



2024 - Summary

# The Sustainable Fleet

Navigating Country-Specific Trends for Success

Additional information  
can be found on the page



<https://scopesdata.com/sustainability-country-information/saudi-arabia-2023>

## Summary

Saudi Arabia's commitment to sustainable fleet management and vehicle electrification is a key component of its Vision 2030, aiming to diversify the economy and reduce environmental impact. Despite challenges related to its current energy mix and infrastructure, the kingdom's strategic investments in EV production and renewable energy sources are paving the way for a significant reduction in transportation-related CO2 emissions. This transition not only aligns with global sustainability efforts but also positions Saudi Arabia as a leader in the region's move towards cleaner transportation solutions. As Saudi Arabia continues to develop its EV ecosystem, it showcases the potential for countries with a strong dependence on fossil fuels to embrace a more sustainable and innovative transportation future.

## Country Case Study

The "Base Fleet" percentage is based on the 2023 sales ratio of each powertrain in Saudi Arabia. The "Recommended Fleet" is designed to be practical and efficient in reducing CO2e emissions, considering a realistic transition over 4 to 8 years, aligning with typical fleet renewal cycles.

CO2e emissions are calculated for a fleet of 100 vehicles, each traveling 30,000 km annually. Calculations assume petrol usage (2345 CO2e g/L) for all vehicles, with PHEVs using 50% electricity and 50% fuel, based on Saudi Arabia's average electricity emission factor.



## Analysis of Fleet Transition from Current State to Sustainable Future



ICE  
118  
(CO2e g/km)



HEV  
88  
(CO2e g/km)

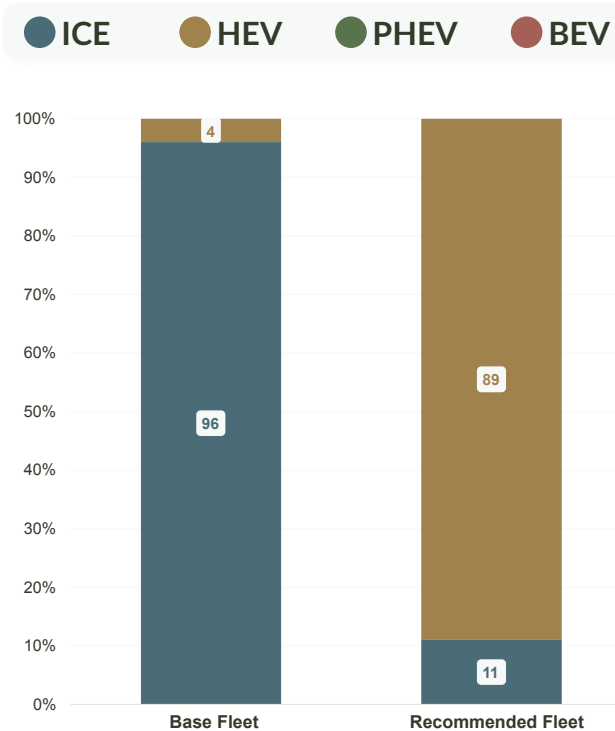


PHEV  
92  
(CO2e g/km)



BEV  
67  
(CO2e g/km)

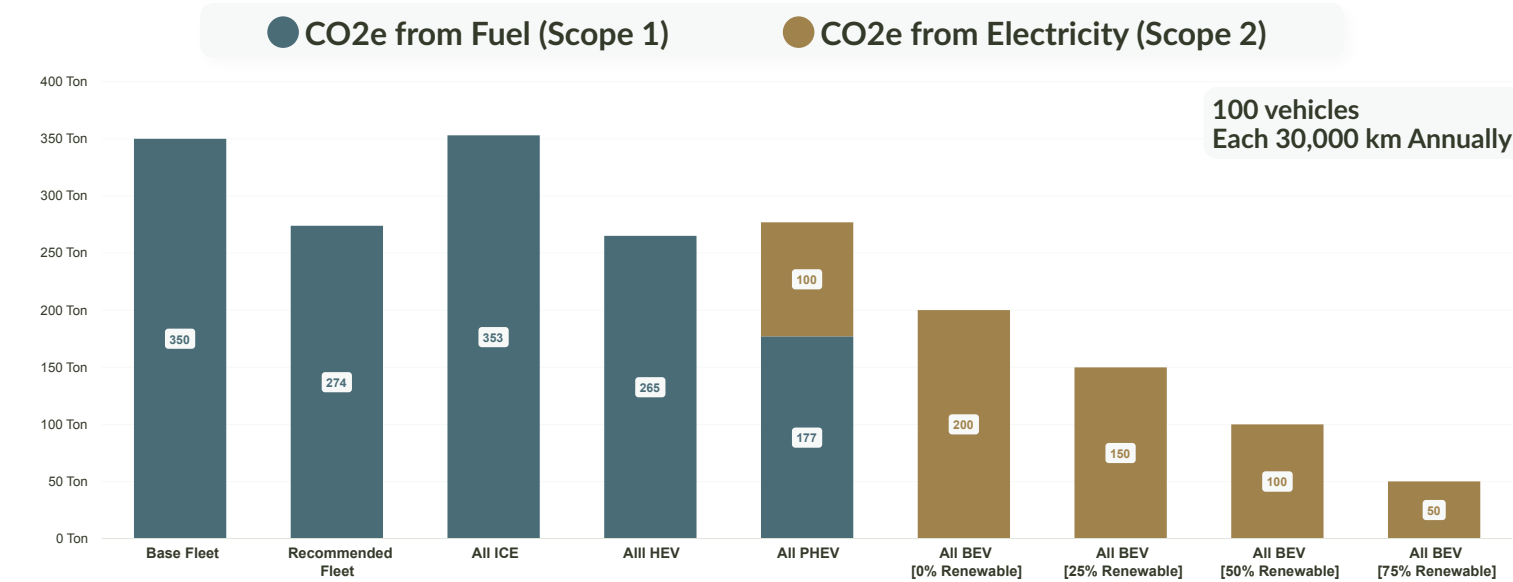
This refers to the average CO2e emissions per kilometer calculated based on the actual energy (Fuel and Electricity) used. It also takes into account the size of the vehicles used in Saudi Arabia's fleet.



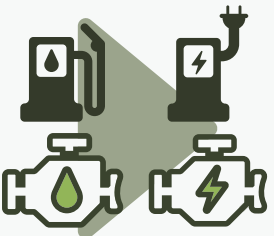
- Drastic Reduction in ICE Vehicles:** Saudi Arabia's strategy reduces ICE vehicles from 96% to 11%, marking a significant step towards reducing CO2 emissions and fuel consumption.
- Focus on HEVs as an Interim Solution:** The transition increases HEVs to 89%, aligning with Saudi Arabia's Vision 2030 goals to reduce oil dependence and carbon footprint while addressing current infrastructure limitations for BEVs.
- Supportive Governmental Incentives:** The strategy is bolstered by governmental incentives to boost local EV production and adoption, as well as plans to expand EV charging infrastructure, demonstrating a commitment to a sustainable transportation ecosystem.



## Comparative Analysis of CO2e Emissions Across Fleet Scenarios



- Effective Emission Reductions with HEVs:** Transitioning to a recommended fleet mix with a significant proportion of HEVs reduces total CO2e emissions to 274 tons, showcasing the effectiveness of hybrid technology in Saudi Arabia's current energy and infrastructure context.
- Short to Medium-term Role of HEVs:** Alternative scenarios, such as an all-ICE or all-HEV fleet, underscore the potential of HEVs to achieve short to medium-term emission reductions while laying the foundation for future electrification.
- Long-term Vision for BEVs:** The transition strategy reflects a pragmatic approach by leveraging immediate gains from HEVs and preparing for future BEV adoption, which will become more viable as Saudi Arabia continues to invest in renewable energy and expand its EV infrastructure, supporting the kingdom's sustainability goals.



## Scopes Data Electrification Recommendation Rank



### Difficult Environment for EVs

These countries are challenging environments for EV adoption due to economic difficulties and underdeveloped infrastructure. Here, transitioning to HEVs is the first choice for reducing CO2 emissions.

#### Same Category Countries

Argentina, Egypt, India, Kazakhstan, Philippines, Russia, Saudi Arabia, South Africa

#### Info:

The Electrification Recommendation is derived from two aspects: each country's EV Readiness assessment (based on factors such as Electric Vehicle market share, environmental consciousness, GDP, etc.), and the Electricity EF. Even if a country has a low Electricity EF, enabling CO2e emissions reduction through transitioning to BEVs, the adoption of BEVs could be challenging if the country lacks adequate infrastructure or faces financial constraints.

Since every company operates in a unique environment, this recommendation might not apply in all cases. However, it can be useful for setting a general direction.



## Electricity Emission Factor Category

Rank 1

Saudi Arabia's Electricity EF  
**0.506 CO2e kg/kWh**

Climate Transparency (2021 Report) in 2020

Rank 2

Saudi Arabia's Category

**Rank 3**  
High Emission Countries (0.50 - 0.75 kg/kWh)

#### Info:

Countries with high Electricity EF have less benefit for electrification

- Rank 1: 0.00 - 0.25 kg/kWh (0 - 38 CO2e g/km)
- Rank 2: 0.25 - 0.50 kg/kWh (38 - 76 CO2e g/km)
- Rank 3: 0.50 - 0.75 kg/kWh (76 - 113 CO2e g/km)
- Rank 4: 0.75 - 1.00 kg/kWh (113 - 151 CO2e g/km)
- Rank 5: More than 1.00 kg/kWh (More than 151 CO2e g/km)



## Electric Vehicle Readiness Category

Rank 1

Saudi Arabia's Category

**Rank 5**  
Very Challenging Environment for EV Adoption

#### Sales Share Information



BEV

2022  
0%

2023  
0.1%



HEV

2022  
3.5%

2023  
3.8%



Non-ICE

2022  
3.5%

2023  
3.8%

HEV: Only Full Hybrid Vehicles (Does not include Mild Hybrid Vehicles)

Non-ICE: Total of BEV, PHEV, HEV, and MHEV (Mild Hybrid Electric Vehicles)

#### Abbreviations

- EV: Electric Vehicle
- ICE: Internal Combustion Engine
- HEV: Hybrid Electric Vehicle
- PHEV: Plug-in Hybrid Electric Vehicle
- BEV: Battery Electric Vehicle
- EF: Emission Factor