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Comparative Analysis of Decarbonisation Pathways of Electric and Fuel Cell Vehicles

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Over the last two decades, the transport sector has been one of the leading sources of carbon emissions. Several efforts have been made to mitigate the carbon emission from the sector. Battery Electric Vehicles and [Hydrogen Fuel](#) Cell Vehicles play a pivotal role in mitigating climate change. This study enhances the Well-to-Wheel (WTW) model to capture the interactions between vehicle emissions and the evolving energy sector by incorporating changes in energy mixes and regional energy trade across Chinese provinces. The enhanced WTW model aims to improve the accuracy of data and models, emphasizing the need to reflect distinct regional energy configurations and emission characteristics precisely. According to a WTW analysis, between 2030 and 2040, vehicles delivered in 2040 are expected to show a reduction in emissions of 55.5% to 62.5% compared to those delivered in 2030 across various provinces in China. This study's detailed WTW emission analysis of low-emission vehicles enriches our understanding of regional energy impacts and provides a scientific basis for precise, proactive [environmental policies](#).