CREDIT OPINION
24 March 2025

Update

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RATINGS

Volkswagen Aktiengesellschaft

Domicile	Wolfsburg, Germany
Long Term Rating	Baa1
Type	LT Issuer Rating
Outlook	Stable

Please see the ratings section at the end of this report for more information. The ratings and outlook shown reflect information as of the publication date.

Contacts

Perrine Bajolle +49.69.70730.902
VP-Senior Analyst
perrine.bajolle@moodys.com

Christian Hendker, CFA +49.69.70730.735
Associate Managing Director
christian.hendker@moodys.com

Jingchao Zhao, CFA +49.69.70730.812
Sr Ratings Associate
jingchao.zhao@moodys.com

Volkswagen Aktiengesellschaft

Update on Key Credit Considerations

Summary

In March 2025, we downgraded Volkswagen Aktiengesellschaft's (Volkswagen, or VW) long-term issuer rating to Baa1 from A3. The outlook was changed to stable from negative. The downgrade reflects the recent contraction in operating margin, with limited expectations of a significant recovery in the coming quarters to meet the requirements for the previous A3 rating. VW's performance will face pressure due to sector headwinds including low volume growth and continued high price pressure, challenges from the shift to zero emissions vehicles, intense competition in China, and the need for significant investments in software. Trade tensions add to the uncertainty of the outlook. In the next 12-18 months, we anticipate Moody's adjusted EBITA margin to stay around 5.5-6.0%, including €2 billion in annual restructuring costs. We also expect the Moody's adjusted free cash flow (FCF) generation to remain relatively weak.

VW's Baa1 long-term ratings are supported by its strong business profile as the second-largest global auto manufacturer with a good geographic diversification, a robust portfolio of highly recognizable brands (including Volkswagen, Audi and Porsche) and notable progress towards zero emissions vehicles. VW's balance sheet is robust, with low leverage (1.7x Moody's adjusted debt/EBITDA in 2024) and very good liquidity. This gives the company time to implement strategic shifts and manage industry challenges.

Conversely, VW's ratings are constrained by the high cyclicality of the automotive industry, declining market share in China—its largest single market, significant profitability disparity among its passenger car brands, and the weak margins at the VW brand, which are somewhat offset by stronger margins at Audi and Porsche. The company also faces the need for substantial investments to meet rising global environmental standards, transition to electric vehicles (including the EV battery business), and develop vehicle software architectures for the Western markets and China. Additionally, high governance risks under our ESG criteria, due to the organizational complexity within the group, weight on the ratings .

VW's management, which took over in 2022, has initiated strategic changes to stay competitive. These measures, provided a successful execution could support an improvement in profitability by 2026/27. One element is a new software strategy with XPeng and Rivian, which represents a move away from the expensive in-house subsidiary CARIAD, which has struggled with operational problems and ongoing losses. Another important initiative involves planned reductions in fixed costs. For instance, the agreement signed at Volkswagen AG in December 2024 aims to lower fixed costs in Germany, which have weighted on VW brand's profitability. Finally, VW's new local strategy for China aims to launch more competitive BEV and ICE models by 2026 through its local joint venture partners.

Credit strengths

» Strong business profile as the second-largest global auto manufacturer with strong market positioning

» Robust portfolio of highly recognizable brands (including Volkswagen, Audi and Porsche) and good geographic diversification

» Ability to offer attractive financing, which is a key component of VW's business model

» Relative low leverage and sizeable liquidity position

Credit challenges

» Difficult market environment for the automotive industry globally, including its high cyclicality and a highly competitive market environment, including China, where VW has lost market share

» Strong divergence in profitability across passenger car brands, especially weak profitability at the VW brand

» Need for high investments to cope with stricter emission regulation, to develop and produce alternative fuel vehicles (including BEVs) and a group-wide vehicle software architecture that enables connectivity, driving assistance and autonomous driving features

» Corporate governance issues (according to Moody's ESG criteria), including highly complex group structure and history of high management turnover

Rating outlook

The stable outlook reflects our expectations that despite the challenging market environment, VW will maintain, within the next 12-18 months, a Moody's adjusted EBITA margin (after restructuring expenses) of around 5.5-6.0%, a Moody's adjusted debt/EBITDA well below 2.5x and very good liquidity. Consequently, Volkswagen is solidly positioned in the Baa1 rating category.

Factors that could lead to an upgrade

Upward rating pressure could develop in case (1) Moody's adjusted EBITA margin (after restructuring) increases above 7% sustainably, (2) Moody's adjusted debt/EBITDA stays below 2x sustainably, (3) Moody's adjusted FCF/debt improves well above mid-single-digit percentages sustainably and (4) the company global market share trend stabilizes supported by a successful execution of BEV transition.

Factors that could lead to a downgrade

Downward rating pressure could develop in case (1) Moody's adjusted EBITA margin (after restructuring) decreases below 5% for a prolonged period of time, (2) Moody's adjusted debt/EBITDA increases above 2.5x for a prolonged period of time, (3) Moody's adjusted FCF remains negative and/or liquidity weakens. Loss of global market share could add to the downward rating pressure.

Key indicators

Exhibit 1
Volkswagen Aktiengesellschaft

	2020	2021	2022	2023	2024	2025F	2026F
EBITA Margin %	6.0%	6.9%	7.5%	6.7%	5.7%	5.3%	6.0%
EBITA Margin % excl. JVs	4.5%	5.8%	6.5%	5.9%	5.5%	5.2%	5.7%
Debt / EBITDA	2.8x	2.3x	1.4x	1.6x	1.7x	1.8x	1.6x
Debt / EBITDA excl. JVs	3.2x	2.6x	1.5x	1.7x	1.8x	1.8x	1.7x
(Cash + Marketable Securities) / Debt	63.7%	69.2%	124.5%	110.4%	100.3%	98.5%	99.5%
RCF / Debt	21.1%	28.9%	14.7%	43.3%	34.7%	35.9%	39.7%
FCF / Debt	4.4%	14.8%	-17.8%	13.4%	-2.8%	-0.3%	4.6%
EBITA / Interest Expense	7.1x	9.2x	6.1x	6.6x	5.3x	4.8x	5.5x

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology. Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

Profile

Volkswagen Aktiengesellschaft, headquartered in Wolfsburg, Germany, is Europe's largest car manufacturer in terms of passenger car unit sales, with a market share of 26% in 2024[1], and one of the two largest globally, marginally below Toyota Motor Corporation (A1/P-1 positive).

VW manufactures mass-market and premium vehicles under the Volkswagen Passenger Cars, SKODA, SEAT/Cupra, Audi, Bentley, Lamborghini and Porsche (75% owned) brands, as well as commercial vehicles under the Volkswagen Commercial Vehicles brands. VW also produces trucks and buses via its publicly listed subsidiary TRATON SE (Baa2 positive, VW share 87.5%), which produces vehicles under the Scania, MAN, International Motors (f.k.a. Navistar) and VW Truck & Bus brands. In addition, VW's subsidiary Audi has a 100% stake in the premium motorcycle manufacturer, Ducati. In 2024, VW delivered 9.0 million vehicles to its customers (9.2 million in 2023). Volkswagen generates the vast majority of its unit sales in Europe (46% in 2024) as well as Asia-Pacific (35%, predominantly China), followed by North America (12%) and South America (7%).

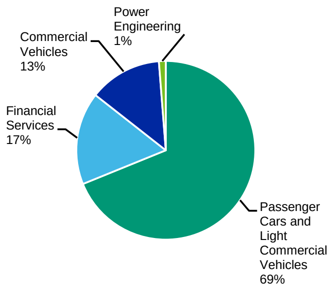
VW also provides a full range of banking, leasing, insurance and mobility services mainly through its subsidiaries Volkswagen Financial Services AG (LT issuer rating, Baa1 stable) and Volkswagen Bank GmbH (Bank Deposits A1, BCA baa3). Volkswagen Bank GmbH holds a banking licence and offers wholesale and retail banking services.

Detailed credit considerations

Robust and diversified business profile with strong positions in global automotive market, but weakening in China

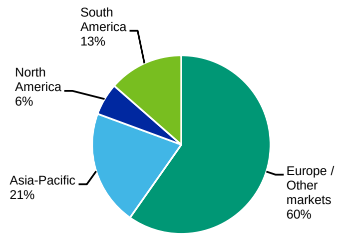
VW has a strong business profile, with leading and established market positions in Europe (number one position with 26.3% market share in 2024, well before Stellantis N.V. (Baa1 negative), with a share of 15.2%, according to ACEA), China (number two position achieved through joint ventures [JVs] with local partners, behind BYD) and Brazil (second position, behind Stellantis and just before General Motors Company (Baa2 stable). Given its broad and attractive product and service offering (including the ability to provide customer financing), as well as a strong product pipeline, we expect the company to maintain a market share in Europe at around the current level in the next 12-18 months.

Exhibit 2
Revenue by segment (2024)



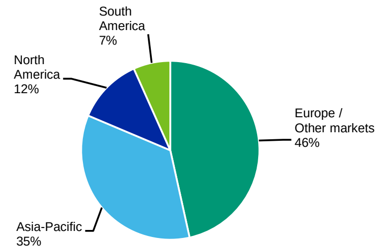
Revenue excludes revenue from Chinese joint-ventures which are not fully consolidated
Source: Company

Exhibit 3
Revenue by region (2024)



Revenue excludes revenue from Chinese joint-ventures which are not fully consolidated
Source: Company

Exhibit 4
Vehicles units sales by region (2024)



Units sales include sales from Chinese joint-ventures which are not fully consolidated
Source: Company

VW's presence in both passenger cars and commercial vehicles brings a degree of diversification to its business risk profile. VW has bundled its commercial vehicle activities under its publicly listed subsidiary TRATON SE (Baa2 positive; VW share: 87.5%), comprising Scania, MAN, International Motors and VW Truck & Bus.

VW generates its profits in China from locally produced vehicles within the local joint-ventures (€1.7 billion proportionate operating profit accounted at equity in 2024, down from €2.6 billion in 2023 and €5.2 billion at peak in 2015) and imported cars mainly from Audi and Porsche. Volkswagen's market share in China has dropped from 17.2% in 2019 to 11.1% due to the rapid adoption of New Energy Vehicles - NEVs, which include battery electric vehicles (BEVs), plug-in hybrids (PHEVs) and fuel cell electric vehicles - and the rise of local brands. NEVs now account for 40% of the market, up from 5% in 2019, while local brands' sales have surged to 65% of total passenger vehicle sales in 2024. We expect NEV adoption to continue rising, with local brands leading the market. Consequently, Volkswagen and other foreign automakers, which still rely on the declining internal combustion engine (ICE) segment, face ongoing challenges. Fierce price competition from local brands is also hurting their profits. To defend its position in China, VW unveiled a new strategy in April 2024. The company plans to localize some decision-making processes and utilize the capabilities of local joint venture partners and its new partnership with Xpeng for electronic architecture. This approach is expected to reduce time to market by 30% and make VW brands competitive in terms of costs and technology with local players in both BEV and ICE segments by 2026.

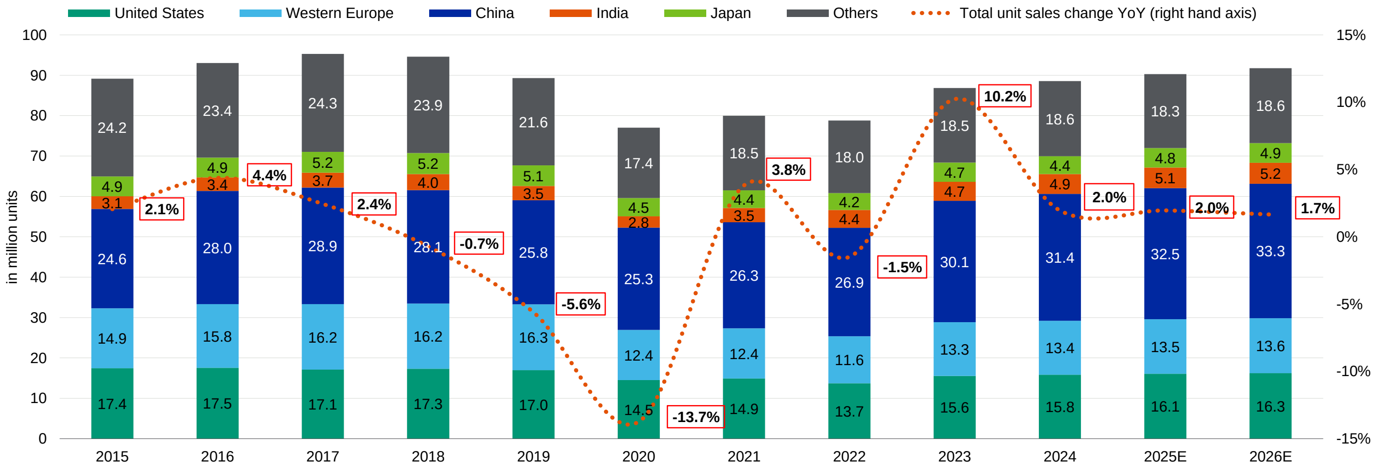
Challenging global automotive industry, which is highly cyclical and highly competitive

VW, like all major automakers, is exposed to the cyclicality of the global automotive industry. Global light vehicle sales peaked at around 95 million units in 2017-18 after several years of growth. The COVID-19 pandemic caused a 14% drop in 2020, followed by a modest recovery in 2021. In 2022, sales declined by 1.5% due to semiconductor shortages. Sales rebounded strongly in 2023 with a 10% year-on-year growth as supply constraints eased, but growth slowed to 2% last year due to reduced demand. We forecast light vehicle sales to grow another 2.0% this year, with a further 1.7% rise in 2026, tracking GDP forecasts. Our forecast does not include an escalation in global trade tensions, which would hurt sales.

Exhibit 5

Global light vehicle sales growth will grow 2.0% this year, 1.7% next year

Our projections for global light vehicle unit sales (in million units)



China unit sales represent auto sales, including those of both passenger and commercial vehicles. Starting 2019, the total number of global light vehicle excludes China exports, in line with Global Data new definition

Sources: Global Data, European Automobile Manufacturers' Association (ACEA), China Association of Automobile Manufacturers (CAAM), Korean Ministry of Trade, Industry and Energy and Moody's Ratings

In 2024, VW's unit sales dropped 2%, driven by a 10% decrease in China. The US and South America saw increases of 6% and 15%, respectively, while Europe remained flat. At the brand level, volume was flat for the core brand group, with Skoda and SEAT/CUPRA up and VW down. Audi's volume fell 12% across all regions, and Porsche saw a 3% decline, including a 30% drop in China. Audi's weak performance was attributed to a supply shortage of V6 and V8 engines early in the year and high number of model changes. Revenues of VW's automotive division declined by 0.8% last year. We expect revenue growth of 0.8% in 2025 and 1.5% in 2026, lower than company's guidance, on conservative volume growth assumption and expectation of continuous price pressure globally.

Divergence in profitability across passenger car brands, management initiatives aim at sustainably improving profitability

VW's large scale should help the group efficiently deploy resources and boost profitability through operating leverage. The valuation of derivatives has historically impacted VW's margins, on a positive or negative way, increasing its volatility. In 2024, VW transferred these derivatives largely to hedge accounting. From 2025, fluctuations in commodity prices will affect the income statement only when profits or losses are realized, with valuation effects recognized in other comprehensive income.

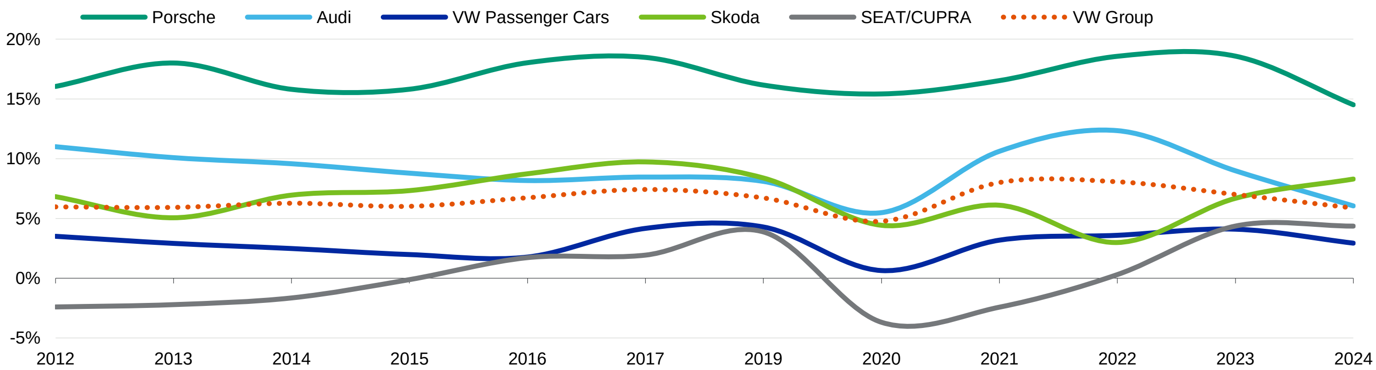
In June 2023, VW management announced a strategic plan aiming to improve the group's operating margin before special items to 8%-10% by 2027 and to 9%-11% by 2030 (from 5.9% in 2024). The plan focuses on better product positioning, reducing fixed costs, and efficiency measures. The management intends to raise the VW brand's margin to 6.5% by 2029 (from 2.9% in 2024 or 3.0% excluding restructuring and release of provisions). We note that VW has been attempting to improve the margins for the VW brand for a long time with a mixed track record so far. Execution risks are high due to the fierce competition in the automotive sector, organizational complexity of the VW group, and significant software architecture investments required.

In 2024, while they accounted only for 22% of group's unit sales, Audi and Porsche represented 45% of the group's operating profit (excluding the intercompany profit, special items and results from JVs). While VW's premium brands continue to drive earnings, higher profitability at the group's other brands is key to achieve the management goal of group's margin improvement. The group also aims to cut overhead cost, reduce its total number of model variants, and further streamline its modular architectures.

Exhibit 6

VW management targets to improve group profitability to 8-10% by 2027 from 5.9% in 2024

Reported operating margin by segment



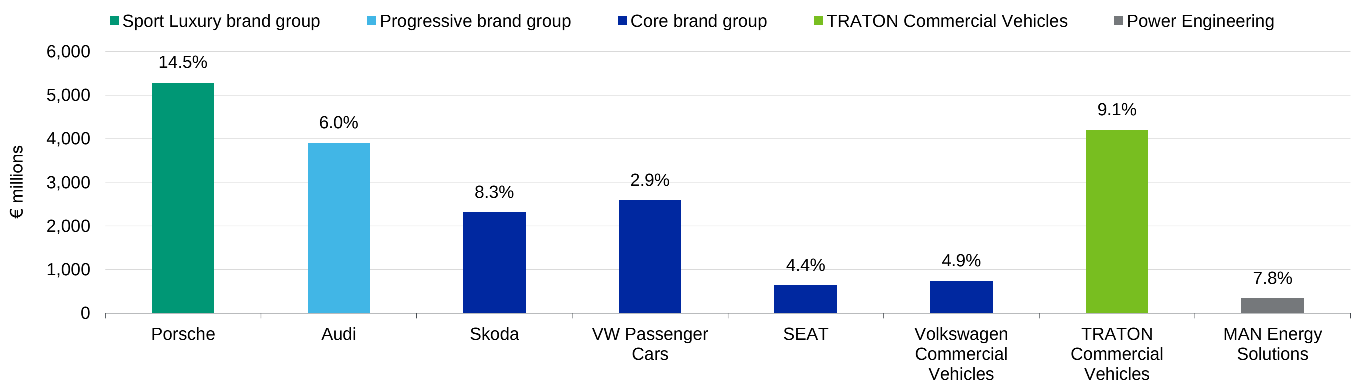
Excluding intercompany profit, special items and results from joint ventures

Source: Company filings

Exhibit 7

Sustainable improvement of the VW Passenger Cars brand profitability is key to achieving higher margins at the group level

Reported operating profit and margin by brand and business field (2024)



Excluding intercompany profit, special items and results from joint ventures. Excluding restructuring expenses, operating profit margin of Audi would be 8.5% (6.0% including restructuring). Excluding restructuring expenses and release of provisions, operating profit margin of VW Passenger Cars would be 3.0% (2.9% including both)

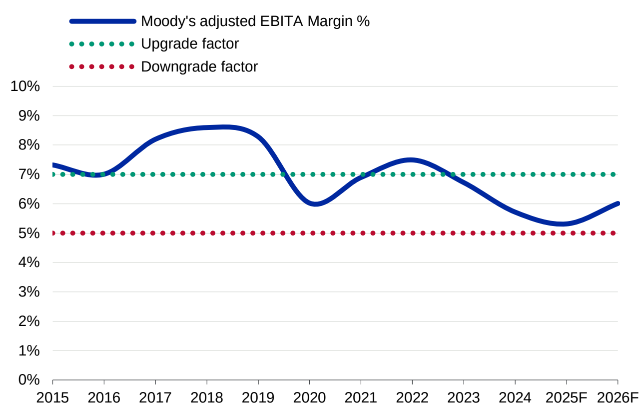
Source: Company filings

Since last year, VW has intensified its initiatives on fixed costs reduction. The agreement signed in December 2024 aims to reduce fixed costs in Germany, which have weighed on VW brand's profitability. We forecast €1 billion in cost savings from this agreement in 2025, mainly from canceled bonuses and planned wage increases. Larger cost savings towards the mid-term target of more than €4 billion per year are expected by 2027/28 through workforce and production capacity reductions. VW is also in the process of closing down its Audi plant in Brussels resulting in €1.6 billion restructuring costs booked in Q3 and Q4 2024. We forecast ongoing restructuring expenses of €2 billion per year for 2025 and 2026 on the expectation that fixed costs reduction initiatives will continue.

We anticipate that VW's operating performance will remain pressured over the next 12-18 months. We forecast a Moody's adjusted EBITA margin of 5.3% this year, down from 5.7% last year and 6.0% in 2026, including €2 billion of restructuring expenses per year (€2.1 billion in 2024 consisting of €3.1 billion of restructuring expenses and €1.0 billion of release of personnel related provisions, mainly VW AG). Sluggish volume growth, continuous price pressure globally and margin dilution impact from expected BEV volume increase will weight on margin while costs savings will provide some relief. In 2024, Moody's adjusted FCF turned negative at -€1.3 billion due to the weakening operating profit and high capex. We expect capex to reduce to €25 billion (PPE + capitalized development costs) by 2026. As a result Moody's adjusted FCF will improve to break even level in 2025 and €2 billion in 2026. This forecast includes

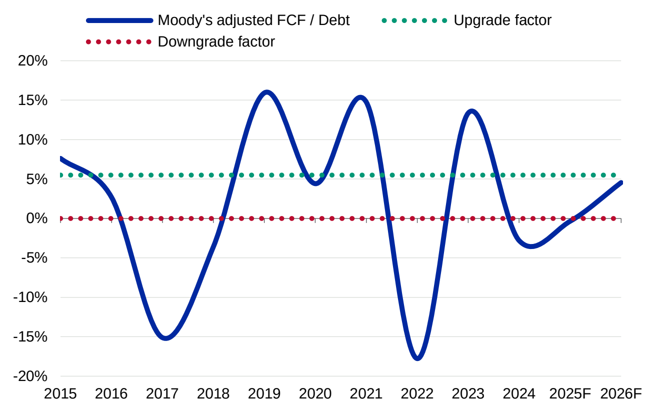
30 product launches this year, mainly at Audi and VW. While these launches constrain FCF generation, they are a key basis for Volkswagen's medium term performance improvements.

Exhibit 8
VW's margin to remain around 5.5-6.0%, in line with current Baa1 rating requirements



Source: Moody's ratings; (F) Moody's forecasts are Moody's opinion and do not represent the views of the issuer

Exhibit 9
VW's free cash flow (FCF) expected to improve on gradual capex reduction



Source: Moody's ratings; (F) Moody's forecasts are Moody's opinion and do not represent the views of the issuer

Electrification focus requires high investment but should protect market position

The transition to electric vehicles poses significant execution risks. The global automotive industry is in the early stages of a long-term shift to lower carbon emissions through improved fuel efficiency and shift to fully electric vehicles. Key risks for automakers like VW include potential market share loss, inability to earn adequate profits on electric vehicles, and manufacturing challenges due to possible constraints in the supply of critical materials

VW has invested heavily in its transition to electric vehicles, including in-house battery production through its subsidiary PowerCo. The company has accelerated EV development and production, with its share of BEVs rising from less than 1% in 2019 to 8.3% in 2024. While BEV volume decreased by 3% last year, PHEV deliveries increased by 5% to 269,622 units. Although EV adoption slowed last year, especially in Europe, it is expected to pick up this year driven by new models launches and pressure from stricter EU CO2 regulations. VW aims to increase its BEV penetration to 10-14% by 2025, with a higher share in Europe.

Battery sourcing is crucial to Volkswagen's strategy. The company currently sources from suppliers like LG Chem, Ltd.(Baa1 negative), Samsung SDI, SKI (Ba1 negative) and CATL (A3 stable). In 2022, VW founded PowerCo to manage its global battery business and reduce reliance on external suppliers. This involves significant R&D and capital spending, impacting profit margins and cash flow. PowerCo aims to meet around 50% of VW's EV battery demand by 2030. VW has announced three own battery plants in Germany, Spain, and Canada and plans to recycle up to 95% of raw materials. First cells are expected to be produced in the second half of 2025. The company also aims to develop a network of 18,000 fast-charging points in Europe with partners.

Volkswagen plans to invest €165 billion in R&D and capital spending from 2025 to 2029, averaging 12% of sales, above its usual 9% target. This includes extra front-loaded investments in competitiveness, EV batteries, and other strategic areas. The investment ratio peaked in 2024 and is expected to gradually decline to 10% of automotive revenue by 2027.

Rivian transaction highlights strategic shift of software strategy

VW's high investment spending are partly due to the need to invest in software to stay competitive. VW's subsidiary CARIAD, was founded to develop a standardized operating system for its vehicles and focuses on connectivity, infotainment, driver assistance, and autonomous driving systems. However, CARIAD faced ongoing losses and operational issues which caused delays in key model launches, particularly for Audi and Porsche.

VW's partnership with Rivian aims to enhance software development, marking a shift away from its in-house subsidiary CARIAD. The partnership includes a 50/50 joint venture and an equity investment in Rivian. The JV will develop E/E architectures and software for both partners' electric vehicles, serving VW Group in Western regions, while XPeng will handle E architecture development for VW in China. VW plans to invest $5.8 billion in Rivian and the JV by 2027, with $2.3 billion already invested in 2024. The first car on the Rivian platform, the ID1, is expected in 2027. Despite significant execution risks, we view the Rivian partnership positively as it aims to reduce software development costs and accelerate the time to market for new models.

Strong balance sheet including relatively low leverage

Since 2022, VW has maintained a Moody's adjusted gross debt/EBITDA ratio below 2.0x (1.7x in 2024), comfortably within the Baa1 rating category's upper limit of 2.5x. The pension deficit decreased from €40.1 billion in 2021 to €26.9 billion in 2024 due to higher interest rates. Pensions are the largest adjustment to VW's gross debt, which totaled €47.0 billion in 2024. VW's Moody's adjusted debt/EBITDA is expected to remain below 2x over the next 12-18 months.

IPO of Porsche led to substantial cash proceeds, but has made governance more complicated

Since September 2022, Volkswagen's previously wholly owned subsidiary Porsche AG (Porsche) has been publicly listed at the Frankfurt stock exchange. Porsche has been fully embedded in the VW Group and is a technology leader in many categories that are later rolled out to the wider VW group. Porsche's shares are split into 50% ordinary shares and 50% preference shares. 24.2% of the preference shares are owned by free float investors, and 25% plus one share of the ordinary shares are now owned by Porsche Automobil Holding SE (Porsche Holding), Volkswagen's main shareholder.

The IPO of VW's subsidiary Dr. Ing. h.c. F. Porsche AG (Porsche AG) in September 2022 and the sale of a minority stake to Porsche Holding generated approximately €19.2 billion proceeds. Even after a special dividend payout of €9.6 billion in early 2023, the transaction improved VW's financial flexibility, a credit positive. However, increased organizational complexity, cash leakage due to new minority shareholders, and the presence of minority shareholders in VW's most profitable entity are credit negative factors. Additionally, the dual role of Porsche's CEO as VW's CEO may lead to conflicts of interest. VW's debt calculation excludes Porsche Holding's €5.1 billion net debt as of September 2024, though debt service at Porsche Holding will rely mainly on dividends from VW AG and Porsche AG.

Ability to offer attractive financing is a key component of VW's business model

VW's issuer rating includes our assessment of the captive finance operations due to their key role in promoting sales and maintaining competitiveness. We calculate credit metrics excluding financial services. We analyze the finance business as a stand-alone entity, assessing potential capital or liquidity support needed in a stress scenario, and then incorporate this into VW's overall rating. In 2024, the Financial Services Division (including Volkswagen Financial Services as well as the financial services activities of Scania, International Motors and Porsche Holding Salzburg) had total assets of about €313 billion (49% of the broader group's assets) and an equity ratio of 14.4%, and generated an operating profit of €3.1 billion, down from €3.8 billion a year earlier.

Volkswagen faces residual value risk in its leasing business and indirectly through the health of its dealerships. The continued solid operating performance of VW's Financial Services division, including asset-quality, reflects the fact that VW has so far maintained good level of demand and pricing for its automotive brands. So far, residual values have not suffered significantly from the diesel-related issues and the transition to electric vehicles.

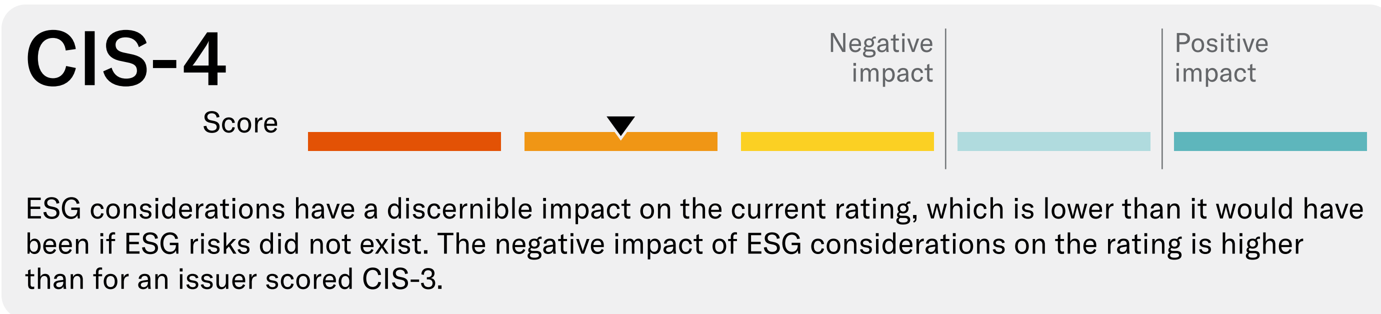
Costs related to the diesel scandal consumed substantial capital, with most payments already made

At this stage, most of the payments related to the diesel issue, totaling around €33 billion, were made in 2016-20 (€28.8 billion). In 2021 and 2022, outflows amounted only to another €1 billion each. Lawsuits in many regions worldwide are still ongoing but given VW's sizeable liquidity position, we expect that remaining outflows for the diesel issue will remain manageable, assuming that the current level of provisions is sufficient. At December 2024, provisions for legal risks related to the diesel scandal amounted to €0.6 billion and contingent liabilities relating to the diesel issue amounted to €4.0 billion, the majority of which relate to lawsuits filed by investors in Germany.

ESG considerations

Volkswagen Aktiengesellschaft's ESG credit impact score is CIS-4

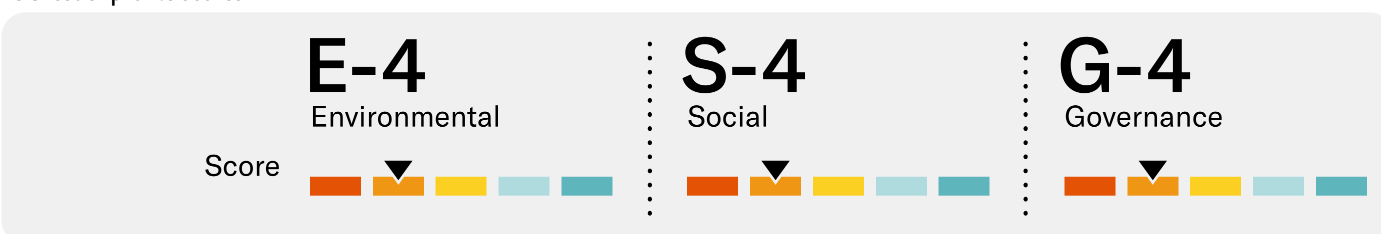
Exhibit 10
ESG credit impact score



Source: Moody's Ratings

VW's **CIS-4** indicates that the rating is lower than it would have been if ESG risk exposures did not exist. The main ESG risks relate to carbon transition and the high costs to manage it, and to company's relatively weak governance due to the organization complexity, which are both constraints to the rating.

Exhibit 11
ESG issuer profile scores



Source: Moody's Ratings

Environmental

VW's **E-4** is driven by carbon transition, which is a high risk for the global auto sector in terms of stricter environmental regulation and the trend towards low and zero emission vehicles. VW has, however, taken mitigating actions by developing and successfully launching electrified vehicles and investing sizeable amounts into future technologies, including its own battery production under its subsidiary PowerCo. VW's share of battery electric vehicles represented 8.3% of total deliveries in 2024 while the share of plug-in hybrid vehicles reached 3.0%. Since 2021, Volkswagen Group fleet CO2 emissions complied with EU targets but remained flat; further improvement needed to comply with 2025 EU CO2 regulation.

Social

VW's **S-4** is driven by high risks in three categories: Human capital risks incorporate the strong reliance on a highly skilled workforce and high strike risks, given the high degree of unionization of production workforce. Responsible production risks are also high, given the complexity of the global supply chain and very high requirements for vehicle product quality. The high risks in terms of Demographic & Societal Trends include the heightened environmental awareness among consumers and the risk that brand loyalty among younger consumers might gradually fall.

Governance

VW's **G-4** is driven by the highly complex group structure, with multiple stakeholders, including the family owners, the German State of Lower Saxony and workers unions, and the existence of minority shareholders in key businesses, like Porsche AG, TRATON SE and the JVs in China. The history of high management turnover within the group, including the early replacement of the CEO in September 2022, and the early replacement of the divisional CEO of Audi in June 2023, result in a weak management credibility and track record under Moody's ESG criteria, with the need to build credibility. In February 2025, Porsche announced the replacement of its CFO and head of sales. In September 2022, Porsche's CEO was also appointed Volkswagen's CEO, a dual role which can lead to conflicts of interests. These weaknesses are only partially mitigated by the company's conservative financial strategy and risk management.

ESG Issuer Profile Scores and Credit Impact Scores for the rated entity/transaction are available on Moodys.com. In order to view the latest scores, please click here to go to the landing page for the entity/transaction on MDC and view the ESG Scores section.

Carbon transition is Volkswagen's key environmental risk

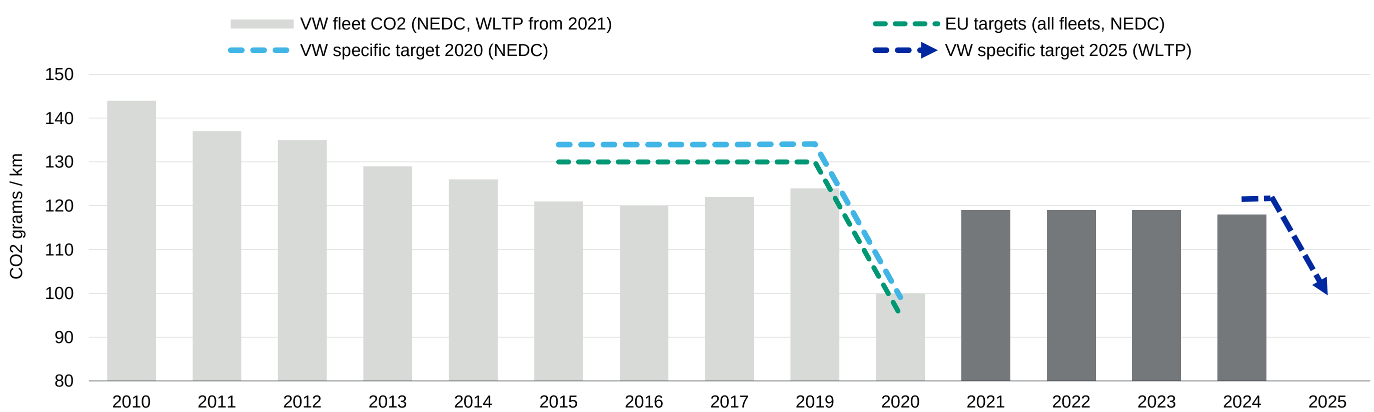
We assess Volkswagen's environmental risks as high, in line with sector-wide risks of the automotive industry (see our environmental heat map). Continued tightening of emissions standards and regulations across most major markets, because of environmental concerns, require investments into greater efficiency and electrification to maintain compliance and avoid fines or additional costs. Volkswagen, like its competitors, faces stricter CO_2 emission targets set by the EU. We expect automotive manufacturers to continue to invest substantial amounts in R&D and capital spending to meet increasingly stringent hurdles imposed by CO_2 emissions regulations worldwide, as well as electrification expectations set by governments in the major automotive markets globally.

Committed to the Paris Agreement, Volkswagen wants to become a net carbon-neutral company by 2050. By 2030, the company wants to reduce the carbon footprint of its passenger cars and light commercial vehicles by 30% per vehicle compared with 2018 without any offset measures. Within its €165 billion multi-year investment plan for capital spending and R&D, Volkswagen has allocated a significant amount into the development of BEVs.

VW reported an EU CO2 emission of 118g CO2/km for 2024, stable since 2021, versus a regulatory target of less than 122g. The EU regulatory target will be tighten as from 2025 (15% reduction versus 2021) meaning a CO2 target of less than 100g. Given the trend over the last three years, we believe that it will be difficult for VW to comply with the 2025 regulatory target without additional efforts to boost volume, for example in terms of discounts or the need to pay for CO2 credits (pooling). Reducing CO2 emissions can be achieved thanks to various measures, including the continued launch of new electrified models (both, battery electric and plug-in electric vehicles), the launch of more efficient conventional models with internal combustion engines and the termination of production of older, inefficient models. In March 2025, the European Commission's proposed an amendment to the current EU CO2 regulation, allowing automaker to meet their target over a three-year period (2025-2027) versus 2025 currently. If adopted, this could give Volkswagen more time to achieve CO2 compliance in Europe, a positive.

Exhibit 12

Volkswagen Group fleet CO_2 emissions complied with targets since 2021 but remained flat; further improvement needed for 2025



Sources: Company filings and Moody's Ratings

Liquidity analysis

In our theoretical scenario of no access to the capital markets for its manufacturing and financial services activities, Volkswagen had a coverage of more than 12 months of its corporate needs as of end December 2024. The group's liquidity position is supported by cash on balance sheet and short-term marketable securities (after a 20% haircut) of around €60 billion as of December 2024. We apply a 25% haircut on Porsche AG's cash & cash equivalents. In addition, VW has access to a significant amount of long-term committed credit facilities, totaling around €32.4 billion, out of which only €2.1 billion was drawn (as of December 2024).

Methodology and scorecard

For the ratings of VW, we have applied our Automobile Manufacturer Industry rating methodology. The scorecard-indicated outcome indicates Baa2 for FY 2024 and Baa1 for the forward-view, the latest being in line with the actual rating assigned.

Exhibit 13

Volkswagen Aktiengesellschaft

Auto Manufacturers Industry Scorecard [1][2]	Current LTM December 31 2024		Moody's 12-18 Month Forward View [3]	
	Measure	Score	Measure	Score
Factor 1: Business Profile (40%)				
a) Trend in Global Unit Share Over Three Years	Ba	Ba	Ba	Ba
b) Market Position and Product Breadth / Strength	A	A	A	A
Factor 2: Profitability And Efficiency (20%)				
a) EBITA Margin	5.7%	Ba	5.3% - 6.0%	Ba
Factor 3: Leverage And Coverage (30%)				
a) Debt / EBITDA	1.7x	A	1.6x - 1.8x	A
b) (Cash + Marketable Securities) / Debt	100.3%	A	98.5% - 99.5%	A
c) RCF / Debt	34.7%	Baa	35.9% - 39.7%	Baa
d) FCF / Debt	-2.8%	Caa	-0.3% - 4.6%	B
e) EBITA / Interest Expense	5.3x	Baa	4.8x - 5.5x	Baa
Factor 4: Financial Policy (10%)				
a) Financial Policy	A	A	A	A
Ratings				
a) Scorecard-Indicated Outcome		Baa2		Baa1
b) Actual Rating Assigned				Baa1

[1] All ratios are based on 'Adjusted' financial data and incorporate Moody's Global Standard Adjustments for Non-Financial Corporations.
[2] As of December 31 2024
[3] This represents Moodys Forward View;not the view of the issuer;and unless noted in the text,does not incorporate significant acquisitions and divestitures
Source: Moody's Financial Metrics;Moody's Projections™

Appendix

Exhibit 14

Peer comparison

Volkswagen Aktiengesellschaft

	Volkswagen Aktiengesellschaft Baa1 Stable			Toyota Motor Corporation A1 Positive			Bayerische Motoren Werke Aktiengesellschaft (P)A2 Stable			Mercedes-Benz Group AG A2 Stable			Stellantis N.V. Baa1 Negative		
	FY	FY	FY	FY	FY	FY	FY	FY	LTM	FY	FY	LTM	FY	FY	FY
(in $ millions)	Dec-22	Dec-23	Dec-24	Mar-22	Mar-23	Mar-24	Dec-22	Dec-23	Jun-24	Dec-22	Dec-23	Sep-24	Dec-22	Dec-23	Dec-24
Revenue	244,925	289,981	287,689	259,288	254,715	289,942	133,615	146,518	146,617	129,700	136,796	131,336	188,754	203,995	167,735
Total Debt	47,914	50,934	48,742	29,686	28,471	26,074	5,034	5,341	5,799	1,317	1,153	1,165	35,098	32,160	32,187
Cash + Marketable Securities	59,660	56,237	48,874	52,137	48,074	71,076	18,112	18,242	17,646	21,413	20,973	20,164	52,638	52,459	36,741
EBITA Margin	7.5%	6.7%	5.7%	11.3%	10.4%	16.1%	10.0%	10.6%	9.3%	14.5%	14.0%	10.7%	10.5%	11.9%	3.8%
EBITA / Interest Expense	6.1x	6.6x	5.3x	48.4x	35.8x	56.6x	49.8x	68.4x	51.9x	88.0x	200.1x	144.4x	11.8x	13.3x	3.1x
(Cash + Marketable Securities) / Debt	124.5%	110.4%	100.3%	175.6%	168.9%	272.6%	359.8%	341.6%	304.3%	1625.9%	1818.6%	1730.6%	150.0%	163.1%	114.1%
Debt / EBITDA	1.4x	1.6x	1.7x	0.9x	0.8x	0.5x	0.3x	0.2x	0.3x	0.1x	0.0x	0.1x	1.4x	1.1x	2.8x
FCF / Debt	-17.8%	13.4%	-2.8%	23.4%	29.1%	98.1%	-8.9%	-30.5%	-31.2%	232.7%	439.6%	297.0%	23.2%	36.8%	-29.5%
RCF / Debt	14.7%	43.3%	34.7%	76.2%	63.1%	150.1%	187.4%	229.1%	181.1%	858.8%	917.0%	627.9%	52.0%	71.7%	7.2%

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology. LTM = Last 12 months.
Source: Moody's Financial Metrics™

Exhibit 15

Moody's-adjusted debt reconciliation

Volkswagen Aktiengesellschaft

(in € millions)	2020	2021	2022	2023	2024
As reported debt	**12,831.0**	**14,402.0**	**10,918.0**	**9,409.0**	**13,210.0**
Pensions	44,853.0	40,750.0	26,916.0	29,122.0	26,916.0
Hybrid Securities	7,856.5	7,219.5	7,060.5	7,577.5	6,945.0
Moody's-adjusted debt	**65,540.5**	**62,371.5**	**44,894.5**	**46,108.5**	**47,071.0**

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology.
Source: Moody's Financial Metrics™

Exhibit 16

Moody's-adjusted EBITDA reconciliation

Volkswagen Aktiengesellschaft

(in € millions)	2020	2021	2022	2023	2024
As reported EBITDA	**28,957.0**	**34,495.0**	**38,973.0**	**40,701.0**	**38,111.0**
Pensions	(91.0)	(2.0)	22.0	(14.0)	46.0
Capital Development Costs	(6,473.0)	(7,836.0)	(9,723.0)	(11,142.0)	(10,244.0)
Interest Expense - Discounting	-	-	-	(351.0)	(613.0)
Unusual Items	900.0	(20.0)	2,676.0	-	-
Moody's-adjusted EBITDA	**23,293.0**	**26,637.0**	**31,948.0**	**29,194.0**	**27,300.0**

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology.
Source: Moody's Financial Metrics™

Exhibit 17

Overview on selected historical and forecasted Moody's-adjusted financial data

Volkswagen Aktiengesellschaft

(in € millions)	2020	2021	2022	2023	2024	2025F	2026F
INCOME STATEMENT							
Revenue	182,106	206,237	232,392	268,156	265,887	267,881	271,899
EBITA	10,966	14,221	17,412	18,025	15,197	14,234	16,341
EBITDA	23,293	26,637	31,948	29,194	27,300	26,428	28,718
BALANCE SHEET							
Cash & Cash Equivalents	41,725	43,165	55,901	50,909	47,199	46,368	46,845
Total Debt	65,541	62,372	44,895	46,109	47,071	47,071	47,071
CASH FLOW							
Capital Expenditures	(12,165)	(11,749)	(13,801)	(15,054)	(17,740)	(16,047)	(15,547)
Retained Cash Flow (RCF)	13,817	17,997	6,590	19,948	16,321	16,882	18,690
RCF / Debt	21.1%	28.9%	14.7%	43.3%	34.7%	35.9%	39.7%
Free Cash Flow (FCF)	2,893	9,205	(7,978)	6,164	(1,323)	(165)	2,143
FCF / Debt	4.4%	14.8%	-17.8%	13.4%	-2.8%	-0.3%	4.6%
PROFITABILITY							
% Change in Sales (YoY)	-14.3%	13.3%	12.7%	15.4%	-0.8%	0.8%	1.5%
EBITA Margin	6.0%	6.9%	7.5%	6.7%	5.7%	5.3%	6.0%
EBITDA Margin	12.8%	12.9%	13.7%	10.9%	10.3%	9.9%	10.6%
INTEREST COVERAGE							
EBITA / Interest Expense	7.1x	9.2x	6.1x	6.6x	5.3x	4.8x	5.5x
LEVERAGE							
Debt / EBITDA	2.8x	2.3x	1.4x	1.6x	1.7x	1.8x	1.6x
LIQUIDITY							
(Cash + Marketable Securities) / Debt	63.7%	69.2%	124.5%	110.4%	100.3%	98.5%	99.5%

All data based on adjusted financial data, which follow our Financial Statement Adjustments in the Analysis of Nonfinancial Corporations methodology. Moody's forecasts are Moody's opinion and do not represent the views of the issuer.
Sources: Moody's Financial Metrics™ and Moody's Ratings forecasts

Ratings

Exhibit 18

Category	Moody's Rating
VOLKSWAGEN AKTIENGESELLSCHAFT	
Outlook	Stable
Issuer Rating	Baa1
Sr Unsec Bank Credit Facility -Dom Curr	Baa1
Senior Unsecured MTN -Dom Curr	(P)Baa1
Commercial Paper -Dom Curr	P-2
VOLKSWAGEN FINANCIAL SERVICES N.V.	
Outlook	Stable
Bkd Senior Unsecured	Baa1
Bkd Commercial Paper	P-2
Bkd Other Short Term	(P)P-2
VOLKSWAGEN BANK GMBH	
Outlook	Negative
Bank Deposits	A1/P-1
Issuer Rating	A1
Senior Unsecured MTN	(P)A1
Subordinate MTN	(P)Baa2
Commercial Paper -Dom Curr	P-1
Other Short Term -Dom Curr	(P)P-1
VOLKSWAGEN GROUP OF AMERICA FINANCE, LLC	
Outlook	Stable
Bkd Senior Unsecured	Baa1
Bkd Commercial Paper	P-2
VOLKSWAGEN FINANCIAL SERVICES AG	
Outlook	Stable
Issuer Rating	Baa1
Senior Unsecured -Dom Curr	Baa1
Commercial Paper	P-2
Other Short Term	(P)P-2
VOLKSWAGEN FINAN. SERVICES AUSTRALIA PTY LTD	
Outlook	Stable
Bkd Senior Unsecured -Dom Curr	Baa1
Bkd Other Short Term -Dom Curr	(P)P-2
VOLKSWAGEN FINANCIAL SERVICES JAPAN LTD.	
Outlook	Stable
Bkd Senior Unsecured -Dom Curr	Baa1
Bkd Commercial Paper -Dom Curr	P-2
Bkd Other Short Term	(P)P-2
VOLKSWAGEN INTERNATIONAL FINANCE N.V.	
Outlook	Stable
Bkd Senior Unsecured	Baa1
Bkd Jr Subordinate -Dom Curr	Baa3
Bkd Commercial Paper -Dom Curr	P-2
Bkd Other Short Term -Dom Curr	(P)P-2
VW CREDIT, INC.	
Outlook	Stable
Bkd Commercial Paper	P-2
Bkd Other Short Term	(P)P-2
VOLKSWAGEN LEASING GMBH	
Outlook	Negative
Bkd Senior Unsecured -Dom Curr	A1
VOLKSWAGEN FINANCIAL SERVICES OVERSEAS AG	
Outlook	Stable
Issuer Rating	Baa1
Senior Unsecured MTN	(P)Baa1

Commercial Paper	P-2
Other Short Term	(P)P-2
VW CREDIT CANADA, INC.	
Outlook	Stable
Bkd Senior Unsecured -Dom Curr	Baa1
Bkd Commercial Paper -Dom Curr	P-2
Bkd Other Short Term	(P)P-2
TRATON FINANCE LUXEMBOURG S.A.	
Outlook	Positive
Bkd Senior Unsecured	Baa2
TRATON SE	
Outlook	Positive
Issuer Rating	Baa2
Senior Unsecured MTN	(P)Baa2
ST Issuer Rating	P-2
PORSCHE HOLDING GESELLSCHAFT M.B.H.	
Outlook	No Outlook
Bkd Commercial Paper -Dom Curr	P-2
SKOFIN S.R.O.	
Outlook	No Outlook
Bkd Commercial Paper	P-2
VOLKSWAGEN INTERNATIONAL LUXEMBURG S.A	
Outlook	No Outlook
Bkd Commercial Paper -Dom Curr	P-2
VOLKSWAGEN INTERNATIONAL BELGIUM S.A.	
Outlook	No Outlook
Commercial Paper -Dom Curr	P-2
VOLKSWAGEN FINANCE OVERSEAS B.V.	
Outlook	No Outlook
Bkd Commercial Paper	P-2
VOLKSWAGEN GROUP CANADA, INC.	
Outlook	No Outlook
Bkd Commercial Paper -Dom Curr	P-2
VOLKSWAGEN GROUP OF AMERICA, INC.	
Outlook	No Outlook
Bkd Commercial Paper	P-2

Source: Moody's Ratings

Endnotes

1 EU+EFTA+UK according to ACEA

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CLIENT SERVICES

Americas	1-212-553-1653
Asia Pacific	852-3551-3077
Japan	81-3-5408-4100
EMEA	44-20-7772-5454