Міністерство освіти і науки України
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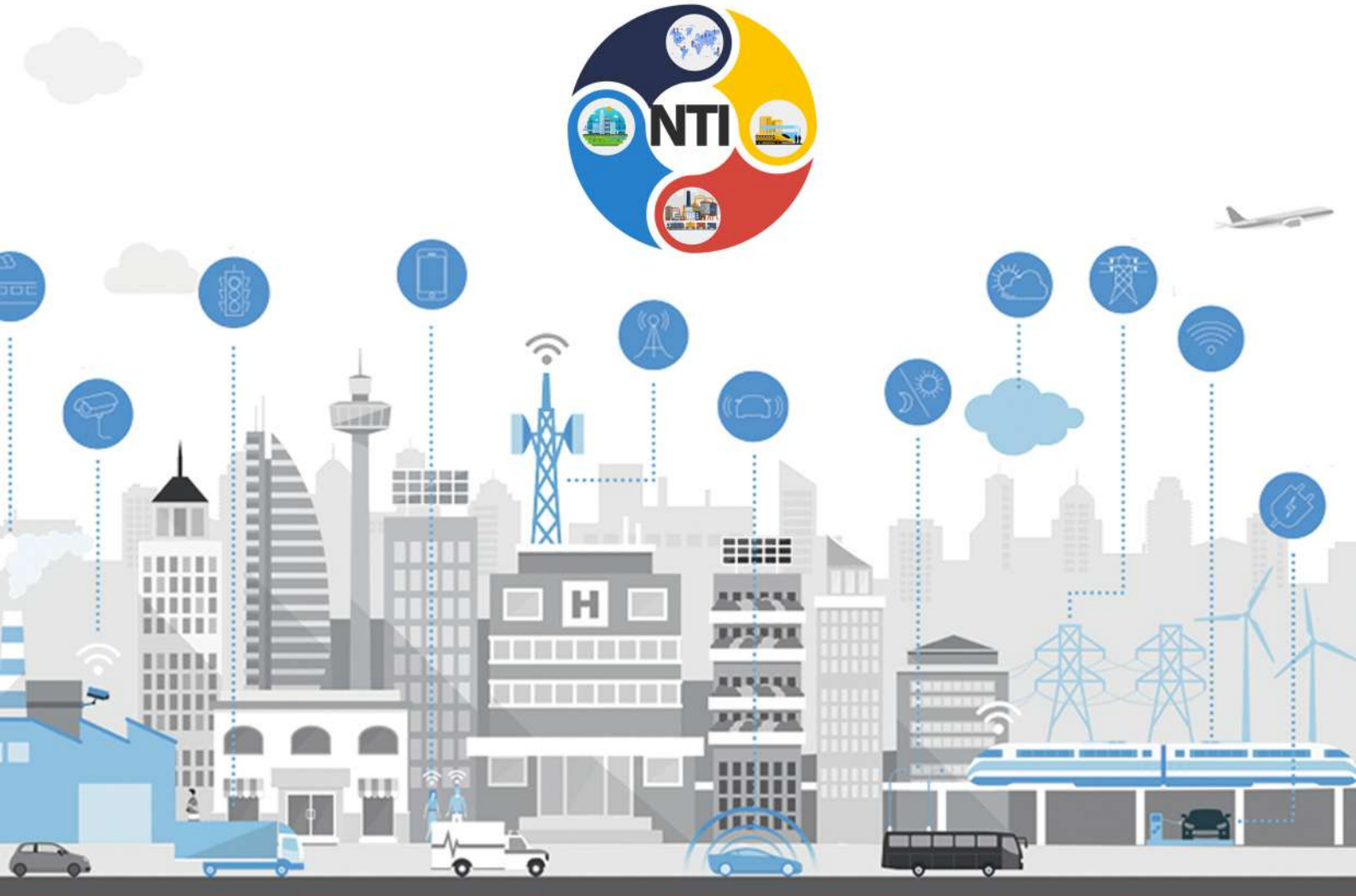
МАТЕРІАЛИ

двадцять першої науково-практичної міжнародної конференції

«Міжнародна транспортна інфраструктура, індустріальні центри та корпоративна логістика»

(5-6 червня 2025р. м. Харків, Україна)



МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
МІНІСТЕРСТВО ІНФРАСТРУКТУРИ УКРАЇНИ
ТРАНСПОРТНА АКАДЕМІЯ УКРАЇНИ
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ІНСТИТУТ ЕКОНОМІКИ ПРОМИСЛОВОСТІ НАН УКРАЇНИ

Матеріали

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«МІЖНАРОДНА ТРАНСПОРТНА ІНФРАСТРУКТУРА, ІНДУСТРІАЛЬНІ ЦЕНТРИ ТА КОРПОРАТИВНА ЛОГІСТИКА»

(5 - 6 червня 2025р. м. Харків)

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KEY DIRECTIONS OF USING THE CIRCULAR ECONOMY MODEL IN RAILWAY TRANSPORT IN UKRAINE

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The whole world is currently experiencing a period of significant challenges, and Ukraine has become the epicenter of a global confrontation, defending the sovereignty of its own territories and independence. Military aggression, which causes huge losses among the civilian population and inflicts colossal damage to the economy, is forcing Ukraine to transform, introducing innovative models to stimulate economic growth processes.

To maintain economic stability in the fight against the enemy and ensure the effective revival of the country after victory, it is necessary to implement a comprehensive approach to rebuilding the economy, focused on the digital modernization of infrastructure, the introduction of digital production technologies and models of economical use of resources.

Circular economy is an economic model aimed at eliminating waste and promoting the economical use of resources. Unlike the traditional linear economy, which is expressed in the terms “take – make – dispose”, the circular economy is focused on developing products with a long service life, as well as those intended for reuse and recycling. Its goals are to reduce environmental impact, preserve natural resources, minimize waste and create a foundation for sustainable growth based on the principles of recycling, recovery and eco-design. This resource-saving approach contributes to economic sustainability, innovation and the transition to more sustainable consumption patterns [1].

In a circular economy, the key process is the use process, which should be oriented towards the conservation and reuse of resources. The circular economy model is based on the fact that product design should include the possibility of long-term or repeated use of resources during several phases. This approach allows you to maximize the value of resource use and minimize the level of waste generated. As confirmed by the results of research by the Ellen MacArthur Foundation, the implementation of the circular economy model and the creation of opportunities for resource reuse on its basis allows you to reduce the level of energy consumption by up to 80% and, accordingly, reduce the

costs of manufacturing products [2].

For the railway transport of Ukraine, the circular economy model can be considered a key strategy for sustainable development and effective operation. After all, the high level of energy and capital intensity of the industry generates significant operating costs, which, together with the critical depreciation of fixed assets, negatively affects the efficiency and competitiveness of railway transport, limiting the opportunities for its sustainable growth.

The practice of European railway companies indicates that it is precisely the technologies and models of the circular economy that allow you to transform existing challenges in the industry into dynamic capabilities for development, creating opportunities for optimizing resources, reducing environmental impact and increasing the efficiency of operating railway transport infrastructure. The implementation of the circular economy model in railway transport allows [3]:

- firstly, to create conditions for extending the life cycle of rolling stock by switching to the "renewal-reconstruction" model instead of the "use-decommissioning" model. This means that by implementing the circular economy model in railway transport, it is possible to reduce the need for the production of new rolling stock, since its technologies allow not to write off and dispose of rolling stock after the end of its service life, but to modernize and restore it;

- secondly, to ensure the recycling and reuse of resources in production processes, thereby optimizing the costs of creating new components;

- thirdly, to introduce a cost-effective approach to energy consumption by creating renewable energy sources and implementing energy-efficient technological solutions;

- fourthly, to achieve optimization of operating costs and increase the efficiency of the transport process by using digital energy consumption monitoring systems and management systems for other types of resources in the process of operation.

Thus, the implementation of the circular economy model in Ukrainian railway transport will allow not only to achieve a reduction in operating costs, but also to increase economic, social and environmental sustainability, ensuring its synchronous innovative modernization.

[1] Circularity in the Rail Sector – Focus: Rolling Stock. *railsponsible.group: web-site*. URL: https://railsponsible.group/app/uploads/2024/09/20240910_Whitepaper-circularity_FINAL.pdf

[2] How Rail Can Enable the Circular Economy. A White Paper. *theiam.org : web-site*. URL: https://theiam.org/media/4450/rail-circular-economy-paper.pdf

[3] Корінь М. В., Валюх А. В., Валюх О. Ю. Теоретичні основи ресурсозбереження на підприємствах залізничного транспорту України. *Вісник економіки транспорту і промисловості*. 2018. № 63. С. 165-173.