# INDUSTRY OVERVIEW

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## OVERVIEW OF GLOBAL E-BIKE MARKET

### Definition and Classification

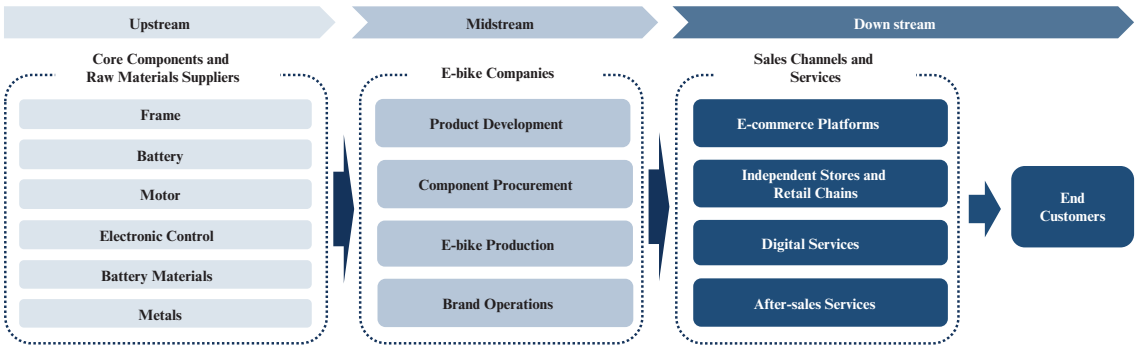
An e-bike, also known as an electric pedal assist cycle, refers to a bicycle equipped with an electric assistance system that provides power support in response to the rider's pedaling input and riding conditions, thereby enhancing acceleration performance and overall riding efficiency. Pursuant to the European Standard EN15194, the continuous rated output power of e-bike motor generally does not exceed 250 watts. Electric assistance is activated only when the rider is continuously pedaling and is progressively reduced as the bicycle speed approaches 25 kilometers per hour, with assistance fully disengaged upon reaching such speed. As e-bikes rely primarily on human pedal power and are classified as non-motorized bicycles comparable to conventional bicycles in most jurisdictions, they generally do not require vehicle registration or a driving license. Owing to their convenience, regulatory friendliness and broad applicability, e-bikes have become a key product category for urban commuting and recreational riding.

Based on differences in design, application scenarios and functional requirements, e-bikes can generally be categorized into the following types:

| Urban | Trekking | Mountain Biking (MTB) | Others |
|---|---|---|---|
| Urban e-bikes are designed primarily for daily commuting and short-distance travel in urban environments. These models typically feature an upright riding posture and are equipped with integrated lighting systems, mudguards, chainguards and optional cargo racks. Their design emphasizes comfort, practicality and ease of use rather than off-road performance. | Trekking e-bikes combine characteristics of both urban and mountain e-bikes. They are typically equipped with more robust frames and higher load-capacity components, enabling operation across a wide range of conditions from paved roads to light off-road terrain. These models are suitable for long-distance riding and multi-scenario use. | Mountain e-bikes are designed to address complex and rugged terrain. These bicycles generally feature higher ground clearance, wider tires and reinforced frames, together with advanced suspension systems and relatively higher-power motors, making them suitable for off-road riding on mountainous terrain, muddy paths and other unpaved surfaces. | Other categories include cargo, performance, folding and speed e-bikes, which address specialized and diversified usage scenarios and continue to expand the functional scope and application boundaries of e-bikes. |

### Value Chain of Global E-Bike Market

The e-bike industry value chain can be broadly divided into three segments: upstream supply of key raw materials and core components, midstream e-bike production, and downstream sales channels and digital services.



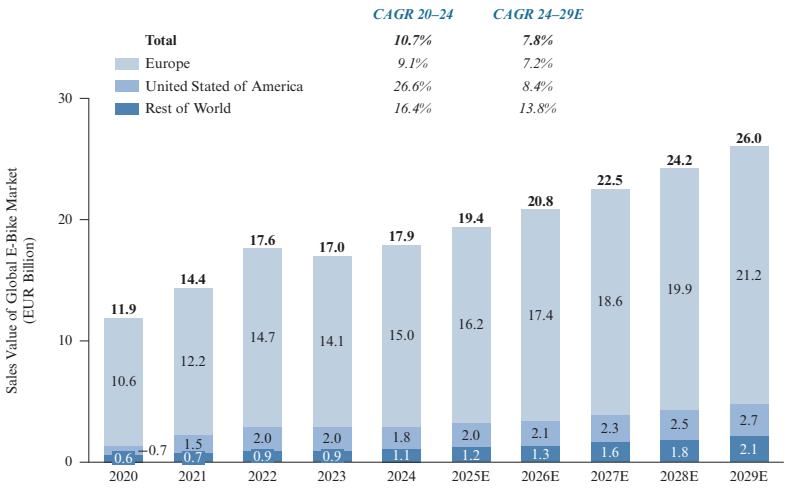

*Source: Frost & Sullivan*

### Market Size of Global E-Bike Market

The sales value of the global e-bike market expanded from approximately €11.9 billion in 2020 to approximately €17.9 billion in 2024, representing a CAGR of 10.7%. This growth was primarily driven by continual performance enhancements in core components, including battery technology, drive systems and intelligent control systems, increasing policy support for green and sustainable mobility across Europe and other major global markets, as well as the gradual release of consumer demand for higher-quality, intelligent and multi-scenario riding experiences.

Looking ahead, the global e-bike market is expected to reach approximately €26.0 billion by 2029, representing a CAGR of 7.8% from 2024 to 2029. With ongoing upgrades in powertrain systems, deeper integration of intelligent connectivity functions, and broader penetration of e-bikes across commuting, leisure and logistics use cases, together with increasing localization and strengthening of industrial supply chains in Europe and other regions and the maturation of product ecosystems, e-bikes are expected to play an increasingly important role in the evolution of global green mobility and light transportation systems.

**Sales Value of E-Bike Market by Region (Global), 2020–2029E**




*Source: Confederation of the European Bicycle Industry(CONEBI), U.S. Department of Energy, Frost & Sullivan*

**Market Drivers of Global E-Bike Market**

***Urban Transportation Electrification:*** Against the backdrop of accelerating global trends toward green mobility and transportation electrification, the global transportation landscape is progressively shifting transportation systems from internal combustion engines to electric-powered alternatives in order to reduce fossil fuel consumption and improve environmental quality.

***Environmental Regulations and Carbon Neutrality Targets:*** Under global carbon neutrality commitments and increasingly stringent environmental regulations, the transportation sector is accelerating its transition toward low-carbon and clean mobility.

***Improvements in Electric Powertrain System Efficiency:*** Continuous technological advancements in motors, battery systems and electronic control units have significantly improved the range, power output and riding experience of e-bikes. Together with the ongoing enhancement of cycling infrastructure and urban transportation policies, rising consumer demand for assisted riding has increased the penetration of more efficient and compact drive systems.

***Rising Consumer Health Awareness and Outdoor Cycling Culture:*** With rising public awareness of physical health and the growing popularity of outdoor sports and active lifestyles, e-bikes are increasingly viewed not only as transportation tools but also as an integral component of a healthy lifestyle.

***Government Subsidies and Industrial Policy Support:*** Governments worldwide are promoting the adoption of e-bikes through purchase subsidies, tax incentives and infrastructure investment as part of broader low-carbon transportation strategies. For example, France provides purchase subsidies of up to 40% for electric bicycles designed for passenger or cargo transport, folding electric bicycles and adaptive electric bicycles. In parallel, industrial policies are driving standardization and technological upgrading across the industry. For instance, the European Union mandates upgrades to complete e-bikes, motors, electronic control systems and batteries under EU Machinery Regulation 2023/1230. Overall, the combined effect of fiscal incentives and industrial policies not only stimulates market demand but also accelerates supply chain upgrading and technological iteration.

**Future Trends of Global E-Bike Market**

***Intelligence and Connectivity:*** The advancement of digital technologies and connectivity solutions is accelerating the integration of intelligent and connected functions into e-bikes.

***Product Premiumization and Multi-Scenario Segmentation:*** Rising consumer demand for higher-quality mobility solutions is driving e-bikes toward premiumization and more clearly defined segmentation across usage scenarios.

***Expansion of Sharing and Subscription Models:*** The growth of urbanization and increasing last-mile mobility demand are accelerating the adoption of shared and subscription-based e-bike models.

## OVERVIEW AND COMPETITIVE LANDSCAPE OF E-BIKE MARKET IN EUROPE

**Market Size of E-Bike Market in Europe**

***Sales Value and Growth Rate of E-Bike Market in Europe***

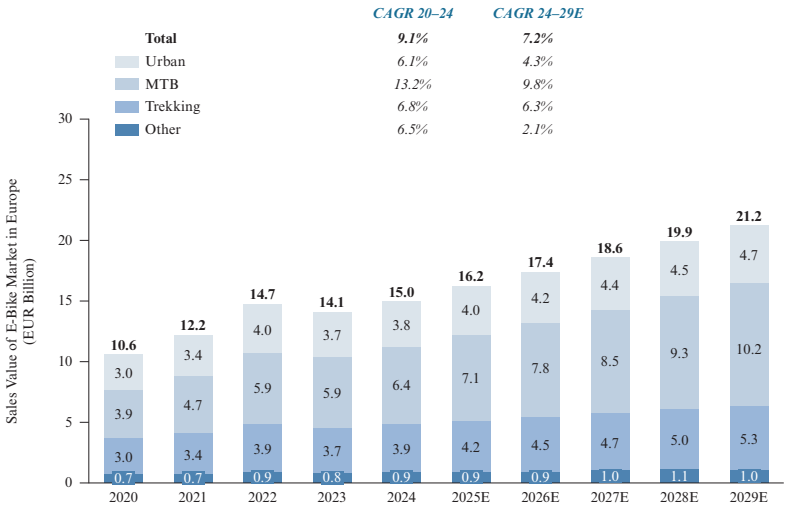
The sales value of e-bike market in Europe increased from approximately €10.6 billion in 2020 to approximately €15.0 billion in 2024, representing a CAGR of 9.1%. Market growth during this period was driven by multiple structural factors, including strengthened EU carbon reduction and sustainable mobility policies, continued support through subsidies, tax incentives and infrastructure investments across the European countries, and the maturity of urban cycling culture, under which e-bikes have increasingly become an important mobility solution for short-distance commuting, urban transportation and leisure activities. From 2022 to 2023, the electric bicycle market experienced a period of short-term adjustment, primarily reflecting the lagged impact of global supply chain disruptions during the COVID-19 period. Given the relatively long supply chain and

production cycles of the electric bicycle industry, lead times for certain key components were extended during the pandemic, resulting in delayed market supply as demand normalized in the post-COVID recovery phase. Against this backdrop, inventory levels across the supply chain increased, and market participants implemented pricing and promotional adjustments to support inventory turnover. As a result, average selling prices recorded a moderate adjustment, and the overall market size showed a temporary moderation during the period from 2022 to 2023. Since 2024, inventory pressures have been gradually alleviated, and such adjustments are expected to continue to ease through 2025, contributing to a progressive stabilization of market conditions.

In addition, technological advancements in batteries, motors and electronic control systems significantly improved riding performance and user experience, accelerating replacement demand. Persistently high energy prices and rising costs associated with private vehicle ownership further enhanced consumer acceptance of e-bikes as a cost-efficient alternative.

Looking forward, the e-bike market in Europe is expected to evolve toward premiumization, multi-purpose applications and deeper integration of intelligent functions. Ongoing improvements in powertrain systems, connectivity features, safety standards and overall e-bike quality are expected to support the expansion of scenario-specific products, including long-range commuting models, off-road MTB models, trekking models, as well as other categories such as cargo, folding and leisure models, resulting in an increasingly diversified product structure. Supported by higher levels of supply chain localization, further refinement of regulatory frameworks and the continued maturation of the industry ecosystem, the market is expected to maintain steady growth. Sales value is projected to reach approximately €21.2 billion by 2029, with a CAGR of 7.2% from 2024 to 2029.

**Sales Value of E-Bike Market by Application Scenario (Europe), 2020–2029E**



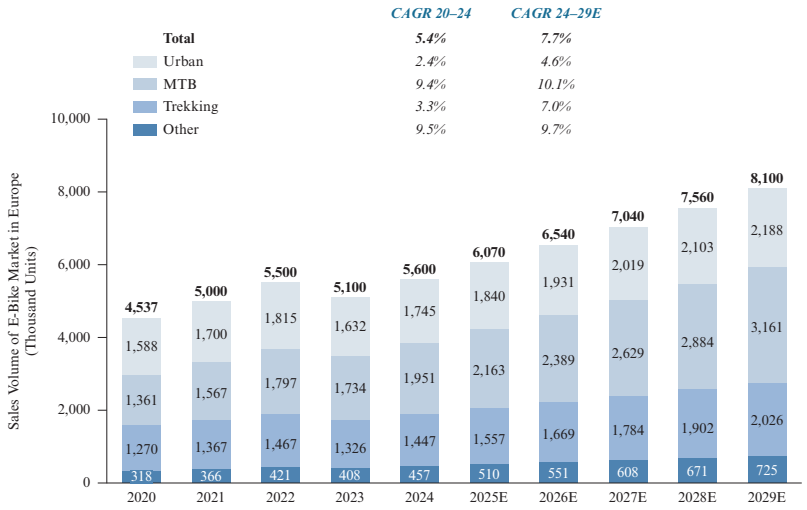

*Source: Confederation of the European Bicycle Industry (CONEBI), Frost & Sullivan*

***Sales Volume and Growth Rate of E-Bike Market in Europe***

In terms of sales volume, the e-bike market in Europe demonstrated steady expansion, with total sales volume increasing from approximately 4,537 thousand units in 2020 to approximately 5,600 thousand units in 2024, representing a CAGR of 5.4%. Volume growth during this period was supported by sustained demand for short-distance commuting solutions, widespread adoption of e-bikes in daily urban mobility, and expanding application scenarios, including off-road riding, physical exercise and leisure activities. Improvements in affordability, product reliability and riding comfort further supported broader consumer adoption across different age groups. Looking ahead, supported by continued infrastructure development and replacement demand for

higher-performance models, the e-bike market in Europe is expected to maintain steady growth, with sales volume projected to reach approximately 8,100 thousand units by 2029, representing a CAGR of 7.7% from 2024 to 2029.

**Sales Volume of E-Bike Market by Application Scenario (Europe), 2020–2029E**




*Source: Confederation of the European Bicycle Industry(CONEBI), Expert Interview, Frost & Sullivan*

***Sales Volume and Growth Rate of E-Bike Market in Europe (by Sales Channel)***

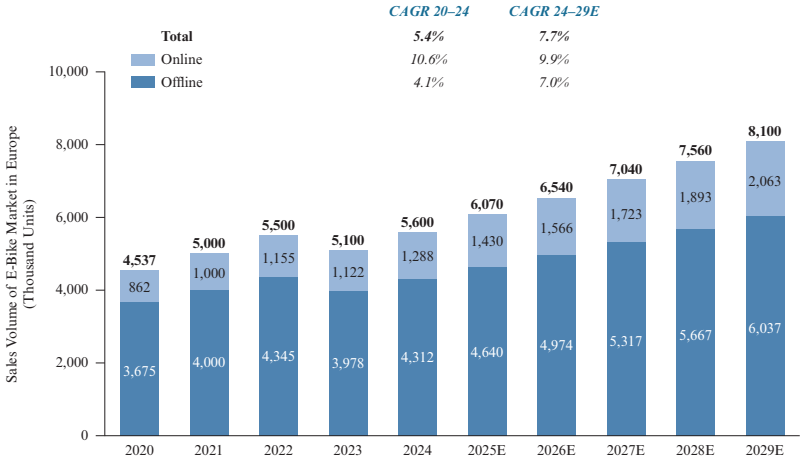
In terms of sales channels, the European e-bike market remains predominantly offline, while online channels have been growing at a faster pace. Offline sales volume increased from approximately 3,675 thousand units in 2020 to approximately 4,312 thousand units in 2024, representing a CAGR of 4.1%. Growth was supported by consumers' preference for test riding, professional fitting, and after-sales services and maintenance provided by specialty bicycle retailers and dealer networks. Offline sales volume is projected to increase to approximately 6,037 thousand units by 2029, representing a CAGR of 7.0% from 2024 to 2029, driven by replacement demand and the continued expansion of service-oriented retail networks.

Online sales volume increased from approximately 862 thousand units in 2020 to approximately 1,288 thousand units in 2024, achieving a higher CAGR of 10.6%, reflecting increasing acceptance of direct-to-consumer models, improved logistics capabilities and growing consumer confidence in online purchasing of standardized products. Online sales volume is expected to reach approximately 2,063 thousand units by 2029, representing a CAGR of 9.9% from 2024 to 2029, with penetration expected to continue to increase alongside the integration of online ordering with offline delivery and service models.

Against this backdrop of differentiated channel growth dynamics, the structural characteristics of various offline retail formats also have a material impact on the overall market development and growth trajectory of the European e-bike market. Retail chain distributors typically operate at large scale with extensive store networks and strong financial capacity, allowing them to place sizable orders and absorb significant inventory. As these channels are generally multi-brand and professionally managed, their brand switching costs are relatively low and price sensitivity is high, resulting in more intense competition among e-bike brands. During industry upcycles, retail chains enable rapid market entry by allowing brands to access multiple stores at once, while in downcycles, heightened intra-channel competition and aggressive pricing for destocking may pressure margins and brand positioning of e-bike brands. Independent stores, in contrast, operate on a smaller scale with lower inventory levels and typically carry a limited number of brands, leading to lower price sensitivity and stronger brand loyalty. Although expansion through independent stores is slower, their higher channel stickiness and limited price competition often provide e-bike brands with a more

stable and predictable revenue base across industry cycles. Accordingly, independent bicycle dealers currently remain the predominant offline distribution channel in the European e-bike market, supported by their service-oriented business model and closer customer relationships.

**Sales Volume of E-Bike Market by Sales Channel (Europe), 2020–2029E**



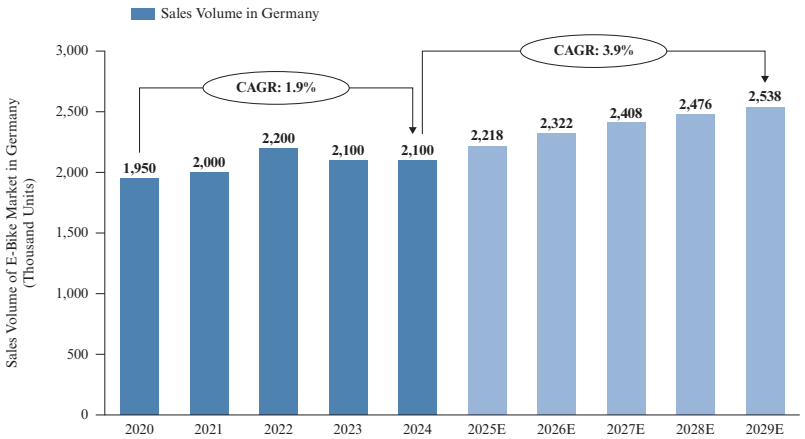

*Source: Confederation of the European Bicycle Industry (CONEBI), Expert Interview, Frost & Sullivan*

***Sales Volume and Growth Rate of E-Bike Market in Germany***

The German e-bike market demonstrated moderate but resilient growth in terms of sales volume. Total sales volume increased from approximately 1,950 thousand units in 2020 to approximately 2,100 thousand units in 2024, representing a CAGR of 1.9%. During this period, e-bike sales volumes in 2023 saw a modest decline due to elevated inventory levels following the pandemic era demand surge, prompting short-term inventory corrections and reduced ordering. During the pandemic, supply chain disruptions extended lead times for key components, contributing to delivery delays and inventory accumulation, consistent with European market dynamics. Combined with short-term market fluctuations and competitive pressure from illicit imports, these factors contributed to the observed slowdown in Germany's unit sales.

Looking ahead, supported by replacement demand, and broader adoption of utility-oriented use, total sales volume in Germany is projected to reach approximately 2,538 thousand units by 2029, implying a CAGR of 3.9% from 2024 to 2029.

**Sales Volume of E-Bike Market (Germany), 2020–2029E**




*Source: Confederation of the European Bicycle Industry (CONEBI), ZIV — German Bicycle Industry, Expert Interview, Frost & Sullivan*

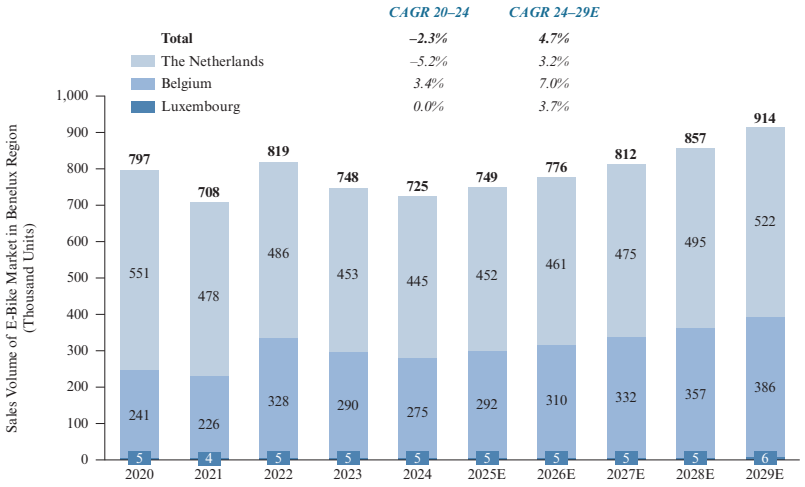
### *Sales Volume and Growth Rate of E-Bike Market in Benelux Region*

The Benelux Region, comprising Belgium, the Netherlands and Luxembourg, is a highly integrated economic area in Western Europe and an early adopter of cross-border cooperation frameworks. The region is characterized by high population density, advanced infrastructure, strong purchasing power and a mature consumer market. With a long-established cycling culture, particularly in the Netherlands and Belgium, Benelux represents one of Europe's most developed markets for bicycles and e-bikes, supported by extensive cycling infrastructure, favorable urban planning and strong policy support for sustainable mobility. The region also serves as an important logistics and distribution hub for Europe, benefiting from well-developed ports, transport networks and proximity to major European markets.

The e-bike market in the Benelux region experienced a period of adjustment followed by a gradual stabilization and return to growth from 2020 to 2024. Total sales volume decreased from approximately 797 thousand units in 2020 to approximately 725 thousand units in 2024, representing a CAGR of approximately -2.3%. Such changes primarily reflected post-pandemic demand normalization as well as inventory adjustments across major markets within the region. Within the Benelux region, the Netherlands remained the largest market by sales volume. Market performance was affected by supply and delivery constraints in 2021 and comparatively subdued consumer demand in subsequent years, in line with the overall contraction of the e-bike market in Europe during the period. By comparison, the Belgian market exhibited moderate fluctuations, reflecting the increasing adoption of e-bikes as a mobility solution, while also reflecting broader market adjustments associated with inventory accumulation.

Looking forward, supported by recovery in replacement demand and continued expansion of utility use cases, total sales volume in the Benelux region is projected to increase to approximately 914 thousand units by 2029, representing a CAGR of 4.7% from 2024 to 2029. Growth is expected to be increasingly driven by Belgium and Luxembourg, alongside gradual stabilization in the Netherlands market.

**Sales Volume of E-Bike Market by Country (Benelux Region), 2020–2029E**




*Source: Confederation of the European Bicycle Industry(CONEBI), Expert Interview, Frost & Sullivan*

**Ranking and Market Share of E-Bike Companies in Europe**

The global e-bike market presents relatively high barriers to entry, primarily arising from the need for product development capabilities across engineering, power electronics and battery systems, compliance with regulatory and certification requirements, and the establishment of supply chain, distribution and after-sales service networks. Accordingly, competition in the global e-bike industry is driven by technological capabilities, regulatory compliance, manufacturing scale and brand positioning.

In 2024, the top five e-bike companies in Europe accounted for approximately 33.9% of total sales volume, indicating a moderately fragmented market structure. Within this competitive landscape, market participants can generally be grouped into two segments based on scale. Companies at scale, typically defined as companies with annual e-bike sales exceeding 50,000 units, tend to benefit from economies of scale, stronger supplier relationships and more established distribution networks. In contrast, emerging companies are usually smaller in scale but often compete through differentiated product designs, technological innovation or targeted market positioning. Under such market conditions, established industry groups with strong brand recognition, diversified product portfolios, advanced technologies and efficient supply chain capabilities are generally better positioned to strengthen their market presence through ongoing product upgrades, channel consolidation and selective acquisitions, and are expected to benefit from gradual industry consolidation over the medium to long term.

In 2025, the Company achieved sales of over 50,000 e-bikes in Europe, becoming the fastest-growing e-bike company in Europe to attain company-at-scale status within five years, highlighting its rapid market expansion and operational scalability.

**Ranking and Market Share of Top Five E-Bike Companies in terms of Sales Volume (Europe), 2024**

| Ranking | E-Bike Companies | Sales Volume of E-Bikes in Europe *(thousand unit)* | Market Share *(%)* |
|---|---|---|---|
| 1 | Company A | 662.5 | 11.8% |
| 2 | Company B | 398.9 | 7.1% |
| 3 | Company C | 349.3 | 6.2% |
| 4 | Company D | 281.0 | 5.0% |
| 5 | Company E | 211.1 | 3.8% |
| | **Top five** | **1,902.8** | **33.9%** |
| | **Total** | **5,600.0** | **100.0%** |

*Notes:*

1. Company A is a private company, founded in 1867 and headquartered in the Netherlands. It is primarily engaged in the transport and mobility sector, with significant activities in the development and manufacture of bicycles, e-bikes, and related cycling products, with a diversified portfolio of brands.
2. Company B is a private company, founded in 1983 and headquartered in Germany. It is mainly engaged in the design and manufacture of bicycles, e-bikes, and related cycling products.
3. Company C is a private company, founded in 1998 and headquartered in the Netherlands. It is primarily engaged in the manufacture of bicycles, e-bikes, cargo bikes, parts and accessories, with a diversified portfolio of brands.
4. Company D is a company listed on the Taiwan Stock Exchange, founded in 1972 and headquartered in Taiwan. It is mainly engaged in the design, production, and worldwide distribution of bicycles, e-bikes, and related cycling products.
5. Company E is a private company, founded in 1976 and headquartered in the United States. It is primarily engaged in the design, manufacture, and global distribution of performance bicycles and e-bikes.

**Ranking and Market Share of E-Bike Brands in the Benelux Region**

In 2024, the top five e-bike brands, ranked by sales volume of urban e-bikes, achieved combined sales of approximately 157.7 thousand units in the Benelux region, representing approximately 47.9% of total urban e-bike sales in the region. Against this backdrop, traditional brands with slower product renewal cycles or weaker technological competitiveness experienced downward pressure on their market share. In contrast, brands with strong product competitiveness, active new product launches and rapid channel expansion capabilities were better positioned to retain or enhance their market presence.

In 2024, the Company Brand ranked fifth among e-bike brands in the Benelux market based on sales volume of urban e-bikes, with a market share of approximately 5.9%, and the company's brand was the fastest-growing e-bike brand in Benelux region during 2022 to 2024 in terms of e-bikes sales volume.

**Ranking and Market Share of Top Five E-Bike Brands in terms of Sales Volume of Urban E-bikes (Benelux Region), 2024**

| Ranking | E-Bike Brands | Sales Volume of Urban E-Bike in the Benelux Region *(thousand unit)* | Market Share *(%)* |
|---|---|---|---|
| 1 | Brand A | 44.8 | 13.6% |
| 2 | Brand B | 39.9 | 12.1% |
| 3 | Brand C | 32.5 | 9.9% |
| 4 | Brand D | 21.2 | 6.4% |
| **5** | **The Company Brand** | **19.3** | **5.9%** |
| | **Top five** | **157.7** | **47.9%** |
| | **Total** | **329.5** | **100.0%** |

*Notes:*

1. The Company's brand data is provided by the Company.
2. Brand A is a Dutch bicycle brand bicycle brand originating from the Netherlands, launched in founded in 1892, operating as part of a privately held, Netherlands-based global bicycle group and primarily engaged in the design and manufacture of high-quality urban and trekking e-bikes, with an emphasis on commuter and everyday transportation use cases.
3. Brand B is a bicycle brand originating from Germany, launched in 1993, operating as part of a privately held, German-based global bicycle manufacturers and primarily engaged in developing and manufacturing premium e-bikes and performance-oriented e-bikes, with a strong presence in MTB and trekking segments.
4. Brand C is a bicycle brand originating from the Netherlands, launched in 2006, operating as part of a privately held, Netherlands-based bicycle group, and is primarily engaged in the design and manufacture of urban-oriented bicycles and e-bikes, with a focus on daily commuting, lifestyle mobility, and city riding applications.
5. Brand D is a bicycle brand originating from the Netherlands, launched in 1904, operating as part of a Netherlands-based global bicycle group, and is primarily engaged in the design and manufacture of bicycles and e-bikes, with a strong focus on urban mobility, commuting, and leisure cycling applications across European markets.

**Market Drivers of E-Bike Market in Europe**

***Policy Support and Tax Incentives*:** Across Europe, governments continue to promote the adoption of e-bike through purchase subsidies, tax incentives and green mobility support schemes. These fiscal measures reduce initial ownership costs and improve affordability, thereby increasing consumer adoption and demand elasticity. The inclusion of e-bikes within carbon reduction initiatives, urban commuting frameworks and sustainable mobility planning has positioned e-bikes as an important instrument for achieving carbon neutrality targets and improving air quality. The consistency of policy direction and continuity of fiscal support provides long-term institutional backing for the expansion of the e-bike market in Europe.

***Cycling Culture and Urban Infrastructure Development:*** Europe's long-established cycling culture, together with continuous improvements in urban cycling infrastructure, provides a solid foundation for e-bike market growth. In cities such as Amsterdam and Copenhagen, bicycles and e-bikes are mainstream modes of commuting and daily transportation. The expansion of dedicated cycling lanes and improvements in road design and safety standards have enhanced riding convenience and safety. In addition, high urban density, traffic congestion and limited parking availability further incentivize residents to adopt flexible, cost-efficient and environmentally friendly transportation options, thereby supporting sustained demand for e-bikes.

***High Energy Prices and Rising Commuting Costs:*** Persistently high fuel prices and rising costs associated with private ownership in Europe are driving consumers toward more economical commuting alternatives. As a zero-fuel, low-maintenance transportation option, e-bikes have become an increasingly attractive choice for urban commuters. Compared with internal combustion engine vehicles, e-bikes significantly reduce commuting expenses and help users avoid exposure to fuel price volatility, road taxes and vehicle-related fees, thereby strengthening their cost competitiveness.

***Upgrading of E-Bike Performance and Safety Standards:*** The e-bike market in Europe is undergoing a transition toward higher performance, greater reliability and increased professionalization, driven by continuous upgrades in e-bike performance and safety standards. Improvements in batteries, motors, drive systems and e-bike structures, together with higher requirements for durability, comfort, range and safety, have strengthened consumer preference for mid- to high-end models suitable for multiple riding scenarios. The growing adoption of higher-performance configurations, including mid-drive systems, reflects rising expectations for riding experience and e-bike capability among European consumers.

**Future Trends of E-Bike Market in Europe**

***Intelligent Connectivity and Digital Riding Experience:*** In Europe, e-bikes are increasingly evolving from traditional transportation tools into intelligent mobility terminals. The expansion of shared mobility and public fleet applications has increased demand for connected e-bikes equipped with remote management, GPS positioning and fleet dispatch capabilities. Digital features such as IoT connectivity, smart locks, mobile applications, remote diagnostics, navigation and subscription-based services enhance convenience, safety and service quality. Intelligent riding experiences improve product value, deepen brand-user engagement and support the penetration of mid- to high-end models as well as new service-oriented business models.

***Application of New Technologies:*** Driven by technological progress and rising user expectations, the European e-bike industry is entering a new phase of innovation. Hub motors remain widely used in urban and lightweight models due to their simplicity and low maintenance requirements, while mid-drive systems continue to dominate mountain, trekking and mid- to high-end segments due to superior performance. Battery technology is advancing toward higher energy density and longer service life, while belt-drive systems are gaining adoption for improved durability and reduced maintenance. Production processes are increasingly incorporating flexible and automated systems to support product diversification and premiumization.

***Omnichannel Sales Integration:*** Sales channels for e-bikes in Europe are accelerating toward omnichannel integration. While physical retail stores remain the primary sales channel, e-commerce and click-and-collect models are growing rapidly and enhancing customer reach. Leading brands increasingly combine direct-to-consumer online sales with offline test rides, professional assembly and service networks. This integration improves sales efficiency, strengthens consumer trust and supports broader market penetration across Europe.

***Rising Brand Concentration and Accelerating Mergers and Acquisitions:*** As the European e-bike market continues to expand and competition intensifies, the industry is moving toward higher brand concentration and resource integration. Manufacturers with stronger capital strength and technological capabilities are consolidating their market positions through mergers, acquisitions and strategic cooperation, while smaller players face increasing consolidation pressure. Higher brand concentration supports economies of scale, cost efficiency and stronger supply chain control, while enhancing consumer trust and brand recognition.

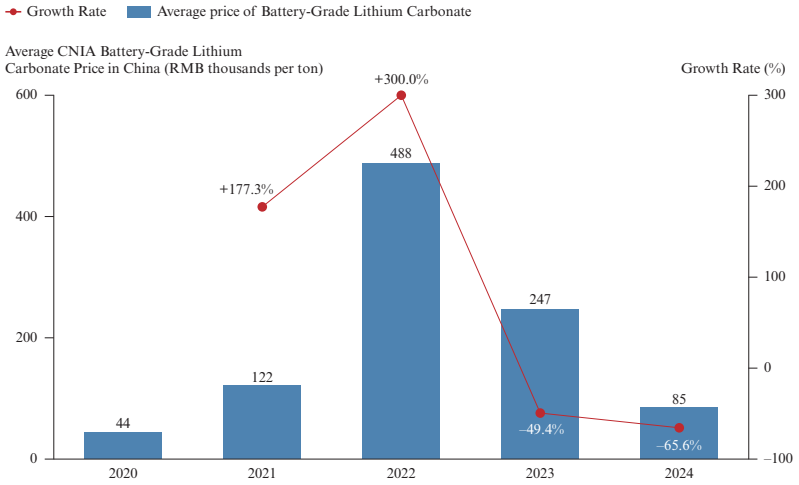
***Localization of Production and European Supply Chain Restructuring:*** As European countries place greater emphasis on supply chain resilience, security and local economic contribution, the e-bike industry is gradually shifting from reliance on Asian imports toward localized production and regional supply chain restructuring within Europe. More brands and start-ups are establishing assembly facilities in Europe or cooperating with suppliers in Central and Eastern Europe to localize key components, and e-bike production. The adoption of flexible production systems and robotic automation has improved production efficiency and customization capabilities, enhancing supply chain responsiveness. This trend strengthens supply chain security, delivery efficiency and the "Made in Europe" brand positioning, supporting long-term competitiveness.

***Stricter Regulations and Standard Harmonization:*** With growing regulatory emphasis on safety, environmental performance and consumer protection, stricter regulation and standard harmonization are becoming key drivers of industry development in Europe. Unified standards require manufacturers to improve e-bike frame and component quality, battery and electronic control safety, as well as production and testing processes. While these requirements raise entry thresholds, they also improve overall industry quality, strengthen market confidence and support standardized and sustainable industry development.

**Raw Materials Price Trend**

The average price of battery-grade lithium carbonate in China increased from approximately RMB44 thousand per ton in 2020 to RMB85 thousand per ton in 2024, representing a CAGR of approximately 17.9% over the same period. Entering 2020, battery-grade lithium carbonate prices remained at a relatively low level due to prior capacity expansion and a temporary slowdown in downstream demand. As demand from the new energy vehicle industry expanded rapidly and supply growth lagged behind, battery-grade lithium carbonate prices rose sharply to RMB122 thousand per ton in 2021. After that, the average price of battery-grade lithium carbonate continued to surge amid intensified supply-demand imbalance and speculative stocking activities, reaching a peak of RMB488 thousand per ton in 2022. In 2024, following significant capacity releases, inventory adjustments and a correction from the previous price spike, the average price declined and stabilized at approximately RMB85 thousand per ton. In the future, battery-grade lithium carbonate prices are expected to fluctuate within a rational range as supply-side expansion gradually aligns with downstream demand growth, with market dynamics driven by capacity discipline, cost structures and the pace of electric vehicle penetration.

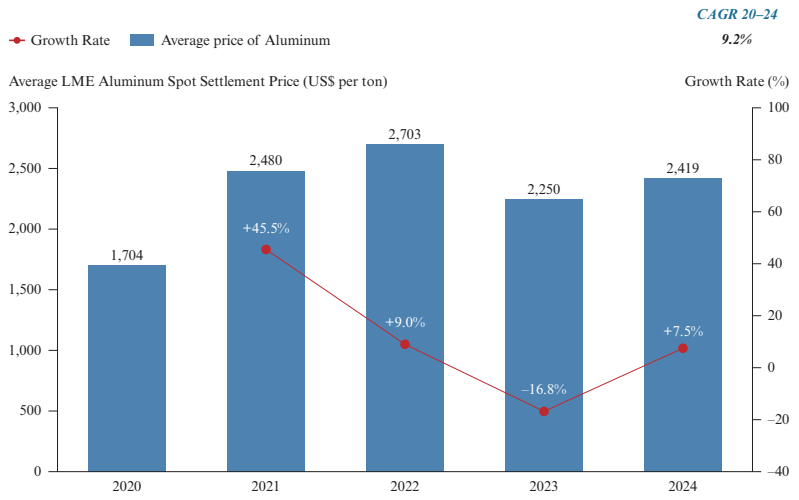
**Average Battery-Grade Lithium Carbonate Price (China), 2020–2024**




*Source: China Nonferrous Metals Industry Association (CNIA), Frost & Sullivan*

The average price of aluminum increased from approximately US$1,704 per ton in 2020 to US$2,419 per ton in 2024, representing a CAGR of approximately 9.2% over the same period. Entering 2020, the COVID-19 pandemic and subsequent global supply chain disruptions caused the demand for raw materials to fluctuate significantly, with aluminum prices initially suppressed by industrial lockdowns. As a key raw material for e-bike frames and components, market demand for aluminum surged during the recovery phase, leading to a rapid increase in prices from around US$1,704 per ton in 2020 to US$2,480 per ton in 2021. After that, the average price of aluminum continued to rise due to surging energy costs and geopolitical instability affecting smelting operations, reaching a peak of US$2,703 per ton in 2022. In 2024, the average price of aluminum stabilized at approximately US$2,419 per ton. In the future, the market demand for aluminum is expected to continue to grow, driven by the accelerating global transition toward electric mobility and lightweight automotive structures, thereby supporting a stable increase in the price of aluminum.

**Average Aluminum Price (Global), 2020–2024**




*Source: London Metal Exchange(LME), Frost & Sullivan*

**Entry Barriers of E-Bike Market in Europe**

***Supply Chain Complexity and Localized Production:*** The European e-bike supply chain involves metal components, battery packs, motors and electronic control systems, making stable and compliant sourcing increasingly complex. Volatility in semiconductor supply, battery raw material prices, metals and energy costs directly affects cost structures and supply reliability. In addition, localized production requirements increase investment in facilities, labor and regulatory compliance, making supply chain complexity and localization costs important entry barriers for new entrants.

***Market Competition, Brand and Channel Barriers:*** The European market is dominated by established brands with comprehensive product portfolios, strong brand recognition, mature distribution channels and extensive after-sales service networks. High consumer expectations regarding quality, safety and service reliability limit opportunities for under-resourced entrants. Dealer relationships, service infrastructure and brand loyalty further constrain rapid market entry and large-scale expansion.

***Intellectual Property and Patent Protection:*** Core technologies related to motors, control systems, connectivity, battery management and frame design are extensively protected by patents. Strong patent portfolios create substantial competitive barriers, particularly in high-end and smart e-bike segments. New entrants are required to invest significantly in research and development, licensing or strategic partnerships to avoid infringement risks, increasing upfront costs and market entry difficulty.

**SOURCES OF INFORMATION**

We commissioned Frost & Sullivan to analyse and prepare a report regarding global e-bike market as well as e-bike market in Europe. Frost & Sullivan is an independent global consulting firm founded in 1961 in New York that offers industry research and market strategies and provides growth consulting and corporate training. We agreed to pay a commission fee of RMB460,000 to Frost & Sullivan pursuant to a service agreement reached by arm's length negotiation. Except as otherwise noted, all of the data and forecasts contained in this section are derived from the Frost & Sullivan Report. We have also referred to certain information in the "Summary," "Risk Factors," "Business" and "Financial Information" sections to provide a more comprehensive presentation of the industry in which we operate.

In preparing the report, Frost & Sullivan conducted both primary and secondary research and relied on various sources. The primary research was conducted via interviews with key industry experts and leading industry participants. The secondary research involved analysis of market data obtained from several publicly available data sources, such as the IMF, World Bank, Confederation of the European Bicycle Industry and other industrial associations. The market projections in the Frost & Sullivan Report are based on the following key assumptions: (i) the global social, economic, and political environment are expected to remain stable during the forecast period; (ii) global economic and industrial development are likely to maintain a steady growth in the forecast period; (iii) related industry key drivers are likely to drive the growth of the global e-bike market as well as e-bike market in Europe in the forecast period; and (iv) there is no extreme force majeure or industry regulation which may affect the market dramatically or fundamentally.

Our Directors confirm that, to the best of their knowledge, after making reasonable inquiries and exercising reasonable care, there is no material adverse change in the market information since the date of the relevant data contained in the Frost & Sullivan Report which may qualify, contradict or have an impact on the information in this section.