ELECTRIC VEHICLES (EV)

Adoption and Infrastructure Development in KSA

A 4SiGHT

Point-of- View Document

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INTRODUCTION

Electric Vehicles (EV) first came into existence in the **late 19th century** with the advent of electricity, but their adoption was constrained due to the limited storage capacity offered by contemporary battery technologies which hindered any mass adoption of private electric vehicles throughout the 20th century.

However, by the late 1990s, sufficient advances in battery technology led to the introduction of Hybrid Electric Vehicles (HEV), wherein electric motors are used to supplement the usage of Internal Combustion Engines (ICE). Further improvements in technology led to the gradual introduction of fully battery-operated electric vehicles (BEV) and finally led to practical options for the consumer market by the 2010s.

Recent advancements in battery technology and charging infrastructure have addressed many of the earlier barriers to EV adoption, making electric vehicles a more viable option for a wider range of consumers.

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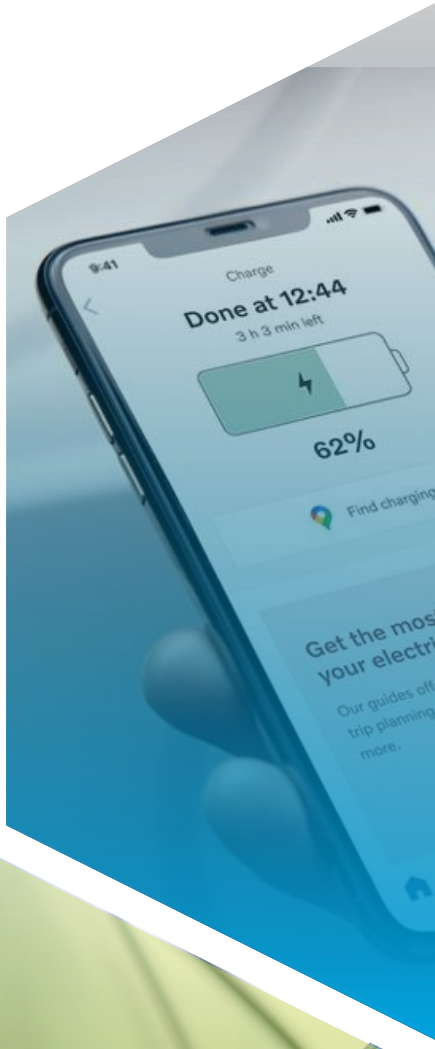
The **EV LANDSCAPE** in Saudi Arabia:

To keep abreast of global developments in this area, the Saudi Arabian Government has also introduced a series of initiatives to promote EV adoption in the kingdom. Among other steps, these include subsidies, reduced registration fees, and tax incentives for EV buyers.



Some of the key pillars of the measures initiated by the Kingdom include:

National Transport and Logistics Strategy (NTLS):

This strategy aims to transform the transport sector by integrating advanced technologies, including autonomous vehicles. The goal is to transition 25% of goods transport vehicles to autonomous vehicles by 2030.

Regulatory Sandboxes:

These are controlled environments where new technologies can be tested and refined before full-scale deployment. This approach helps in addressing regulatory challenges and ensuring safety and efficiency.

Public-Private Partnerships:

The government encourages collaboration between public and private sectors to develop smart mobility solutions. This includes investments in infrastructure, research, and development.

Incentives for Electric Vehicles:

To promote the adoption of EVs, the government offers various incentives, including subsidies and tax benefits. This is part of a broader effort to reduce carbon emissions and promote sustainable transportation.

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Key Highlights of the Saudi Arabian EV market:

Marching towards Sustainability

Saudi Arabia's electric vehicle (EV) market is experiencing remarkable growth, driven by government initiatives, expanding charging infrastructure, and partnerships with international companies. Passenger cars dominate the market.

The electric vehicle (EV) landscape in Saudi Arabia is evolving rapidly, driven by the government's Vision 2030 initiative and significant investments from the Public Investment Fund (PIF).

HERE ARE SOME KEY HIGHLIGHTS ABOUT THE CURRENT EV MARKET IN SAUDI ARABIA

Government Initiatives:

Saudi Arabia aims to have 30% of the cars in its capital city, Riyadh, be electric by 2030. The PIF is heavily investing in the EV ecosystem, including backing companies like Lucid Motors.

Infrastructure Development:

The country is focusing on building a robust charging infrastructure to support the growing number of EVs. This includes setting up charging stations and creating standards for EV charging.

Market Size (Est.):

Saudi Arabia's EV market is projected to reach US$ 53,639.1 million by 2032, with a CAGR of 52.31% from its 2023 value of US$ 1,215.7 million.

Market Trends:

Battery electric vehicles (BEVs) are leading the market, outpacing other types of electric vehicles like plug-in hybrids (PHEVs) and hybrids (HEVs).

Key Players:

Major global EV brands such as Tesla, Volkswagen (VW), and Changan Auto are present in the market. Additionally, Chinese brands like BYD are gaining traction.

Local Production:

Lucid Motors, which is partly owned by the PIF, is set to begin production in Saudi Arabia. Another local brand, Ceer, is also expected to start production soon.

Saudi Arabia's commitment to electrification is clear, and the market is poised for significant growth in the coming years.

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Market size

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Government initiatives

The Saudi government is making investments aiming to have 30% of all new vehicles sold be electric by 2030, with target of 912,010 EV units sold in the country by 2032.

Factors driving growth

Rising awareness about sustainable practices, increasing disposable income, favorable government policies, and technological advancements in electric vehicles

Infrastructure development

The government aims to install 50,000 charging stations by 2025, complemented by initiatives like the Diriyah ePrix to showcase EV technology.

EV segment

Passenger cars dominate the EV market, capturing over 45% of the revenue share, driven by consumer preferences, market trends, and government initiatives.

Partnerships

Key players in the market such as Lucid Motors etcs. are making strategic investments, forming partnerships, and launching new models to capitalize on the growing demand for electric vehicles in Saudi Arabia.

Sources:

Saudi Arabia EV Landscape | 2023 • EVreporter

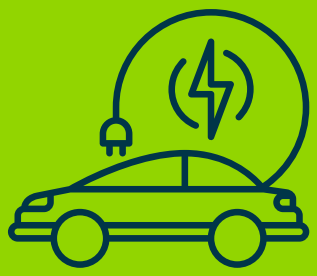
2. *The Middle East EV Market: Trends, Investment, and Opportunities*
3. *Survey finds significant trend in Saudi Arabia's EV landscape*

Saudi Arabia Electric Vehicle Market Trends - Mordor Intelligence

Key Initiatives by leading

AUTO BRANDS IN KSA:

Taking advantage of the industry-friendly policies introduced by the Kingdom, many leading companies have joined the EV bandwagon to launch ventures aimed at catering to the anticipated surge in demand for EVs in the coming years. Some notable initiatives are given below:



ELECTRIC VEHICLES (EV)

Ceer,

A joint venture between Saudi Arabia's Public Investment Fund (PIF) and Taiwan's Foxconn, is launching the first Saudi electric vehicle (EV) brand. This initiative aims to accelerate the transition towards automobile electrification in the Kingdom.

Lucid Motors,

A US-based EV manufacturer, has announced plans to establish a manufacturing facility in Saudi Arabia. The company aims to produce up to 150,000 electric vehicles annually, catering to the growing demand for EVs in the region.

Volvo Cars

Has partnered with NEOM, a futuristic city project in Saudi Arabia, to develop sustainable mobility solutions. The collaboration focuses on exploring electric and autonomous vehicle technologies tailored for NEOM's urban environment.

AUTONOMOUS VEHICLES

NEOM,

In collaboration with the General Authority of Civil Aviation (GACA) and Volocopter, has successfully conducted test flights of electric vertical take-off and landing (eVTOL) vehicles in Saudi Arabia. This milestone marks a significant step towards implementing autonomous air mobility solutions in the Kingdom.

Cruise,

A subsidiary of General Motors, has partnered with Saudi Arabia's Ministry of Investment to explore the deployment of autonomous vehicles in the country. The partnership aims to develop a regulatory framework and infrastructure to support the adoption of self-driving cars.

SHARED MOBILITY

Ride-sharing platforms like Uber and local alternatives have become popular in major Saudi cities, offering affordable and convenient transportation options for daily commutes.

Car subscription services, which provide flexibility for consumers to switch between different vehicle models based on their needs, have gained traction in Saudi Arabia.

Carpooling platforms have emerged as cost-effective and environmentally friendly transportation solutions, encouraging commuters to share rides and reduce the number of single-occupancy vehicles on the road.

These initiatives by leading auto brands in Saudi Arabia demonstrate a strong commitment to developing smart mobility solutions, particularly in the areas of electric vehicles, autonomous driving, and shared mobility.

These efforts align with the Kingdom's Vision 2030 goals of diversifying the economy, reducing environmental impact, and positioning Saudi Arabia as a global leader in innovative transportation technologies.

Sources:
https://www.mdpi.com/2071-1050/15/4/3158
https://www.nveo.org/index.php/journal/article/download/3635/2980/3634
https://saudimobilityconsulting.com/projects/urban-mobility-strategy-for-a-smart-city-initiative/
https://www.leapforward.onegiantleap.com/the-future-of-mobility-is-here/
https://www.techsciresearch.com/report/saudi-arabia-automobile-market/12930.html
https://www.kenresearch.com/industry-reports/ksa-automotive-market
https://www.smartcitiessaudiexpo.com
https://saudimobilityconsulting.com/2024s-top-automotive-mobility-innovations-impacting-saudi-arabia/

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Key Initiatives in developing the

EV CHARGING INFRASTRUCTURE IN KSA:

It goes without saying that a well-developed and easily accessible EV charging network is the backbone of any initiative to attract people towards using EVs.In this regard also, there have been notable initiatives by various agencies to develop a robust EV charging infrastructure in the Kingdom to go hand-in-hand with the introduction of EVs. Some of these are listed below:

Establishment of Charging Networks:

- **Electric Vehicle Infrastructure Company (EVIQ):** A joint venture between the Public Investment Fund (PIF) and the Saudi Electricity Company (SEC), EVIQ aims to install over 5,000 fast chargers across 10,000 locations by 2030. This initiative is designed to create a reliable and accessible charging network throughout the Kingdom, enhancing consumer confidence in EV adoption.
- **Public and Private Partnerships:** Various companies are contributing to the charging network. For instance, Electromin, part of the Petromin Group, is rolling out a national public EV charger network at 100 locations. Additionally, TotalEnergies and Altaaqa Alternative Solutions have signed agreements to develop integrated charging stations.
- **Charging Station Types:** The charging infrastructure includes different levels of charging stations:

Regulatory Framework and Support:

- **Saudi Standards and Regulations:** The Saudi Standards, Metrology and Quality Organization (SASO) has implemented standards for EV charging, ensuring safety and compatibility. The SEC has also established procedures for consumers to install EV chargers through its Electric Vehicle Charging Gate platform, facilitating the connection to the electricity grid.
- **Investment and Growth:** The Saudi government is heavily investing in the EV sector, with expectations of total investments reaching $50 billion over the next decade. This includes not only charging infrastructure but also local EV manufacturing initiatives.

Level 1:
Standard AC outlets for slow charging

Level 2:
Faster AC charging typically found in malls and workplaces.

Level 3:
DC fast charging stations located along highways and in commercial areas.

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Future Outlook:

- **Rapid Expansion:** The number of charging stations is expected to grow significantly in the coming years, with major cities like Riyadh, Jeddah, and Dammam already seeing an increase in public charging facilities. The government's commitment to reducing carbon emissions is driving this rapid expansion of the EV charging network.
- **Consumer Engagement:** To support EV owners, various apps and platforms are available to provide real-time information on charging station locations and availability, making it easier for users to plan their journeys.

Sources:

Saudi Arabia EV Landscape | 2023 • EVreporter

2. *The Middle East EV Market: Trends, Investment, and Opportunities*
3. *Survey finds significant trend in Saudi Arabia's EV landscape*
4. *Saudi Arabia Electric Vehicle Market Trends - Mordor Intelligence*

Saudi Arabia is actively developing a comprehensive EV charging infrastructure through strategic partnerships, regulatory support, and significant investments, aiming to facilitate the widespread adoption of electric vehicles in alignment with its Vision 2030 goals.

How can Market Research and Consumer Insights help in development of the EV sector in KSA:

Market research plays a crucial role in the adoption and infrastructure development of electric vehicles (EVs) in Saudi Arabia (KSA) by providing insights into consumer behavior, industry trends, and regulatory landscapes. Here's how market research can help:

Understanding Consumer Demand

Identifying Target Audiences:

Market research can segment potential EV buyers based on income levels, lifestyle preferences, environmental concerns, and technological interests. This helps manufacturers and policymakers tailor strategies to meet the needs of these groups.

Perception and Awareness Analysis:

Understanding how aware consumers are of EVs, their benefits, and the incentives offered in KSA is vital. Research can uncover the barriers to EV adoption, such as range anxiety, cost concerns, or lack of knowledge, allowing companies to address these issues in their marketing strategies.

Analyzing Market Competitors and Trends

Competitor Benchmarking:

Market research can track competitors, including global and local EV manufacturers, their offerings, pricing, and strategies. This helps companies entering the EV market in KSA identify gaps and opportunities.

Emerging Technologies and Trends:

Research can keep track of global trends in EV technology, such as battery advancements, autonomous driving features, or energy-efficient models. This helps manufacturers stay ahead in the market by adopting innovative solutions.

Assessing Infrastructure Needs

Charging Infrastructure Demand:

Market research can identify the most strategic locations for setting up EV charging stations, such as in urban areas, highways, shopping centers, or residential complexes. This data ensures that the infrastructure meets actual consumer demand and usage patterns.

Technology and Standards:

Research can help analyze the types of charging technologies preferred by consumers (fast-charging vs. regular charging) and guide the standardization of charging stations across the country to promote interoperability and ease of access.

Evaluating Regulatory and Policy Impact

Government Incentives and Regulations:

Research can assess how effective current government incentives, such as subsidies, tax breaks, and rebates, are in promoting EV adoption. It can also evaluate potential regulatory barriers or requirements that might slow down infrastructure development, offering data-driven recommendations to policymakers.

Environmental Impact Studies:

Market research can also assess the environmental benefits of EV adoption and how they align with Saudi Vision 2030, providing insight into how businesses and the government can promote sustainability.

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Determining Cost-Benefit Analysis for Investors

Investment Opportunities:

Market research helps in evaluating the return on investment (ROI) for building EV infrastructure, such as charging networks, battery swapping stations, or maintenance centers. It provides investors with clear insights into market viability, growth potential, and profitability.

Cost Analysis for Consumers:

Research into the long-term cost benefits of owning an EV, such as savings on fuel, maintenance, and taxes, can help promote consumer confidence and drive adoption.

Understanding Supply Chain and Manufacturing Needs

Supply Chain Logistics:

Research can identify key challenges in the EV supply chain, such as sourcing batteries, availability of raw materials, and production capabilities. This ensures a more stable and reliable infrastructure for the EV industry in KSA.

Local Manufacturing Potential:

Market research can also explore opportunities for local manufacturing of EVs or EV components in KSA, which aligns with the Kingdom's goal of diversifying its economy under Vision 2030.

Measuring Consumer Satisfaction and Feedback

Post-Purchase Behavior:

Market research can track how satisfied consumers are with their EVs, including factors like performance, charging convenience, and service. This helps companies improve their products and infrastructure based on real-world feedback.

Customer Journey Insights:

Understanding the customer journey, from awareness to purchase and aftersales, allows companies to identify pain points and areas where they can enhance the customer experience, making EV adoption more attractive.

In summary, market research helps shape the future of EV adoption and infrastructure development in KSA by offering data-driven insights that influence strategy, policy, investment, and consumer engagement. It enables stakeholders to make informed decisions, drive growth, and contribute to the country's broader sustainability goals.

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THANK YOU

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