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Aleksander Ślادkowski *Editor*

# Ecology in Transport: Problems and Solutions

 Springer

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# Environmental Aspects of the Production and Use of Biofuels in Transport

Myroslav Panchuk, Sviatoslav Kryshchuk, Aleksander Śladkowski and Andrii Panchuk

**Abstract** The article presents a comprehensive analysis of the environmental aspects of the production and use of biofuels in transport. It is stated that the environmental impact occurs at all stages of production and processing of bioenergy raw materials. It is substantial during land use change and production intensification, and minimal greenhouse gas emissions are observed when lignocellulosic fuels are used. Life cycle analysis shows that battery electric vehicles have a better greenhouse gas saving than most biofuels. At the same time, a large-scale implementation of renewable energy sources is needed to reduce harmful emissions from electricity generation. It is established that the use of carbon-neutral synthetic biofuels is a promising way to achieve the complete decarbonisation of the transport sector.

**Keywords** Biofuels · Greenhouse gases · Emissions · Life cycle analysis · Battery electric vehicle

## 1 Using of Biomass-Based Alternative Fuels in Automotive Industry

The existence of energy is a fundamental requirement for the development of all aspects of society. Energy is also needed to maintain the existence of ecosystems, life and human civilization. However, the use of fossil energy sources can cause

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