Green Finance Report 2025

September 2025

DISCLAIMER

The following presentations as well as remarks/comments and explanations in this context contain forward-looking statements on the business development of the Volkswagen Group. These statements are based on assumptions relating to the development of the economic, political and legal environment in individual countries, economic regions and markets, and in particular for the automotive industry, which we have made on the basis of the information available to us and which we consider to be realistic at the time of going to press. The estimates given entail a degree of risk, and actual developments may differ from those forecast.

All figures are rounded, so minor discrepancies may arise from addition of these amounts.

Any changes in significant parameters relating to our key sales markets, or any significant shifts in exchange rates, energy and other commodities or the supply with parts relevant to the Volkswagen Group will have a corresponding effect on the development of our business. In addition, there may also be departures from our expected business development if the assessments of the factors influencing sustainable value enhancement and of risks and opportunities presented develop in a way other than we are currently expecting, or if additional risks and opportunities or other factors emerge that affect the development of our business.

We do not update forward-looking statements retrospectively. Such statements are valid on the date of publication and can be superseded.

This information does not constitute an offer to exchange or sell or an offer to exchange or buy any securities.

VOLKSWAGEN GROUP

Foreword

Dear Ladies and Gentlemen,

The Volkswagen Group continues to make good progress in aligning its financing strategy with its sustainability goals. In fiscal year 2024, green bonds accounted for more than 40% of our total issuance volume. This means that green bonds now account for 26% of our total outstanding bond volume, bringing us closer to our medium-term target. This milestone underscores our commitment to credible and sustainable financing.

Our Green Finance Framework, introduced in 2022, forms the basis for providing capital to finance investments that support our transformation into a CO_2-neutral mobility provider. As one of the world's leading automakers, we see it as our responsibility to actively shape the sustainable finance landscape within the framework of applicable regulations.

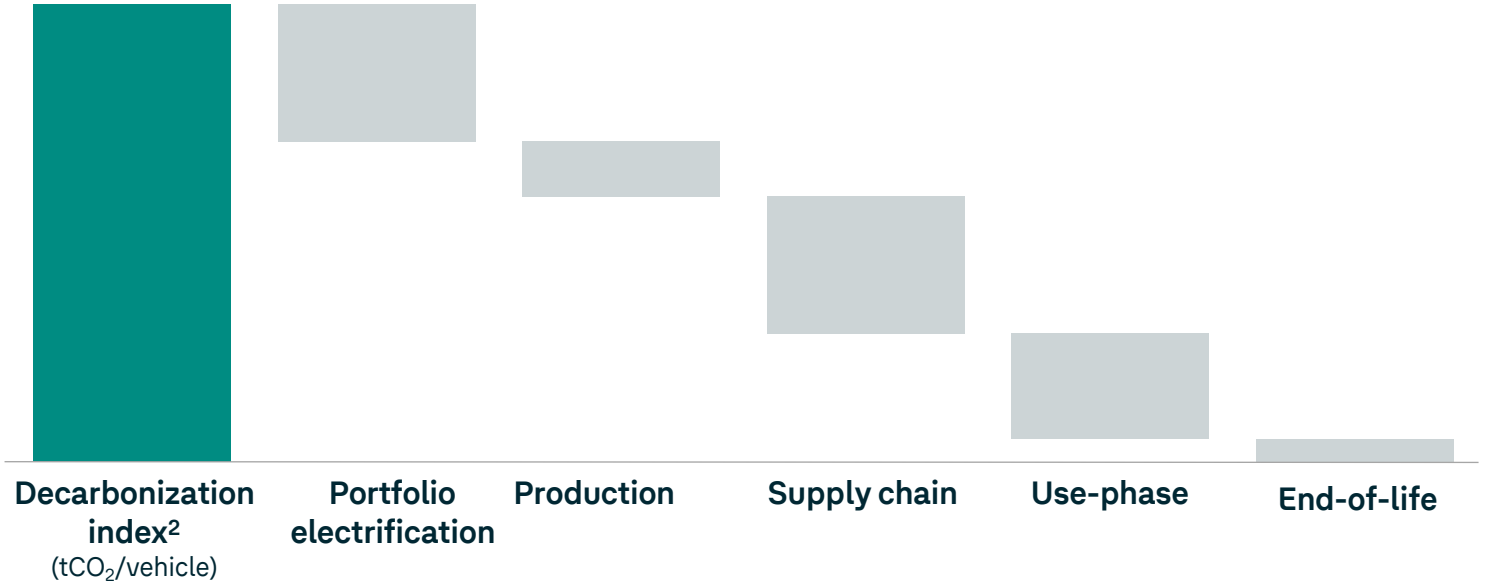
Looking ahead, we want to further increase the share of green debt in our financing mix. By 2030, at least 30% of our outstanding bond volume should consist of green bonds. This target reflects our long-term commitment to environmental protection and sustainable value creation.

Yours sincerely,
Rolf Woller
Head of Group Treasury & Investor Relations

NATURE: Our Path to Sustainable Mobility

Underpinned by decarbonization, circular economy, and biodiversity protection

Key strategic levers to decarbonize[1]



Volkswagen Group 2050 ambition

Net Carbon Neutral[1]

Decarbonization index (tCO_2 /vehicle)

+

Circularity principles

Biodiversity protection

[1]Strategy is subject to progress made in individual levers illustrated above, relying on assumptions and elements that cannot be influenced by Volkswagen Group and therefore might not be achievable. Offsets (including carbon reduction and carbon removal) are included in Volkswagen Group's decarbonization strategy.
[2]Volkswagen Group's "DCI" aims to provide a comprehensive overview of the CO2 equivalent emissions throughout the value chain. It is primarily based on life cycle assessments (based on assumptions) which Volkswagen Group performs on the basis of systematic methods. The "DCI" calculation methodology is continuously adapted.

NATURE: Our Path to Sustainable Mobility

Objectives

Near term targets

- Use phase emissions of our vehicles to be reduced by 30% compared to 2018 by 2030[1]
- Ambition level for scope 1-2 is aligned with a 1.5 °C decarbonization pathway
- Reduction measures credited only

Long term ambitions

- Aspiring to operate all factories net carbon neutral by 2040
- The Volkswagen Group aims to achieve net carbon neutrality by 2050
- >-90% Reduction measures & avoidance

[1]Certified by the Science Based Target initiative, use phase emissions reduction certified

EU Taxonomy

Introduction to the Framework[1]

Activity Eligibility

The EU Taxonomy is a classification system for sustainable economic activities.

An economic activity is considered taxonomy-eligible if it is listed in the EU Taxonomy and can therefore potentially contribute to realizing at least one of the following six environmental objectives:

1 | Climate change mitigation

2 | Climate change adaptation

3 | Sustainable use and protection of water and marine resources

4 | Transition to a circular economy

5 | Pollution prevention and control

6 | Protection and restoration of biodiversity and ecosystems.

Activity Conditions

An activity is only considered environmentally sustainable, i.e. taxonomy-aligned, if it meets all three of the following conditions:

1 | The activity makes a substantial contribution to one of the environmental objectives by meeting the screening criteria defined for this economic activity, e.g. level of CO_2 emissions for the climate change mitigation environmental objective. We are committed to the Paris Climate Agreement and align our own activities with the 1.5 °C goal. It is our aim to be a net carbon-neutral company by 2050.

2 | The activity meets the Do-No-Significant-Harm (DNSH) criteria defined for this economic activity. These are designed to prevent significant harm to one or more of the other environmental objectives, e.g. from the production process or by the product.

3 | The activity is carried out in compliance with the minimum safeguards, which apply to all economic activities and relate primarily to human rights and social and labor standards.

[1]as stated in the Group sustainability report 2023: https://www.volkswagen-group.com/en/publications/more/group-sustainability-report-2023-2674

DNSH Criteria: Implications for Substance Substitution Processes

Revised DNSH Criteria of the EU Taxonomy

In June 2023, the European Commission revised the DNSH critera of the EU Taxonomy. There is room for interpretation as to the effect that these revised requirements will have on internal processes related to the assessment of substitution options for certain substances with significant hazard potential for human health or the environment.

In the vehicle-related business, we fleshed out existing standards and processes with the aim of generally avoiding and substituting substances of relevance under the EU Taxonomy. On this basis, our analyses look at the substances contained in the vehicle –related materials and components, in order to assess whether the substances of relevance under EU Taxonomy can be substituted taking into account factors such as technical and economic criteria.

Corresponding substitution assessments have already been initiated for sites that manufacture passenger cars and light commercial vehicles and for the all-electric vehicles or components produced there, which must be carried out primarily with professional and technical support of our suppliers. In the reporting year it was possible to demonstrate compliance with the new regulations primarily for Europe. It was not possible to demonstrate that the all-electric vehicles currently manufactured and sold in North America and China comply with the new regulations.

EUR 31bn of Eligible Assets

Taxonomy aligned Capital Expenditure

EU Taxonomy Criteria

Substantial contribution

to at least one of the environmental objectives

Do no significant harm (DNSH)

to any of the other environmental objectives

Minimum safeguards

comply with OECD Guidelines, UN Guiding Principles on Business and Human Rights, ILO fundamental conventions

Economic activity is environmentally sustainable

Capital Expenditure - Extracts from Annual Reports 2022 -2024[1]

3.3 manufacture of low-carbon technologies for transport	2022	2023	2024
of which additions to capitalized development costs for BEVs	4,415	4,920	4,286
of which additions to property, plant and equipment for BEVs	5,398	6,107	5,493
Total	9,814	11,027	9,779
Total Eligible Assets	30,620		

[1]Extracts from Volkswagen Group annual reports, numbers in €m
Note: All figures shown are rounded, so minor discrepancies may arise from addition of these amounts.

Extract of the Green Finance Framework 2022

EU Taxonomy aligned

VW Group has established processes for **EU taxonomy reporting** (Article 8).

This report applies the EU Taxonomy Regulation including:

- ✓ **EU Environmental Objectives, the**
- ✓ **Technical Screening Criteria (TSC), the**
- ✓ **Do No Significant Harm (DNSH) criteria and**
- ✓ **Minimum Social Safeguard requirements**

Third-Party Review

Volkswagen Group's EU taxonomy reporting (Article 8) will be **externally audited** on a **reasonable assurance basis**, as it is part of the Group Management Report. Given that the Eligible Green Portfolio **only** consists of **EU taxonomy aligned capital expenditures**, it will have been subject to this audit process.

Eligible Assets

ICMA Green Bond Principles Eligible Green Project Category: Clean Transportation

Substantial contribution to Environmental Objective: Climate Change Mitigation

United Nation Sustainable Development Goals: 9.1, 9.5, 11.6, 13.1

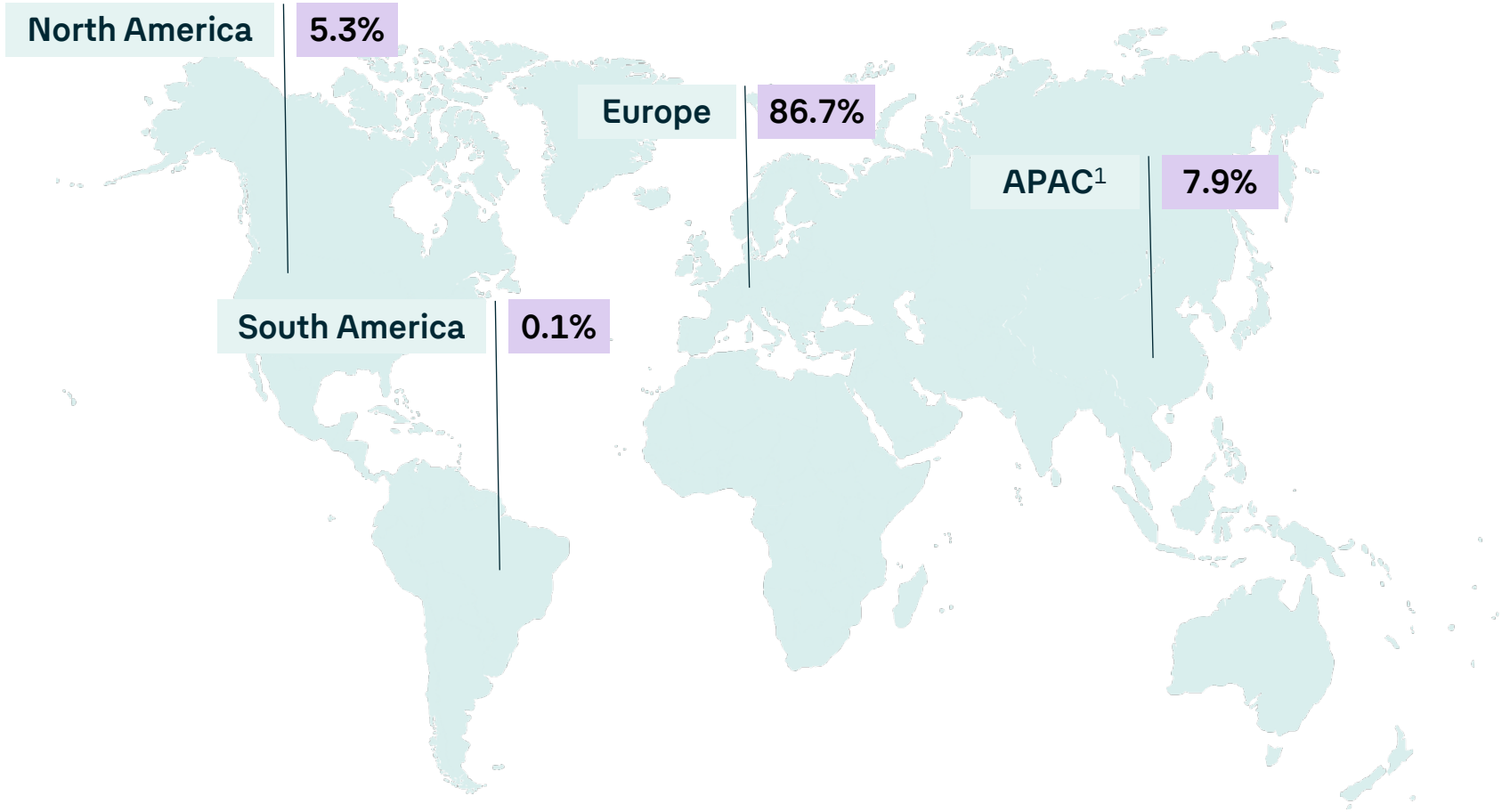
Economic activity EU taxonomy	Allocation in the Volkswagen Group	Additional criteria and information on the Eligible Green Portfolio
3.3 Manufacture of low-carbon technologies for transport	Vehicle-related business	IFRS accounted additions to capitalized development costs[1] for the BEVs (Battery Electric Vehicles) and, the IFRS accounted additions to property, plant and equipment[2] for BEVs

Exclusions	× plug-in hybrid electric vehicles (PHEVs) × vehicles with combustion engines

[1]Include all direct and indirect costs that are directly attributable to the development process (as defined in the notes to the Consolidated Financial Statements of the Annual Report)
[2]Such as buildings, site improvements, technical equipment and machinery or other equipment and operating equipment, including special tools (as defined in the notes to the Consolidated Financial Statements of the Annual Report)

Taxonomy Aligned Capital Expenditure from 2022-2024

Allocation by Region



[1]Including China

Note: All figures shown are rounded, so minor discrepancies may arise from addition of these amounts.

Our Automotive Green Finance Portfolio

Fully allocated towards Eligible Assets/Projects in line with the lookback period 2022-24[1]

ISIN	Framework	Portfolio Allocation	Issuance Date	Due Date	Coupon (%)	Amount (m)
XS2604697891	2022	2022	23.03.2023	29.03.2026	3.875	1,000
XS2604699327	2022	2022	23.03.2023	29.03.2029	4.250	750
XS2675884576	2022	2022	29.08.2023	perpetual	7.500	1,000
XS2675884733	2022	2022	29.08.2023	perpetual	7.875	750
XS2794650833	2022	2023	25.03.2024	27.03.2026	3ME+0.650	500
XS2880093765	2022	2023	14.08.2024	14.08.2026	3ME+0.550	500
Credit Financing	2022	2023	11.02.2025	11.02.2028	Undisclosed	1,000
XS3071332962	2022	2023	15.05.2025	perpetual	5.500	750
XS3071335478	2022	2024	15.05.2025	perpetual	6.000	1,150
XS3083232002	2022	2024	30.05.2025	30.05.2030	3ME+0.700	400
XS3171593661	2022	2024	02.09.2025	02.09.2035	4.125	500

Portfolio Utilization

Total Portfolio Utilization 2022-2024 (m)

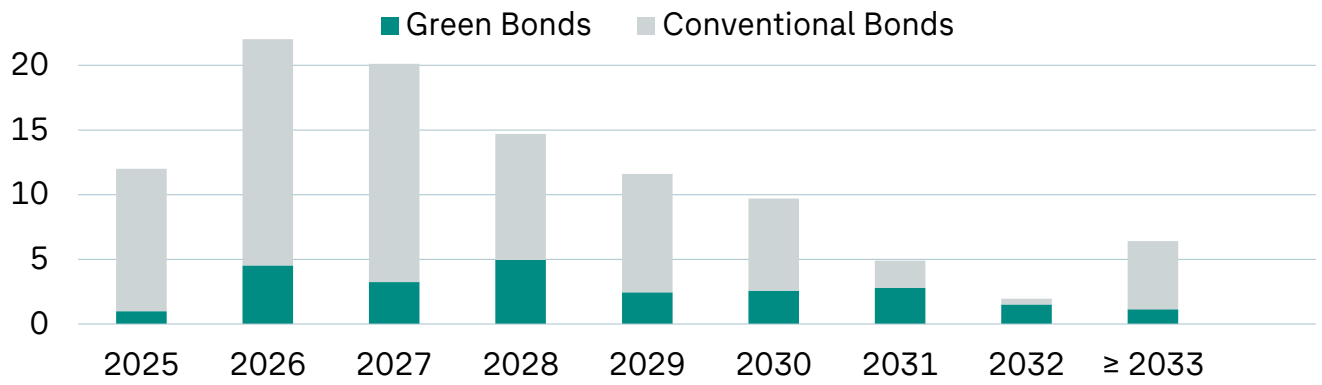
Portfolio	Utilized	Left
30,620	8,300	22,320

[1]An overview of all bonds in the Green Bonds portfolio is shown in the appendix

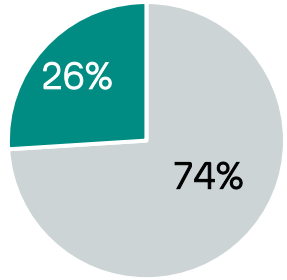
Utilized Portfolio Remaining Portfolio

Volkswagen Group is a well-established Issuer in the Green Bond Market

Bond Maturity Profile[1] (EUR bn equivalent)

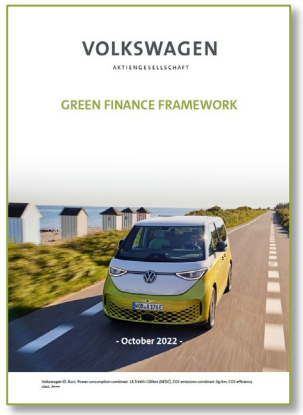


Share of Green Bonds[1]

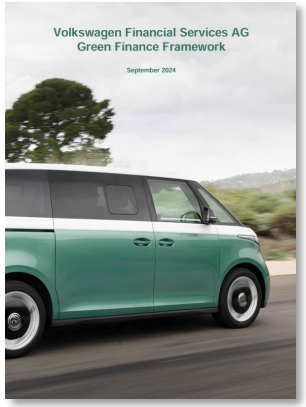


Target 2030: at least **30%** of our outstanding bond volume through **green bonds**[2]

Further Information on Volkswagen's Green Bonds



Volkswagen Group - Green Finance Framework 2022
volkswagen-group.com



Volkswagen Financial Services - Green Finance Framework
vwfs.com

www.volkswagen-group.com > Investors > Fixed Income> Green Finance

[1] Includes all outstanding bonds from the Volkswagen Automotive Division (hybrids shown on first call dates) and Financial Services Division, as of 06/25
[2] target based on the current EU Taxonomy framework

Life Cycle Assessment

Methods and independent verification

Life Cycle Assessment (LCA) based on DIN EN ISO 14040 and DIN EN ISO 14044

We are currently particularly observing the global warming potential as impact category that converts certain environmental impacts into CO_2 equivalents. Volkswagen AG commissioned TÜV NORD CERT Prüf- und Umweltgutachtergesellschaft mbH as an independent external body to carry out the critical review of this LCA study in accordance with the applicable standards DIN EN ISO 14040 and DIN EN ISO 14044. In accordance with the standard, the manufacturing phase from raw material extraction, the use phase comprising passenger transportation over 200,000 km in the WLTP driving cycle and the dismantling for recycling (without battery system) were used as framework. The environmental impacts were assessed via a special software including a database with average upstream chain values. For selected parts like the battery cells separate analyses were carried out.

With regard to the state of the art of LCAs, it should be noted that the calculation methods for LCAs in the automotive industry are subject to constant further development. Amongst others generic data and assumptions are increasingly being replaced by vehicle- and company-specific data, thus future calculations may lead to significant deviations from previous LCA values. Therefore LCAs are to be understood as a status at the time of execution (snapshot of the respective assumptions), do not represent a guaranteed product property in a legal sense and are not suitable for comparisons with LCAs from other car manufacturers. Respective harmonizing EU standards are expected to be published at the end of 2025.

Example of ID.4 and Tiguan LCA Comparison
CO_2e-emissions by life cycle phases

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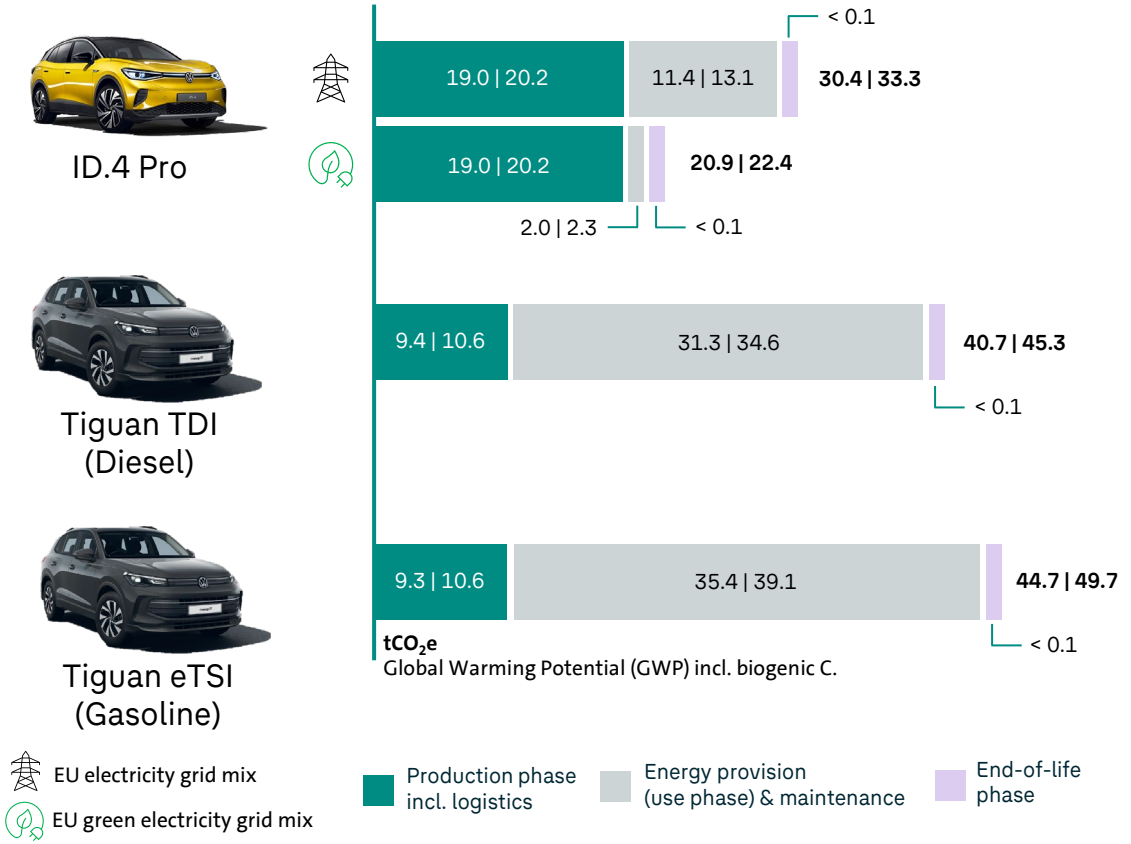
Overview LCA ID.4 Pro & Tiguan

	ID.4 Pro 210 kW 82 kWh[3]	Tiguan 2.0 TDI 110 kW[4] DSG	Tiguan 1.5 eTSI 110 kW[5] DSG
Configurations[1]	standard (std.) | maximum (max.), market Germany, MY 24		
Functional unit	200,000 km passenger transportation in WLTP test cycle		
System boundaries	production in Europe (not site-specific)		
	avg. logistics Zwickau & Emden	avg. logistics Wolfsburg	
WLTP energy / fuel consumption[2]	16.0 | 18.4 kWh per 100 km	5.3 | 5.8 liter per 100 km	6.2 | 6.8 liter per 100 km
Maintenance	tires, brake pads and disks, starter batteries, wiper blades, additionally for Tiguan engine oil and AdBlue in case of TDI		
End-of-life phase	dismantling (without battery), no credits for recovery (cut-off)		
Critical Review	TÜV NORD CERT, Audit Report No. 3535 7825		

Comparison of CO_2e-emissions (std. | max.)



All figures shown in the report are rounded, minor discrepancies may arise from addition of these amounts

[1]standard configuration: standard equipment in representative line | maximum configuration: one feasible parameter set for additional equipment for maximum weight [2]values rounded to first decimal place

Information in accordance with 1999/94/EC for the German market as of May 2025: [3]energy consumption combined 17.4 - 15.7 kWh/100 km; CO_2 emissions combined 0 g/km; CO_2 class: A; [4]fuel consumption combined 5.8 - 5.3 l/100 km; CO_2 emissions combined 153 - 139 g/km; CO_2 class: E; [5]fuel consumption combined 6.5 - 5.8 l/100 km; CO_2 emissions combined 148 - 133 g/km; CO_2 classes: E-D; specific models from model year 2024 with different consumption value spans used in the LCA calculation are no longer available for sale

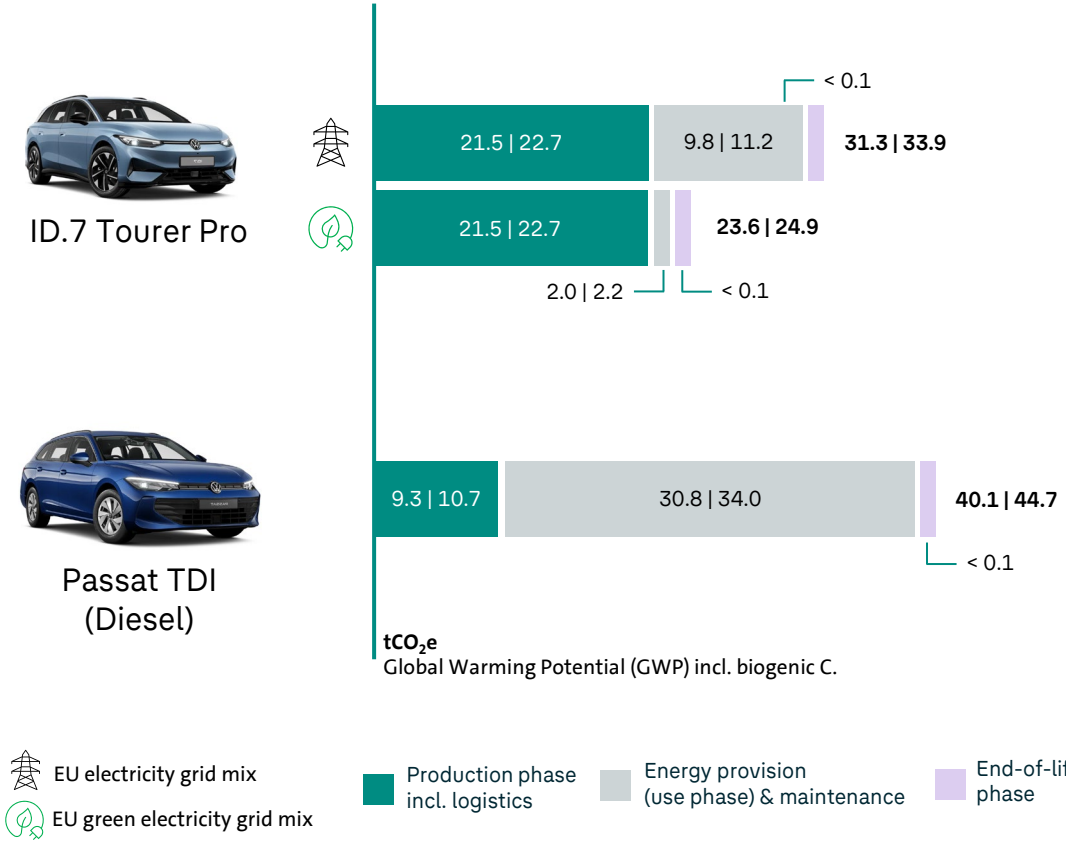
Example of ID.7 Tourer and Passat LCA Comparison
CO_2e-emissions by life cycle phases

VOLKSWAGEN GROUP

Overview LCA ID.7 Tourer Pro & Passat

	ID.7 Tourer Pro 210 kW 82 kWh[3]	Passat 2.0 TDI 110 kW[4] DSG
Configurations[1]	standard (std.) | maximum (max.), market Germany, MY 24	
Functional unit	200,000 km passenger transportation in WLTP test cycle	
System boundaries	production in Europe (not site-specific)	
	avg. logistics Emden	avg. logistics Bratislava
WLTP energy / fuel consumption[2]	14.5 | 16.8 kWh per 100 km	4.9 | 5.4 liter per 100 km
Maintenance	tires, brake pads and disks, starter batteries, wiper blades, additionally for Passat engine oil and AdBlue	
End-of-life phase	dismantling (without battery), no credits for recovery (cut-off)	
Critical Review	TÜV NORD CERT, Audit Report No. 3539 8485	

Comparison of CO_2e-emissions (std. | max.)



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[1]standard configuration: standard equipment in representative line | maximum configuration: one feasible parameter set for additional equipment for maximum weight [2]values rounded to first decimal place

Information in accordance with 1999/94/EC for the German market as of May 2025: [3]energy consumption combined 16.5 - 14.4 kWh/100 km; CO_2 emissions combined 0 g/km; CO_2 class: A; [4]fuel consumption combined 5.4 - 4.9 l/100 km; CO_2 emissions combined 143 - 130 g/km; CO_2 class: E-D; specific models from model year 2024 with different consumption value spans used in the LCA calculation are no longer available for sale

Impact Reporting based on ID.4 and ID.7

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Clean Transportation Portfolios	Signed Amount in EUR bn	Share of Total Project Financing	Eligibility for Green Finance Instruments	Allocated Amount in EUR bn	Potentially saved CO_2 emissions over life cycle (200,000km) in t CO_2e[1]	Number of delivered cars in the EU including the UK, Norway and Iceland	Calculated potentially avoided CO_2 emissions over life cycle (200,000km) in t CO_2e
	a/	b/		c/	d/		d/
Projects related to the manufacture of electric vehicles							
2023 (ID.4)	11,027	100%	100%	0.50	10.3	85,714	**882,854**
2024 (ID.4)	9,379	100%	100%	0.40	10.3	64,443	**663,763**
2024 (ID.7)				1.65	8.8	32,262	**283,906**
Total							**1,830,523**

Portfolio date: 2023 & 2024

b/ This is the share of the total project cost that is financed

c/ This represents the amount of green debt instruments proceeds that has been allocated for disbursements to the portfolio

d/ Eligible Categories impact indicators

Vehicle bases:

ID.4 Pro (standard configuration) and Tiguan TDI (Diesel, standard configuration), both A-Segment with similar dimensions, comparable purpose and usability, both produced mainly in Europe

ID.7 Tourer Pro (standard configuration) and Passat TDI (Diesel, standard configuration), both B-Segment with similar dimensions, comparable purpose and usability, both produced mainly in Europe

comparisons in accordance with requirements of the standards DIN EN ISO 14040 and DIN EN ISO 14044 for comparative LCAs (critical reviews by TÜV NORD CERT)

[1]impact of electricity grid mixes in Norway and Iceland not considered

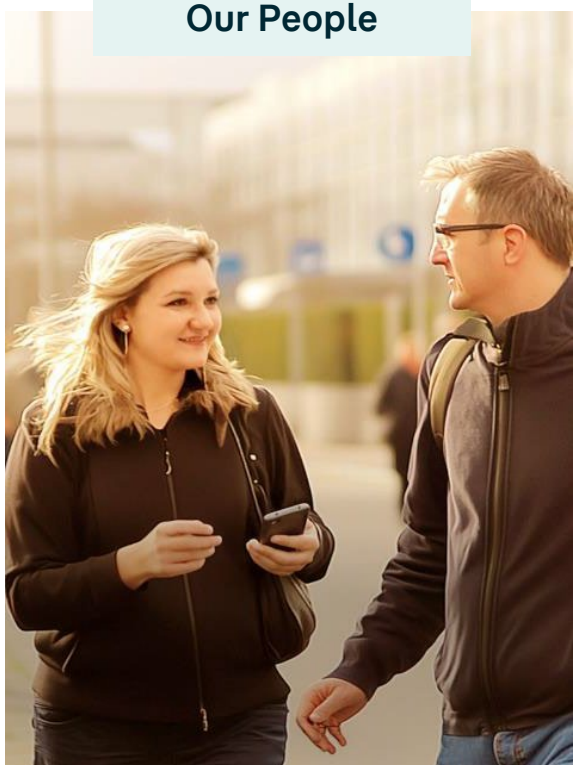
https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/Handbook-Harmonized-Framework-for-Impact-Reporting-December-2020-151220.pdf

VOLKSWAGEN GROUP

Impact-Driven Ambition towards Sustainable Mobility

Nature

Our People



Society

Business

Achieved notable **progress in the TOP KPI set**

Integration into **The Group Strategy**

Strong commitment to our strategy and framework

VOLKSWAGEN GROUP

Overview about Targets, TOP KPIs and Indicators

	Target	TOP KPI		Year	Quanti.	Quanti. Performance (FY2023)	Quanti. Performance (FY2024)	Further Info
	The Volkswagen Group wants to become a net-carbon-neutral company.	Reduction of CO_{2eq} Inventory	Scope 1+2	2030	-50%	-33.7%[2]	-51%[2]	Carbon Neutrality in 2040 (-90%)
			Scope 3 Cat.11	2030	-30%	-10.8%[3,4]	-11.3%[3,4]	Carbon Neutrality in 2050 (-90%)
	The Volkswagen Group is working to continuously reduce our demand of primary resources.	Share of Circular Materials		2040	40%[1]	on track	12.5-26.2%	Reference: body weight for EU vehicles
	The Volkswagen Group supports biodiversity.	Biodiversity-Index						KPI in development with base year 2025
	The Volkswagen Group fosters a diverse, inclusive, and holistic non-discriminatory culture.	Proportion of diversity in management[5]	Women	2025	20.2%	19.2%	19.9%	Status Annual Report 2024
			Internationalization	2025	25%	25.6%	29.1%	
	The Volkswagen Group wants to be a unique employer leading teams to success.	Ø Qualification hours per employee		2030	30h	22.1h/ employee	20.8h/ employee	The baseline value is 22.3 hours and is the average for the years 2015 to 2019.
	The Volkswagen Group stands for excellent health and safety at work.	Lost Time Injury Frequency Rate		2040	< 1	3.6	6.4[6]	Value per 1 million hours worked
	The Volkswagen Group shapes responsible and sustainable supply chains.	Sustainability Performance of supplier in S-Rating		2040	> 95%	79%	83%	Revenue percentage of direct suppliers with a positive S rating in total procurement volume
	The Volkswagen Group is a reliable partner.	Global Reputation KPI						KPI will be published based on revised reputation study in 2025
	The Volkswagen Group increases the positive social impact of its actions.	Social impact by donations and projects					> 60 Mio € > 200 projects	Strategic target in development
	The Volkswagen Group identifies and promotes sustainability-related business areas.	Revenues from sustainable business models						KPI will be published with base year 2025
		Share of BEV		2030	50%	8.3%	8.3%	Brand- and regional specific targets
	The Volkswagen Group strengthens and intensifies sustainable financing.	Share of Green Bonds		2030 2040	30% 50%	13.3%[6]	23%[7]	Excluding Porsche AG & TRATON SE

[1] Ambition 2040 (world excl. China) for vehicle projects with SOP in 2040 and beyond [2] absolute reduction target [3] intensity target measured per vehicle km [4] based on assumptions and information from markets EU+3, US, CN; value may be subject to change with base year recalculation process [see Group Annual Report 2024, p. 291]; [5] Diversity-Index with the Sub-KPIs Women in Management and Internationalization in Top Management; [6] new scope and metric in 2024; [7] implicit disclosed; point of reference: 11.03.2025

ESG Ratings: Performance Trends and Ambition Levels 2030

ESG RATING[1]	2020	2023	2024	Trend since 2020	Ambition Level 2030
MSCI	CCC	B	B	↗	Improve rating level
SUSTAINALYTICS	41.1 Severe risk	26.4 Medium risk	26.8 Medium risk	↗	Improve "Medium risk"
ISS ESG	C	C+ Prime[2] status	C+ Prime status	↗	Maintain "Prime" status

[1] MSCI scale: CCC | B | BB | BBB | A | AA | AAA, Sustainalytics scale: the lower, the better; negl (0-10) | low (10-20) | med (20-30) | high (30-40) | severe 40+, ISS scale: A+ to D-; [2] "Prime" marks best result as fulfillment of sector specific performance requirements

Our Automotive Green Finance Portfolio

Entire Portfolio

ISIN	Framework	Portfolio Allocation	Issuance Date	Due Date	Coupon (%)	Amount (m)
XS2234567233	2020	2017 | 2018 | 2019	23.09.2020	22.09.2028	0.875	1,250
XS2234567662	2020	2019	23.09.2020	23.09.2032	1.250	750
XS2491738352	2020	2019 | 2020	21.06.2022	29.03.2025	3.125	750
XS2491738949	2020	2020	21.06.2022	28.09.2027	3.750	750
XS2554487905	2022	2021	07.11.2022	15.11.2025	4.125	1,000
XS2554488978	2022	2021	07.11.2022	15.02.2028	4.250	750
XS2554489513	2022	2021	07.11.2022	15.05.2030	4.375	750
XS2604697891	2022	2022	23.03.2023	29.03.2026	3.875	1,000
XS2604699327	2022	2022	23.03.2023	29.03.2029	4.250	750
XS2675884576	2022	2022	29.08.2023	perpetual	7.500	1,000
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XS2794650833	2022	2023	25.03.2024	27.03.2026	3ME+0.650	500
XS2880093765	2022	2023	14.08.2024	14.08.2026	3ME+0.550	500
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XS3083232002	2022	2024	30.05.2025	30.05.2030	3ME+0.700	400
XS3171593661	2022	2024	02.09.2025	02.09.2035	4.125	500

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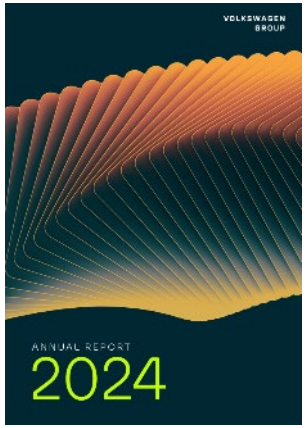
Further Information available on our website…

ESG Conference 2025

We regularly update on the progress of our sustainability strategy. In 2025, the focus topics were Just Transition and Cyber Security.

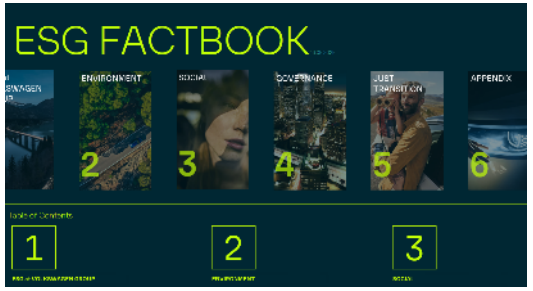


Sustainability Report 2024

The report is part of the annual report start reading p 228 ff.

Progress Report 2024

Key insights into our ESG performance.



ESG Factbook and PAI Indicators

The ESG Factbook focuses on providing both quantitative and qualitative references across the core dimensions of Volkswagen Group's ESG sections.

ESG Controversies

Here we actively report on controversies in a factual and transparent manner.

…to enhance transparency for our stakeholders

ID.4 and Tiguan
LCA methodology

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Software, Data Basis and Scope

Software
- Sphera LCA for Experts version 10.7.1.28

LCA database and data sets
- Sphera LEAD database content version 2023.2 with extension databases and data-on-demand datasets, respective VW Group mapping list
- VW Group datasets: final assembly, paint shop, press-quenched steel, tires, vehicle windows, recovery, printed circuit boards, high-voltage battery cell
- Logistics via VW logistic system (only GWP)

Calculation Rules
- DIN EN ISO 14040/44
- VW Group LCA Guidelines version 2.0 and VW Group LCA Manual version 8.0

Scope
- According to the life cycle approach the system boundaries comprise the entire product life span (from production to use phase and end-of-life). Emissions from further scope 3 categories like business travel, employee commuting, franchises etc. as defined in the greenhouse gas protocol are not covered and are considered for the calculation of the VW group KPI “Decarbonization Index”.

Input variables

Production phase
- Vehicle configurations in dominant market with standard equipment in representative line and with one feasible parameter set for additional equipment for maximum weight
- Supply chain and in-house production in Europe (not site-specific)
- Battery: one traction battery (if applicable) covering the functional unit
- If applicable inclusion of reduction measures on part level confirmed by respective validation reports and validity statements

Use Phase
- Energy and fuel provision: European electricity, gasoline and diesel datasets of 2019 (the most current data available in the applied Sphera LEAD database)
- Energy and fuel consumption: Worldwide Harmonized Light Vehicles Test Procedure (WLTP) for 200,000 km
- Maintenance: tires, brake pads and disks, starter batteries, wiper blades, if applicable engine oil and AdBlue

End-of-life
- Generic vehicle segment specific model for dismantling without battery system and without credits for recovery (cut-off approach)

Verification

- Critical Review by TÜV NORD CERT: validity statement from Audit Report No. 3535 7825

With regard to the state of the art of LCAs, it should be noted that the calculation methods for LCAs in the automotive industry are subject to constant further development. Amongst others generic data and assumptions are increasingly being replaced by vehicle- and company-specific data, thus future calculations may lead to significant deviations from previous LCA values. Therefore LCAs are to be understood as a status at the time of execution (snapshot of the respective assumptions), do not represent a guaranteed product property in a legal sense and are not suitable for comparisons with LCAs from other car manufacturers. Respective harmonizing EU standards are expected to be published at the end of 2025.

ID.7 and Passat
LCA methodology

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Software, Data Basis and Scope

Software
- Sphera LCA for Experts version 10.8.0.14

LCA database and data sets
- Sphera LEAD database content version 2024.1 with extension databases and data-on-demand datasets, respective VW Group mapping list
- VW Group datasets: final assembly, paint shop, press-quenched steel, tires, vehicle windows, recovery, printed circuit boards, high-voltage battery cell
- Logistics via VW logistic system (only GWP)

Calculation Rules
- DIN EN ISO 14040/44
- VW Group LCA Guidelines version 3.0 and VW Group LCA Manual version 9.0

Scope
- According to the life cycle approach the system boundaries comprise the entire product life span (from production to use phase and end-of-life). Emissions from further scope 3 categories like business travel, employee commuting, franchises etc. as defined in the greenhouse gas protocol are not covered and are considered for the calculation of the VW group KPI “Decarbonization Index”.

Input variables

Production phase
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- Energy and fuel provision: European electricity, gasoline and diesel datasets of 2020 (the most current data available in the applied Sphera LEAD database)
- Energy and fuel consumption: Worldwide Harmonized Light Vehicles Test Procedure (WLTP) for 200,000 km
- Maintenance: tires, brake pads and disks, starter batteries, wiper blades, if applicable engine oil and AdBlue

End-of-life
- Generic vehicle segment specific model for dismantling without battery system and without credits for recovery (cut-off approach)

Verification

- Critical Review by TÜV NORD CERT: validity statement from Audit Report No. 3539 8485

With regard to the state of the art of LCAs, it should be noted that the calculation methods for LCAs in the automotive industry are subject to constant further development. Amongst others generic data and assumptions are increasingly being replaced by vehicle- and company-specific data, thus future calculations may lead to significant deviations from previous LCA values. Therefore LCAs are to be understood as a status at the time of execution (snapshot of the respective assumptions), do not represent a guaranteed product property in a legal sense and are not suitable for comparisons with LCAs from other car manufacturers. Respective harmonizing EU standards are expected to be published at the end of 2025.

ID.4, ID.7, Tiguan and Passat
LCA methodology - glossary

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CML methodology and IPCC methodology
The Life Cycle Impact Assessment (LCIA) and the characterization model for the ID.4 and the Tiguan LCA are based on the CML methodology as of August 2016. For the ID.7 and the Passat LCA the more recent IPCC AR 6 methodology is applied. The IPCC AR6 is the sixth major climate assessment report, developed over several years by scientists worldwide and released between 2021 and 2023. The respective methodology and its characterization model for the assessment of environmental impact potentials thus incorporates current insights into atmospheric chemistry, radiative forcing, and climate feedbacks.

Critical Review
Process described in ISO 14044 intended to ensure consistency between a life cycle assessment and the principles and requirements of the International Standards on life cycle assessment as described in ISO 14040, carried out by independent experts.

Cut-off approach
For the secondary materials emerging from vehicle recovery processes at the end of life, no credits are issued within the life cycle assessment. Only the expenditures and emissions of the recovery processes are considered. For vehicles with a high-voltage battery, the end of life of the battery including thermal deactivation and shredding is not assessed.

Global Warming Potential (GWP)
The global warming potential describes the emission of greenhouse gases, which lead to an increase of the heat absorption of solar radiation within the atmosphere and thus can contribute to climate change, e.g. an increase of global average temperatures. The reference substance for the global warming potential is carbon dioxide. All other greenhouse gases (e. g. CH_4, N_2O, SF_6) are projected to carbon dioxide in terms of their impact on global warming (CO_2 equivalents or CO_2e). GWP values including biogenic carbon (biogenic C) basically consider the uptake of greenhouse gases from the atmosphere by respective processes.

Greenhouse Gas Protocol (GHG Protocol)
A partnership between the World Resources Institute and the World Business Council for Sustainable Development providing accounting and reporting standards, sector guidance and calculation tools for emissions reporting. It establishes a comprehensive, global, standardized framework for measuring and managing emissions and divides emissions into three scopes: scope 1 - direct GHG emissions (of company), scope 2 - energy related indirect GHG emissions, scope 3 - other indirect GHG emissions

ISO 14040/44
ISO 14040 and ISO 14044 define the standard for an ISO-compliant Life Cycle Assessment (LCA) and respective comparative LCAs. ISO 14040 provides the 'principles and framework' of the standard, while ISO 14044 provides an outline of the 'requirements and guidelines'.

Life Cycle Assessment (LCA)
LCA addresses the environmental aspects and potential environmental impacts (e.g. use of resources and environmental consequences of releases) throughout a product's life cycle from raw material acquisition through production, use and end-of-life treatment (i.e. cradle-to-grave). An LCA study consists of the phases (1) goal and scope definition, (2) inventory analysis, (3) impact assessment and (4) interpretation.

Sphera LCA for Experts
The software LCA for Experts (common name: GaBi, "Ganzheitliche Bilanzierung") from Sphera is a LCA modelling and reporting application. The content databases include many raw materials and processes in every phase from extraction to end-of-life across the supply chain.

Worldwide Harmonized Light Vehicles Test Procedure (WLTP)
The WLTP is a globally harmonized standard for determining the levels of pollutants, CO_2 emissions and fuel consumption of traditional and hybrid cars, as well as the range of fully electric vehicles.

Information in accordance with 1999/94/EC:

The figures for fuel consumption, power consumption, CO_2 emissions and electric range were determined in accordance with the legally required "Worldwide Harmonized Light Vehicles Test Procedure" (WLTP) in accordance with Regulation (EC) 715/2007. Additional equipment and accessories (add-on parts, tyre format, etc.) can change relevant vehicle parameters, such as weight, rolling resistance and aerodynamics, and influence a vehicle's fuel consumption, power consumption, CO_2 emissions, electric range and mileage values in addition to weather and traffic conditions as well as individual driving behaviour.

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