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Sustainable financing for transport companies in Ukraine: challenges, opportunities and areas for development

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Abstract: *This article* ***aims*** *to systematise the theoretical principles of sustainable financing for enterprises in the transport sector and to identify the main challenges, potential opportunities and priority areas for its development in the current context. To achieve this objective, a range of established* ***scientific methods*** *were employed during the research: generalisation methods were used to summarise theoretical approaches to the concept of sustainable financing and to draw general conclusions; the comparison method was used to contrast different approaches to sustainable financing and to identify the specific features of applying the concept to enterprises in the transport sector. In addition, methods of logical generalisation and analysis were employed, enabling the identification of challenges, opportunities, and directions for developing the concept in Ukraine, and substantiating conclusions regarding the effectiveness of financial analysis as a tool for crisis management.* ***Results.*** *This paper examines the nature of sustainable financing in supporting the development of enterprises in the transport sector. It identifies the key challenges to its development, including the fragmented* *institutional environment, limited access to capital, technological uncertainty, and a lack of expertise. Strategic opportunities for sustainable financing are substantiated, including international support, the implementation of ESG approaches, digitalization, and the use of innovative financial instruments. Priority areas for developing a sustainable financing system for transport enterprises are identified, taking into account sector-specific characteristics and current transformational processes.* ***Conclusions.*** *Sustainable financing of transport enterprises in Ukraine is the foundation for their long-term development, increased competitiveness, and the sector's environmental transformation. Leveraging opportunities for international support, digitalisation, and the development of 'green' financial instruments, combined with coordinated action by the state, financial institutions, and enterprises, will contribute to the formation of an effective system of sustainable financing.*

Keywords: *sustainable financing, transport companies, ESG approaches, green finance, financial instruments, environmental transition, financial stability.*

Стале фінансування підприємств транспорту в Україні: виклики, можливості та напрямки розвитку

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Анотація: ***Метою*** *статті є систематизація теоретичних положень сталого фінансування підприємств транспортного сектору та ідентифікація основних викликів, потенційних можливостей і пріоритетних напрямів його розвитку в сучасних умовах. Для досягнення поставленої мети в ході дослідження було використано комплекс відомих* ***наукових методів****:*

методи узагальнення було використано для узагальнення теоретичних підходів концепції сталого фінансування, а також формування узагальнених висновків; метод порівняння було використано для зіставлення різних підходів сталого фінансування та визначення особливостей застосування концепції для підприємств транспортної галузі. Крім того використано методи логічного узагальнення та аналізу, які дозволили сформувати виклики, можливості та напрями розвитку концепції в Україні, обґрунтувати висновки щодо ефективності використання фінансового аналізу як інструменту антикризового управління. ***Результати.*** *У роботі досліджено сутність сталого фінансування в забезпеченні розвитку підприємств транспортного сектору. Визначено ключові виклики його формування, зокрема фрагментарність інституційного середовища, обмежений доступ до капіталу, технологічну невизначеність та недостатній рівень компетенцій. Обґрунтовано стратегічні можливості розвитку сталого фінансування, включаючи міжнародну підтримку, впровадження ESG-підходів, цифровізацію та використання інноваційних фінансових інструментів. Визначено пріоритетні напрями розвитку системи сталого фінансування транспортних підприємств з урахуванням галузевої специфіки та сучасних трансформаційних процесів.* ***Висновки.*** *Стале фінансування транспортних підприємств в Україні є основою їх довгострокового розвитку, підвищення конкурентоспроможності та екологічної трансформації галузі. Використання можливостей міжнародної підтримки, цифровізації та розвитку «зелених» фінансових інструментів у поєднанні з узгодженими діями держави, фінансових інституцій і підприємств сприятиме формуванню ефективної системи сталого фінансування.*

Ключові слова: *стале фінансування, транспортні підприємства, ESG-підходи, зелені фінанси, фінансові інструменти, екологічна трансформація, фінансова стійкість*

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A general formulation of the problem and its connection to significant scientific or practical challenges. The current development of Ukraine's transport sector is taking place against a backdrop of heightened economic instability, military challenges and the need to rebuild infrastructure, which significantly complicates efforts to ensure its effective financial operation. Traditional approaches to financing transport enterprises' activities are proving insufficient to address the challenges of modernisation, improving energy efficiency, and reducing negative environmental impacts. In these circumstances, the establishment of a sustainable financing system that integrates economic, environmental, and social aspects into financial management processes is particularly relevant. At the same time, the development of sustainable financing for transport enterprises in Ukraine is accompanied by several systemic challenges. These include a fragmented institutional environment, limited access to financial resources, high capital costs, insufficient development of 'green' financial instruments, and low levels of ESG implementation. Furthermore, there is an insufficient adaptation of international sustainable financing practices to the national conditions of the transport sector.

As a result of these constraints, transport enterprises face difficulties in implementing investment projects aimed at achieving sustainable development goals. This reduces their competitiveness, limits their ability to integrate into international markets, and slows the process of environmental transformation. Consequently, there is a need for a comprehensive study of the challenges, opportunities and directions for the development of sustainable financing for transport enterprises in Ukraine, which defines the problem statement of this article.

An analysis of recent studies and publications. D. Shkvaruk and L. Donchak [1] have examined the issues surrounding the theory of green finance in Ukraine and the possibilities for adapting global standards to the Ukrainian context. Y. Stashchuk and Y. Chyzh [2] have investigated the nature of green finance as an investment tool, as well as its role in the digital economy. Conceptual approaches to green finance are being studied by V. S. Chala and B. Yu. Demidov [3]. The paradigm of sustainable development and theoretical models of its adaptation to Ukrainian realities are investigated by B. Lutsiw, T. Maiorova, and P. Lutsiw [4]. Green and sustainable finance are examined as a paradigm for the financial provision of sustainable development by P. Golka, S. Murau, and J.-E. Thie [7]. The study examines the state's role in blended finance for sustainable development and establishes institutional links among the system's elements. B. Scholtens [6] analysed the evolution of finance from a profit-oriented to a socially oriented approach. His research demonstrates the transition to a stakeholder-based financing model. The scholar emphasises the importance of transparent reporting for the formation of sustainable capital and demonstrates the link between financial incentives and CSR practices. L.D. Tymchenko and V.P. Kononenko [7] examine the essence of the concept of sustainable development and its defining characteristics. Y.M. Kovalenko and V.Y. Khmelevsky [8] investigate the financing of sustainable development and the definition of state policy directions regarding capital investment in Ukraine. I. Boyarko and N. Trushkina [9] examine the content of various financing types in the sustainable development economy. Scholars examine the role of green finance in mitigating environmental impact and its importance for ensuring the sustainable development of modern society, based on empirical evidence and policy implications for the components of national economies. D. Sknar [10] explores the theoretical foundations of the sustainable investment market in contemporary economic relations. A. Mazur and V. Mozil [11] investigate the processes of formulating financing strategies for the harmonious development of enterprises in the context of multifaceted challenges, in particular the full-scale war in Ukraine, global economic instability, and the transformation of financial markets. L. Nechyporuk [12] examines the management of financial system development in the context of sustainable financing. The essence of the sustainable development strategy as a new financial paradigm is examined in the

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work of I.L. Yakimenko, L.P. Petrashko, T.M. Diman, O.M. Salavor, E.B. Shapovalov, M.A. Galaburda, O.V. Nychik, and O.V. Martynyuk [13]. V. Chobitok and M. Matsyshyn [14] investigate the problems of forming an enterprise's financial resources. The financial mechanisms of sustainable development are studied by V. Sapozhnikov, A. Zhabak, V. Sydorko, and V. Mozhuk [15]. At the same time, there is a lack of a comprehensive analysis of the theoretical foundations of the concept in terms of its origins, conceptual framework, tools, and risks in the Ukrainian context, which underscores the academic relevance of this study.

Identifying previously unaddressed aspects of the overall problem. Despite the significant body of academic literature on sustainable financing and the development of the transport sector, a number of important aspects remain insufficiently explored. Most studies focus on general approaches to sustainable financing or treat environmental and financial aspects separately, without accounting for the complex specifics of transport enterprises' operations.

Furthermore, the scientific literature offers limited consideration of the interactions among institutional, financial, and corporate mechanisms in the formation of a sustainable financing system. Consequently, there is a need for in-depth research into a comprehensive approach to the formation and development of sustainable financing for transport enterprises, taking into account national characteristics and contemporary challenges.

Formulation of the article's objectives (statement of the problem). This article aims to summarise the theoretical foundations of sustainable financing for transport enterprises in Ukraine and to identify the key challenges, opportunities, and priority areas for its development in the current context. To achieve this aim, the following objectives have been set:

- to identify the main problems and constraints in implementing the principles of sustainable financing of transport enterprises,

- to identify strategic opportunities to implement the principles of sustainable

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financing for transport enterprises.

A presentation of the main research material, with a full justification of the scientific findings.

The transport sector is a key part of the economy, providing logistics, ensuring population mobility, and facilitating integration into global supply chains. It forms the basis for the effective functioning of most other sectors of the economy. Transport facilitates the movement of goods, services, and labor between regions and countries. This promotes trade, investment activity, and economic growth. Furthermore, the transport system plays an important social role, ensuring access to services and improving the quality of life for the population.

The establishment of a sustainable financing system for transport enterprises in Ukraine faces a range of systemic challenges, both structural and situational in nature. Structural challenges include the underdevelopment of financial markets, limited access to long-term resources and insufficient institutional support. Situational factors are linked to economic instability, military risks and fluctuations in the external environment. Taken together, these factors complicate the implementation of sustainable financing principles and hinder the development of transport enterprises in this direction. Systematising these factors (Fig. 1) is essential for the implementation of sustainable financing mechanisms for transport enterprises.

The challenge posed by the fragmented institutional environment for sustainable finance is evident in the absence of a comprehensive, coordinated regulatory framework to support the relevant financial instruments. Existing elements of sustainable development policy, environmental regulation and financial incentives operate in isolation, without proper coordination among government bodies, financial institutions and enterprises. This complicates the development of a unified approach to implementing the principles of sustainable finance in the transport sector.

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- The fragmented nature of the institutional framework for sustainable financing
- High costs and limited access to capital
- Technological uncertainty
- Lack of expertise and information asymmetry
- Unequal competitive conditions and the lack of profitability of ‘green’ solutions

Fig. 1. Systemic challenges to the sustainable financing of transport companies

Source: compiled by the author

Another problem is the underdeveloped regulatory framework governing the use of green and sustainable finance instruments. The lack of clear standards, criteria for classifying ‘green’ projects and mechanisms for verifying them undermines investor confidence and limits businesses’ access to relevant sources of funding. Furthermore, existing regulatory initiatives often fail to account for the specific nature of the transport sector, further complicating their practical application. The fragmented nature of the institutional environment hinders the development of sustainable finance and reduces the effectiveness of transport-sector investment projects. It creates additional barriers to the integration of Ukrainian enterprises into international financial markets, where requirements for transparency and compliance with ESG principles are significantly higher. Overcoming this challenge requires formulating a comprehensive state policy to harmonize the regulatory framework, develop financial instruments, and coordinate the actions of all market participants.

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The high cost and limited availability of capital are among the key barriers to the development of sustainable financing for transport enterprises in Ukraine. The implementation of investment projects in the areas of environmental modernisation, rolling stock renewal and the introduction of energy-efficient technologies requires significant long-term financial resources. At the same time, the cost of raising capital remains high due to macroeconomic instability, inflationary risks and the limited development of financial markets. An additional complication is transport companies' limited accessibility to sources of funding, particularly in the 'green' investment segment. Bank lending is often short-term in nature and accompanied by strict requirements for borrowers, which does not correspond to the specific nature of infrastructure projects. As a result, transport companies are forced to postpone or scale back investment projects aimed at achieving sustainable development goals. This slowed down modernisation processes and reduced the sector's competitiveness in the long term. To overcome this challenge, it is necessary to develop financial instruments for sustainable investment, to reduce the cost of capital through state support mechanisms, and to intensify cooperation with international financial organisations.

Technological uncertainty poses a significant challenge to the development of sustainable financing for transport companies, as it complicates investment decision-making. The rapid development of innovations in the fields of alternative fuels, electric transport, digital management systems and logistics creates a situation where it is difficult to determine which technologies will become dominant in the long term. This increases the risks of investing in solutions that may quickly become obsolete or lose their economic viability. An additional problem is the high cost of implementing the latest technologies and the lack of sufficient experience in operating them under Ukrainian conditions. Investors and companies often face a lack of reliable information regarding the efficiency, payback period and environmental impact of such solutions. This limits the ability to attract financing,

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as the increased level of uncertainty negatively affects the risk assessment of investment projects.

A lack of expertise is a significant barrier to the development of sustainable financing for transport companies. Many companies lack sufficient knowledge of ESG approaches, the preparation of non-financial reporting, and the use of modern financial instruments. This complicates the development of high-quality investment projects and limits opportunities to attract financing. As a result, enterprises are unable to integrate sustainable development principles into their operations fully.

However, despite significant systemic challenges, the current situation presents several strategic opportunities to accelerate the establishment of sustainable financing for transport enterprises in Ukraine (Fig. 2). This is primarily due to increased international support for infrastructure rehabilitation and the implementation of sustainable development principles. Ukrainian enterprises are gaining access to financial resources from international financial organisations focused on 'green' investments. This creates the conditions for modernising the transport sector through new technologies.

Another significant opportunity lies in Ukraine's integration into the European economic area, accompanied by the harmonisation of standards and approaches in the field of sustainable finance. The adoption of European standards and practices increases transparency in businesses' operations and their investment attractiveness. This opens up access to new sources of funding, particularly through participation in international programs and funds.

Significant potential lies in developing 'green' financing instruments, such as green bonds, loans with an environmental component, and public-private partnerships. The development of an appropriate financial market allows enterprises to diversify their sources of capital. This also drives the implementation of innovative projects to reduce the carbon footprint and improve energy efficiency. The development of digital technologies in the transport sector presents a separate

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opportunity. The use of digital platforms, monitoring systems and analytics enables more efficient resource management and reduced costs. This creates additional conditions for the implementation of sustainable development projects and increased transparency of financial flows.

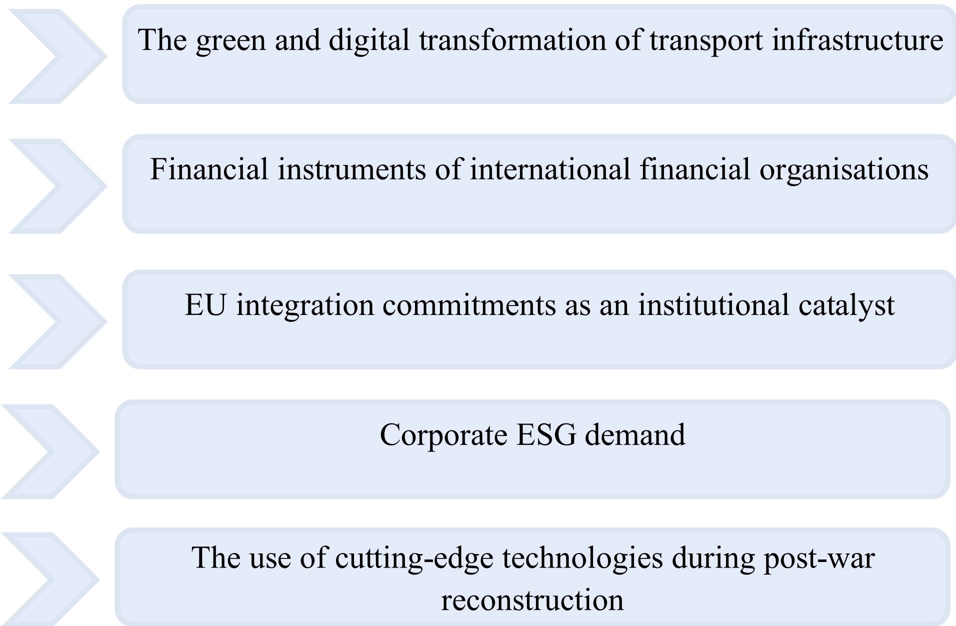

Fig. 2. Opportunities for sustainable financing of transport companies

Source: compiled by the author

Thus, even amid the complex conditions of the transport sector's current development, there are real opportunities to establish an effective system of sustainable financing. Realising these opportunities requires coordinated action by the state, business and financial institutions. Making proper use of the available opportunities will not only help overcome existing constraints but also ensure the long-term competitiveness of transport enterprises.

Also, establishing a sustainable financing system for transport enterprises involves developing and activating domestic instruments tailored to the specific features of the domestic financial market and institutional environment. Establishing an effective system of sustainable financing for transport enterprises in Ukraine requires coordinated efforts at the state, institutional and corporate levels (Fig. 3).

Fig. 3. Key areas and priorities for the development of a sustainable financing system for transport enterprises

Source: proposed by the author

The development of a sustainable financing system for transport enterprises primarily involves improving the regulatory and institutional framework. A key priority is the formulation of a comprehensive state policy that will encourage investment in 'green' transport projects and ensure a level playing field for all market participants.

An important development priority is to intensify international cooperation on sustainable financing for the transport sector. Attracting resources from international financial organisations and participating in global investment programs helps to compensate for the shortage of domestic capital. This also facilitates the introduction of best practices in financial management and environmental standards that are already being successfully applied in other countries.

The reform of tariff policy to encourage the 'green' transition involves reviewing current approaches to setting transport service prices, considering environmental factors. It is important to introduce economic incentives for enterprises that use low-carbon technologies and energy-efficient transport. Such a

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policy should ensure a balance between the social affordability of tariffs and the need to invest in the environmental modernisation of the sector. As a result, the reform will help accelerate the 'green' transition and enhance the sustainability of the transport system.

Thus, implementing the main directions and defining priorities for developing a sustainable financing system for transport enterprises will ensure more effective investment in modernizing the sector and introducing environmentally friendly technologies. This will help improve enterprises' financial stability and reduce their dependence on external risks. At the same time, conditions will be created for the development of innovative financial instruments and for expanding access to international resources.

Conclusions. Sustainable financing of transport enterprises in Ukraine is a vital foundation for their stable, long-term development. It helps enhance enterprise competitiveness by implementing innovative and effective financial solutions. Furthermore, sustainable financing creates the conditions for the sector's environmental transformation, in particular by supporting the adoption of energy-efficient and low-carbon technologies. Key challenges to the development of sustainable financing for transport enterprises include the fragmentation of the institutional environment and the lack of a coordinated policy in this area. Significant constraints also include the high cost of raising financial resources and uncertainty regarding the selection of effective technological solutions.

Furthermore, the situation is complicated by insufficient professional competencies and limited access to high-quality information, which reduces the effectiveness of management decisions and hampers the sector's development. At the same time, significant opportunities have been identified for developing a sustainable financing system, in particular through international financial support, the digitalization of the transport sector, the integration of ESG approaches, and the development of 'green' financial instruments. Their effective use enables partial

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compensation for existing structural constraints and accelerates transport infrastructure modernization. The establishment of an effective, sustainable financing system requires coordinated action by the state, financial institutions, and transport enterprises themselves.

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