



**Title: Attitudes towards Electric Vehicle in Kuwait: A Mixed Method Approach**  
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# Agenda for Today's presentation



Background  
problem

Literature  
Review---brief

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analysis

Research  
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Conclusion



## **Acknowledgement**

### **Acknowledgement:**

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# KFAS

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KFAS is already running a renewable energy program to evaluate the performance of Electric vehicles in Kuwait and to better understand technical requirements for the design of EVs so that they can be used in hot climatic conditions that require heavy use of air-conditioning, which is a factor strongly associated with EV battery depletion, and thus the range EVs can drive and therefore their appeal to consumers in Kuwait.

<https://www.kfas.org/what-we-offer/scientific-research/research-grants>



# General information about Kuwait

GDP per capita - USD 32,000 (ranked 28th globally)

Population- 4,207,083 (1.67% annual growth)

Strategic developmental goals of the national development plans 2035: sustainable diversified economy – away from oil-based economy

Kuwait has a rich and relatively open economy with crude oil reserves of nearly 6 percent of world reserves.

Petroleum accounts for over half of GDP, 92 percent export revenues and 90 percent of government income (Giris and Ramadan, 2018).



# An Overview of EVs Landscape in Kuwait

Nearly 99 percent of the country's electricity is produced using carbon-based resources (oil and gas, non-renewable sources) as opposed to renewable sources such as solar, wind or hydropower (International Renewable Energy Agency 2020).

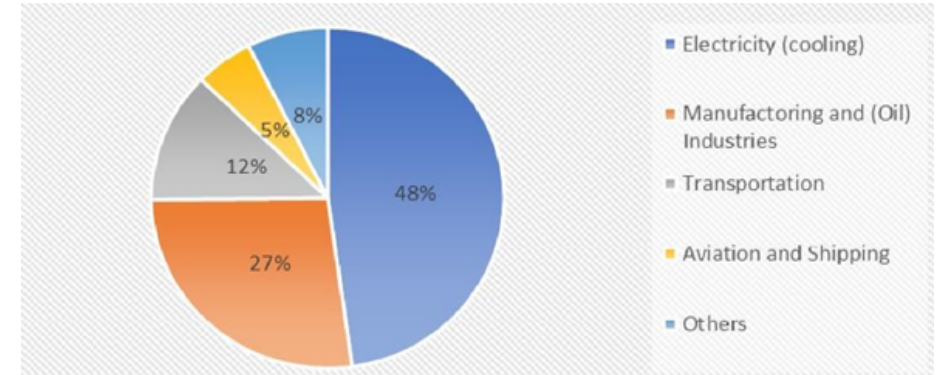
According to the 2035 Sustainable Vision of Kuwait, Kuwait aims to have 15 percent of its energy needs supplied by solar power, up from 0.7 percent today.

Kuwait seeks to avoid emission of greenhouse gases equivalent to 7.4% of its total future emission on 2035 through its national efforts.

This will be translated in its new, to be prepared, low-emissions development strategy 2050 in accordance with the requirements of the Paris climate agreement and based on the principle of a circular carbon economy.

# An Overview of Evs Landscape in Kuwait

- Currently nearly 12 percent of CO2 emission comes from ground transport
- This number though must be compared to the total greenhouse emission per capita in comparison to other nations.



| GCC          | Metric Ton | Europe  | Metric Ton |
|--------------|------------|---------|------------|
| Qatar        | 38.8       | Germany | 8.5        |
| UAE          | 22.9       | Poland  | 8.4        |
| Kuwait       | 22.6       | Italy   | 5.6        |
| Bahrain      | 21.6       | Spain   | 5.6        |
| Oman         | 18.6       | UK      | 5.5        |
| Saudi Arabia | 18.0       | France  | 4.8        |
| Average      | 23.8       | Average | 6.4        |

Source: Climate Watch 2019



# Literature Review... An Overview of EVs Landscape in Kuwait

- There is a growing body of research on EV-adoption, mainly relating to settings in European, American and Australian markets (Vilchez et al. ,2017, Thiel et. al , 2012), Aksen and Kurani ,2013) EV-adoption in Kuwait and the GCC is limited for various reasons. These include:
  - A. Kuwait has a very hot climate which has important implications for how vehicles are used, and for vehicle suitability, compared to countries in Northern Europe. there is an infrastructure issue in Kuwait due to bad road conditions during severe rains in the winter season and high rates of accidents. During the summer season, the temperature reaches over 50C degrees in Kuwait.
  - B. The minimalist tax system in Kuwait means that relative to countries in Northern Europe, very low taxes are levied on the purchase of gasoline for automobiles or on the use of road infrastructure.
  - C. Kuwaiti families tend to have drivers, which is important given car owner preferences may be distinct from car driver preferences – EV drivers and owners tend to be treated as analogous elsewhere. Kuwait has the highest vehicle ownership rate in the MENA region. Kuwait is recognized as one of the most lucrative markets for largest automobiles in the MENA (Middle East and North Africa Region).
  - D. there is an urgent need to diversify the economy away from oil-based revenues.





# Brief Literature review...

- Ottesen and Banna (2018) found that financial factors, battery-charging infrastructure, and battery-related concerns remain major obstacles to widespread electric vehicles market penetration in Iceland.
- Ottesen and Banna (2021) concluded that there are three potential new car buyers' segment:
  - 1) 'Value Seeker' group which is not likely to become an early adopter of EVs in the GCC region.
  - 2) 'Performance Seeker', which includes mainly younger men who prefer speedy EVs
  - 3) 'Safety Seekers', who are mainly younger women with environmental consciousness and prefer to drive EVs and prefer low maintenance as determining factors for EV adoption in the GCC region in the future.
- Therefore, the present study aims to fill the gap in literature by adding more knowledge on this phenomenon.



# Research Methodology

- a mixed method approach (collected quantitative and qualitative data) is applied to achieve the study objective.
- A large-scale questionnaire survey-the qualitative data
  - The first part =demographic characteristics of the respondents (11 item, gender, age, education, household income, employment, nationality, and numbers of cars owned by the households.
  - The second part of the survey consists of in-depth questionnaires (2 items for open and 18 items closed types of questions) to achieve the purpose of the study.
  - The respondents= at least 18 years old and car drivers to participate in this study.
  - The data collection stage started in February 2022 until May 2022.
  - The random sampling technique was used to collect data, with many questionnaires distributed to the targeted respondents.



# Data analysis and results

- The data obtained from the study were analysed using various statistics in the SPSS program. Descriptive statistics (i.e., frequencies and percentages) were computed.
- 640 drivers participated in this study.
- After removing 132 questionnaires (i.e., those who do not have or drive a car),
- a total of 472 questionnaires were analysed

# Research results...Demographic data

- males (**50.4%**) and females (**49.6%**) completed the questionnaire equally.
- Approximately half of participants (**47%**) belong to the age range of 26 to 39 years, while more than third of them (35.6%) belong to the age range of 18 to 25 years.
- More than half of respondents were single (57.6%), while approximately fifth of them (18.2%) were married with three kids or more.
- Approximately two thirds (**60.8%**) of participants were Kuwaiti.
- More than half of respondents (54.9%) have a bachelor's degree. More than a quarter of participants own two cars (29.4%) or five cars and more (28.6%). More than third of participants (37.3%) were employed in the private sector while approximately third of them (32.2%) were employed in the public sector.
- Approximately third of participants (29.4%) worked in other private services and more than quarter of them (26.5%) worked in government and ministries sector and more than fifth of them (21.6%) in the middle management level.
- The monthly income of more than half of participants (53.6%) was less than 1000 KD.

| Question                                                                                                                                           | Categories                                    | N=472 | %     |
|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-------|-------|
| How much more would you pay for an electric vehicle that is environmentally friendly than gasoline cars?                                           | 0%                                            | 83    | 17.6% |
|                                                                                                                                                    | 1%-5%                                         | 72    | 15.3% |
|                                                                                                                                                    | 6%-10%                                        | 117   | 24.8% |
|                                                                                                                                                    | 11%-20%                                       | 98    | 20.8% |
|                                                                                                                                                    | 21%-29%                                       | 48    | 10.2% |
|                                                                                                                                                    | 30% & more                                    | 54    | 11.4% |
| How much more would you pay for an electric vehicle that is much quicker than normal gasoline car or about (0-100 in 4 seconds)?                   | 0%                                            | 78    | 16.5% |
|                                                                                                                                                    | 1%-5%                                         | 75    | 15.9% |
|                                                                                                                                                    | 6%-10%                                        | 103   | 21.8% |
|                                                                                                                                                    | 11%-20%                                       | 104   | 22.0% |
|                                                                                                                                                    | 21%-29%                                       | 58    | 12.3% |
|                                                                                                                                                    | 30% & more                                    | 54    | 11.4% |
| How much has the gas/fuel have to increase so you would seriously start thinking about buying electric vehicle.                                    | 500% and above                                | 14    | 3.0%  |
|                                                                                                                                                    | 400%-499%                                     | 12    | 2.5%  |
|                                                                                                                                                    | 300% -399%                                    | 19    | 4.0%  |
|                                                                                                                                                    | 200%-299%                                     | 50    | 10.6% |
|                                                                                                                                                    | 100%-199%                                     | 97    | 20.6% |
|                                                                                                                                                    | 50%-99%                                       | 108   | 22.9% |
|                                                                                                                                                    | Less than 50%                                 | 83    | 17.6% |
|                                                                                                                                                    | Indifferent/I do not care about Electric cars | 89    | 18.9% |
| I would change my mind towards buying electric vehicle if the government regulate and control the costs of electric cars to be _____.              | 30% cheaper costs than gasoline cars          | 135   | 28.6% |
|                                                                                                                                                    | 10% cheaper costs than gasoline cars          | 108   | 22.9% |
|                                                                                                                                                    | The same costs as gasoline cars               | 92    | 19.5% |
|                                                                                                                                                    | 10% higher costs than gasoline cars           | 58    | 12.3% |
|                                                                                                                                                    | Indifferent/I do not care about Electric cars | 79    | 16.7% |
| I would change my mind towards buying Electric car if there were public and free fast charging station every _____.                                | Less than 10km                                | 85    | 18.0% |
|                                                                                                                                                    | 10km-25km                                     | 143   | 30.3% |
|                                                                                                                                                    | 26km-50km                                     | 110   | 23.3% |
|                                                                                                                                                    | 51km-75km                                     | 41    | 8.7%  |
|                                                                                                                                                    | 76km & more                                   | 23    | 4.9%  |
|                                                                                                                                                    | Indifferent/I do not care about Electric cars | 70    | 14.8% |
| I would change my mind towards buying electric vehicle if there a fast lane only for EV on the major highways (such as on the 30 and 40 highway)   | No                                            | 96    | 20.3% |
|                                                                                                                                                    | Yes                                           | 272   | 57.6% |
|                                                                                                                                                    | Indifferent/I do not care about Electric cars | 104   | 22.0% |
| I would change my mind towards buying electric vehicle if there were public and free parking spaces almost at the same capacity as handicap space. | No                                            | 119   | 25.2% |
|                                                                                                                                                    | Yes                                           | 259   | 54.9% |
|                                                                                                                                                    | Indifferent/I do not care about Electric cars | 94    | 19.9% |
| Would you buy an electric vehicle in Kuwait within the next 3 years?                                                                               | off course NOT                                | 71    | 15.0% |
|                                                                                                                                                    | Unlikely                                      | 149   | 31.6% |
|                                                                                                                                                    | Very likely                                   | 186   | 39.4% |
|                                                                                                                                                    | Certainly                                     | 66    | 14.0% |
| How safe do you think electric vehicle are in Kuwait- Fire and Car Crash?                                                                          | Very Dangerous                                | 30    | 6.4%  |
|                                                                                                                                                    | Dangerous                                     | 44    | 9.3%  |
|                                                                                                                                                    | Neutral                                       | 201   | 42.6% |
|                                                                                                                                                    | Safe                                          | 99    | 21.0% |
|                                                                                                                                                    | Very Safe                                     | 98    | 20.7% |
| If you have an electric vehicle, would you be able to charge electric vehicle in residential areas in Kuwait                                       | Very impossible                               | 81    | 17.2% |
|                                                                                                                                                    | Impossible                                    | 73    | 15.5% |
|                                                                                                                                                    | Neutral                                       | 134   | 28.4% |
|                                                                                                                                                    | Possible                                      | 63    | 13.3% |
|                                                                                                                                                    | Very possible                                 | 121   | 25.6% |

# Research Results...

**A quarter of participants (24.8%) would pay 6%-10% more for an EV that is environmentally friendly than gasoline cars, while, more than fifth of them (20.8%) would pay 11%-20% more. More than fifth of participant would pay 6%-10% (21.8%) and 11%-20% (22.0%) more for an EV that is much quicker than normal gasoline car or about (0-100 in 4 seconds).**

Approximately, **quarter of participants (22.9%) and more than fifth of them (20.6%) would seriously start thinking about buying EV if the gas/fuel prices increase between 50% to 99% and 100% to 199% respectively, while 18.9% of them did not care about EC.**

**More than quarter of participants (28.6%) would change their mind towards buying EV if the government regulate and control the costs of these cars to be 30% cheaper than gasoline cars,** whereas more than fifth of them (22.9%) would change their mind if the cost 10% cheaper than gasoline cars.

Approximately, **third of participants (30.3%) would change their mind towards buying EV if there were public and free fast charging station every 10km to 25km,** while approximately, quarter of them (23.3%) would change their mind if there charging station every 26km to 50km.

**More than half of participants (57.6%) would change their mind towards buying EV if there was a fast lane only for EV on the major highways (such as on the 30 and 40 highway).** More than half of participants (54.9%) would change their mind towards buying EV if there were public and free parking spaces almost at the same capacity as handicap space.

**More than half of participants (53.4%) would buy an EV within the next 3 years.** Of those, 14% would buy it certainly and 39.4% very likely, 41.7% of participants thought that EVs are safe in relation to fire and car crashes, and 39% of them would be able to charge EV in their residential areas in Kuwait.

# Research results: open-ended question:

*“Your comments and feedback about Electric vehicle in Kuwait.”*

- Over 59 percent have concerns about the environment and proposed phrases such as “green, preserving, Eco-Friendly, air pollution, Carbon gas emission reduction, greenhouse gases, health improvement, cancer free.”. ...labelled as “enviornmentalists”
- Almost over 55 percent expressed their interest in **functionalities and features of EV** such as smooth driving, powerful engine, speed, comfort, safety, and rechargeable and recyclable batteries.
- **Nearly 50 percent of respondents pointed out obstacles and expressed their worries about EV phenomena in Kuwait in terms of speed limits, less popularity, not suitable due to hot summer season, lack of government plan and policies, lack of EV dealerships and worrying about the costs for maintenance, lacking shaded areas designed for EV, lack of quality of roads, no culture of environmental awareness among people in Kuwait.**



# Research results: open-ended question:

*“What is the first word that comes to your mind when you hear " Electric Vehicle in Kuwait.”*

- Over 70 percent of the sample had positive vibes towards electric vehicle (EV) by expressing words such as **“fun, amazing, wow, great, good, awesome, new, exciting, happy, future etc.”**.
- The findings showed that although most of the respondents cared about the environment and were willing to buy electric cars in the future, they had concerns regarding **its lack of practicality due to hot and dry weather conditions and lasting batteries for EV in Kuwait.**



# Conclusion

- The suggested strategies (Governments, marketing, managerial):
- The Kuwait market needs to be ready before the introduction of electric cars.
- The old automobile industry should be gearing up for transformation.
- The fossil fuel price should spike
- Government must call for a change in individual transportation attitudes and habits.
- The automobile sector should be drifting gradually towards EV from renewable resources. These cars are energy efficient, generating less greenhouse gas emissions and reduced noise.

