

June 2020

GCC Automobile Sector

Updated for COVID-19 Impact

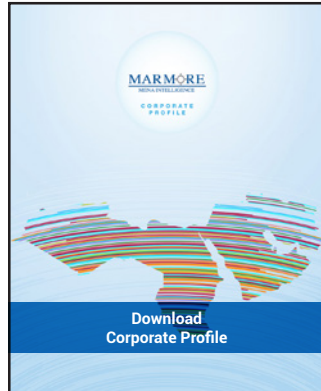


Research Highlights:

Examining the COVID-19 impact, the recent declining trend in imports, impact of demographic changes taking place, quantifying threats from fuel price hikes, shared mobility, and upside from lifting of ban on driving by females in Saudi. The report also presents growth drivers, the demand outlook for the sector as well as expected demand for electric vehicles.



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Executive Summary

Automobiles have a prominent place in the life of GCC residents and the sector's prominence was supported with subsidized fuel prices given the abundant availability of fossil fuels in the region. The automobile market in the GCC countries boasts of the presence of all top international brands, with the top international auto majors operating in the region for decades. GCC does not have automobile manufacturing facilities, but it is presently taking small steps in this direction, with UAE being the first to be setting up manufacturing facilities though on a small scale. Saudi Arabia the largest automobile market among the GCC countries, has set up special industrial zones for automobiles with the initial thrust being on auto parts manufacturing firms.

As part of the larger drive to move away from subsidized goods and services towards market prices, Saudi Arabia and other GCC countries have hiked motor fuel prices in recent years and the markets are expected to see full implementation of market prices for motor fuels in the next few years. The current drop in international gasoline prices and the bearish outlook for oil prices in the near term, may mean that oil subsidies previously considered high may not be relevant in the near term, and the governments may not have a case for increasing domestic gasoline prices which will be a positive for greater use of automobiles leading to some demand push for new purchases. VAT was introduced in recent years for the first time by some of the GCC countries. Further, Saudi Arabia is reported to have increased VAT rates recently in May 2020 due to budgetary deficits caused by low oil prices resulting from Covid-19 impact. Other GCC countries may follow though it is difficult to predict at this juncture. Any VAT increases on gasoline and automobiles can be expected to have a dampening effect on the purchase of new automobiles. In addition, in the current economic scenario of job losses and wage cuts consequent to business losses from negative GDP growth rates in 2020 as was seen previously when oil prices fell, the automobile purchases are also expected to be lower at least in the near term of next 12 months. The net impact on the gasoline prices consequent from lower international prices for gasoline and higher VAT on gasoline if any needs to be seen as higher fuel costs is a dampener for greater automobile usage. These two factors have an impact on the automobile demand if motor riding costs go up. The lack of public transport however maybe holding up the market, but this may change in the next few years as most cities in the GCC are setting up metro rail projects. Again, Covid-19 may make use of public transport less preferred by the new social distancing practices that may prevail until a vaccine is available to prevent the virus. New York Metro is talking to employers in their city to examine staggered office timings to reduce the density of traffic in underground trains. Such steps may mitigate the adverse impact of Covid-19 on public transport usage. In addition, the success of Ride hailing Apps like Careem and Uber are making available an alternative means of transport to GCC residents wanting to economize on commuting costs in the cities. However, it is not still clear whether Ride Sharing will sustain its demand post Covid-19. Moreover, the slowing growth of adult population during the next few years will result in lower annual demand for automobiles as fewer numbers of individuals seek car ownership. These developments pose challenges to the auto suppliers in the region and require them to adopt innovative marketing tools to stem the impact of negative developments on automobile demand.

On the positive side is the recent initiative of Saudi Arabia to lift the ban on driving of automobiles by the female population which is expected to give a boost to the automobile demand in the coming few years. This development can also increase demand from the female population to seek car ownership in rest of the GCC as well, where only cultural restrictions make females not to drive automobiles. Covid-19, may definitely induce female drivers who may be continuing their dependence on Ride Sharing and Taxis to shift more towards own vehicles and self-driving in these countries. Added to this, is the global initiative to switch to use of electric Vehicles (EV) in place of conventional IC engine-based automobiles with a view to reduce carbon emissions as part of the goal of Climate control and clean environment. The EVs are also found to have advantage of lower fuel and maintenance costs, while the manufacturing cost of EV is coming down and miles per recharge are going up with improvements in battery technology. The preference for EVs can be expected to result in quicker replacement of aged vehicles thereby generating higher demand for new vehicles. However, gasoline prices are lower currently and outlook is bearish in the future, EVs will benefit from lower electricity charges due to power companies paying less for their fuels like natural gas and crude oil. Therefore, lower gasoline prices may not deter the usage of Electric Vehicles. Connected cars, that is vehicles equipped with many smart features are becoming increasingly popular and the technologies for such cars is opening new capabilities, all of which can boost the new vehicle demand in the region. Autonomous Vehicles (AV) have yet to hit the market but are fast coming closer to reality and some GCC countries like UAE are recognizing their presence in their plans for automobiles.

This report examines the automobile market in the GCC as well as in the individual GCC countries. The historical growth of the automobile market is examined, relevant growth drivers are discussed and analyzed, and the forecasted market demand and vehicle population is given. For estimating demand from incremental car ownership due to additions to adult population, analysis of demographic trends is provided. An attempt is made to quantify the impact on demand from fuel price hikes, ride hailing apps, and ownership of automobiles by the female population. The expected demand for Electric Vehicles including Hybrid Electric Vehicles and Battery Electric Vehicles over the next five years is also provided. The demand estimates are provided for Reference Case, High Case and Low Case scenarios. The demand estimates for automobiles for 2020 particularly and for 2021 can be expected to be lower due to Covid-19 and low oil prices currently prevailing. However, 2019 imports data for automobiles is not yet available for the GCC countries and a clear picture of the length of this downturn and its implications are not crystallized yet. Therefore, while the relevant qualitative implications of Covid-19 are identified and discussed, the demand estimates for near term in the report are however not revised for these developments. The estimates for long term provided in the report are however expected to hold good.

All, in all, the emerging market for automobiles in GCC is one of new opportunities and new threats.

Overview of GCC Automobile Market

Automobiles are private mobility solutions for people that have made measuring distances in terms of time taken instead of kilometers to be travelled. As a result, automobile has been increasing steadily since their invention in the early part of last century. Increasing national incomes from economic development has been an important growth factor for the growth of the automobile sector across the globe. Technology has been making several improvements to the automobile whether it is fuel efficiency or passenger comfort or driving ease. GCC automobile sector is no exception to this global trend and its use is more prevalent in the region compared to many other countries, aided by the abundant availability of automobile fuels like gasoline and diesel.

For long period, until recently, fuel prices, were abnormally low in the region and this also contributed to the large automobile ownership in GCC. Currently, the governments in GCC have been taking steps to make fuel prices more comparable to world levels, which may dampen in the long term to some extent the usage of automobile compared to public transport. However, the current sharp drop in gasoline prices and the bearish outlook for the prices in the near term are positives for greater automobile usage, though increase in VAT or other taxes on gasoline can offset some of the gasoline price drop. Automobile sector globally is also under the scanner, since the recent past, for their adverse effect on the environment due to Green House Gas (GHG) emissions that has made all nations to seek alternative fuels that do not cause these ill effects. This has brought into limelight Electric Vehicles (EV) as alternative to Internal Combustion (IC) engines in automobiles. Globally and likewise in GCC, EVs are increasingly being looked at as an alternative to IC vehicles to reduce GHG emissions. The EVs can be expected to see lower electricity charges while IC vehicles benefit from lower gasoline prices in the current post Covid-19 environment thus the net impact may be zero on their comparative preference. Another cause of concern has been the fear of running out of fossil fuels like gasoline and diesel used in IC based automobiles. This is another driving force for EVs due to the emergence of non-renewable sources of energy for electricity production that can dispel fears of running out of fossil fuels. In addition, hydrogen powered fuel cell technologies under development, promise to eliminate dependence on fossil fuels as well as GHG emissions.

Further, automobiles are also known for their contribution to congestion particularly in urban places and roadways as their numbers increased several folds in many world cities. This is leading to the popularity of shared mobility, earlier only taxis, but now by the added ride sharing and ride hailing companies enabled through IT applications. Covid-19 is raising questions about the growth or sustainability of shared mobility, at least until a vaccine is available for the virus. Then of course are the technological developments that are making the futuristic automobiles like Autonomous Vehicles (AV) that promise greater driving comforts to the passengers, closer to reality. IT enabled Connected vehicles are under implementation currently, which will add to passenger comfort and driving ease.

Historical Size and Growth of the Market

The long-term growth of the automobile market in the GCC is positive, but the trends in the recent period of 2014-2018 have been not been encouraging, as explained below.

GCC Motorization Rate Comparison with Other Markets

As of 2015, the total passenger vehicle population (referred to in this report as "PV" or "passenger cars" or "automobiles") in the GCC countries was 9.9 million with a long term CAGR of 7.8% over the period 2005-2015. The estimated PV population in the GCC in 2018 was 10.77 million. The motorization rate i.e. the passenger cars per thousand population in GCC in 2015 was 187 as compared to 381 passenger cars per thousand inhabitants in USA and global average of 129 passenger cars per thousand. The higher per capita passenger car population in US maybe explained by its higher per capita income. GCC is expected to be accounting for about 1.0% of the world population of 1.06 billion passenger cars as of 2018.

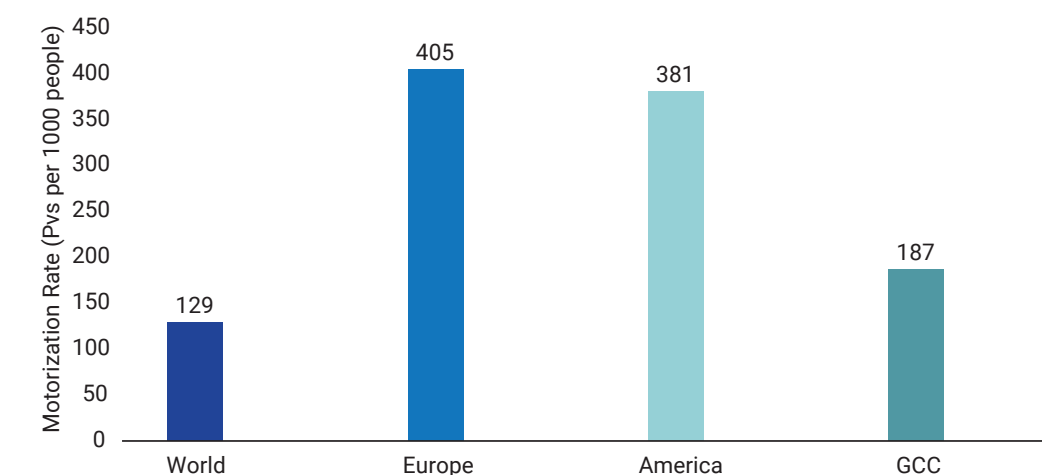
The number of vehicles in the GCC countries increased during the period 2010-2015 for which data is available and is shown in the Table below.

Table 2.1: Number of Vehicles in Use ('000s) in GCC Countries (2010-2015)

GCC countries	2010	2011	2012	2013	2014	2015	CAGR
Bahrain	364	381	402	437	467	500	6.6%
Kuwait	1,203	1,267	1,342	1,427	1,501	1,570	5.5%
Oman	520	570	620	660	710	760	7.9%
Qatar	490	540	580	607	650	700	7.4%
Saudi Arabia	3,110	3,410	3,689	3,868	4,110	4,400	7.2%
UAE	1,347	1,446	1,559	1,700	1,830	2,000	8.2%
Total	7,034	7,614	8,192	8,698	9,268	9,930	7.1%

Source: International Organization of Motor Vehicles Manufacturers (IOMVM)

Figure 2.1: Motorization Rate in GCC vs Other Regions (2015)



Source: IOMVM, World Bank Population Statistics, Marmore Analysis

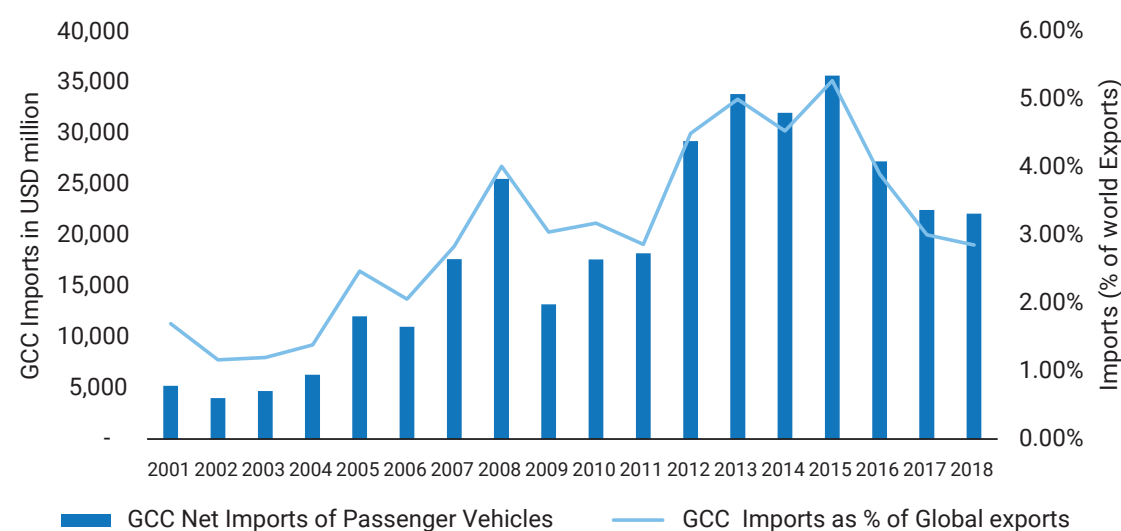
The motorization rate in the GCC is significantly lower than that of Europe and America because of its large expat population which predominantly have lower incomes compared to that of developed countries.

Historical GCC Imports and Reports of Automobiles

GCC does not currently have Passenger Vehicle production (UAE is currently setting up a manufacturing facility) and therefore its entire PV requirements are met from imports from across the world. World import statistics provide trade statistics of passenger vehicles (Category 8703-Motor cars and other motor vehicles principally designed for the transport of persons, incl. station wagons and racing cars (excluding motor vehicles carrying more than 10 persons). Data for some of the historical years were not available and therefore estimated numbers were taken for the purpose of various analyses carried out in this study.

In 2018, GCC countries imported passenger vehicles equivalent to USD 32.6 billion, re-exported vehicles valued at USD 10.5 billion, resulting in net imports of USD 22.1 billion. The value of net passenger car imports during the five-year period 2013-2018 showed negative growth of CAGR of 8.2 %, declining from USD 33.9 billion in 2013. The overall decline during the period took place across all the GCC countries except UAE. (See Figure 2.2: GCC Net Automobile Imports Value-2001 to 2018)

Figure 2.2: Value of GCC Net Imports of Passenger Vehicles (2001-2018)



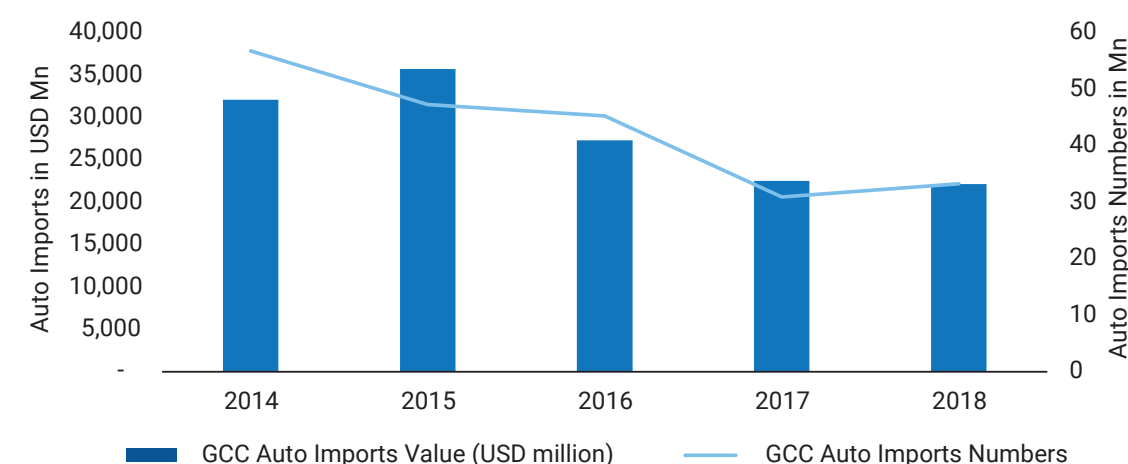
Source: International Trade Statistics (ITS), Marmore Analysis

Analysis of Reasons for the Slump in automobile Imports (2014-2018)

GCC total goods imports fluctuate with oil prices and so also do automobile imports. But what is worrying is the slump in imports of automobiles in value and more particularly by number of vehicles during 2016 and 2017 with no reversal in numbers in 2018 (See Figure 2.3: GCC Auto Imports Slump). Automobile imports by value shrunk -16% in 2016, while the imports by number shrunk -24.4% in 2016. As mentioned later, the current drop in oil prices is even more severe and raises concerns about the likely impact on automobile purchases during 2020 and 2021 as the oil price outlook is currently very bearish for 2020, though recovery is being

expected in 2021. Though the decline in imports by value was checked +0.4% in 2018, imports by number saw further decline of -16.9% in 2017 and -8.9% in 2018. Further, the auto imports by value in 2018 showed no growth compared to that in 2016, though overall imports of all merchandise by value increased by 10.5% during 2018 over 2016.

Figure 2.3: GCC Auto Imports Slump (by Value and by Numbers)



Source: Its, Marmore Analysis

Analysis of the slump requires an understanding of the key growth drivers for automobile demand in the GCC. One of the growth drivers is the per capita income which fluctuates due to oil prices. But it is seen that the auto sales decline is beyond the lower oil prices, as the oil prices were better in 2017 over 2016 but auto demand was down. We then come to three other important growth drivers for the GCC automobile demand that can explain the current slump in automobile sector, and on analysis they are found to be the following:

1. Demand Cyclicity that is characteristic of the Industry in GCC.
2. Demographic Changes that are happening in GCC.
3. Lower Replacement demand as automobile imports 10 years back were low.

Examining the share of GCC Imports of automobiles out of the Global automobile exports shows that the share of auto imports exhibits cyclical trends (See Figure 2.4). GCC Import of automobiles to Global automobile exports shows periodic troughs and peaks and the decline during 2015-2018 may be one such decline, as imports declined from the peak in 2015 to a trough in 2018. Historical data shows that there is a trough every 7-9 years. The GCC imports to global exports reached a trough of 1.20% in 2002, a trough of 2.87% 9 years later in 2011 and they were at 2.86% the next trough in 2018. Thus, one of the explanatory factors for the auto slump in GCC can be the industry cyclicity due to oil price changes. This can also be seen from Figure 2.4 that shows GCC Auto imports closely tracking Crude Oil prices (Arabian Light prices) over the period 2001-2018. The oil price for 2020 is expected to average below the reduced oil price that was recently seen in 2016 which may mean lower share of GCC imports of global exports, but also of concern will be the drop in the global exports due to fall in demand globally and also global supply from Covid-19 impact.

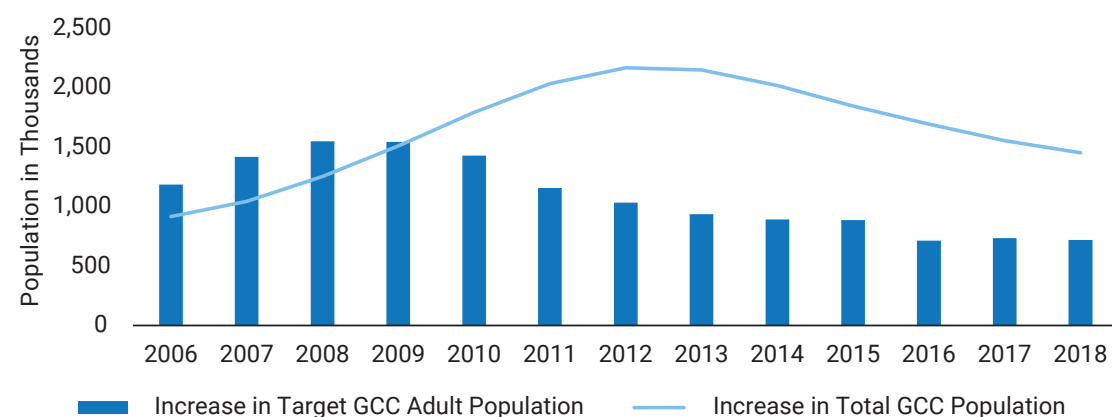
Figure 2.4: Cyclicalities of GCC Auto Imports & Oil Price Changes (2001-18)



Source: SAMA Annual Report, Marmore Analysis

The next important factor is the changing demographics happening in the GCC. Increase in adult population (adults being defined here as age group over 19 years), a part of whom purchase automobiles, is expected to be one of the main causes of automobile purchases other than vehicle replacement demand. It is found that increase in adult population in the GCC, taking total adults in all GCC countries except for Saudi where increase in male adults is considered, dropped from 1,035 thousand in 2015 to 812 thousand in 2016 i.e. a decline of 223 thousand in 2016, which could have partly caused some of the large drop in the automobile imports by 400 thousand vehicles in 2016 over 2015. Also, there has been a large exit of the expat population in some of the GCC countries, which also might have had a negative impact on the demand growth in these years.

Figure 2.5: Yearly Increase in GCC Total and Adult Population (2006-18)



Source: Marmore Analysis, World Bank Population Statistics

Additionally, as mentioned earlier the third factor contributing to automobile demand slump can be the importance of the replacement demand from ageing vehicle population. The expected average useful life of automobiles in the GCC is around 10 years. That means, automobile imports in 2006 will fall due for replacement

in 2016 and the automobile imports in 2007 will fall due for replacement in 2017. It is found that the average imports during the historical period 2006-2016 were about 1,240 thousand per year. In comparison the imports were much lower, about by 440 thousand in 2006 compared to the ten-year average (total automobile imports in 2006 were about 793 thousand) and in 2007 the automobile imports were lower by 245 thousand (total automobile imports were about 995 thousand in 2007). These lower purchases of automobiles in 2006 and 2007 can explain the lower replacement demand for automobiles in 2016 and 2017 respectively and therefore considered as the third reason for the auto slump in the GCC.

Also, recent years witnessed GCC governments' initiatives to remove fuel subsidies and introduction of VAT, both of which would have also contributed to negative sentiment for the sector. The lower gasoline prices at least in the near term may mitigate adverse effects of this impact partly, even if VAT rates are increased to meet budgetary deficits arising from low oil prices and Covid-19 lockdowns.

To sum up the auto slump in GCC during 2016-2018 is explained by regional factors of industry cyclicalities, changing demographics leading to lower increase in adults who are potential buyers of automobiles and lower replacement demand that can be attributed to lower imports 10 years previously.

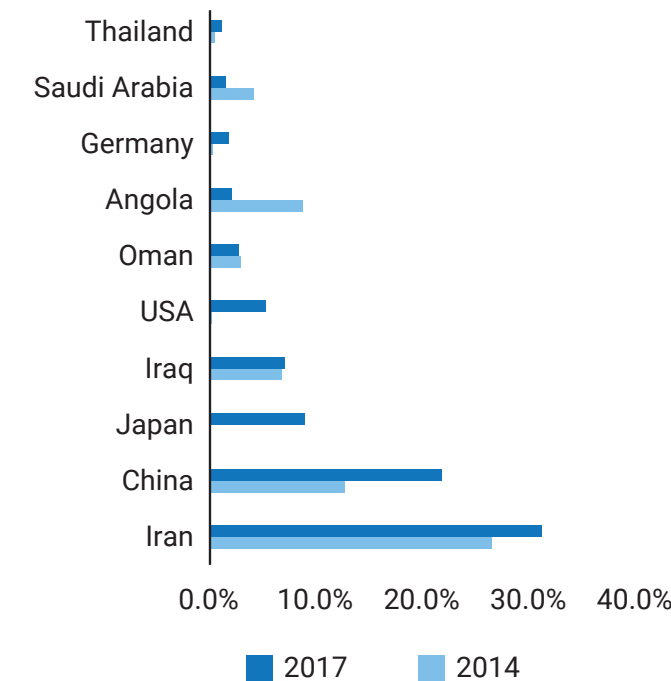
GCC's Automobile Re-exporting Countries & Important Destinations

Out of the re-exports of USD 10.5 billion from GCC in 2018, UAE accounted for bulk of the re-exports of USD 8.6 billion (82.9%) followed by Saudi Arabia for USD 896 million (8.6%), Kuwait USD 516 million (4.9%), Bahrain for USD 292 million (2.8%), Oman for USD 72 million (0.7%) and Qatar for USD 10 million (0.1%). The principal re-export destinations outside GCC are Iran, China, Japan, Iraq, USA, Angola, Germany, Thailand, Lebanon, United Kingdom, Tanzania, Sudan, Egypt, Jordan, Yemen, Djibouti, Tunisia and France (Please see Figure 2.6; Re-exports from UAE and Figure 2.7 Re-exports from Saudi Arabia).

The Figures 2.6 and 2.7 show that UAE's re-exports increased over the period for most top destinations, while that of Saudi Arabia showed mixed performance increasing in case of some destinations and decreasing to some. The automotive and spare parts companies operating in Jebel Ali Free Zone, Jafza, recorded business worth USD 10.7 billion in 2017. This shows Dubai's position as logistics and distribution centre for the automotive industry in the region. Vehicle and transport sector accounts for 11 % of Jafza's customers' base and it currently has 546 automotive companies from 62 countries, employing around 8,200 people. Almost 1.1 million vehicles moved through the port in RoRo carriers and containers in 2017. Jebel Ali Port is served by more than 180 shipping lines that offer over 80 services a week and connecting to a global network in 40 countries¹. It is worth noting that Covid-19 can be expected to adversely affect re-exports to all destinations but more particularly to countries like Iran and Iraq that are severely impacted by Covid-19 as well as international trade sanction introduced earlier on Iran.

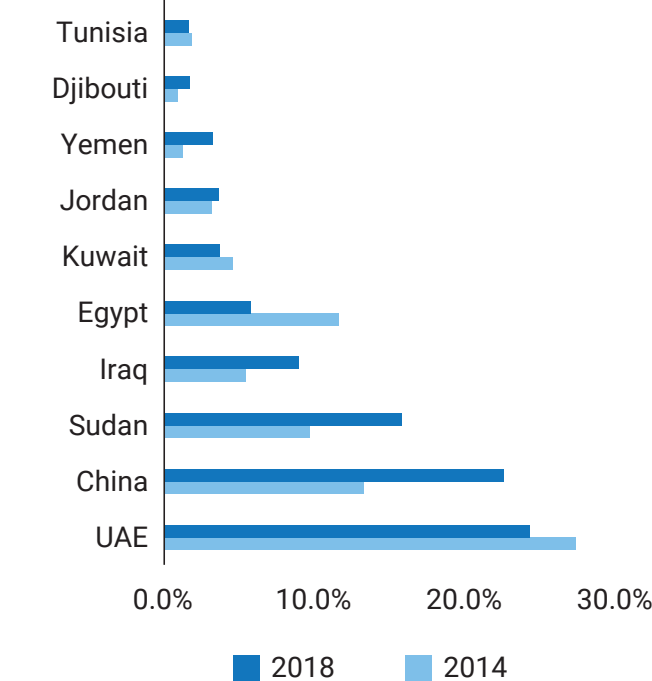
¹ <https://www.zawya.com/mena/en/business/story/>

Figure 2.6: UAE Re-exports Top 10 Destinations



Source: ITS and Marmore analysis

Figure 2.7: Saudi Re-exports Top 10 destinations



Source: ITS and Marmore analysis

GCC's Average Price of Imports of Automobiles

GCC passenger car imports by number of vehicles is not available for all the countries for all the period from ITS. However, estimates were prepared by Marmore taking the available data from ITS and making assumptions to bridge the data gap, and the numbers for 2014-2018 are presented in Table 2.2 below. The net number of imported vehicles (net of re-exports) fluctuate between a maximum of 1.63 million vehicles in 2015 and a low of 0.96 million vehicles in 2018. The average net number of vehicles imported during the period 2014-2018 was 1.23 million which forms about 9.8 % of the total estimated vehicles population in GCC of 10.03 million in 2018. On the other hand, GCC countries re-exported about half a million vehicles per year during the period. The average gross import price per vehicle for the period was USD 21,177 and the net import price per vehicle was USD 22,797. The net import price being higher than gross price shows that some of the vehicles re-exported were of a lower price.

Table 2.2: GCC Annual Passenger Vehicle Imports and Import Price

Year	million vehicles				
	2014	2015	2016	2017	2018
Number of Vehicles Imported	2.093	2.037	1.555	1.600	1.562
Estimated re-exported Vehicles	0.821	0.410	0.325	0.553	0.608
Number of Net Vehicles Imported	1.272	1.627	1.230	1.048	0.955
Average Gross Import Price (USD per Vehicle)	21,178	21,336	21,825	20,692	20,853
Average Net Import Price (USD per Vehicle)	25,206	21,949	22,173	21,472	23,184

Source: ITS and Marmore estimates

The average import price except in 2014, fluctuated by a small % over the period 2014-2018.

GCC Passenger Vehicle (PV) Imports by Member Countries

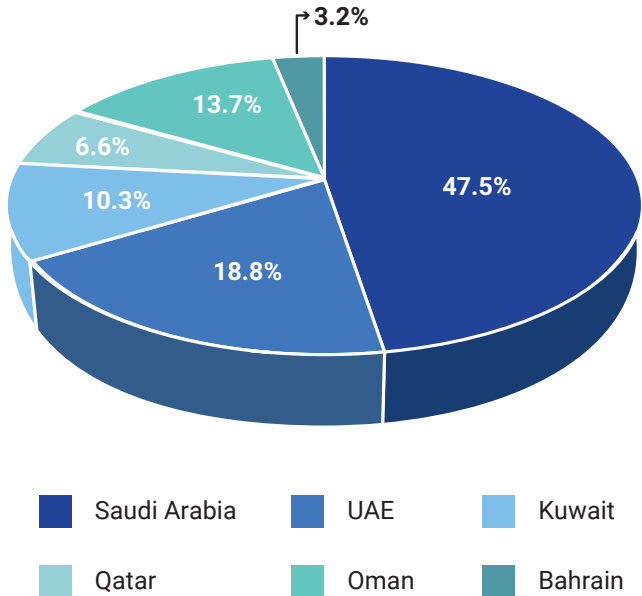
Saudi Arabia is the largest net importer of PVs by value, followed closely by UAE among the GCC countries. Table 2.3 gives the breakdown of net imports (value) by each of the GCC countries (see Figures 2.8 & 2.9) for composition of value of imports in GCC. The import figures for Oman for 2015-2017 are estimates as the data was not available.

Table 2.3: Passenger Vehicle Imports by GCC Member Countries (2014-2018)

Year	million vehicles				
	2014	2015	2016	2017	2018
Saudi Arabia	15.215	16.951	12.130	8.297	8.003
United Arab Emirates	6.021	8.216	6.473	7.389	6.778
Kuwait	3.302	2.915	2.277	2.056	2.491
Qatar	2.110	2.466	2.024	1.432	1.582
Oman	4.392	3.949	3.193	2.748	2.552
Bahrain	1.015	1.220	1.175	0.575	0.723
Total for GCC	32.055	35.717	27.272	22.497	22.129

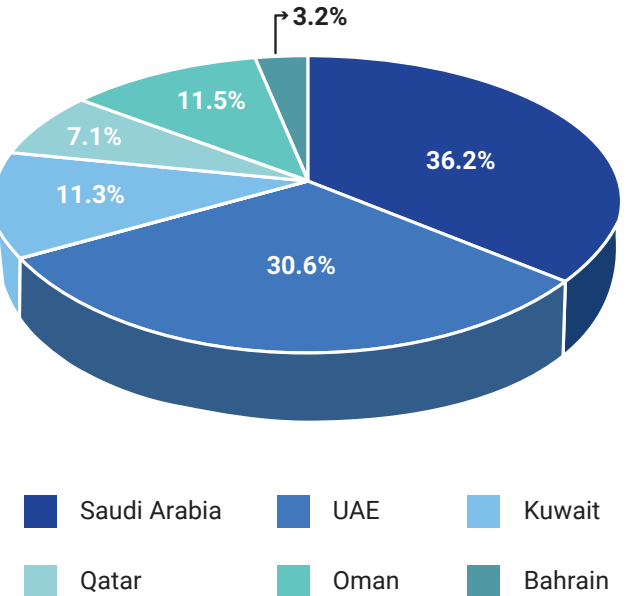
Source: ITS. Marmore estimates.

Figure 2.8: Net PV Imports by Value (2014)



Source: ITS and Marmore analysis

Figure 2.9: Net PV Imports by Value (2018)



Source: ITS and Marmore analysis

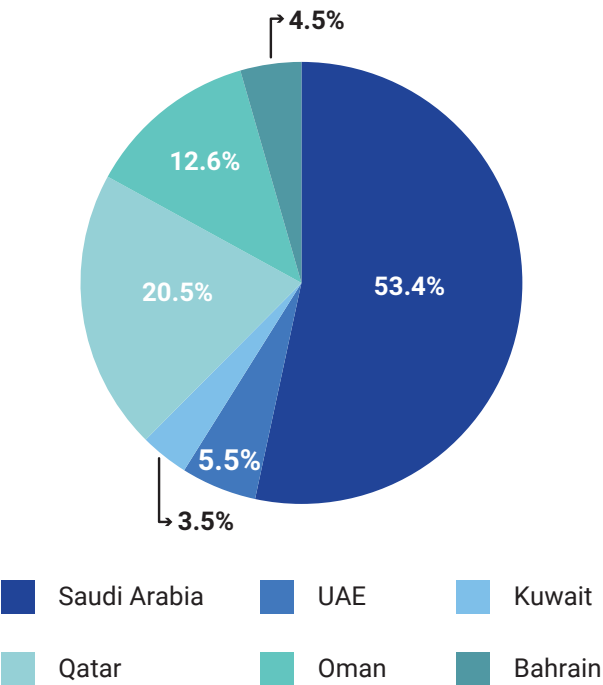
See Table 2.4 for Vehicle Imports by Country and Figures 2.10 & 2.11 for comparison of % share of number of net vehicle imports by each GCC member in 2018 versus that in 2014. The imports for Oman for the years 2015-2017 were not available and figures show estimated numbers.

Table 2.4: Net Number of Vehicles (in Mn) Imported by GCC Members (2014-2018)

Year	2014	2015	2016	2017	2018
Saudi Arabia	0.679	0.727	0.511	0.341	0.337
United Arab Emirates	0.070	0.296	0.237	0.317	0.216
Kuwait	0.045	0.106	0.062	0.077	0.072
Qatar	0.261	0.307	0.258	0.182	0.202
Oman	0.160	0.144	0.116	0.100	0.094
Bahrain	0.057	0.047	0.045	0.031	0.033
Total for GCC	1.272	1.627	1.230	1.048	0.955

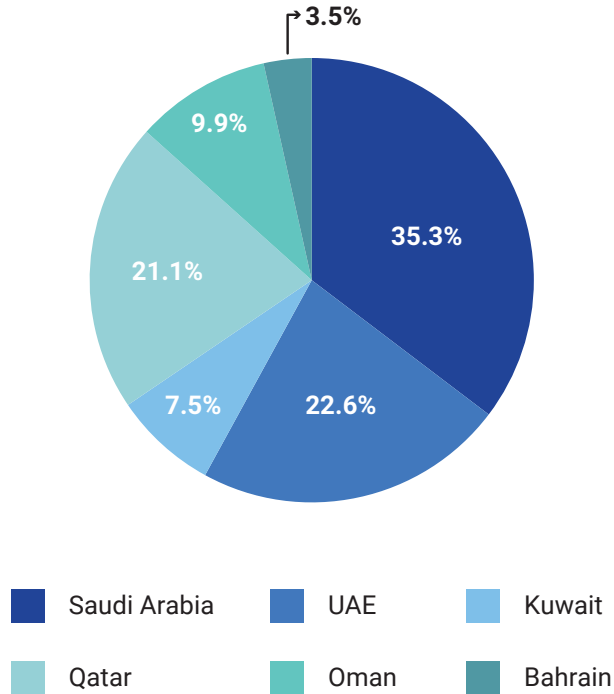
Source: ITS and Marmore estimates

Figure 2.10: Net PV Imports by Number (2014)



Source: ITS and Marmore estimates

Figure 2.11: Net PV Imports by Number (2018)



Source: ITS and Marmore estimates

Countries Supplying GCC's Passenger Vehicles Market

The GCC countries meet their requirement of passenger vehicles requirement through imports as they do not have domestic manufacturing capacity. Only UAE has recently set capacity for domestic manufacture of passenger vehicles. *(The first Emirati four-wheel drive vehicle 'Al Reem' is expected to hit the local and Arab market by 2019-year end, with 13,000-4Wheel Drive cars to be manufactured in the first phase of the production line, by Sandstorm Automotive Factory)².* The region meets its imports from several countries but, some of the large countries from which GCC imports the PVs are Japan, USA, South Korea, Germany, UK, Thailand, Indonesia, China and France. Table 2.5 gives the passenger vehicle gross imports from these countries over the period 2014-2018.

Table 2.5: GCC's Gross Imports of Passenger Vehicles by Exporting Country

Year	USD million				
	2014	2015	2016	2017	2018
Japan	14,629	12,632	10,972	11,285	13,847
USA	7,555	7,505	5,683	4,494	4,750
South Korea	6,230	4,790	3,239	4,045	2,582
Germany	4,127	3,640	2,289	2,499	2,452
UK	2,158	2,312	1,666	1,622	1,897
Thailand	1,089	669	1,041	880	1,139
Indonesia	1,131	1,413	684	810	831
China	481	482	320	171	360
France	103	70	52	127	116
Total of above	37,504	33,513	25,945	25,934	27,974
% of Total Imports	84.6%	77.3%	75.1%	78.4%	85.9%

Source: ITS

The changes in shares of total imports for the exporting countries across the period 2014-2018 can be seen from Table 2.6 below. It is observed that Japan increased its share by sizeable amount, Thailand, UK and France also increased their shares, while USA, South Korea, Germany saw decline in their shares, and Indonesia and China maintained their shares. See Exhibit-1 for a comparison with global trend. Covid-19 having impacted all major source countries for GCC Imports, the supply of vehicles from these regions can be expected to be

² https://www.zawya.com/mena/en/business/story/First-UAE_homegrown_4WD_vehicle_to_hit_streets_by_end_2019-SNG_143578617/

lower, though some of the countries like China and Korea that have recovered better from Covid-19 impact maybe able to increase their supply of automobiles to the GCC in the near term and whether this will impact long term market shares of other countries brands cannot be judged.

Table 2.6: Country-wise Share of GCC's Gross Passenger Vehicle Imports (Value) 2014-2018

Year	2014	2015	2016	2017	2018
Japan	33.0%	32.0%	35.7%	37.2%	42.5%
USA	17.0%	19.0%	18.5%	14.8%	14.6%
South Korea	14.1%	12.1%	10.5%	13.3%	7.9%
Germany	9.3%	9.2%	7.4%	8.2%	7.5%
UK	4.9%	5.9%	5.4%	5.3%	5.8%
Thailand	2.5%	1.7%	3.4%	2.9%	3.5%
Indonesia	2.6%	3.6%	2.2%	2.7%	2.6%
China	1.1%	1.2%	1.0%	0.6%	1.1%
France	0.2%	0.2%	0.2%	0.4%	0.4%

Source: ITS and Marmore Analysis

Exhibit 1: Country-wise Share of Exports – Global versus GCC

Declining GCC Automobile Imports from USA in line with Global Trend

Analysis shows that the change in market shares of the top four countries exporting automobiles to GCC followed the global trend. Globally also Japan increased its share, while US, Germany and Korea faced decline in their share of exports.

Global Share of Automobile exports for Japan/USA/Germany/Korea

Year	2014	2015	2016	2017	2018
Japan	12.49%	12.69%	13.13%	12.46%	12.79%
USA	8.70%	8.17%	7.69%	7.15%	6.63%
South Korea	6.32%	6.16%	5.36%	5.18%	4.93%
Germany	22.61%	22.59%	21.71%	20.99%	19.96%

Passenger Vehicles Manufacturers and their Sales in the GCC

In the Middle East of which GCC is the largest segment, Toyota continues to rule the market with the largest market share of 31.4% in 2018, which though has come down from 37.1% in 2012. Toyota has seven of the topmost popular cars selling in the Middle East. Toyota sold 346,788 vehicles in GCC in 2018 (419,165 in 2017) which is 84% of total Middle East sales. The South Korean car major Hyundai occupies the next largest position in Middle East with a market share of 10.5% that is lower than 15.22% in 2016. Kia Motors also of South Korea has a market share of 7.88%. Nissan has the next largest market share and sold 59,520 vehicles in the Middle East in 2018 and 69,043 vehicles in 9 months ended December 31, 2018. Mitsubishi Motors sold 72,762 vehicles in Middle East and Africa during 2017 and a high of 126,648 vehicles in 2015. General Motors (GM) enjoys a market share of 8.2% in Asia Pacific, Middle East and Africa. In terms of type of cars in 2015, the two types namely PCs and SUVs recorded around 850,000 and 650,000 respectively³. Market share of Mitsubishi and GM separately for Middle East and GCC were not available. See Appendix 1 for the automobile dealers in the GCC for major car brands.

The market shares of some of the top car brands in the GCC countries is shown in the table below:

Table 2.7: Market Shares of Top Brands in the GCC Countries (2018)

	UAE	Saudi Arabia	Kuwait	Qatar	Oman	Bahrain
Toyota	29.90%	31.70%	30.70%	34.60%	50.10%	38.30%
Nissan	8.50%	6.60%	10.20%	15.20%	21.40%	12.80%
Mitsubishi	13.10%		9.35	8.10%		
Hyundai		18.60%			6%	
Mazda		4.90%			4.9%	

Source: Bestsellingcarsblog.com

³ AMENA Automobile Association - The Middle East Car Sales Data Reveals Improvement In Early 2019

Growth Drivers for GCC Passenger Vehicle Market

There are several important factors that influence the growth of the automobile sector in the GCC countries. Most of these factors are common to all the GCC member countries given the structural similarities among them whether it is the abundant availability of fossil fuels, abundant sunshine a prerequisite for solar power generation, commonalities in culture and living habits, emerging young population which is now commonly termed as demographic dividend, a passion for driving among the population, tech savvy population with high internet and mobile use, comparatively high per capita incomes, large expat population that has comparatively lower income and a nascent automobile manufacturing sector putting reliance on imported automobiles as well as providing economic flexibility to absorb technological changes like electric vehicles, fuel cell technology, connected vehicles, and autonomous vehicles. Some of these factors in the GCC are undergoing a change resulting from new economic, social and international priorities like removal of fuel subsidies, permission to female population to drive automobiles, and goals for compliance with Global Climate control regulations. Some of these factors will influence automobile sector positively while other might have a negative effect. However, factors like shared mobility and impact of lower gasoline prices while experiencing VAT increases, at least in the near term due to Covid-19 impact on oil prices and social distancing and higher levels of hygiene may alter the previous opinions of the likely factors that will drive the growth of automobile demand in the GCC.

Growth in Adult Population to drive the Addressable Market

The additions to adult population in the GCC countries form the addressable market for new passenger vehicles market every year. The increase in addressable market for new passenger vehicles will consist of replacement of existing vehicle population due to wear and tear and the remaining from additions to adult population. The entire additional adult population may not lead to purchase of new vehicles as different age groups in the population have differing proportions of likelihood to lead to purchase of passenger cars. Generally, the vehicle additions will be largely coming from the increase in youth population. Further, in a large part of GCC, the female population till recently were not allowed driving of passenger vehicles, therefore the addition to male adult population may be more relevant for assessing the expected increase in vehicle purchases from new owners every year. The purchase of vehicles by the female population that was allowed to drive cars recently is discussed separately in Section 6.0 under "Additional Demand from Lifting Ban on Female Driving in Saudi Arabia ". Also, large part of the GCC population consists of expat workers many of whom may not afford owning a car.

The addressable adult population is considered to comprise of population with age higher than 19 years, the age when persons in the GCC can be expected to learn driving passenger vehicles. In view of the large child population reaching youth in the GCC economies over the past many years, the change in total adult population

every year was lower than the increase in the adult population in the year. However, the difference between the two is slowly diminishing. The expected change in total adult population as well as for the corresponding male and female categories, over next five years is presented in Table 3.1 below.

Table 3.1: Yearly Increase in Adult Population of GCC

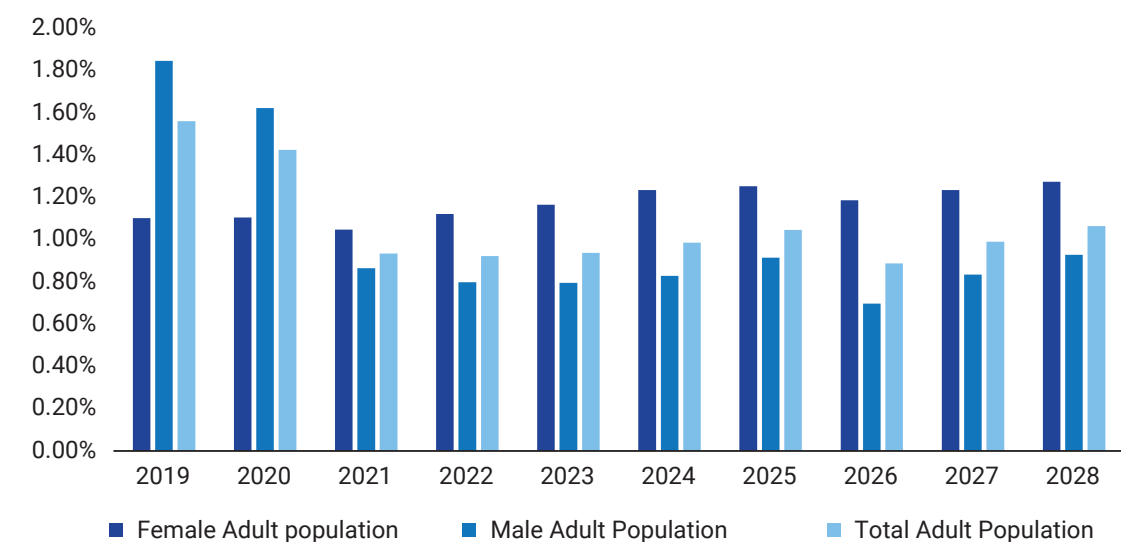
Year	2019	2020	2021	2022	2023
Female Adult population	243,638	248,000	239,000	260,000	275,000
Male Adult Population	657,142	588,000	318,000	297,000	299,000
Total Adult Population	900,780	836,000	557,000	557,000	574,000

Source: World Bank and Marmore Analysis

It is observed from Table 3.1 that the yearly increase in adult population over the next five years is expected to see a decline in 2020 and a sharper decline in the remaining years. The yearly increase was much higher in the previous period 2014-2018, around one million and more.

The % growth in adult population in the GCC over the next 10 years in male, female and total categories is presented in Figure 3.1: Expected Growth in GCC Adult Population.

Figure 3.1: Expected Growth in GCC Adult Population (2019-2028)



Source: World Bank and Marmore Analysis

Allowing Female Automobile Driving to boost Sector Growth

Historically long, religious and cultural traditions did not allow female population to drive in Saudi Arabia, that has the largest population in GCC, and it was true to some extent even in other member countries. This has changed last two years and the Saudi government in June 2018, issued decree to allow female population to drive passenger cars. This move has opened up a large opportunity that is expected to grow automobiles sales in the Kingdom in the coming years. Also, this change can be expected to motivate greater participation of female drivers in other GCC member countries as well, in the future, which may have been muted in the

past due to cultural traditions despite no legal restriction. Also, social distancing and higher levels of hygiene consequent to Covid-19 impact may influence a greater number of women to adopt a faster shift towards self-driving away from previous modes of transports like taxis and Ride Sharing options like Uber. The female adult population in GCC was 21.8 million which forms 62% of the male population of 34.9 million. This means that existing vehicle population estimated at 10.77 million in 2018 (See Section 2 under “GCC Motorization Rate Comparison with Other Markets”) can increase by 62% if the female car ownership reaches levels equal to male population driven demand. It is expected that 3 million women drivers, 20% of the female population, will be added in Saudi Arabia over the coming years which is expected to give a big boost to the automobile sales by 2020 . (See Section 6 under “Additional Demand from Lifting Ban on Female Driving in Saudi Arabia “, for Marmore estimate of incremental demand from lifting ban on female driving in Saudi Arabia).

Almost 50,000 driver licenses were issued till July 2019 in Saudi Arabia. Key industry players in Saudi Arabia are already taking initiatives to capitalize on opportunities created by women being allowed to drive, including the creation of women-only car showrooms, auto-insurance claims centers and driving schools dedicated to women. In July 2019, Samaco Automotive Company, the exclusive dealer for Volkswagen in Saudi Arabia announced a boost in sales to women, as they accounted for 25% of total sales of VW in the year to date. A response to the new opportunity is Saudi Arabia's first women-only car show by Le Mall in Jeddah, Saudi Arabia that hosted. It is widely believed that female driving schools cannot keep up with the demand. It can take applicants several months to start their lessons at one of the schools, most of which are located within Saudi universities. It takes women sometimes three months to get a driving license.

TNS (one of the largest global research agencies) survey in 2017 after the announcement of Saudi government, shows 82 % of the women are contemplating on getting a license. While going to work was the key reason to drive (45 %) dropping children (39 %) was the other reason. Interestingly, about 17 % of the intending drivers expected to shop more and indulge in more leisure activities. An overwhelming majority of intending drivers (92 %) are expected to reduce their reliance on taxis and services such as Uber. Women have also come out strongly in favor of reducing their reliance on personal drivers with over three fourths (80 %) of intending drivers expected to reduce their dependency. Some 60 % of the female residents are intending to buy a car in the next three years and 38 % planning this purchase in the next year. Non-premium, small and medium car segments i.e. those costing about SAR 63,000 is the preferred choice with 71 % intending to buy in that range. However, premium vehicles interest a tenth who are expected to pay over SAR 110,000 for the cars. Males are likely to continue to play a key role in the decision of vehicle make/model, 44 % were still undecided on whether to purchase or give an existing vehicle to the woman. Among those who were decided, 57 % plan to buy a new car for women and a fourth likely to buy a new vehicle for themselves⁵.

⁴ https://www.zawya.com/mena/en/business/story/Saudi_automotive_sector_set_for_rapid_transformation-SNG_

⁵ Provided by SyndiGate Media Inc. (Syndigate.info)

Connected Cars to provide Higher Replacement Demand

GCC population has very high internet and mobile population, and the population at large possess a strong preference for automation and related gadgets. Passenger Vehicles with automated features therefore are expected to find good preference among the GCC population of vehicle owners. The automobiles with new technology enabled features can be expected to drive higher rate of replacement of the existing vehicle population. Also new vehicles that may promise a more hygienic environment within the automobile through appropriate devices can motivate some of the population towards faster replacement of their vehicles with new ones equipped with such improved features.

Connected vehicles in some form are around for many years in the GCC as most car manufacturers provided vehicles equipped with GPS Navigation, Cellular Connectivity, Smart phone linking (WIFI & Bluetooth), Infotainment and Telematics. Intelligent transportation systems (ITS) which is more advanced connectivity are currently transforming the market. An example of ITS is in Wuxi, China where around 1.76 million vehicles make their way around the metropolis, with cars, buses, traffic lights and signs all communicating with each other. Many of the new vehicles on the market today include elements of automated vehicle systems, such as sensing technologies that help the driver monitor the vehicle's environment to proactively avoid crashes. Many variations of driving automation are possible, including steering, parking, and speed control. Over the past two decades, automakers and suppliers introduced numerous features that warn, aid, and assist drivers. These systems were generally provided in higher-end vehicles where consumers could pay for the additional features. These features are expected to be increasingly standard across the new vehicle fleet in the coming decades. Aid features provided currently include night vision, rear camera, surround view and adaptive front lights. Warn features include parking assist (warning), forward collision warning, lane departure warning, blind spot detection, driver monitoring, and drowsiness alert. Driver assistance features are adaptive cruise control, automated emergency brake, dynamic brake assist, automated parking, single lane autopilot, lane keep assist, pedestrian avoidance, and intelligent speed adaptation. Regulatory mandates and consumer adoption also are among the factors affecting these features, for example some features may be mandated or included in safety-rating systems. Similarly, customers demand driven automated vehicle systems such as automated park assists, adaptive cruise control, and automated emergency braking, and these systems are now available on an increasing number of new vehicles . The advent of 5G technology is expected to give to wider use of these technologies.

Regulatory Changes to have mixed Impact on Automobile Demand

The GCC governments are committed to Climate Control and are taking many initiatives for reduction of Green House Gas Emissions. The new regulations will make many older segments of the car population not fit for use and this can increase the existing population of passenger vehicles. Also, better safety regulations make

⁶ Center for Automotive Research, Ann Arbor, Michigan, USA

many cars in the existing vehicle population out of use, thereby also aiding increase in vehicle purchases in the future. Safety features includes SRS airbags, Drive-start Control, Vehicle Stability Control (VSC), Anti-lock Braking System (ABS), Electronic Brakeforce Distribution (EBD), Tire Pressure Warning System (TPWS), Hill-start Assist Control (HAC), among many others.

While the automotive industry is not the biggest contributor to climate change, the fact is that it does play a significant part and so climate change is one of the automobile sectors premier challenges to find solutions for. Regulatory efforts to limit global climate change and improve energy security have driven the automotive industry to develop and produce ever more efficient vehicles. Automakers and suppliers have made significant investments in both research, development, and engineering to refine ICE powertrains further and develop viable alternative energy systems. Since 2009, automakers have announced investments in North America exceeding \$9.2 billion to produce advanced, efficient, ICE powertrain systems. These investments are split evenly between high-speed transmissions (8+ gears and CVTs) and new, smaller engines (4 or fewer cylinders).

Clean energy is driving growth of electric vehicles worldwide. Emissions from cars have been growing globally at an annual rate of 1.5 %. Ideally, the world is required to keep reducing emissions by 3.5 % annually to preserve the ecosystem. While governments project that carbon allowance will expire after 2040 or 2050, independent research firms calculate the expiry to be closer to 2030, making it urgent to adapt to sustainable mobility⁷. Cutting CO₂ emissions to prevent global warming and preventing air pollution gradually have become the major social issues demanding global solutions. In response, many counties and regions have made plans to shift to electrified vehicles.

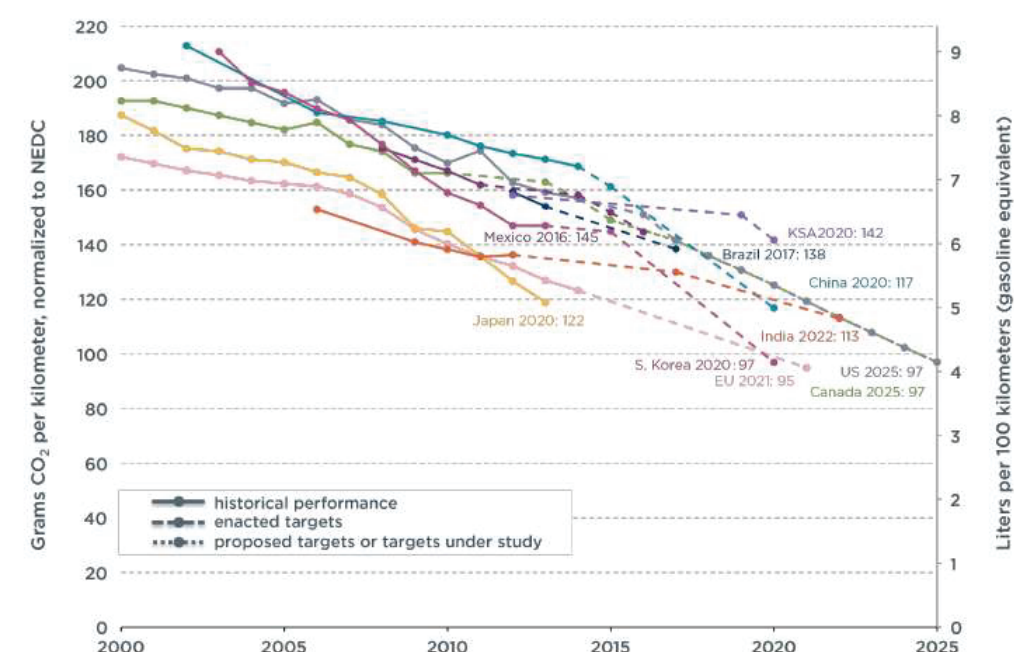
Many countries and even cities have taken actions to develop zero-emission vehicle mandates, with a specific interest in Battery Electric Vehicle (BEV) technology. Countries including China, France, Germany, Great Britain, India, Norway have announced plans to phase out gasoline and diesel-powered engines. Also, Austria, Denmark, Ireland, Japan, the Netherlands, Portugal, Korea and Spain have set government targets for EV sales. Several cities are also looking to move to limit or ban ICE-powered vehicles, including Paris, London, and Copenhagen. Norway has committed to Plug-In Electric Vehicle (PEV) technology; the country has implemented a "green" tax system for vehicles, where the government taxes vehicles sold according to their emissions.

The Norwegian strategy has been effective as in 2017, PEVs accounted for 39.2 % (20.8 % for BEV and 18.4 % PHEV) of new vehicle sales in the country. Norway's monetary incentives are the equivalent of 45 % of the total price for a midsize EV. While this strategy has gained much acclaim, it may not serve as a model for countries with larger vehicle markets due to its high costs. China's New Energy Vehicle (NEV) credit system may be more important for global automakers. Modeled after California's ZEV mandates, it is a partial response to local, and maybe even global, emissions concerns.

⁸ AMENA Automotive Association, UAE

For decades, governments have relied mainly on laws of such as the U.S. Corporate Average Fuel Economy (CAFE) standards or Europe's New European Drive Cycle (NEDC) to regulate motor vehicle emissions. The International Coalition for Clean Transportation has tracked these past, current, and future standards, as shown in Figure 3.2. While there are some differences in the slope, globally, these standards are rapidly becoming more restrictive, which will require lower emissions and reduced fuel consumption in the future.

Figure 3.2: ICCT Passenger Car CO₂ Emissions and Fuel Consumption, Normalized NEDC



Source: International Coalition for Clean Transportation

Ultimately the big question is that electric vehicles are still not 100 % carbon neutral. They may not produce exhaust gases, but there are other indirect CO₂ generation. Sourcing the minerals used for batteries, dismantling batteries which have deteriorated, and building and delivering vehicles to buyers in different parts of the world and finally generating electricity would still involve substantial CO₂ emissions.

Lower Fuel Cost a Reducing Growth Driver

GCC countries have the advantage of an abundant availability of crude oil produced at a low cost that has led to globally lowest prices for motor fuels like gasoline and diesel. This has enabled extravagant use of the automobile as a dominant provider of mobility for the population. However, over the years with a sharp rise in population the consumption of motor fuels has risen sizably and since they are supplied at subsidized rates, the subsidy bill has become a burden on the government finances. Therefore, the GCC governments recognized the need to rein in the subsidies to manage government finances better, more so given the volatility of oil revenues and the increasing demand for government resources by other important sectors for economic growth.

As a result of the changed priorities, there is reprising of motor fuels in the GCC countries by the governments sharply in the recent years with the aim be to gradually bring the fuel prices closer to market prices and eliminate the fuel subsidies. (For example Gasoline Prices in Saudi Arabia were 0.58 USD/Liter in August 2019 compared to average price in the world of USD 1.10 /liter. Gasoline Prices in Saudi Arabia averaged 0.29 USD/Liter from 1995 until 2019, reaching an all-time high of 0.58 USD/Liter in July of 2019 and a record low of 0.12 USD/Liter in March of 2013⁸). This increase in fuel prices that is expected to be experienced in the next few years in the future as well, can have a dampening effect on the growth of the usage of automobiles. Consequently, the revised fuel prices can also lead to a lower purchase of automobiles, though on the other side less efficient automobiles among the existing vehicles might be replaced at a higher rate with more fuel-efficient vehicles that provide higher mileage. While these arguments may hold in the long term, in the near term the gasoline prices have dropped and the near term outlook at least is bearish, making the question of subsidies somewhat redundant in the near term and subsidies may prove less important factor influencing demand. On the other hand, lower oil prices can be a positive factor of IC engine automobiles.

Thus, lower motor fuel prices of the past that would have partly lifted the sector growth in the past, may not continue in the long term and hence the sector may see dampening of its growth potential consequent to the expected price rationalization of motor fuels in the region. But in the near term the impact from gasoline prices is expected to be positive.

New Public Transportation Systems to Lower Automobile Needs

Traditionally, GCC countries did not have much of a public transportation system due to the low prices of fuel that resulted in automobile transport an affordable proposition for most of the population. However, rapid urbanization has led to creation of public transportation modes like the metro rail in Dubai, which enabled lower reliance on the automobile. However, in most parts of UAE as well as in other GCC member countries the automobile continued to be the principal mode of mobility for the population. However, in recent years the GCC governments like Saudi Arabia are taking initiatives for introducing public transportation through metro rail.

The Riyadh Metro is a rapid transit system under construction in the city of Riyadh, the capital of Saudi Arabia. It will consist of six metro lines spanning a total length of 176 kilometers, with 85 stations. The project will cost \$22.5 billion to build. It is scheduled for a light opening in 2019, and the full network is expected to be operational in 2021. The project will contribute to reducing the number of car trips by nearly 250 thousand trips a day, equivalent to 400 thousand liters of fuel per day, thus reducing the air pollutant emissions in the city. It is expected that the capacity of the project will reach 3.6 million passengers a day compared to existing population of 6.5 million. Also, another shift in the GCC is evident from Riyadh Bus Project that is being taken

up will have 1000 buses within and among Riyadh Districts in Saudi Arabia which is expected to carry 900,000 passengers across a network of 1200 kilometers. Metro Rail is being taken up in other cities of Saudi Arabia like Jeddah, Makkah and Medina⁹. The Public Transport Commuter share for Jeddah metro is targeted at 30% from current level of 1-2%.

The RTA of Dubai is working to complement the public transport network in the emirate to reduce the use of private vehicles and to make mass transit the ideal mobility choice in Dubai. Route 2020 project in Dubai extends 15 km from Nakheel Harbour and Tower Station on the Red Line, comprising 11.8 km as an elevated track and 3.2 km as an underground track. The capacity of Route 2020 is 46,000 riders per hour in both directions. The ridership of the Route is expected to hit 125,000 riders per day by 2020 and the number is expected to shoot up to 275,000 riders per day by 2030. The Expo 2020 project covers the extension of the Red Line of the Dubai Metro to the Expo at a cost of US\$ 3 billion.

Kuwait Metropolitan Rapid Transit System (KMRT) is being taken up at a cost of USD 7 billion. Bahrain's government has commissioned a detailed feasibility study on a light rail network. The Light Rail project is likely to implement a build-operate-transfer (BOT) scheme (105 km, phase 1 is likely to be 25 km with 17 stations)¹⁰.

The introduction of public transportation mentioned above, will absorb the transportation needs partly or for part of the population and hence can be expected to result in a lower growth of the passenger vehicle population in the GCC in the long term. In the near term, until a vaccine is found for Covid-19, public transport usage volumes to some extent can see a downtrend due to the desire to or need to practice social distancing, though this can be overcome by innovative approaches like staggered office timing to spread travelers across different timings thus permitting less crowded public transport enabling required social distancing.

⁸ <https://tradingeconomics.com/saudi-arabia/gasoline-prices>

⁹ https://en.wikipedia.org/wiki/Riyadh_Metro

¹⁰ <https://www.gulftraffic.com/content/dam/Informa/gulftraffic/en/2017/pdf>.

Technological Trends Impacting the Sector

The automobile sector worldwide is seeing the emergence of new technologies in the areas of connected vehicles, electric vehicles, autonomous vehicles and fuel cell powered vehicles. GCC imports all its requirements of automobile except for small local production likely to start in UAE from 2019 and planned automobile industries planned by Saudi Arabia. Also, GCC governments have also committed to Climate Control and are therefore expected to pursue regulatory initiatives like elsewhere in the world about Green or Clean Technology for their automobile sector. So also, GCC governments have initiated steps that will see their adoption of Connected Vehicles and Autonomous Vehicles that promise a revolution in the global automobile sector over the coming decade.

Electric Vehicles (EV) Likely to see high Supplies in Future

The internal combustion engine (ICE) has been the dominant power source for passenger vehicles for over a century. Even in 2017, over 98 % of the vehicles sold in in USA had an ICE. However, global automakers are currently investing heavily for Electric Vehicles. Compared to developed economies, the number of electric vehicles operating in the Middle East is lower. Toyota and Nissan two large auto players in GCC have been promoting hybrid cars in the region. The first electric vehicle in the GCC was introduced in 2008 by Toyota with a Hybrid electric model of its Corolla brand. Plug-in vehicle sales are still at a nascent stage, but demand for these vehicles is expected to increase, especially in the UAE where the government is promoting the shift to EVs. Approximately 35,500 electric vehicles were sold in the region in 2018, of which nearly 30,000 were hybrid electric vehicles (HEVs). In 2019 a new hybrid EV of Corolla brand was introduced by Toyota in GCC and Toyota proposes to bring a greater number of HEV models for GCC in the coming years. Nissan, a major car supplier to GCC, was one of the first when it brought "LEAF" an entirely 100 % electric car to the international market. Roads and Transport Authority (RTA), of Dubai has endorsed an initiative to transform 90% of limousines operating (6,500 limos) in Dubai into hybrid/electric vehicles by 2026.

Plans of International Vehicle Manufacturers for Electric Vehicles

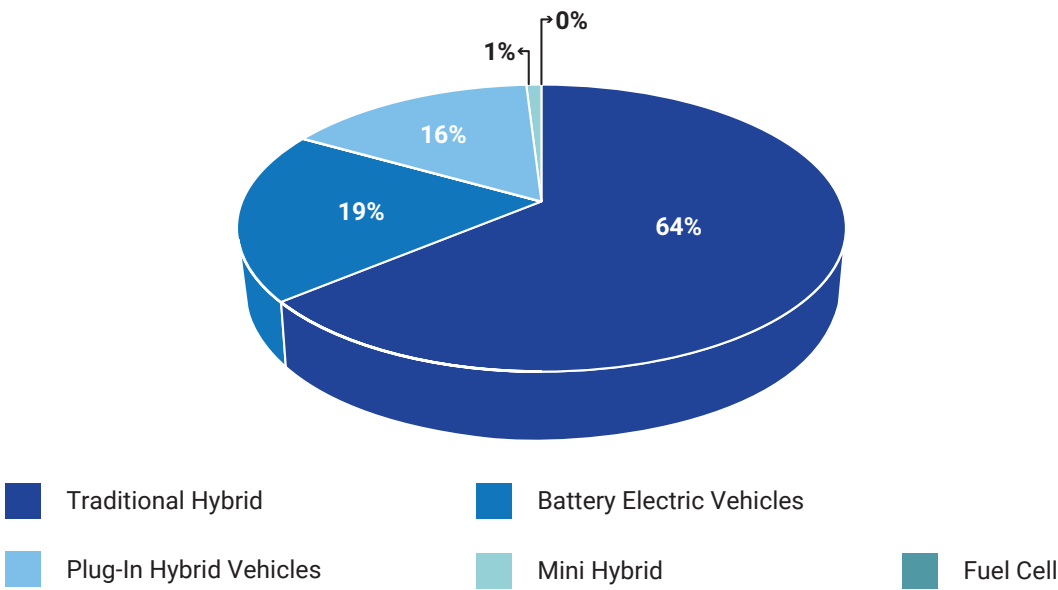
Globally, automakers such as Toyota, Tesla, Chevrolet, Ford, and Nissan have already developed their EV product offerings. Most global automakers have announced ambitious plans for EVs. The automakers production plans will influence the sales growth of the Electric vehicles as auto companies are expected to commit higher outlays for advertisements & promotions as well as financing for vehicle purchases, which are important determinants of consumer selection of the brands and vehicle types. Some of the auto companies' commitment to electric vehicle production are as follows.

- Toyota that has largest market share in GCC, globally sold 13 million Electric Vehicles (EVs) up to 2018, plans to sell 5.5 million EVs annually by 2030 and offer all zero-emission vehicles by 2050.
- Renault-Nissan has sold nearly 500,000 LEAFs globally—the highest volume of any automaker—and expects zero-emission vehicles to make up 20 % of its sales by 2020
- BMW plans to offer 12 fully electric vehicles by 2025.
- Daimler plans to sell 100,000 electrified vehicles by 2020.
- GM will offer 20 all-electric models by 2023.
- Ford is spending \$11B and plans to offer 40 electrified vehicles by 2022.
- Honda announced two electric vehicles in 2017 and planned to have two-thirds of its lineup electrified by 2030.
- Mercedes is planning an electrified version of every model it sells.
- Tesla is planning to build 500,000 all-electric Model 3s annually by 2020—which would be six times the total number of EVs sold by it in 2016.
- VW is investing \$11.8B to roll-out 80 new electric models across all of its brands by 2025.
- Volvo announced it would only launch electrified vehicles after 2019

Electric Vehicle Purchases influenced by Gasoline Prices

US data shows that electrified vehicle (HEV, PEV, and BEV) sales and market share are highly correlated with gasoline prices. In 2013, the U.S. market achieved record high electrified vehicle sales (nearly 600,000 vehicles or 3.8 % of market share) during a period of relatively high gasoline prices. In 2017, after a three-year dip in sales as gasoline prices dipped, electrified vehicle sales rebounded when gasoline prices rebounded, and market share for electrified vehicles reached 3.3 %. Currently the gasoline prices are much lower due to fall in crude oil prices caused primarily by Covid-19 and the near term outlook for crude oil prices is bearish world over and will be the same in GCC unless boosted by increase in VAT by GCC governments. Therefore, EV demand though in the long term will be determined by the cost of electricity which also can be expected to go down with lower oil prices, in the near term can see a slower growth due to lower gasoline prices. The composition of EVs by type in 2017 are shown in Figure 4.1. Among the 567,000 electrified vehicles sold in 2017, near two-thirds were traditional HEVs such as the Toyota Prius and the Ford Fusion Hybrid. PHEVs such as the Chevrolet Volt and the Ford Fusion Energi accounted for only 16 % of U.S. electric vehicle sales in 2017. BEVs such as the Chevrolet Bolt, the Tesla Model S, and the Nissan Leaf, accounted for 19 % of the electrified vehicle market. The low base of EVs currently, means that the EVs have a steep climb ahead to reach the ambitious targets being set by the international automobile manufacturers worldwide.

Figure 4.1: US Market Share: Electrified Vehicles 2017

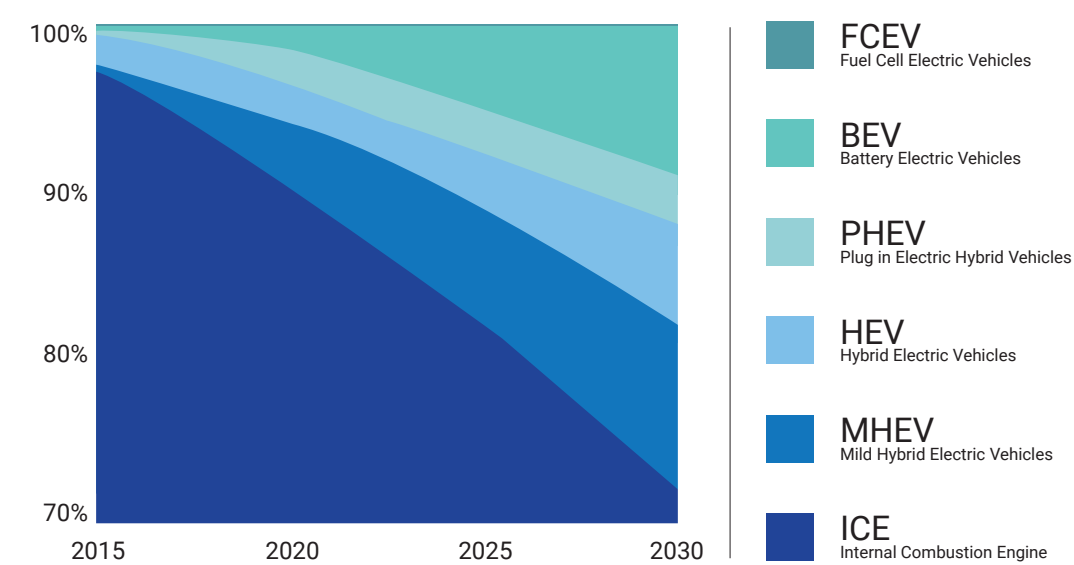


Source: Center for Automotive Research, Hybridcars.com

Global Electric Vehicles Market Share (2015-2040)

However, ICEs are expected to continue to dominate the global market with approximately 80 % market share, including mild hybrids (MHEV), through 2030 (see Figure 4.2: Global Power Train Market Share 2015-2030).

Figure 4.2: Global Powertrain¹¹ Market Share 2015-2030



Source: Center for Automotive Research, Michigan, USA

¹¹ Powertrain comprises the main components that generate power and deliver it to the road surface, This includes the engine, transmission, drive shafts, differentials, and the final drive.

Electric Vehicles Characteristics considered Important by Consumers

Ultimately success of electric vehicles depends on consumer conviction since consumers treat new technologies with caution, and therefore the automobile manufacturers need to address their concerns about safety, reliability, and high costs. A JD Power¹² survey reveals that in US, only 40% of the respondents showed interest in EVs and their biggest consumer concerns are driving range, availability of charging stations, time it takes to charge, cost to own (maintenance and battery charge), actual purchase cost and performance and acceleration. Among the EVs, hybrids are preferred first followed by Plug-In Hybrid, full electric and fuel cell in that order. Therefore, ICE vehicles that enjoy advantages of a low cost, high performance, and utility and may continue to be favored especially in low-cost energy regions like GCC.

The infrastructure creation is still a long way in the GCC, and it can add to costs and reduce margins for the EV suppliers. People living in apartment blocks or houses without private parking spaces require designated stations erected across cities. Tesla is actively rolling out its Supercharger network at motorway service stations across various markets it operates in. Overall, sales of EVs though on the rise, are yet to offset fully costs of development and production for automakers. For most of the traditional automakers, EVs may not represent a successful business case, unless EV volumes increase significantly in the future¹³. The methods for charging electric vehicles continue to evolve. In China which accounts for about 60 per cent of all newly licensed and electrically powered vehicles registered worldwide, there are 330,000 public charging points available in the country for around 2.6 million vehicles. Also, online-electric vehicle (OLEV) technology is currently undergoing pilot tests. OLEV enables transferring power from tracks embedded in roads to electric vehicles (using magnetic transmitters). A city in South Korea first deployed two OLEV buses in 2013¹⁴.

Technological Advancement helping shift to Electric Vehicles

On the flip side, there is positive evidence for likely shift to EVs. Development of advanced batteries is a critical enabler for the successful adoption of PEVs. Lithium-ion batteries used in EVs are seeing their decreasing rapidly for over a decade. Cost-per-kilowatt-hour estimates for lithium-ion batteries vary but are thought to be approximately \$200/kW currently. Lithium-ion battery costs could be below \$100/kW by 2025. Such cost reductions would make BEVs much more purchase-price competitive with ICE vehicles. Also, technology is influencing operating efficiencies of electric vehicles. The first-generation Nissan Leaf had 24 kWh battery and could drive 180 km, while its current second-generation Leaf has a 40 kWh and can drive 400 km. EVs come with a variety of savings, like lower operating and maintenance costs, compared to fuel-powered vehicles. Today, most BEVs have a range of over 300 kms and this is positive as most motorists in the GCC drive less than 70 km a day.

¹² <https://www.jdpower.com/business/resource/ev-offerings-are-rise-will-consumers-buy-them>

¹³ Automotive Association for Middle East and North Africa

¹⁴ Strategy& Building Smarter Transportation Networks in GCC.

A sample of the Operating features of some of the battery electric vehicles in the market in 2019 are shown in Table 4.1 given below.

Table 4.1: Sample of Operating Features of Electric Vehicles

Battery Capacity	Driving Range	Price (USD)	Battery Capacity	Driving Range	Price (USD)
28 kwh	200 km	30,000	58 kwh	420 kms	44,000
32 kwh	260 km	20,000	72 kwh	360 kms	50,000
39 kwh	277 kms	37,000	77 kwh	450 kms	N.A.
45 kwh	330 km	N.A.	77 kwh	550 km	N.A.
50 kwh	330 kms	34,000	80 kwh	530 kms	55,000
52 kwh	395 km	22,000	90 kwh	470 kms	70,000

Source: <https://www.evspecifications.com/en/brand/95aeb>

On another note, GCC is also preparing itself for Fuel Cell driven automobiles. Cars powered by hydrogen are also considered EVs because oxygen and hydrogen are converted to electric energy, which then powers the electric motor with a battery. They can also recapture the energy that is lost during braking and store it in a battery. As a first step, supported by Toyota , Saudi Arabia opened the first hydrogen fueling station .The facility will fuel an initial fleet of six Toyota Mirai fuel cell electric vehicles (FCEV) that utilize hydrogen and oxygen to generate electricity onboard the vehicle using a fuel cell, where only water vapor is emitted in the process.

Exhibit 2: Commitment to EV Production by TOYOTA largest automobile supplier in GCC

TOYOTA- A New Push to Popularize Electrified Vehicles by 2030

In December 2017, Toyota announced its plans to sell more than 5.5 million electrified vehicles per year globally by 2030. As part of the Toyota Environmental Challenge 2050, launched in 2015 to contribute to the realization of a sustainable society, it set for itself the New Vehicle Zero CO2 Emissions Challenge, under which it aims to reduce its global average new vehicle CO2 emissions in 2050 by 90% compared with the 2010 level. This new initiative to popularize electrified vehicles is one of its medium to long-term measures to achieve this target. Toyota believes that eco-friendly vehicles can best help protect the environment if they are in widespread use. To consistently provide products that meet customer expectations and needs as a mass manufacturer, a diverse lineup of electrified vehicles is essential. At the same time, Toyota is advancing initiatives on all fronts, including technological innovation as well as social infrastructure development tailored to the energy and usage conditions of specific countries and regions. Toyota regards the current once-in-a-century transformation of the automobile industry—including the promotion of electrification—as an unparalleled opportunity to deliver new value to its customers and expand its business.

Toyota aims to sustainably grow while steadily solidifying its business base through the three values of safety and peace of mind, Waku-doki (excitement and exhilaration that wows), and environmental sustainability. By doing so, it hopes to contribute to the creation of a sustainable mobility society and bring smiles to its customers' faces. Electrification will be indispensable to reducing vehicle CO2 emissions and thus addressing global warming, a challenge facing by the entire planet.

Toyota is steadily advancing efforts in this area under the Toyota Environmental Challenge 2050 established in October 2015.

To popularize electrified vehicles, Toyota is aiming for at least 50% of all the vehicles it sells globally in 2030 to be electrified, and, of those, for more than 10% to be battery electric vehicles (BEVs) or fuel cell electric vehicles (FCEVs). To this end, it set the following three intermediary targets. First, from 2020 onward, it will advance the full-scale roll-out of BEVs. Specifically, Toyota will launch mass-market BEVs developed by it for the Chinese market in 2020, then expand sales to Japan, India, the United States, Europe, and around the globe. It plans to introduce more than 10 BEV models in the first half of the decade. Next, while expanding its lineup of dedicated electrified models, such as the Prius and Mirai, it will make electrified versions available for other models, as well, aiming to have no models lacking an electrified option by around 2025.

Basing calculations on its current global sales, by 2030 it aims for annual sales of more than 5.5 million electrified vehicles, including hybrid electric vehicles (HEVs), plug-in hybrid vehicles (PHEVs), BEVs, and FCEVs. Of this total, it is aiming for more than 1 million to be BEVs, FCEVs, or other zero-emission vehicles. In the 20 years since launching the Prius in 1997, Toyota has sold more than 12 million electrified vehicles around the world, helping to cut CO2 emissions by more than 94 million tons.* Today, Toyota offers 36 electrified models in more than 90 countries and regions, maintains an electrified vehicle development staff numbering 4,500 within the Company alone, and sells more than 1.5 million of these vehicles each year. These figures are a testament to the trust that customers have in these vehicles' quality, durability, and reliability; customer support for this type of vehicle over the years; the vast technological expertise built up by the Group; and Toyota's successful establishment of electrified vehicle mass production technologies in Japan and around the world. The electrified vehicle technologies and expertise it has accumulated over the decades are a vital strength of Toyota and will provide a solid foundation for the popularization of electrified vehicles going forward.

Autonomous Vehicles Technology – where the industry Stands

Among the GCC countries, UAE is ahead for making autonomous vehicles or self-driving vehicles a reality soon. UAE is readying the infrastructure for AV and globally, it ranks 8th on the AV readiness index. Under the Dubai Autonomous Transportation Strategy 2030, the government aims to switch up to 25% of total transportation to autonomous mode. The government of the UAE is framing rules and regulations for the deployment of AVs and it expects the first vehicles to be used commercially as public taxis. UAE-based automotive company W Motors' Level 5 autonomous driving project has its vehicle 'MUSE'. W Motors is the first developer in the Middle East, in partnership with sister company ICONIQ Motors, to release a self-driving vehicle, designed to be on the road for EXPO 2020 in Dubai. MUSE was developed by W Motors and ICONIQ Motors in collaboration with international partners AKKA Technologies, Magna Steyr and Microsoft USA, each offering specialized technologies related to advanced autonomous driving solutions.

Globally, although a significant number of high-end vehicles is equipped with level 2 autonomy features, for example, Mercedes S-class and Tesla models, the industry will take time for adopting autonomy features under level 3 and above. On the flip side, in Singapore, people can summon autonomous taxis through a smartphone app. In the U.S., Uber announced a program in Pittsburgh, where autonomous cabs will be supervised by humans in the driver's seat for the near term¹⁵. Three major automakers are forming a consortium to help draw up safety standards for self-driving cars that could eventually help create regulations in the United States. Regulators in the United States have been grappling with how to regulate self-driving cars, with other countries watching closely to see how implementation of the emerging technology pans out. In 2018, U.S. lawmakers, unable to agree on a way forward, abandoned a bid to pass sweeping legislation to speed the introduction of vehicles without steering wheels and human controls onto roads, but may resurrect the effort later this year. The new group, dubbed the Automated Vehicle Safety Consortium, will begin by deciding priorities, with a focus on data sharing, vehicle interaction with other road users and safe testing guidelines. Last month, the National Highway Traffic Safety Administration asked the public if robotic cars should be allowed on streets without steering wheels or brake pedals as they try to set the first legal boundaries for their design. NHTSA's existing rules prohibit vehicles without human controls. The regulator will for the first time compare a vehicle in which all driving decisions are made by a computer versus a human driver. A fatal 2018 accident involving a self-driving vehicle operated by Uber Technologies Inc and two deadly plane crashes involving highly automated Boeing 737 MAX airliners have put a spotlight on the ability of regulators to assess the safety of advanced systems that substitute machine intelligence for human judgment¹⁶.

The safe and successful implementation of intelligent mobility services is dependent on infrastructure readiness. The role of infrastructure will be far more critical for future automated vehicles deployments. In the absence of a human driver's intelligence, connected AVs (CAV) will have to rely on the information received from the vehicle's sensors and other inputs as well as from other road users and the infrastructure. Currently, state and local transportation agencies are working with industry partners to install in-road sensors and roadside units using various communication technologies.

High technological costs are a substantial challenge toward adoption of CAVs. The cost of some CAV technologies is currently so high that some companies, most notably Tesla, have opted not to use it for their CAV systems. However, it is believed that future technology innovations and reduced production costs of CAV components and systems will eventually drive down CAV costs.

¹⁵ Strategy& Building Smarter Transportation Networks in GCC

¹⁶ https://www.zawya.com/mena/en/business/story/GM_Ford_and_Toyota_join_to_advance_selfdriving_testing_standards

Ride Sharing Impact on GCC Automobile Market

Ride Hailing and Ride Sharing that started a decade back has captured a large following both in the advanced as well as the developing cities of the world, as it provides benefits like ease of travel, affordable costs, and free from urban hassles in finding parking spaces. While taxis were available in the past, the new Business Model introduced by the likes of Uber, Didi and Careem, Easytaxi, and eKar in the GCC, have revolutionized the industry as they made shared mobility a cost effective and attractive option enable by their IT enabled apps. In Saudi, women account for large % of Uber and Careem's passengers. Saudi's sovereign wealth fund put \$3.5 billion into Uber in June 2016 while state-controlled Saudi Telecom Co bought 10 % of Careem for \$100 million. In March 2019, Uber Technologies Inc. acquired Careem in a USD 3.1 billion deal.

Understanding Ride Sharing and Ride Hailing

Person-to-person car sharing, also known as peer-to-peer car sharing, was the very first kind of scheme that enabled people to car share. With peer-to-peer car sharing, individuals simply share a car with other users. They coordinate via private networks or carpool agencies. This business model is closely aligned with traditional car clubs but replaces a typical fleet with a virtual one made up of vehicles from participating owners. So, here, private car owners charge a fee to rent out their vehicles when they are not using them. Now the Ride Sharing or Car Sharing players like Careem in GCC have also integrated the taxi fleets into their network making their business all encompassing. Hala, a joint venture between Roads & Transport Authority (RTA) and Careem that enables customers to book a Dubai Taxi on the Careem app-has achieved its landmark one millionth trip booked through the e-hailing service in September 2019.

Today, sharing services are now broader, operating in many service segments and so-called commercial car sharing is becoming more popular. This involves transportation providers which rent out vehicles professionally. Unlike traditional car rental operations, car sharing companies often calculate the rates for their services based on the precise number of minutes or miles driven. With car sharing, a distinction is made between free-floating and station-based services. Station-based car sharing is when users pick up their vehicles from fixed locations – just like when you rent a car – to which they generally have to return them afterwards. By contrast, with free-floating services vehicles are simply parked on public roads and can be found with an app. After driving the car, users don't need to return it to the place where they picked it up. Instead, they can park it in any (legal) public parking spot within the car sharing company's business area. These zones tend to encompass city centers and areas with heavy traffic on the edge of the city, like airports.

Ride sharing is a collective term for rides shared by individuals. One person drives their car a certain route and takes along another person who wants to go to the same destination. Opportunities for ride shares (or lift shares) are generally found and settled via websites or apps. With ride hailing, the customer uses an app to book a ride. The car has a professional driver that collects the customer at an agreed meeting place and drives

him or her to their destination. In this scenario, the ride is for the customer's exclusive use, similar to a taxi ride. Payment for the journey is settled via the app. With ride pooling on the other hand, several passengers share a professional driver. Every shared taxi trip makes for one less burden on both traffic and the environment.

Impact of Ride Hailing and Sharing on the Automobile Market

Shared mobility as explained above, provides economic efficiencies from better utilization of the resources invested in passenger vehicles, thus reducing the transportation cost for individuals. Also, urban hassles like car parking difficulties are solved through ride hailing and reduces urban traffic resulting for use of a vehicle by all individual commuters. IT has enabled the sharing to be achieved in an efficient and easy manner. In inner cities, cars are unused 96 per cent of the time, clogging up on average over 20 per cent of a city's urban landmass, said Travis Kalanick, CEO and co-founder of Uber Technologies at the World Government Summit in Dubai. Carsharing reduces the number of cars on the road, what's more the concept delivers on-demand mobility while leaving a small environmental footprint and for every carshare in operation, 17 privately-owned cars are off the road¹⁷.

The economic use of passenger vehicles means savings in the number of private vehicles required which means reduction in the vehicle population required and reduction in the annual demand for additional vehicles for replacement for worn out population of vehicles and also lower additional vehicles required for meeting the transportation needs of a growing population. While this may be true in the long term, in the near term the social distancing preferences and higher hygiene levels demanded by passengers due to Covid-19 until a vaccine is found for the virus, may mean lower preference and lower use and growth of shared mobility services like Uber. Presently, about 4 % of the population's transportation requirement is being met by the ride hailing mode and the potential is seen to reach as high as 30% by 2030. We have made an estimate of the impact of ride hailing and ride sharing on the automobile's population and additional annual vehicle purchases, using the estimate of revenues of the likes of Uber and Careem in the GCC. For this study, the ride hailing, and ridesharing market is taken around USD1.1 billion in the GCC in 2018. Using this information and using estimates of the cost of ride hailing services per km, as well as expected average kilometers driven per day by vehicle owners and ride hailing drivers, expected useful life for individual vehicles as well as for vehicles used in ride hailing, the consequent expected reduction in the vehicle population as well as reduction in annual vehicle purchases are estimated. The key assumptions are as follows:

1. The cost of Ridesharing is expected at USD 5.3 per 5 kilometers trip
2. A Ride Hailing driver is assumed to travel 115 kilometers per day
3. The total Gross Bookings of Ride Hailing and Sharing in GCC is taken at USD 1.09 billion in 2018.
4. The distance covered through Ride Hailing is thus estimated at 1.09 billion kilometers in 2018

¹⁷ https://www.zawya.com/mena/en/story/Transport_car_sharing_the_way_ahead

Expected Changes and Growth of Automobile Demand in GCC

5. The growth of Ride Hailing volumes in GCC are estimated to grow at declining rate from 18% per annum in 2019 to 10% per annum in 2023.

6. The average car utilization by individuals is assumed at 60 kilometers per day

The results of the analysis showing expected impact on GCC's passenger vehicles population and annual purchases over the period 2019 to 2023 is given in Table 5.1.

Table 5.1: Impact of Ride Hailing on Automobile Demand in GCC

Year	2019	2020	2021	2022	2023
Expected Ride Hailing Vehicles (RHV)	39,290	45,577	51,957	58,192	64,011
Number of Individual Vehicles Population made Redundant (roughly 3 times of RHVs)	117,300	136,068	155,118	173,732	191,105
Expected Reduction in required Vehicle Population	(25,122)	(28,084)	(30,767)	(33,011)	(34,662)
Expected Reduction in Annual Vehicle Purchases	(23,423)	(25,293)	(26,618)	(27,243)	(27,037)

Source: Marmore Analysis

The impact on GCC auto sector that is expected from influence of both positive and negative developments that are affecting vehicle usage. The demand analysis that follows is based on the expected long-term trends and do not take into account implications of Covid-19 and lower oil price environment presently prevailing in the GCC countries like elsewhere in the world. No doubt, the estimates of demand presented for 2020 and 2021 may therefore be lower, but these estimates carried out prior to emergence of Covid-19 were not modified as this juncture the duration for which these adverse conditions will prevail is presently not clear and also the consequent implications and what responses governments, businesses and individuals will show are not fully understood.

Impact of Increase in Fuel Prices by Governments

One of the negative developments for automobile sector is the increase in the gasoline prices that was made in the last few years and a further increase that is expected in the future years. The removal of fuel subsidies and market pricing of motor fuels to be done gradually, can be expected to impact the kilometers driven by passenger vehicle owners in the GCC and we assume this to have started in 2018 and will continue to happen over the next five years i.e. up to 2023 as the fuel subsidies are removed gradually by the period ending 2023. The reduction in kilometers driven is expected to result from lowering of discretionary motor vehicle trips or shifting to alternative modes of transport like the proposed metros being constructed in all the major cities in the GCC. Lower kilometers travelled means an extended life of the passenger vehicles compared to the past and this is expected to result in slower replacement of existing vehicle populations in the future compared to what was witnessed in the past.

An attempt has been made to assess what will be the impact of the higher prices of motor fuels on the automobile usage. The per capita usage of motor gasoline and diesel in the GCC is estimated at around 1000 liters in 2016, the latest year for which data was available and 2016 is before the sharp rises in fuel cost that came into being in the GCC. The data available for OECD countries shows that the per capita usage of motor gasoline and diesel was 1,184 liters in 2018. Since the OECD countries have fuel prices largely determined by market prices, it is expected to represent the motor fuel consumption when market prices for fuels are implemented. However, in order to estimate per capita motor fuel consumption in GCC post removal of fuel subsidies, an adjustment is made for the lower per capita GDP of USD 25,087 in GCC as compared to USD 39,900 for OECD block. Accordingly, the estimated GCC consumption of motor fuels after removal of fuel subsidies will be 718 liters which is about 28% lower than current consumption of 1000 liters¹⁸. Therefore, it can be expected the historically higher usage of motor vehicles (shown by higher motor fuel consumption) by the GCC residents will taper off gradually by 2023 to reach levels comparable to OECD.

¹⁸ US Energy Information Administration, World Bank Statistics and Marmore Analysis

Thus, it is expected that the motor vehicle replacement demand will reduce at a CAGR of 4.6% over the period 2019-2023, reaching a normal per capita motor fuel consumption of 718 liters by 2023, assuming the reduction trend already started in 2018. The impact in terms of number of vehicles is presented in a sub section 5.4 of the report in which the demand forecast model is presented.

Additional Demand from Lifting Ban on Driving by Females in Saudi Arabia

As was mentioned in Section 2.2, the change permitting females in Saudi Arabia to drive passenger vehicles has opened a big growth opportunity for the passenger vehicle industry in Saudi Arabia, which accounts for the largest automobile market in the GCC. It is reported that the change will create additional demand of 3 million vehicles in Saudi Arabia by 2020 (Marmore estimates given below in this section show that the estimated purchases by the female population may be much lower though they are no doubt an encouraging boost for the automobile sector that has shown decline in revenues in the recent years). This move in Saudi Arabia can also have an influence on vehicle ownership by female in the rest of the GCC where restrictions on female driving do not exist but are low in practice. The positive influence in other GCC countries, from Saudi women taking up driving may arise from similarities in cultural, demographics and socio-economic influences. The realization of the additional demand will however extend may not be realized immediately but over a period beyond 2020, considering that currently only 50,000 drivers were licensed in the first year of 2018 - 2019.

Taking into account the female population in the age group 20-50 years which was 7.7 million in 2017 and considering that about 81% (using a previous survey by TNI) intend to obtain a license the maximum female license holders population size is likely to be 6.2 million that will include about 1.0 million Saudi females employed, as of 2017. Out of this potential only 80% presently are estimated to be possessing drivers presently. The female population with driver facility is estimated at 5.0 million. Further, out of this population, it is estimated that only 37% have a priority needs like driving to work and dropping children at school. Therefore, the targeted or potential addressable market of female car purchasers will be about 1.6 million out of the 5 million with drivers and against the existing total Saudi female population of 10 million in 2017.Itv is assumed that expat female population may not be a potential demographic segment for automobile purchases, as a large segment of the population may be having comparatively low incomes.

The next part of estimating the car purchases from the female population is the year-wise demand over next five years from the potential addressable market of 1.6 million passenger vehicles. To do this we have assumed that 38% of the buyers will purchase a vehicle in next year (2020) and 60% will buy a car in three years (2021) based on responses mentioned in the survey carried out by TNI. Using this information, the expected annual purchases of cars by Saudi females are shown in Table 6.1 below.

Table 6.1: Potential Passenger Vehicle purchases by Saudi Female Population

Year	2019	2020	2021	2022
Annual purchase of Passenger Vehicles	187,500	365,625	478,969	526,866
Cumulative Vehicle Population	237,500	603,125	1,082,094	1,608,959

Source: Marmore Analysis

Estimated Automobile Demand over next 5 and 10 Years

In this section first the estimate of passenger vehicle purchases for the period 2019-2023 are presented based on as is it basis, that is not taking into account the impact of fuel price increase, female driving allowed in Saudi Arabia and the popularity of Ride Hailing Apps like Careem in the GCC market. Thereafter, the demand estimate after netting the positive or negative implication of these factors is presented.

The passenger vehicle purchases are dependent on two factors namely the extent of replacement of the existing vehicle population due to wear and tear or damage and second the purchase of vehicles by the additions to the adult population due to demographic growth. The average age of the vehicle population in the GCC is around 10-12 years (except for Kuwait and Bahrain where it is higher, around 20 years, possibly due to lower distance travelled per year due to smaller geographical area of these countries) and this is assumed to be applicable to the Saudi Arabia, UAE and Oman (higher average age is taken for Kuwait and Bahrain) in view of the structural and demographic similarities among the GCC member countries. Historically, the driving population in the GCC is mainly the adult male population and we define this as the male population above 19 years age. Examining the ratio of vehicle population per thousand adult male's show that it has increased from 242 in 2005 to 336 in 2015 and is expected to have increased to 430 in 2018, reflecting higher vehicle ownership because of economic growth and better standard of living. As GCC population consists of several low-income male workers, the future vehicle ownership growth is constrained.

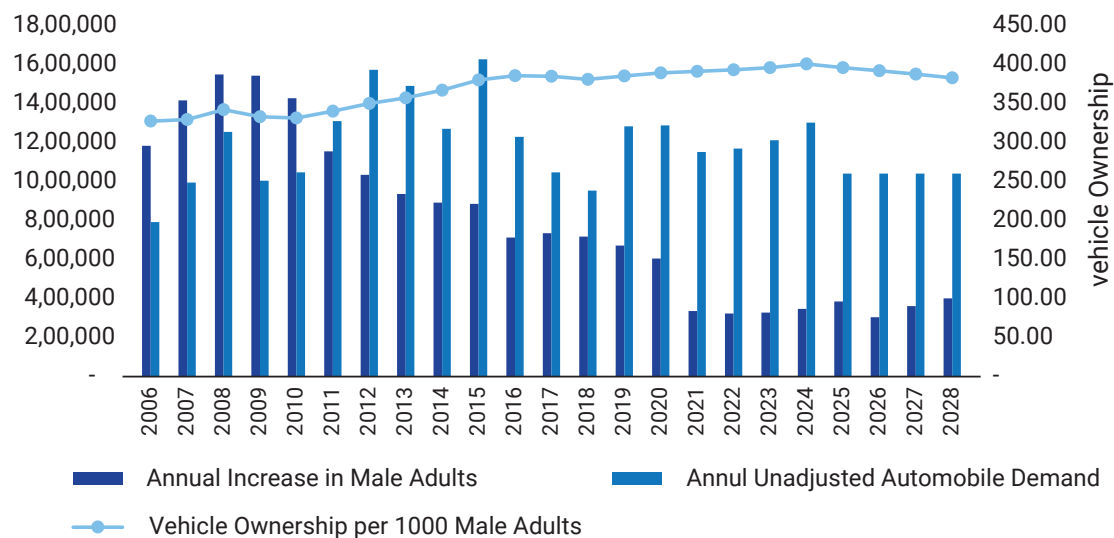
To estimate the future automobile demand for passenger vehicles in GCC, the two variables discussed above were forecasted into the future based on World Bank demographic forecasts for GCC and the forecasted vehicle ownership per thousand male adults based on analysis of historical data. The forecast of demand was done under three Scenarios namely Reference Case (average vehicle replacement period of 11 years, High Case (average vehicle replacement period of 10 years) and Low Case (average vehicle replacement period of 12.5 years). These initial estimates of forecasted automobile demand were prepared using the forecast of the two variables. The initial estimates were next adjusted for the positive influence due to emergence of female demand for automobiles in Saudi Arabia and negative developments for the sector due to increasing fuel prices to market levels and lower use of personal automobiles due to shared mobility through Ride Hailing Apps. Thus, the automobile demand forecast is developed and is shown in Table 6.2: Estimates of Automobile Demand in the GCC for 2019-2023. The demand is estimated to be stable around 1.40 million to 1.53 million during the next five years. The cumulative vehicle population is however expected to increase from 10.41 million in 2019 to 12.2 million in 2023. The High Case and Low Case Demand Estimates are presented in Appendix-1.

Table 6.2: Estimates of Automobile Demand in the GCC for 2019-2023

Year	2019	2020	2021	2022	2023
Annual Unadjusted Demand for Automobiles	1,284,718	1,289,069	1,152,956	1,169,683	1,213,015
Effect of Fuel Price Increase	(39,644)	(80,417)	(121,895)	(161,678)	(201,029)
Effect of Ride Hailing Apps	(23,423)	(25,293)	(26,618)	(27,243)	(27,037)
Effect of Female Driving in KSA	187,500	365,625	478,969	526,866	542,672
Adjusted Demand for Automobiles	1,409,151	1,548,985	1,483,411	1,507,628	1,527,620
Cumulative Vehicle Population	11,279,891	11,894,014	12,411,645	12,937,270	13,466,619

Source: Marmore Analysis

Figure 6.1: Male Population/Automobile Demand/Vehicle Ownership from 2006 to 2028



Source: Marmore Analysis

Demand Forecast for Electric Vehicles in GCC

Current Status of Electric Vehicles Shift in the GCC Markets

Compared to developed economies, the number of electric vehicles operating in the Middle East is however lower. The infrastructure creation is still a long way in the GCC, and it can add to costs and reduce margins for the EV suppliers. However, Toyota and Nissan two large auto players in GCC have been promoting hybrid cars in the region. The first electric vehicle in the GCC was introduced in 2008 by Toyota with a Hybrid electric model of its Corolla brand. Plug-in electric vehicle sales are still at a nascent stage, but demand for these vehicles is expected to increase, especially in the UAE where the government is promoting the shift to EVs. Approximately

35,500 electric vehicles were sold in the region in 2018, of which nearly 30,000 were hybrid electric vehicles (HEVs). In 2019 a new hybrid EV of Corolla brand was introduced by Toyota in GCC and Toyota proposes to bring a greater number of HEV models for GCC in the coming years. Nissan, a major car supplier to GCC, was one of the first when it brought "LEAF" an entirely 100 % electric car to the international market and has been successful over the past ten years. Roads and Transport Authority (RTA), of Dubai has endorsed an initiative to transform 90% of limousines operating (6,500 limos) in Dubai into hybrid/electric vehicles by 2026.

Since US data shows that electrified vehicle (HEV, PEV, and BEV) sales and market share are highly correlated with gasoline prices, similar consumer behavior can be expected in the GCC countries where currently, motor fuel prices are going up in GCC countries due to removal of fuel subsidies and this can drive the shift in preference of GCC customers towards electric vehicles. ICE vehicles that enjoy advantages of a low cost, high performance, and utility may however continue to be favored especially in a low-cost energy region like GCC. However, the low base of EVs currently in GCC, means that the EVs have a steep growth ahead given the ambitious targets set by the international automobile manufacturers like Toyota and Nissan the main auto suppliers to the GCC and other players of repute in the GCC.

Estimation of EVs in the future in the GCC

The estimation of future EVs demand in the GCC is assumed to be determined by Toyota's electric vehicles strategy. Toyota has set itself the target of meeting 50% of its passenger vehicles sales to be met out of electric Vehicles by 2030. Assuming the GCC automobile market which imports bulk of its vehicles from Japan and that too from Toyota, to fall in line with this expected global trend being planned by Japan, its Electric Vehicles share of total vehicles purchased, which was 3.7% in 2018 will require to grow at a CAGR of 24.3% (It was reported recently that UAE is expecting growth of electrical vehicles demand to grow at a CAGR of 25%). Accordingly, the total EVs demand is expected to grow from 3.7% of total passenger vehicle demand in 2018 to 10.9% of total passenger vehicle demand by 2023.

The next step is the estimation of BEV demand, which is estimated based on the estimated trend exhibited by the sales of Nissan's fully electric vehicle "LEAF" (from an estimated 0.3% of total Nissan passenger vehicles sales in 2012 to 5.3% of total Nissan Sales in 2018). Assuming the same trend in growth to be exhibited by the BEV demand in GCC, the current share of BEV in GCC is expected to grow from 0.5% of total passenger vehicles sales in 2018 to 5.9% in 2023. On this basis the EV sales in GCC is expected to grow to 166,375 vehicles in 2023 comprising of 76,472 hybrid vehicles and 89,903 battery electric vehicles in 2023. The expected electricity demand for charging the battery vehicles population in GCC is estimated at 740 million kwh in 2023 This assumes 25,000 kms travelled per year per vehicle and consumption of one Kwh per 10 kms for battery electric vehicles.

Thus, the population of electric vehicles in 2023 will be 590,002 vehicles in GCC out of which battery vehicles population will be 296,023. China has 330,000 charging stations for 2.6 million battery vehicles. On this basis the GCC will require 37,573 charging stations installed by 2023. (Please see Table 6.3).

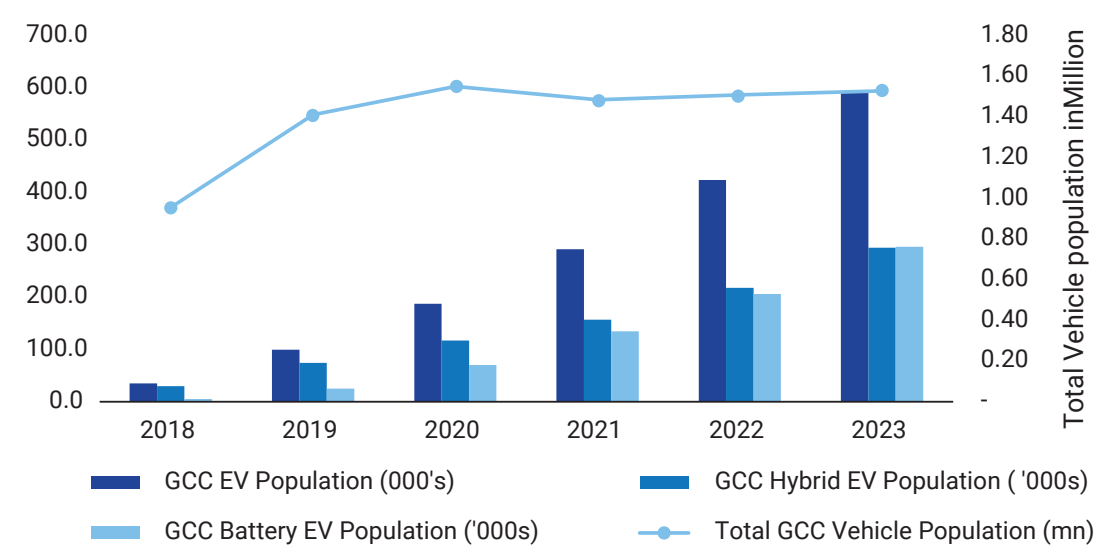
Table 6.3: GCC's Estimated Demand and Population of Hybrid and Battery EVs 2019-2023

Year	2018	2019	2020	2021	2022	2023
Demand for Passenger Vehicles	954,508	1,409,151	1,548,985	1,483,411	1,507,628	1,527,620
Total EVs demand	35,000	64,240	87,791	104,525	132,072	166,375
Hybrid EVs (HEVs) Demand among EVs	30,000	43,957	42,709	40,278	60,564	76,472
Battery EVs (BEVs) demand among EVs	5,000	20,282	45,082	64,247	71,508	89,903
Share of EVs in Total Demand	3.7%	4.6%	5.7%	7.0%	8.8%	10.9%
Share of HEV in EVs	85.7%	68.4%	48.6%	38.5%	45.9%	46.0%
Share of BEVs in EVs	14.3%	31.6%	51.4%	61.5%	54.1%	54.0%
Electricity Demand from EVs (Million kWh)	13	63	176	337	515	740

Source: Marmore Analysis

The trends in EV population broken down by Hybrid Vehicles population and Battery Vehicles population over the period 2019-2023 is presented in Figure 6.2 below.

Figure 6.2: GCC Population Trends of EVs/ Hybrid EVs and Battery EVs during 2018-2023



Source: Marmore Analysis

Exhibit 3: GCC Consumers Opinions on Electric Passenger Vehicles

Survey Results of Yella Motors' Electric Vehicles Survey

Yella Motor conducted an Online Survey to analyze the factors affecting consumers' willingness to purchase an Electric Vehicle. Yella Motor is a subsidiary of the Middle East's well known job site Bayt.com, was launched in 2012 and has grown to become well visited automotive portal in the region.

Out of GCC car buyers, only 9% have ever driven a pure electric vehicle. 14% have driven a hybrid (petrol + electric), while 77% have never been in the driver's seat of a hybrid or electric vehicle. Motorists in Saudi Arabia and Bahrain have driven the greatest number of electric vehicles at 11%, followed by Kuwait at 10%, UAE at 8%, Oman at 7% and Qatar at 6%.

About perceived advantages of electric vehicles, better fuel economy and reduced carbon emissions topped the charts at 51% and 49% respectively. Other factors such as lower maintenance costs, better performance, ease of driving and positive image of owning/driving all made the cut but weren't as popular. When it comes to the perceived disadvantages of purchasing electric vehicles, the biggest concern continues to be long charging times (45%) followed by the high initial cost of purchase (37%) and inconvenient charging options (34%). The unavailability of proper infrastructure and the limited offerings from manufacturers are also roadblocks for potential electric vehicle buyers. Nearly 25% of respondents do not know enough about electric mobility and its advantages and disadvantages. Several motorists are still unclear on how many kilometers they can drive in an electric vehicle, charging durations and locations, how to maintain an EV and the final on-road price of the vehicle-

Current electric vehicle owners seem to be a lot more flexible with the pros and cons of electric mobility. The biggest advantage according to electric vehicle owners is the ease of driving, which outranked factors such as fuel economy and reduced carbon emissions. While long charging times and the high initial cost of purchase is something current and potential EV owners highlighted, current owners pointed out the limited offerings in the market and how a wider choice of products would have addressed their needs better.

Due to the lack of information in the GCC, potential buyers are currently uncertain if electric vehicles make for a good return of investment. For instance, 40% of respondents stated that they are unaware if an electric vehicle will be a good return of investment. Electric vehicles are perceived to be significantly pricier than their petrol-powered equivalents. For instance, the most affordable EV in the market (the Renault Zoe) costs a whopping AED 137,000 negating its advantages of lesser running and servicing costs when compared to its petrol-powered rival (the Chevrolet Spark) at AED 46,500.

GCC - Country Wise Automobile Market Profiles

Moreover, while car buyers have a vague understanding of the lesser running costs involved with EVs, there are several factors that stand in the way of them deciphering whether EVs provide a good return on investment. A few major concerns include the resale value of the vehicle and the price / frequency with which the batteries need to be replaced. At a country-specific level, respondents in the United Arab Emirates and Saudi Arabia believe that electric vehicles are a good return on investment. In contrast, majority of motorists in Bahrain, Qatar, Oman and Kuwait are unaware about whether EVs offer a good return on investment. With regards to the price point of electric vehicles, 39% of respondents said they will pay the same amount for an electric vehicle as they would for a standard car, while 35% of respondents said they would pay less.

31% of GCC car buyers expect a driving range between 300 and 500 kilometers, while 20% of buyers expect to complete between 100 and 300 kilometers on a single charge. When it comes to charging times, 32% of GCC motorists expect their EV to be fully charged in one hour - a stark contrast from the current reality. That said, if we consider a wider time frame, we can see that 72% of respondents are willing to spend between one and four hours charging their vehicle.

While 27% of car buyers in the GCC are uncertain whether they will purchase an electric vehicle in the next two years, 44% are likely and very likely to do so. More interestingly, a whopping 61% will also opt to have it as their primary vehicle.

Key aspects of the GCC automobile sector information and analysis discussed in the previous sections is presented in this section for the individual member countries of GCC.

Automobile Market Profile- Saudi Arabia

Saudi Arabia represents the largest automobile market among the GCC Countries and various aspects related to it are presented and discussed in this subsection.

Historical Size and Growth of Saudi Automobile Market

The total passenger vehicle population in Saudi Arabia was 4.40 million in 2015 and is estimated by Marmore at about 4.50 million in 2018 which is about 41.8% of the GCC total. The number of passenger vehicles per thousand population in Saudi was 134 which was lower than that for GCC of 190, explained by the lower per capita income of Saudi compared to that of GCC average. See the Figure 6.1 that gives the passenger vehicle population growth and increase in vehicle ownership in Saudi Arabia during the period 2005-2015.

Saudi Arabia which does not manufacture car sales, is currently developing a car manufacturing city and working to incentivize investors to inject money into the industry. The government is seeking to develop a domestic automotive industry and has encouraged global vehicle manufacturers to establish local operations, to create jobs for the country's growing youth population and facilitate the transfer of technology and skills. The Kingdom proposes to provide the required raw materials including aluminum, rubber, plastics and others at competitive prices. The Auto Cluster aims to attract Saudi and foreign investment, as part of its 2030 Vision reform plan¹⁹.

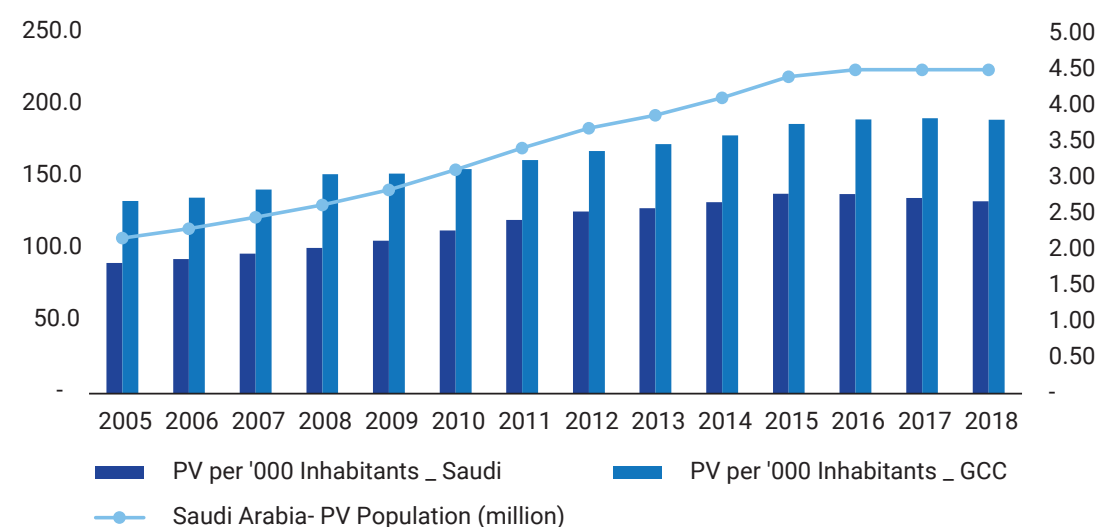
In Saudi, the SUV and luxury cars market remain strong and shows growing demand. However, the Saudi Government is working on legislation to create a healthy balance of SUVs and passenger vehicles. Also, Saudi Standards, Metrology and Quality Organization (SASO) the quality wing in Saudi, has directed manufacturers and their agents in the Kingdom to strictly follow new safety regulations for new cars to be marketed in the Kingdom beginning 2017. In 2014, SASO also signed memorandums of understanding (MoUs) with many light vehicle manufacturers to establish Saudi corporate average fuel economy (CAFE) standard. The first stage of the Saudi CAFE applies on all imported light vehicles, new or used. The Saudi CAFE system aims to improve the fuel economy average of light vehicles across the Kingdom by four % annually, from the current level of 12 km per liter of fuel to more than 19 km per liter by 2025. SASO is planning to issue regulations for the use of electric vehicles in the Kingdom. Certain models of Tesla vehicles have been approved on a trial basis and feasibility studies are currently underway on the infrastructure requirements. Brands such as BMW, Lexus and Mercedes continue to lead the luxury segment in 2018²⁰.

¹⁹ https://www.zawya.com/mena/en/economy/story/Saudi_seeks_to_develop_domestic_automotive_industry-SN

²⁰ <http://export.gov/usoffices>.

In 2018, Saudi Arabia imported passenger vehicles valued at USD 8.9 billion out of which USD 0.9 billion were re-exports, resulting in net imports of automobiles of USD 8.0 billion. The imports declined from a high of USD 15.0 billion in 2014 and USD 16.8 billion in 2015, showing a negative CAGR of (-) 14.8%. By value, Saudi imports of automobiles formed about 36% of GCC imports net of re-exports. As explained in Section 2 under “Analysis of Reasons for the Slump in automobile Imports (2014-2018), the drop-in imports maybe explained by the drop-in oil revenues of the economy due to cyclical oil prices, drop in average price per vehicle and decrease in expat population due to Saudization priority of government, and partly due to factors like hike in motor fuel prices and popularity in ride hailing in the country. In addition, the introduction of mandatory five-% VAT in January 2018 seemed to have been a deterrent to new vehicle sales as customers adapt to the higher prices due to new tax laws. The re-exports value for Saudi showed fluctuations during the period.

Figure 7.1: Passenger Vehicle Population of Saudi Arabia (2005-2018)



Source: International Organization of Motor Vehicles Manufacturers and Marmore Analysis

Table 7.1: Saudi Net Imports of Automobiles and Changes in Price per Vehicle (2014-18)

Year	2014	2015	2016	2017	2018
Number of Vehicles Imported	732,990	778,818	563,890	460,600	462,617
Estimated re-exported Vehicles	54,308	51,764	52,733	119,452	125,418
Number of Net Vehicles Imported	678,682	727,054	511,157	341,148	337,199
Average Gross Import Price (USD per Vehicle)	21,898	22,654	22,834	20,623	19,237
Average Net Import Price (USD per Vehicle)	22,418	23,315	23,731	24,322	23,735

Source: ITS and Marmore Analysis

Countries Supplying Saudi Arabia's Passenger Vehicles Market

Table 7.2 gives the countries from which Saudi sources its gross passenger vehicle imports over the period 2014-2018.

Table 7.2: Countries Exporting Automobiles to Saudi Arabia (million USD)

Year	2014	2015	2016	2017	2018
Japan	3,507	4,313	3,214	2,261	2,644
USA	3,640	3,813	2,867	1,703	1,751
Korea	2,977	3,594	2,362	2,123	1,424
Germany	1,024	1,052	549	480	577
Total	16,051	17,643	12,876	9,499	8,900

Source: ITS

The proportion of imports by each of the above countries is presented in Table 7.3 below. It is observed that Japan, Korea and Germany account for bulk of the automobile imports into Saudi Arabia.

Table 7.3: Imports by Countries Exporting Automobiles to Saudi Arabia (million USD)

Year	2014	2015	2016	2017	2018
Japan	21.9%	24.4%	25.0%	23.8%	29.7%
USA	22.7%	21.6%	22.3%	17.9%	19.7%
Korea	18.5%	20.4%	18.3%	22.3%	16.0%
Germany	6.4%	6.0%	4.3%	5.0%	6.5%
Above out of total	69.5%	72.4%	69.8%	69.1%	71.9%

Source: ITS, Marmore Analysis

Demand Drivers -Growth in Male and Female Adults – Saudi Arabia

After, replacement needs of the existing passenger vehicle population, the growth in male and female adult population are the key drivers of automobile population. These growth numbers are shown in the Table 7.4 below to understand the likely growth in demand in the coming 5 years, on account of increase in population in the coming years. It is seen that the increase in male adult population growth rate is likely to see a fall in the coming years, while the female adult population growth rate is expected to also see small fall in growth rate.

Table 7.4: Adult Population and their Growth Rates in Saudi Arabia (2019-23)

Year	2019	2020	2021	2022	2023
Female Adult Population (FAP)	9.20	9.36	9.52	9.69	9.88
Male Adult Population (MAP)	14.31	14.64	14.86	15.05	15.23
Total Adult Population (TAP)	23.51	24.00	24.38	24.74	25.11
Growth in FAP	1.90%	1.75%	1.21%	1.20%	1.18%
Growth in MAP	2.60%	2.29%	1.47%	1.30%	1.22%
Growth in TAP	2.23%	2.05%	1.58%	1.50%	1.49%

Source: World Bank data and Marmore Analysis

Impact of Ride Hailing on Automobile Demand – Saudi Arabia

Shared mobility through Ride Hailing Apps was discussed in Section 5 under “Ride Sharing Impact on GCC Automobile Market” and its impact on automobile demand in Saudi Arabia is presented in the Table 7.5 below.

Table 7.5: Impact of Ride Hailing on Automobile Demand in Saudi Arabia

Year	2019	2020	2021	2022	2023
Expected Ride Hailing Vehicles (RHV)	21,355	24,772	28,240	31,629	34,791
Number of Individual Vehicles Population made Redundant (roughly 6 times of RHVs)	63,755	73,956	84,309	94,427	103,869
Expected Reduction in required Vehicle Population	42,400	49,184	56,070	62,798	69,078
Expected Reduction in Annual Vehicle Purchases	(12,731)	(13,747)	(14,468)	(14,807)	(14,695)

Source: Marmore Analysis

Estimated Automobile Demand over next 5 years for Saudi Arabia

The methodology applied for forecasting automobile demand for the GCC was explained under “Estimated Automobile Demand over next 5 and 10 Years in Section 6”. The estimate of automobile demand for Saudi Arabia using the said methodology is presented in Table 7.6 below.

Table 7.6: Estimate of Automobile Demand for Saudi Arabia (2019-2023)

Year	2019	2020	2021	2022	2023
Annual Unadjusted Demand for Automobiles	577,618	573,218	538,525	536,197	540,751
Effect of Fuel Price Increase	(18,515)	(37,476)	(56,611)	(75,233)	(93,513)
Effect of Ride Hailing Apps	(12,731)	(13,747)	(14,468)	(14,807)	(14,695)
Effect of Female Driving in KSA	187,500	365,625	478,969	526,866	542,672
Adjusted Demand for Automobiles	733,873	887,620	946,415	973,023	975,215
Cumulative Vehicle Population	4,655,712	5,126,726	5,672,174	6,198,993	6,712,701

Source: Marmore Analysis

Demand Forecast for Electric Vehicles in Saudi Arabia

The estimated demand for Electrical Vehicles in Saudi Arabia was done using the same methodology explained under “Demand Forecast for Electric Vehicles in GCC” in Section 6, for estimating the electrical vehicle demand in the GCC. Since the electrical vehicles in Saudi Arabia is not known, we assumed electric vehicles share of Saudi equal to its share of total passenger vehicles purchased in the GCC. The results based on this analysis are shown in Table 7.7 below.

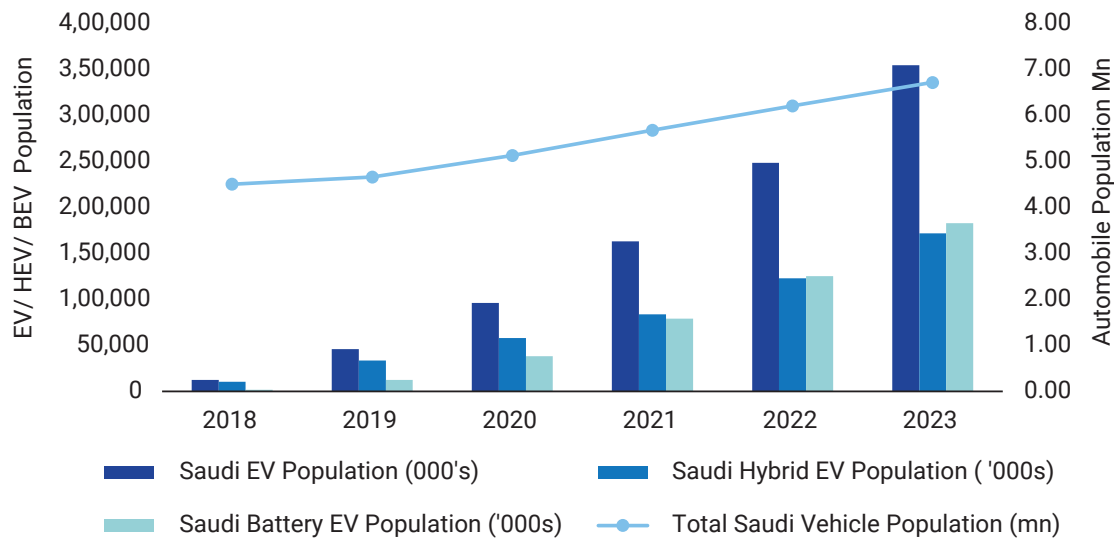
Table 7.7: Saudi's Estimated Demand & Population of Hybrid and Battery EVs 2019-2023

Year	2018	2019	2020	2021	2022	2023
Demand for Passenger Vehicles	337,199	733,873	887,620	946,415	973,023	975,215
Total EVs demand	12,364	33,455	50,307	66,687	85,239	106,212
Hybrid EVs (HEVs) Demand among EVs	10,598	22,893	24,473	25,697	39,088	48,819
Battery EVs (BEVs) demand among EVs	1,766	10,563	25,834	40,990	46,151	57,393
Electricity Demand from EVs (Million kWh)	4.4	30.8	95.4	197.9	313.3	456.7

Source: Marmore Analysis

The trends in EV population in Saudi Arabia broken down by Hybrid Vehicles population and Battery Vehicles population over the period 2019-2023 is presented in Figure 7.2 below.

Figure 7.2: Population of Total EVs /Hybrid EVs/BEVs for the period 2018-2023- Saudi Arabia



Source: Marmore Analysis

Automobile Market Profile- UAE

UAE represents the second largest automobile market among the GCC Countries and various aspects related to it are presented and discussed in this subsection.

Historical Size and Growth of UAE Automobile Market

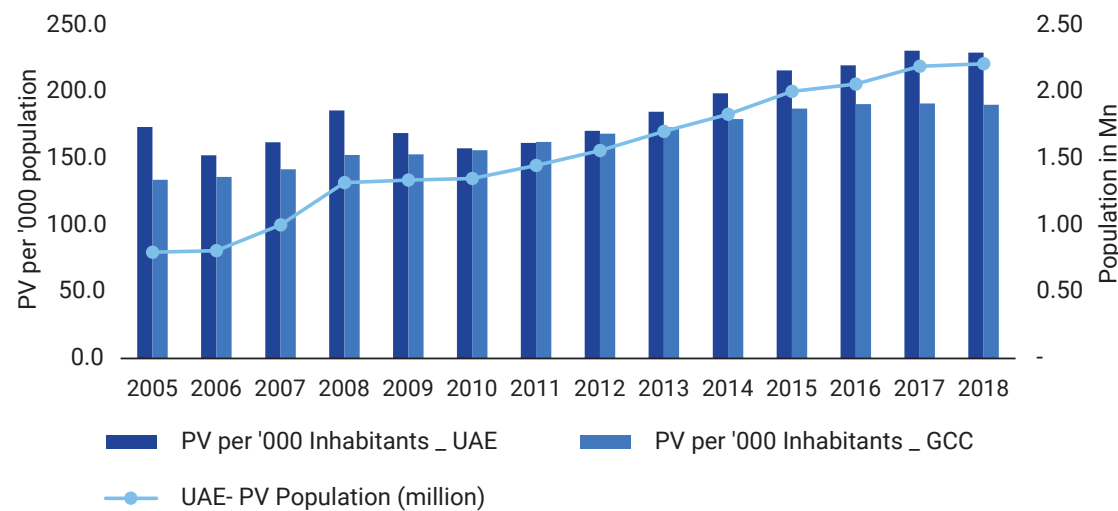
The total passenger vehicle population in UAE was 2.0 million in 2015, with a long term CAGR of 9.65% over the period 2005-2015, which was higher than the average CAGR for GCC. The PV population is estimated by Marmore at about 2.21 million in 2018 in UAE which is about 20.5% of the GCC total. The number of passenger vehicles per thousand population in UAE was 229 which was higher than that for GCC of 190, explained by the higher per capita income of UAE compared to that of GCC. Please see the Figure 6.3 that gives the passenger vehicle population growth and increase in vehicle ownership in UAE during the period 2005-2018.

Like other GCC countries, UAE also does not manufacture automobiles. It therefore imports its entire requirement of automobiles. However, the first Emirati four-wheel drive vehicle 'Al Reem' is planned to enter the market by the end of 2019, with 13,000-4WD cars to be manufactured in the first phase of the production line by Sandstorm Automotive Factory (SAF) set up in the country. SAF also disclosed plans to launch another vehicle 'S24', a double-cabin pickup, with the two vehicles being designed and built entirely by Emirati workforce. Al Reem, the seven-seater vehicles will be assembled and manufactured at the Sandstorm plant, which is spreading over a total area of 48,000 square feet which will be expanded in the upcoming phases of production. The factory, the first of its kind in the country and the GCC region, is designed to produce cars, whose 30-40 per cent of their components are locally made. The company has plans to set up a second car factory in Abu Dhabi soon²¹.

²¹ https://www.zawya.com/mena/en/business/story/First_UAE_homegrown_4WD_vehicle_to_hit_streets_by_end_2019-SNG_143578617/

In 2018, UAE imported passenger vehicles valued at USD 15.4 billion out of which USD 8.6 billion were re-exports, resulting in net imports of automobiles of USD 6.8 billion. The imports declined from a high of USD 8.2 billion in 2015, showing a small CAGR of (+) 1.8%. By value UAE imports of automobiles formed about 31% of GCC imports net of re-exports. Despite oil price fluctuations, UAE's net imports of automobiles showed positive CAGR, explained by comparatively lower dependence of the economy on oil revenues. The re-exports value for UAE showed small fluctuations during the period. UAE accounts for bulk (82.9%) of automobile re-exports from the GCC. The major re-export destinations were like those mentioned in "GCC's Automobile Re-exporting Countries & Important Destinations" under Section 2.

Figure 7.3: UAE Automobile Population and PV per '000 inhabitants



Source: International Organization of Motor Vehicles Manufacturers and Marmore Analysis

Table 7.8: UAE Imports of Automobiles and Changes in Price per Vehicle (2014-18)

Year	2014	2015	2016	2017	2018
Number of Vehicles Imported	651,120	524,128	464,292	694,330	640,022
Estimated re-exported Vehicles	580,670	228,620	227,228	377,696	423,903
Number of Net Vehicles Imported	70,450	295,508	237,064	316,634	216,119
Average Gross Import Price (USD per Vehicle)	24,519	26,259	25,195	18,779	19,928
Average Net Import Price (USD per Vehicle)	85,459	27,803	27,306	23,335	31,361

Source: ITS and Marmore Analysis

It is observed that the UAE's net imports of Vehicles showed a sharp rise in 2017 compared to that during 2014-2016 but reversed to previous levels in 2018. It is also noticed that there was a sharp fall in average gross import price in 2017 and even in 2018 as compared to previous years. The reason for the spike is not known.

However, the sharp fall in price indicates possible large imports of used automobiles at a low price. This may have taken place by the large demand for such vehicles in its re-export markets. The average net import price spiked in 2014, but thereafter fell in 2015 but showed growth in 2018.

Countries Supplying UAE's Passenger Vehicles Market

Table 7.9 gives the countries from which UAE sources its gross passenger vehicle imports over the period 2014-2018.

Table 7.9: Countries Exporting Automobiles to UAE (million USD)

Year	2014	2015	2016	2017	2018
Japan	5,690	5,174	5,180	7,063	7,626
USA	2,300	2,363	1,790	2,053	1,858
Korea	2,086	680	546	1,576	825
Germany	1,907	1,775	1,228	1,506	1,327
Total	15,965	13,763	11,698	15,786	15,441

Source: ITS

The proportion of imports by each of the above countries is presented in Table 7.10 below. It is observed that Japan, Korea and Germany account for bulk of the automobile imports into UAE.

Table 7.10: Proportion of imports by Countries Exporting Automobiles to UAE

Year	2014	2015	2016	2017	2018
Japan	35.6%	37.6%	44.3%	44.7%	49.4%
USA	14.4%	17.2%	15.3%	13.0%	12.0%
Korea	13.1%	4.9%	4.7%	10.0%	5.3%
Germany	11.9%	12.9%	10.5%	9.5%	8.6%
Above out of total	75.1%	72.6%	74.7%	77.3%	75.4%

Source: ITS, Marmore Analysis

Demand Drivers -Growth in Male and Female Adults – UAE

As mentioned earlier, part of the demand increase is driven by the growth in male and female adult population. The growth in adult population in UAE is shown in the Table 7.11 which helps understand the likely growth in demand in the coming 5 years on account of increase in population. It is seen that UAE will see a sharp slowdown in growth of male adult population which may slow automobile demand growth arising from population increase. The female population growth is also expected to see a slowdown.

Table 7.11: Change in Adult Population Growth Rates in UAE (2019-2023)

Year	2019	2020	2021	2022	2023
Female Adult Population (FAP) - million	2.11	2.15	2.17	2.20	2.23
Male Adult Population (MAP) - million	5.82	5.89	5.90	5.92	5.94
Total Adult Population (TAP) - million	7.93	8.04	8.07	8.11	8.16
Annual Growth in FAP	1.90%	1.75%	1.21%	1.20%	1.18%
Annual Growth in MAP	1.35%	1.15%	0.17%	0.29%	0.39%
Annual Growth in TAP	1.50%	1.31%	0.45%	0.53%	0.60%

Source: World Bank, Marmore Analysis

Impact of Ride Hailing on Automobile Demand – UAE

Shared mobility through Ride Hailing Apps was discussed in Section 5 and its impact on automobile demand in UAE is presented in the Table 7.12 below.

Table 7.12: Impact of Ride Hailing on Automobile Demand in UAE

Year	2019	2020	2021	2022	2023
Expected Ride Hailing Vehicles (RHV)	10,855	12,592	14,355	16,077	17,685
Number of Individual Vehicles Population made Redundant (roughly 6 times of RHVs)	32,408	37,593	42,856	47,999	52,799
Expected Reduction in required Vehicle Population	42,400	49,184	56,070	62,798	69,078
Expected Reduction in Annual Vehicle Purchases	(6,471)	(6,988)	(7,354)	(7,527)	(7,470)

Source: Marmore Analysis

Estimated Automobile Demand over next 5 years for UAE

The methodology applied for forecasting automobile demand for the GCC was explained in Section: 6. The estimate of automobile demand for UAE using the said methodology is presented in Table 7.13 below.

Table 7.13: Estimate of Automobile Demand for UAE (2019-2023)

Year	2019	2020	2021	2022	2023
Annual Unadjusted Demand for Automobiles	229,972	231,685	209,902	216,832	232,376
Effect of Fuel Price Increase	(8,738)	(17,334)	(25,776)	(33,708)	(41,448)
Effect of Ride Hailing Apps	(6,471)	(6,988)	(7,354)	(7,527)	(7,470)
Adjusted Demand for Automobiles	214,762	207,363	176,772	175,597	183,457
Cumulative Vehicle Population	2,192,501	2,199,457	2,196,503	2,160,946	2,124,124

Source: Marmore Analysis

Demand Forecast for Electric Vehicles in UAE

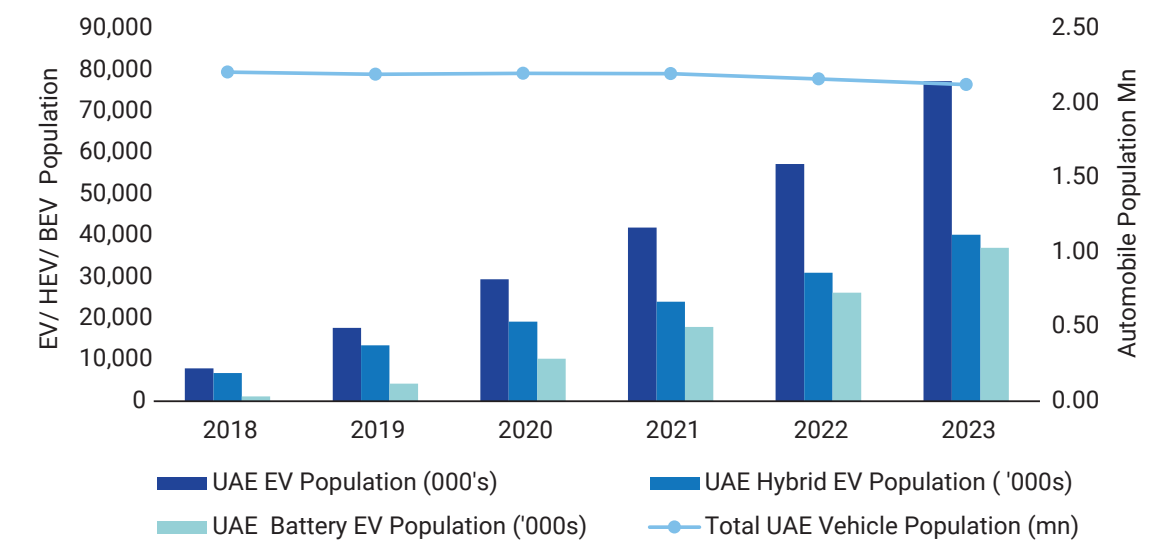
The demand for Electrical Vehicles in UAE is assessed using the same methodology explained in Section 6 for estimating the electrical vehicle demand in the GCC. Since the number of electrical vehicles in UAE in 2018 is not known, we assumed electric vehicles share of UAE equal to its share of total passenger vehicles purchased in the GCC. The results based on this analysis are shown in Table 7.14 below.

Table 7.14: UAE's Estimated Demand & Population of Hybrid and Battery EVs 2019-2023

Year	2018	2019	2020	2021	2022	2023
Demand for Passenger Vehicles	216,119	214,762	207,363	176,772	175,597	183,457
Total EVs demand	7,925	9,790	11,753	12,456	15,383	19,981
Hybrid EVs (HEVs) Demand among EVs	6,793	6,699	5,717	4,800	7,054	9,184
Battery EVs (BEVs) demand among EVs	1,132	3,091	6,035	7,656	8,329	10,797
Electricity Demand from EVs (Million kWh)	2.8	10.6	25.6	44.8	65.6	92.6

Source: Marmore Analysis

The trends in EV population in UAE broken down by Hybrid Vehicles population and Battery Vehicles population over the period 2019-2023 is presented in Figure 6.4 below

Figure 7.4: Population of Total EVs /Hybrid EVs/BEVs for the period 2018-2023- UAE

Source: Marmore Analysis

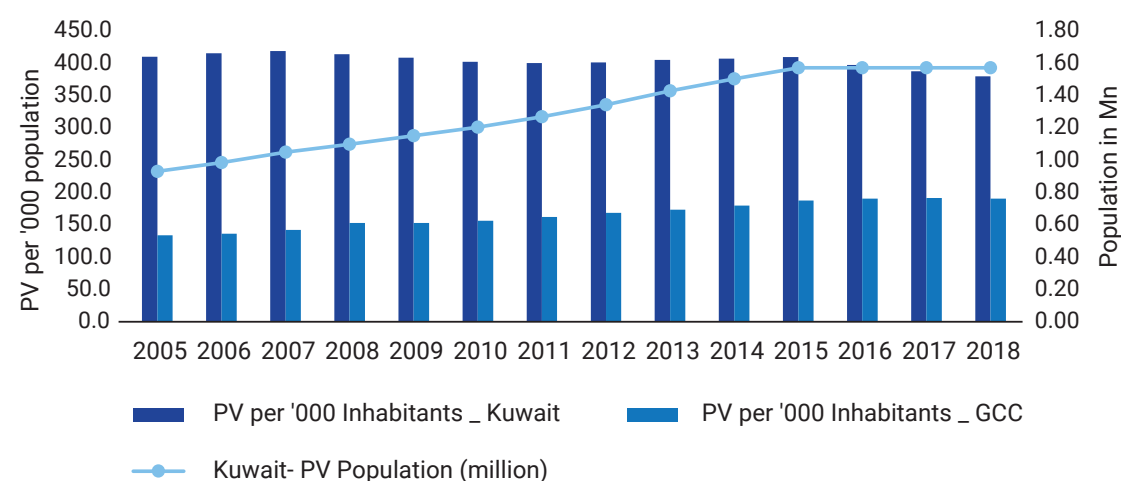
Automobile Market Profile- Kuwait

Kuwait represents the third largest automobile market among the GCC Countries and various aspects related to it are presented and discussed in this subsection.

Historical Size and Growth of Kuwait Automobile Market

As of 2015, the total passenger vehicle population in Kuwait was 1.57 million with a long term CAGR of 5.38% over the period 2005-2015, which was lower than the average CAGR for GCC. Marmore estimates puts the PV population in Kuwait in 2018 at 1.57 million, the third largest in GCC. On this basis, the passenger cars per thousand population in Kuwait in 2018 was 380 as compared to 190 passenger cars per thousand inhabitants in GCC (see Figure 7.5: Kuwait Automobile Population and PV per '000 inhabitants). The higher vehicle ownership in Kuwait compared to that of GCC may be due to comparatively higher per capita income of Kuwait. Kuwait's automobile population is expected to be accounting for about 14.6% of the GCC population of 10.77 million passenger cars as of 2018. Please see Figure 7.5 that gives the passenger vehicle population growth and increase in vehicle ownership in Kuwait during the period 2005-2018.

Figure 7.5: Kuwait Automobile Population and PV per '000 inhabitants



Source: International Organization of Motor Vehicles Manufacturers and Marmore Analysis

Like other GCC countries, UAE also does not manufacture automobiles. It therefore imports its entire requirement of automobiles (see Table 7.15 for Kuwait's Imports of Automobiles and change in price per vehicle). In 2018, Kuwait imported passenger vehicles valued at USD 3.0 billion out of which USD 0.5 billion were re-exports, resulting in net imports of automobiles of USD 2.5 billion. By value Kuwait's net automobile imports in 2018 were in 11.3% of that of GCC and they showed a decline at a CAGR of (-)6.8% during 2014-2018. Kuwait's re-exports were 4.9% of total re-exports of GCC. Kuwait's re-exports declined in 2015, but thereafter showed consistent increase during the period 2015-18.

Table 7.15: Kuwait's Imports of Automobiles and Changes in Price per Vehicle (2014-18)

Year	2014	2015	2016	2017	2018
Number of Vehicles Imported	139,141	140,690	102,181	120,944	121,111
Estimated re-exported Vehicles	94,056	34,280	39,948	44,317	49,125
Number of Net Vehicles Imported	45,085	106,410	62,233	76,627	71,986
Average Gross Import Price (USD per Vehicle)	27,826	25,352	27,740	22,160	24,834
Average Net Import Price (USD per Vehicle)	73,241	27,391	36,585	26,834	34,606

Source: ITS and Marmore Analysis

Kuwait's net imports of vehicles in 2018 and 2017, were higher than those in 2016 and 2014 but lower than the much higher volume in 2015. The average net import price per vehicle was high in 2014, declined in 2015 and fluctuated between USD 26,834 and USD 36,585 in the remaining years.

Countries Supplying Kuwait's Passenger Vehicles Market

Table 7.16 gives the countries from which Kuwait sources its gross passenger vehicle imports over the period 2014-2018.

Table 7.16: Countries Exporting Automobiles to Kuwait (million USD)

Year	2014	2015	2016	2017	2018
Japan	1,410	1,285	1,140	977	1,223
USA	661	637	524	475	552
Korea	328	287	184	220	158
Germany	504	275	256	269	194
Total	3,872	3,567	2,834	2,680	3,008

Source: ITS

The proportion of imports by each of the above countries is presented in Table 7.17 below. It is observed that Japan, Korea and Germany account for bulk of the automobile imports into Kuwait.

Table 7.17: Proportion of imports by Countries Exporting Automobiles to Kuwait

Year	2014	2015	2016	2017	2018
Japan	36.4%	36.0%	40.2%	36.5%	40.7%
USA	17.1%	17.8%	18.5%	17.7%	18.4%
Korea	8.5%	8.0%	6.5%	8.2%	5.2%
Germany	13.0%	7.7%	9.0%	10.0%	6.4%
Above out of total	75.0%	69.6%	74.2%	72.4%	70.7%

Source: ITS, Marmore Analysis

Demand Drivers -Growth in Male and Female Adults – Kuwait

The adult population reflects the potential for automobile ownership. The expected growth in adult population in Kuwait is shown in Table 7.18. The data shows the likely growth in demand in the coming 5 years that will be generated by increase in population. It is seen that Kuwait will see a sharp slowdown in growth of male adult population which may consequently slow automobile demand growth arising from population increase. The female adult population growth is also expected to see a slowdown.

Table 7.18: Adult Population and their Growth Rates in Kuwait (2019-23)

Year	2019	2020	2021	2022	2023
Female Adult Population (FAP) - million	1.12	1.13	1.14	1.16	1.18
Male Adult Population (MAP) - million	1.96	2.00	2.02	2.05	2.07
Total Adult Population (TAP) - million	3.08	3.13	3.16	3.20	3.25
Annual Growth in FAP	0.37%	0.53%	0.88%	1.49%	1.82%
Annual Growth in MAP	2.51%	2.04%	1.25%	1.09%	1.12%
Annual Growth in TAP	1.72%	1.49%	1.12%	1.23%	1.37%

Source: World Bank data and Marmore Analysis

Impact of Ride Hailing on Automobile Demand – Kuwait

Shared mobility through Ride Hailing Apps was discussed in Section 5 and its expected impact on automobile demand in Kuwait is presented in the Table 7.19 below.

Table 7.19: Impact of Ride Hailing on Automobile Demand in Kuwait

Year	2019	2020	2021	2022	2023
Expected Ride Hailing Vehicles (RHV)	2,339	2,714	3,094	3,465	3,811
Number of Individual Vehicles Population made Redundant (roughly 6 times of RHVs)	6,984	8,102	9,236	10,345	11,379
Expected Reduction in required Vehicle Population	4,645	5,388	6,143	6,880	7,568
Expected Reduction in Annual Vehicle Purchases	(1,395)	(1,506)	(1,585)	(1,622)	(1,610)

Source: Marmore Analysis

Estimated Automobile Demand over next 5 years for Kuwait

The methodology applied for forecasting automobile demand for the GCC was explained in Section 6. The estimate of automobile demand for UAE using the said methodology is presented in Table 7.20 below.

Table 7.20: Estimate of Automobile Demand for Kuwait (2019-2023)

Year	2019	2020	2021	2022	2023
Annual Unadjusted Demand for Automobiles	92,267	90,672	87,741	89,838	89,905
Effect of Fuel Price Increase	(3,453)	(6,813)	(10,068)	(13,199)	(16,242)
Effect of Ride Hailing Apps	(1,395)	(1,506)	(1,585)	(1,622)	(1,610)
Adjusted Demand for Automobiles	87,419	82,354	76,087	75,017	72,054
Cumulative Vehicle Population	1,565,349	1,570,787	1,570,609	1,563,756	1,555,573

Source: Marmore Analysis

Demand Forecast for Electric Vehicles in Kuwait

The demand for Electrical Vehicles in Kuwait is assessed using the same methodology explained in Section 6 for estimating the electrical vehicle demand in the GCC. Since the number of electrical vehicles in Kuwait in 2018 is not known, we assumed electric vehicles share of Kuwait equal to its share of total passenger vehicles purchased in the GCC. The results based on this analysis are shown in Table 7.21 below.

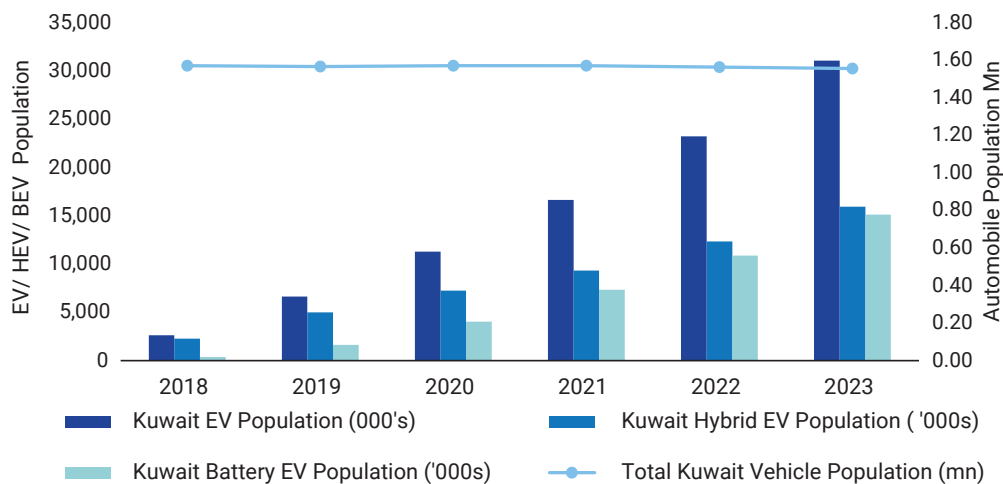
Table 7.21: Kuwait's Estimated Demand & Population of Hybrid and Battery EVs 2019-2023

Year	2018	2019	2020	2021	2022	2023
Demand for Passenger Vehicles	71,986	87,419	82,354	76,087	75,017	72,054
Total EVs demand	2,640	3,985	4,668	5,361	6,572	7,847
Hybrid EVs (HEVs) Demand among EVs	2,263	2,727	2,271	2,066	3,014	3,607
Battery EVs (BEVs) demand among EVs	377	1,258	2,397	3,295	3,558	4,240
Electricity Demand from EVs (Million kWh)	0.9	4.1	10.1	18.3	27.2	37.8

Source: Marmore Analysis

The trends in EV population in Kuwait broken down by Hybrid Vehicles population and Battery Vehicles population over the period 2019-2023 is presented in Figure 7.6 below

Figure 7.6: Population of Total EVs /Hybrid EVs/BEVs for the period 2018-2023 _ Kuwait



Source: Marmore Analysis

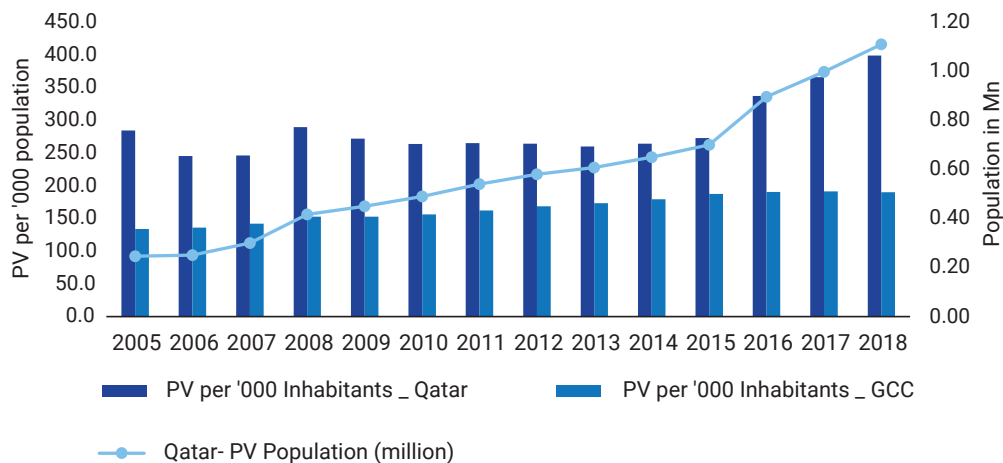
Automobile Market Profile- Qatar

Qatar represents the fifth largest automobile market among the GCC Countries and various aspects related to it are presented and discussed in this subsection.

Historical Size and Growth of Qatar Automobile Market

As of 2015, the total passenger car population in Qatar was 0.70 million with a long term CAGR of 7.14% over the period 2005-2015, which was slightly lower than the average CAGR for GCC. Marmore estimates puts the PV population in Qatar in 2018 at 1.11 million, the fourth largest in GCC. On this basis, the passenger cars per thousand population in Qatar in 2018 was 399 as compared to 190 passenger cars per thousand inhabitants in GCC. The higher vehicle ownership in Qatar compared to that of GCC may be due to comparatively higher per capita income of Qatar. Qatar's automobile population is expected to be accounting for about 10.30% of the GCC population of 10.77 million passenger cars as of 2018. Please see Figure 7.7 that gives the passenger vehicle population growth and increase in vehicle ownership in Qatar during the period 2005-2018.

Figure 7.7: Qatar Automobile Population and PV per '000 inhabitants (2005-2015)



Source: International Organization of Motor Vehicles Manufacturers and Marmore Analysis

Like other GCC countries, Qatar also does not manufacture automobiles. It therefore imports its entire requirement of automobiles (see Table 7.22 for Qatar's Imports of Automobiles and change in price per vehicle). In 2018, Qatar imported passenger vehicles valued at USD 1.59 billion out of which USD 0.01 billion were re-exports, resulting in net imports of automobiles of USD 1.58 billion. By value Qatar's net automobile imports in 2018 were in 7.1% of that of GCC and they showed a decline at a CAGR of (-)11.8% during 2014-2018. Kuwait's re-exports were a meager 0.1% of total re-exports of GCC.

Table 7.22: Qatar's Imports of Automobiles and Changes in Price per Vehicle (2014-18)

Year	2014	2015	2016	2017	2018
Number of Vehicles Imported	337,498	389,236	259,670	184,545	203,376
Estimated re-exported Vehicles	76,403	81,805	1,464	2,068	1,647
Number of Net Vehicles Imported	261,095	307,431	258,206	182,476	201,729
Average Gross Import Price (USD per Vehicle)	10,061	9,697	10,610	8,476	9,498
Average Net Import Price (USD per Vehicle)	8,083	8,022	7,838	7,846	7,842

Source: Marmore Analysis

Qatar's net imports of vehicles in 2018 and 2017, were lower than those in 2016 but much lower than high volumes in 2014 and 2015. The average net import price per vehicle ranged between USD 7,838 (that in 2016) to USD 8,083 (that in 2014) in the period 2014-18, which was much lower than other GCC countries which may be due to import of used automobiles in large numbers.

Countries Supplying Qatar's Passenger Vehicles Market

Table 7.23 gives the countries from Qatar sources its gross passenger vehicle imports over the period 2014-2018.

Table 7.23: Countries Exporting Automobiles to Qatar (million USD)

Year	2014	2015	2016	2017	2018
Japan	1,024	1,122	N.A.	N.A.	N.A.
USA	339	443	N.A.	N.A.	N.A.
Korea	210	152	N.A.	N.A.	N.A.
Germany	353	400	N.A.	N.A.	N.A.
Total	2,627	2,981	2,033	1,445	1,592

Source: ITS

The Proportion of imports by each of the above countries is presented in Table 7.24 below. It is observed that Japan, Korea and Germany account for bulk of the automobile imports into Qatar.

Table 7.24: Proportion of imports by Countries Exporting Automobiles to Qatar

Year	2014	2015	2016	2017	2018
Japan	39.0%	37.6%	N.A.	N.A.	N.A.
USA	12.9%	14.9%	N.A.	N.A.	N.A.
Korea	8.0%	5.1%	N.A.	N.A.	N.A.
Germany	13.5%	13.4%	N.A.	N.A.	N.A.
Above out of total	73.3%	71.0%	N.A.	N.A.	N.A.

Source: ITS, Marmore Analysis

Demand Drivers -Growth in Male and Female Adults – Qatar

The adult population trends show the potential for automobile ownership. The expected growth in adult population in Qatar is shown in Table 7.25. The data shows the likely growth in demand in the coming 5 years that will be generated by increase in population. It is seen that Qatar will see a sharp slowdown in growth of male adult population which may consequently slow automobile demand growth arising from population increase. The female adult population growth is also expected to see a slowdown.

Table 7.25: Adult Population and their Growth Rates in Qatar (2019-23)

Year	2019	2020	2021	2022	2023
Female Adult Population (FAP) - million	0.47	0.48	0.49	0.50	0.51
Male Adult Population (MAP) - million	1.87	1.91	1.92	1.95	1.97
Total Adult Population (TAP) - million	2.33	2.38	2.41	2.45	2.48
Annual Growth in FAP	2.76%	2.58%	2.31%	2.66%	2.40%
Annual Growth in MAP	1.92%	1.93%	1.00%	1.09%	1.34%
Annual Growth in TAP	2.08%	2.06%	1.26%	1.41%	1.55%

Source: World Bank data and Marmore Analysis

Impact of Ride Hailing on Automobile Demand – Qatar

Shared mobility through Ride Hailing Apps was discussed in Section 5 and its impact on automobile demand in Qatar is presented in the Table 7.26 below.

Table 7.26: Impact of Ride Hailing on Automobile Demand in Qatar

Year	2019	2020	2021	2022	2023
Expected Ride Hailing Vehicles (RHV)	1,170	1,357	1,547	1,732	1,906
Number of Individual Vehicles Population made Redundant (roughly 6 times of RHVs)	3,492	4,051	4,618	5,172	5,690
Expected Reduction in required Vehicle Population	2,323	2,694	3,071	3,440	3,784
Expected Reduction in Annual Vehicle Purchases	(697)	(753)	(792)	(811)	(805)

Source: Marmore Analysis

Estimated Automobile Demand over next 5 years for Qatar

The methodology applied for forecasting automobile demand for the GCC was explained in Section 6. The estimate of automobile demand for Qatar using the said methodology is presented in Table 7.27 below.

Table 7.27: Estimate of Automobile Demand for Qatar (2019-2023)

Year	2019	2020	2021	2022	2023
Annual Unadjusted Demand for Automobiles	199,323	210,748	171,771	182,280	201,797
Effect of Fuel Price Increase	(4,390)	(9,357)	(14,887)	(20,217)	(25,806)
Effect of Ride Hailing Apps	(697)	(753)	(792)	(811)	(805)
Adjusted Demand for Automobiles	194,236	200,638	156,092	161,252	175,186
Cumulative Vehicle Population	1,104,016	1,193,409	1,279,703	1,312,494	1,345,367

Source: Marmore Analysis

Demand Forecast for Electric Vehicles in Qatar

The demand for Electrical Vehicles in Qatar is assessed using the same methodology explained in Section 6 for estimating the electrical vehicle demand in the GCC. Since the number of electrical vehicles in Qatar in 2018 is not known, we assumed electric vehicles share of Qatar equal to its share of total passenger vehicles purchased in the GCC. The results based on this analysis are shown in Table 7.28 below.

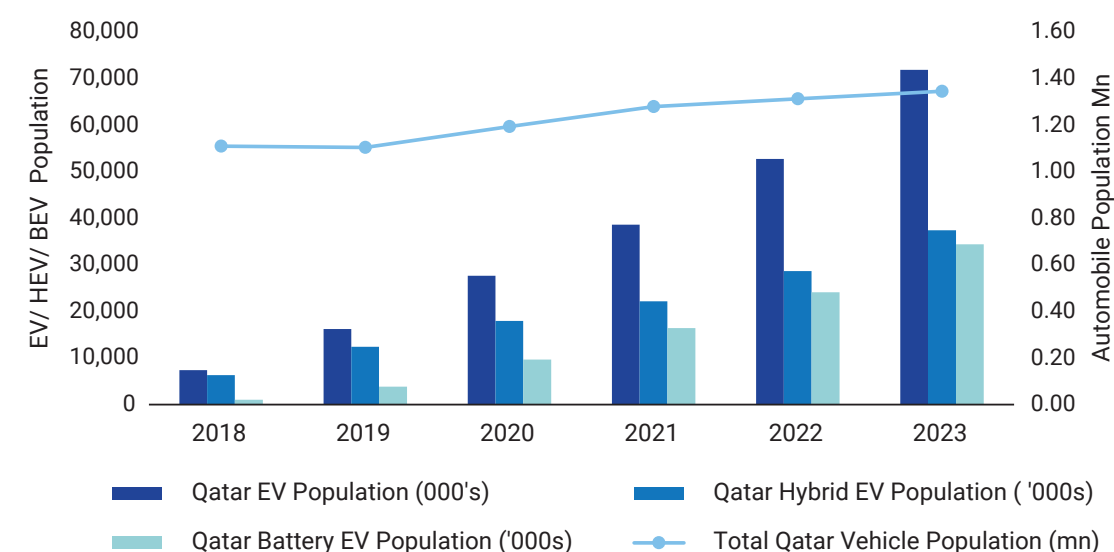
Table 7.28: Qatar's Estimated Demand & Population of Hybrid and Battery EVs 2019-2023

Year	2018	2019	2020	2021	2022	2023
Demand for Passenger Vehicles	201,729	194,236	200,638	156,092	161,252	175,186
Total EVs demand	7,397	8,855	11,371	10,999	14,126	19,080
Hybrid EVs (HEVs) Demand among EVs	6,340	6,059	5,532	4,238	6,478	8,770
Battery EVs (BEVs) demand among EVs	1,057	2,796	5,839	6,760	7,648	10,310
Electricity Demand from EVs (Million kWh)	2.6	9.6	24.2	41.1	60.3	86.0

Source: Marmore Analysis

The trends in EV population in Qatar broken down by Hybrid Vehicles population and Battery Vehicles population over the period 2018-2023 is presented in Figure 7.8 below

Figure 7.8: Population of Total EVs /Hybrid EVs/BEVs for the period 2018-2023 - Qatar



Source: Marmore Analysis

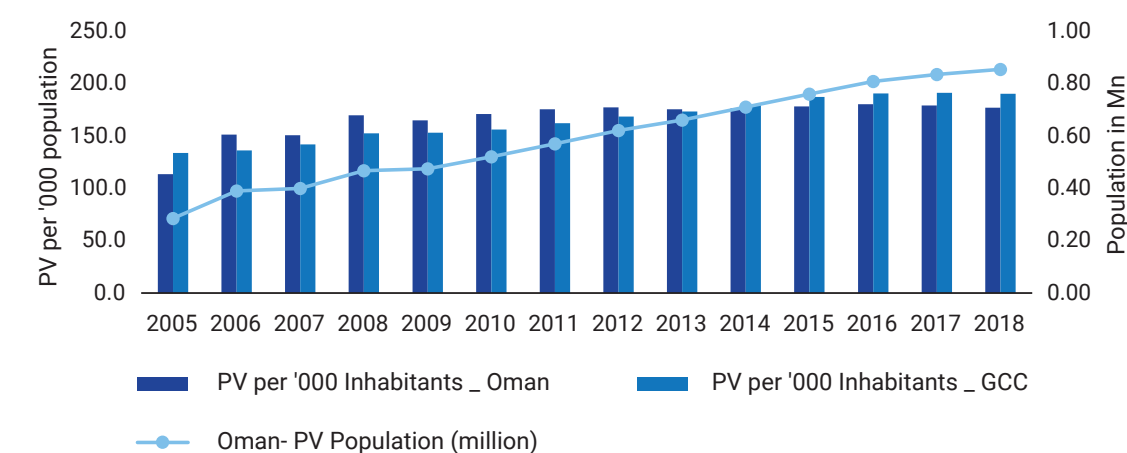
Automobile Market Profile - Oman

Oman represents the fifth largest automobile market among the GCC Countries and various aspects related to it are presented and discussed in this subsection

Historical Size and Growth of Oman Automobile Market

As of 2015, the total passenger car population in Oman was 0.76 million with a long term CAGR of 10.31% over the period 2005-2015, which was higher than the average CAGR for GCC. Marmore estimate, puts the PV population in Oman in 2018 at 0.85 million, the fifth largest in GCC. On this basis, the passenger cars per thousand population in Oman in 2018 was 177 as compared to 190 passenger cars per thousand inhabitants in GCC (see Figure 7.9: Oman Automobile Population and PV per '000 inhabitants). The lower vehicle ownership in Oman compared to that of GCC may be due to comparatively lower per capita income of Oman. Oman's automobile population is expected to be accounting for about 7.93% of the GCC population of 10.77 million passenger cars as of 2018. Please see the Figure 7.9 that gives the passenger vehicle population growth and increase in vehicle ownership in Oman during the period 2005-2018.

Figure 7.9: Oman Automobile Population and PV per '000 inhabitants



Source: International Organization of Motor Vehicles Manufacturers and Marmore Analysis

Like other GCC countries, Oman also does not manufacture automobiles. It therefore imports its entire requirement of automobiles (see Table 7.29 for Oman's Imports of Automobiles and change in price per vehicle). In 2018, Oman imported passenger vehicles valued at USD 2.62 billion out of which USD 0.07 billion were re-exports, resulting in net imports of automobiles of USD 2.55 billion. By value Oman's net automobile imports in 2018 were 11.5% of that of GCC and they showed decline at a CAGR of (-)12.7% during 2014-2018. Oman's re-exports were very small. The numbers for 2015-2017 are estimates as actual data was not available.

Table 7.29: Oman's Imports of Automobiles and Changes in Price per Vehicle (2014-18)

Year	2014	2015	2016	2017	2018
Number of Vehicles Imported	159,682	143,570	116,077	99,912	95,379
Estimated re-exported Vehicles	0	0	0	0	1,154
Number of Net Vehicles Imported	159,682	143,570	116,077	99,912	94,225
Average Gross Import Price (USD per Vehicle)	27,506	27,506	27,506	27,506	27,843
Average Net Import Price (USD per Vehicle)	27,506	27,506	27,506	27,506	27,080

Source: ITS, Marmore Analysis

Oman's imports of automobiles for the years 2015, 2016 and 2017 are not available, the numbers given above are estimates. It is seen that imports in 2018 are much lower than that in 2014. The average net import price per vehicle in 2018 was comparable to that in 2014.

Countries Supplying Oman's Passenger Vehicles Market

Table 7.30 gives the countries from Oman sources its gross passenger vehicle imports over the period 2014-2018.

Table 7.30: Countries Exporting Automobiles to Oman (million USD)

Year	2014	2015	2016	2017	2018
Japan	1,966	1,851	1,432	1,380	1,175
USA	331	348	361	246	288
Korea	546	358	280	123	73
Germany	154	136	106	125	100
Total	4,392	N.A.	N.A.	N.A.	N.A.

Source: ITS, Marmore Analysis

The Proportion of imports by each of the above countries is presented in Table 7.31 below. It is observed that Japan, Korea and Germany account for bulk of the automobile imports into Oman.

Table 7.31: Proportion of imports by Countries Exporting Automobiles to Oman

Year	2014	2015	2016	2017	2018
Japan	44.8%	N.A.	N.A.	N.A.	N.A.
USA	7.5%	N.A.	N.A.	N.A.	N.A.
Korea	12.4%	N.A.	N.A.	N.A.	N.A.
Germany	3.5%	N.A.	N.A.	N.A.	N.A.
Above out of total	78.7%	N.A.	N.A.	N.A.	N.A.

Source: ITS, Marmore Analysis

Demand Drivers -Growth in Male and Female Adults – Oman

The adult population trends, as mentioned earlier, show the potential for automobile ownership. The expected growth in adult population in Oman is shown in Table 7.32. The data shows the likely growth in demand in the coming 5 years that will be generated by increase in population. It is seen that Oman will see a sharp slowdown in growth of male adult population which may consequently slow automobile demand growth accounted by the population increase. The female adult population growth is also expected to see a slowdown.

Table 7.32: Adult Population and their Growth Rates in Oman (2019-23)

Year	2019	2020	2021	2022	2023
Female Adult Population (FAP) - million	1.03	1.06	1.08	1.10	1.12
Male Adult Population (MAP) - million	2.61	2.69	2.71	2.74	2.76
Total Adult Population (TAP) - million	3.64	3.74	3.79	3.83	3.88
Annual Growth in FAP	2.69%	2.52%	1.99%	2.04%	2.00%
Annual Growth in MAP	3.30%	2.91%	0.86%	0.92%	0.99%
Annual Growth in TAP	3.13%	2.80%	1.18%	1.24%	1.28%

Source: World Bank, Marmore Analysis

Impact of Ride Hailing on Automobile Demand – Oman

Shared mobility through Ride Hailing Apps was discussed in Section 5 and its impact on automobile demand in Oman is presented in the Table 7.33 below.

Table 7.33: Impact of Ride Hailing on Automobile Demand in Oman

Year	2019	2020	2021	2022	2023
Expected Ride Hailing Vehicles (RHV)	2,011	2,333	2,660	2,979	3,277
Number of Individual Vehicles Population made Redundant (roughly 6 times of RHVs)	6,004	6,965	7,940	8,893	9,782
Expected Reduction in required Vehicle Population	3,993	4,632	5,280	5,914	6,506
Expected Reduction in Annual Vehicle Purchases	(1,199)	(1,295)	(1,363)	(1,394)	(1,384)

Source: Marmore Analysis

Estimated Automobile Demand over next 5 years for Oman

The methodology applied for forecasting automobile demand for the GCC was explained in Section 6. The estimate of automobile demand for Oman using the said methodology is presented in Table 7.34 below.

Table 7.34: Estimate of Automobile Demand for Oman (2019-2023)

Year	2019	2020	2021	2022	2023
Annual Unadjusted Demand for Automobiles	131,071	129,955	100,165	101,553	104,140
Effect of Fuel Price Increase	(3,380)	(7,031)	(10,864)	(14,381)	(17,847)
Effect of Ride Hailing Apps	(1,199)	(1,295)	(1,363)	(1,394)	(1,384)
Adjusted Demand for Automobiles	126,492	121,629	87,938	85,778	84,910
Cumulative Vehicle Population	849,404	895,291	931,281	929,594	924,571

Source: Marmore Analysis

Demand Forecast for Electric Vehicles in Oman

The demand for Electrical Vehicles in Oman is assessed using the same methodology explained in Section 6 for estimating the electrical vehicle demand in the GCC. Since the number of electrical vehicles in Oman in 2018 is not known, we assumed electric vehicles share of Oman equal to its share of total passenger vehicles purchased in the GCC. The results based on this analysis are shown in Table 7.35 below.

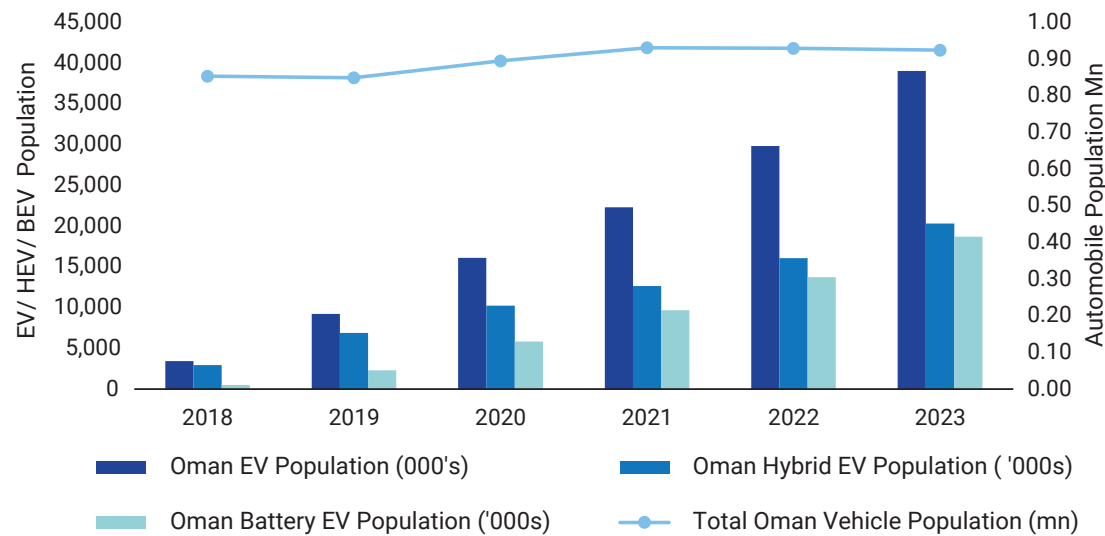
Table 7.35: Oman's Estimated Demand & Population of Hybrid and Battery EVs 2019-2023

Year	2018	2019	2020	2021	2022	2023
Demand for Passenger Vehicles	94,225	126,492	121,629	87,938	85,778	84,910
Total EVs demand	3,455	5,766	6,894	6,196	7,514	9,248
Hybrid EVs (HEVs) Demand among EVs	2,961	3,946	3,354	2,388	3,446	4,251
Battery EVs (BEVs) demand among EVs	494	1,821	3,540	3,809	4,069	4,997
Electricity Demand from EVs (Million kWh)	1.2	5.8	14.6	24.2	34.3	46.8

Source: Marmore Analysis

The trends in EV population in Oman broken down by Hybrid Vehicles population and Battery Vehicles population over the period 2019-2023 is presented in Figure 7.10 below.

Figure 7.10: Population of Total EVs /Hybrid EVs/BEVs for the period 2018-2023- Oman



Source: Marmore Analysis

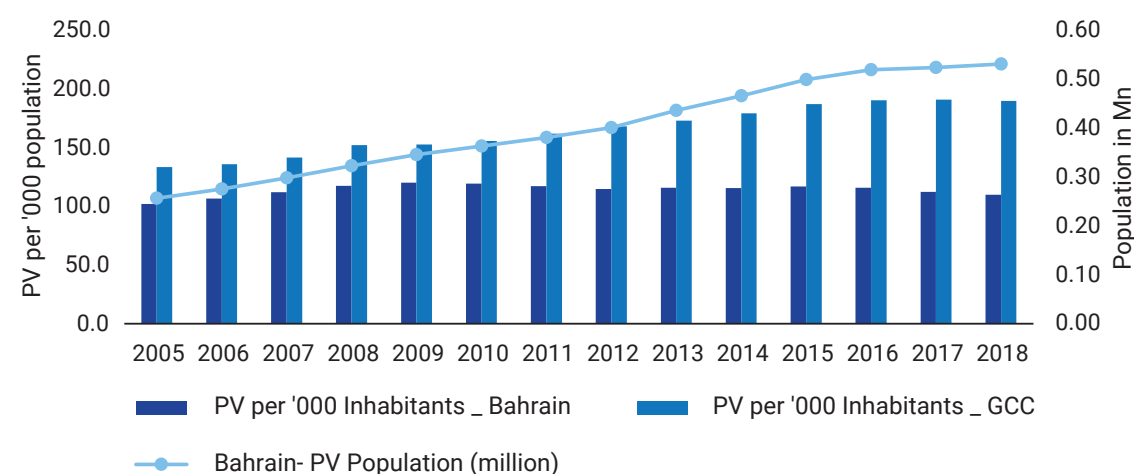
Automobile Market Profile- Bahrain

Bahrain represents the sixth largest automobile market among the GCC Countries and various aspects related to it are presented and discussed in this subsection

Historical Size and Growth of Bahrain's Automobile Market

As of 2015, the total passenger car population in Bahrain was 0.50 million with a long term CAGR of 6.88% over the period 2005-2015, which was lower than the average CAGR for GCC. Marmore estimate puts the PV population in Bahrain in 2018 at 0.53 million, the sixth largest in GCC. On this basis, the passenger cars per thousand population in Bahrain in 2018 was 110 as compared to 190 passenger cars per thousand inhabitants in GCC. The lower vehicle ownership in Bahrain compared to that of GCC may be due to comparatively lower per capita income of Bahrain. Bahrain's automobile population is expected to be accounting for about 4.94% of the GCC vehicle population of 10.77 million passenger cars as of 2018. Please see the Figure 7.11 that gives the passenger vehicle population growth and increase in vehicle ownership in Bahrain during the period 2005-2018.

Figure 7.11: Bahrain Automobile Population and PV per '000 inhabitants



Source: International Organization of Motor Vehicles Manufacturers and Marmore Analysis

Like other GCC countries, Bahrain also does not manufacture automobiles. It therefore imports its entire requirement of automobiles (see Table 7.36 for Bahrain's Imports of Automobiles and change in price per vehicle). In 2018, Bahrain imported passenger vehicles valued at USD 1.02 billion out of which USD 0.29 billion were re-exports, resulting in net imports of automobiles of USD 0.72 billion. By value Bahrain's net automobile imports in 2018 were 3.3% of that of GCC and they showed decline at a CAGR of (-) 8.1% during 2014-2018. Bahrain's re-exports were a meager 2.8% of total re-exports of GCC.

Table 7.36: Bahrain's Imports of Automobiles and Changes in Price per Vehicle (2014-18)

Year	2014	2015	2016	2017	2018
Number of Vehicles Imported	72,640	60,525	48,793	39,971	39,849
Estimated re-exported Vehicles	15,892	13,254	3,568	9,055	6,599
Number of Net Vehicles Imported	56,748	47,271	45,225	30,916	33,250
Average Gross Import Price (USD per Vehicle)	19,564	25,749	26,660	23,899	25,483
Average Net Import Price (USD per Vehicle)	17,885	25,805	25,975	18,595	21,758

Source: ITS, Marmore Analysis

Bahrain's net imports of automobiles showed a decline over the period 2014-2018. The average net price of imports was low in 2014 increased in 2015 and 2016, declined in 2017 to almost the level of that in 2014, but again recovered in 2018 though lower than the highs in the previous years.

Countries Supplying Bahrain's Passenger Vehicles Market

Table 7.37 gives the countries from Bahrain sources its gross passenger vehicle imports over the period 2014-2018.

Table 7.37: Countries Exporting Automobiles to Bahrain (million USD)

Year	2014	2015	2016	2017	2018
Japan	619	738	551	424	409
USA	240	249	218	131	134
Korea	110	77	82	76	60
Germany	157	138	111	79	93
Total	1,421	1,558	1,301	955	1,015

Source: ITS

The Proportion of imports by each of the above countries is presented in Table 7.38 below. It is observed that Japan, Korea and Germany account for bulk of the automobile imports into Bahrain.

Table 7.38: Proportion of imports by Countries Exporting Automobiles to Bahrain

Year	2014	2015	2016	2017	2018
Japan	43.6%	47.4%	42.4%	44.4%	40.3%
USA	16.9%	16.0%	16.8%	13.7%	13.2%
Korea	7.7%	4.9%	6.3%	8.0%	5.9%
Germany	11.0%	8.9%	8.6%	8.3%	9.1%
Above out of total	79.2%	77.2%	74.1%	74.4%	68.4%

Source: ITS, Marmore Analysis

Demand Drivers -Growth in Male and Female Adults – Bahrain

The adult population trends, as mentioned earlier, show the potential for automobile ownership. The expected growth in adult population in Bahrain is shown in Table 7.39. The data shows the likely growth in demand in the coming 5 years that will be generated by increase in population. It is seen that Bahrain will see a sharp slowdown in growth of male adult population which may consequently slow automobile demand growth accounted by the population increase. The female adult population growth is also expected to see a slowdown.

Table 7.39: Adult Population and their Growth Rates in Bahrain (2019-23)

Year	2019	2020	2021	2022	2023
Female Adult Population (FAP) - million	0.40	0.41	0.42	0.43	0.44
Male Adult Population (MAP) - million	0.85	0.89	0.92	0.94	0.95
Total Adult Population (TAP) - million	1.25	1.30	1.34	1.36	1.39
Annual Growth in FAP	2.97%	3.02%	1.96%	2.16%	2.11%
Annual Growth in MAP	6.22%	4.82%	2.91%	2.07%	1.81%
Annual Growth in TAP	5.16%	4.25%	2.61%	2.10%	1.91%

Source: World Bank, Marmore Analysis

Impact of Ride Hailing on Automobile Demand – Bahrain

Shared mobility through Ride Hailing Apps was discussed in Section 5 and its impact on automobile demand in Bahrain is presented in the Table 7.40 below.

Table 7.40: Impact of Ride Hailing on Automobile Demand in Bahrain

Year	2019	2020	2021	2022	2023
Expected Ride Hailing Vehicles (RHV)	1,560	1,809	2,062	2,310	2,541
Number of Individual Vehicles Population made Redundant (roughly 6 times of RHVs)	4,656	5,401	6,158	6,896	7,586
Expected Reduction in required Vehicle Population	3,097	3,592	4,095	4,586	5,045
Expected Reduction in Annual Vehicle Purchases	(930)	(1,004)	(1,057)	(1,081)	(1,073)

Source: Marmore Analysis

Estimated Automobile Demand over next 5 years for Bahrain

The methodology applied for forecasting automobile demand for the GCC was explained in Section 6. The estimate of automobile demand for Bahrain using the said methodology is presented in Table 7.41 below.

Table 7.41: Estimate of Automobile Demand for Bahrain (2019-2023)

Year	2019	2020	2021	2022	2023
Annual Unadjusted Demand for Automobiles	54,468	52,791	44,851	42,983	44,045
Effect of Fuel Price Increase	(1,169)	(2,407)	(3,688)	(4,940)	(6,173)
Effect of Ride Hailing Apps	(930)	(1,004)	(1,057)	(1,081)	(1,073)
Adjusted Demand for Automobiles	52,369	49,380	40,106	36,961	36,799
Cumulative Vehicle Population	529,668	554,136	574,199	583,807	589,539

Source: Marmore Analysis

Demand Forecast for Electric Vehicles in Bahrain

The demand for Electrical Vehicles in Bahrain is assessed using the same methodology explained in Section 6 for estimating the electrical vehicle demand in the GCC. Since the number of electrical vehicles in Bahrain in 2018 is not known, we assumed electric vehicles share of Bahrain equal to its share of total passenger vehicles purchased in the GCC. The results based on this analysis are shown in Table 7.42 below.

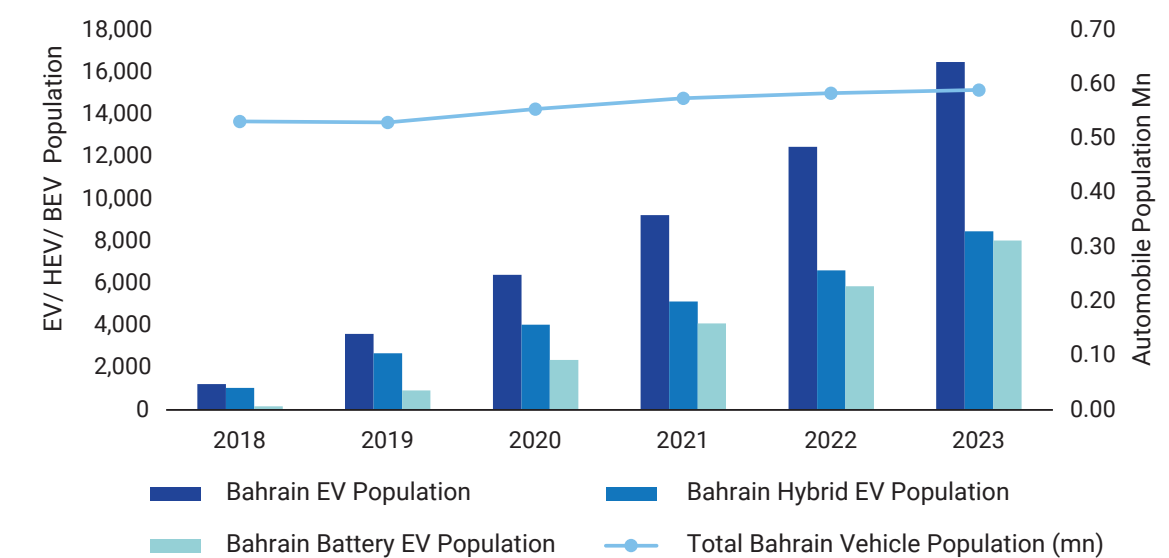
Table 7.42: Bahrain's Estimated Demand & Population of Hybrid and Battery EVs 2019-2023

Year	2018	2019	2020	2021	2022	2023
Demand for Passenger Vehicles	33,250	52,369	49,380	40,106	36,961	36,799
Total EVs demand	1,219	2,387	2,799	2,826	3,238	4,008
Hybrid EVs (HEVs) Demand among EVs	1,045	1,634	1,361	1,089	1,485	1,842
Battery EVs (BEVs) demand among EVs	174	754	1,437	1,737	1,753	2,166
Electricity Demand from EVs (Million kWh)	0.4	2.3	5.9	10.3	14.6	20.1

Source: Marmore Analysis

The trends in EV population in Bahrain broken down by Hybrid Vehicles population and Battery Vehicles population over the period 2019-2023 is presented in Figure 7.12 below.

Figure 7.12: Population of Total EVs /Hybrid EVs/BEVs for the period 2018-2023- Bahrain



Source: Marmore Analysis

Key Challenges Facing the Industry

The passenger vehicle market in the GCC is currently a mature market in most of the member countries, having been in existence for many decades. The market in the last five years has been declining, partly due to cyclicalities caused by fluctuating oil revenues that was also accentuated in last two years by the increase in motor fuel prices, introduction of VAT by the governments and increasing preference for shared mobility through ride hailing apps like Uber and Careem. The demand mainly consists of replacement of ageing passenger vehicle population and partly from new demand from the growth in adult population and increase in per capita ownership of automobiles.

In 2019, the industry received a boost in Saudi Arabia, the largest automobile market in the GCC, by lifting of the ban on female driving of cars. This move by the government has opened a large opportunity to the passenger vehicle market in the Kingdom. The development of this segment of the market will now rest with the players in the field through innovative market development steps as the growth will depend on their product offerings and their market promotion initiatives. Also, while female driving is not restricted in other GCC countries, it is not widespread in these countries. Therefore, the automobile industry can definitely expand the opportunity and grow female ownership of automobiles in other GCC member countries, as well, by using the tools of advertising and promotion.

The market was driven in the past decade by the high growth rates in the adult population resulting from demographic shift as the large child population grew into adults. However, in recent years and more in the near future, the growth in adult population in all the GCC countries is slowing and this is expected to result in a lower demand for automobile population from new adults entering the market. The per capita ownership of automobiles in several GCC countries is low compared to that in advanced countries, no doubt partly due to comparatively lower per capita income. However, there may be room for innovative market promotion initiatives by the industry participants, targeted at increasing per capita vehicle ownership and grow industry sales.

Steps to shorten vehicle replacement period, by providing external markets for used vehicles can also help generate higher demand for new vehicles. Neighboring, lower income and under penetrated automobile markets may see value for reconditioned vehicles from the GCC, which can thereby increase the demand for new vehicles from the GCC markets.

The introduction of Electric Vehicles throws up high growth opportunities for industry participants connected with the hybrid electric vehicles and battery electric vehicles. The market in these segments is at the nascent stage and can benefit from creative marketing initiative. These vehicle options are beneficial from a fuel cost and maintenance cost perspective, particularly in medium distance in-city movements. As an example,

automobile suppliers can explore tie-ups with food delivery service providers who use passenger vehicles for their deliveries, as they can be convinced to better see the use of an electric vehicle over conventional IC vehicle. A case in point is the reported move by Amazon to order 100,000 Electric Vehicles for its last mile delivery fleet in US.

The increase in motor fuel prices in the GCC countries can also be an opportunity, for promotion of electric vehicles sales, as the comparative benefit of electric vehicles are enhanced with higher motor fuel prices.

Covid-19 and low oil price environment presently prevailing in the GCC countries poses new challenges and threats and these have been explained in the various parts of the report. Though only for the near term these include need for lower gasoline subsidies on the positive side, and higher taxes on gasoline that may take place to counter budget deficits, higher VAT like taxes on automobiles and lower purchasing power due to job losses, business losses and government spending cuts from lower oil prices which are all negatives for automobile demand. The lower gasoline prices are also a positive for ICE vehicles compared to Electric Vehicles. The demand estimates for automobiles for 2020 particularly and for 2021 can be expected to be lower but as a clear picture of the length of this down turn and its implications are not clear yet, the demand estimates in the report are not revised for these developments.

All, in all, the coming years are challenging times for automobile industry in GCC, as they gear up to exploit emerging opportunities and tackle the new threats they are encountered with.

Appendix

Appendix 1: Automobile Demand in GCC under High and Low Case Scenarios

Appendix 1.1: Automobile Demand – High Case

Table 9.1: Automobile Demand by Country for GCC (High Case)

('000s)									
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Saudi Arabia (incl. female owners)	679	727	511	341	751	905	968	994	995
UAE	296	237	317	216	226	218	190	187	192
Kuwait	106	62	77	72	99	94	88	86	82
Qatar	307	258	182	202	199	206	163	168	181
Oman	144	116	100	94	129	124	93	90	89
Bahrain	47	45	31	33	51	49	41	38	37
GCC Total	1,579	1,446	1,218	958	1,456	1,595	1,542	1,563	1,577

Table 9.2: Automobile Demand with Effect of Threats & Opportunities (High Case)

('000s)					
Year	2019	2020	2021	2022	2023
Annual Demand for Automobiles	1,336	1,343	1,224	1,240	1,281
Effect of Fuel Price Increase	(44)	(88)	(134)	(177)	(220)
Effect of Ride Hailing Apps	(23)	(25)	(27)	(27)	(27)
Effect of Female Driving in KSA	188	366	479	527	543
Adjusted Demand for Automobiles	1,456	1,595	1,542	1,563	1,577
Net Vehicle Population	11,074	11,642	12,127	12,616	13,102
<i>Vehicles per thousand Population</i>	192	198	204	209	214

Appendix 1.2: Automobile Demand – Low Case

Table 9.3: Automobile Demand by Country for GCC (Low Case)

('000s)									
Year	2015	2016	2017	2018	2019	2020	2021	2022	2023
Saudi Arabia (incl. female owners)	679	727	511	341	709	862	915	942	945
UAE	296	237	317	216	202	196	162	163	174
Kuwait	106	62	77	72	77	72	66	66	64
Qatar	307	258	182	202	189	195	149	154	169
Oman	144	116	100	94	124	119	83	81	80
Bahrain	47	45	31	33	53	50	39	36	36
GCC Total	1,579	1,446	1,218	958	1,355	1,494	1,413	1,441	1,468

Table 9.4: Automobile Demand with effect of Threats & Opportunities (Low Case)

('000s)					
Year	2019	2020	2021	2022	2023
Annual Demand for Automobiles	1,225	1,225	1,069	1,085	1,131
Effect of Fuel Price Increase	(35)	(71)	(108)	(143)	(179)
Effect of Ride Hailing Apps	(23)	(25)	(27)	(27)	(27)
Effect of Female Driving in KSA	188	366	479	527	543
Adjusted Demand for Automobiles	1,355	1,494	1,413	1,441	1,468
Net Vehicle Population	11,535	12,205	12,763	13,333	13,914
<i>Vehicles per thousand Population</i>	200	208	214	221	227

Appendix 2: Automobile Dealers Brand-wise in the GCC Countries

(<https://www.drivearabia.com/>)

Brand	Saudi Arabia	UAE	Kuwait	Qatar	Oman	Bahrain
Toyota	Abdul Lateef Jameel Company	Al-Futtaim Motors	Al Sayer Group	Abdullah Abdulghani & Bros. Co. (AAB)	Saud Bahwan Group	Ebrahim K. Kanoo B.S.C.
Nissan	Alissa Auto, Alhamrani United Company, Petromin	Al Masaoood Automobiles, Arabian Automobiles	Abdulmohsen Abdulaziz Al-Babtain Co.	Saleh Al Hamad Al Mana Co.	Suhail Bahwan Automobiles	Y. K. Almoaayed & Sons
Mitsubishi	Alesayi Motors	Al Habtoor Motors	Al Mulla Automotive	Qatar Automobiles Company	General Automotive Company	Zayani Motors
Honda	Abdullah Hashim Co.	Trading Enterprises	Alghanim Motors	International Auto Trading	OMASCO	National Motor Company
Chevrolet/ Cadillac	Universal Motors Agencies, Aljomaih Automotive Company, Omar A. Balubaid Company, Abdullatif Alissa Automotive Company	Bin Hamoodah Trading, Al Ghandi Auto, Liberty Automobiles	Alamana Industries	Jaidah Motors	Oman Trading Establishment	National Motor Company
Ford	Al Jazirah Vehicles Agencies	Premier Motors, Al Tayer Motors	Arabian Motors Group	Almana Motors Co.	Arabian Car Marketing	Almoaayed Motors
Land Rover	Mohamed Yousuf Naghu Motors	Al Tayer Motors, Premier Motors	Ali Alghanim & Sons Automotive	Alfardan Premier Motors	Mohsin Darwish Haider	Euro Motors
Mercedes	Juffali Automotive	Emirates Motor Company, Eastern Motors, Gargash Enterprises	A. R. Albisher & Z. Alkazemi Co.	A. R. Albisher & Z. Alkazemi Co.	Zawawi Trading Company	Al Haddad Motors

Brand	Saudi Arabia	UAE	Kuwait	Qatar	Oman	Bahrain
BMW	Mohamed Yousuf Naghi Motors	AGMC, Abu Dhabi Motors	Ali Alghanim & Sons	Alfardan Automobiles	Al Jenaibi International Automobiles	Euro Motors
Volkswagen	SAMACO Automotive	Ali & Sons Co.	Behbehani Motors Company	Saad Buzwair Automotive	Volkswagen Oman	Behbehani Brothers w.l.l.
Hyundai	Mohamed Yousuf Naghi Motors	Juma Al Majid Est.	Northern Gulf Trading Co.	National Car Company	OTE Group	First Motors
KIA	Al Jabr Automotive	Al Majid Motors	National Agencies Group	Al-Attiya Motors	Saud Bahwan Group	A.A. Bin Hindi B.S.C.
Renualt	Al Thogan Trading, Mohamed Bin Saleh Automobiles, Gulf Advantage Automobile, Mohamed Ali Hassan AL Fardan, Al Thoumaly Trading	Al Masaoood Automobiles, Arabian Automobiles	Abdulmohsen Abdulaziz Al Babtai	Abdulmohsen Abdulaziz Al Babtain	Suhail Bahwan Automobiles	Y K Almoaayed & Sons

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