



MONASH
University

Differences of electricity car usage between Asia and Europe

Group HD (Tutorial 01)

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1 Executive Summary

This report analyzes the differences in electric vehicle (EV) adoption between selected Asian (China, India, Japan) and European (Norway, Finland, Austria) countries from 2013 to 2023. Using data from Our World in Data and the IMPACT Cycle framework, we found that European countries experienced a sharp rise in EV market share, driven by strong policy support such as high taxes on petrol cars and generous EV incentives. In contrast, Asian countries showed slower growth, largely due to weaker government support—except for China, which demonstrated rapid adoption. These findings highlight the critical role of national policy in shaping the trajectory of EV usage.

2 Introduction

The global transition toward electric vehicles (EVs) has gained momentum over the past decade, yet significant differences in adoption rates exist between regions. This study investigates how EV sales shares have evolved in selected Asian (China, India, Japan) and European (Norway, Finland, Austria) countries between 2013 and 2023. By analyzing public data from Our World in Data and applying the IMPACT Cycle methodology, we aim to uncover the underlying factors behind these regional disparities. Initial observations suggest that European nations have experienced a rapid increase in EV adoption, whereas most Asian countries have progressed more gradually. These trends raise important questions about the role of government policies, infrastructure, and public awareness in accelerating EV uptake. China, however, emerges as an exception within Asia, showing growth patterns similar to European counterparts. The analysis focuses on identifying such key differences and understanding their root causes. This comparison provides insight into how policy environments influence consumer behavior and technological adoption. Through this research, we aim to offer actionable recommendations for countries lagging in EV adoption. The goal is to inform strategies that support a more balanced and equitable global shift toward electric mobility.

3 Methodology

A reproducible workflow was followed using RStudio, Git, and GitHub to manage version control and collaboration. This report applies the IMPACT Cycle framework to explore trends in electric vehicle (EV) adoption across selected Asian and European countries. As shown in Figure 1, the methodology follows a structured sequence, from identifying the research question, preparing data, performing analysis, communicating results, and tracking outcomes. The IMPACT Cycle was used

because it provides a structured, repeatable approach for guiding data-driven projects from problem identification through to communication and measurable impact (Richardson, Terrell & Teeter 2023).

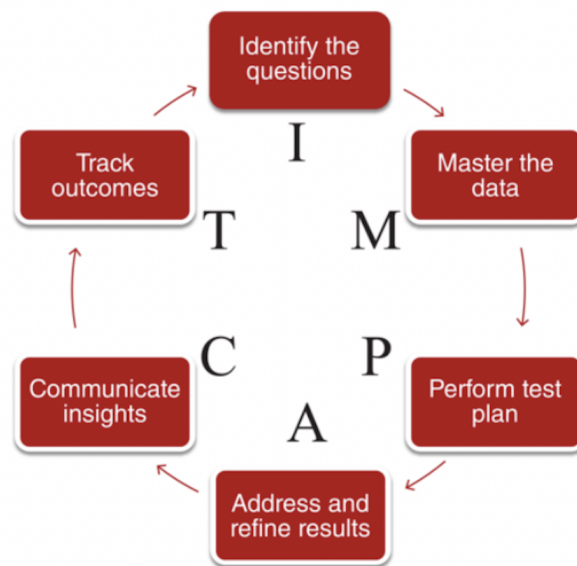


Figure 1: *Impact Cycle*

In the Identify phase, the research question focused on how electric vehicle shares evolved between 2013 and 2023 across selected countries (China, India, and Japan in Asia, and Austria, Finland, and Norway in Europe), and what regional differences can be observed.

During the Master the Data phase, data was retrieved from [Our World in Data](#), based on statistics from the International Energy Agency. Six countries were selected from global dataset, including China, India, and Japan in Asia, and Austria, Finland, and Norway in Europe. Furthermore, The 10-year timeframe (2013-2023) reflects a period of rapid growth and visibility in the electric mobility space.

The final dataset has 4 observations and 66 variables. It contains two numeric variables (Year and Electric_car_share) and two character variable (Country and Code). The description of each variable is provided in Table 1.

Table 1: *Data dictionary for electric car sales share dataset*

Variable	Description
Country	Name of the country where the data was collected
Code	ISO 3-letter country code
Year	Year of observation (from 2013 to 2023)

Electric_Car_Share Percentage of electric vehicles in new car sales

The analysis then produced visualisations that highlight EV adoption trends across countries, supporting the Address and Refine Results phase by making insights clear and actionable. In the Communicate phase, the findings were interpreted, while the Track Outcomes phase offers recommendations to support effective EV adoption.

4 Disucussion and Visualisations

4.1 Results

Figure 2 shows the trend of electric car sales from 2013 to 2023 across six countries. Norway had the highest share, reaching over 80% by 2023, followed by Finland and Austria, which also showed steady growth to about 30% and 20%. In Asia, China started with a low share but grew quickly after 2016, reaching 35% in 2023. However, Japan and India remained low throughout the period, both staying under 2%. This trend shows that European countries had stronger policies and support for electric cars, while some Asian countries moved more slowly.

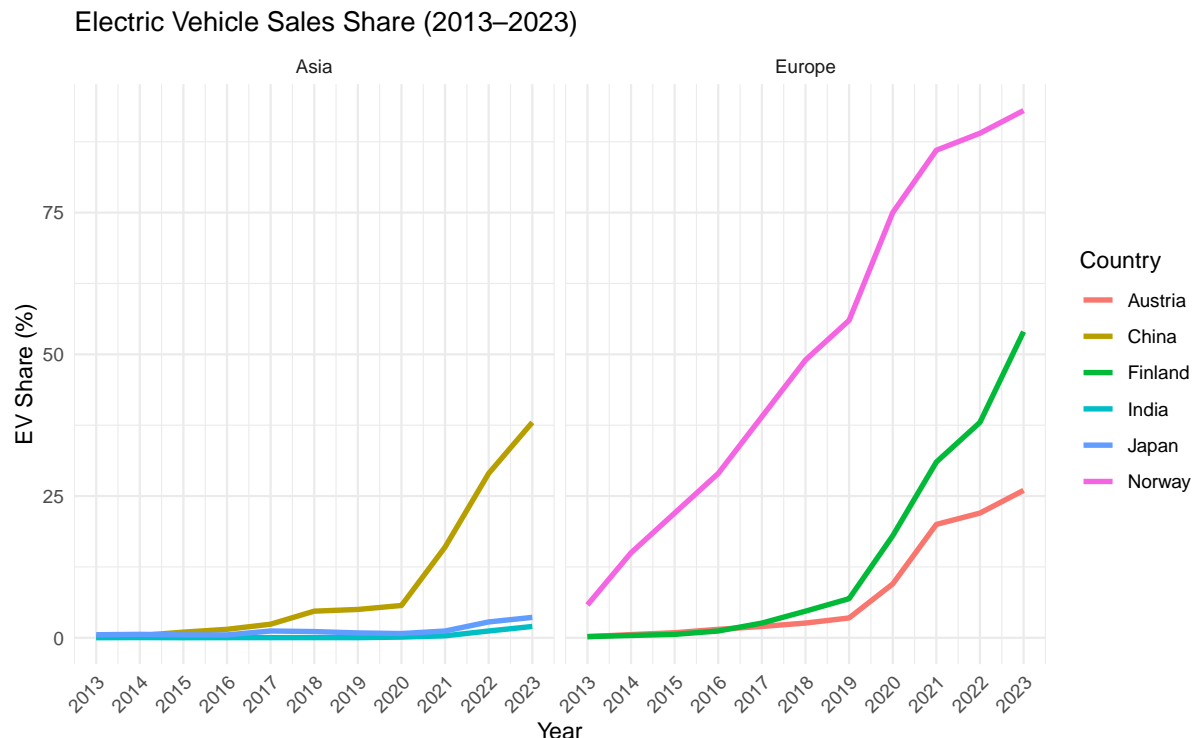


Figure 2: EV sales share trends in selected Asian and European countries from 2013 to 2023.

Figure 3 shows the average share of electric vehicle (EV) sales in each country from 2013 to 2023. Norway had the highest average, exceeding 50%, due to strong government incentives and early EV

adoption. Finland and Austria also showed solid performance, averaging around 20–30%. In contrast, China had a lower average but showed rapid growth in recent years. Japan and India recorded the lowest averages, both below 2%, indicating slower adoption. Overall, European countries performed better in EV adoption compared to most Asian countries, with China as a notable exception.

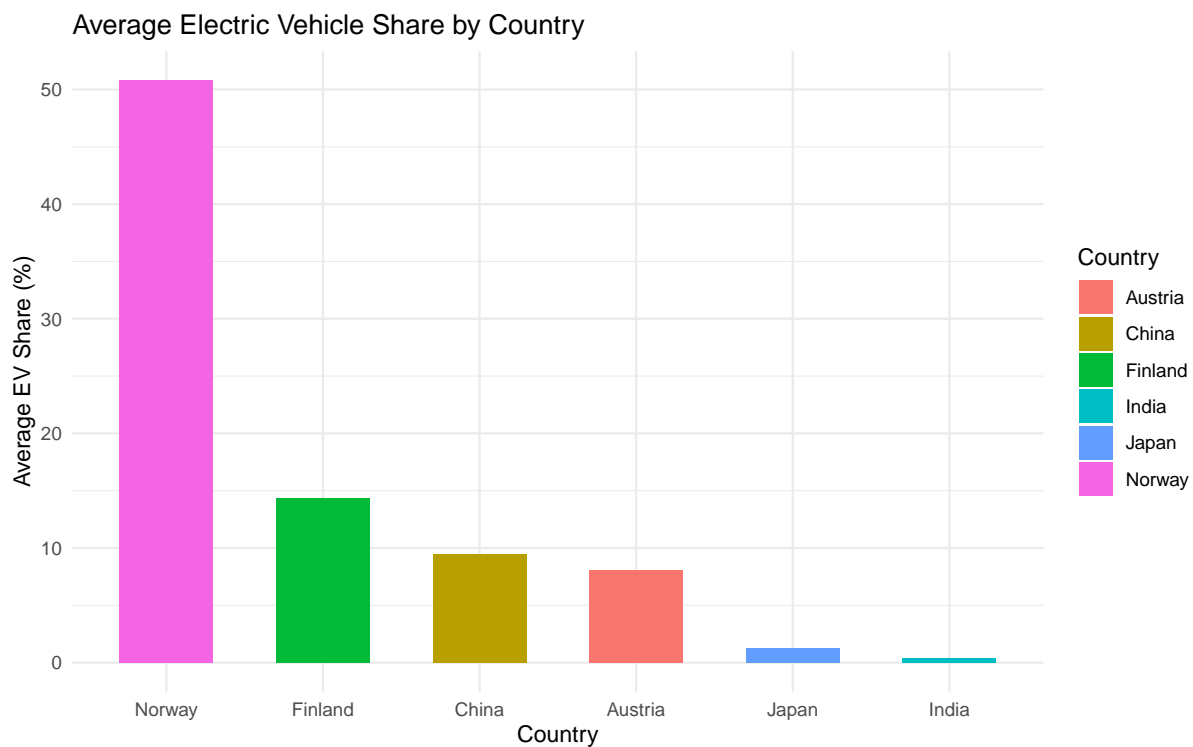


Figure 3: Average EV sales share in each country from 2013 to 2023.

4.2 Discussion

The analysis reveals significant regional disparities in electric vehicle (EV) adoption between selected Asian and European countries from 2013 to 2023. European nations such as Norway and Finland achieved high EV market shares, largely due to robust government policies—including early purchase subsidies, high fuel taxes, and substantial investment in EV infrastructure. In contrast, most Asian countries, with the notable exception of China, experienced much slower adoption, which can be attributed to weaker institutional support and limited public infrastructure. China stands out within the Asian group, having demonstrated rapid EV growth patterns similar to its European counterparts. This suggests that strong and sustained government intervention—such as preferential tax exemptions and strategic planning—can effectively overcome structural constraints (People’s Republic of China 2023).

5 Conclusion and Recommendations

5.1 Recommendations

To encourage broader adoption, countries with low EV uptake—such as India and Japan—should consider adopting proven policy mechanisms implemented in Europe and China. These include offering generous purchase subsidies, implementing tax penalties on internal combustion engine vehicles, expanding charging infrastructure, and increasing public awareness through coordinated campaigns (eMotion 2015). Setting clear national targets for EV adoption can also help guide private sector investments and align consumer expectations. A comprehensive, multi-pronged approach—consistent with the “Track Outcomes” and “Communicate Insights” phases of the IMPACT Cycle—will be essential in fostering a more equitable and sustainable global shift toward electric transportation.

5.2 Conclusion

These findings reinforce the critical role of national policy frameworks, financial incentives, and public infrastructure in shaping EV adoption trajectories. Although cultural and economic contexts differ across regions, the data-driven patterns observed through the IMPACT Cycle framework highlight that consistent, policy-led strategies have produced measurable growth in EV market share. The contrasting trajectories between countries underscore how deliberate policy choices can accelerate or hinder the transition to electric mobility.

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