

Chapter 2

A Review of Current Developments in Flying Cars in the Context of Sustainable Transport

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ABSTRACT

Flying cars are emerging as an innovative and sustainable means of transport. In recent years, efforts to develop flying cars have gained momentum. Flying cars, which do not consume fossil fuels thanks to their electric systems, are attracting attention due to their effective contribution to sustainable transport policies thanks to their carbon-neutral design. Furthermore, flying cars are expected to travel using air routes, which will make them a more attractive option, as they will be able to travel without being affected by traffic congestion in crowded cities. This study provides a comprehensive examination of research on flying cars, covering topics such as the emergence of the need for flying cars, flying car travel and urban life, the desirability of flying cars, and the integration of flying cars into social life.

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INTRODUCTION

Global warming and climate change are among the most pressing issues affecting the entire world in the 21st century. They require urgent global-scale intervention and are currently a highly popular and strategically important area of research for policymakers, academics and scientists. Although the primary destructive effects of global warming and climate change are concentrated on the environment, food security, water resources and ecological balance, the fundamental factors contributing to them exhibit a wide range of diversity. Heavy industry, intensive production activities, the widespread use of non-renewable energy production methods, rapidly growing urban lifestyles and fossil fuel-based transportation systems are among the primary factors (Ahmed et al., 2018; Kabeyi and Olanrewaju, 2022; Muluneh, 2021)

The vast majority of existing transport systems rely heavily on fossil fuels and produce high levels of carbon emissions. This critical situation calls into serious question the long-term sustainability of traditional transport systems, increasing the urgent need for innovative, alternative technological solutions every day. The transport sector is one of the main sources of global greenhouse gas emissions and a significant contributor to fossil fuel consumption. It is widely accepted that slowing down, controlling and reducing the destructive effects of global warming and climate change is only possible by reducing fossil fuel consumption and minimising emissions. In line with these strategic objectives, sustainable transportation can be defined as advanced systems that minimise negative environmental impacts from transportation activities, are economically viable in the long term, consider social equality and meet social needs fairly through a holistic approach (Lelieveld et al., 2019; Wuebbles & Jain, 2001)

The design of sustainable transport infrastructure and modern mobility applications is centred on the fundamental strategic objective of gradually reducing our reliance on fossil fuels and significantly minimising our carbon footprint, thereby improving urban air quality. In recent years, environmentally friendly electric and hybrid vehicles (Figure 1), which run on both fossil fuels and electricity, have rapidly entered the market and are becoming increasingly popular with environmentally conscious consumers. Current advanced sustainable transport technologies offer different operational advantages and technical limitations. While electric vehicles stand out for their zero-emission status during operation, significant drawbacks include the inadequacy of widespread charging infrastructure, limitations in the range of lithium-ion battery technology and the indirect environmental impacts of complex production processes. Recent fires involving electric vehicle batteries have also raised a critical safety issue within the scientific community: traditional firefighting methods are ineffective at extinguishing lithium batteries. Hybrid technology systems are considered a transitional solution on the way to completely

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