Volkswagen Group: Navigating Transformation – Strategic Priorities, Brand Dynamics, and Future Outlook

Executive Summary

The Volkswagen Group is navigating a period of profound transformation, driven by electrification, digitalization, and evolving market dynamics. Guided by its "Mobility for Generations" strategy aiming for global automotive technology leadership by 2035, the Group is focusing on resilience, adaptability, and financial robustness. Key strategic priorities include accelerating electric vehicle (EV) adoption with ambitious targets, particularly in Europe and North America, though facing significant headwinds in China. The development of software-defined vehicles, spearheaded by a realigned CARIAD and bolstered by strategic partnerships with tech players like Rivian and Mobileye, is central to future competitiveness. The Group's multi-brand strategy, organized into Core, Progressive, and Sport Luxury groups, seeks to leverage synergies through shared platforms (MEB, future SSP) while maintaining distinct brand identities, a crucial balance for maximizing market coverage and profitability. Financially, while revenues remain substantial, profitability is under pressure from high transformation investments and market challenges, necessitating strong performance from efficiency programs. Managing financial risks associated with the EV transition, particularly residual values of internal combustion engine (ICE) vehicles, is critical. Regionally, while Europe remains a BEV stronghold and North America shows growth potential, regaining competitiveness in China is a major challenge. In India, the "India 2.0" strategy has yielded localized products, but achieving significant market share requires further adaptation and potentially a focused EV strategy. Overall, Volkswagen Group possesses the scale and strategic framework for the transition, but successful execution across technology development, brand management, regional adaptation, and financial discipline will determine its future success.

I. Strategic Direction: Charting the Course to 2035 ("Mobility for Generations")

The Volkswagen Group is navigating the most significant transformation in its history, transitioning from a traditional international automotive company towards a software-centric global leader in sustainable mobility. This evolution is guided by a clear strategic roadmap extending to 2035, officially titled **"The Group Strategy – Mobility for Generations"**.[1] The overarching ambition is for the Volkswagen Group to become **"The Global Automotive Tech Driver"** by 2035, actively shaping the future of mobility rather than merely reacting to it.[1]

A. Core Strategic Pillars: Resilience, Adaptability, Financial Robustness

Underpinning the "Mobility for Generations" strategy are three fundamental principles designed to ensure the Group's long-term success in a volatile environment [1]:

1. **Resilience:** Acknowledging the increasing frequency and impact of political, economic, and ecological crises, the strategy emphasizes building the capacity to withstand these disruptions. This involves robust operational structures, diversified supply chains, and financial stability.
2. **Adaptability:** The automotive landscape is characterized by rapid technological leaps (electrification, autonomous driving, software) and constantly evolving customer requirements (shifting usage models from ownership to leasing/subscriptions, demand for digital features). The strategy prioritizes agility, enabling the Group to adjust its course in response to these changes.[1]
3. **Financial Robustness:** Sustainable investment in future technologies and the capacity to weather unforeseen events require a strong financial foundation. This pillar focuses on maintaining profitability and healthy cash flows to fund the necessary transformation and ensure long-term viability.[1]

B. Overarching Goals: "Global Automotive Tech Driver" by 2035

The vision to become "The Global Automotive Tech Driver" by 2035 signifies a fundamental shift in the Group's identity and focus.[1] It moves beyond traditional automotive manufacturing to encompass leadership in the technologies defining future mobility. This involves mastering key areas like electrification, software development, autonomous driving, and connectivity, integrating them seamlessly into attractive and sustainable mobility solutions. The Group believes that strong brands, iconic design, outstanding technology, and user-friendly software will remain crucial customer decision criteria, with digital functions becoming increasingly important unique selling points.[1]

C. Key Focus Areas: Electrification, Software/Connectivity, Autonomous Driving, Sustainability

The strategy prioritizes several key technological and business areas:

- **Electrification:** Accelerating the transition to battery-electric vehicles (BEVs) is paramount, with significant investments and ambitious sales targets across all brands and regions.[2] This includes developing core competencies in battery technology, from cell design (unified cell) to production (gigafactories) and recycling.[5]
- **Software and Connectivity:** Recognizing software as a "real gamechanger" [3], the Group aims to develop software and digital customer experiences into core

competencies via its CARIAD unit and partnerships.[5] The goal is to create future-proof electronic architectures and platforms (like the E³ platforms) enabling data-based business models, over-the-air updates, and new revenue streams through software-based services.[1]
- **Autonomous Driving (AD):** The Group is investing heavily in developing and deploying automated driving functions up to Level 4, aiming to make this technology widespread and not just a luxury feature.[3] This involves both in-house development via CARIAD and strategic collaborations.[7]
- **Sustainability and Circular Economy:** Sustainability is positioned as a fundamental element of all corporate activities under the "regenerate+" strategy.[1] This includes ambitious decarbonization goals (net carbon-neutral by 2050), shifting to renewable energy in production, promoting a circular economy through increased use of recycled materials and battery recycling, and ensuring supply chain responsibility.[6]

D. Implementation: Top-10 Programs and Regional Management

To translate the long-term strategy into concrete actions, the Volkswagen Group utilizes **Top-10 programs**. These are defined annually at the Group, brand, and market levels, identifying the most critical action areas and setting short- to mid-term goals.[1] This mechanism provides agility and ensures focus on immediate priorities while aligning with the overarching strategic direction.

Furthermore, the strategy emphasizes **regionally managed operations**.[1] Recognizing diverse market needs, the Group aims to leverage local expertise and partnerships to tailor products and strategies for specific regions like Europe, North America, and China, ensuring customer focus ("Excite") while balancing global synergies ("Unleash") and maintaining lean structures and cost optimization ("Focus").[1]

II. Electrification Trajectory: Targets, Progress, and Challenges

Electrification is a cornerstone of the Volkswagen Group's transformation strategy. The company has launched a comprehensive electrification initiative, initially outlined in the "TOGETHER – Strategy 2025" and significantly accelerated through subsequent strategies like "ACCELERATE" and "Roadmap E".[3]

A. Global EV Targets and Timelines

The Volkswagen Group has set ambitious, albeit evolving, targets for the electrification of its fleet:

- **Europe:** The Group aims for 80% of its sales in Europe to be fully electric (BEVs)

by 2030, an increase from the previous target of 70%.[3] This significantly exceeds planned EU regulations.[3] The Volkswagen brand specifically intends to produce only EVs in Europe by 2033 [11], although recent reports suggest potential flexibility in this timeline due to market conditions.[12] The Group committed early on to electrifying its entire model portfolio (around 300 models) with at least one electrified version by 2030 at the latest.[4]
- **North America (NAR):** The target for the US market is for 55% of vehicle sales to be fully electric by 2030, revised upwards from an earlier 50% target.[11] This is supported by a $7.1 billion investment over five years (announced in 2022) in the region to boost portfolio, R&D, and manufacturing, including localizing EV and battery production.[14] The VW brand plans to phase out gasoline vehicle sales in the US early in the next decade.[14]
- **China:** The target is to achieve a 50% share of EV sales by 2030.[2] This market presents unique challenges due to intense local competition.[15]

To support these targets, the Group plans to introduce a significant number of new BEV models. Over 25 new BEVs are planned for the US market through 2030.[14] Globally, the plan announced under "Roadmap E" was to bring over 80 new electrified models (50 BEV, 30 PHEV) by 2025.[4] More recently, the VW brand aims to launch nine new models by 2027, including affordable entry-level EVs priced around €20,000 (production version planned for 2027) and €25,000 (ID. 2all planned for 2026).[16]

Meeting these targets requires substantial battery capacity. By 2025, the Group estimated needing over 150 GWh annually, equivalent to at least four gigafactories.[4] Plans include building six gigafactories in Europe alone with a total capacity of 240 GWh, leveraging the standardized "unified cell" architecture to reduce costs by up to 50%.[5] Battery cell production is also planned for the US.[14]

B. Progress and Current BEV Performance

The Group has made significant progress in its electrification ramp-up:

- **Sales Growth:** In the first nine months of 2023, the Group delivered 531,500 BEVs globally, a 45% increase year-over-year. The BEV share of total deliveries rose to 7.9% (from 6.1% in the prior year period), reaching 9.0% in Q3 2023.[18] In Q1 2025, global BEV deliveries surged 59% YoY to 216,800 units, pushing the global BEV share to 10%.[19]
- **Regional Performance:** Europe remains the key driver, with BEV deliveries up 61% in the first nine months of 2023.[18] In Q1 2025, European BEV deliveries more than doubled (+113%) to 158,100 vehicles, solidifying the Group's position as the clear BEV market leader in Europe with roughly 26% market share.[19] The BEV

share in Western Europe reached ~19% in Q1 2025.[19] The US also showed strong growth, up 74% in the first nine months of 2023 [18] and up 51% in Q1 2025.[19] However, China experienced a decline, with BEV deliveries up only 4% in the first nine months of 2023 [18] and down 37% in Q1 2025 due to intense competition.[19]

- **Brand Contributions:** The Volkswagen Passenger Cars brand accounts for the largest share of Group BEV deliveries (over half in Jan-Sep 2023), followed by Audi, Škoda, SEAT/CUPRA, Porsche, and Volkswagen Commercial Vehicles.[18] Strong BEV growth was seen across most brands in Q1 2025, notably SEAT/CUPRA (+167%) and Porsche (+326%).[19]
- **Top Models:** Key BEV models driving sales include the Volkswagen ID.4/ID.5, Volkswagen ID.3, Audi Q4 e-tron, Škoda Enyaq iV, and CUPRA Born.[18] The ID.4/ID.5 was the top seller in Q1 2025 with 43,700 units.[20]

C. Competitive Benchmarking and Potential Delays

While the Volkswagen Group is a major player in the EV market, particularly in Europe, it faces intense competition and potential headwinds:

- **Competitors:** Tesla and BYD are global front-runners, collectively accounting for 35% of electric car sales in 2023.[22] BYD overtook Tesla in global BEV sales in H2 2023 and surpassed VW as the top-selling brand overall in China.[22] In Europe, VW Group faces challenges from Stellantis (whose share grew significantly) and Renault-Nissan-Mitsubishi (whose share declined), as well as Tesla and emerging Chinese brands.[22] Many traditional automakers have set their own electrification targets, varying in ambition and focus (BEV vs. PHEV vs. Hybrid).[11] Ford targets 600k BEV sales by 2026 (Europe), GM targets 1m EV capacity by 2025 (NA), BMW targets 50% EV sales share by 2030 globally, and Toyota aims for 1.5m BEV sales by 2026 while pursuing a multi-pathway approach.[23]
- **Market Challenges:** Slowing EV adoption rates in some markets, like Germany in 2024, pose a risk to achieving ambitious targets.[12] Price sensitivity, particularly in volume segments, remains a hurdle, driving VW's focus on affordable models like the ID.2all and the €20,000 entry-level EV.[16] Intense price competition, especially from Chinese manufacturers benefiting from scale and potentially subsidies, pressures margins.[15]
- **Potential Delays and Strategy Adjustments:** Reports suggest VW may be reconsidering the strict 2033 deadline for ending ICE sales in Europe due to slower-than-anticipated EV uptake, potentially extending the lifecycle of popular ICE models like the Golf, Tiguan, and T-Roc with refreshes.[12] Software development delays within CARIAD have also reportedly pushed back the launch of key EV models like the electric Porsche Macan, Audi Q6 e-tron, and the

flagship Trinity project (originally planned for 2026, potentially delayed to 2030 or later).[24] CEO Oliver Blume has indicated a review of project timelines and investments to ensure viability and avoid past software issues.[25] While VW officially maintains ambitious targets [11], the operational reality suggests a degree of flexibility and potential adjustments based on market conditions and internal execution capabilities. Missing stricter European emissions targets due to slower EV adoption could result in significant fines.[12]

III. The Software Imperative: CARIAD, Partnerships, and the Software-Defined Vehicle (SDV)

The transition towards software-defined vehicles (SDVs) represents a fundamental shift in the automotive industry, and Volkswagen has identified digitalization as the "real gamechanger" alongside electrification.[3] Mastering software is critical for future vehicle functionality, customer experience, new business models, and autonomous driving capabilities.

A. CARIAD's Role and Evolution

Established as the Volkswagen Group's dedicated software and technology company, CARIAD's mission is to build the technological foundation for data-driven business models, mobility services, and automated driving (up to Level 4), while leveraging cross-brand synergies.[5] Key elements of its mandate include:

- **Increasing In-House Software Development:** A core aim is to increase the proportion of software developed internally within the Group.[5]
- **Developing Standardized Platforms:** CARIAD is responsible for developing standardized software architectures (E^3 platforms) and the VW.OS software platform, intended to form the basis of a digital ecosystem across brands.[5] The E^3 1.2 platform, developed with Porsche and Audi, aims to harmonize hardware and software, facilitating over-the-air (OTA) updates and enabling new services post-production.[5] The future E^3 2.0 architecture is planned for the Scalable Systems Platform (SSP).[26]
- **Enabling the SDV:** CARIAD plays a central role in developing the software-defined vehicle architecture, working closely with brands like VW and Audi through integrated project houses.[27]

B. Challenges and Realignment

Despite significant investment (nearly €12 billion since inception [28]), CARIAD has faced substantial challenges:

- **Software Delays and Glitches:** Software development delays significantly impacted the launch schedules of crucial new electric models, including the Porsche Macan EV, Audi Q6 e-tron, and the flagship Trinity project.[24] Early VW EVs were also plagued by software glitches.[24] The E³ 2.0 platform launch was reportedly delayed from 2026 to potentially 2029 or later.[26]
- **Financial Performance:** CARIAD incurred significant losses, reported at $2 billion in 2022.[29]
- **Organizational and Governance Issues:** Internal bureaucratic struggles, complex interfaces with brands, and governance issues hampered effectiveness and adaptability.[28] The initial approach of trying to develop everything in-house proved difficult.[29]

In response, the Volkswagen Group initiated a comprehensive realignment of CARIAD in mid-2023 [27]:

- **Leadership Change:** Peter Bosch, credited with restructuring Bentley, was appointed CEO, replacing the previous leadership team.[24]
- **Structural Reorganization:** The realignment involved restructuring the organization, sharpening core competencies, revising interfaces with the brands for closer collaboration, setting more realistic timelines for software architectures, and implementing a new leadership model.[27]
- **Strategic Shift:** A key shift involves broadening the approach to partnerships, combining internal competencies with external solutions.[24] The focus remains on developing digital future technologies, but with a more pragmatic and collaborative approach. Restructuring measures at CARIAD contributed to negative special effects in Q1 2025 results.[30]

The difficulties experienced by CARIAD underscore the immense challenge traditional automakers face in transitioning from hardware-centric engineering to integrated hardware-software development. Combining these different cultures and skillsets effectively is crucial but fraught with complexity, impacting not only product timelines but also customer experience and brand perception.[29]

C. Strategic Partnerships

Reflecting the strategic shift following CARIAD's realignment, Volkswagen Group is intensifying collaborations with external technology partners:

- **Rivian:** A major $5 billion joint venture was announced, aiming to leverage Rivian's software and electrical architecture expertise.[28] This partnership is expected to accelerate the development of next-generation SDVs for both Rivian (R2 model) and VW Group brands, potentially starting from 2027.[32] The JV aims to speed

innovation, increase scale, and lower EV costs.[32] However, the deal reportedly caused tension within CARIAD due to lack of involvement in negotiations and uncertainty about employee roles.[28] This move highlights VW's pragmatic approach to acquiring necessary software capabilities quickly, even if it creates internal friction.

- **XPENG:** In China, VW is partnering with XPENG to co-develop the China Electrical Architecture (CEA) and accelerate the development of intelligent, connected vehicles tailored to the local market.[33] This collaboration aims to reduce costs and shorten time-to-market significantly.[33]
- **Mobileye:** Following the discontinuation of investment in Argo AI [24], VW has intensified its collaboration with Mobileye. Mobileye will provide technologies based on its SuperVision™ (Level 2+) and Chauffeur™ (Level 3/Highly Automated) platforms for upcoming models from Audi, Bentley, Lamborghini, and Porsche using the E³ 1.2 architecture.[7] Mobileye is also collaborating with Valeo to supply surround-sensing ADAS technology (cameras, radars, EyeQ™6 High processor) for future high-volume MQB platform vehicles.[35]
- **Other Tech Partners:** The Group continues to work with Bosch and Qualcomm on AD systems and has specific partnerships in China with Horizon Robotics and Thundersoft.[7] An AI Lab has been established to foster collaboration with the global tech sector.[36]

This web of partnerships signifies a move towards a more open ecosystem model, allowing VW to access cutting-edge technology and share development costs and risks. However, managing these diverse collaborations and integrating external solutions effectively with internal platforms like CARIAD's E³ architecture remains a complex task.

D. Autonomous Driving Roadmap

Volkswagen Group aims to make autonomous driving (AD) widely available.[3] The strategy involves developing capabilities across different levels of automation and leveraging both internal development and partnerships:

- **Levels of Automation:** The Group is developing systems across the spectrum, from Level 1 Driver Assistance (adaptive cruise control) and Level 2 Partial Automation (like IQ.DRIVE Travel Assist) currently available, towards Level 3 Conditional Automation (driver can temporarily disengage) and Level 4 High Automation (vehicle handles most situations autonomously within defined areas).[37]
- **Technology Stack:** CARIAD is tasked with developing the core software architectures.[7] Partnerships supplement this: Mobileye provides key platforms

(SuperVision™ for L2+, Chauffeur™ for L3) [7], while collaborations with Valeo [35], Bosch, Qualcomm, and Horizon Robotics [7] contribute hardware and software components. Sensor fusion, integrating data from cameras, radar, and potentially lidar, is crucial.[38]

- **Timelines and Applications:** Level 2+ features (enhanced partially automated driving) are being developed with Mobileye and Valeo for upcoming MQB vehicles.[35] Level 3 functions are being co-developed with Mobileye for premium brands (Audi, Bentley, Lamborghini, Porsche) on the E³ 1.2 architecture.[7] Level 4 capabilities, initially targeted for 2026 via CARIAD's original plan, have faced delays.[24] Commercial vehicle applications (like the ID. Buzz for transport services) targeting Level 4 autonomy are aimed for deployment around 2025 or later, potentially leveraging partners like Mobileye.[24] The SSP platform was initially intended to support Level 4 AD.[26]
- **Data Utilization:** The Group plans to use anonymized sensor and image data from customer vehicles (initially VW and Audi in Germany from Q4 2024) to continuously optimize ADAS and AD functions.[36]

The path to higher levels of automation remains challenging, requiring significant technological advancement, regulatory approval, and public acceptance.[24] VW's multi-pronged approach, combining internal efforts with key partnerships, aims to accelerate progress while managing the inherent complexities and risks.

IV. Multi-Brand Portfolio Management: Synergy vs. Differentiation

A defining characteristic of the Volkswagen Group is its extensive portfolio of distinct automotive brands. Managing this portfolio effectively requires a sophisticated strategy to maximize market coverage and achieve economies of scale through synergies, while simultaneously preserving the unique identity and appeal of each brand, particularly in the lucrative luxury segments.

A. Brand Group Structure

To enhance efficiency and collaboration, the Volkswagen Group has organized its core passenger car brands into distinct groups [39]:

- **Brand Group Core:** This group comprises the high-volume brands: Volkswagen Passenger Cars, Škoda, SEAT/CUPRA, and Volkswagen Commercial Vehicles. These brands work closely together, sharing resources and coordinating strategies to achieve joint growth and increase overall efficiency.[39] The group focuses on realizing synergies in areas like e-mobility technology, sales performance, development speed, and manufacturing costs, aiming to offer

competitive technology at accessible prices.[40] This close cooperation is credited with positively impacting financial performance, such as the Brand Group Core's improved operating result in 2023.[41]
- **Brand Group Progressive:** This group includes Audi, Bentley, Lamborghini, and Ducati. These premium and performance-oriented brands collaborate to leverage combined strength, particularly in the transition towards electrification. Synergies gained within this group are intended to afford individual brands the freedom to focus on their unique specializations and target customers.[39]
- **Brand Group Sport Luxury:** This group currently consists solely of the Porsche brand, which operates with significant autonomy, underscored by its separate stock exchange listing since September 2022.[39]

This structure aims to streamline decision-making, foster closer cooperation within relevant segments, and unlock economies of scale more effectively than managing each brand entirely independently.

B. Balancing Synergies and Brand Identity

The core tenet of VW's multi-brand strategy is to leverage synergies without diluting individual brand identities.[1] Key mechanisms include:

- **Platform Sharing:** Modular vehicle platforms are the primary tool for achieving economies of scale. Platforms like MQB (Modular Transverse Matrix) and MLB (Modular Longitudinal Matrix) underpin numerous ICE and hybrid models across VW, Audi, Škoda, and SEAT/CUPRA.[42] The MEB (Modular Electric Drive Toolkit) platform serves the current generation of BEVs across multiple brands (e.g., VW ID.4, Audi Q4 e-tron, Škoda Enyaq).[18] The upcoming SSP (Scalable Systems Platform) aims to create a unified, all-electric, digital platform scalable across all segments, further maximizing synergies while allowing brand differentiation.[5] VW Group Technology's Platform Business division explicitly manages platform sharing with external partners like Ford and Mahindra as well.[43]
- **Component Sharing:** Beyond platforms, brands share engines (e.g., TSI engines), transmissions (e.g., DSG), electric drive components, axles, and steering systems, often developed and supplied by Volkswagen Group Components.[42]
- **Cost Optimization:** The Brand Group Core structure explicitly targets cross-brand cost advantages through shared development, manufacturing, and purchasing.[40] Performance programs within brands also focus on reducing overheads and product costs.[41]

The success of this strategy hinges on the ability of the shared platforms and components to provide a robust, cost-effective foundation while allowing sufficient

flexibility for each brand to tailor the design, features, driving dynamics, and overall experience to meet the expectations of its specific target audience.[39]

C. Avoiding Cannibalization

Managing a portfolio with multiple brands serving similar, albeit differentiated, segments inevitably carries the risk of internal competition or cannibalization, where one Group brand's sales come at the expense of another. VW Group addresses this through:

- **Clear Brand Positioning:** Each brand cultivates a distinct identity, value proposition, and target audience.[45] For example, Škoda often emphasizes value and practicality ("Simply Clever"), SEAT/CUPRA focuses on design and sportiness, while Volkswagen represents the core, often technologically advanced, volume offering.
- **Defined Roles and Scopes:** Within the brand groups, efforts are made to define the role of each brand and model to cover different market segments effectively without excessive overlap.[41] The Head of Brand Group Core noted the goal is to cover important segments with strong, differentiated models without cannibalizing sister brands.[41]
- **Strategic Product Planning:** Decisions about which brand introduces which type of vehicle in which segment are crucial. For instance, the development of the affordable "Electric Urban Car Family" involves VW, CUPRA, and Škoda models built in Spain, designed to unlock synergies while presumably targeting slightly different customer profiles within the small EV segment.[47] However, challenges can arise, such as the potential overlap between a future electric Golf and the existing ID.3, requiring careful differentiation in features, pricing, and positioning to avoid hindering the ID.3's market penetration.[44]
- **Market Segmentation:** By targeting different demographic and psychographic profiles, even within the same vehicle class, brands can minimize direct competition.[44]

Effectively managing brand architecture and ensuring distinct identities and experiences are crucial to maximizing overall market share and preventing counterproductive internal competition.[45]

D. Luxury Brand Differentiation

Maintaining distinctiveness is particularly critical for the premium and luxury brands (Audi, Porsche, Bentley, Lamborghini, Ducati) within the Progressive and Sport Luxury groups, as their value proposition relies heavily on exclusivity, performance, heritage,

and unique brand image.[39]

- **Audi:** Positions itself as a technologically advanced, progressive luxury brand with sleek, sophisticated designs.[48] It targets affluent, tech-savvy, contemporary urban consumers who value quality, performance, and style.[48] Marketing emphasizes innovation and often associates with celebrities to enhance its premium image.[48] While sharing platforms (e.g., MLB with Porsche, MEB with VW/Skoda), Audi differentiates through unique design language, interior appointments, technology features (like the Virtual Cockpit), and powertrain tuning.[42] Its target demographic often values a balance of luxury, performance, and potentially sustainability.[49]
- **Porsche:** Focuses intensely on performance, driving dynamics, and motorsport heritage.[39] It targets enthusiasts and affluent individuals seeking a high-performance luxury sports car experience. Brand loyalty is exceptionally high.[51] While benefiting from Group synergies (e.g., sharing platforms like PPE with Audi), Porsche maintains significant engineering independence and a distinct brand identity centered on sportiness and exclusivity.[45]
- **Bentley and Lamborghini:** Operate at the upper echelons of luxury and performance, respectively. They cater to ultra-high-net-worth individuals, leveraging Group resources while maintaining highly distinct brand identities, bespoke craftsmanship (Bentley), and extreme performance/design (Lamborghini).[39]

The strategy allows these high-margin brands to benefit from Group R&D and platform efficiencies (particularly relevant for electrification costs) while preserving the unique characteristics and customer perceptions that command premium pricing.[39] The perceived separation is vital; customers buying a Porsche typically do not see themselves as driving a Volkswagen, highlighting the importance of maintaining distinct brand identities despite shared underpinnings.[45]

V. Brand Performance and Market Dynamics

The Volkswagen Group's market performance reflects the complex interplay of its multi-brand strategy, the global shift towards electrification, regional variations in demand, and intense competitive pressures.

A. Regional Market Share Analysis

The Group's market position varies significantly across key regions:

- **Europe:** Remains a stronghold, particularly in the BEV segment. In Q1 2025, VW Group held a commanding **~26% share of the European BEV market**, doubling its deliveries year-over-year.[19] Overall deliveries in Western Europe grew 3.0% in

Q1 2025.[19] Despite this strength, competition is intensifying from players like Stellantis, Tesla, and Asian brands.[22] The Group's overall European passenger car market share was around 25% in FY2024.[54]

- **China:** Facing significant challenges. While historically the leading automaker, VW Group has lost ground, particularly to domestic competitors like BYD in the rapidly growing New Energy Vehicle (NEV) market.[15] Group deliveries in China fell 7.1% in Q1 2025 [19], and BEV deliveries plummeted 37%.[19] German brands overall saw their Q1 2025 market share in China decline to 14.4% (down 7.2% YoY).[55] FAW-VW ranked 3rd and SAIC VW ranked 7th among manufacturers in China for March 2025 retail sales.[55] Regaining momentum requires successful execution of the "In China, for China" strategy, including cost reduction and launching locally tailored, technologically advanced models.[15] The Group aims for a 15% market share by 2030.[34]
- **North America (USA):** Showing positive momentum. Group deliveries in North America grew 4.4% in Q1 2025.[19] In the US, the VW brand achieved 7.1% sales growth in Q1 2025, holding a 2.2% overall market share.[57] The Group's US BEV sales grew 51% in Q1 2025 [19], achieving a **6.7% share of the US EV market**.[59] This growth supports the strategic goal of increasing presence and achieving 55% EV sales by 2030.[11]
- **South America:** Demonstrating strong growth, with deliveries up 16.6% in Q1 2025.[19] This region is strategically important, receiving significant investment, particularly in Brazil and Argentina.[3]

Table: Volkswagen Group Regional Performance Snapshot (Q1 2025 vs Q1 2024)

Region	Total Deliveries Change (YoY)	BEV Deliveries Change (YoY)	Key Market Share Notes	Supporting Snippets
Europe	+3.7% (Total) / +3.0% (West)	+112.6%	~26% BEV Market Share (Europe)	[19]
China	-7.1%	-36.8%	Overall share under pressure; German brands 14.4% (Q1)	[19]
North America	+4.4%	+51.0% (USA)	~2.2% Overall (VW Brand, US);	[19]

			6.7% BEV Market Share (US)	
South America	+16.6%	N/A	Strong growth, driven by Brazil	[19]
Central & East Eur.	+7.9%	N/A	Positive growth trend	[19]
Rest of World	N/A	+63.7%	Growing BEV uptake	[19]
Global Total	**+1.4%**	**+58.9%**	**10% Global BEV Share**	[19]

(Note: Market share figures are estimates based on available data and may vary depending on source and methodology. BEV share is based on VW Group's deliveries relative to the total BEV market where available.)

B. Key Brand Performance Trends

- **Volkswagen Passenger Cars:** Remains the Group's largest brand by volume.[62] Showed positive delivery growth (+5.1%) and strong BEV growth (+39.6%) in Q1 2025.[19] However, the brand faces significant pressure to improve profitability, with performance programs aiming to enhance efficiency.[3]
- **Audi:** Experienced a slight decline in overall deliveries (-3.4%) but solid BEV growth (+30.1%) in Q1 2025.[19] As a key contributor to the Progressive brand group, its performance is vital for Group profitability, though recent results were impacted by restructuring and market factors.[63]
- **Porsche:** Saw a dip in deliveries (-7.9%) in Q1 2025 but achieved exceptional BEV growth (+326.4%), driven by models like the Taycan and the new Macan EV.[19] Remains a highly profitable cornerstone of the Sport Luxury group.[63]
- **Škoda:** Continues its strong performance with +8.2% overall growth and +93.3% BEV growth in Q1 2025.[19] The brand plays a crucial role in the Core group, particularly in Europe and emerging markets like India.[64]
- **SEAT/CUPRA:** Delivered solid growth (+5.9% overall) fueled by outstanding BEV performance (+167.4%) in Q1 2025, largely driven by the CUPRA brand and models like the Born.[18]
- **Volkswagen Commercial Vehicles:** Faced a significant drop in overall deliveries (-22.9%) in Q1 2025 but showed strong BEV growth (+51.1%), indicating a shift in

its portfolio mix towards electric models like the ID. Buzz.[19]

C. Strengths and Weaknesses

- **Strengths:**
  - **Brand Portfolio Breadth:** Covers nearly all market segments from volume to ultra-luxury.[39]
  - **Engineering Capability:** Strong reputation for engineering, particularly in traditional powertrain technology (TSI, DSG) and vehicle dynamics.[42] Platform strategy enables scale.[42]
  - **Global Manufacturing Footprint:** Extensive production network allows for regional adaptation and potential cost advantages.[14]
  - **Strong European Position:** Market leadership, particularly in the growing BEV segment, provides a solid foundation.[19]
  - **High Brand Loyalty (Luxury):** Brands like Porsche boast exceptionally high customer loyalty and retention rates.[51]
- **Weaknesses:**
  - **Software Development Challenges:** Past struggles with CARIAD impacting product launches and potentially brand perception.[24]
  - **China Market Erosion:** Losing ground to local competitors in the crucial Chinese market, particularly in EVs.[15]
  - **Profitability Pressure:** Transformation costs, restructuring, and price competition are weighing on operating margins.[31]
  - **Brand Perception (Volume):** While improving post-Dieselgate [67], volume brands like VW face ongoing challenges regarding perceived reliability, maintenance costs (especially in markets like India [68]), and interior quality compared to past benchmarks.[68] J.D. Power data on overall brand loyalty needs closer examination.[100]
  - **Complexity:** Managing the vast portfolio of brands, platforms, and technologies across diverse global markets inherently creates complexity.[28]

D. Competitive Landscape Response

The Group is actively responding to competitive threats:

- **EV Startups (Tesla, Rivian, Chinese players):** VW is accelerating its own EV launches, investing heavily in battery technology (unified cell, PowerCo, QuantumScape), and forming partnerships (Rivian JV for software, XPENG in China) to match the technological pace and cost structures of nimbler competitors.[5] The goal to overtake Tesla in EV sales by 2025, stated in 2022 [70], appears increasingly challenging given current market dynamics.[22]

- **Legacy Luxury Brands (BMW, Mercedes-Benz):** Competition remains fierce. Audi, Porsche, Bentley, and Lamborghini differentiate through technology (Audi), performance heritage (Porsche, Lamborghini), and bespoke luxury (Bentley), while leveraging Group scale for electrification investments.[39]
- **Local Competitors (China, India):** The "In China, for China" strategy directly targets local players like BYD through localized R&D (VCTC), cost-optimized platforms (CMP), partnerships (XPENG), and tailored products.[15] In India, high localization (MQB-A0-IN) aims to compete on price against Maruti Suzuki, Hyundai, Tata, and Mahindra.[64]

E. Key Model Sales Drivers

- **Electric Vehicles:** The ID.4/ID.5 is the Group's global BEV best-seller [18], performing well in Europe [73] and seeing significant sales increases in the US, sometimes driven by attractive lease deals.[74] Other key BEVs include the ID.3, Audi Q4 e-tron, Škoda Enyaq, and CUPRA Born.[18] The rollout of new models like the ID.7, ID. Buzz, Audi Q6 e-tron, and Porsche Macan EV is expected to drive future EV growth.[19]
- **SUVs:** Remain a critical segment globally. Models like the Tiguan, Atlas (NAR), Taos (NAR), Taigun (India/SA), Kushaq (India), and luxury SUVs from Audi (Q-series) and Porsche (Cayenne, Macan) are significant volume contributors.[14] The shift towards SUVs is a key trend VW is addressing across markets, including India.[71]
- **Luxury/Performance Models:** High-margin vehicles from Porsche, Audi Sport, Lamborghini, and Bentley are crucial for overall Group profitability, even if volumes are lower than core brands.[63]

VI. Powering Innovation: R&D and Technology

The Volkswagen Group's ambition to be "The Global Automotive Tech Driver" necessitates substantial and focused investment in research and development (R&D). An efficient, cross-brand research alliance connects internal experts and facilitates collaboration with external partners to foster innovation and leverage Group-wide synergies.[36]

A. R&D Investment Priorities

The Group is channeling significant resources into key future technologies:

- **Overall Investment:** Planned investment totals €165 billion for 2025-2029, a reduction from previous plans but still substantial.[75] A significant portion (estimated ~55% up to 2026) is directed towards future-oriented fields like

hybridization, electric mobility, and digitalization.[78] Specific regional investments include $7.1bn in North America (focused on EVs, R&D, manufacturing) [14] and BRL 20bn in South America.[61]

- **Battery Technology:** This is a core focus. The **Unified Cell** strategy aims to standardize cell format across up to 80% of Group models by 2030, using different chemistries within the standard casing to achieve economies of scale and target cost reductions of up to 50%.[5] **PowerCo SE**, the Group's battery company, leads global cell development and production, with gigafactories planned in Europe (Salzgitter, Valencia, St. Thomas) totaling up to 200 GWh capacity.[43] Beyond current chemistries, VW is heavily invested in **solid-state battery technology** through its partnership with **QuantumScape**. A landmark agreement allows PowerCo to license QuantumScape's lithium-metal technology for mass production, initially up to 40 GWh/year with an option to double capacity.[69] This represents a long-term bet on next-generation battery performance (energy density, charging speed, safety).[69]
- **Autonomous Driving (AD) and Software:** As detailed in Section III, significant resources are allocated to CARIAD for developing software architectures (E^3 platforms, VW.OS) and AD capabilities.[5] This is heavily supplemented by partnerships with Mobileye (L2+/L3 platforms), Rivian (Software/Architecture JV), XPENG (China architecture), Valeo, Bosch, Qualcomm, and Horizon Robotics.[7] An **AI Lab** has been established to identify and incubate AI-driven product ideas and foster collaboration with the tech sector.[36]
- **Sustainable Materials:** R&D efforts focus on increasing the use of circular materials. This includes research into incorporating more recycled plastics, aluminum, and steel [6], as well as renewable resources like natural fibers (flax, cotton, wood).[10] Specific targets exist, such as using 40% circular materials in vehicles (ex-China) by 2040 [82] and meeting future regulatory requirements for recycled content in plastics and battery materials (e.g., from 2031, targets for recycled lithium, cobalt, nickel in new batteries).[82] Battery recycling is a key R&D area, with a pilot plant in Salzgitter aiming for >90% recovery of valuable materials.[81]

The scale and focus of these investments underscore the technological battlegrounds where VW must succeed – particularly in batteries and software – to remain competitive in the era of electrified and autonomous mobility. The partnership with QuantumScape, aiming to industrialize potentially game-changing solid-state technology, exemplifies the high-stakes nature of this R&D race.[69]

B. Cross-Brand Technology Leverage

Sharing technologies across its diverse brand portfolio is fundamental to the Volkswagen Group's business model, enabling cost efficiencies and faster deployment of innovations:

- **Modular Platforms:** This is the cornerstone of technology sharing.
  - **Legacy/Hybrid:** The MQB (Modular Transverse Matrix) and MLB (Modular Longitudinal Matrix) platforms have been widely used across volume and premium brands (e.g., VW Golf, Audi A3 on MQB; Audi A4, Porsche Macan ICE on MLB variants), allowing shared development of chassis, suspension, and powertrain integration while enabling distinct brand characteristics.[42]
  - **Electric (Current):** The MEB (Modular Electric Drive Toolkit) platform forms the basis for a wide range of current-generation BEVs, including the VW ID. series, Audi Q4/Q5 e-tron, Škoda Enyaq, and CUPRA Born.[18] This allows amortization of core EV development costs over high volumes.
  - **Electric (Premium):** The PPE (Premium Platform Electric), co-developed by Audi and Porsche, underpins models like the Porsche Macan EV and Audi Q6 e-tron.[75]
  - **Electric (Future):** The SSP (Scalable Systems Platform) represents the next generation, envisioned as a highly scalable, all-electric, fully digital mechatronics platform based on standardized software architecture. It aims to underpin vehicles across all segments, from entry-level to premium, reducing complexity and enabling rapid technology updates across brands.[5] The affordable Electric Urban Car Family (VW, CUPRA, Škoda) will leverage platform synergies.[47]
- **Powertrains and Components:** Volkswagen Group Components acts as an internal technology supplier, providing standardized components like electric drives, motors, gearboxes (including legacy tech like TSI engines and DSG transmissions), axles, and steering systems across multiple brands, further driving economies of scale.[42]
- **Formalized Sharing:** The Group Platform Business division explicitly manages the sharing of platforms and components, not only internally but also with external partners like Ford (using MEB) and Mahindra (using MEB components), generating additional revenue streams and further scaling technology.[43]

This systematic approach to technology sharing through platforms and components is a key competitive advantage, allowing the Group to fund the high cost of developing new technologies and deploy them across a wider range of vehicles and price points than smaller competitors might manage. The evolution towards the unified SSP platform indicates an intention to deepen this integration further.

C. The Role of Strategic Partnerships and Collaborations

Recognizing the complexity and rapid pace of technological change, particularly in software, AD, and batteries, Volkswagen Group has increasingly embraced strategic partnerships to complement its internal R&D efforts [27]:

- **Rationale:** Partnerships provide access to specialized expertise, accelerate development timelines, share significant R&D costs and risks, and provide access to specific regional technologies or market knowledge (e.g., XPENG in China).[24]
- **Key Technology Areas:**
  - **Software & AD:** Rivian (JV for next-gen software/electrical architecture) [32], Mobileye (ADAS/AD platforms L2+/L3) [7], XPENG (China-specific electrical architecture CEA) [33], Valeo (ADAS sensors/ECUs) [35], Bosch, Qualcomm, Horizon Robotics (China AD).[7]
  - **Batteries:** QuantumScape (Solid-state battery industrialization).[69] Potential indirect links or future collaboration with players like CATL, especially concerning China operations.[84]
  - **Platforms:** Ford and Mahindra licensing MEB technology.[43]
- **Collaboration Model:** The Group fosters an efficient, cross-brand research alliance that connects internal experts and facilitates collaborative work with external partners.[36] The dedicated AI Lab aims to streamline collaboration with the tech sector globally.[36]

The sheer number and strategic importance of these partnerships, particularly those formed after the CARIAD realignment (Rivian, intensified Mobileye collaboration), signify a fundamental shift. VW is moving from a predominantly in-house development model towards orchestrating a complex ecosystem of internal capabilities and external partners. This requires strong integration skills and effective partner management but offers the potential for faster innovation and reduced internal R&D burden in highly dynamic fields.

VII. Financial Health, Investment, and Risk Management

The Volkswagen Group's ambitious transformation requires substantial financial resources and careful management of associated risks. Assessing its financial health, funding strategy, and risk exposure is crucial to understanding its capacity to execute its strategic plans.

A. Financial Performance Analysis

Recent financial performance reflects the pressures of the transition and challenging market conditions:

- **Group Level:**
  - **FY 2024:** Sales revenue reached €324.7 billion (slightly up YoY), but Operating Result declined 15% to €19.1 billion, yielding an operating margin of 5.9% (down from 7.0% in 2023). Underlying profitability, excluding one-offs like restructuring costs (€2.6bn net impact), was higher at €21.7 billion (6.7% margin).[63] Automotive Net Cash Flow (NCF) decreased significantly to €5.0 billion from €10.7 billion in 2023, impacted by high investments and lower profit.[63] Net liquidity in the Automotive Division remained robust at €36.1 billion end-of-year.[86] A dividend of €6.36 per preferred share was proposed, representing a 30% payout ratio.[63]
  - **Q1 2025 (Preliminary):** Revenue grew ~3% YoY to €78 billion, but Operating Result fell sharply by 39% to €2.8 billion (3.6% margin), significantly below market expectations. Performance was heavily impacted by ~€1.1 billion in special effects, including provisions for EU CO2 regulations (€0.6bn), CARIAD restructuring (€0.2bn), and diesel issue/US tariff adjustments (€0.3bn).[30] Automotive net liquidity stood at ~€33 billion.[30]
  - **Outlook 2025:** The Group maintained its outlook, projecting revenue growth up to 5%, an operating margin between 5.5% and 6.5%, automotive NCF between €2-5 billion, and year-end automotive net liquidity between €34-37 billion.[31]
- **Brand Group Performance (FY 2024):** Profitability varied significantly across the groups [54]:
  - **Core:** Operating margin decreased slightly to 5.0%, impacted by model launches, lower volumes, higher costs, and restructuring expenses.[63]
  - **Progressive:** Operating margin fell to 6.0%, significantly affected by restructuring (Audi Brussels plant), residual value effects, and competition.[63]
  - **Sport Luxury (Porsche):** Maintained a strong operating margin of 14.5%, despite pressures from model launches, volume, and costs.[63]
  - **Trucks (TRATON):** Achieved a robust operating margin of 9.1%.[54]
  - **Financial Services:** Contributed positively to Group revenue.[63] Operating result was €3.0 billion in 2024 (-7.7% YoY).[88]

Table: VW Group Key Financial Indicators (Selected Periods)

Indicator	FY 2023	FY 2024	Q1 2024	Q1 2025 (Prelim.)	FY 2025 Outlook	Supporting Snippets

Group Sales Revenue (€bn)	322.3	324.7	75.5	~78	Up to +5% YoY	30
Group Operating Result (€bn)	22.5	19.1	4.6	~2.8	N/A	30
Group Operating Margin (%)	7.0%	5.9%	6.0%	~3.6%	5.5% - 6.5%	30
Automotive Net Cash Flow (€bn)	10.7	5.0	N/A	N/A	€2bn - €5bn	31
Automotive Net Liquidity (€bn, EoP)	N/A	36.1	N/A	~33	€34bn - €37bn	30

Table: Brand Group Financial Performance (FY 2024)

Brand Group	Sales Revenue (€bn)	Operating Result (€bn)	Operating Margin (%)	Supporting Snippets
Core	140.0	5.0 / 7.0*	5.0%	54
Progressive	64.5	3.9	6.0%	54
Sport Luxury	36.4	5.3	14.5%	54
Trucks (TRATON)	46.2	4.2	9.1%	54
Financial	N/A	3.0	N/A	54

Services				

54

The financial data clearly indicates that while the Group maintains significant scale and revenue, profitability and cash flow generation are under pressure. The high margins from Sport Luxury and Trucks provide crucial support, but improving the performance of the volume segments (Core, Progressive) through efficiency programs is essential for sustainable funding of the transformation.[3] Achieving the 2025 margin targets will depend heavily on successful execution and navigating market headwinds.

B. Funding the Transformation

The Group's massive investment program (€165bn planned for 2025-2029 [75]) requires a multi-faceted funding approach:

- **Operating Cash Flow:** While currently reduced [63], generating strong cash flow from operations remains the primary intended funding source. The success of performance programs across brands is critical to improving NCF towards levels that can sustain investment.
- **Existing Liquidity:** The substantial net liquidity (€33-36bn) provides a significant buffer and flexibility to manage investment phasing and potential cash flow volatility.[31]
- **Debt Financing:** The Group actively utilizes debt markets, as evidenced by its maintained credit ratings from major agencies.[90] Volkswagen Financial Services also plays a role in funding, partly through attracting significant customer deposits (€55bn in 2024).[88] The Group maintains a robust balance sheet with relatively low leverage (Moody's adjusted Debt/EBITDA of 1.7x in 2024).[90]
- **Equity/Divestments:** The Porsche IPO provided capital. While no further major listings are explicitly mentioned in the snippets, portfolio adjustments remain a strategic option.
- **Investment Management:** The Group is actively managing its investment levels, reducing the 2025-2029 plan by €15bn compared to previous planning [75] and aiming to lower the automotive investment ratio towards 10% by 2027.[54]

Table: VW Group Credit Ratings Summary (as of early 2025)

Agency	Short-Term Rating	Long-Term Rating	Outlook	Supporting Snippets

Moody's	P-2	Baa1	Stable	[90]
Standard & Poor's	A-2	BBB+	Stable	[91]
Fitch	F-1	A-	Negative	[91]
DBRS Morningstar	R-1 (low)*	A (low)	Stable	[91]

**Applicable to VW Credit Canada only.*

The recent downgrade by Moody's from A3 to Baa1 highlights the perceived increase in risk associated with the Group's profitability challenges during the transition.[90] Maintaining investment-grade ratings is crucial for ensuring access to debt capital at reasonable costs. The Group's ability to fund its transformation hinges on a combination of restoring operating cash flow, disciplined investment allocation, and continued access to capital markets supported by its strong balance sheet and liquidity position.

C. Financial Risks in the Automotive Transition

Beyond typical market risks (interest rates, FX, commodity prices [92]), the shift to electrification and digitalization presents specific financial challenges:

- **Residual Value Risk:** This is a major concern, particularly for the large leasing portfolio managed by VW Financial Services.[92] A faster-than-anticipated decline in the market value of used ICE vehicles, driven by improving EV technology and changing consumer preferences, could lead to substantial losses when leased vehicles are returned.[93] The difference between predicted residual value at contract inception and actual market value upon remarketing represents a direct financial exposure.[92] This risk is already impacting results, noted as a factor in the Progressive brand group's 2024 performance.[63] The potential scale is significant, with estimates suggesting a 10% downturn could cause billions in losses across the industry.[93] Mitigation involves sophisticated forecasting, risk management (hedging, insurance), and adapting lease offerings.[92]
- **Stranded Asset Risk:** Legacy investments in ICE manufacturing infrastructure (factories, tooling, supply chains) face the risk of becoming obsolete or underutilized before the end of their economic life if the transition to EVs accelerates rapidly or unevenly across regions.[78] This could lead to significant write-downs. VW mitigates this through flexible platforms, converting existing

plants to EV production (e.g., Zwickau, Emden, Chattanooga [11]), and planned capacity adjustments (e.g., reduction in Germany [86]).

- **Regulatory and Policy Risk:** Stricter CO2 emission standards in key markets like Europe require significant investment in compliance and carry the risk of substantial penalties if fleet targets are missed.[11] The €0.6 billion provision for CO2 regulations in Q1 2025 underscores this risk.[31] Changes in EV subsidies, tax regimes (e.g., emission-based vehicle taxes [78]), or import tariffs [31] can significantly impact demand, cost structures, and profitability.
- **Transition Costs and Market Acceptance:** The sheer scale of investment required for R&D, new platforms, battery production, and retraining workforce represents a major financial burden.[78] If market adoption of EVs proceeds slower than anticipated, the return on these massive investments could be jeopardized.[12]
- **ESG Integration:** Failure to meet environmental, social, and governance (ESG) targets, which are increasingly scrutinized by investors and integrated into strategy [6], could negatively impact access to capital, brand reputation, and regulatory standing.[78]

Successfully managing these transition-specific financial risks, particularly the latent threat posed by ICE residual values, is paramount for maintaining financial stability throughout the transformation period.

VIII. Regional Deep Dive: Volkswagen Group in India

India represents a market with significant long-term growth potential for the automotive industry, driven by an expanding middle class and government initiatives.[71] However, it also presents unique challenges related to price sensitivity, infrastructure, and intense local competition. Volkswagen Group operates in India through Škoda Auto Volkswagen India Private Limited (SAVWIPL), managing five Group brands (Škoda, VW, Audi, Porsche, Lamborghini).[65]

A. Strategy and Market Presence

The Group's approach to India has been shaped by the **"India 2.0" project**, launched in 2018 with a €1 billion investment and led by the Škoda brand.[95]

- **Core Objectives:** The primary goal was to increase efficiency and gain significant market share (targeting ~3-5%) by 2025, shifting from a niche premium player towards the mainstream volume segments.[64] This involved merging VW's passenger car entities and focusing heavily on localization.[95]
- **Localization (MQB-A0-IN Platform):** A cornerstone of India 2.0 was the development of the localized MQB-A0-IN platform, tailored to Indian market

requirements and enabling high levels of local content (up to 95-98%).[64] This was crucial for achieving competitive pricing and addressing previous concerns about high maintenance costs.[64]

- **Manufacturing Footprint:** SAVWIPL operates manufacturing facilities in Chakan, Pune, and Shendra, Aurangabad.[65] The Chakan plant produces engines (recently reaching the 500,000th unit milestone) and vehicles, demonstrating a commitment to the 'Make in India' initiative.[65]
- **Network Expansion:** Significant effort has gone into expanding the sales and service network, more than doubling touchpoints from 120 in 2021 to over 280, with a target of 350 by the end of 2025.[64]
- **Export Hub:** India is increasingly serving as an export hub for the Group. Around 25-30% of production was exported in recent years, primarily to Latin America, Africa, and ASEAN markets.[65] SAVWIPL exported over 43,000 vehicles in FY2023-24, with models like Virtus, Taigun, and Kushaq being key exports.[96] Exports help achieve economies of scale for Indian operations.[65] Vietnam is seen as a gateway to the ASEAN region, with parts exports complementing CBU shipments.[96]
- **Market Share:** Despite these efforts, VW Group's market share in India remains relatively modest, estimated around 2% [72], significantly lagging behind market leaders like Maruti Suzuki, Hyundai, Tata Motors, and Mahindra & Mahindra. Achieving the initial India 2.0 market share goals appears challenging. The strategy is likely evolving into a next phase ("India 3.0" or similar), potentially with a greater focus on EVs and continued exports.[71]

B. Product and Marketing Adaptation

Adapting products to meet the specific needs and preferences of Indian consumers is critical:

- **Localized Models:** The India 2.0 strategy yielded a family of vehicles based on the MQB-A0-IN platform: Škoda Kushaq (SUV), VW Taigun (SUV), Škoda Slavia (Sedan), VW Virtus (Sedan), and the recently launched Škoda Kylaq (sub-4-meter compact SUV).[64]
- **Focus on SUVs:** Recognizing the strong shift towards SUVs in India [71], the portfolio heavily features SUV models (Kushaq, Taigun, Tiguan, Kylaq). The Kylaq, Škoda's first sub-4-meter SUV, is pivotal, targeting high volumes (75k-100k units annually) with competitive pricing and features like ventilated seats and a large boot.[64]
- **Addressing Cost Concerns:** High localization (up to 98% for Kylaq) aims to keep production costs low and enable competitive pricing.[64] While perceptions of high

maintenance costs persist [68], the company emphasizes efforts to manage this through localization and service packages.
- **Safety Focus:** Building on the 5-star Global NCAP ratings for Kushaq and Slavia, safety is positioned as a key differentiator, with the Kylaq aiming for a 5-star Bharat NCAP rating and featuring standard six airbags.[64]
- **Sales Performance:** Models like the Kushaq and Taigun are the respective bestsellers for Škoda and VW in India.[77] However, sales volumes fluctuate and face intense competition.[68] The new Kylaq has seen strong initial booking numbers (>15,000), requiring a rapid production ramp-up.[64] Reviews suggest that while driving dynamics are appreciated, factors like perceived interior quality compared to older VW models, cabin space relative to competitors, and AC performance can be drawbacks for some buyers.[68]

C. Challenges and Opportunities

The Indian market presents a unique mix of opportunities and significant hurdles for VW Group:

- **Opportunities:**
  - **Market Growth:** Rapidly expanding middle class with increasing disposable income.[71]
  - **Government EV Push:** Policies and incentives promoting electric mobility offer a pathway for future growth, though infrastructure remains a challenge.[71]
  - **Infrastructure Development:** Improving road networks and urbanization create a more favorable environment for car ownership.[71]
  - **SUV Demand:** Strong consumer preference for SUVs aligns with VW's recent product focus.[71]
  - **Export Potential:** Leveraging India as a cost-effective manufacturing hub for exports to other emerging markets.[65]
- **Challenges:**
  - **Intense Competition:** Dominance of established players like Maruti Suzuki and Hyundai, and the strong rise of local manufacturers Tata Motors and Mahindra & Mahindra, particularly in the popular SUV and growing EV segments.[71]
  - **Price Sensitivity:** The Indian market is highly price-conscious, making it difficult for European brands to compete on cost against highly localized and established competitors.[71] Achieving cost parity is essential.
  - **Infrastructure Gaps:** Particularly relevant for EVs, the charging infrastructure is still developing, which can hinder adoption outside major urban centers.[99]
  - **Brand Perception Issues:** Lingering perceptions of higher maintenance costs

and potentially lower resale value compared to Japanese or Korean brands can deter buyers.[68] Recent quality concerns regarding interior fit/finish on India 2.0 models compared to previous VW standards have also been noted.[68]
    - **Regulatory/Tax Issues:** The Group has faced significant tax disputes with Indian authorities regarding import duties, creating operational friction.[95]

Navigating these challenges requires a long-term commitment, continued focus on localization and cost optimization, building brand trust, and potentially developing India-specific EV solutions that address affordability and infrastructure concerns.

D. Investment Plans and Future Outlook

VW Group continues to invest in its Indian operations, signaling a long-term commitment:

- **Manufacturing Investment:** Ongoing investment in the Chakan and Shendra plants supports localization and export activities.[65] The Chakan engine plant highlights local manufacturing capabilities.[65]
- **Potential EV Manufacturing:** Reports suggest SAVWIPL is considering significant investment (potentially Rs 15,000 crore, approx. $1.8bn) in establishing EV manufacturing capabilities, likely at the Chakan plant.[99] This would involve infrastructure for EV assembly, battery production/assembly, and component localization.[99] This aligns with the broader government push for EV manufacturing.[98]
- **Future EV Models:** While currently focused on ICE models from the India 2.0 project, VW Group has indicated plans to introduce EV models, including potentially affordable options tailored for emerging markets like India.[71] The launch of the ID.4 has occurred [72], and further models under Škoda and Audi are anticipated.[72] Developing cost-effective EVs leveraging global platforms but adapted for India will be key.
- **Battery Ecosystem:** Potential investment in EV manufacturing would likely involve developing a local battery supply chain, potentially including assembly or even cell production, leveraging government incentives aimed at building a domestic battery ecosystem.[98]

The future outlook for VW Group in India hinges on successfully increasing volumes with its current localized portfolio (especially the Kylaq), effectively managing costs and brand perception, and strategically entering the EV space with competitive and affordable products tailored to the Indian context. Continued use of India as an export base will also be crucial for overall operational viability.

IX. Conclusion

The Volkswagen Group stands at a critical juncture, navigating a complex and costly transformation towards electric, software-defined, and autonomous mobility. Its "Mobility for Generations" strategy provides a comprehensive framework, underpinned by principles of resilience, adaptability, and financial robustness, with the ambitious goal of achieving global automotive technology leadership by 2035.

The Group's strengths are considerable: a diverse and powerful brand portfolio covering all market segments, deep engineering capabilities, a global manufacturing footprint, and a leading position in the European BEV market. The multi-brand strategy, orchestrated through Brand Groups and enabled by shared platforms like MEB and the future SSP, remains a core pillar for achieving scale and efficiency. Strategic partnerships in critical areas like batteries (QuantumScape) and software/AD (Rivian, Mobileye, XPENG) have been significantly expanded, reflecting a pragmatic shift towards a more collaborative innovation model to accelerate progress and mitigate risks associated with purely in-house development.

However, the challenges are equally significant. Executing the software transition effectively, particularly through the realigned CARIAD unit and its integration with partners, remains a critical uncertainty after initial setbacks. Regaining competitiveness in the vital Chinese market against agile and technologically advanced local players is arguably the Group's most pressing strategic challenge. Financially, the massive investments required for electrification, software development, and global restructuring are pressuring operating margins and cash flow, making the success of ongoing performance programs paramount. Furthermore, managing the substantial financial risks inherent in the transition, especially the potential decline in residual values of the vast ICE vehicle portfolio, requires careful navigation.

Regionally, while Europe provides a strong BEV base and North America offers growth potential, the path forward in China is difficult. In India, the India 2.0 strategy has laid groundwork through localization, but achieving substantial market share in this price-sensitive and competitive market demands continued adaptation and a clear future strategy, likely involving affordable EVs.

Ultimately, the Volkswagen Group possesses the industrial scale, brand strength, and strategic intent required for the transformation. Success, however, is not guaranteed. It will depend critically on disciplined execution: delivering on technological promises (especially in software and batteries), effectively balancing synergies with brand

differentiation, adapting swiftly to diverse regional market dynamics (particularly in China and India), and maintaining financial discipline to fund the journey while navigating significant transition risks. The coming years will be decisive in determining whether Volkswagen can successfully translate its strategic vision into sustained market leadership in the new automotive era.

Works cited

1. The Group Strategy | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/the-group-strategy-15955
2. www.volkswagen-newsroom.com, accessed on April 20, 2025, https://www.volkswagen-newsroom.com/en/strategy-3912#:~:text=In%20the%20U.S.%20and%20China,climate%2Dneutral%20e%2Dmobility.
3. Strategy | Volkswagen Newsroom, accessed on April 20, 2025, https://www.volkswagen-newsroom.com/en/strategy-3912
4. the volkswagen group launches the most comprehensive electrification initiative in the automotive industry with "roadmap e", accessed on April 20, 2025, https://www.vwpress.co.uk/releases/3044
5. The 12 Group Initiatives of the NEW AUTO Strategy - Volkswagen Annual Report 2022, accessed on April 20, 2025, https://annualreport2022.volkswagenag.com/group-management-report/goals-and-strategies/the-12-group-initiatives-of-the-new-auto-strategy.html
6. Volkswagen Sustainability - The Sustainable Innovation, accessed on April 20, 2025, https://thesustainableinnovation.com/volkswagen/
7. Automated driving: Volkswagen Group intensifies collaboration with Mobileye, accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/automated-driving-volkswagen-group-intensifies-collaboration-with-mobileye-18290
8. Information at your fingertips – the interactive sustainability report of the Volkswagen Group, accessed on April 20, 2025, https://www.groupfleet.com/en/the-interactive-sustainability-report-of-the-volkswagen-group/
9. SUSTAINABILITY REPORT - Volkswagen Group Italia, accessed on April 20, 2025, https://www.volkswagengroup.it/en/volkswagen-group/environmental-policy/download/sustainabilty-report.pdf
10. Sustainability - Volkswagen Group Annual Report 2022, accessed on April 20, 2025, https://annualreport2022.volkswagenag.com/group-management-report/sustainable-value-enhancement/sustainability.html
11. Volkswagen Takes its Electric Ambitions Up Another Notch with New Targets for 2030, accessed on April 20, 2025, https://www.frost.com/growth-opportunity-news/volkswagen-takes-its-electric-ambitions-up-another-notch-with-new-targets-for-2030/
12. VW Group May Choose Combustion Over EV Goals - CarBuzz, accessed on April

20, 2025, https://carbuzz.com/vw-group-may-choose-combustion-over-ev-goals/
13. Volkswagen and Audi Are Sticking with Gas Engines: Report - Motor1.com, accessed on April 20, 2025, https://www.motor1.com/news/750871/vw-audi-stick-gas-engines/
14. Volkswagen unveils $7.1 billion commitment to boost product line-up, R&D, manufacturing in North America, accessed on April 20, 2025, https://media.vw.com/view/releases/1668
15. Volkswagen's Fight for Relevance in China: Can 11 New Models Turn the Tide? - Autoblog, accessed on April 20, 2025, https://www.autoblog.com/news/volkswagens-fight-for-relevance-in-china-can-11-new-models-turn-the-tide
16. Volkswagen Future Plan: brand gives first glimpse of entry-level electric model at works meeting, accessed on April 20, 2025, https://www.volkswagen-group.com/en/articles/volkswagen-future-plan-brand-gives-first-glimpse-of-entry-level-electric-model-at-works-meeting-18997
17. Volkswagen Future Plan: Passenger Cars brand gives first glimpse of entry-level electric model at works meeting, accessed on April 20, 2025, https://www.volkswagen-newsroom.com/en/press-releases/volkswagen-future-plan-passenger-cars-brand-gives-first-glimpse-of-entry-level-electric-model-at-works-meeting-18996
18. Volkswagen Group delivers 45 percent more all-electric vehicles in first 9 months, accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/volkswagen-group-delivers-45-percent-more-all-electric-vehicles-in-first-9-months-17768
19. Volkswagen Group doubles all-electric deliveries in Europe, accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/volkswagen-group-doubles-all-electric-deliveries-in-europe-19162
20. Volkswagen Group Doubles EV Deliveries in Europe as Global Sales Rise in Q1 2025, accessed on April 20, 2025, https://emobilityplus.com/2025/04/10/volkswagen-group-doubles-ev-deliveries-in-europe-as-global-sales-rise-in-q1-2025/
21. Volkswagen is 'shifting into the fast lane' as EV sales climb 59%, double in Europe - Electrek, accessed on April 20, 2025, https://electrek.co/2025/04/09/volkswagen-shifts-into-fast-lane-as-ev-sales-double-europe/
22. Trends in the electric vehicle industry – Global EV Outlook 2024 – Analysis - IEA, accessed on April 20, 2025, https://www.iea.org/reports/global-ev-outlook-2024/trends-in-the-electric-vehicle-industry
23. Corporate strategy – Global EV Outlook 2023 – Analysis - IEA, accessed on April 20, 2025, https://www.iea.org/reports/global-ev-outlook-2023/corporate-strategy
24. Volkswagen's Plan To Fix Cariad Includes Collaboration With Mobileye - CleanTechnica, accessed on April 20, 2025,

https://cleantechnica.com/2023/05/10/volkswagens-plan-to-fix-cariad-includes-collaboration-with-mobileye/
25. Volkswagen Said To Delay Production of EV Models - Investopedia, accessed on April 20, 2025, https://www.investopedia.com/volkswagen-said-to-delay-production-of-ev-models-8694059
26. Volkswagen Trinity EV delayed - report - CarExpert, accessed on April 20, 2025, https://www.carexpert.com.au/car-news/volkswagen-trinity-ev-delayed-report
27. Structural and personnel realignment at CARIAD | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/structural-and-personnel-realignment-at-cariad-17032
28. Volkswagen's $5 billion Rivian Partnership Sparks Tension Within ..., accessed on April 20, 2025, https://riviantrackr.com/news/volkswagens-5-billion-rivian-partnership-sparks-tension-within-cariad-software-division/
29. Volkswagen's Woes Remind Us That Combining Hardware With Software Is Hard - Forrester, accessed on April 20, 2025, https://www.forrester.com/blogs/volkswagens-woes-remind-us-that-combining-hardware-with-software-is-hard/
30. Volkswagen Reports Mixed Preliminary Q1 2025 Results - WebDisclosure, accessed on April 20, 2025, https://www.webdisclosure.com/article/volkswagen-reports-mixed-preliminary-q1-2025-results-6lXgD6R2b1E
31. Volkswagen AG publishes preliminary key figures for the financial statements as of March 31, 2025, accessed on April 20, 2025, https://www.volkswagen-group.com/en/ad-hoc/volkswagen-ag-publishes-preliminary-key-figures-for-the-financial-statements-as-of-march-31-2025-19187
32. Faster, Leaner, More Efficient: Rivian and Volkswagen Group Announce the Launch of their Joint Venture, accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/faster-leaner-more-efficient-rivian-and-volkswagen-group-announce-the-launch-of-their-joint-venture-18828
33. Volkswagen Group takes the offensive in China by strengthening ..., accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/volkswagen-group-takes-the-offensive-in-china-by-strengthening-tech-capabilities-and-reducing-costs-18350
34. Volkswagen Targets 15% China Market Share by 2030, Country Head Says - Yicai Global, accessed on April 20, 2025, https://www.yicaiglobal.com/news/volkswagen-aims-for-15-market-share-in-china-by-2030-china-chairman-says
35. Volkswagen Group cooperates with Valeo and Mobileye to enhance driver assistance in future MQB vehicles - Business Wire, accessed on April 20, 2025, https://www.businesswire.com/news/home/20250325025714/en/Volkswagen-Gro

up-cooperates-with-Valeo-and-Mobileye-to-enhance-driver-assistance-in-future-MQB-vehicles
36. #Innovation | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/tags/innovation-1061
37. Volkswagen and the Future of Autonomous Driving: What to Expect in Coming Years, accessed on April 20, 2025, https://www.vwofmarion.com/blog/volkswagen-autonomous-driving-future/
38. Volkswagen Partners with Multiple Companies to Create Autonomous Vehicle Technology, accessed on April 20, 2025, https://www.sunrise-vw.com/volkswagen-partners-with-multiple-companies-to-create-autonomous-vehicle-technology/
39. Brands & Brand Groups | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/brands-and-brand-groups-15811
40. Brand Group Core - Volkswagen Newsroom, accessed on April 20, 2025, https://www.volkswagen-newsroom.com/en/brand-group-core-17663
41. Brand Group Core improves result and return in 2023 – closer cooperation between the volume brands is gaining traction, accessed on April 20, 2025, https://www.volkswagen-group.com/en/articles/brand-group-core-improves-result-and-return-in-2023-closer-cooperation-between-the-volume-brands-is-gaining-traction-18278
42. Why Do Audi and Volkswagen Share Parts and Technology? - Complete Car Care Encinitas, accessed on April 20, 2025, https://completecarcare318.com/blog/why-do-audi-and-volkswagen-share-parts-and-technology
43. Volkswagen Group Technology, accessed on April 20, 2025, https://www.volkswagen-group.com/en/volkswagen-group-technology-16016
44. How Volkswagen Might Have Fallen Into A Cannibalization Loop In The EV Segment, accessed on April 20, 2025, https://www.topspeed.com/volkswagen-ev-cannibalization-loop/
45. Multi-Brand Strategy: Definition, Benefits, and Examples | Lytho, accessed on April 20, 2025, https://www.lytho.com/blog/multi-brand-strategy/
46. The Challenges Of Managing Multiple Brands And Avoiding Cannibalization - FasterCapital, accessed on April 20, 2025, https://fastercapital.com/topics/the-challenges-of-managing-multiple-brands-and-avoiding-cannibalization.html
47. Brand Group Core reports solid results for 2024 in a challenging environment, accessed on April 20, 2025, https://www.volkswagen-newsroom.com/en/press-releases/brand-group-core-reports-solid-results-for-2024-in-a-challenging-environment-19051
48. Analyzing the Audi Brand - Osum, accessed on April 20, 2025, https://blog.osum.com/audi-brand-analysis/
49. Who Buys Audi? Exploring Audi's Target Market and Buyer Persona - Keegan Edwards, accessed on April 20, 2025, https://keeganedwards.com/who-buys-audi-exploring-audis-target-market-and-buyer-persona/

50. As you like it - Audi.com, accessed on April 20, 2025, https://www.audi.com/en/innovation/research/audi-innovation-research/future-kids/
51. Report: Brand retention rises, but shows signs of 'loyalty erosion' | Auto Remarketing, accessed on April 20, 2025, https://www.autoremarketing.com/ar/analysis/report-brand-retention-rises-but-shows-signs-of-loyalty-erosion/
52. Porsche Ranks Highest in J.D. Power Automotive Brand Loyalty Study, accessed on April 20, 2025, https://www.porscheenglewood.com/porsche-ranks-highest-in-j-d-power-automotive-brand-loyalty-study/
53. 2023 J.D. Power Brand Loyalty Study - CarPro, accessed on April 20, 2025, https://www.carpro.com/blog/2023-j.d.-power-brand-loyalty-study
54. Volkswagen Group, accessed on April 20, 2025, https://www.vwfs.com/content/dam/bluelabel/valid/www-vwfs-com/investor-relations/pr%C3%A4sentationen/2025.03.27_UniCredit%20VW%20Group%20Investor%20Presentation_final.pdf
55. China - Flash report, Automotive sales volume market data (brands, vehicle type), 2025 - MarkLines, accessed on April 20, 2025, https://www.marklines.com/en/statistics/flash_sales/automotive-sales-in-china-by-month
56. Volkswagen Group launches a major product offensive at Auto Shanghai 2025, offering intelligent, fully connected vehicles for the growing China market, accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/volkswagen-group-launches-a-major-product-offensive-at-auto-shanghai-2025-offering-intelligent-fully-connected-vehicles-for-the-growing-china-market-19186
57. Volkswagen of America Reports Q1 2025 Sales, accessed on April 20, 2025, https://media.vw.com/releases/1861
58. USA - Flash report, Automotive sales volume market data (brands, vehicle type), 2025, accessed on April 20, 2025, https://www.marklines.com/en/statistics/flash_sales/automotive-sales-in-usa-by-month
59. Electric Vehicle Sales and Market Share (US - Q1 2025 Updates) - CarEdge, accessed on April 20, 2025, https://caredge.com/guides/electric-vehicle-market-share-and-sales
60. Volkswagen is putting its future plan into action with a new pick-up truck for South America, accessed on April 20, 2025, https://www.volkswagen-group.com/en/articles/volkswagen-is-putting-its-future-plan-into-action-with-a-new-pick-up-truck-for-south-america-19160
61. VW increases models to be launched in South America - MarkLines, accessed on April 20, 2025, https://www.marklines.com/en/news/324519
62. 2024 (Full Year) Global: Volkswagen Group Worldwide Car Sales by Region and Brand, accessed on April 20, 2025, https://www.best-selling-cars.com/brands/2024-full-year-global-volkswagen-gro

up-worldwide-car-sales-by-region-and-brand/
63. Volkswagen Group with solid FY 2024 results and a robust outlook, accessed on April 20, 2025, https://www.volkswagen-group.com/en/press-releases/volkswagen-group-with-solid-fy-2024-results-and-a-robust-outlook-19043
64. KYLAQ EFFECT: Skoda India Sets New Monthly Sales Record | Autocar Professional, accessed on April 20, 2025, https://www.autocarpro.in/news/skoda-auto-india-achieves-record-monthly-sales-during-silver-jubilee-year-as-new-kylaq-suv-drives-growth-in-competitive-market-125669
65. Škoda Auto Volkswagen India Rolls Out 500000th Engine from Chakan Plant, accessed on April 20, 2025, https://www.autocarpro.in/news/%C5%A1koda-auto-volkswagen-india-rolls-out-500000th-engine-from-chakan-plant-125434
66. Annual Report & Full Year Results 2024 | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/annual-report-and-full-year-results-2024-19005
67. VW wins back customer loyalty - GoAutoNews Premium, accessed on April 20, 2025, https://premium.goauto.com.au/vw-wins-back-customer-loyalty/
68. Main reason for low kushaq/taigun sales. : r/CarsIndia - Reddit, accessed on April 20, 2025, https://www.reddit.com/r/CarsIndia/comments/1j2bqug/main_reason_for_low_kushaqtaigun_sales/
69. PowerCo and QuantumScape Announce Landmark Agreement to Industrialize Solid-State Batteries, accessed on April 20, 2025, https://ir.quantumscape.com/resources/press-releases/news-details/2024/PowerCo-and-QuantumScape-Announce-Landmark-Agreement-to-Industrialize-Solid-State-Batteries/default.aspx
70. May 2022: VW chief says German car giant will overtake Tesla on electric vehicle sales by 2025 : r/electricvehicles - Reddit, accessed on April 20, 2025, https://www.reddit.com/r/electricvehicles/comments/1giuk9d/may_2022_vw_chief_says_german_car_giant_will/
71. (PDF) Evaluating Volkswagen's Current Market Position and Future Prospects for Growth in a Rapidly Electrifying Automotive Industry - ResearchGate, accessed on April 20, 2025, https://www.researchgate.net/publication/389847489_Evaluating_Volkswagen's_Current_Market_Position_and_Future_Prospects_for_Growth_in_a_Rapidly_Electrifying_Automotive_Industry
72. Indian EV market Companies - Market Research Future, accessed on April 20, 2025, https://www.marketresearchfuture.com/reports/india-electric-vehicle-market/companies
73. New electric vehicle model just rapidly outsold Tesla — here's why its flying off of lots, accessed on April 20, 2025,

https://www.thecooldown.com/green-business/volkswagen-id4-tesla-model-y-europe/
74. Volkswagen ID.4 sales soar by 653% in the United States: what has happened? The Volkswagen ID.4 experiences a significant increase in sales in January 2025, becoming the third best-selling electric vehicle in the U.S. market - Reddit, accessed on April 20, 2025, https://www.reddit.com/r/electricvehicles/comments/1izuy21/volkswagen_id4_sales_soar_by_653_in_the_united/
75. Volkswagen AG (VWAGY) Earnings Dates, Call Summary & Reports - TipRanks.com, accessed on April 20, 2025, https://www.tipranks.com/stocks/vwagy/earnings
76. Trends in the markets - VW Annual Report 2023 - Volkswagen Group, accessed on April 20, 2025, https://annualreport2023.volkswagen-group.com/group-management-report/business-development/trends-in-the-markets.html
77. Skoda, VW Sales Breakup Dec 2024 – Taigun, Virtus, Kushaq, Slavia - RushLane, accessed on April 20, 2025, https://www.rushlane.com/skoda-vw-sales-breakup-dec-2024-taigun-virtus-kushaq-slavia-12516638.html
78. DECARBONIZATION | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/publications/more/decarbonization-2348/download?disposition=attachment
79. QuantumScape Lounge: (Week 09 2025) : r/QUANTUMSCAPE_Stock - Reddit, accessed on April 20, 2025, https://www.reddit.com/r/QUANTUMSCAPE_Stock/comments/1j60731/quantumscape_lounge_week_09_2025/
80. QuantumScape and PowerCo Announce Groundbreaking Agreement - YouTube, accessed on April 20, 2025, https://www.youtube.com/watch?v=2mEqI53PS-A&pp=0gcJCfcAhR29_xXO
81. Circular Economy | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/publications/more/circular-economy-2342/download?disposition=attachment
82. Resource use and circular economy - Annual Report 2024 - Volkswagen Group, accessed on April 20, 2025, https://annualreport2024.volkswagen-group.com/sustainability-report/environment/resource-use-and-circular-economy.html
83. Volkswagen Group Components begins battery recycling pilot, accessed on April 20, 2025, https://media.vw.com/releases/1465
84. CATL and VW battery R&D cooperation : r/QUANTUMSCAPE_Stock - Reddit, accessed on April 20, 2025, https://www.reddit.com/r/QUANTUMSCAPE_Stock/comments/1iut6w1/catl_and_vw_battery_rd_cooperation/
85. Volkswagen AG (VWAGY) Q4 2024 Earnings Call Transcript | Seeking Alpha, accessed on April 20, 2025, https://seekingalpha.com/article/4766479-volkswagen-ag-vwagy-q4-2024-earnin

gs-call-transcript
86. Volkswagen AG, accessed on April 20, 2025, https://uploads.vw-mms.de/system/production/documents/cws/002/933/file_en/c185af7abefe2532043cd52d16cc4b02eaa874f4/2025-03-11_Volkswagen_Group_FY24_Website.pdf?1741681222
87. VW Group revenue up 3.0%, operating profit down 39.1% in Q1 2025 - MarkLines, accessed on April 20, 2025, https://www.marklines.com/en/news/324911
88. Volkswagen Group Mobility division with solid FY 2024 results in a challenging market environment, accessed on April 20, 2025, https://www.vwfs.com/en/media/press-releases/2025/Jahresergebnis-2024.html
89. uploads.vw-mms.de, accessed on April 20, 2025, https://uploads.vw-mms.de/system/production/documents/cws/002/931/file_en/953dcbb8e57270df70ca288218092dba4721fd63/Y_2024_e.pdf?1741692088
90. Rating Action - Moody's Ratings, accessed on April 20, 2025, https://ratings.moodys.com/ratings-news/439319
91. Ratings | Volkswagen Group, accessed on April 20, 2025, https://www.volkswagen-group.com/en/ratings-15756
92. Financial risks - Volkswagen Group Annual Report 2024, accessed on April 20, 2025, https://annualreport2024.volkswagen-group.com/group-management-report/report-on-risks-and-opportunities/risks-and-opportunities/financial-risks.html
93. Residual Value Risk Transitioning to Electric Vehicles — Will History Repeat Itself?, accessed on April 20, 2025, https://www.autodealertodaymagazine.com/366617/residual-value-risk-transitioning-to-electric-vehicles-will-history-repeat-itsel
94. Framing Stranded Asset Risks in an Age of Disruption - Stockholm Environment Institute, accessed on April 20, 2025, https://www.sei.org/wp-content/uploads/2018/03/stranded-assets-age-disruption.pdf
95. How Volkswagen bumped into a $1.4 billion problem in India - The Economic Times, accessed on April 20, 2025, https://m.economictimes.com/industry/auto/auto-news/how-volkswagen-bumped-into-a-1-4-billion-problem-in-india/articleshow/117888885.cms
96. Skoda India Says It Needs to Increase Share in Group's Overall Exports with Better Planning, accessed on April 20, 2025, https://www.outlookbusiness.com/corporate/skoda-india-says-it-needs-to-increase-share-in-groups-overall-exports-with-better-planning
97. Skoda And VW Sales Breakup November 2023 - Kushaq, Taigun, Slavia, Virtus - RushLane, accessed on April 20, 2025, https://www.rushlane.com/skoda-and-vw-sales-breakup-november-2023-kushaq-taigun-slavia-virtus-12484439.html
98. India's EV drive targets $500bn investment by 2030 | Automotive Manufacturing Solutions, accessed on April 20, 2025, https://www.automotivemanufacturingsolutions.com/electrification/india-invests-heavily-in-ambitious-electric-vehicle-strategy/46908.article

99. Skoda-Volkswagen to Invest in EV Plant EV Update Media - Electric Vehicles and Battery Industry News & Updates, accessed on April 20, 2025, https://evupdatemedia.com/skoda-volkswagen-to-invest-in-ev-plant/
100. 2023 U.S. Automotive Brand Loyalty Study | J.D. Power, accessed on April 20, 2025, https://www.jdpower.com/business/press-releases/2023-us-automotive-brand-loyalty-study