

Lecture Notes in Networks and Systems 124

Aleksander Sładkowski *Editor*

# Ecology in Transport: Problems and Solutions

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# Logistic Flow Control System in Green Supply Chains

Nikita Osintsev, Aleksandr Rakhmangulov, Aleksander Śladkowski and Natalja Dyorina

**Abstract** The effective concept implementation of sustainable development in logistics and supply chain management is based on the use of management decision-making methods for changing the parameters of logistics flows. Decisions should be made based on the measurement and evaluation of the parameters and indicators of these flows. The complexity of managing green supply chains is associated with insufficient knowledge of the system of logistics flows indicators and parameters, as well as in the absence of methods for their comprehensive assessment. In the present work, an original system of indicators (indicators and parameters) of logistic flows in green supply chains is proposed. Managed parameters of logistic flows are identified, the change of which ensures the principles implementation of the sustainable development concept. The use of the fuzzy AHP-TOPSIS method for evaluating the performance of logistics flows in green supply chains is considered. A fuzzy model for managing the parameters of logistics flows has been developed. Changing the parameters of logistic flows in order to achieve the goals of the sustainable development concept is proposed to be carried out using the original system of green logistics instruments. The work presents a calculation implementation example in the logistics flow control system of the procedure for selecting green logistic instruments.

**Keywords** Sustainable development · Green logistics · Transport systems · Green supply chain management · Logistics flows · Indicators · Fuzzy approach · AHP-TOPSIS · Decision-making

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