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THE IMPLEMENTATION OF GREEN LOGISTICS PRINCIPLES IN UKRAINE'S TRANSPORT SYSTEM

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One of the main environmental problems facing Ukrainian cities is air pollution caused by transport. The greatest threat comes from old cars and vehicles with diesel engines, which emit nitrogen oxides, carbon monoxide, soot and other toxic substances. The situation is exacerbated by poor-quality fuel, an overburdened transport network and underdeveloped public transport, which leads to an increase in the use of private cars.

The biggest source of air pollution is exhaust fumes from internal combustion engines. These contain over 100 toxic substances, including carbon monoxide, nitrogen oxides, volatile organic compounds, soot and sulphur oxides. The main causes of high pollution levels are the growing number of private cars, the use of an outdated vehicle fleet, the use of low-quality fuel and the poor state of the road infrastructure.

Road transport has a significant negative impact on the environment and public health. High concentrations of traffic are found in large cities and industrial regions, where pollutants accumulate directly in the lower layers of the atmosphere. In addition to air pollution, transport emissions contribute to the greenhouse effect and global climate change.

The situation in Ukraine is further complicated by the consequences of military action, which has led to the destruction of roads, bridges and transport infrastructure. Rebuilding this infrastructure presents a unique opportunity to integrate "green" corridors and smart traffic management systems from the ground up. This has a negative impact on logistics processes, increases transport costs and hinders transport links between regions.

Nowadays, logistics is a distinct sector of the economy, which is why the implementation of green logistics principles is considered particularly important. The aim of green logistics is to improve the efficiency of logistics processes whilst reducing the negative impact on the environment. Green logistics involves the comprehensive modernisation of the entire logistics chain, from transport and storage to waste disposal.

«Green» logistics is based on the rational use of resources, reducing CO₂ emissions, implementing energy-saving technologies, developing environmentally friendly transport, and minimising waste generation. The principles of green logistics include the decarbonisation of transport, the optimisation of routes and goods flows, the development of energy-efficient warehouses, the use of environmentally friendly packaging, and the implementation of reverse logistics [5].

Modern technologies play a key role in the development of ‘green’ logistics. One of the main areas of focus is the transition to electric vehicles – electric cars, electric lorries and hybrid vehicles – which are more energy-efficient and produce no harmful emissions during operation. Biofuels, hydrogen and synthetic fuels also hold great promise.

The practical implementation of green logistics is based on modern technological solutions. Transport management systems (TMS) are becoming increasingly widespread, enabling the optimisation of routes and a reduction in fuel consumption. Freight consolidation is also an effective solution, as it reduces the number of journeys and the volume of emissions. A significant area of focus is the development of «smart» warehouses that utilize automation, renewable energy sources and energy-efficient technologies.

Digitalisation also contributes to the development of «green» logistics. With the help of the Internet of Things (IoT), it is possible to monitor transport operations in real time and track fuel consumption. By forecasting demand and optimising routes, artificial intelligence can reduce the number of empty runs by 15–30%. Blockchain technology ensures transparency in logistics processes and enables the monitoring of environmental performance.

A significant step taken by the European Union in the field of environmental

policy was the European Green Deal, adopted in 2019. Its main objective is to achieve climate neutrality by 2050 and reduce the negative impact on the environment. The European Union intends to cut transport emissions by 90% and actively promote electric vehicles, high-speed railways and zero-emission vehicles [2;3].

According to forecasts, by 2030 there will be 30 million zero-emission vehicles on EU roads, 100 climate-neutral cities will have been established, and the volume of high-speed rail transport will have doubled. These targets will also be relevant for Ukraine, which has significant potential for development in the areas of public transport, rail infrastructure and micromobility [1].

Ukraine has also announced its plans to achieve climate neutrality by 2060 and supports the implementation of the European Green Deal. To meet these ambitious targets, it is essential for Ukraine to harmonize its national transport regulations with EU standards regarding eco-labeling and sustainable warehousing. Work is already underway to develop electric mobility and integrate the Ukrainian transport network into the TEN-T. However, the current pace of the transport system's environmental transformation remains insufficient [4].

To reduce emissions, it is advisable to increase the share of public transport in cities, develop cycling and pedestrian infrastructure, reduce the use of private cars, and increase the level of electrification of the rail network. Priorities include modernising public transport, expanding the network of charging stations for electric vehicles, and introducing environmental taxation based on the «polluter pays» principle.

The introduction of green logistics offers businesses a number of benefits: reduced fuel and vehicle maintenance costs, lower regulatory risks, an improved corporate image, and easier access to EU markets. To meet these ambitious targets, it is essential for Ukraine to harmonize its national transport regulations with EU standards regarding eco-labeling and sustainable warehousing. However, there are also certain challenges, namely: high costs associated with the implementation of modern technologies, and insufficient infrastructure development for electric vehicles.

Experience from other countries provides successful examples in the field of green logistics. For example, companies such as IKEA and Amazon have begun introducing

electric vehicles, energy-efficient warehouses and modern packaging solutions. At present, examples of green logistics are not yet very widespread in Ukraine, but interest in this sector is gradually growing.

The development of green logistics in Ukraine is hampered by several issues: ineffective state oversight in the field of environmental protection, the prioritisation of economic interests over environmental ones, low motivation among businesses, and the lack of clear procedures for implementing green logistics solutions.

The implementation of green logistics principles is therefore of key importance to the development of Ukraine's transport system in the context of current environmental and climate challenges. Road transport, in particular, continues to be a source of air pollution and greenhouse gas emissions, which in turn has a negative impact on the environment and public health. This is why the transition to an environmentally safe and energy-efficient transport system is considered a prerequisite for the country's sustainable development.

«Green logistics» refers to the comprehensive optimisation of logistics processes through the use of electric vehicles, route optimisation, the development of energy-efficient infrastructure, digital technologies and reverse logistics. Modern technologies play a key role in this, particularly transport management systems, artificial intelligence, the Internet of Things (IoT) and automation.

The European «Green Deal» sets new requirements for transport and logistics systems; therefore, it is extremely important for Ukraine to adapt to modern environmental standards and continue its integration into the European transport area. Effective development of green logistics requires state support, as well as the modernisation of transport infrastructure, the promotion of environmental innovations and the strengthening of corporate environmental responsibility.

Ultimately, the development of green logistics will not only help to reduce the negative impact of transport on the environment, but will also boost the competitiveness of the Ukrainian economy and strengthen its integration into the European market.

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MATERNAL AND CHILD HEALTH SERVICES IN POLYCLINICS DURING WARTIME

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War shatters every layer of society, but its most insidious devastation often unfolds far from the front lines—in the quiet collapse of routine health services. Among the most vulnerable casualties are pregnant women, new mothers, and young children. In times of active conflict, polyclinics—the backbone of primary and outpatient care in many health systems—become both a lifeline and a fragile frontline institution, struggling to sustain maternal and child health (MCH) services against a tide of destruction, displacement, and fear.

The Polyclinic Under Siege A polyclinic, by design, is a hub of comprehensive, non-residential care. It combines general practice, specialist consultations, diagnostics, immunization, antenatal care, family planning, and pediatric services under one roof. In peacetime, it offers continuity and accessibility, especially for women and children who rely on its proximity, affordability, and integrated services. War upends every one of these attributes.