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Influence of low-carbon logistics on the structure of the retail network and trade formats in the cities and rural areas

The aim of the paper is to analyze influence of rising e-commerce trend and low-carbon logistics on the structure of the retail network and trade formats in the cities and rural areas, based on literature review and authors own study regarding consumer perceptions on greening of last mile logistics operations.

Retail trade is strongly influenced by (mega) trends in economic, social, technological and legal development, which has led to its transformation and dynamic changes, especially in recent years. These changes are significant from the point of view of spatial planning, especially in urban areas. For instance, increased competition and global technological changes led to a shift into the digitisation of trade. The spread of the internet, and later mobile devices, paved the way for the development of e-commerce, which gained particular momentum there after 2010. The emergence of e-platforms such as Allegro, the expansion of courier and logistics services, and changing consumer expectations regarding shopping convenience.

Virtualisation, digitisation and digitalisation are concepts that are particularly emphasised in the context of global consumer megatrends. Today's consumer is a digital consumer who uses digital content and platforms, regularly makes purchases on the Internet, including, to an increasing extent, digital services. According to the Consumer Digital Empowerment Index survey, 75% of European consumers believe that in ten years' time, consumer experiences will mainly take place in the digital space, which shows that in their opinion, the digital world will dominate traditional commerce. The dynamic growth of trade via e-commerce and m-commerce platforms is one of the main trends observed in the consumer market in the third decade of the 21st century. It is indicated that this type of trade will see double-digit year-on-year growth in the coming years, and according to estimates by Research and Markets, the global e-commerce market will reach a value of USD 55.6 trillion in 2027, while in Poland it will reach PLN 187 billion.

With the growth of online commerce, the role of last mile logistics (LML) operations, including parcel delivery, is increasing. LML is considered the least efficient and most complex part of the supply chain. One of the significant challenges facing LML operations, particularly road transport, is low-carbon logistics, optimisation and modernization of processes. In order to meet the emerging challenges related to LML operations, it is necessary to implement innovative solutions aimed, among other things, at reducing the demand for freight transport, optimising the use of freight transport, increasing the use of resources, improving the energy efficiency of the fleet and reducing the carbon dioxide content in energy sources, which has impact on the structure of the retail network and trade formats both in the cities as well as in rural areas. Another aspect to consider is product packaging in e-commerce, which has a negative impact on the environment,

particularly in the case of plastic waste and non-returnable packaging, as well as the use of reverse logistics solutions.