,94E-05	6,30E-04	1,79E-04	3,03E-04
Climate Change - total	1,15E+01	9,24E+00	3,59E-01	1,18E+00	7,89E-02	1,10E-01	7,67E-03	4,25E-01	3,21E-02	1,24E-01
Climate Change, biogenic	8,49E-02	7,47E-02	1,05E-03	3,44E-03	2,86E-05	1,65E-04	3,58E-05	8,75E-04	0,00E+00	4,61E-03
Climate Change, fossil	1,14E+01	9,08E+00	3,54E-01	1,17E+00	7,89E-02	1,10E-01	7,63E-03	4,20E-01	3,21E-02	1,19E-01
Climate Change, land use	8,80E-02	7,98E-02	3,62E-03	3,92E-05	2,23E-05	8,14E-05	2,27E-06	4,34E-03	0,00E+00	9,53E-05
Ecotoxicity, freshwater - total	4,59E+01	3,46E+01	1,57E+00	1,52E-01	1,61E-01	1,78E+00	2,10E-01	6,97E+00	1,79E-03	4,83E-01
Ecotoxicity, freshwater inorganics	4,09E+01	3,28E+01	1,56E+00	1,49E-01	1,50E-01	1,73E+00	2,09E-01	3,86E+00	1,11E-03	4,37E-01
Ecotoxicity, freshwater organics	4,94E+00	1,72E+00	2,74E-03	3,50E-03	1,18E-02	4,88E-02	1,74E-03	3,11E+00	6,80E-04	4,59E-02
Eutrophication, freshwater	3,79E-05	2,21E-06	2,87E-07	1,34E-07	1,23E-08	3,38E-05	6,38E-08	1,14E-06	1,56E-08	2,70E-07
Eutrophication, marine	1,11E-02	1,01E-02	1,48E-04	3,04E-04	8,41E-05	1,08E-04	3,45E-06	2,54E-04	2,53E-05	7,60E-05
Eutrophication, terrestrial	1,21E-01	1,11E-01	1,54E-03	3,37E-03	9,22E-04	1,04E-03	3,66E-05	2,70E-03	2,76E-04	8,49E-04
Human toxicity, cancer - total	9,77E-09	9,08E-09	2,02E-10	1,69E-10	1,64E-11	1,90E-10	3,46E-12	9,37E-11	1,77E-12	1,85E-11
Human toxicity, cancer inorganics	1,24E-09	8,89E-10	1,60E-11	1,13E-10	3,72E-12	1,10E-10	3,22E-12	9,14E-11	5,85E-14	1,39E-11
Human toxicity, cancer organics	8,53E-09	8,19E-09	1,86E-10	5,59E-11	1,27E-11	8,01E-11	2,43E-13	2,39E-12	1,71E-12	4,61E-12
Human toxicity, non-cancer - total	8,61E-08	6,24E-08	2,09E-09	1,32E-08	2,51E-10	1,12E-09	7,49E-11	5,29E-09	1,99E-11	1,65E-09
Human toxicity, non-cancer inorganics	8,41E-08	6,09E-08	2,07E-09	1,31E-08	2,41E-10	1,04E-09	7,12E-11	4,95E-09	7,06E-12	1,60E-09
Human toxicity, non-cancer organics	2,05E-09	1,44E-09	2,14E-11	9,72E-11	1,02E-11	8,06E-11	3,72E-12	3,32E-10	1,28E-11	4,71E-11
Ionising radiation, human health	4,43E-01	3,61E-01	6,95E-02	4,95E-04	4,56E-04	4,99E-03	2,27E-04	9,80E-04	0,00E+00	5,91E-03
Land Use	1,09E+01	6,29E+00	1,44E+00	4,43E-02	1,96E-02	5,38E-01	4,00E-03	2,38E+00	0,00E+00	1,59E-01
Ozone depletion	2,95E-09	9,62E-11	2,27E-12	8,36E-15	4,72E-14	2,85E-09	1,14E-14	4,97E-14	0,00E+00	4,33E-13
Particulate matter	7,82E-07	7,48E-07	6,13E-09	6,55E-09	4,12E-09	7,09E-09	1,87E-10	5,95E-09	1,61E-09	2,33E-09
Photochemical ozone formation, HH	3,32E-02	3,01E-02	4,31E-04	8,78E-04	2,39E-04	5,53E-04	1,80E-05	5,42E-04	8,47E-05	3,77E-04
Resource use, fossils	1,52E+02	1,15E+02	6,46E+00	2,04E+01	1,08E+00	2,22E+00	2,91E-01	5,37E+00	1,05E+00	7,47E-01
Resource use, mineral and metals	1,76E-04	1,75E-04	4,95E-08	1,02E-07	2,37E-07	9,25E-07	6,77E-10	2,80E-08	3,01E-09	4,72E-09
Water use	2,75E+00	2,56E+00	2,57E-02	3,07E-03	2,88E-03	5,31E-02	1,64E-01	1,69E-03	2,16E-02	-8,15E-02
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	0,07	ND	0,03	0,01	0,00	0,01	0,00	0,02	0,00	0,01
GWP100, Biogenic GHG removal	-0,07	ND	-0,03	0,00	0,00	-0,01	0,00	-0,03	0,00	-0,01
GWP100, Emissions from land use change	0,01	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	2,29	ND	0,35	1,17	0,08	0,11	0,01	0,42	0,03	0,12
ISO 14067 GWP 100 total	10,01	7,70	0,36	1,18	0,08	0,11	0,01	0,41	0,03	0,12

TABLE 41: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR DEL

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	5,77E-02	5,24E-02	2,42E-03	3,99E-04	2,94E-04	8,73E-04	2,01E-05	6,59E-04	1,79E-04	4,65E-04
Climate Change - total	1,20E+01	9,32E+00	8,31E-01	9,70E-01	7,67E-02	1,10E-01	7,91E-03	4,41E-01	3,21E-02	1,70E-01
Climate Change, biogenic	1,09E-01	7,79E-02	7,91E-04	1,39E-03	2,51E-05	1,65E-04	5,11E-05	9,08E-04	0,00E+00	2,75E-02
Climate Change, fossil	1,18E+01	9,15E+00	8,30E-01	9,68E-01	7,66E-02	1,10E-01	7,86E-03	4,36E-01	3,21E-02	1,43E-01
Climate Change, land use	8,82E-02	8,29E-02	5,09E-04	2,56E-05	1,31E-05	8,14E-05	2,94E-06	4,50E-03	0,00E+00	1,74E-04
Ecotoxicity, freshwater - total	4,50E+01	3,29E+01	1,55E+00	1,89E-01	1,61E-01	1,78E+00	2,12E-01	7,23E+00	1,79E-03	9,69E-01
Ecotoxicity, freshwater inorganics	3,97E+01	3,13E+01	1,26E+00	1,75E-01	1,49E-01	1,73E+00	2,10E-01	4,01E+00	1,11E-03	8,67E-01
Ecotoxicity, freshwater organics	5,25E+00	1,56E+00	2,88E-01	1,45E-02	1,20E-02	4,88E-02	1,85E-03	3,22E+00	6,80E-04	1,02E-01
Eutrophication, freshwater	4,28E-05	1,90E-06	4,57E-06	5,77E-08	1,07E-08	3,38E-05	1,30E-07	1,18E-06	1,56E-08	1,14E-06
Eutrophication, marine	1,18E-02	1,03E-02	6,98E-04	1,79E-04	8,57E-05	1,08E-04	3,83E-06	2,66E-04	2,53E-05	8,30E-05
Eutrophication, terrestrial	1,29E-01	1,13E-01	8,15E-03	1,99E-03	9,39E-04	1,04E-03	3,85E-05	2,82E-03	2,76E-04	8,67E-04
Human toxicity, cancer - total	9,97E-09	9,33E-09	2,03E-10	1,00E-10	1,63E-11	1,90E-10	3,80E-12	9,73E-11	1,77E-12	2,39E-11
Human toxicity, cancer inorganics	1,13E-09	7,76E-10	1,27E-10	3,07E-12	3,75E-12	1,10E-10	3,25E-12	9,48E-11	5,85E-14	1,52E-11
Human toxicity, cancer organics	8,84E-09	8,56E-09	7,60E-11	9,73E-11	1,26E-11	8,01E-11	5,50E-13	2,48E-12	1,71E-12	8,73E-12
Human toxicity, non-cancer - total	7,33E-08	5,05E-08	1,42E-08	3,16E-10	2,51E-10	1,12E-09	9,46E-11	5,48E-09	1,99E-11	1,31E-09
Human toxicity, non-cancer inorganics	7,09E-08	4,91E-08	1,40E-08	1,13E-10	2,41E-10	1,04E-09	9,09E-11	5,14E-09	7,06E-12	1,19E-09
Human toxicity, non-cancer organics	2,38E-09	1,45E-09	1,59E-10	2,03E-10	9,98E-12	8,06E-11	3,69E-12	3,45E-10	1,28E-11	1,17E-10
Ionising radiation, human health	4,26E-01	3,74E-01	3,26E-02	2,07E-04	4,26E-04	4,99E-03	2,78E-04	1,02E-03	0,00E+00	1,24E-02
Land Use	6,31E+01	2,66E+00	5,71E+01	1,73E-02	1,48E-02	5,38E-01	5,30E-03	2,47E+00	0,00E+00	2,94E-01
Ozone depletion	1,15E-08	7,62E-11	8,01E-12	1,90E-14	3,03E-14	2,85E-09	8,52E-09	5,16E-14	0,00E+00	8,22E-13
Particulate matter	7,91E-07	7,45E-07	2,00E-08	2,94E-09	4,14E-09	7,09E-09	2,06E-10	6,32E-09	1,61E-09	4,00E-09
Photochemical ozone formation, HH	3,43E-02	3,05E-02	1,36E-03	5,97E-04	2,42E-04	5,53E-04	1,81E-05	5,68E-04	8,47E-05	4,12E-04
Resource use, fossils	1,54E+02	1,17E+02	1,12E+01	1,46E+01	1,09E+00	2,22E+00	2,80E-01	5,58E+00	1,05E+00	1,40E+00
Resource use, mineral and metals	2,30E-06	9,98E-07	6,75E-08	1,54E-08	2,51E-07	9,25E-07	1,15E-09	2,90E-08	3,01E-09	9,04E-09
Water use	2,93E+00	2,53E+00	1,53E-01	9,95E-04	2,02E-03	5,31E-02	3,54E-01	1,75E-03	2,16E-02	-1,86E-01
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	1,27	ND	1,03	0,00	0,00	0,01	0,00	0,02	0,00	0,04
GWP100, Biogenic GHG removal	-1,15	ND	-1,03	0,00	0,00	-0,01	0,00	-0,03	0,00	-0,01
GWP100, Emissions from land use change	0,09	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	2,60	ND	0,83	0,97	0,08	0,11	0,01	0,44	0,03	0,14
ISO 14067 GWP 100 total	10,48	7,84	0,83	0,97	0,08	0,11	0,01	0,43	0,03	0,18

TABLE 42: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR JAWS

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	9,62E-02	8,81E-02	3,94E-03	5,18E-04	2,70E-04	8,73E-04	1,89E-05	1,70E-03	1,79E-04	6,79E-04
Climate Change - total	1,88E+01	1,69E+01	7,55E-02	9,03E-01	7,21E-02	1,10E-01	7,37E-03	4,10E-01	3,21E-02	2,29E-01
Climate Change, biogenic	7,26E-02	5,98E-02	2,40E-04	1,62E-03	2,51E-05	1,65E-04	4,70E-05	7,63E-04	0,00E+00	9,97E-03
Climate Change, fossil	1,87E+01	1,68E+01	7,44E-02	9,01E-01	7,20E-02	1,10E-01	7,32E-03	4,06E-01	3,21E-02	2,18E-01
Climate Change, land use	4,20E-02	3,72E-02	8,48E-04	3,18E-05	1,71E-05	8,14E-05	2,75E-06	3,53E-03	0,00E+00	2,58E-04
Ecotoxicity, freshwater - total	5,43E+01	4,33E+01	9,62E-01	2,47E-01	1,49E-01	1,78E+00	1,92E-01	6,22E+00	1,79E-03	1,46E+00
Ecotoxicity, freshwater inorganics	4,80E+01	4,03E+01	4,79E-01	2,43E-01	1,38E-01	1,73E+00	1,91E-01	3,69E+00	1,11E-03	1,25E+00
Ecotoxicity, freshwater organics	6,29E+00	3,00E+00	4,83E-01	3,77E-03	1,10E-02	4,88E-02	1,68E-03	2,53E+00	6,80E-04	2,12E-01
Eutrophication, freshwater	4,58E-05	2,10E-06	8,10E-06	6,74E-08	1,08E-08	3,38E-05	1,39E-07	9,42E-07	1,56E-08	6,75E-07
Eutrophication, marine	1,86E-02	1,61E-02	1,26E-03	1,84E-04	7,83E-05	1,08E-04	3,56E-06	7,06E-04	2,53E-05	1,13E-04
Eutrophication, terrestrial	2,03E-01	1,76E-01	1,47E-02	2,05E-03	8,58E-04	1,04E-03	3,57E-05	7,67E-03	2,76E-04	1,26E-03
Human toxicity, cancer - total	1,56E-08	1,48E-08	3,75E-10	1,20E-10	1,51E-11	1,90E-10	3,74E-12	8,47E-11	1,77E-12	3,49E-11
Human toxicity, cancer inorganics	1,51E-09	1,04E-09	2,02E-10	5,55E-11	3,44E-12	1,10E-10	2,95E-12	8,24E-11	5,85E-14	2,21E-11
Human toxicity, cancer organics	1,41E-08	1,37E-08	1,73E-10	6,49E-11	1,17E-11	8,01E-11	7,91E-13	2,21E-12	1,71E-12	1,28E-11
Human toxicity, non-cancer - total	1,12E-07	7,35E-08	2,39E-08	6,32E-09	2,32E-10	1,12E-09	8,77E-11	4,44E-09	1,99E-11	2,42E-09
Human toxicity, non-cancer inorganics	1,09E-07	7,11E-08	2,39E-08	6,21E-09	2,22E-10	1,04E-09	8,43E-11	4,16E-09	7,06E-12	1,80E-09
Human toxicity, non-cancer organics	3,57E-09	2,39E-09	5,87E-11	1,15E-10	9,35E-12	8,06E-11	3,46E-12	2,83E-10	1,28E-11	6,17E-10
Ionising radiation, human health	1,58E-01	1,31E-01	2,09E-03	1,83E-04	4,10E-04	4,99E-03	2,60E-04	9,19E-04	0,00E+00	1,86E-02
Land Use	1,10E+02	4,50E+00	1,02E+02	2,39E-02	1,63E-02	5,38E-01	5,00E-03	1,94E+00	0,00E+00	4,37E-01
Ozone depletion	2,11E-08	6,41E-11	2,39E-13	3,13E-17	3,72E-14	2,85E-09	1,82E-08	4,65E-14	0,00E+00	1,22E-12
Particulate matter	1,31E-06	1,22E-06	2,69E-08	5,01E-09	3,82E-09	7,09E-09	1,94E-10	3,62E-08	1,61E-09	5,84E-09
Photochemical ozone formation, HH	6,22E-02	4,79E-02	2,39E-03	5,96E-04	2,22E-04	5,53E-04	1,68E-05	1,81E-03	8,47E-05	8,62E-03
Resource use, fossils	1,94E+02	1,67E+02	6,80E-01	1,48E+01	9,99E-01	2,22E+00	2,54E-01	5,12E+00	1,05E+00	2,04E+00
Resource use, mineral and metals	2,08E-06	7,55E-07	6,15E-08	7,29E-08	2,24E-07	9,25E-07	1,62E-09	2,44E-08	3,01E-09	1,34E-08
Water use	4,85E+00	3,28E+00	1,44E+00	1,13E-03	2,34E-03	5,31E-02	3,29E-01	1,49E-03	2,16E-02	-2,76E-01
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	1,90	ND	1,85	0,00	0,00	0,01	0,00	0,02	0,00	0,03
GWP100, Biogenic GHG removal	-1,89	ND	-1,85	0,00	0,00	-0,01	0,00	-0,03	0,00	-0,01
GWP100, Emissions from land use change	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	1,82	ND	0,07	0,90	0,07	0,11	0,01	0,41	0,03	0,22
ISO 14067 GWP 100 total	10,84	9,00	0,08	0,90	0,07	0,11	0,01	0,40	0,03	0,23

TABLE 43: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR JOH

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,21E-01	8,47E-02	3,22E-02	6,70E-04	3,49E-04	8,73E-04	1,87E-04	6,84E-04	1,79E-04	8,45E-04
Climate Change - total	2,15E+01	1,63E+01	2,27E+00	1,92E+00	9,51E-02	1,10E-01	7,35E-02	4,61E-01	3,21E-02	2,39E-01
Climate Change, biogenic	7,19E-02	5,75E-02	2,36E-03	8,68E-04	3,52E-05	1,65E-04	2,58E-04	9,51E-04	0,00E+00	9,78E-03
Climate Change, fossil	2,12E+01	1,62E+01	2,12E+00	1,91E+00	9,50E-02	1,10E-01	7,32E-02	4,56E-01	3,21E-02	2,29E-01
Climate Change, land use	1,90E-01	3,58E-02	1,49E-01	2,16E-05	2,92E-05	8,14E-05	1,89E-05	4,72E-03	0,00E+00	3,15E-04
Ecotoxicity, freshwater - total	5,91E+01	4,16E+01	2,17E+00	1,95E+00	1,93E-01	1,78E+00	1,99E+00	7,57E+00	1,79E-03	1,81E+00
Ecotoxicity, freshwater inorganics	5,24E+01	3,87E+01	2,09E+00	1,91E+00	1,79E-01	1,73E+00	1,98E+00	4,20E+00	1,11E-03	1,57E+00
Ecotoxicity, freshwater organics	6,69E+00	2,89E+00	7,19E-02	3,75E-02	1,40E-02	4,88E-02	1,64E-02	3,37E+00	6,80E-04	2,40E-01
Eutrophication, freshwater	1,52E-03	2,02E-06	1,48E-03	7,73E-08	1,51E-08	3,38E-05	6,68E-07	1,24E-06	1,56E-08	7,56E-07
Eutrophication, marine	2,22E-02	1,55E-02	5,72E-03	3,10E-04	1,00E-04	1,08E-04	3,17E-05	2,76E-04	2,53E-05	1,37E-04
Eutrophication, terrestrial	2,42E-01	1,69E-01	6,23E-02	3,47E-03	1,10E-03	1,04E-03	3,46E-04	2,93E-03	2,76E-04	1,53E-03
Human toxicity, cancer - total	1,54E-08	1,42E-08	6,38E-10	1,53E-10	1,96E-11	1,90E-10	3,27E-11	1,02E-10	1,77E-12	4,26E-11
Human toxicity, cancer inorganics	1,80E-09	9,97E-10	5,04E-10	2,50E-11	4,44E-12	1,10E-10	3,05E-11	9,92E-11	5,85E-14	2,70E-11
Human toxicity, cancer organics	1,36E-08	1,32E-08	1,35E-10	1,28E-10	1,51E-11	8,01E-11	2,16E-12	2,59E-12	1,71E-12	1,55E-11
Human toxicity, non-cancer - total	1,38E-07	7,07E-08	5,63E-08	8,05E-10	3,00E-10	1,12E-09	6,39E-10	5,74E-09	1,99E-11	2,80E-09
Human toxicity, non-cancer inorganics	1,34E-07	6,84E-08	5,58E-08	2,77E-10	2,88E-10	1,04E-09	5,83E-10	5,38E-09	7,06E-12	2,16E-09
Human toxicity, non-cancer organics	4,53E-09	2,30E-09	5,46E-10	5,28E-10	1,23E-11	8,06E-11	5,58E-11	3,61E-10	1,28E-11	6,34E-10
Ionising radiation, human health	2,36E-01	1,26E-01	7,87E-02	4,50E-04	5,54E-04	4,99E-03	2,05E-03	1,06E-03	0,00E+00	2,28E-02
Land Use	8,84E+01	4,33E+00	8,03E+01	4,53E-02	2,49E-02	5,38E-01	3,42E-02	2,59E+00	0,00E+00	5,39E-01
Ozone depletion	5,49E-09	6,17E-11	2,56E-09	3,77E-14	6,13E-14	2,85E-09	1,78E-11	5,40E-14	0,00E+00	1,52E-12
Particulate matter	1,28E-06	1,18E-06	6,89E-08	8,41E-09	4,93E-09	7,09E-09	1,71E-09	6,46E-09	1,61E-09	7,25E-09
Photochemical ozone formation, HH	7,26E-02	4,61E-02	1,51E-02	1,07E-03	2,84E-04	5,53E-04	1,74E-04	5,88E-04	8,47E-05	8,70E-03
Resource use, fossils	2,41E+02	1,61E+02	3,72E+01	2,71E+01	1,29E+00	2,22E+00	2,84E+00	5,83E+00	1,05E+00	2,54E+00
Resource use, mineral and metals	3,80E-06	7,26E-07	1,57E-06	2,25E-07	2,79E-07	9,25E-07	1,97E-08	3,04E-08	3,01E-09	1,66E-08
Water use	3,82E+00	3,16E+00	4,00E-01	8,34E-03	3,69E-03	5,31E-02	5,21E-01	1,83E-03	2,16E-02	-3,50E-01
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	2,29	ND	2,08	0,00	0,00	0,01	0,00	0,02	0,00	0,03
GWP100, Biogenic GHG removal	-2,22	ND	-2,08	0,00	0,00	-0,01	0,00	-0,03	0,00	-0,02
GWP100, Emissions from land use change	0,19	ND	0,15	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	5,02	ND	2,12	1,91	0,10	0,11	0,07	0,46	0,03	0,23
ISO 14067 GWP 100 total	21,92	16,73	2,27	1,92	0,10	0,11	0,07	0,45	0,03	0,24

TABLE 44: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR CHI

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	9,25E-02	8,53E-02	1,16E-03	4,68E-04	2,87E-04	8,73E-04	1,96E-05	3,81E-03	1,79E-04	3,63E-04
Climate Change - total	1,93E+01	1,64E+01	8,18E-01	1,34E+00	7,70E-02	1,10E-01	7,67E-03	3,88E-01	3,21E-02	1,22E-01
Climate Change, biogenic	6,78E-02	5,79E-02	1,10E-03	6,06E-04	2,75E-05	1,65E-04	4,45E-05	5,56E-04	0,00E+00	7,33E-03
Climate Change, fossil	1,92E+01	1,63E+01	8,15E-01	1,34E+00	7,70E-02	1,10E-01	7,63E-03	3,85E-01	3,21E-02	1,15E-01
Climate Change, land use	3,98E-02	3,61E-02	1,49E-03	1,51E-05	2,03E-05	8,14E-05	2,66E-06	2,02E-03	0,00E+00	1,29E-04
Ecotoxicity, freshwater - total	5,35E+01	4,19E+01	2,44E+00	1,36E+00	1,58E-01	1,78E+00	2,03E-01	4,86E+00	1,79E-03	7,53E-01
Ecotoxicity, freshwater inorganics	4,89E+01	3,90E+01	2,36E+00	1,34E+00	1,47E-01	1,73E+00	2,01E-01	3,41E+00	1,11E-03	6,85E-01
Ecotoxicity, freshwater organics	4,60E+00	2,91E+00	8,37E-02	2,62E-02	1,16E-02	4,88E-02	1,74E-03	1,45E+00	6,80E-04	6,81E-02
Eutrophication, freshwater	3,73E-05	2,04E-06	2,85E-07	5,40E-08	1,18E-08	3,38E-05	1,21E-07	5,76E-07	1,56E-08	4,43E-07
Eutrophication, marine	1,79E-02	1,56E-02	2,51E-04	2,17E-04	8,28E-05	1,08E-04	3,62E-06	1,60E-03	2,53E-05	5,70E-05
Eutrophication, terrestrial	1,96E-01	1,70E-01	2,75E-03	2,42E-03	9,06E-04	1,04E-03	3,70E-05	1,75E-02	2,76E-04	6,28E-04
Human toxicity, cancer - total	1,49E-08	1,43E-08	1,18E-10	1,07E-10	1,60E-11	1,90E-10	3,78E-12	6,84E-11	1,77E-12	1,79E-11
Human toxicity, cancer inorganics	1,24E-09	1,00E-09	2,27E-11	1,75E-11	3,65E-12	1,10E-10	3,11E-12	6,65E-11	5,85E-14	1,12E-11
Human toxicity, cancer organics	1,36E-08	1,33E-08	9,55E-11	8,94E-11	1,24E-11	8,01E-11	6,71E-13	1,91E-12	1,71E-12	6,68E-12
Human toxicity, non-cancer - total	7,87E-08	7,13E-08	1,64E-09	5,63E-10	2,46E-10	1,12E-09	8,58E-11	2,86E-09	1,99E-11	9,03E-10
Human toxicity, non-cancer inorganics	7,55E-08	6,89E-08	1,49E-09	1,94E-10	2,36E-10	1,04E-09	8,22E-11	2,67E-09	7,06E-12	8,50E-10
Human toxicity, non-cancer organics	3,19E-09	2,32E-09	1,51E-10	3,69E-10	9,98E-12	8,06E-11	3,65E-12	1,92E-10	1,28E-11	5,30E-11
Ionising radiation, human health	2,51E-01	1,27E-01	1,08E-01	3,14E-04	4,42E-04	4,99E-03	2,56E-04	8,18E-04	0,00E+00	9,54E-03
Land Use	7,58E+00	4,36E+00	1,29E+00	3,16E-02	1,84E-02	5,38E-01	4,82E-03	1,11E+00	0,00E+00	2,24E-01
Ozone depletion	1,70E-08	6,22E-11	4,31E-11	2,64E-14	4,34E-14	2,85E-09	1,41E-08	4,11E-14	0,00E+00	4,78E-13
Particulate matter	1,31E-06	1,18E-06	1,08E-08	5,88E-09	4,05E-09	7,09E-09	1,97E-10	9,61E-08	1,61E-09	3,09E-09
Photochemical ozone formation, HH	5,33E-02	4,64E-02	7,24E-04	7,47E-04	2,35E-04	5,53E-04	1,76E-05	4,33E-03	8,47E-05	1,74E-04
Resource use, fossils	2,05E+02	1,62E+02	1,34E+01	1,89E+01	1,06E+00	2,22E+00	2,72E-01	4,72E+00	1,05E+00	1,09E+00
Resource use, mineral and metals	2,39E-06	7,32E-07	3,11E-07	1,57E-07	2,34E-07	9,25E-07	1,43E-09	1,77E-08	3,01E-09	7,05E-09
Water use	3,56E+00	3,18E+00	1,68E-01	5,83E-03	2,68E-03	5,31E-02	2,83E-01	1,14E-03	2,16E-02	-1,56E-01
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	0,22	ND	0,04	0,00	0,00	0,01	0,00	0,01	0,00	0,02
GWP100, Biogenic GHG removal	-0,15	ND	-0,04	0,00	0,00	-0,01	0,00	-0,01	0,00	-0,01
GWP100, Emissions from land use change	0,04	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	1,54	ND	0,81	1,34	0,08	0,11	0,01	0,39	0,03	0,11
ISO 14067 GWP 100 total	13,57	10,68	0,82	1,34	0,08	0,11	0,01	0,38	0,03	0,12

TABLE 45: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR SAN

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	8,83E-02	8,46E-02	6,68E-06	2,20E-03	1,84E-04	8,73E-04	2,20E-05	5,24E-05	1,79E-04	2,58E-04
Climate Change - total	1,80E+01	1,63E+01	1,96E-01	1,22E+00	5,07E-02	1,10E-01	8,65E-03	3,53E-02	3,21E-02	8,28E-02
Climate Change, biogenic	2,40E-01	5,74E-02	1,82E-01	2,45E-04	1,94E-05	1,65E-04	3,74E-05	7,28E-05	0,00E+00	2,54E-04
Climate Change, fossil	1,77E+01	1,62E+01	3,23E-03	1,22E+00	5,06E-02	1,10E-01	8,61E-03	3,49E-02	3,21E-02	8,24E-02
Climate Change, land use	4,74E-02	3,57E-02	1,11E-02	3,84E-05	1,76E-05	8,14E-05	2,44E-06	3,61E-04	0,00E+00	1,05E-04
Ecotoxicity, freshwater - total	4,55E+01	4,15E+01	1,17E-02	6,38E-01	1,02E-01	1,78E+00	2,36E-01	5,80E-01	1,79E-03	6,08E-01
Ecotoxicity, freshwater inorganics	4,21E+01	3,87E+01	8,41E-03	6,21E-01	9,44E-02	1,73E+00	2,34E-01	3,21E-01	1,11E-03	4,64E-01
Ecotoxicity, freshwater organics	3,36E+00	2,88E+00	3,31E-03	1,79E-02	7,33E-03	4,88E-02	1,93E-03	2,58E-01	6,80E-04	1,45E-01
Eutrophication, freshwater	3,62E-05	2,02E-06	3,43E-09	3,00E-08	8,37E-09	3,38E-05	6,65E-08	9,47E-08	1,56E-08	1,39E-07
Eutrophication, marine	1,68E-02	1,55E-02	1,55E-06	1,11E-03	5,25E-05	1,08E-04	3,84E-06	2,11E-05	2,53E-05	4,52E-05
Eutrophication, terrestrial	1,83E-01	1,69E-01	1,69E-05	1,21E-02	5,75E-04	1,04E-03	4,11E-05	2,24E-04	2,76E-04	5,11E-04
Human toxicity, cancer - total	1,49E-08	1,42E-08	1,83E-10	2,47E-10	1,03E-11	1,90E-10	3,93E-12	7,80E-12	1,77E-12	1,38E-11
Human toxicity, cancer inorganics	1,14E-09	9,95E-10	1,04E-13	8,89E-12	2,33E-12	1,10E-10	3,61E-12	7,60E-12	5,85E-14	8,88E-12
Human toxicity, cancer organics	1,37E-08	1,32E-08	1,83E-10	2,38E-10	8,00E-12	8,01E-11	3,23E-13	1,99E-13	1,71E-12	4,93E-12
Human toxicity, non-cancer - total	7,46E-08	7,06E-08	3,45E-10	4,38E-10	1,59E-10	1,12E-09	8,09E-11	4,40E-10	1,99E-11	1,44E-09
Human toxicity, non-cancer inorganics	7,09E-08	6,83E-08	1,75E-11	1,52E-10	1,52E-10	1,04E-09	7,67E-11	4,12E-10	7,06E-12	7,75E-10
Human toxicity, non-cancer organics	3,70E-09	2,30E-09	3,27E-10	2,86E-10	6,54E-12	8,06E-11	4,24E-12	2,76E-11	1,28E-11	6,61E-10
Ionising radiation, human health	1,39E-01	1,26E-01	5,26E-05	4,22E-04	2,99E-04	4,99E-03	2,47E-04	8,15E-05	0,00E+00	7,38E-03
Land Use	5,28E+00	4,32E+00	7,21E-03	2,31E-02	1,43E-02	5,38E-01	4,30E-03	1,98E-01	0,00E+00	1,73E-01
Ozone depletion	5,21E-09	6,16E-11	1,10E-14	2,39E-13	3,64E-14	2,85E-09	2,30E-09	4,13E-15	0,00E+00	4,73E-13
Particulate matter	1,20E-06	1,17E-06	1,29E-10	1,46E-08	2,59E-09	7,09E-09	2,09E-10	4,95E-10	1,61E-09	2,25E-09
Photochemical ozone formation, HH	6,02E-02	4,60E-02	7,26E-05	3,07E-03	1,49E-04	5,53E-04	2,03E-05	4,50E-05	8,47E-05	1,02E-02
Resource use, fossils	1,85E+02	1,61E+02	2,15E-02	1,87E+01	6,78E-01	2,22E+00	3,29E-01	4,47E-01	1,05E+00	7,82E-01
Resource use, mineral and metals	1,88E-06	7,25E-07	3,02E-08	4,41E-08	1,43E-07	9,25E-07	8,92E-10	2,33E-09	3,01E-09	5,17E-09
Water use	3,40E+00	3,15E+00	1,23E-01	2,20E-03	2,15E-03	5,31E-02	1,48E-01	1,40E-04	2,16E-02	-9,94E-02
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	0,22	ND	0,20	0,00	0,00	0,01	0,00	0,00	0,00	0,01
GWP100, Biogenic GHG removal	-0,03	ND	-0,02	0,00	0,00	-0,01	0,00	0,00	0,00	-0,01
GWP100, Emissions from land use change	0,01	ND	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	1,54	ND	0,00	1,22	0,05	0,11	0,01	0,03	0,03	0,08
ISO 14067 GWP 100 total	5,48	3,75	0,20	1,22	0,05	0,11	0,01	0,03	0,03	0,08

TABLE 46: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR LMA

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	9,20E-02	8,78E-02	6,37E-06	2,52E-03	2,87E-04	8,73E-04	2,76E-05	7,39E-05	1,79E-04	2,05E-04
Climate Change - total	1,88E+01	1,69E+01	1,87E-01	1,40E+00	7,70E-02	1,10E-01	1,08E-02	2,11E-02	3,21E-02	8,03E-02
Climate Change, biogenic	2,36E-01	5,96E-02	1,74E-01	2,81E-04	2,75E-05	1,65E-04	3,62E-05	4,02E-05	0,00E+00	2,15E-03
Climate Change, fossil	1,85E+01	1,68E+01	3,08E-03	1,39E+00	7,70E-02	1,10E-01	1,08E-02	2,08E-02	3,21E-02	7,80E-02
Climate Change, land use	4,81E-02	3,71E-02	1,06E-02	4,39E-05	2,03E-05	8,14E-05	2,64E-06	1,90E-04	0,00E+00	8,12E-05
Ecotoxicity, freshwater - total	4,68E+01	4,31E+01	1,12E-02	7,30E-01	1,58E-01	1,78E+00	2,91E-01	3,26E-01	1,79E-03	4,23E-01
Ecotoxicity, freshwater inorganics	4,36E+01	4,01E+01	8,02E-03	7,10E-01	1,47E-01	1,73E+00	2,89E-01	1,90E-01	1,11E-03	3,71E-01
Ecotoxicity, freshwater organics	3,27E+00	2,99E+00	3,15E-03	2,05E-02	1,16E-02	4,88E-02	2,31E-03	1,36E-01	6,80E-04	5,20E-02
Eutrophication, freshwater	3,63E-05	2,09E-06	3,27E-09	3,43E-08	1,18E-08	3,38E-05	6,44E-08	5,03E-08	1,56E-08	1,79E-07
Eutrophication, marine	1,76E-02	1,60E-02	1,47E-06	1,27E-03	8,28E-05	1,08E-04	4,60E-06	3,06E-05	2,53E-05	3,54E-05
Eutrophication, terrestrial	1,92E-01	1,75E-01	1,61E-05	1,39E-02	9,06E-04	1,04E-03	5,07E-05	3,32E-04	2,76E-04	3,96E-04
Human toxicity, cancer - total	1,54E-08	1,47E-08	1,75E-10	2,82E-10	1,60E-11	1,90E-10	5,02E-12	4,42E-12	1,77E-12	1,09E-11
Human toxicity, cancer inorganics	1,17E-09	1,03E-09	9,90E-14	1,02E-11	3,65E-12	1,10E-10	4,45E-12	4,31E-12	5,85E-14	6,91E-12
Human toxicity, cancer organics	1,43E-08	1,37E-08	1,74E-10	2,72E-10	1,24E-11	8,01E-11	5,76E-13	1,15E-13	1,71E-12	3,97E-12
Human toxicity, non-cancer - total	7,65E-08	7,33E-08	3,29E-10	5,01E-10	2,46E-10	1,12E-09	8,87E-11	2,36E-10	1,99E-11	6,69E-10
Human toxicity, non-cancer inorganics	7,33E-08	7,09E-08	1,66E-11	1,74E-10	2,36E-10	1,04E-09	8,33E-11	2,21E-10	7,06E-12	5,86E-10
Human toxicity, non-cancer organics	3,23E-09	2,39E-09	3,12E-10	3,27E-10	9,98E-12	8,06E-11	5,42E-12	1,50E-11	1,28E-11	8,30E-11
Ionising radiation, human health	1,42E-01	1,30E-01	5,01E-05	4,83E-04	4,42E-04	4,99E-03	2,80E-04	4,76E-05	0,00E+00	5,74E-03
Land Use	5,32E+00	4,49E+00	6,88E-03	2,64E-02	1,84E-02	5,38E-01	4,67E-03	1,04E-01	0,00E+00	1,34E-01
Ozone depletion	1,37E-08	6,39E-11	1,05E-14	2,74E-13	4,34E-14	2,85E-09	1,08E-08	2,41E-15	0,00E+00	3,25E-13
Particulate matter	1,25E-06	1,22E-06	1,23E-10	1,67E-08	4,05E-09	7,09E-09	2,54E-10	1,49E-09	1,61E-09	1,77E-09
Photochemical ozone formation, HH	5,32E-02	4,78E-02	6,92E-05	3,51E-03	2,35E-04	5,53E-04	2,57E-05	7,74E-05	8,47E-05	9,35E-04
Resource use, fossils	1,94E+02	1,67E+02	2,05E-02	2,14E+01	1,06E+00	2,22E+00	4,15E-01	2,64E-01	1,05E+00	6,18E-01
Resource use, mineral and metals	2,00E-06	7,53E-07	2,88E-08	5,04E-08	2,34E-07	9,25E-07	1,54E-09	1,28E-09	3,01E-09	4,06E-09
Water use	3,45E+00	3,27E+00	1,17E-01	2,52E-03	2,68E-03	5,31E-02	5,91E-02	7,84E-05	2,16E-02	-8,04E-02
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	0,36	ND	0,19	0,00	0,00	0,01	0,00	0,00	0,00	0,01
GWP100, Biogenic GHG removal	-0,11	ND	-0,02	0,00	0,00	-0,01	0,00	0,00	0,00	0,00
GWP100, Emissions from land use change	0,05	ND	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	1,73	ND	0,00	1,39	0,08	0,11	0,01	0,02	0,03	0,08
ISO 14067 GWP 100 total	5,66	3,75	0,19	1,40	0,08	0,11	0,01	0,02	0,03	0,08

TABLE 47: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR PNA

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,09E-01	8,75E-02	1,69E-02	2,12E-03	3,29E-04	8,73E-04	1,76E-05	9,82E-04	1,79E-04	3,45E-04
Climate Change - total	1,98E+01	1,68E+01	1,36E+00	1,14E+00	8,81E-02	1,10E-01	6,95E-03	1,66E-01	3,21E-02	9,31E-02
Climate Change, biogenic	7,21E-02	5,94E-02	1,16E-02	3,23E-04	3,10E-05	1,65E-04	4,33E-05	2,88E-04	0,00E+00	3,33E-04
Climate Change, fossil	1,97E+01	1,67E+01	1,34E+00	1,14E+00	8,80E-02	1,10E-01	6,91E-03	1,65E-01	3,21E-02	9,27E-02
Climate Change, land use	4,34E-02	3,70E-02	4,95E-03	2,49E-05	2,18E-05	8,14E-05	2,51E-06	1,26E-03	0,00E+00	1,24E-04
Ecotoxicity, freshwater - total	5,78E+01	4,30E+01	9,32E+00	2,75E-01	1,82E-01	1,78E+00	1,89E-01	2,39E+00	1,79E-03	7,12E-01
Ecotoxicity, freshwater inorganics	5,37E+01	4,00E+01	9,21E+00	2,60E-01	1,68E-01	1,73E+00	1,87E-01	1,49E+00	1,11E-03	6,45E-01
Ecotoxicity, freshwater organics	4,14E+00	2,98E+00	1,08E-01	1,41E-02	1,33E-02	4,88E-02	1,63E-03	9,03E-01	6,80E-04	6,80E-02
Eutrophication, freshwater	3,74E-05	2,09E-06	8,80E-07	2,01E-08	1,33E-08	3,38E-05	1,00E-07	3,41E-07	1,56E-08	1,91E-07
Eutrophication, marine	1,98E-02	1,60E-02	2,10E-03	1,06E-03	9,53E-05	1,08E-04	3,33E-06	4,11E-04	2,53E-05	5,28E-05
Eutrophication, terrestrial	2,17E-01	1,74E-01	2,31E-02	1,16E-02	1,04E-03	1,04E-03	3,38E-05	4,48E-03	2,76E-04	5,97E-04
Human toxicity, cancer - total	1,54E-08	1,47E-08	2,19E-10	2,25E-10	1,84E-11	1,90E-10	3,24E-12	3,28E-11	1,77E-12	1,70E-11
Human toxicity, cancer inorganics	1,30E-09	1,03E-09	1,08E-10	3,78E-12	4,19E-12	1,10E-10	2,89E-12	3,20E-11	5,85E-14	1,07E-11
Human toxicity, cancer organics	1,41E-08	1,37E-08	1,11E-10	2,22E-10	1,42E-11	8,01E-11	3,44E-13	8,75E-13	1,71E-12	6,28E-12
Human toxicity, non-cancer - total	8,75E-08	7,31E-08	1,01E-08	3,22E-10	2,83E-10	1,12E-09	8,11E-11	1,63E-09	1,99E-11	8,96E-10
Human toxicity, non-cancer inorganics	8,45E-08	7,07E-08	1,00E-08	8,37E-11	2,71E-10	1,04E-09	7,77E-11	1,52E-09	7,06E-12	8,32E-10
Human toxicity, non-cancer organics	3,02E-09	2,38E-09	1,22E-10	2,39E-10	1,14E-11	8,06E-11	3,32E-12	1,05E-10	1,28E-11	6,49E-11
Ionising radiation, human health	1,63E-01	1,30E-01	1,80E-02	2,74E-04	5,03E-04	4,99E-03	2,39E-04	3,67E-04	0,00E+00	9,17E-03
Land Use	8,54E+00	4,47E+00	2,58E+00	1,57E-02	2,04E-02	5,38E-01	4,49E-03	6,92E-01	0,00E+00	2,16E-01
Ozone depletion	5,73E-09	6,37E-11	9,61E-11	2,59E-14	4,72E-14	2,85E-09	2,71E-09	1,85E-14	0,00E+00	6,18E-13
Particulate matter	1,57E-06	1,21E-06	2,98E-07	1,49E-08	4,65E-09	7,09E-09	1,78E-10	2,29E-08	1,61E-09	2,94E-09
Photochemical ozone formation, HH	5,95E-02	4,76E-02	6,43E-03	2,92E-03	2,70E-04	5,53E-04	1,59E-05	1,08E-03	8,47E-05	5,76E-04
Resource use, fossils	2,06E+02	1,66E+02	1,43E+01	1,77E+01	1,22E+00	2,22E+00	2,51E-01	2,06E+00	1,05E+00	1,04E+00
Resource use, mineral and metals	2,53E-06	7,50E-07	5,50E-07	1,64E-08	2,71E-07	9,25E-07	8,00E-10	9,19E-09	3,01E-09	6,76E-09
Water use	3,64E+00	3,26E+00	1,56E-01	2,09E-03	2,94E-03	5,31E-02	2,87E-01	5,70E-04	2,16E-02	-1,47E-01
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	0,10	ND	0,08	0,00	0,00	0,01	0,00	0,01	0,00	0,01
GWP100, Biogenic GHG removal	-0,09	ND	-0,07	0,00	0,00	-0,01	0,00	-0,01	0,00	-0,01
GWP100, Emissions from land use change	0,01	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	2,98	ND	1,34	1,14	0,09	0,11	0,01	0,16	0,03	0,09
ISO 14067 GWP 100 total	13,93	10,93	1,36	1,14	0,09	0,11	0,01	0,16	0,03	0,09

TABLE 48: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR SAR

Impact category	Total	Alumi-nium	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	9,35E-02	8,37E-02	3,88E-03	2,15E-03	2,87E-04	8,73E-04	2,63E-05	1,46E-03	1,79E-04	9,62E-04
Climate Change - total	1,92E+01	1,61E+01	1,25E+00	1,12E+00	7,70E-02	1,10E-01	1,04E-02	1,88E-01	3,21E-02	2,72E-01
Climate Change, biogenic	6,16E-02	5,68E-02	3,23E-03	7,03E-05	2,75E-05	1,65E-04	7,11E-05	2,98E-04	0,00E+00	9,36E-04
Climate Change, fossil	1,91E+01	1,60E+01	1,24E+00	1,12E+00	7,70E-02	1,10E-01	1,03E-02	1,86E-01	3,21E-02	2,71E-01
Climate Change, land use	4,16E-02	3,54E-02	4,56E-03	2,11E-05	2,03E-05	8,14E-05	4,00E-06	1,21E-03	0,00E+00	3,66E-04
Ecotoxicity, freshwater - total	5,31E+01	4,11E+01	5,09E+00	1,11E-01	1,58E-01	1,78E+00	2,83E-01	2,53E+00	1,79E-03	2,03E+00
Ecotoxicity, freshwater inorganics	4,64E+01	3,83E+01	2,39E+00	1,06E-01	1,47E-01	1,73E+00	2,80E-01	1,66E+00	1,11E-03	1,77E+00
Ecotoxicity, freshwater organics	6,76E+00	2,85E+00	2,71E+00	4,98E-03	1,16E-02	4,88E-02	2,49E-03	8,66E-01	6,80E-04	2,66E-01
Eutrophication, freshwater	7,84E-04	2,00E-06	7,47E-04	1,63E-08	1,18E-08	3,38E-05	1,68E-07	3,34E-07	1,56E-08	5,26E-07
Eutrophication, marine	1,84E-02	1,53E-02	1,05E-03	1,09E-03	8,28E-05	1,08E-04	5,10E-06	6,15E-04	2,53E-05	1,56E-04
Eutrophication, terrestrial	1,99E-01	1,67E-01	9,58E-03	1,19E-02	9,06E-04	1,04E-03	5,10E-05	6,71E-03	2,76E-04	1,76E-03
Human toxicity, cancer - total	1,50E-08	1,41E-08	3,61E-10	2,56E-10	1,60E-11	1,90E-10	4,86E-12	3,52E-11	1,77E-12	4,90E-11
Human toxicity, cancer inorganics	1,29E-09	9,85E-10	1,15E-10	3,75E-12	3,65E-12	1,10E-10	4,33E-12	3,42E-11	5,85E-14	3,12E-11
Human toxicity, cancer organics	1,37E-08	1,31E-08	2,45E-10	2,53E-10	1,24E-11	8,01E-11	5,27E-13	9,57E-13	1,71E-12	1,78E-11
Human toxicity, non-cancer - total	8,49E-08	6,99E-08	8,29E-09	3,72E-10	2,46E-10	1,12E-09	1,29E-10	1,62E-09	1,99E-11	3,19E-09
Human toxicity, non-cancer inorganics	8,06E-08	6,76E-08	7,23E-09	2,88E-10	2,36E-10	1,04E-09	1,24E-10	1,51E-09	7,06E-12	2,55E-09
Human toxicity, non-cancer organics	4,27E-09	2,28E-09	1,06E-09	8,33E-11	9,98E-12	8,06E-11	4,80E-12	1,06E-10	1,28E-11	6,36E-10
Ionising radiation, human health	1,61E-01	1,24E-01	4,00E-03	1,75E-04	4,42E-04	4,99E-03	3,75E-04	4,05E-04	0,00E+00	2,64E-02
Land Use	7,43E+00	4,28E+00	1,28E+00	2,34E-02	1,84E-02	5,38E-01	7,18E-03	6,63E-01	0,00E+00	6,21E-01
Ozone depletion	4,20E-08	6,10E-11	3,56E-08	2,22E-15	4,34E-14	2,85E-09	3,50E-09	2,04E-14	0,00E+00	1,74E-12
Particulate matter	1,30E-06	1,16E-06	6,89E-08	1,39E-08	4,05E-09	7,09E-09	2,72E-10	3,58E-08	1,61E-09	8,27E-09
Photochemical ozone formation, HH	6,29E-02	4,55E-02	3,12E-03	2,93E-03	2,35E-04	5,53E-04	2,37E-05	1,65E-03	8,47E-05	8,76E-03
Resource use, fossils	2,04E+02	1,59E+02	1,85E+01	1,64E+01	1,06E+00	2,22E+00	3,70E-01	2,31E+00	1,05E+00	2,90E+00
Resource use, mineral and metals	2,94E-06	7,18E-07	9,95E-07	3,90E-08	2,34E-07	9,25E-07	1,10E-09	9,51E-09	3,01E-09	1,90E-08
Water use	3,54E+00	3,12E+00	2,28E-01	2,73E-03	2,68E-03	5,31E-02	5,08E-01	5,99E-04	2,16E-02	-3,94E-01
GWP 100, Air craft emissions	0,00	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Biogenic GHG emissions	0,43	ND	0,40	0,00	0,00	0,01	0,00	0,01	0,00	0,02
GWP100, Biogenic GHG removal	-0,08	ND	-0,04	0,00	0,00	-0,01	0,00	-0,01	0,00	-0,02
GWP100, Emissions from land use change	0,01	ND	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
GWP100, Fossil GHG emissions	3,05	ND	1,24	1,12	0,08	0,11	0,01	0,19	0,03	0,27
ISO 14067 GWP 100 total	12,45	9,04	1,60	1,12	0,08	0,11	0,01	0,18	0,03	0,27

8.5 RESULTS FOR LVS PLANTS

TABLE 49: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR CZS

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	6,76E-03	5,81E-03	1,91E-04	3,51E-05	4,66E-05	4,35E-04	5,61E-06	9,40E-05	5,24E-05	9,03E-05
Climate Change - total	2,83E+00	2,50E+00	8,53E-02	6,06E-02	1,44E-02	5,49E-02	2,20E-03	6,34E-02	9,37E-03	4,20E-02
Climate Change, biogenic	3,26E-03	3,72E-04	2,87E-04	1,77E-04	1,28E-05	8,20E-05	1,01E-05	1,31E-04	0,00E+00	2,19E-03
Climate Change, fossil	2,83E+00	2,50E+00	8,40E-02	6,04E-02	1,44E-02	5,47E-02	2,19E-03	6,26E-02	9,37E-03	3,98E-02
Climate Change, land use	2,09E-03	3,61E-04	1,01E-03	2,02E-06	2,06E-06	4,05E-05	8,25E-07	6,48E-04	0,00E+00	2,74E-05
Ecotoxicity, freshwater - total	5,96E+00	3,42E+00	3,71E-01	7,85E-03	2,13E-02	8,84E-01	5,29E-02	1,04E+00	5,22E-04	1,67E-01
Ecotoxicity, freshwater inorganics	5,31E+00	3,31E+00	3,71E-01	7,67E-03	2,10E-02	8,60E-01	5,23E-02	5,76E-01	3,23E-04	1,19E-01
Ecotoxicity, freshwater organics	6,51E-01	1,13E-01	7,26E-04	1,80E-04	2,70E-04	2,43E-02	5,69E-04	4,63E-01	1,99E-04	4,80E-02
Eutrophication, freshwater	1,82E-05	9,03E-07	6,82E-08	6,89E-09	1,28E-08	1,68E-05	1,07E-07	1,70E-07	4,56E-09	1,04E-07
Eutrophication, marine	1,37E-03	1,19E-03	3,52E-05	1,57E-05	6,99E-06	5,36E-05	1,05E-06	3,79E-05	7,39E-06	2,55E-05
Eutrophication, terrestrial	1,47E-02	1,28E-02	3,66E-04	1,73E-04	7,22E-05	5,16E-04	1,05E-05	4,02E-04	8,06E-05	2,83E-04
Human toxicity, cancer - total	1,11E-09	9,25E-10	5,49E-11	8,70E-12	2,30E-12	9,47E-11	9,60E-13	1,40E-11	5,17E-13	5,86E-12
Human toxicity, cancer inorganics	1,37E-10	5,29E-11	3,81E-12	5,82E-12	7,18E-13	5,48E-11	8,32E-13	1,36E-11	1,71E-14	4,56E-12
Human toxicity, cancer organics	9,70E-10	8,72E-10	5,11E-11	2,88E-12	1,58E-12	3,99E-11	1,28E-13	3,56E-13	5,00E-13	1,30E-12
Human toxicity, non-cancer - total	8,39E-09	4,96E-09	4,95E-10	6,82E-10	5,08E-11	5,59E-10	2,75E-11	7,88E-10	5,81E-12	8,25E-10
Human toxicity, non-cancer inorganics	7,75E-09	4,69E-09	4,90E-10	6,77E-10	4,94E-11	5,19E-10	2,14E-11	7,39E-10	2,06E-12	5,56E-10
Human toxicity, non-cancer organics	6,45E-10	2,65E-10	5,16E-12	5,01E-12	1,42E-12	4,01E-11	6,14E-12	4,96E-11	3,75E-12	2,69E-10
Ionising radiation, human health	3,43E-02	1,32E-02	1,65E-02	2,55E-05	3,82E-04	2,48E-03	1,01E-04	1,46E-04	0,00E+00	1,58E-03
Land Use	2,06E+00	1,03E+00	3,42E-01	2,28E-03	1,64E-02	2,68E-01	1,77E-03	3,56E-01	0,00E+00	4,50E-02
Ozone depletion	1,42E-09	-8,63E-14	5,37E-13	4,31E-16	2,62E-14	1,42E-09	4,68E-12	7,42E-15	0,00E+00	1,19E-13
Particulate matter	2,43E-07	2,34E-07	1,46E-09	3,37E-10	1,99E-09	3,53E-09	5,17E-11	8,88E-10	4,71E-10	6,74E-10
Photochemical ozone formation, HH	9,40E-03	4,65E-03	1,02E-04	4,52E-05	2,50E-05	2,76E-04	4,94E-06	8,08E-05	2,48E-05	4,19E-03
Resource use, fossils	3,29E+01	2,76E+01	1,53E+00	1,05E+00	1,70E-01	1,11E+00	7,46E-02	8,01E-01	3,07E-01	2,09E-01
Resource use, mineral and metals	1,04E-06	5,84E-07	1,29E-08	5,28E-09	-3,45E-08	4,61E-07	3,68E-09	4,17E-09	8,79E-10	1,30E-09
Water use	1,21E-01	4,31E-02	6,96E-03	1,58E-04	4,44E-03	2,64E-02	5,31E-02	2,52E-04	6,31E-03	-1,99E-02
GWP 100, Air craft emissions	3,18E-08	ND	1,87E-08	1,07E-09	1,02E-08	0,00E+00	4,00E-11	1,25E-10	0,00E+00	1,58E-09
GWP100, Biogenic GHG emissions	1,79E-02	ND	6,52E-03	2,58E-04	4,00E-04	3,34E-03	7,34E-05	3,19E-03	0,00E+00	4,14E-03
GWP100, Biogenic GHG removal	-1,56E-02	ND	-6,25E-03	-4,71E-05	-4,09E-04	-2,87E-03	-5,03E-05	-4,59E-03	0,00E+00	-1,40E-03
GWP100, Emissions from land use change	1,73E-03	ND	1,01E-03	2,02E-06	2,06E-06	4,05E-05	8,25E-07	6,48E-04	0,00E+00	2,74E-05
GWP100, Fossil GHG emissions	3,27E-01	ND	8,40E-02	6,04E-02	1,44E-02	5,47E-02	2,19E-03	6,26E-02	9,37E-03	3,98E-02
ISO 14067 GWP 100 total	3,13	2,80	0,09	0,06	0,01	0,06	0,00	0,06	0,01	0,04

TABLE 50: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR MAN

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	6,23E-03	5,22E-03	1,48E-04	4,36E-05	1,08E-05	4,35E-04	2,01E-05	1,99E-04	5,24E-05	1,05E-04
Climate Change - total	2,70E+00	2,25E+00	1,11E-01	1,02E-01	3,32E-03	5,49E-02	7,91E-03	1,31E-01	9,37E-03	3,23E-02
Climate Change, biogenic	2,39E-03	3,34E-04	5,57E-05	5,60E-05	2,97E-06	8,20E-05	2,69E-05	2,69E-04	0,00E+00	1,56E-03
Climate Change, fossil	2,69E+00	2,25E+00	1,11E-01	1,02E-01	3,32E-03	5,47E-02	7,88E-03	1,29E-01	9,37E-03	3,07E-02
Climate Change, land use	1,76E-03	3,24E-04	1,35E-05	3,76E-06	4,75E-07	4,05E-05	2,18E-06	1,33E-03	0,00E+00	4,08E-05
Ecotoxicity, freshwater - total	6,73E+00	3,07E+00	1,66E-01	3,21E-02	4,91E-03	8,84E-01	2,07E-01	2,14E+00	5,22E-04	2,17E-01
Ecotoxicity, freshwater inorganics	5,61E+00	2,97E+00	1,61E-01	3,05E-02	4,85E-03	8,60E-01	2,05E-01	1,19E+00	3,23E-04	1,91E-01
Ecotoxicity, freshwater organics	1,11E+00	1,02E-01	4,31E-03	1,54E-03	6,23E-05	2,43E-02	1,83E-03	9,54E-01	1,99E-04	2,61E-02
Eutrophication, freshwater	1,83E-05	8,11E-07	1,53E-08	3,37E-09	2,97E-09	1,68E-05	1,59E-07	3,50E-07	4,56E-09	1,04E-07
Eutrophication, marine	1,29E-03	1,07E-03	4,02E-05	1,87E-05	1,62E-06	5,36E-05	3,47E-06	8,03E-05	7,39E-06	1,79E-05
Eutrophication, terrestrial	1,38E-02	1,15E-02	4,35E-04	2,08E-04	1,67E-05	5,16E-04	3,72E-05	8,54E-04	8,06E-05	1,99E-04
Human toxicity, cancer - total	9,89E-10	8,31E-10	1,51E-11	9,00E-12	5,31E-13	9,47E-11	3,48E-12	2,88E-11	5,17E-13	5,44E-12
Human toxicity, cancer inorganics	1,40E-10	4,76E-11	2,27E-12	4,56E-13	1,66E-13	5,48E-11	3,19E-12	2,81E-11	1,71E-14	3,48E-12
Human toxicity, cancer organics	8,49E-10	7,83E-10	1,28E-11	8,54E-12	3,65E-13	3,99E-11	2,89E-13	7,35E-13	5,00E-13	1,96E-12
Human toxicity, non-cancer - total	7,22E-09	4,45E-09	1,33E-10	3,17E-11	1,17E-11	5,59E-10	7,40E-11	1,62E-09	5,81E-12	3,32E-10
Human toxicity, non-cancer inorganics	6,75E-09	4,22E-09	1,13E-10	1,10E-11	1,14E-11	5,19E-10	6,29E-11	1,52E-09	2,06E-12	2,90E-10
Human toxicity, non-cancer organics	4,78E-10	2,38E-10	1,95E-11	2,07E-11	3,27E-13	4,01E-11	1,11E-11	1,02E-10	3,75E-12	4,21E-11
Ionising radiation, human health	4,45E-02	1,18E-02	2,65E-02	7,06E-05	8,81E-05	2,48E-03	2,55E-04	3,01E-04	0,00E+00	2,90E-03
Land Use	2,03E+00	9,24E-01	2,29E-02	2,51E-03	3,79E-03	2,68E-01	4,25E-03	7,32E-01	0,00E+00	6,83E-02
Ozone depletion	1,44E-09	-7,75E-14	1,40E-11	5,32E-15	6,06E-15	1,42E-09	6,60E-12	1,53E-14	0,00E+00	1,89E-13
Particulate matter	2,19E-07	2,10E-07	1,38E-09	4,89E-10	4,60E-10	3,53E-09	1,82E-10	1,98E-09	4,71E-10	9,04E-10
Photochemical ozone formation, HH	5,33E-03	4,18E-03	1,22E-04	6,28E-05	5,77E-06	2,76E-04	1,85E-05	1,73E-04	2,48E-05	4,66E-04
Resource use, fossils	3,28E+01	2,48E+01	2,68E+00	1,56E+00	3,92E-02	1,11E+00	2,97E-01	1,65E+00	3,07E-01	3,16E-01
Resource use, mineral and metals	1,09E-06	5,25E-07	9,73E-08	2,83E-09	-7,96E-09	4,61E-07	5,60E-09	8,59E-09	8,79E-10	2,07E-09
Water use	1,19E-01	3,87E-02	3,27E-02	3,34E-04	1,02E-03	2,64E-02	5,44E-02	5,19E-04	6,31E-03	-4,16E-02
GWP 100, Air craft emissions	5,61E-08	ND	5,07E-08	3,12E-10	2,36E-09	0,00E+00	1,17E-10	2,57E-10	0,00E+00	2,32E-09
GWP100, Biogenic GHG emissions	1,48E-02	ND	4,05E-04	1,25E-04	9,23E-05	3,34E-03	1,78E-04	6,56E-03	0,00E+00	4,10E-03
GWP100, Biogenic GHG removal	-1,52E-02	ND	-3,79E-04	-6,01E-05	-9,44E-05	-2,87E-03	-1,33E-04	-9,45E-03	0,00E+00	-2,19E-03
GWP100, Emissions from land use change	1,43E-03	ND	1,35E-05	3,76E-06	4,75E-07	4,05E-05	2,18E-06	1,33E-03	0,00E+00	4,08E-05
GWP100, Fossil GHG emissions	4,47E-01	ND	1,11E-01	1,02E-01	3,32E-03	5,47E-02	7,88E-03	1,29E-01	9,37E-03	3,07E-02
ISO 14067 GWP 100 total	2,82	2,38	0,11	0,10	0,00	0,06	0,01	0,13	0,01	0,03

TABLE 51: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR INC

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,15E-02	8,25E-03	2,10E-03	1,68E-05	2,42E-05	4,35E-04	1,28E-05	3,10E-04	5,24E-05	3,17E-04
Climate Change - total	3,43E+00	3,00E+00	3,71E-02	2,93E-02	7,47E-03	5,49E-02	5,02E-03	1,90E-01	9,37E-03	9,61E-02
Climate Change, biogenic	1,29E-02	6,04E-04	1,26E-04	5,25E-05	6,68E-06	8,20E-05	2,57E-05	3,90E-04	0,00E+00	1,16E-02
Climate Change, fossil	3,41E+00	3,00E+00	3,65E-02	2,92E-02	7,46E-03	5,47E-02	4,99E-03	1,88E-01	9,37E-03	8,44E-02
Climate Change, land use	3,01E-03	4,76E-04	4,52E-04	1,03E-06	1,07E-06	4,05E-05	1,88E-06	1,93E-03	0,00E+00	1,16E-04
Ecotoxicity, freshwater - total	9,30E+00	3,96E+00	5,11E-01	8,01E-03	1,10E-02	8,84E-01	1,25E-01	3,10E+00	5,22E-04	6,94E-01
Ecotoxicity, freshwater inorganics	7,49E+00	3,91E+00	2,53E-01	7,89E-03	1,09E-02	8,60E-01	1,24E-01	1,73E+00	3,23E-04	5,95E-01
Ecotoxicity, freshwater organics	1,82E+00	5,70E-02	2,58E-01	1,22E-04	1,40E-04	2,43E-02	1,27E-03	1,38E+00	1,99E-04	9,92E-02
Eutrophication, freshwater	2,36E-05	1,22E-06	4,32E-06	2,19E-09	6,67E-09	1,68E-05	1,99E-07	5,05E-07	4,56E-09	5,44E-07
Eutrophication, marine	2,58E-03	1,65E-03	6,73E-04	5,98E-06	3,64E-06	5,36E-05	2,41E-06	1,25E-04	7,39E-06	5,27E-05
Eutrophication, terrestrial	2,69E-02	1,65E-02	7,82E-03	6,65E-05	3,76E-05	5,16E-04	2,40E-05	1,34E-03	8,06E-05	5,67E-04
Human toxicity, cancer - total	1,14E-09	8,28E-10	1,54E-10	3,90E-12	1,20E-12	9,47E-11	2,22E-12	4,18E-11	5,17E-13	1,58E-11
Human toxicity, cancer inorganics	2,82E-10	6,41E-11	1,08E-10	1,80E-12	3,74E-13	5,48E-11	1,95E-12	4,07E-11	1,71E-14	1,00E-11
Human toxicity, cancer organics	8,61E-10	7,64E-10	4,65E-11	2,10E-12	8,23E-13	3,99E-11	2,71E-13	1,07E-12	5,00E-13	5,80E-12
Human toxicity, non-cancer - total	2,16E-08	4,57E-09	1,28E-08	2,05E-10	2,64E-11	5,59E-10	6,22E-11	2,35E-09	5,81E-12	1,09E-09
Human toxicity, non-cancer inorganics	2,07E-08	4,24E-09	1,27E-08	2,01E-10	2,57E-11	5,19E-10	5,14E-11	2,20E-09	2,06E-12	7,75E-10
Human toxicity, non-cancer organics	8,77E-10	3,25E-10	3,13E-11	3,74E-12	7,36E-13	4,01E-11	1,09E-11	1,48E-10	3,75E-12	3,14E-10
Ionising radiation, human health	3,32E-02	2,04E-02	1,10E-03	5,94E-06	1,98E-04	2,48E-03	2,15E-04	4,38E-04	0,00E+00	8,39E-03
Land Use	5,80E+01	1,84E+00	5,46E+01	7,75E-04	8,54E-03	2,68E-01	3,85E-03	1,06E+00	0,00E+00	1,99E-01
Ozone depletion	1,53E-09	6,11E-13	5,00E-14	1,02E-18	1,36E-14	1,42E-09	1,12E-10	2,22E-14	0,00E+00	5,62E-13
Particulate matter	3,02E-07	2,76E-07	1,43E-08	1,63E-10	1,04E-09	3,53E-09	1,21E-10	3,44E-09	4,71E-10	2,72E-09
Photochemical ozone formation, HH	1,20E-02	5,82E-03	1,28E-03	1,94E-05	1,30E-05	2,76E-04	1,13E-05	2,75E-04	2,48E-05	4,28E-03
Resource use, fossils	3,94E+01	3,35E+01	3,57E-01	4,79E-01	8,83E-02	1,11E+00	1,73E-01	2,40E+00	3,07E-01	9,52E-01
Resource use, mineral and metals	5,18E-07	2,28E-08	2,46E-08	2,37E-09	-1,79E-08	4,61E-07	6,25E-09	1,24E-08	8,79E-10	6,17E-09
Water use	5,17E-01	2,62E-01	2,00E-01	3,66E-05	2,31E-03	2,64E-02	1,51E-01	7,52E-04	6,31E-03	-1,32E-01
GWP 100, Air craft emissions	1,67E-08	ND	3,29E-09	7,87E-10	5,31E-09	0,00E+00	1,02E-10	3,72E-10	0,00E+00	6,88E-09
GWP100, Biogenic GHG emissions	1,02E+00	ND	9,86E-01	7,65E-05	2,08E-04	3,34E-03	1,76E-04	9,48E-03	0,00E+00	2,10E-02
GWP100, Biogenic GHG removal	-1,01E+00	ND	-9,86E-01	-1,49E-05	-2,12E-04	-2,87E-03	-1,16E-04	-1,36E-02	0,00E+00	-6,43E-03
GWP100, Emissions from land use change	2,54E-03	ND	4,52E-04	1,03E-06	1,07E-06	4,05E-05	1,88E-06	1,93E-03	0,00E+00	1,16E-04
GWP100, Fossil GHG emissions	4,14E-01	ND	3,65E-02	2,92E-02	7,46E-03	5,47E-02	4,99E-03	1,88E-01	9,37E-03	8,44E-02
ISO 14067 GWP 100 total	2,74	2,31	0,04	0,03	0,01	0,06	0,01	0,19	0,01	0,10

TABLE 52: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR LMS

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	8,22E-03	7,39E-03	1,58E-06	9,11E-05	1,97E-06	4,35E-04	8,05E-06	1,20E-04	5,24E-05	1,19E-04
Climate Change - total	2,97E+00	2,69E+00	4,65E-02	5,05E-02	6,08E-04	5,49E-02	3,14E-03	8,12E-02	9,37E-03	4,19E-02
Climate Change, biogenic	4,47E-02	5,41E-04	4,31E-02	1,02E-05	5,44E-07	8,20E-05	1,44E-05	1,67E-04	0,00E+00	7,81E-04
Climate Change, fossil	2,93E+00	2,68E+00	7,66E-04	5,05E-02	6,08E-04	5,47E-02	3,12E-03	8,02E-02	9,37E-03	4,11E-02
Climate Change, land use	3,97E-03	4,26E-04	2,63E-03	1,59E-06	8,71E-08	4,05E-05	9,37E-07	8,30E-04	0,00E+00	4,29E-05
Ecotoxicity, freshwater - total	6,16E+00	3,55E+00	2,77E-03	2,64E-02	9,00E-04	8,84E-01	8,28E-02	1,33E+00	5,22E-04	2,81E-01
Ecotoxicity, freshwater inorganics	5,43E+00	3,50E+00	1,99E-03	2,57E-02	8,88E-04	8,60E-01	8,21E-02	7,39E-01	3,23E-04	2,23E-01
Ecotoxicity, freshwater organics	7,29E-01	5,10E-02	7,83E-04	7,42E-04	1,14E-05	2,43E-02	6,85E-04	5,94E-01	1,99E-04	5,79E-02
Eutrophication, freshwater	1,83E-05	1,09E-06	8,13E-10	1,24E-09	5,43E-10	1,68E-05	3,81E-08	2,18E-07	4,56E-09	8,90E-08
Eutrophication, marine	1,66E-03	1,48E-03	3,66E-07	4,58E-05	2,96E-07	5,36E-05	1,41E-06	4,85E-05	7,39E-06	1,84E-05
Eutrophication, terrestrial	1,66E-02	1,47E-02	4,00E-06	5,02E-04	3,06E-06	5,16E-04	1,49E-05	5,15E-04	8,06E-05	2,07E-04
Human toxicity, cancer - total	9,16E-10	7,41E-10	4,34E-11	1,02E-11	9,74E-14	9,47E-11	1,54E-12	1,79E-11	5,17E-13	5,93E-12
Human toxicity, cancer inorganics	1,35E-10	5,74E-11	2,46E-14	3,68E-13	3,04E-14	5,48E-11	1,27E-12	1,75E-11	1,71E-14	3,70E-12
Human toxicity, cancer organics	7,81E-10	6,84E-10	4,33E-11	9,85E-12	6,70E-14	3,99E-11	2,76E-13	4,57E-13	5,00E-13	2,23E-12
Human toxicity, non-cancer - total	6,36E-09	4,09E-09	8,17E-11	1,81E-11	2,15E-12	5,59E-10	3,06E-11	1,01E-09	5,81E-12	5,57E-10
Human toxicity, non-cancer inorganics	5,60E-09	3,80E-09	4,14E-12	6,28E-12	2,09E-12	5,19E-10	2,90E-11	9,47E-10	2,06E-12	2,86E-10
Human toxicity, non-cancer organics	7,61E-10	2,91E-10	7,75E-11	1,18E-11	6,00E-14	4,01E-11	1,54E-12	6,35E-11	3,75E-12	2,71E-10
Ionising radiation, human health	2,42E-02	1,82E-02	1,25E-05	1,75E-05	1,62E-05	2,48E-03	9,38E-05	1,87E-04	0,00E+00	3,16E-03
Land Use	2,45E+00	1,65E+00	1,71E-03	9,56E-04	6,95E-04	2,68E-01	1,69E-03	4,56E-01	0,00E+00	7,45E-02
Ozone depletion	7,86E-09	5,47E-13	2,61E-15	9,91E-15	1,11E-15	1,42E-09	6,44E-09	9,51E-15	0,00E+00	1,97E-13
Particulate matter	2,54E-07	2,48E-07	3,05E-11	6,06E-10	8,44E-11	3,53E-09	7,78E-11	1,14E-09	4,71E-10	1,02E-09
Photochemical ozone formation, HH	9,95E-03	5,21E-03	1,72E-05	1,27E-04	1,06E-06	2,76E-04	7,32E-06	1,04E-04	2,48E-05	4,18E-03
Resource use, fossils	3,37E+01	3,00E+01	5,09E-03	7,74E-01	7,19E-03	1,11E+00	1,15E-01	1,03E+00	3,07E-01	3,58E-01
Resource use, mineral and metals	4,98E-07	2,04E-08	7,15E-09	1,82E-09	-1,46E-09	4,61E-07	6,23E-10	5,35E-09	8,79E-10	2,33E-09
Water use	3,14E-01	2,35E-01	2,90E-02	9,10E-05	1,88E-04	2,64E-02	6,84E-02	3,23E-04	6,31E-03	-5,09E-02
GWP 100, Air craft emissions	3,53E-09	ND	1,30E-10	1,42E-10	4,33E-10	0,00E+00	5,92E-11	1,60E-10	0,00E+00	2,60E-09
GWP100, Biogenic GHG emissions	5,86E-02	ND	4,77E-02	3,37E-05	1,69E-05	3,34E-03	8,73E-05	4,09E-03	0,00E+00	3,33E-03
GWP100, Biogenic GHG removal	-1,57E-02	ND	-4,46E-03	-2,52E-05	-1,73E-05	-2,87E-03	-5,73E-05	-5,88E-03	0,00E+00	-2,41E-03
GWP100, Emissions from land use change	3,54E-03	ND	2,63E-03	1,59E-06	8,71E-08	4,05E-05	9,37E-07	8,30E-04	0,00E+00	4,29E-05
GWP100, Fossil GHG emissions	2,40E-01	ND	7,66E-04	5,05E-02	6,08E-04	5,47E-02	3,12E-03	8,02E-02	0,0093688	0,0410544
ISO 14067 GWP 100 total	3,14	2,85	0,05	0,05	0,00	0,06	0,00	0,08	0,01	0,04

TABLE 53: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR SLP

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	9,46E-03	8,15E-03	1,88E-04	2,49E-05	4,71E-05	4,35E-04	9,21E-06	5,12E-04	5,24E-05	4,02E-05
Climate Change - total	3,36E+00	2,96E+00	1,29E-01	7,13E-02	1,45E-02	5,49E-02	3,61E-03	1,01E-01	9,37E-03	1,25E-02
Climate Change, biogenic	1,15E-03	5,97E-04	1,77E-04	3,23E-05	1,30E-05	8,20E-05	1,21E-05	1,82E-04	0,00E+00	5,59E-05
Climate Change, fossil	3,36E+00	2,96E+00	1,29E-01	7,13E-02	1,45E-02	5,47E-02	3,60E-03	1,00E-01	9,37E-03	1,24E-02
Climate Change, land use	1,59E-03	4,70E-04	2,36E-04	8,05E-07	2,08E-06	4,05E-05	1,15E-06	8,19E-04	0,00E+00	1,59E-05
Ecotoxicity, freshwater - total	6,98E+00	3,92E+00	3,89E-01	7,27E-02	2,15E-02	8,84E-01	8,80E-02	1,50E+00	5,22E-04	1,17E-01
Ecotoxicity, freshwater inorganics	6,26E+00	3,86E+00	3,75E-01	7,13E-02	2,12E-02	8,60E-01	8,71E-02	9,09E-01	3,23E-04	7,30E-02
Ecotoxicity, freshwater organics	7,28E-01	5,63E-02	1,37E-02	1,40E-03	2,73E-04	2,43E-02	8,93E-04	5,87E-01	1,99E-04	4,41E-02
Eutrophication, freshwater	1,85E-05	1,21E-06	4,81E-08	2,88E-09	1,30E-08	1,68E-05	1,48E-07	2,20E-07	4,56E-09	2,24E-08
Eutrophication, marine	1,98E-03	1,63E-03	4,09E-05	1,16E-05	7,08E-06	5,36E-05	1,63E-06	2,14E-04	7,39E-06	6,79E-06
Eutrophication, terrestrial	1,99E-02	1,63E-02	4,47E-04	1,29E-04	7,31E-05	5,16E-04	1,69E-05	2,32E-03	8,06E-05	7,68E-05
Human toxicity, cancer - total	9,66E-10	8,18E-10	2,08E-11	5,69E-12	2,33E-12	9,47E-11	1,56E-12	2,05E-11	5,17E-13	2,10E-12
Human toxicity, cancer inorganics	1,46E-10	6,34E-11	3,74E-12	9,30E-13	7,27E-13	5,48E-11	1,38E-12	1,99E-11	1,71E-14	1,34E-12
Human toxicity, cancer organics	8,20E-10	7,55E-10	1,71E-11	4,76E-12	1,60E-12	3,99E-11	1,83E-13	5,40E-13	5,00E-13	7,53E-13
Human toxicity, non-cancer - total	6,89E-09	4,51E-09	2,74E-10	3,00E-11	5,14E-11	5,59E-10	3,89E-11	1,04E-09	5,81E-12	3,76E-10
Human toxicity, non-cancer inorganics	6,14E-09	4,19E-09	2,50E-10	1,03E-11	5,00E-11	5,19E-10	2,95E-11	9,76E-10	2,06E-12	1,14E-10
Human toxicity, non-cancer organics	7,48E-10	3,21E-10	2,40E-11	1,97E-11	1,43E-12	4,01E-11	9,35E-12	6,68E-11	3,75E-12	2,62E-10
Ionising radiation, human health	4,14E-02	2,01E-02	1,69E-02	1,67E-05	3,86E-04	2,48E-03	1,46E-04	2,25E-04	0,00E+00	1,13E-03
Land Use	2,79E+00	1,82E+00	2,09E-01	1,69E-03	1,66E-02	2,68E-01	2,46E-03	4,50E-01	0,00E+00	2,65E-02
Ozone depletion	1,49E-09	6,04E-13	1,42E-11	1,41E-15	2,66E-14	1,42E-09	5,81E-11	1,14E-14	0,00E+00	7,27E-14
Particulate matter	2,93E-07	2,73E-07	1,79E-09	3,13E-10	2,02E-09	3,53E-09	8,14E-11	1,15E-08	4,71E-10	3,48E-10
Photochemical ozone formation, HH	1,09E-02	5,75E-03	1,18E-04	3,98E-05	2,53E-05	2,76E-04	8,26E-06	5,58E-04	2,48E-05	4,14E-03
Resource use, fossils	3,93E+01	3,31E+01	2,11E+00	1,01E+00	1,72E-01	1,11E+00	1,28E-01	1,26E+00	3,07E-01	1,21E-01
Resource use, mineral and metals	5,62E-07	2,25E-08	9,22E-08	8,36E-09	-3,49E-08	4,61E-07	5,50E-09	5,81E-09	8,79E-10	8,00E-10
Water use	3,38E-01	2,59E-01	2,67E-02	3,11E-04	4,49E-03	2,64E-02	3,03E-02	3,58E-04	6,31E-03	-1,59E-02
GWP 100, Air craft emissions	1,12E-07	ND	1,01E-07	1,91E-10	1,03E-08	0,00E+00	5,14E-11	1,82E-10	0,00E+00	8,97E-10
GWP100, Biogenic GHG emissions	1,49E-02	ND	6,03E-03	7,33E-05	4,05E-04	3,34E-03	9,15E-05	4,07E-03	0,00E+00	8,88E-04
GWP100, Biogenic GHG removal	-1,60E-02	ND	-5,92E-03	-3,97E-05	-4,13E-04	-2,87E-03	-6,91E-05	-5,82E-03	0,00E+00	-8,49E-04
GWP100, Emissions from land use change	1,12E-03	ND	2,36E-04	8,05E-07	2,08E-06	4,05E-05	1,15E-06	8,19E-04	0,00E+00	1,59E-05
GWP100, Fossil GHG emissions	3,95E-01	ND	1,29E-01	7,13E-02	1,45E-02	5,47E-02	3,60E-03	1,00E-01	9,37E-03	1,24E-02
ISO 14067 GWP 100 total	3,46	3,07	0,13	0,07	0,01	0,06	0,00	0,10	0,01	0,01

TABLE 54: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR SED

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	8,44E-03	6,78E-03	7,44E-04	4,07E-05	1,99E-05	4,35E-04	9,32E-06	1,51E-04	5,24E-05	2,05E-04
Climate Change - total	2,96E+00	2,47E+00	1,52E-01	1,16E-01	6,14E-03	5,49E-02	3,66E-03	1,02E-01	9,37E-03	5,34E-02
Climate Change, biogenic	1,28E-03	4,96E-04	2,17E-04	5,27E-05	5,49E-06	8,20E-05	1,94E-05	2,10E-04	0,00E+00	2,00E-04
Climate Change, fossil	2,96E+00	2,46E+00	1,51E-01	1,16E-01	6,14E-03	5,47E-02	3,64E-03	1,01E-01	9,37E-03	5,31E-02
Climate Change, land use	1,89E-03	3,91E-04	3,42E-04	1,31E-06	8,79E-07	4,05E-05	1,59E-06	1,04E-03	0,00E+00	7,37E-05
Ecotoxicity, freshwater - total	7,02E+00	3,26E+00	5,40E-01	1,19E-01	9,08E-03	8,84E-01	8,31E-02	1,67E+00	5,22E-04	4,56E-01
Ecotoxicity, freshwater inorganics	6,07E+00	3,21E+00	4,81E-01	1,16E-01	8,97E-03	8,60E-01	8,21E-02	9,29E-01	3,23E-04	3,82E-01
Ecotoxicity, freshwater organics	9,53E-01	4,68E-02	5,85E-02	2,28E-03	1,15E-04	2,43E-02	1,01E-03	7,46E-01	1,99E-04	7,36E-02
Eutrophication, freshwater	1,93E-05	1,00E-06	7,75E-07	4,70E-09	5,49E-09	1,68E-05	2,42E-07	2,74E-07	4,56E-09	1,13E-07
Eutrophication, marine	1,74E-03	1,36E-03	2,00E-04	1,89E-05	2,99E-06	5,36E-05	1,84E-06	6,10E-05	7,39E-06	3,12E-05
Eutrophication, terrestrial	1,77E-02	1,35E-02	2,27E-03	2,11E-04	3,09E-05	5,16E-04	1,75E-05	6,48E-04	8,06E-05	3,54E-04
Human toxicity, cancer - total	8,69E-10	6,81E-10	4,88E-11	9,29E-12	9,83E-13	9,47E-11	1,59E-12	2,25E-11	5,17E-13	1,00E-11
Human toxicity, cancer inorganics	1,64E-10	5,27E-11	2,54E-11	1,52E-12	3,07E-13	5,48E-11	1,33E-12	2,20E-11	1,71E-14	6,33E-12
Human toxicity, cancer organics	7,05E-10	6,28E-10	2,34E-11	7,77E-12	6,76E-13	3,99E-11	2,61E-13	5,74E-13	5,00E-13	3,70E-12
Human toxicity, non-cancer - total	9,30E-09	3,76E-09	2,81E-09	4,89E-11	2,17E-11	5,59E-10	5,28E-11	1,27E-09	5,81E-12	7,71E-10
Human toxicity, non-cancer inorganics	8,55E-09	3,49E-09	2,78E-09	1,68E-11	2,11E-11	5,19E-10	3,96E-11	1,19E-09	2,06E-12	4,92E-10
Human toxicity, non-cancer organics	7,48E-10	2,67E-10	3,19E-11	3,21E-11	6,05E-13	4,01E-11	1,32E-11	7,98E-11	3,75E-12	2,80E-10
Ionising radiation, human health	4,44E-02	1,68E-02	1,91E-02	2,73E-05	1,63E-04	2,48E-03	1,97E-04	2,35E-04	0,00E+00	5,44E-03
Land Use	1,81E+01	1,51E+00	1,56E+01	2,75E-03	7,02E-03	2,68E-01	3,53E-03	5,73E-01	0,00E+00	1,28E-01
Ozone depletion	1,43E-09	5,03E-13	1,06E-12	2,29E-15	1,12E-14	1,42E-09	1,06E-11	1,19E-14	0,00E+00	3,66E-13
Particulate matter	2,42E-07	2,27E-07	6,24E-09	5,11E-10	8,52E-10	3,53E-09	8,69E-11	1,43E-09	4,71E-10	1,74E-09
Photochemical ozone formation, HH	1,00E-02	4,78E-03	4,92E-04	6,50E-05	1,07E-05	2,76E-04	7,98E-06	1,30E-04	2,48E-05	4,22E-03
Resource use, fossils	3,51E+01	2,76E+01	2,43E+00	1,65E+00	7,26E-02	1,11E+00	1,15E-01	1,29E+00	3,07E-01	6,14E-01
Resource use, mineral and metals	5,19E-07	1,88E-08	2,11E-08	1,36E-08	-1,47E-08	4,61E-07	8,21E-09	6,72E-09	8,79E-10	4,01E-09
Water use	3,33E-01	2,15E-01	4,15E-02	5,07E-04	1,90E-03	2,64E-02	1,28E-01	4,06E-04	6,31E-03	-8,75E-02
GWP 100, Air craft emissions	1,97E-08	ND	1,03E-08	3,11E-10	4,37E-09	0,00E+00	7,44E-11	2,01E-10	0,00E+00	4,48E-09
GWP100, Biogenic GHG emissions	3,20E-01	ND	3,07E-01	1,20E-04	1,71E-04	3,34E-03	1,47E-04	5,14E-03	0,00E+00	4,28E-03
GWP100, Biogenic GHG removal	-3,22E-01	ND	-3,07E-01	-6,47E-05	-1,75E-04	-2,87E-03	-9,71E-05	-7,39E-03	0,00E+00	-4,16E-03
GWP100, Emissions from land use change	1,50E-03	ND	3,42E-04	1,31E-06	8,79E-07	4,05E-05	1,59E-06	1,04E-03	0,00E+00	7,37E-05
GWP100, Fossil GHG emissions	4,95E-01	ND	1,51E-01	1,16E-01	6,14E-03	5,47E-02	3,64E-03	1,01E-01	9,37E-03	5,31E-02
ISO 14067 GWP 100 total	3,01	2,52	0,15	0,12	0,01	0,06	0,00	0,10	0,01	0,05

TABLE 55: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR PNP

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,24E-02	9,07E-03	2,51E-03	1,39E-04	3,40E-05	4,35E-04	9,28E-06	4,10E-05	5,24E-05	8,53E-05
Climate Change - total	3,51E+00	3,10E+00	2,02E-01	7,47E-02	1,05E-02	5,49E-02	3,63E-03	2,76E-02	9,37E-03	3,03E-02
Climate Change, biogenic	2,57E-03	5,87E-04	1,71E-03	2,11E-05	9,38E-06	8,20E-05	1,53E-05	5,69E-05	0,00E+00	8,24E-05
Climate Change, fossil	3,51E+00	3,10E+00	1,99E-01	7,47E-02	1,05E-02	5,47E-02	3,61E-03	2,73E-02	9,37E-03	3,02E-02
Climate Change, land use	1,63E-03	5,37E-04	7,33E-04	1,63E-06	1,50E-06	4,05E-05	1,09E-06	2,82E-04	0,00E+00	3,10E-05
Ecotoxicity, freshwater - total	6,75E+00	3,72E+00	1,38E+00	1,79E-02	1,55E-02	8,84E-01	9,40E-02	4,53E-01	5,22E-04	1,77E-01
Ecotoxicity, freshwater inorganics	6,45E+00	3,69E+00	1,36E+00	1,70E-02	1,53E-02	8,60E-01	9,32E-02	2,51E-01	3,23E-04	1,59E-01
Ecotoxicity, freshwater organics	2,92E-01	2,91E-02	1,61E-02	9,21E-04	1,97E-04	2,43E-02	8,21E-04	2,02E-01	1,99E-04	1,79E-02
Eutrophication, freshwater	1,85E-05	1,37E-06	1,31E-07	1,31E-09	9,37E-09	1,68E-05	7,08E-08	7,40E-08	4,56E-09	4,70E-08
Eutrophication, marine	2,43E-03	1,95E-03	3,12E-04	6,93E-05	5,11E-06	5,36E-05	1,63E-06	1,65E-05	7,39E-06	1,32E-05
Eutrophication, terrestrial	2,39E-02	1,87E-02	3,42E-03	7,59E-04	5,27E-05	5,16E-04	1,72E-05	1,75E-04	8,06E-05	1,49E-04
Human toxicity, cancer - total	1,10E-09	9,42E-10	3,33E-11	1,47E-11	1,68E-12	9,47E-11	1,71E-12	6,10E-12	5,17E-13	4,27E-12
Human toxicity, cancer inorganics	1,23E-10	4,15E-11	1,60E-11	2,47E-13	5,25E-13	5,48E-11	1,45E-12	5,94E-12	1,71E-14	2,66E-12
Human toxicity, cancer organics	9,76E-10	9,00E-10	1,73E-11	1,45E-11	1,16E-12	3,99E-11	2,65E-13	1,55E-13	5,00E-13	1,61E-12
Human toxicity, non-cancer - total	5,54E-09	2,80E-09	1,50E-09	2,11E-11	3,71E-11	5,59E-10	3,62E-11	3,44E-10	5,81E-12	2,31E-10
Human toxicity, non-cancer inorganics	5,07E-09	2,45E-09	1,49E-09	5,47E-12	3,61E-11	5,19E-10	3,23E-11	3,22E-10	2,06E-12	2,09E-10
Human toxicity, non-cancer organics	4,72E-10	3,45E-10	1,81E-11	1,56E-11	1,03E-12	4,01E-11	3,85E-12	2,16E-11	3,75E-12	2,26E-11
Ionising radiation, human health	2,52E-02	1,73E-02	2,69E-03	1,79E-05	2,79E-04	2,48E-03	1,18E-04	6,37E-05	0,00E+00	2,28E-03
Land Use	3,19E+00	2,32E+00	3,85E-01	1,02E-03	1,20E-02	2,68E-01	2,08E-03	1,55E-01	0,00E+00	5,37E-02
Ozone depletion	6,26E-09	8,48E-13	1,70E-11	1,69E-15	1,92E-14	1,42E-09	4,82E-09	3,23E-15	0,00E+00	1,53E-13
Particulate matter	3,65E-07	3,13E-07	4,40E-08	9,76E-10	1,45E-09	3,53E-09	8,74E-11	3,87E-10	4,71E-10	7,27E-10
Photochemical ozone formation, HH	8,24E-03	6,49E-03	9,53E-04	1,91E-04	1,82E-05	2,76E-04	8,43E-06	3,52E-05	2,48E-05	2,47E-04
Resource use, fossils	4,06E+01	3,50E+01	2,12E+00	1,16E+00	1,24E-01	1,11E+00	1,32E-01	3,49E-01	3,07E-01	2,56E-01
Resource use, mineral and metals	1,37E-06	8,28E-07	9,61E-08	1,07E-09	-2,52E-08	4,61E-07	1,99E-09	1,82E-09	8,79E-10	1,67E-09
Water use	6,37E-01	5,50E-01	2,33E-02	1,37E-04	3,24E-03	2,64E-02	6,38E-02	1,10E-04	6,31E-03	-3,62E-02
GWP 100, Air craft emissions	1,58E-07	ND	1,48E-07	1,86E-10	7,46E-09	0,00E+00	6,35E-11	5,43E-11	0,00E+00	1,87E-09
GWP100, Biogenic GHG emissions	1,91E-02	ND	1,22E-02	4,66E-05	2,92E-04	3,34E-03	9,75E-05	1,39E-03	0,00E+00	1,79E-03
GWP100, Biogenic GHG removal	-1,76E-02	ND	-1,06E-02	-2,62E-05	-2,98E-04	-2,87E-03	-6,67E-05	-2,00E-03	0,00E+00	-1,74E-03
GWP100, Emissions from land use change	1,09E-03	ND	7,33E-04	1,63E-06	1,50E-06	4,05E-05	1,09E-06	2,82E-04	0,00E+00	3,10E-05
GWP100, Fossil GHG emissions	4,10E-01	ND	1,99E-01	7,47E-02	1,05E-02	5,47E-02	3,61E-03	2,73E-02	9,37E-03	3,02E-02
ISO 14067 GWP 100 total	3,58	3,17	2,02E-01	7,47E-02	1,05E-02	5,52E-02	3,64E-03	2,70E-02	9,37E-03	3,02E-02

8.6 RESULTS FOR CV PLANTS

TABLE 56: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR KON

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,02E-02	7,84E-03	2,33E-04	6,46E-05	3,95E-05	4,35E-04	2,68E-06	1,46E-03	5,24E-05	4,77E-05
Climate Change - total	3,88E+00	3,38E+00	1,88E-01	1,18E-01	1,22E-02	5,49E-02	1,04E-03	1,06E-01	9,37E-03	1,94E-02
Climate Change, biogenic	4,33E-03	5,01E-04	1,08E-04	2,49E-04	1,09E-05	8,20E-05	4,39E-06	1,21E-04	0,00E+00	3,25E-03
Climate Change, fossil	3,88E+00	3,38E+00	1,88E-01	1,17E-01	1,22E-02	5,47E-02	1,04E-03	1,06E-01	9,37E-03	1,61E-02
Climate Change, land use	9,07E-04	4,87E-04	4,49E-05	8,18E-06	1,75E-06	4,05E-05	5,65E-07	3,05E-04	0,00E+00	2,00E-05
Ecotoxicity, freshwater - total	7,12E+00	4,62E+00	3,17E-01	2,85E-02	1,80E-02	8,84E-01	1,72E-02	1,14E+00	5,22E-04	9,88E-02
Ecotoxicity, freshwater inorganics	6,68E+00	4,46E+00	2,90E-01	2,67E-02	1,78E-02	8,60E-01	1,69E-02	9,19E-01	3,23E-04	8,59E-02
Ecotoxicity, freshwater organics	4,41E-01	1,53E-01	2,72E-02	1,73E-03	2,29E-04	2,43E-02	3,41E-04	2,21E-01	1,99E-04	1,30E-02
Eutrophication, freshwater	1,85E-05	1,22E-06	2,22E-08	1,02E-08	1,09E-08	1,68E-05	1,42E-07	9,89E-08	4,56E-09	1,30E-07
Eutrophication, marine	2,40E-03	1,60E-03	7,71E-05	2,96E-05	5,93E-06	5,36E-05	5,60E-07	6,14E-04	7,39E-06	9,67E-06
Eutrophication, terrestrial	2,59E-02	1,72E-02	8,40E-04	3,27E-04	6,13E-05	5,16E-04	4,89E-06	6,72E-03	8,06E-05	1,01E-04
Human toxicity, cancer - total	1,47E-09	1,25E-09	1,00E-10	1,50E-12	1,95E-12	9,47E-11	4,19E-13	1,66E-11	5,17E-13	2,65E-12
Human toxicity, cancer inorganics	1,51E-10	7,14E-11	5,53E-12	4,84E-13	6,09E-13	5,48E-11	2,99E-13	1,61E-11	1,71E-14	1,72E-12
Human toxicity, cancer organics	1,32E-09	1,18E-09	9,46E-11	1,02E-12	1,34E-12	3,99E-11	1,20E-13	4,89E-13	5,00E-13	9,28E-13
Human toxicity, non-cancer - total	8,47E-09	6,69E-09	4,15E-10	3,90E-11	4,31E-11	5,59E-10	1,91E-11	5,34E-10	5,81E-12	1,68E-10
Human toxicity, non-cancer inorganics	7,96E-09	6,33E-09	3,94E-10	1,83E-11	4,19E-11	5,19E-10	1,09E-11	4,96E-10	2,06E-12	1,49E-10
Human toxicity, non-cancer organics	5,10E-10	3,58E-10	2,17E-11	2,07E-11	1,20E-12	4,01E-11	8,15E-12	3,83E-11	3,75E-12	1,82E-11
Ionising radiation, human health	2,48E-02	1,78E-02	2,50E-03	3,07E-05	3,24E-04	2,48E-03	8,39E-05	2,14E-04	0,00E+00	1,36E-03
Land Use	1,93E+00	1,39E+00	5,09E-02	2,77E-03	1,39E-02	2,68E-01	1,46E-03	1,69E-01	0,00E+00	3,22E-02
Ozone depletion	1,43E-09	-1,16E-13	2,67E-14	3,52E-15	2,23E-14	1,42E-09	7,05E-12	1,07E-14	0,00E+00	8,59E-14
Particulate matter	3,62E-07	3,16E-07	2,41E-09	3,69E-10	1,69E-09	3,53E-09	2,23E-11	3,79E-08	4,71E-10	4,20E-10
Photochemical ozone formation, HH	8,69E-03	6,28E-03	2,16E-04	8,78E-05	2,12E-05	2,76E-04	2,11E-06	1,68E-03	2,48E-05	1,11E-04
Resource use, fossils	4,42E+01	3,73E+01	2,05E+00	1,85E+00	1,44E-01	1,11E+00	2,60E-02	1,27E+00	3,07E-01	1,45E-01
Resource use, mineral and metals	1,27E-06	7,88E-07	3,83E-08	2,96E-09	-2,92E-08	4,61E-07	5,33E-09	3,87E-09	8,79E-10	9,47E-10
Water use	1,09E-01	5,82E-02	1,74E-03	1,24E-04	3,76E-03	2,64E-02	2,97E-02	2,61E-04	6,31E-03	-1,71E-02
GWP 100, Air craft emissions	1,86E-08	ND	8,25E-09	4,09E-10	8,67E-09	0,00E+00	1,58E-11	1,48E-10	0,00E+00	1,06E-09
GWP100, Biogenic GHG emissions	1,16E-02	ND	6,51E-04	3,92E-04	3,39E-04	3,34E-03	4,62E-05	1,65E-03	0,00E+00	5,13E-03
GWP100, Biogenic GHG removal	-7,18E-03	ND	-6,09E-04	-6,87E-05	-3,47E-04	-2,87E-03	-3,35E-05	-2,23E-03	0,00E+00	-1,02E-03
GWP100, Emissions from land use change	4,21E-04	ND	4,49E-05	8,18E-06	1,75E-06	4,05E-05	5,65E-07	3,05E-04	0,00E+00	2,00E-05
GWP100, Fossil GHG emissions	5,04E-01	ND	1,88E-01	1,17E-01	1,22E-02	5,47E-02	1,04E-03	1,06E-01	9,37E-03	1,61E-02
ISO 14067 GWP 100 total	4,63	4,12	0,19	0,12	0,01	0,06	0,00	0,11	0,01	0,02

TABLE 57: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR JAN

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,39E-02	1,01E-02	2,55E-03	3,97E-05	6,17E-05	4,35E-04	8,68E-06	3,48E-04	5,24E-05	3,58E-04
Climate Change - total	4,05E+00	3,66E+00	4,51E-02	6,91E-02	1,90E-02	5,49E-02	3,43E-03	8,13E-02	9,37E-03	1,07E-01
Climate Change, biogenic	8,96E-03	7,36E-04	1,53E-04	1,24E-04	1,70E-05	8,20E-05	2,36E-05	1,50E-04	0,00E+00	7,67E-03
Climate Change, fossil	4,03E+00	3,66E+00	4,44E-02	6,90E-02	1,90E-02	5,47E-02	3,41E-03	8,04E-02	9,37E-03	9,88E-02
Climate Change, land use	2,00E-03	5,80E-04	5,49E-04	2,43E-06	2,73E-06	4,05E-05	1,47E-06	6,94E-04	0,00E+00	1,35E-04
Ecotoxicity, freshwater - total	8,47E+00	4,83E+00	6,20E-01	1,89E-02	2,82E-02	8,84E-01	8,77E-02	1,23E+00	5,22E-04	7,73E-01
Ecotoxicity, freshwater inorganics	7,46E+00	4,76E+00	3,07E-01	1,86E-02	2,78E-02	8,60E-01	8,68E-02	7,31E-01	3,23E-04	6,64E-01
Ecotoxicity, freshwater organics	1,01E+00	6,95E-02	3,13E-01	2,89E-04	3,57E-04	2,43E-02	8,81E-04	4,97E-01	1,99E-04	1,09E-01
Eutrophication, freshwater	2,43E-05	1,49E-06	5,25E-06	5,16E-09	1,70E-08	1,68E-05	1,25E-07	1,85E-07	4,56E-09	4,35E-07
Eutrophication, marine	3,12E-03	2,02E-03	8,17E-04	1,41E-05	9,27E-06	5,36E-05	1,74E-06	1,45E-04	7,39E-06	5,97E-05
Eutrophication, terrestrial	3,27E-02	2,01E-02	9,50E-03	1,57E-04	9,57E-05	5,16E-04	1,68E-05	1,57E-03	8,06E-05	6,56E-04
Human toxicity, cancer - total	1,34E-09	1,01E-09	1,87E-10	9,21E-12	3,05E-12	9,47E-11	1,56E-12	1,67E-11	5,17E-13	1,82E-11
Human toxicity, cancer inorganics	2,98E-10	7,82E-11	1,31E-10	4,25E-12	9,52E-13	5,48E-11	1,36E-12	1,63E-11	1,71E-14	1,16E-11
Human toxicity, cancer organics	1,04E-09	9,31E-10	5,65E-11	4,97E-12	2,10E-12	3,99E-11	1,99E-13	4,38E-13	5,00E-13	6,61E-12
Human toxicity, non-cancer - total	2,43E-08	5,57E-09	1,55E-08	4,84E-10	6,73E-11	5,59E-10	4,76E-11	8,73E-10	5,81E-12	1,24E-09
Human toxicity, non-cancer inorganics	2,35E-08	5,17E-09	1,55E-08	4,75E-10	6,55E-11	5,19E-10	4,21E-11	8,18E-10	2,06E-12	9,28E-10
Human toxicity, non-cancer organics	8,64E-10	3,96E-10	3,80E-11	8,82E-12	1,88E-12	4,01E-11	5,56E-12	5,57E-11	3,75E-12	3,14E-10
Ionising radiation, human health	3,92E-02	2,48E-02	1,34E-03	1,40E-05	5,06E-04	2,48E-03	1,53E-04	1,82E-04	0,00E+00	9,70E-03
Land Use	6,94E+01	2,24E+00	6,63E+01	1,83E-03	2,18E-02	2,68E-01	2,87E-03	3,81E-01	0,00E+00	2,29E-01
Ozone depletion	1,76E-09	7,45E-13	6,07E-14	2,40E-18	3,48E-14	1,42E-09	3,40E-10	9,21E-15	0,00E+00	6,42E-13
Particulate matter	3,72E-07	3,37E-07	1,74E-08	3,83E-10	2,64E-09	3,53E-09	8,83E-11	7,51E-09	4,71E-10	3,08E-09
Photochemical ozone formation, HH	1,37E-02	7,09E-03	1,55E-03	4,57E-05	3,31E-05	2,76E-04	7,63E-06	3,73E-04	2,48E-05	4,30E-03
Resource use, fossils	4,63E+01	4,09E+01	4,33E-01	1,13E+00	2,25E-01	1,11E+00	1,15E-01	1,01E+00	3,07E-01	1,08E+00
Resource use, mineral and metals	4,94E-07	2,78E-08	2,99E-08	5,58E-09	-4,57E-08	4,61E-07	3,05E-09	4,80E-09	8,79E-10	7,04E-09
Water use	6,32E-01	3,19E-01	2,43E-01	8,63E-05	5,88E-03	2,64E-02	1,77E-01	2,95E-04	6,31E-03	-1,47E-01
GWP 100, Air craft emissions	2,75E-08	ND	3,99E-09	1,86E-09	1,35E-08	0,00E+00	9,00E-11	1,49E-10	0,00E+00	7,87E-09
GWP100, Biogenic GHG emissions	1,22E+00	ND	1,20E+00	1,81E-04	5,30E-04	3,34E-03	1,53E-04	3,44E-03	0,00E+00	1,69E-02
GWP100, Biogenic GHG removal	-1,21E+00	ND	-1,20E+00	-3,52E-05	-5,42E-04	-2,87E-03	-9,17E-05	-4,93E-03	0,00E+00	-7,38E-03
GWP100, Emissions from land use change	1,42E-03	ND	5,49E-04	2,43E-06	2,73E-06	4,05E-05	1,47E-06	6,94E-04	0,00E+00	1,35E-04
GWP100, Fossil GHG emissions	3,79E-01	ND	4,44E-02	6,90E-02	1,90E-02	5,47E-02	3,41E-03	8,04E-02	9,37E-03	9,88E-02
ISO 14067 GWP 100 total	2,80	2,46	0,09	0,06	0,01	0,06	0,00	0,06	0,01	0,04

TABLE 58: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR CRZ-MX

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,05E-02	9,61E-03	1,65E-06	9,78E-05	3,85E-05	4,35E-04	2,15E-05	1,27E-04	5,24E-05	1,20E-04
Climate Change - total	3,82E+00	3,49E+00	4,84E-02	5,42E-02	1,19E-02	5,49E-02	8,31E-03	8,55E-02	9,37E-03	4,97E-02
Climate Change, biogenic	5,02E-02	7,03E-04	4,49E-02	1,09E-05	1,06E-05	8,20E-05	2,05E-05	1,76E-04	0,00E+00	4,34E-03
Climate Change, fossil	3,76E+00	3,49E+00	7,96E-04	5,42E-02	1,19E-02	5,47E-02	8,29E-03	8,44E-02	9,37E-03	4,53E-02
Climate Change, land use	4,26E-03	5,54E-04	2,73E-03	1,71E-06	1,70E-06	4,05E-05	4,40E-06	8,74E-04	0,00E+00	5,08E-05
Ecotoxicity, freshwater - total	7,32E+00	4,62E+00	2,89E-03	2,84E-02	1,76E-02	8,84E-01	1,18E-01	1,40E+00	5,22E-04	2,44E-01
Ecotoxicity, freshwater inorganics	6,56E+00	4,55E+00	2,07E-03	2,76E-02	1,73E-02	8,60E-01	1,15E-01	7,78E-01	3,23E-04	2,14E-01
Ecotoxicity, freshwater organics	7,51E-01	6,64E-02	8,15E-04	7,96E-04	2,23E-04	2,43E-02	2,81E-03	6,25E-01	1,99E-04	3,03E-02
Eutrophication, freshwater	2,00E-05	1,42E-06	8,45E-10	1,33E-09	1,06E-08	1,68E-05	1,33E-06	2,29E-07	4,56E-09	2,10E-07
Eutrophication, marine	2,12E-03	1,93E-03	3,81E-07	4,92E-05	5,78E-06	5,36E-05	4,36E-06	5,11E-05	7,39E-06	2,34E-05
Eutrophication, terrestrial	2,12E-02	1,92E-02	4,16E-06	5,39E-04	5,97E-05	5,16E-04	3,79E-05	5,42E-04	8,06E-05	2,54E-04
Human toxicity, cancer - total	1,15E-09	9,64E-10	4,51E-11	1,10E-11	1,90E-12	9,47E-11	3,18E-12	1,89E-11	5,17E-13	6,64E-12
Human toxicity, cancer inorganics	1,55E-10	7,47E-11	2,56E-14	3,95E-13	5,93E-13	5,48E-11	2,13E-12	1,84E-11	1,71E-14	4,34E-12
Human toxicity, cancer organics	9,91E-10	8,90E-10	4,51E-11	1,06E-11	1,31E-12	3,99E-11	1,05E-12	4,81E-13	5,00E-13	2,29E-12
Human toxicity, non-cancer - total	7,66E-09	5,32E-09	8,49E-11	1,95E-11	4,20E-11	5,59E-10	1,51E-10	1,06E-09	5,81E-12	4,13E-10
Human toxicity, non-cancer inorganics	6,97E-09	4,94E-09	4,30E-12	6,74E-12	4,08E-11	5,19E-10	7,27E-11	9,97E-10	2,06E-12	3,85E-10
Human toxicity, non-cancer organics	6,91E-10	3,79E-10	8,06E-11	1,27E-11	1,17E-12	4,01E-11	7,86E-11	6,69E-11	3,75E-12	2,88E-11
Ionising radiation, human health	3,10E-02	2,37E-02	1,30E-05	1,88E-05	3,15E-04	2,48E-03	7,22E-04	1,97E-04	0,00E+00	3,49E-03
Land Use	3,00E+00	2,14E+00	1,78E-03	1,03E-03	1,36E-02	2,68E-01	1,23E-02	4,80E-01	0,00E+00	8,08E-02
Ozone depletion	1,49E-09	7,12E-13	2,71E-15	1,06E-14	2,17E-14	1,42E-09	6,86E-11	1,00E-14	0,00E+00	1,18E-13
Particulate matter	3,31E-07	3,22E-07	3,17E-11	6,50E-10	1,65E-09	3,53E-09	1,61E-10	1,20E-09	4,71E-10	1,05E-09
Photochemical ozone formation, HH	7,49E-03	6,78E-03	1,79E-05	1,36E-04	2,06E-05	2,76E-04	1,66E-05	1,09E-04	2,48E-05	1,10E-04
Resource use, fossils	4,31E+01	3,91E+01	5,29E-03	8,31E-01	1,40E-01	1,11E+00	1,96E-01	1,08E+00	3,07E-01	3,64E-01
Resource use, mineral and metals	5,29E-07	2,66E-08	7,44E-09	1,96E-09	-2,85E-08	4,61E-07	5,18E-08	5,63E-09	8,79E-10	2,39E-09
Water use	4,08E-01	3,05E-01	3,02E-02	9,77E-05	3,66E-03	2,64E-02	7,95E-02	3,40E-04	6,31E-03	-4,37E-02
GWP 100, Air craft emissions	1,17E-08	ND	1,35E-10	1,52E-10	8,44E-09	0,00E+00	7,38E-11	1,68E-10	0,00E+00	2,70E-09
GWP100, Biogenic GHG emissions	6,59E-02	ND	4,96E-02	3,62E-05	3,30E-04	3,34E-03	3,16E-04	4,30E-03	0,00E+00	7,98E-03
GWP100, Biogenic GHG removal	-1,69E-02	ND	-4,64E-03	-2,71E-05	-3,37E-04	-2,87E-03	-2,56E-04	-6,19E-03	0,00E+00	-2,55E-03
GWP100, Emissions from land use change	3,71E-03	ND	2,73E-03	1,71E-06	1,70E-06	4,05E-05	4,40E-06	8,74E-04	0,00E+00	5,08E-05
GWP100, Fossil GHG emissions	2,69E-01	ND	7,96E-04	5,42E-02	1,19E-02	5,47E-02	8,29E-03	8,44E-02	9,37E-03	4,53E-02
ISO 14067 GWP 100 total	4,09	3,77	0,05	0,05	0,01	0,06	0,01	0,08	0,01	0,05

TABLE 59: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR PNT

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,25E-02	9,67E-03	2,08E-03	1,12E-04	3,63E-05	4,35E-04	9,68E-06	7,03E-05	5,24E-05	5,84E-05
Climate Change - total	3,68E+00	3,30E+00	1,70E-01	6,05E-02	1,12E-02	5,49E-02	3,78E-03	4,37E-02	9,37E-03	2,42E-02
Climate Change, biogenic	2,31E-03	6,26E-04	1,42E-03	1,71E-05	1,00E-05	8,20E-05	1,43E-05	8,97E-05	0,00E+00	5,67E-05
Climate Change, fossil	3,68E+00	3,30E+00	1,68E-01	6,05E-02	1,12E-02	5,47E-02	3,76E-03	4,32E-02	9,37E-03	2,41E-02
Climate Change, land use	1,69E-03	5,73E-04	6,11E-04	1,32E-06	1,60E-06	4,05E-05	1,07E-06	4,43E-04	0,00E+00	2,21E-05
Ecotoxicity, freshwater - total	6,97E+00	3,97E+00	1,15E+00	1,45E-02	1,65E-02	8,84E-01	9,83E-02	7,15E-01	5,22E-04	1,21E-01
Ecotoxicity, freshwater inorganics	6,57E+00	3,94E+00	1,14E+00	1,38E-02	1,63E-02	8,60E-01	9,74E-02	3,97E-01	3,23E-04	1,07E-01
Ecotoxicity, freshwater organics	4,03E-01	3,11E-02	1,46E-02	7,45E-04	2,10E-04	2,43E-02	8,45E-04	3,17E-01	1,99E-04	1,35E-02
Eutrophication, freshwater	1,86E-05	1,46E-06	1,17E-07	1,06E-09	1,00E-08	1,68E-05	6,66E-08	1,16E-07	4,56E-09	3,19E-08
Eutrophication, marine	2,50E-03	2,08E-03	2,60E-04	5,61E-05	5,45E-06	5,36E-05	1,67E-06	2,84E-05	7,39E-06	9,41E-06
Eutrophication, terrestrial	2,45E-02	2,00E-02	2,85E-03	6,14E-04	5,62E-05	5,16E-04	1,78E-05	3,03E-04	8,06E-05	1,06E-04
Human toxicity, cancer - total	1,16E-09	1,00E-09	3,30E-11	1,19E-11	1,79E-12	9,47E-11	1,77E-12	9,62E-12	5,17E-13	3,02E-12
Human toxicity, cancer inorganics	1,26E-10	4,43E-11	1,37E-11	2,00E-13	5,59E-13	5,48E-11	1,51E-12	9,37E-12	1,71E-14	1,88E-12
Human toxicity, cancer organics	1,03E-09	9,60E-10	1,93E-11	1,17E-11	1,23E-12	3,99E-11	2,62E-13	2,45E-13	5,00E-13	1,14E-12
Human toxicity, non-cancer - total	5,63E-09	2,99E-09	1,28E-09	1,71E-11	3,96E-11	5,59E-10	3,56E-11	5,41E-10	5,81E-12	1,74E-10
Human toxicity, non-cancer inorganics	5,13E-09	2,62E-09	1,26E-09	4,43E-12	3,85E-11	5,19E-10	3,17E-11	5,07E-10	2,06E-12	1,53E-10
Human toxicity, non-cancer organics	5,00E-10	3,68E-10	1,56E-11	1,26E-11	1,10E-12	4,01E-11	3,94E-12	3,40E-11	3,75E-12	2,01E-11
Ionising radiation, human health	2,54E-02	1,84E-02	2,39E-03	1,45E-05	2,97E-04	2,48E-03	1,18E-04	1,01E-04	0,00E+00	1,60E-03
Land Use	3,37E+00	2,47E+00	3,35E-01	8,28E-04	1,28E-02	2,68E-01	2,03E-03	2,44E-01	0,00E+00	3,76E-02
Ozone depletion	6,28E-09	9,04E-13	3,15E-11	1,37E-15	2,04E-14	1,42E-09	4,83E-09	5,11E-15	0,00E+00	1,05E-13
Particulate matter	3,78E-07	3,34E-07	3,65E-08	7,90E-10	1,55E-09	3,53E-09	8,98E-11	7,66E-10	4,71E-10	5,01E-10
Photochemical ozone formation, HH	8,50E-03	6,92E-03	7,96E-04	1,55E-04	1,94E-05	2,76E-04	8,83E-06	6,22E-05	2,48E-05	2,35E-04
Resource use, fossils	4,25E+01	3,73E+01	1,79E+00	9,39E-01	1,32E-01	1,11E+00	1,39E-01	5,52E-01	3,07E-01	1,76E-01
Resource use, mineral and metals	1,50E-06	8,83E-07	1,73E-07	8,66E-10	-2,68E-08	4,61E-07	2,01E-09	2,86E-09	8,79E-10	1,15E-09
Water use	6,65E-01	5,87E-01	2,01E-02	1,11E-04	3,45E-03	2,64E-02	4,59E-02	1,73E-04	6,31E-03	-2,40E-02
GWP 100, Air craft emissions	2,84E-07	ND	2,74E-07	1,51E-10	7,96E-09	0,00E+00	6,10E-11	8,57E-11	0,00E+00	1,29E-09
GWP100, Biogenic GHG emissions	1,75E-02	ND	1,03E-02	3,77E-05	3,11E-04	3,34E-03	9,16E-05	2,18E-03	0,00E+00	1,24E-03
GWP100, Biogenic GHG removal	-1,67E-02	ND	-9,03E-03	-2,12E-05	-3,18E-04	-2,87E-03	-6,51E-05	-3,14E-03	0,00E+00	-1,21E-03
GWP100, Emissions from land use change	1,12E-03	ND	6,11E-04	1,32E-06	1,60E-06	4,05E-05	1,07E-06	4,43E-04	0,00E+00	2,21E-05
GWP100, Fossil GHG emissions	3,75E-01	ND	1,68E-01	6,05E-02	1,12E-02	5,47E-02	3,76E-03	4,32E-02	9,37E-03	2,41E-02
ISO 14067 GWP 100 total	3,74	3,36	0,17	0,06	0,01	0,06	0,00	0,04	0,01	0,02

TABLE 60: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR NAN

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,11E-02	1,01E-02	1,86E-06	1,06E-04	3,79E-05	4,35E-04	7,60E-06	2,16E-04	5,24E-05	1,60E-04
Climate Change - total	3,78E+00	3,46E+00	4,21E-03	5,54E-02	1,17E-02	5,49E-02	2,98E-03	1,46E-01	9,37E-03	4,40E-02
Climate Change, biogenic	4,90E-03	6,55E-04	3,10E-03	3,47E-06	1,05E-05	8,20E-05	1,29E-05	3,00E-04	0,00E+00	7,35E-04
Climate Change, fossil	3,78E+00	3,46E+00	8,53E-04	5,54E-02	1,17E-02	5,47E-02	2,97E-03	1,44E-01	9,37E-03	4,32E-02
Climate Change, land use	2,45E-03	5,99E-04	2,59E-04	1,04E-06	1,68E-06	4,05E-05	1,15E-06	1,49E-03	0,00E+00	5,92E-05
Ecotoxicity, freshwater - total	7,85E+00	4,15E+00	2,98E-03	5,46E-03	1,73E-02	8,84E-01	6,91E-02	2,39E+00	5,22E-04	3,28E-01
Ecotoxicity, freshwater inorganics	6,70E+00	4,12E+00	2,55E-03	5,21E-03	1,71E-02	8,60E-01	6,83E-02	1,33E+00	3,23E-04	2,97E-01
Ecotoxicity, freshwater organics	1,16E+00	3,25E-02	4,29E-04	2,46E-04	2,20E-04	2,43E-02	7,89E-04	1,07E+00	1,99E-04	3,13E-02
Eutrophication, freshwater	1,90E-05	1,53E-06	9,95E-10	8,07E-10	1,05E-08	1,68E-05	1,73E-07	3,90E-07	4,56E-09	1,07E-07
Eutrophication, marine	2,41E-03	2,18E-03	4,44E-07	5,36E-05	5,70E-06	5,36E-05	1,43E-06	8,71E-05	7,39E-06	2,54E-05
Eutrophication, terrestrial	2,34E-02	2,09E-02	4,85E-06	5,87E-04	5,88E-05	5,16E-04	1,41E-05	9,25E-04	8,06E-05	2,86E-04
Human toxicity, cancer - total	1,25E-09	1,05E-09	5,02E-11	1,27E-11	1,87E-12	9,47E-11	1,29E-12	3,22E-11	5,17E-13	8,00E-12
Human toxicity, cancer inorganics	1,39E-10	4,63E-11	3,25E-14	1,85E-13	5,85E-13	5,48E-11	1,10E-12	3,13E-11	1,71E-14	5,08E-12
Human toxicity, cancer organics	1,11E-09	1,00E-09	5,02E-11	1,25E-11	1,29E-12	3,99E-11	1,90E-13	8,19E-13	5,00E-13	2,93E-12
Human toxicity, non-cancer - total	6,03E-09	3,12E-09	1,05E-11	1,83E-11	4,14E-11	5,59E-10	3,85E-11	1,81E-09	5,81E-12	4,24E-10
Human toxicity, non-cancer inorganics	5,45E-09	2,74E-09	4,85E-12	1,42E-11	4,02E-11	5,19E-10	2,85E-11	1,70E-09	2,06E-12	4,04E-10
Human toxicity, non-cancer organics	5,84E-10	3,85E-10	5,65E-12	4,12E-12	1,15E-12	4,01E-11	9,99E-12	1,14E-10	3,75E-12	2,01E-11
Ionising radiation, human health	2,69E-02	1,93E-02	1,47E-05	8,65E-06	3,11E-04	2,48E-03	1,46E-04	3,36E-04	0,00E+00	4,31E-03
Land Use	3,79E+00	2,59E+00	2,18E-03	1,16E-03	1,34E-02	2,68E-01	2,55E-03	8,18E-01	0,00E+00	1,02E-01
Ozone depletion	1,43E-09	9,45E-13	3,09E-15	1,10E-16	2,14E-14	1,42E-09	7,87E-12	1,71E-14	0,00E+00	2,88E-13
Particulate matter	3,59E-07	3,49E-07	3,72E-11	6,84E-10	1,62E-09	3,53E-09	6,87E-11	2,04E-09	4,71E-10	1,37E-09
Photochemical ozone formation, HH	7,97E-03	7,24E-03	2,41E-06	1,45E-04	2,03E-05	2,76E-04	6,63E-06	1,86E-04	2,48E-05	7,75E-05
Resource use, fossils	4,38E+01	3,90E+01	6,06E-03	8,09E-01	1,38E-01	1,11E+00	9,85E-02	1,84E+00	3,07E-01	4,81E-01
Resource use, mineral and metals	1,39E-06	9,23E-07	8,30E-09	1,92E-09	-2,81E-08	4,61E-07	6,12E-09	9,59E-09	8,79E-10	3,15E-09
Water use	1,17E+00	6,14E-01	5,22E-01	1,35E-04	3,61E-03	2,64E-02	6,59E-02	5,79E-04	6,31E-03	-6,69E-02
GWP 100, Air craft emissions	1,28E-08	ND	1,53E-10	5,03E-10	8,32E-09	0,00E+00	5,13E-11	2,87E-10	0,00E+00	3,52E-09
GWP100, Biogenic GHG emissions	1,87E-02	ND	3,49E-03	2,12E-05	3,26E-04	3,34E-03	9,94E-05	7,33E-03	0,00E+00	4,12E-03
GWP100, Biogenic GHG removal	-1,75E-02	ND	-3,90E-04	-2,38E-05	-3,33E-04	-2,87E-03	-6,95E-05	-1,06E-02	0,00E+00	-3,29E-03
GWP100, Emissions from land use change	1,85E-03	ND	2,59E-04	1,04E-06	1,68E-06	4,05E-05	1,15E-06	1,49E-03	0,00E+00	5,92E-05
GWP100, Fossil GHG emissions	3,22E-01	ND	8,53E-04	5,54E-02	1,17E-02	5,47E-02	2,97E-03	1,44E-01	9,37E-03	4,32E-02
ISO 14067 GWP 100 total	3,81	3,49	0,00	0,06	0,01	0,06	0,00	0,14	0,01	0,04

8.7 RESULTS FOR MSC PLANTS

TABLE 61: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR CRZ-MSC

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	8,92E-03	8,29E-03	1,67E-06	1,64E-04	2,57E-05	1,90E-04	1,79E-05	1,08E-04	2,62E-06	1,17E-04
Climate Change - total	3,31E+00	3,01E+00	4,91E-02	9,07E-02	7,93E-03	2,40E-02	6,89E-03	7,31E-02	4,68E-04	4,25E-02
Climate Change, biogenic	5,10E-02	6,06E-04	4,55E-02	1,83E-05	7,09E-06	3,59E-05	1,68E-05	1,51E-04	0,00E+00	4,61E-03
Climate Change, fossil	3,25E+00	3,01E+00	8,08E-04	9,07E-02	7,92E-03	2,40E-02	6,87E-03	7,22E-02	4,68E-04	3,79E-02
Climate Change, land use	4,07E-03	4,78E-04	2,77E-03	2,86E-06	1,13E-06	1,78E-05	4,10E-06	7,47E-04	0,00E+00	4,34E-05
Ecotoxicity, freshwater - total	5,96E+00	3,98E+00	2,93E-03	4,75E-02	1,17E-02	3,87E-01	7,85E-02	1,20E+00	2,61E-05	2,49E-01
Ecotoxicity, freshwater inorganics	5,32E+00	3,92E+00	2,10E-03	4,62E-02	1,16E-02	3,77E-01	7,60E-02	6,65E-01	1,62E-05	2,20E-01
Ecotoxicity, freshwater organics	6,36E-01	5,72E-02	8,27E-04	1,33E-03	1,49E-04	1,07E-02	2,51E-03	5,34E-01	9,94E-06	2,92E-02
Eutrophication, freshwater	1,03E-05	1,23E-06	8,58E-10	2,23E-09	7,08E-09	7,37E-06	1,32E-06	1,96E-07	2,28E-10	2,21E-07
Eutrophication, marine	1,84E-03	1,66E-03	3,87E-07	8,24E-05	3,86E-06	2,35E-05	3,78E-06	4,37E-05	3,70E-07	2,00E-05
Eutrophication, terrestrial	1,84E-02	1,65E-02	4,22E-06	9,02E-04	3,98E-05	2,26E-04	3,13E-05	4,64E-04	4,03E-06	2,15E-04
Human toxicity, cancer - total	9,63E-10	8,32E-10	4,58E-11	1,84E-11	1,27E-12	4,15E-11	2,56E-12	1,61E-11	2,58E-14	5,92E-12
Human toxicity, cancer inorganics	1,11E-10	6,44E-11	2,60E-14	6,61E-13	3,96E-13	2,40E-11	1,53E-12	1,57E-11	8,55E-16	3,80E-12
Human toxicity, cancer organics	8,52E-10	7,67E-10	4,57E-11	1,77E-11	8,73E-13	1,75E-11	1,02E-12	4,11E-13	2,50E-14	2,12E-12
Human toxicity, non-cancer - total	6,39E-09	4,59E-09	8,62E-11	3,26E-11	2,80E-11	2,45E-10	1,41E-10	9,09E-10	2,91E-13	3,56E-10
Human toxicity, non-cancer inorganics	5,74E-09	4,26E-09	4,37E-12	1,13E-11	2,72E-11	2,27E-10	6,30E-11	8,52E-10	1,03E-13	2,97E-10
Human toxicity, non-cancer organics	6,43E-10	3,27E-10	8,18E-11	2,13E-11	7,81E-13	1,76E-11	7,78E-11	5,71E-11	1,87E-13	5,95E-11
Ionising radiation, human health	2,58E-02	2,05E-02	1,31E-05	3,14E-05	2,11E-04	1,09E-03	6,89E-04	1,69E-04	0,00E+00	3,15E-03
Land Use	2,47E+00	1,85E+00	1,80E-03	1,72E-03	9,06E-03	1,17E-01	1,17E-02	4,10E-01	0,00E+00	7,31E-02
Ozone depletion	6,91E-10	6,14E-13	2,75E-15	1,78E-14	1,45E-14	6,22E-10	6,86E-11	8,55E-15	0,00E+00	1,01E-13
Particulate matter	2,84E-07	2,78E-07	3,22E-11	1,09E-09	1,10E-09	1,55E-09	1,29E-10	1,02E-09	2,36E-11	1,01E-09
Photochemical ozone formation, HH	6,99E-03	5,84E-03	1,81E-05	2,28E-04	1,38E-05	1,21E-04	1,32E-05	9,32E-05	1,24E-06	6,57E-04
Resource use, fossils	3,71E+01	3,37E+01	5,37E-03	1,39E+00	9,37E-02	4,84E-01	1,39E-01	9,24E-01	1,53E-02	3,53E-01
Resource use, mineral and metals	2,75E-07	2,29E-08	7,55E-09	3,28E-09	-1,90E-08	2,02E-07	5,16E-08	4,81E-09	4,39E-11	2,28E-09
Water use	3,46E-01	2,63E-01	3,06E-02	1,64E-04	2,45E-03	1,16E-02	8,60E-02	2,90E-04	3,16E-04	-4,85E-02
GWP 100, Air craft emissions	8,78E-09	ND	1,37E-10	2,55E-10	5,64E-09	0,00E+00	5,59E-11	1,44E-10	0,00E+00	2,55E-09
GWP100, Biogenic GHG emissions	6,42E-02	ND	5,03E-02	6,07E-05	2,21E-04	1,46E-03	2,94E-04	3,68E-03	0,00E+00	8,15E-03
GWP100, Biogenic GHG removal	-1,41E-02	ND	-4,70E-03	-4,53E-05	-2,25E-04	-1,26E-03	-2,37E-04	-5,29E-03	0,00E+00	-2,34E-03
GWP100, Emissions from land use change	3,59E-03	ND	2,77E-03	2,86E-06	1,13E-06	1,78E-05	4,10E-06	7,47E-04	0,00E+00	4,34E-05
GWP100, Fossil GHG emissions	2,41E-01	ND	8,08E-04	9,07E-02	7,92E-03	2,40E-02	6,87E-03	7,22E-02	4,68E-04	3,79E-02
ISO 14067 GWP 100 total	3,54	3,25	0,05	0,09	0,01	0,02	0,01	0,07	0,00	0,04

TABLE 62: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR CTG

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	1,25E-02	1,21E-02	1,79E-06	6,09E-06	6,63E-06	0,00E+00	5,97E-06	1,09E-04	2,05E-04	6,57E-05
Climate Change - total	4,61E+00	4,40E+00	5,26E-02	3,37E-03	2,04E-03	0,00E+00	2,33E-03	7,32E-02	5,00E-02	2,33E-02
Climate Change, biogenic	5,36E-02	8,86E-04	4,88E-02	6,79E-07	1,83E-06	0,00E+00	8,64E-06	1,51E-04	2,08E-04	3,51E-03
Climate Change, fossil	4,55E+00	4,40E+00	8,66E-04	3,37E-03	2,04E-03	0,00E+00	2,32E-03	7,23E-02	4,95E-02	1,98E-02
Climate Change, land use	4,80E-03	6,98E-04	2,97E-03	1,06E-07	2,93E-07	0,00E+00	9,04E-07	7,48E-04	3,54E-04	2,40E-05
Ecotoxicity, freshwater - total	7,47E+00	5,82E+00	3,14E-03	1,77E-03	3,02E-03	0,00E+00	5,11E-02	1,20E+00	2,61E-01	1,37E-01
Ecotoxicity, freshwater inorganics	6,77E+00	5,73E+00	2,25E-03	1,72E-03	2,99E-03	0,00E+00	5,04E-02	6,66E-01	1,94E-01	1,24E-01
Ecotoxicity, freshwater organics	7,01E-01	8,36E-02	8,86E-04	4,96E-05	3,84E-05	0,00E+00	6,28E-04	5,35E-01	6,66E-02	1,35E-02
Eutrophication, freshwater	2,59E-06	1,79E-06	9,20E-10	8,30E-11	1,83E-09	0,00E+00	1,63E-07	1,96E-07	2,87E-07	1,56E-07
Eutrophication, marine	2,56E-03	2,43E-03	4,14E-07	3,06E-06	9,95E-07	0,00E+00	1,12E-06	4,37E-05	6,81E-05	1,14E-05
Eutrophication, terrestrial	2,55E-02	2,42E-02	4,52E-06	3,35E-05	1,03E-05	0,00E+00	1,09E-05	4,65E-04	7,29E-04	1,20E-04
Human toxicity, cancer - total	1,30E-09	1,21E-09	4,91E-11	6,83E-13	3,27E-13	0,00E+00	1,00E-12	1,62E-11	1,73E-11	3,31E-12
Human toxicity, cancer inorganics	1,17E-10	9,41E-11	2,78E-14	2,46E-14	1,02E-13	0,00E+00	8,19E-13	1,57E-11	4,01E-12	2,12E-12
Human toxicity, cancer organics	1,19E-09	1,12E-09	4,90E-11	6,58E-13	2,25E-13	0,00E+00	1,86E-13	4,12E-13	1,33E-11	1,19E-12
Human toxicity, non-cancer - total	8,18E-09	6,70E-09	9,24E-11	1,21E-12	7,23E-12	0,00E+00	3,05E-11	9,11E-10	2,61E-10	1,77E-10
Human toxicity, non-cancer inorganics	7,52E-09	6,23E-09	4,68E-12	4,20E-13	7,03E-12	0,00E+00	2,09E-11	8,54E-10	2,45E-10	1,63E-10
Human toxicity, non-cancer organics	6,63E-10	4,77E-10	8,77E-11	7,92E-13	2,02E-13	0,00E+00	9,57E-12	5,73E-11	1,62E-11	1,41E-11
Ionising radiation, human health	3,51E-02	2,99E-02	1,41E-05	1,17E-06	5,43E-05	0,00E+00	1,23E-04	1,69E-04	3,07E-03	1,75E-03
Land Use	2,98E+01	2,70E+00	1,93E-03	6,39E-05	2,34E-03	0,00E+00	2,11E-03	4,11E-01	2,66E+01	4,04E-02
Ozone depletion	8,83E-10	8,97E-13	2,95E-15	6,62E-16	3,73E-15	0,00E+00	8,81E-10	8,57E-15	3,28E-13	3,39E-14
Particulate matter	4,31E-07	4,05E-07	3,45E-11	4,05E-11	2,84E-10	0,00E+00	5,22E-11	1,03E-09	2,32E-08	5,63E-10
Photochemical ozone formation, HH	8,90E-03	8,54E-03	1,94E-05	8,48E-06	3,55E-06	0,00E+00	5,14E-06	9,34E-05	2,00E-04	3,42E-05
Resource use, fossils	5,14E+01	4,92E+01	5,76E-03	5,17E-02	2,42E-02	0,00E+00	7,46E-02	9,26E-01	8,83E-01	1,98E-01
Resource use, mineral and metals	5,70E-08	3,35E-08	8,09E-09	1,22E-10	-4,90E-09	0,00E+00	6,02E-09	4,82E-09	8,14E-09	1,27E-09
Water use	4,39E-01	3,84E-01	3,28E-02	6,08E-06	6,31E-04	0,00E+00	3,70E-02	2,91E-04	1,12E-02	-2,73E-02
GWP 100, Air craft emissions	8,05E-09	ND	1,47E-10	9,47E-12	1,45E-09	0,00E+00	3,46E-11	1,44E-10	4,84E-09	1,42E-09
GWP100, Biogenic GHG emissions	8,94E-02	ND	5,39E-02	2,26E-06	5,69E-05	0,00E+00	7,36E-05	3,68E-03	2,59E-02	5,73E-03
GWP100, Biogenic GHG removal	-2,22E-01	ND	-5,04E-03	-1,68E-06	-5,81E-05	0,00E+00	-5,41E-05	-5,30E-03	-2,10E-01	-1,29E-03
GWP100, Emissions from land use change	4,10E-03	ND	2,97E-03	1,06E-07	2,93E-07	0,00E+00	9,04E-07	7,48E-04	3,54E-04	2,40E-05
GWP100, Fossil GHG emissions	1,50E-01	ND	8,66E-04	3,37E-03	2,04E-03	0,00E+00	2,32E-03	7,23E-02	4,95E-02	1,98E-02
ISO 14067 GWP 100 total	4,75	4,73	0,05	0,00	0,00	0,00	0,00	0,07	-0,13	0,02

TABLE 63: FULL RESULTS OF EF 3.1 AND ISO 140 67 IMPACT CATEGORIES FOR CST

Impact category	Total	Steel	Electricity	Natural gas	Other metals	Paint	Auxiliary material	Transport	Packaging	Disposal
Acidification	7,88E-03	7,52E-03	3,49E-05	6,54E-05	9,17E-07	1,90E-04	1,85E-06	3,30E-05	1,12E-05	2,77E-05
Climate Change - total	3,00E+00	2,73E+00	2,09E-02	1,87E-01	2,83E-04	2,40E-02	1,23E-03	2,22E-02	3,01E-03	1,18E-02
Climate Change, biogenic	3,44E-03	5,50E-04	3,08E-05	8,47E-05	2,53E-07	3,59E-05	4,87E-06	4,58E-05	1,43E-05	2,67E-03
Climate Change, fossil	3,00E+00	2,73E+00	2,09E-02	1,87E-01	2,82E-04	2,40E-02	1,22E-03	2,20E-02	2,97E-03	9,14E-03
Climate Change, land use	7,53E-04	4,33E-04	3,71E-05	2,11E-06	4,05E-08	1,78E-05	9,26E-07	2,27E-04	2,42E-05	9,87E-06
Ecotoxicity, freshwater - total	4,70E+00	3,61E+00	6,56E-02	1,91E-01	4,18E-04	3,87E-01	4,08E-03	3,65E-01	1,71E-02	5,98E-02
Ecotoxicity, freshwater inorganics	4,46E+00	3,56E+00	6,28E-02	1,87E-01	4,13E-04	3,77E-01	3,80E-03	2,02E-01	1,30E-02	5,32E-02
Ecotoxicity, freshwater organics	2,43E-01	5,19E-02	2,78E-03	3,66E-03	5,30E-06	1,07E-02	2,87E-04	1,62E-01	4,04E-03	6,68E-03
Eutrophication, freshwater	8,79E-06	1,11E-06	1,09E-08	7,55E-09	2,53E-10	7,37E-06	1,10E-07	5,96E-08	6,41E-09	1,07E-07
Eutrophication, marine	1,59E-03	1,51E-03	7,72E-06	3,03E-05	1,38E-07	2,35E-05	5,27E-07	1,33E-05	4,00E-06	5,10E-06
Eutrophication, terrestrial	1,59E-02	1,50E-02	8,40E-05	3,38E-04	1,42E-06	2,26E-04	4,60E-06	1,41E-04	4,37E-05	5,11E-05
Human toxicity, cancer - total	8,58E-10	7,54E-10	3,99E-11	1,49E-11	4,53E-14	4,15E-11	2,62E-13	4,91E-12	1,20E-12	1,40E-12
Human toxicity, cancer inorganics	9,19E-11	5,84E-11	9,40E-13	2,44E-12	1,41E-14	2,40E-11	9,08E-14	4,78E-12	2,59E-13	9,01E-13
Human toxicity, cancer organics	7,67E-10	6,96E-10	3,89E-11	1,25E-11	3,11E-14	1,75E-11	1,72E-13	1,25E-13	9,45E-13	4,97E-13
Human toxicity, non-cancer - total	4,93E-09	4,16E-09	5,86E-11	7,86E-11	1,00E-12	2,45E-10	1,35E-11	2,77E-10	1,60E-11	7,97E-11
Human toxicity, non-cancer inorganics	4,52E-09	3,87E-09	5,48E-11	2,70E-11	9,72E-13	2,27E-10	7,38E-12	2,59E-10	1,51E-11	6,55E-11
Human toxicity, non-cancer organics	4,08E-10	2,96E-10	3,81E-12	5,15E-11	2,79E-14	1,76E-11	6,08E-12	1,74E-11	8,96E-13	1,41E-11
Ionising radiation, human health	2,34E-02	1,86E-02	2,58E-03	4,39E-05	7,51E-06	1,09E-03	1,37E-04	5,13E-05	1,89E-04	7,21E-04
Land Use	3,88E+00	1,68E+00	4,16E-02	4,42E-03	3,23E-04	1,17E-01	2,28E-03	1,25E-01	1,90E+00	1,64E-02
Ozone depletion	1,43E-09	5,57E-13	5,64E-12	3,68E-15	5,16E-16	6,22E-10	7,98E-10	2,60E-15	2,30E-14	-1,50E-14
Particulate matter	2,57E-07	2,52E-07	3,55E-10	8,21E-10	3,92E-11	1,55E-09	1,52E-11	3,11E-10	1,73E-09	2,37E-10
Photochemical ozone formation, HH	5,70E-03	5,30E-03	2,26E-05	1,04E-04	4,91E-07	1,21E-04	1,41E-06	2,83E-05	1,17E-05	1,14E-04
Resource use, fossils	3,44E+01	3,05E+01	3,33E-01	2,64E+00	3,34E-03	4,84E-01	1,71E-02	2,81E-01	4,74E-02	8,35E-02
Resource use, mineral and metals	2,96E-07	2,08E-08	4,44E-08	2,19E-08	-6,78E-10	2,02E-07	5,10E-09	1,46E-09	3,76E-10	5,27E-10
Water use	2,72E-01	2,39E-01	4,40E-03	8,14E-04	8,73E-05	1,16E-02	2,74E-02	8,84E-05	4,60E-04	-1,16E-02
GWP 100, Air craft emissions	4,42E-08	ND	4,25E-08	5,00E-10	2,01E-10	0,00E+00	5,26E-11	4,37E-11	3,44E-10	5,89E-10
GWP100, Biogenic GHG emissions	8,50E-03	ND	1,03E-03	1,92E-04	7,87E-06	1,46E-03	7,91E-05	1,12E-03	6,97E-04	3,92E-03
GWP100, Biogenic GHG removal	-1,81E-02	ND	-1,02E-03	-1,04E-04	-8,04E-06	-1,26E-03	-6,71E-05	-1,61E-03	-1,35E-02	-5,20E-04
GWP100, Emissions from land use change	3,19E-04	ND	3,71E-05	2,11E-06	4,05E-08	1,78E-05	9,26E-07	2,27E-04	2,42E-05	9,87E-06
GWP100, Fossil GHG emissions	2,67E-01	ND	2,09E-02	1,87E-01	2,82E-04	2,40E-02	1,22E-03	2,20E-02	2,97E-03	9,14E-03
ISO 14067 GWP 100 total	3,10	2,84	0,02	0,19	0,00	0,02	0,00	0,02	-0,01	0,01