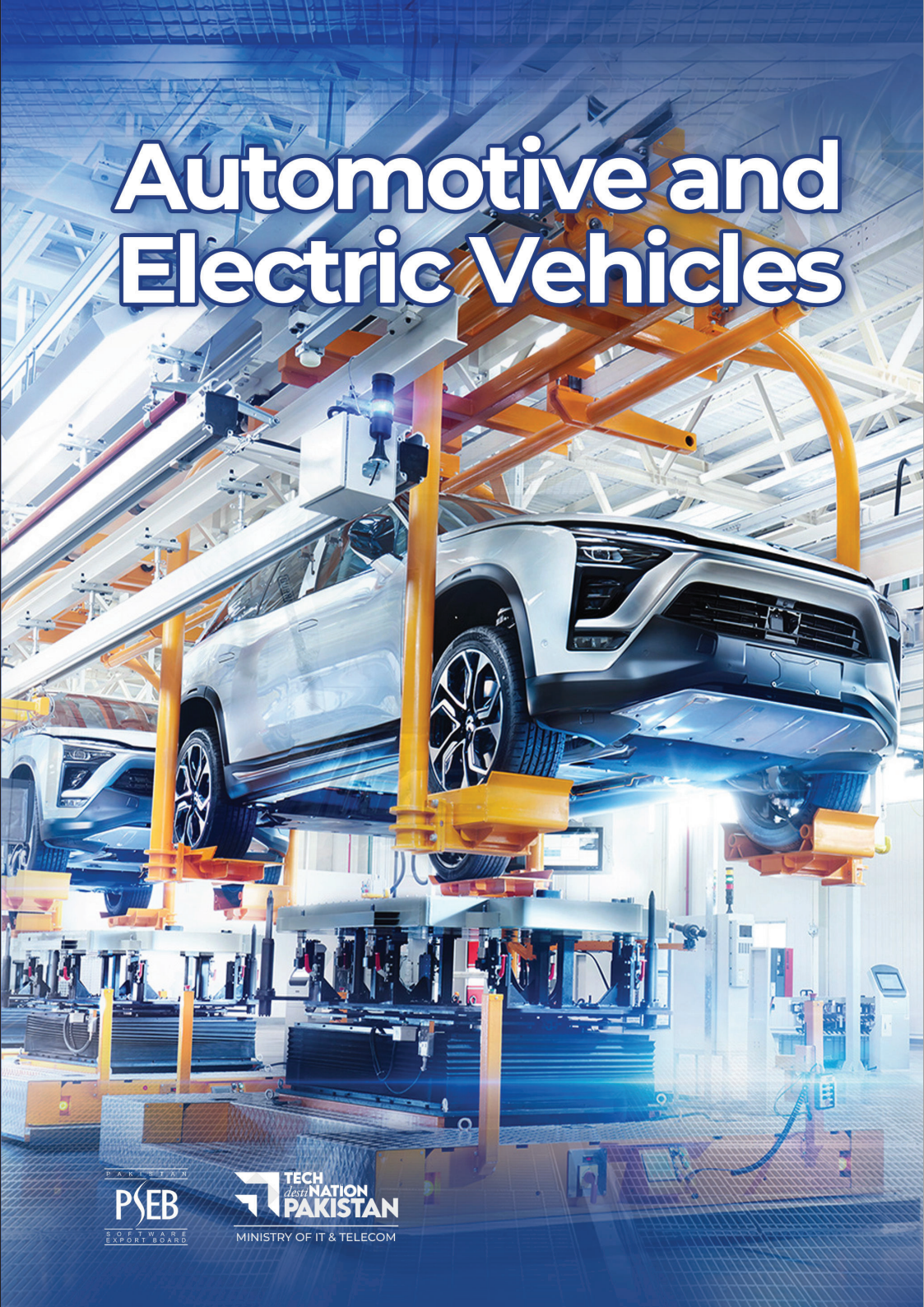
Automotive and Electric Vehicles



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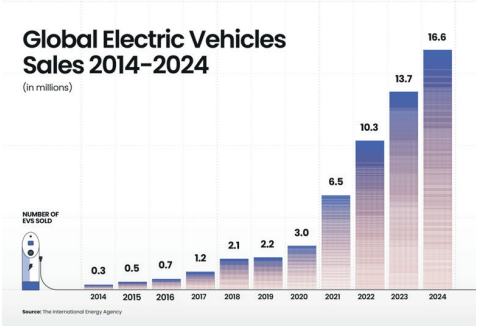
Global Context

The global electric vehicle (EV) market has transformed remarkably over the past decade, reshaping the automotive industry and paving the way for a more sustainable transportation future. According to data from the International Energy Agency (IEA), the global electric car stocks have experienced exponential growth, with sales share surging from under 10% to more than 45% of vehicles sold worldwide in just five years.[1] This dramatic increase represents a paradigm shift in consumer preferences and industry focus, driven by technological advancements, environmental concerns, and supportive government policies.

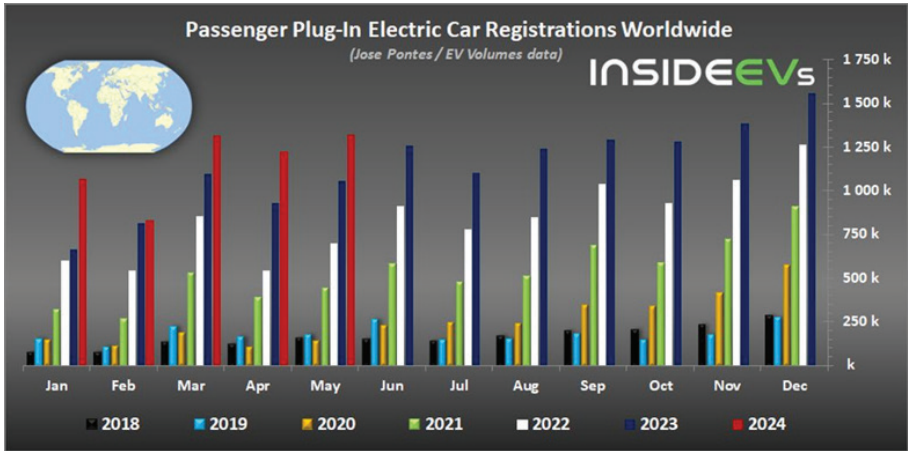
> *The time is right for electric cars. In fact, the time is critical.*
> *– Carlos Ghosn*



Snapshot of Global EV Sales[2]

In absolute terms, the number of electric vehicles on roads worldwide has increased approximately sevenfold in four years, highlighting the accelerating transition from fossil fuel-powered vehicles to electric alternatives. However, this growth trajectory has not been uniform across all regions, and some markets have shown more aggressive adoption rates than others. Electric car sales were close to 14 million in 2023, 95% of which were in China, Europe and the United States.[3]

[1] *Electric vehicles - IEA. (2024, June 06). Retrieved from https://www.iea.org/energy-system/transport/electric-vehicles*
[2] *Global EV sales up 550% in the past four years. (2025, February 12). Retrieved from https://en.majalla.com/node/323318/infographics/-global-ev-sales-550-past-four-years*
[3] *Trends in electric cars – Global EV Outlook 2024 – Analysis - IEA. (2024, October 13). Retrieved from https://www.iea.org/reports/global-ev-outlook-2024/trends-in-electric-cars*



Electric Car Registrations around the World[4]

Europe and China have emerged as frontrunners in EV adoption, setting the pace for the rest of the world. These regions have benefited from a potent combination of strong government support, substantial tax incentives, and significant investments in charging infrastructure. The European Union's stringent emissions regulations and ambitious climate goals have spurred automakers to rapidly electrify their fleets, while China's robust domestic EV industry and national push for technological leadership have also catalyzed widespread adoption.

The United States, while experiencing growth in its EV market, has lagged somewhat behind Europe and China in terms of adoption rates. This disparity can be attributed to several factors, including the politicization of clean energy policies in the US and the higher elasticity of American consumers to fuel expenses due to the overall strength of the US economy. Despite these challenges, the U.S. market has seen increasing momentum in recent years, with major automakers committing to electrification and the federal government introducing more supportive policies.

The performance of the EV industry as a whole has shown promising signs of

[4] *Kane, M. (2024). Global Plug-In Car Sales Hit 1.3 Million In May 2024. InsideEVs. Retrieved from https://insideevs.com/news/725811/global-plugin-car-sales-may2024*

maturation and increasing efficiency. According to data from financial research company Pitchbook, while the Year-on-Year earnings before interest, taxes, depreciation, and amortization (EBITDA) growth for major EV players (including pure-play EV manufacturers like Tesla and Rivian, as well as legacy automakers transitioning to electric models like Toyota) declined by 9% in 2023, EBITDA margins saw a significant improvement. The industry moved from a -17% margin to near break-even at -1%. This is a historical improvement that signals increasing efficiency and economies of scale in EV production. This trend toward profitability is crucial for the long-term sustainability of the EV market and suggests that the industry is moving beyond its initial growth phase into a more mature and stable market position.

The Ecosystem for Automotive and Electric Vehicles

The global supply chain for EVs has also evolved rapidly to meet growing demand. Battery technology, in particular, has seen significant advancements, with energy densities improving and costs per kilowatt-hour declining steadily. This progress has been instrumental in making EVs more competitive with traditional internal combustion engine vehicles on both performance and price. However, the concentration of battery production in certain regions, particularly East Asia, has raised concerns about supply chain resilience and geopolitical risks, prompting efforts to diversify and localize battery manufacturing in other parts of the world.

As the EV market continues to expand, it is driving innovation across multiple sectors. Advanced driver-assistance systems (ADAS) and autonomous driving technologies are being developed in tandem with EV platforms, promising to revolutionize not just the way vehicles are powered, but how they are operated and integrated into broader transportation systems. The growth of EVs is also catalyzing changes in urban planning and energy grid management, as cities and utilities adapt to the needs of an electrified transportation sector.

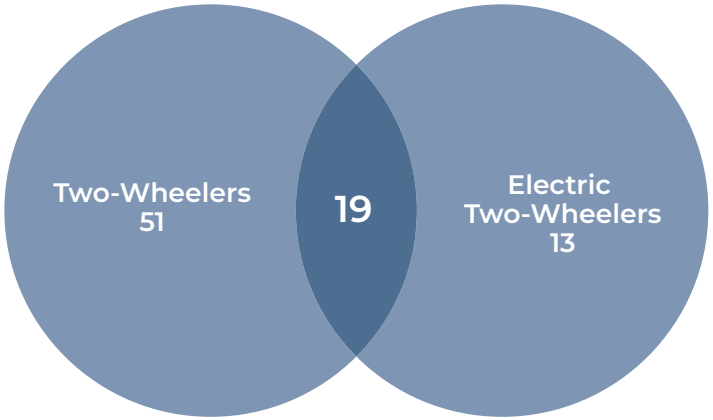
Pakistan's Emerging EV Landscape

Against this backdrop of global EV market expansion, Pakistan's automotive sector is undergoing its own transformation. The country's transition towards EVs is occurring within a complex economic and regulatory environment, shaped by both domestic priorities and global trends.

Pakistan's automotive market has experienced a notable shift towards EVs in recent years, despite an overall slump in the traditional automotive sector. This transition has been driven by a confluence of factors, including economic pressures, government incentives, and changing consumer preferences. Rising fuel costs and broader economic challenges have made EVs an increasingly attractive alternative for consumers seeking to reduce their operational costs. The government has played a crucial role in this shift by introducing tax breaks for EVs, a policy initiative that began in 2013 and has been partially maintained in the 2024-25 budget for non-luxury EVs. These incentives have not only made EVs more accessible to consumers but have also encouraged manufacturers to invest in EV production and assembly within Pakistan.

The demographic makeup of Pakistan's consumer base has also contributed to the growing interest in EVs. A younger population with a preference for technological innovation and comfort features has shown particular enthusiasm for electric vehicles. This generational shift in consumer preferences aligns well with the high-tech image and advanced features often associated with EVs, creating a receptive market for these vehicles.

The two-wheeler EV segment has emerged as a particularly dynamic area of growth within Pakistan's EV market. In major urban centers, electric motorcycles and scooters have become an increasingly common sight, offering an affordable and environmentally friendly alternative to traditional petrol-powered two-wheelers. Data from the Engineering Development Board of Pakistan reveals that 13 firms are now solely focused on assembling two-wheeler EVs, while an additional 19 firms are developing both conventional and electric two-wheelers. This diversification of the market indicates a growing confidence in the long-term viability of electric two-wheelers in Pakistan.



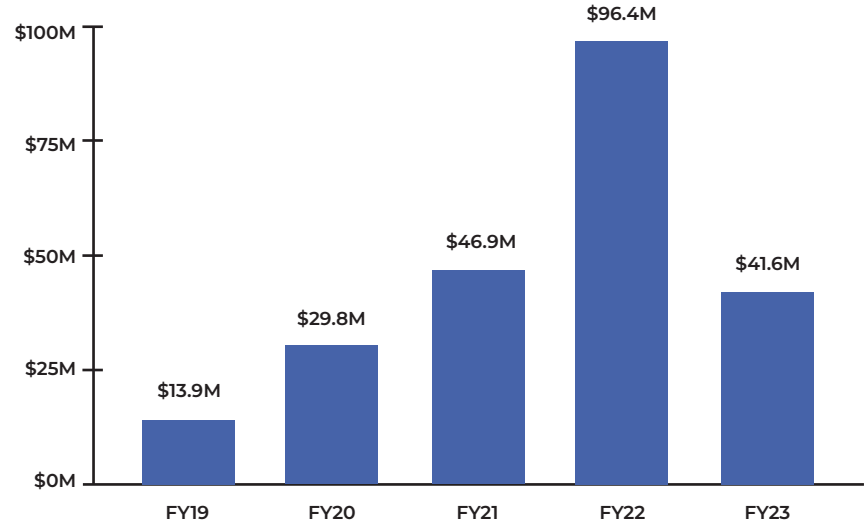
Comparing Registered Traditional and Electric Two-Wheeler Assemblers in Pakistan[5]

The geographic distribution of EV assembly operations in Pakistan also provides insight into the potential for widespread adoption across the country. While major cities like Lahore and Karachi have seen the highest concentration of EV assembly activities, there is evidence of EV production emerging in smaller cities as well, such as Sadiqabad. This spread suggests that the EV transition is not limited to Pakistan's largest urban areas but has the potential to reach smaller cities and potentially rural areas in the future.

The growth of Pakistan's EV market is closely tied to developments in battery technology and production. The country has seen a significant increase in the import of lithium-ion batteries, a critical component of EVs. Lithium-ion battery imports increased almost sevenfold from 2019 to 2022, reflecting the rapid growth in EV demand. However, this trend saw a reversal in 2023, with imports declining to USD 41.6 million. While this decrease might initially appear concerning, it is likely more reflective of broader economic challenges and efforts to balance trade payments rather than a decrease in EV demand. It is also pertinent to note that dollar rates in Pakistan almost doubled in this period, which significantly impacted the buying power of the average citizen. This situation highlights the complex interplay between EV market growth and macroeconomic factors in emerging markets like Pakistan.

[5] *Automotive and Electric Vehicles – EDB. (2024, October 13). Retrieved from https://engineeringpakistan.com/automotive-and-electric-vehicles*

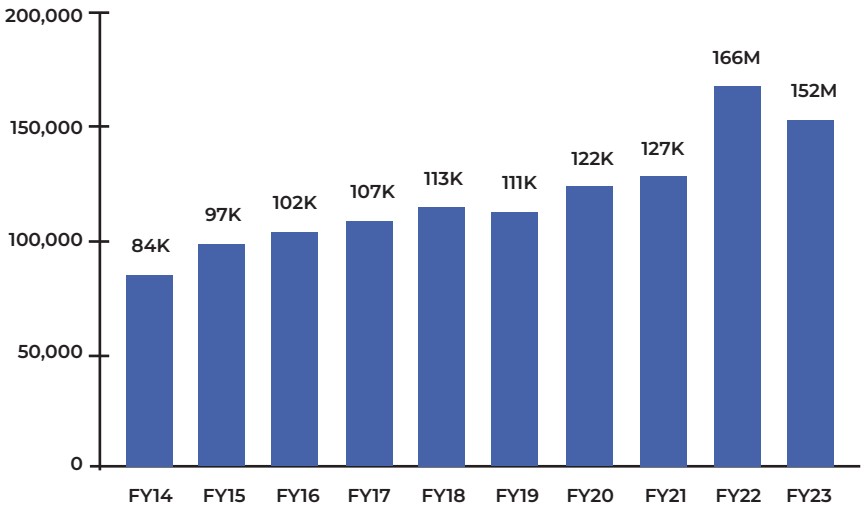
Pakistan's Import of Lithium Ion Batteries



Source: Data Darbar Analysis

In parallel with the growth in battery imports, Pakistan has also seen an expansion in domestic battery production capabilities. Data from the Pakistan Bureau of Statistics shows that storage battery production has nearly doubled over the last decade. While this increase is not solely attributable to EV batteries, it demonstrates the country's growing capacity in battery manufacturing, which could be leveraged to support the EV sector. The development of a robust domestic battery production industry could be a key factor in reducing the costs associated with EV manufacturing in Pakistan and improving the overall competitiveness of locally produced electric vehicles.

Storage Batteries Produced in Pakistan



Source: Pakistan Bureau of Statistics

Opportunities

There are significant opportunities to expand this sector for instance the development of adequate charging infrastructure. As in many countries in the early stages of EV adoption, there is a strong need to develop a comprehensive network of charging stations to support widespread EV use. The current reliance on home charging is sufficient for early adopters but will need to be supplemented by public charging options to facilitate longer journeys and make EVs viable for a broader segment of the population.

The localization of EV component manufacturing, particularly for batteries and electric drivetrains, presents both a challenge and an opportunity for Pakistan. Encouraging domestic production of these critical components could significantly reduce the costs associated with EV manufacturing, potentially making electric vehicles more affordable for Pakistani consumers. Moreover, developing a local EV supply chain could create new jobs and contribute to the country's broader economic development goals.

Balancing the need for imported EV components with the promotion of local manufacturing is a delicate task for policymakers. While imports are currently necessary to meet demand and access cutting-edge technologies, excessive reliance on imports can strain foreign exchange reserves and limit the development of domestic industries. Finding the right balance will be crucial for the sustainable growth of Pakistan's EV sector.

The development of Pakistan's EV market also has significant implications for the country's energy sector. As EV adoption increases, it will create new demands on the electrical grid, necessitating investments in grid infrastructure and potentially accelerating the transition to renewable energy sources. This interdependence between the transportation and energy sectors presents opportunities for integrated planning and development, potentially yielding synergies that could benefit both industries.

Environmental considerations are another important factor driving the transition to EVs in Pakistan. The country's major cities have long struggled with air pollution, much of it attributable to vehicle emissions. The widespread adoption of EVs, particularly in urban areas, could play a crucial role in improving air quality and reducing the health impacts associated with vehicular pollution. This environmental benefit aligns well with global efforts to combat climate change and could position Pakistan as a leader in sustainable transportation among developing nations.

As Pakistan's EV market continues to evolve, it is likely to have ripple effects across various sectors of the economy. The automotive supply chain will need to adapt to the unique requirements of EV production, potentially creating new opportunities for suppliers and manufacturers. The servicing and maintenance sector will also need to develop new skills and capabilities to support an increasingly electrified vehicle fleet. These changes could drive innovation and create new job opportunities in the automotive sector and adjacent industries.

Charging Infrastructure

Pakistan's electric vehicle (EV) charging infrastructure is in its early stages of development, with a focus on home and workplace charging solutions. In urban areas, where personal parking spaces are limited, home charging typically relies on Level 1 chargers with power ratings below 3.3 KW, while workplace charging is emerging as a viable option using Level 2 AC chargers ranging from 3.3 to 22 KW.

The Pakistan Standards and Quality Control Authority (PSQCA) is leading efforts to standardize and regulate EV charging stations across the country. This standardization is crucial for Pakistan's unique energy landscape, which currently has excess power generation capacity, primarily from cleaner sources like nuclear, hydel, renewables, and efficient RLNG plants.

The transition to EVs presents an opportunity for Pakistan to optimize its power grid utilization and potentially alleviate industrial and household power affordability strains. Studies suggest that integrating 0.5 million EVs into Pakistan's transportation grid by 2025 could reduce carbon dioxide emissions by 1.47 billion kg/year.[6] As Pakistan's EV market grows, strategic placement of charging stations in both urban and inter-city locations will be key to supporting widespread adoption and leveraging the country's existing power infrastructure.

AV and EV Companies in Pakistan

AV and EV efforts in Pakistan can be broadly classified into the following categories:

Category	Companies
Electric two-wheeler market	Ezbike, Jolta Electric, Mode Mobility, VLEKTRA, MS Automobiles (Pvt.) Ltd., AIM Motors, Metro E-Vehicles, Evee, Revoo, Nova Mobility
Electric three-wheeler market	Sazgar Autos, AIM Motors, Nova Mobility
Electric passenger car market	Karakoram Motors, MG Motors Pakistan
Hybrid passenger car market	Indus Motor Company
Electric high-transport vehicle market	YES Electromotive
Battery market and operations	Zyp Technologies, ORKO Fleet
Autonomous vehicles	Self Tech Pvt. Ltd.

[6] *Research Desk, (2020). The E in EV. Business Recorder. Retrieved from https://www.brecorder.com/news/40004751*

ezbike

ezBike is revolutionizing transportation in Pakistan with innovative solutions for fleet owners. By transforming traditional petrol motorcycles into efficient electric vehicles, ezBike empowers businesses to cut fuel costs, reduce maintenance expenses, and increase uptime, all while contributing to a greener future. Moreover, as the first electric bike-sharing service in Pakistan, ezBike has successfully raised USD 1 million in pre-seed capital from investors including i2i Ventures, Walled City, and Ground Up.[7]

With the successful launch of Pakistan's first battery swap station network, ezBike has established itself as a leader in the electric mobility space. ezBike's collaboration with TCS Private Limited on Pakistan's largest two-wheeler electrification initiative, along with its partnership with Bahria Town Management to electrify their maintenance fleet highlight the company's pivotal role in driving sustainable transportation in the country.[8] [9]

The numbers speak for themselves: ezBike's electric retrofit kit offers a 50% reduction in upfront investment, making the transition to electric more accessible. The company operates a battery swap network across 40 locations in Islamabad and Rawalpindi. In addition, ezBike's flagship product, the Electron electric scooter, is priced competitively at PKR 225,000 and features a top speed of 65 kph with a range of 75 kilometers on a single charge.

Founded by former investment banker Mohammad Hadi and software executive Ali Moeen, ezBike launched in 2020 and has since onboarded over 100,000 customers through its bike-sharing app in Islamabad. Hadi claims that while Pakistan has 22 million registered motorcycles with 2 million sold each year, the electric vehicles market presents a USD 20 billion opportunity. He believes that ezBike's proprietary solution will allow consumers to purchase electric scooters at 80% of the price of comparable petrol-run motorcycles and operate them for 50% of the cost, which will revolutionize the market.[10]

Primary Products

- **Electric Retrofit Kits**: Convert existing petrol motorcycles to electric, reducing operational costs and environmental impact.
- **Battery Swap Stations**: A network of 40 stations offering quick and convenient battery swaps, minimizing downtime for riders.
- **Electric Scooters**:
  - **The Electron**: A high-performance scooter designed for urban commuters, featuring a 2000-watt motor, LiFePo4 battery, and a range of 75 km.
  - **The Spark**: An affordable option with an 800-watt motor, offering a top speed of 35 kph and a range of up to 50 km.

[7] *Paradigm Shift, & Paradigm Shift. (2022). ezBike: Enhancing Mobility in Pakistan - Paradigm Shift. Paradigm Shift. Retrieved from https://www.paradigmshift.com.pk/ezbike-pakistan*

[8] *(7) Post | LinkedIn. (2024, August 09). Retrieved from https://www.linkedin.com/posts/ezbike_sustainabledeliv-ery-ecofriendlylogistics-activity-7137761129761583106-Rll9/?trk=public_profile_like_view*

[9] *(9) Facebook. (2024, August 09). Retrieved from https://www.facebook.com/roamerPakistan/pho-tos/a.621398061634187/1513639739076677/?type=3&source=48&paipv=0&eav=AfbR5yegRbUbbclpclBi75UUskv7P7WC5X0e1BQHfUHQItwYSKCoN6SMFgdljVVVNWQ&_rdr*

[10] *Paradigm Shift, & Paradigm Shift. (2022). ezBike: Enhancing Mobility in Pakistan - Paradigm Shift. Paradigm Shift. Retrieved from https://www.paradigmshift.com.pk/ezbike-pakistan*

Jolta Electric

Jolta Electric is Pakistan's first electric vehicle (EV) company, providing environmentally friendly solutions through its advanced EV technology. Jolta Electric focuses on electrifying the country's transportation sector, designing and manufacturing key components for electric vehicle kits tailored to two-wheelers, three-wheelers, and four-wheelers. With over five years of product development experience in China, the company has positioned itself as a leader in the EV market in Pakistan.

Jolta Electric's achievements have not gone unnoticed: as the only authorized EV manufacturer in Pakistan, the company played a pivotal role in shaping the country's EV policy, working closely with the Ministry of Climate Change. The launch of Pakistan's first electric bike by Prime Minister Imran Khan on July 8, 2021, was a significant milestone, with the Prime Minister stating, "Jolta Electric Bike will create a positive impact towards the economy of Pakistan."[11] The Governor of Sindh, Mr. Imran Ismail, further endorsed the company by inaugurating its E-bikes showroom in Karachi, highlighting the federal government's commitment to an eco-friendly future.

Jolta Electric's success has also garnered international attention, with U.S. Consul General William K. Makaneole visiting the company's factory in Lahore to acknowledge its contributions to sustainable transportation. The company has also showcased its achievements at global platforms including the Pakistan Tech Summit in Turkey. To further add to its green credentials, Jolta Electric has also participated in tree plantation drives and sustainability-focused exhibitions like Solar Pakistan 2021.

Jolta Electric offers a range of e-bike models designed to be energy-efficient, with charging times ranging from overnight to just 2.5 hours and a top speed of up to 65 km/h. The bikes can cover distances of up to 100 kilometers on a single charge.

Primary Products

- **JE-70 D**: This model provides a top speed of 50 km/h on plain roads and covers a distance of 80 km on a full charge.
- **JE-70Li**: Featuring a lithium battery, this bike achieves a top speed of 55-60 km/h and offers a mileage of 80-90 km. Charging time is notably quick at 2.5 hours.
- **JE-100 L**: A versatile option with a top speed of 60-65 km/h and a mileage of 70-80 km. It also charges within 2.5 hours and uses a lithium battery for efficient performance.
- **JE-125 L**: Designed for higher performance, this bike is equipped with a robust motor, capable of reaching top speeds similar to other models, but with enhanced features and durability.
- **JE-Scooty**: A user-friendly option with a top speed of 55 km/h and a mileage of 70-80 km per charge. It charges overnight and uses a dry EV gel battery, making it a practical choice for daily commuting.
- **JE-Sports Bike**: Built for enthusiasts, this bike offers a more dynamic riding experience with advanced features, combining speed, efficiency, and style. It is the flagship model in Jolta's lineup.

> *Overall I got an excellent experience of riding and charging (as they say in their website). It is fully economical and very light on my pocket.*
> *– Nazakat Hussain, customer*

[11] *Pakistan's First E-Bike Launched by PM Imran Khan | Blog. (2023, April 29). Retrieved from https://www.joltaelectric.com/blogs/pm-imran-khan.html*

mode®

Mode Mobility

Mode Mobility, founded in 2019, is a forward-thinking engineering and design startup dedicated to creating sustainable mobility solutions, specifically a range of battery-electric scooters aimed at revolutionizing urban mobility in Pakistan and similar markets.

Mode Mobility is led by Shah Talha Sohail and Syed Najiullah Hussaini, whose collaboration began during their time as mechanical engineering students with the Formula NUST Racing Team. Their unique blend of marketing, business acumen, and engineering expertise laid the foundation for Mode Mobility. Despite the challenges posed by the COVID-19 pandemic, the company has rapidly advanced its development of eco-friendly transportation options, and is now poised to launch a new line of battery-electric scooters and motorcycles designed specifically for urban use.[12]

Primary Products

- **Battery-Electric Scooters**: A new line of eco-friendly scooters designed for urban mobility.
- **Battery-Electric Motorcycles**: Environmentally conscious motorcycles tailored for urban commuters.

> *The Pakistani electric two-wheeler segment has been buzzing with activity, yet none of the foreign-sourced vehicles have truly stood out as viable replacements for petrol motorcycles. Mode Mobility's C-Series seeks to change that narrative. Designed specifically for urban commuters, the C320 First Edition motorcycle combines local sourcing, sustainable manufacturing, and frugal design principles to deliver an electric 2-wheeler tailored to the needs of everyday Pakistani riders.*
> *– ProPK review*[13]

[12] *Mode Mobility. (2024, August 20). Retrieved from https://modemobility.pk*
[13] *Staff, P. (2024). Mode Mobility's C-Series Could Be the Bike That Finally Replaces Petrol Motorcycles. ProPakistani. Retrieved from https://propakistani.pk/2024/12/06/mode-mobilitys-c-series-could-be-the-bike-that-finally-replaces-petrol-motorcycles*

SAZGAR

Sazgar Autos

Established in 1991, Sazgar has quickly become a household name in Pakistan, thanks to its popular 3-wheeler vehicles and automotive wheel rims. As a public limited company, Sazgar boasts the largest manufacturing facilities in Pakistan and a strong global presence. The company's commitment to quality and durability made it the first Pakistani firm to export 3-wheelers internationally, with ongoing shipments to Japan, Africa, and beyond.

Sazgar's history is marked by innovation and achievements. Notably, the company set a world record with the first rickshaw to reach an altitude of over 4000 meters at the Deosai plateau—showcasing the resilience and versatility of Sazgar's vehicles.[14] Additionally, Sazgar achieved a recent milestone of exporting Pakistan's first electric vehicle, the eVe rickshaw. Sazgar has further expanded its portfolio by partnering with GWM and BAIC to introduce luxury SUVs, including Pakistan's first locally assembled hybrid vehicles that have solidified Sazgar's position as a pioneer in the automotive industry, both locally and globally.[15]

Sazgar's vehicles are exported to over 20 countries, a testament to their high quality and efficiency. As a market leader in the 3-wheeler category, Sazgar's state-of-the-art production facilities ensure that it remains at the forefront of innovation and reliability. The company's environmentally friendly, noise-free vehicles are trusted by businesses and individuals alike.

Primary Products

- **3-Wheel Auto Rickshaws**
- **Multi-Purpose Vehicles**
- **Automotive Wheel Rims**

Specific

- **Deluxe Mini Cab**: A noise-free, environmentally friendly vehicle offering an ideal mix of power and economy with a robust 4-stroke engine.
- **7-Seater Model**: A variant of the Deluxe series designed to carry up to seven passengers, featuring enhanced safety elements.
- **Tempo Delivery Van**: A fuel-efficient vehicle with a load capacity of 450 kg, powered by Sazgar's trusted 219 CC engine, perfect for businesses.

[14] *https://www.linkedin.com/posts/sazgar-engineering-works_sazgarautos-worldrecord-sazgar-activity-7132708486013984770-1lBk?utm_source=share&utm_medium=member_desktop*
[15] *Desk, B. R. W. (2021). Sazgar Engineering to bring another Chinese SUV brand to Pakistan. Brecorder. Retrieved from https://www.brecorder.com/news/40075812*

Zyp Technologies

Zyp Technologies is focused on the development and deployment of next-generation battery systems, electric vehicle (EV) technology, and renewable energy infrastructure. With a mission to transition towards a carbon-neutral future, Zyp Technologies leverages cutting-edge research and innovation to create products that are efficient, reliable, and environmentally friendly.

Zyp Technologies has received significant recognition for its contributions to the clean energy sector. The company was named one of the top innovators in sustainable technology at the Global Cleantech 100 Awards. Additionally, Zyp Technologies has been featured in prominent industry publications, highlighting its role in shaping the future of renewable energy and electric transportation. The company's groundbreaking battery solutions have earned them several industry accolades for their impact on reducing carbon emissions and advancing clean energy adoption.

Zyp Technologies has made remarkable strides in the clean energy market, with its battery systems now powering over 10,000 electric vehicles worldwide. Their renewable energy solutions have helped save millions of tons of CO2 emissions annually, contributing to global efforts to combat climate change. Zyp's innovative approach and commitment to sustainability have led to rapid growth and widespread adoption of their technologies, positioning them as a leader in the clean energy revolution. The company continues to expand its footprint with strategic partnerships and cutting-edge product offerings designed to meet the growing demand for sustainable energy solutions.[16]

Primary Products

- **Energy Kiosks**: Battery Swap Stations for under a minute exchange.
- **Zyp Utility Motorcycle 2000 ZUM 2000**: 2000 W Premium Quality Hub Motor, 1.8KWH Swappable Battery, 70km Battery Swap Range, 75km/h Top Speed
- **MAGVUS 3000**: Powerful 3000W Mid-Drive Motor, 120 km Swap Range, 2 x 1.8KWH Swappable Batteries, 85km/h Top Speed

[16] *Zyp Technologies. (2024, August 27). Retrieved from https://www.zyptechnologies.com/media*

VLEKTRA

Vlektra offers innovative e-bikes that combine cutting-edge technology with sleek design. Their primary product line includes high-performance electric bicycles tailored for both urban commuting and recreational riding. With a focus on sustainability, Vlektra's e-bikes are designed to reduce carbon footprints while delivering an eco-friendly, efficient, and enjoyable ride.

Vlektra's e-bikes are equipped with advanced features such as powerful lithium-ion batteries, intelligent power management systems, and fast-charging capabilities, making them ideal for modern users seeking convenience and sustainability. The brand emphasizes durability, performance, and ease of use, ensuring that their e-bikes offer both style and functionality. Their product line is designed to cater to various riders, from casual commuters to adventure enthusiasts, with customizable options for added comfort and performance.

As a leader in the electric vehicle space, Vlektra continuously pushes the boundaries of innovation. The company's dedication to research and development has led to the integration of IoT solutions, smart riding data, and seamless mobile app connectivity. Vlektra's commitment to delivering quality products and exceptional customer service has positioned them as a trusted name in the growing market for electric mobility solutions.

Primary Products

- **Vlektra Retro**: A stylish, retro-inspired electric bike with a focus on comfort and city commuting.
- **Vlektra Bolt**: A high-performance electric bike designed for speed and longer-range travel.
- **Vlektra Falcon**: A rugged electric bike built for off-road adventures and challenging terrains.
- **Vlektra Thunder**: A powerful model designed for urban mobility with extended battery life and modern features.

> *I'm amazed as these motorcycles are being manufactured in Pakistan. The looks and specs of the motorcycles are amazing...*
> *– Sonia Rana*

> *No other bike in the country comes close to providing the type of specifications this one does in terms of reliability and safety..*
> *– Hassan Zaidi*

> *The future is here. Proud to be one of the early users. Very convenient to charge and gives you decent mileage on one full charge...*
> *– Arif Rehman*

TOYOTA

Indus Motor Company

Indus Motor Company (IMC), operating as Toyota Indus, is a leading automotive manufacturer in Pakistan, assembling and marketing Toyota vehicles. Established in 1989, IMC is a joint venture between the House of Habib, Toyota Motor Corporation, and Toyota Tsusho Corporation. The company is known for delivering high-quality vehicles that cater to the diverse needs of the Pakistani market, offering both local manufacturing and imported models. Indus Motor Company is committed to the highest standards of innovation, quality, and customer satisfaction, making it a key player in Pakistan's automotive industry.

Indus Motor Company has been recognized for outstanding achievements in various domains. Accolades include winning the prestigious MAP Corporate Excellence Award in 2023 and securing multiple honors at the International EHS Awards. The company made a monumental stride in sustainability with the launch of Pakistan's first locally-made Hybrid Electric Vehicle and was honored by the National Forum for Environment and Health for Environmental Excellence.

Indus Motor Company has also recently begun exporting certain vehicles to affiliated companies, signaling a milestone for the company's growth and its role within the global Toyota network. This marks a strategic expansion into international markets while leveraging the company's established manufacturing prowess in Pakistan. Toyota Indus's ability to maintain strong production lines despite regional economic fluctuations has been a key factor in its sustainability. This move aligns with its broader strategy to diversify revenue streams and enhance its export portfolio, ensuring its resilience in the competitive automotive sector.

Primary Products

- **Toyota Vehicles (Sedans, SUVs, Commercial Vehicles)**
- **After-Sales Services (Maintenance, Genuine Parts)**
- **Financial Services (Leasing, Installment Plans)**
- **Toyota Certified Used Cars**
- **Industrial Equipment and Forklifts**

SELFTECH

Self Tech Pvt. Ltd.

Self Tech Pvt. Ltd. is at the forefront of autonomous mobility technology in Pakistan. Since its inception in 2015 in Mirpur, Azad Kashmir, Self Tech has been developing self-driving technology to meet the complexities of Pakistan's diverse road conditions. Self Tech focuses on creating autonomous solutions targeted at both individuals and industries across the country. Their expertise spans the entire lifecycle of autonomous vehicles, from design and testing to development and maintenance.

Self Tech is dedicated to high-security standards and incorporates advanced hardware and software solutions that enhance vehicle performance and autonomy. They further leverage cloud-based private blockchain networks for data integrity, authenticity, and confidentiality. Their offerings include autopilot cars capable of operating without human intervention.

Primary Products

- **Autonomy Level 4 Industrial Loader**
- **EMO Autonomous Vehicle**
- **Self Driving Kit**

MG Motors Pakistan

MG Motors Pakistan is a joint venture between SAIC Motor Corporation and JW SEZ Pvt Ltd, bringing globally recognized, high-performance vehicles to the Pakistani market. The brand, with its rich British heritage, offers a diverse lineup of vehicles known for their advanced technology, modern design, and practical features. MG Motors focuses on providing superior customer experience and reliable after-sales service, aiming to redefine automotive standards in Pakistan through innovative and sustainable mobility solutions.

Morris Garages was originally a renowned British brand founded in 1924, but was acquired and resurrected in 2007 by Chinese carmaker, SAIC Motor, re-entering the global automotive market. The brand has successfully revived its legacy, achieving recognition for blending iconic British design with modern technology. In May 2020, JW Auto Park signed a memorandum of understanding with MG Motors regarding manufacturing and assembling of their electric cars in Pakistan.

In December, 2024 MG Motors launched Pakistan's first locally assembled plug-in hybrid electric vehicle (PHEV).[17] The MG HS PHEV offers features including 52+ kilometers true electric range (WLTP), a 16.6 kWh battery, external charging capabilities, and regenerative braking, contributing to a combined fuel mileage of up to 58.8KM/L.

MG's stylish cars, known for their performance and driveability, have solidified the company's reputation as a leading force in the motoring world. MG Motors Pakistan proudly claims to produce the "best SUV in Pakistan." Other unique selling points include a 4-year warranty program, reliable after-sales services, and a focus on modern, sustainable mobility solutions. Additionally, MG Motors provides a seamless customer experience with roadside assistance, financing options, and test drive services.

Primary Products

- **After-Sales Services (Repairs and Maintenance)**
- **4-Year Warranty**
- **Vehicle Financing Solutions**
- **Roadside Assistance**
- **Genuine Parts Supply**
- **Test Drive and Booking Services**

Some Car Models

- **MG HS SUV**
- **MG ZS SUV**
- **MG ZS EV (Electric Vehicle)**

> *An awesome hybrid vehicle. The MG HS PHEV impresses with exceptional fuel efficiency, offering 16–60 KMPL depending on driving habits. It's 16.6 kWh battery (14.4 kWh usable for EV, 2.2 kWh for hybrid) ensures flexibility. In city driving, a single charge delivers an average of 30 KMPL, lasting 3–4 days on a 120 km daily commute. The seamless 6-speed automatic transmission transitions effortlessly between EV and hybrid modes, enhancing comfort with no lag or jerks. Charging is easy, and smart energy management.*
>
> *– Umer Kiani, Vehicle Owner, PakWheels.com*[18]

[17] *Press Release (2025). MG marks a milestone with the launch of Pakistan s first locally assembled plug in hybrid vehicle. Express Tribune. Retrieved from https://tribune.com.pk/story/2517856/mg-marks-a-milestone-with-the-launch-of-pakistans-first-locally-assembled-plug-in-hybrid-vehicle*

[18] *EVentures, P. (2025, February 14). MG HS PHEV Car Reviews, User Ratings & Opinions. Retrieved from https://www.pakwheels.com/new-cars/mg/hs--2/ehs/reviews*

MS Automobiles (Pvt.) Ltd.

MS Group of Industries, founded by Chaudhary Muhammad Hussain Zahid in 1984, is a conglomerate with significant presence across various sectors, including automotive manufacturing, auto parts production, real estate, and home appliances. With over three decades of experience, the group has grown into a powerhouse, driven by innovation, quality, and a commitment to sustainable development. Among its flagship ventures is MS Automobiles (Pvt.) Ltd., Pakistan's foremost electric bike manufacturer.

MS Group of Industries holds the prestigious ISO 9001:2008 certification, testament to its commitment to quality and adherence to international standards.[19] MS Automobiles (Pvt.) Ltd., a subsidiary of MS Group, is celebrated for introducing Pakistan's first electric motorcycle powered by Lithium-Iron Phosphate batteries. The group's flagship brand, MS Jaguar Motorcycles, is recognized as Pakistan's largest manufacturer of electric bikes.

The company's electric bikes, which offer a remarkable range of up to 170 km on a single charge, have redefined the industry standards in terms of efficiency and sustainability. The group also boasts a network of over 600 dealers nationwide, establishing itself as a dominant force in the motorcycle spare parts market.[20]

Primary Products

- Electric bikes such as the MS Jaguar E-125 and E-70, both of which feature advanced battery technology, long-lasting motors, and minimal maintenance costs. The company also manufactures reliable 70cc and 100cc motorcycles.[21]
- High-quality motorcycle spare parts, including shock absorbers, with a strong focus on Total Quality Management (TQM) and international production standards.

[19] (6) MS Jaguar Motorcycles (Pvt.) Ltd.: About | LinkedIn. (2024, August 27). Retrieved from https://www.linkedin.com/company/ms-jaguar-motorcycles-pvt-ltd/about
[20] About Us. (2024, August 27). Retrieved from https://msjaguarmotorcycles.com/pages/about-us
[21] Products. (2024, August 27). Retrieved from https://msjaguarmotorcycles.com/collections/all

YES Electromotive

YES Electromotive specializes in battery electric vehicles (BEVs) with a focus on sustainable urban mobility. Their offerings include the Campus Transit and Muva models, multi-seater vehicles suited for gated communities and last-mile deliveries. YES Electromotive's commitment to good design, engineering, and sustainability makes its vehicles an attractive choice for individuals and businesses alike.

YES Electromotive has gained significant recognition for its innovative contributions to the electric vehicle industry, featuring prominently at events like the LUMS BEV Symposium and the Future Mobility of Asia 2024 event.

With a range of up to 250 km and a payload capacity of 350 kg, YES Electromotive's vehicles combine efficiency and performance. The company prides itself on onsite operations and maintenance, ensuring reliability and customer satisfaction.

Primary Products

- **Campus Transit**
- **Muva**
- **Powerwall Backup Power Solution**

Mobility
Green Energy

AIM Motors

AIM Motors specializes in innovative swappable battery technology. With a focus on performance, convenience, and sustainability, AIM Motors' electric bikes provide substantial savings on fuel (over 50%) and maintenance (over 70%). Their commitment to affordable electrification positions them as a key player in emerging markets.

AIM Motors' electric bikes offer over 100 km range per charge, zero maintenance costs, and seamless acceleration through their mid-frame motor design. Their AI-driven solutions make electrification affordable, driving a global movement towards cleaner, more accessible transportation.

Primary Products

- **Nayel EV Swift 3.8E**
- **Nayel EV Classic 2.8E**
- **Nayel Gen-II 8.0E**

ORKO

ORKO Fleet

Orko Fleet offers an AI-driven platform designed for electric vehicle (EV) manufacturers and fleet operators. It enables high-frequency telemetry data analysis, predictive maintenance, and full IoT integration. Orko simplifies operations, ensuring compliance with safety standards and regulations. Their end-to-end solution supports manufacturers from installation to maintenance, making it ideal for those entering the Electric Mobility Service Provider (EMSP) market.

Orko's platform supports remote fleet management, route optimization, and diagnostic services. This solution enhances asset longevity, making it a trusted choice for EV manufacturers and operators.

Metro E-Vehicles

Metro E-Vehicles has over two decades of experience in the 2-wheeler industry, introducing a range of electric vehicles to address high fuel costs and rising pollution. Their vehicles are designed using cutting-edge technology, meeting international standards, and promoting green travel options.

Metro's electric vehicles are setting new benchmarks in the market. The T9 and E8S Pro models feature impressive acceleration with no clutch or gears, offering a seamless ride experience. Charging is convenient, reaching 85% in just 4 to 5 hours, ensuring they're ready for daily use with ease. These models boast significantly reduced maintenance needs, making them cost-efficient over the long run. Metro E-Vehicles are designed to be highly energy-efficient, ensuring maximum output with minimal environmental impact, positioning the brand as a leader in the shift towards sustainable transport solutions in Pakistan.

Metro has consistently been recognized for its commitment to innovation and excellence in the 2-wheeler automobile industry. Over the past two decades, Metro has garnered numerous industry awards, including the prestigious 'Best Two-Wheeler Brand' in Pakistan for five consecutive years. With the launch of its electric vehicles, Metro was honored with the 'Green Mobility Excellence Award' in 2023. The T9 model and the E8S Pro have earned the title of 'Best Electric Two-Wheelers' at the 2023 National Innovation Awards.

Primary Products

- **Electric Bikes**
- **Electric Scooters**
- **Eco-friendly Transportation Solutions**
- **Electric Vehicle Charging Stations**
- **After-sales Services & Support**

> *It's a Top-Quality Product.*
> *I have no grievances regarding the quality of the product. It is solid-made, with no rattles or oversized or undersized makeshift parts borrowed from the local market (except the rear-view mirrors – which are pretty standard). The paint finish is extraordinary, so much so that despite my middle age and greying beard, there was a brief moment I considered getting the red variant.*
> *The head and tail lamps are another premium component that deserves a separate mention. The headlight is not just a pretty face; it has a very nice road illumination both at the low and high beam, without blinding the oncoming traffic. The tail light seems to come out of a poster and provides a very chic feel to it.*
> *Last but not least, it comes with tubeless tires, which would save you from exchanging roles with the moped, i.e., you hauling it rather than hauling you.*
> *– Khurram Altaf, Reviewer, PakWheels.com*[22]

[22] *Altaf, K. (2023). To EV or not to EV – Metro T9 - PakWheels Blog. PakWheels Blog. Retrieved from https://www.pakwheels.com/blog/-to-ev-or-not-to-ev-metro-t9*

Evee

Evee offers sustainable, efficient, and stylish alternatives to traditional fuel-based two-wheelers. Evee's high-quality electric scooters, have a focus on affordability, safety, and environmental friendliness.[23]

Evee scooters are designed to be smart, sustainable, and durable, featuring sleek and stylish designs that make a statement on the road. With a strong commitment to sustainability, Evee utilizes eco-friendly materials and manufacturing processes to minimize environmental impact. These scooters are built to last, offering a reliable, eco-friendly alternative for commuting, running errands, or enjoying a leisurely ride.[24]

> *If you are looking for an alternative to a gasoline bike with decent speed, a host of features, and just the right ergonomics, this is the pick.*
> *– Fariha Aftab, Reviewer, PakWheels.com*[25]

[23] *About - Evee Electric. (2024, February 11). Retrieved from https://evee.pk/about*
[24] *evee: About | LinkedIn. (2024, August 27). Retrieved from https://www.linkedin.com/company/eveeelectric/about*
[25] *Aftab, F. (2024). Evee Gen Z Expert Review – Best For Students - PakWheels Blog. PakWheels Blog. Retrieved from https://www.pakwheels.com/blog/evee-gen-z-expert-review-best-for-students*

Revoo

Revoo produces electric motorcycles with a focus on quality, innovation, and affordability.

Revoo motorcycles offer significant economic and environmental benefits compared to traditional gasoline-powered bikes. With energy costs as low as 54.6 PKR per 100 km, users save over 80% on travel expenses. The streamlined mechanical design reduces maintenance costs, and the battery warranty of 18 months or 15,000 km ensures long-term value.[26]

Revoo has consistently demonstrated its leadership in the electric vehicle industry with innovative advancements and quality assurance. Their cutting-edge R&D factory, equipped with intelligent production lines, ensures that every motorcycle undergoes stringent testing for superior performance. The proactive approach to quality control is reflected in the road tests conducted across Pakistan, providing users with peace of mind and reliable transportation.

Primary Products

- **A00 Model:** Budget-friendly option with a top speed of 45 km/h, a range of 90 km, priced at PKR 195,000.
- **A01 Model:** Ideal for city commuting, with a top speed of 45 km/h, a range of 95 km, priced at PKR 210,000.
- **C02 Model:** Designed for longer commutes, offering a top speed of 60 km/h, a range of 100 km, priced at PKR 265,000.
- **C03 Model:** High-performance option with a top speed of 70 km/h, a range of 85 km, priced at PKR 355,000.

> *The product is very reliable and passed all the claims that the company has made. The mileage is accurate and the extra luggage box is value for money. Overall A01 by Revoo has fulfilled my expectations. The bike is lightweight and easy to operate with a keyless start system.*
> ***– Tashif Ahmad, Bike Owner***[27]

> *The Revoo Electric Bike 1000Watt motor is an excellent choice for commuters who need a reliable and powerful ride. While it may not be perfect for off-road adventures, its solid performance and long-range battery make it an excellent option for daily commutes.*
> ***– Sameer Ali, Bike Owner***

[26] *REVOO — Professional Electric Motorcycle Brand — E-bike. (2024, August 27). Retrieved from https://revoo.pk*
[27] *EVentures, P. (2025, February 13). REVOO Bike Reviews, User Ratings & Opinions. Retrieved from https://www.pakwheels.com/-bikes/revoo/reviews*

Nova Mobility

Nova Mobility's mission is to optimize the performance of lightweight urban fleets while contributing to a sustainable future through cost-effective and eco-friendly solutions. Nova Mobility's flagship product, Ecodost, a lightweight electric 2- and 3-wheeler, comes equipped with cutting-edge lithium iron phosphate batteries, offering long-lasting power and fuel efficiency. The company has perfected its EV offerings by sourcing high-quality parts, with many components made locally in Pakistan. Nova Mobility is based in Karachi and is a division of Novatex Limited, a member of the G&T Group which has been in business since 1947.

Ecodost represents Nova Mobility's vision of innovative and sustainable transportation. This electric vehicle eliminates the need for petrol, offering significant monthly savings — up to PKR 7,000 for the 2-wheeler and up to PKR 50,000 for the 3-wheeler. With Ecodost, users can enjoy a fuel-free, low-maintenance solution that extends the driving range while reducing environmental impact. Nova Mobility also offers a comprehensive solution that includes clean energy generation equipment, charging infrastructure, and full after-sales service, ensuring a seamless and sustainable experience for customers.

By offering efficient recharge options, low maintenance costs, and sustainable mobility, Nova Mobility is paving the way for a new era in transportation, aligning with their core values of innovation, environmental responsibility, and profitability.

Primary Products

- **Ecodost 2-Wheeler -** a lightweight electric two-wheeler vehicle equipped with a lithium iron phosphate battery.
- **Ecodost 3-Wheeler -** A lightweight electric three-wheeler vehicle also powered by a lithium iron phosphate battery.
- **Charging Infrastructure equipment and solutions.**
- **Clean Energy Generation Equipment for powering electric vehicles**

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Pakistan Software Export Board developed this paper by hiring services of independent consulting firms to prepare this roundup on Pakistan's Automotive and Electric Vehicles sector. The paper focuses on Pakistan-based companies in this vertical and apprises the reader of the expertise available in Pakistan in this domain.

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