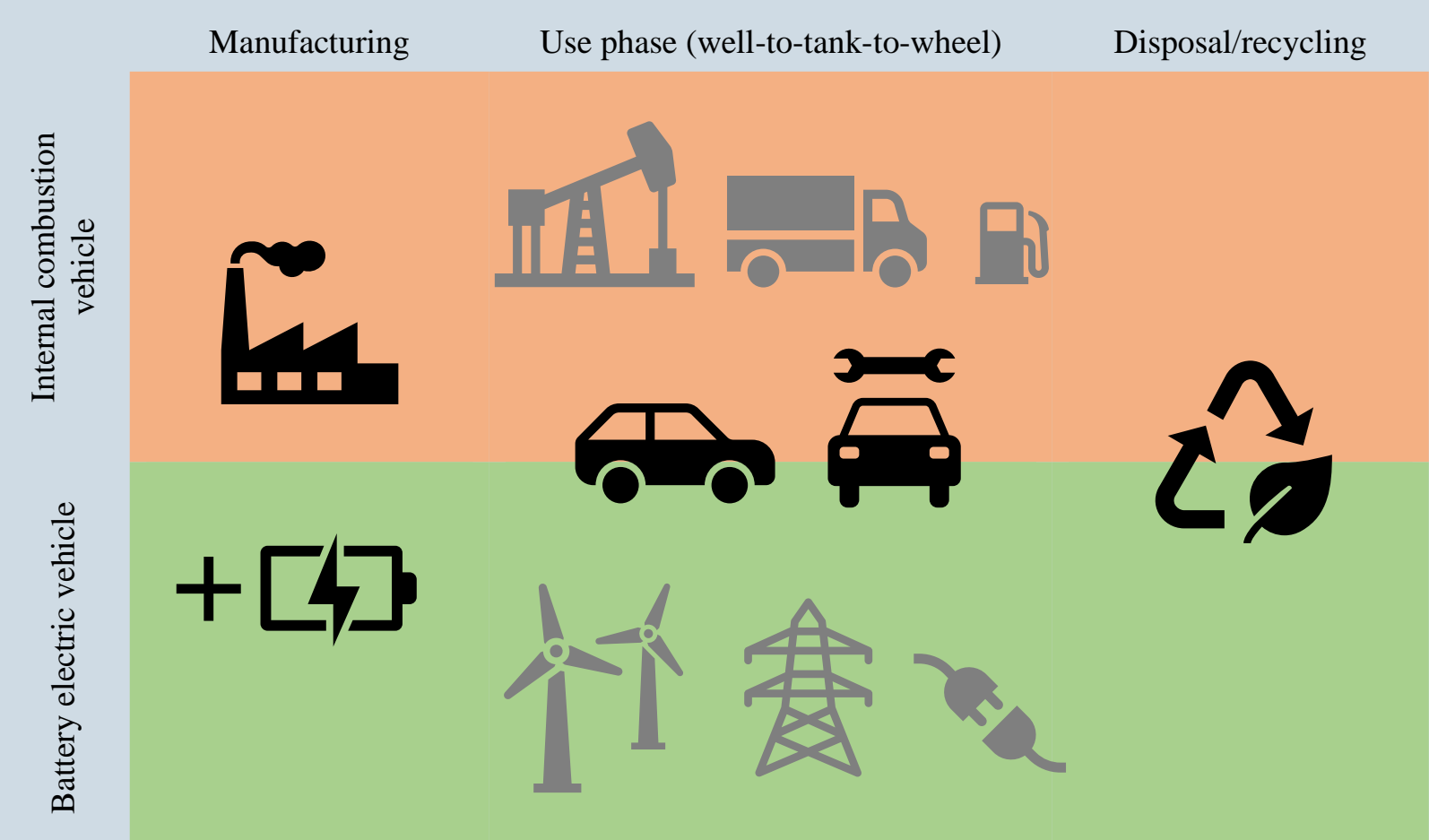


Battery electric vehicles are with a significantly lower environmental impact across various regions.

- The energy consumption, emissions, and resource utilization during vehicle production differ between the two technologies, influencing their overall environmental impact.
- The environmental performance of Battery Electric Vehicles is significantly influenced by the source of electricity used for charging.



- The manufacturing of batteries for electric vehicles can have significant environmental implications.
- Particularly in the context of increased renewable energy adoption, battery electric vehicles reduce the environmental impact.

Introduction

The introduction of electric vehicles has been presented as a promising solution to mitigate the environmental impact of the transportation sector, which is a major contributor to greenhouse gas emissions and air pollution.

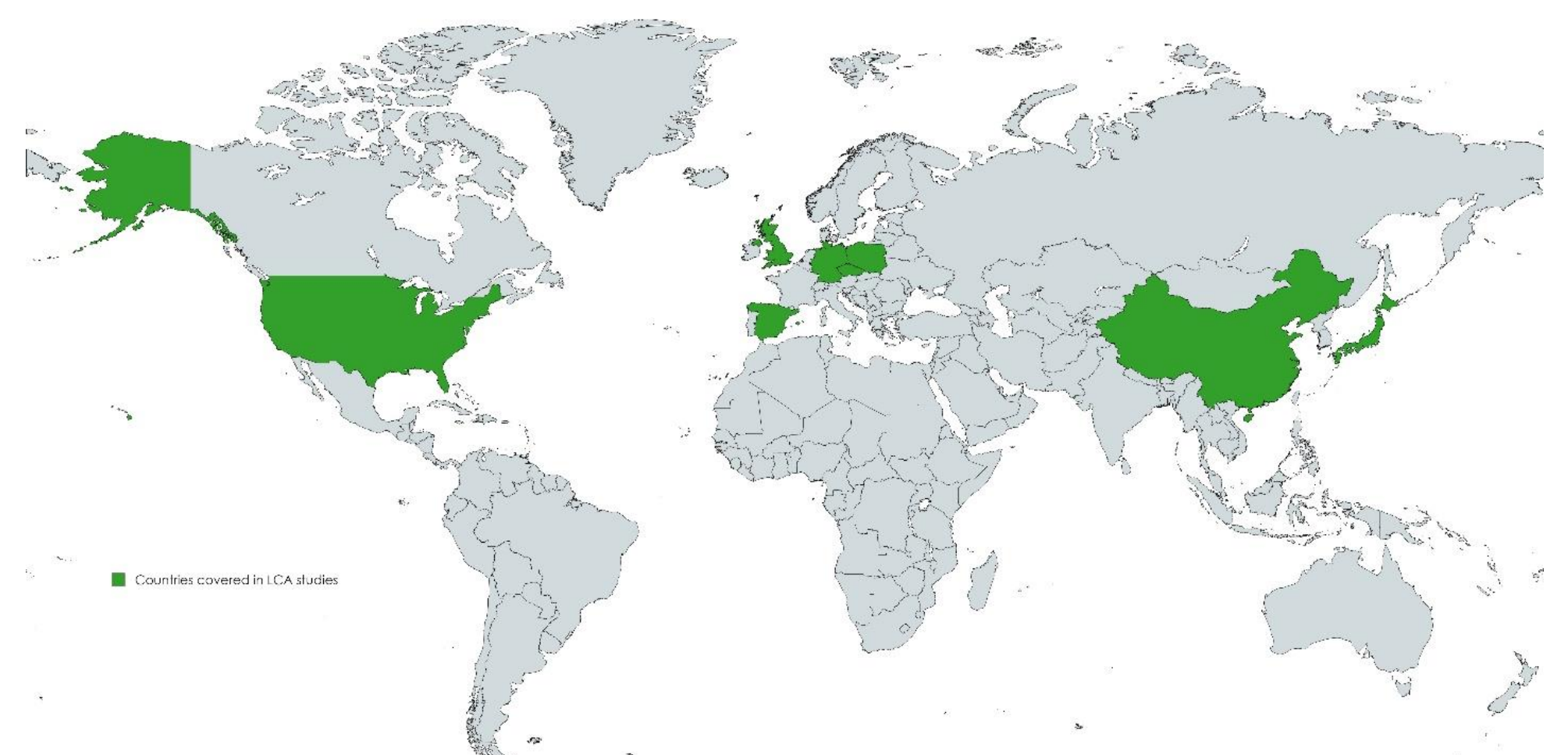
As the awareness of the true carbon footprint of cars increases with the understanding that cars are **emitting much more** than official datasheets are portraying them to do it is even more pressuring to evaluate the life cycle of cars.

By integrating various lifecycle assessments (**LCA**) assessments covering different parts of the world, this study aims to inform sustainable transportation policies and practices by providing a comprehensive understanding of the environmental implications of battery electric vehicles (**BEVs**) and internal combustion vehicles (**ICEVs**).

Methodology

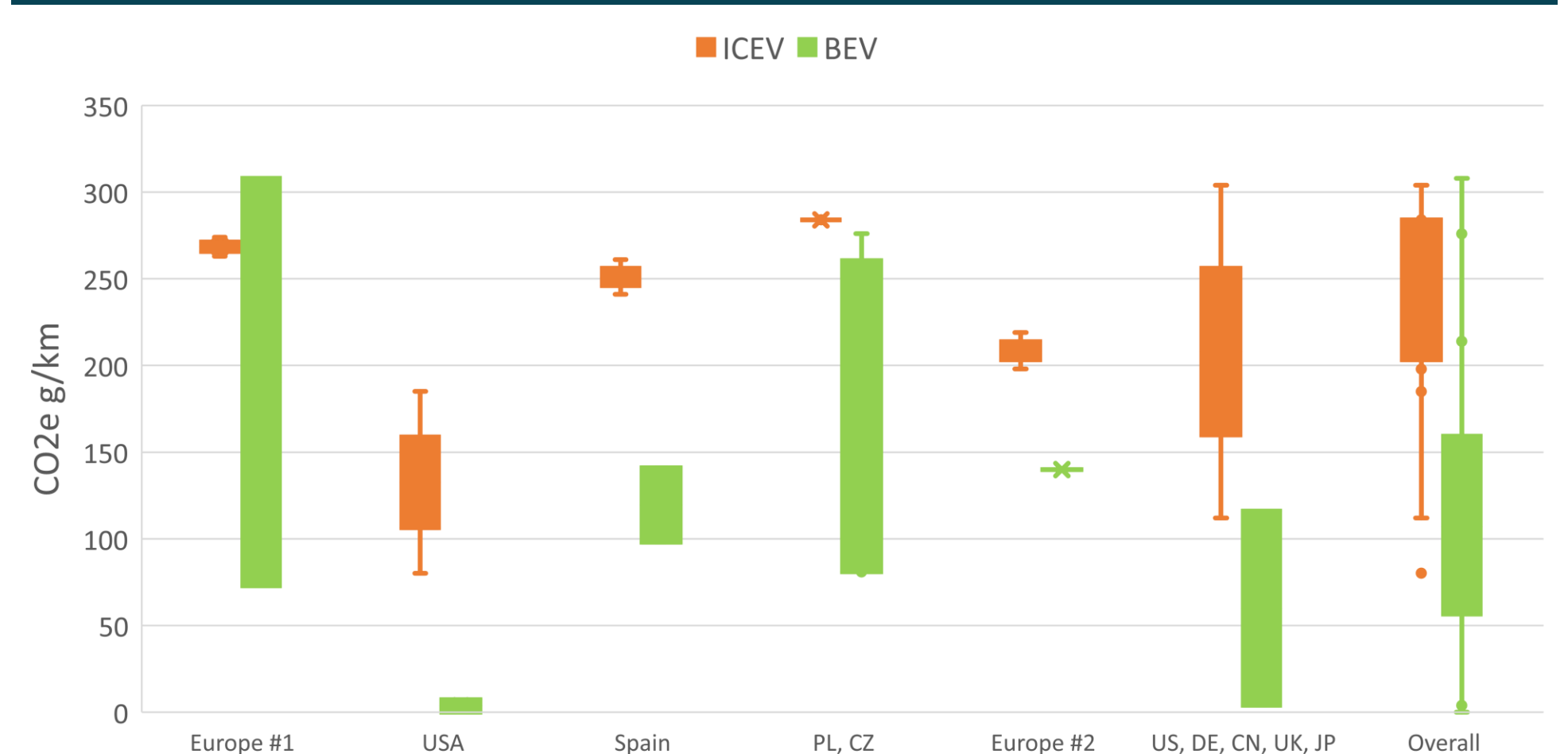
This study encompassed research from a diverse range of regions, including the USA, Spain, Poland, Germany, China, Japan, and the Czech Republic.

The selected LCAs covered the entire life cycle of both BEVs and ICEVs, meticulously examining factors such as vehicle production and manufacturing processes, the energy sources used for charging electric vehicles, battery production and disposal practices, real-world vehicle operation with its associated energy consumption, and even potential end-of-life scenarios for both vehicle types. Their results were converted and expressed as CO₂e g/km.



A map view of countries covered in selected LCA studies

Results



This study highlights the significant potential of BEVs to **reduce environmental impact** compared to ICEVs, particularly in the context of increased renewable energy adoption.

However, it also underscores the importance of considering **regional variations** and the electricity mix when evaluating the environmental performance of BEVs as well as driving patterns, manufacturing processes, and the size and composition of batteries, as these determinants have a profound impact on the overall sustainability of electric mobility.