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FINANCING POST-WAR RECONSTRUCTION OF ECONOMIES ON THE BASIS OF SUSTAINABLE DEVELOPMENT: CHALLENGES AND SOLUTIONS

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Abstract. The *purpose* of the article is to study the past experience of post-war reconstruction of countries' economies, the features of sustainable economic activity and sustainable financing, and on that basis to identify challenges/risks, and new opportunities/prospects for business, governments and the population of countries in the event of post-war reconstruction based on the principles of sustainable development. *Methodology.* The authors utilised a range of established fundamental research methods, including analysis and synthesis, historical and logical approaches. In addition, they employed special principles, criteria, taxonomies and standards specific to sustainable economic activity and sustainable finance. These serve as guidelines for identifying and assessing sustainable economy/finance. *Results.* The analysis of successful post-war economic reconstruction is facilitated by the utilisation of case studies, with examples drawn from Germany, Japan, Singapore, Bosnia and Herzegovina, and South Korea. In light of nearly a decade of experience following the formal endorsement of the concept of sustainable economic development at the global level (as approved in 2015 at the UN Climate Change Conference, UNCCC), nine pivotal components essential for effective post-war economic reconstruction on the basis of sustainability have been identified and examined. In this context, sustainable development is regarded as a comprehensive process aimed at harmonising social, economic and environmental components for the purpose of effective use, preservation and restoration of the natural environment.

Keywords: sustainable economic development, sustainable development goals (SDG), ESG (environment, social, governance), green bonds, green loans, taxonomies of sustainable economic activity, sustainable finance policy, greenwashing, public finance, corporate finance, inclusion, circular economy, transition finance.

JEL Classification: D04, O11, O16, O38, O40

1. Introduction

Historically, many countries have faced military aggression from other countries, resulting in the destruction of their economies and the need for post-war reconstruction, which required significant resources and efforts. For example, in the last thirty years alone, Europe has been the scene of several military conflicts: in the second half of the 1990s and early 2000s, there was the so-called "Balkan crisis", and Russia's current full-scale military aggression against Ukraine is the largest since World War II. Fortunately, wars end sooner or later, and then the war-torn economy needs to be rebuilt. Post-war reconstruction requires significant resources, effort and political will. At the same time, post-war reconstruction is not only a challenge, but also a new opportunity for business and society as a whole.

Post-war reconstruction affects not only the economy of the country being rebuilt, but also the countries participating in the reconstruction. The process of post-war reconstruction determines the foundations for the future development of countries for decades to come. The right strategy for post-war economic reconstruction was the beginning of the economic boom in Germany, Japan, Singapore, South Korea, and Bosnia and Herzegovina. International experience shows that the success of post-war reconstruction depends on a comprehensive combination of different

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financial approaches. For example, the Marshall Plan after World War II, combining American investment with effective local recovery strategies, became an effective mechanism for reviving the economies of Western European countries. Reconstruction creates unique opportunities for modernising production capacity and attracting human capital.

Unlike in previous periods, in the 21st century society has realised that economic activity must follow the principles of sustainable (resilient) development. The concept of sustainability at the global level was enshrined in the Resolution of the UN General Assembly in Paris (2015) *"Transforming our world: The 2030 Agenda for Sustainable Development"* (Transforming our world: The 2030 Agenda for Sustainable Development. Resolution adopted by the UN General Assembly, 2015). The same meeting adopted 17 global sustainable development goals and 169 corresponding targets. A key feature of a sustainable economy is that, in addition to economic and financial expediency, it must also focus on achieving positive environmental (including climate) and social outcomes, as well as providing for adaptation to the needs of sustainable development. The resources involved in a sustainable economy, its products and services must comply with these key features, and the traditional system of economic and financial risk management must be supplemented by ESG risk management. Many regulators and leading international institutions have already devoted considerable effort to defining the environmental goals and criteria for assessing a sustainable economy. For example, in the European Union, they are set out in the Regulation of the European Parliament and of the Council on the establishment of a framework to facilitate sustainable investment (2020) (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, 2020) and implemented in the Taxonomy of Sustainable Economic Activities (EU Taxonomy Navigator).

In the 21st century, post-war reconstruction must be based on sustainable development principles. This approach is already being considered when assessing the prospects for Ukraine's post-war reconstruction. Requiring appropriate knowledge, resources and political will, such post-war reconstruction is accompanied not only by challenges, but also opens up new opportunities. The challenges are due to the novelty of the circular economy, as well as the demanding environmental and social criteria for project selection. Opportunities include broad prospects for the development and financing of modern infrastructure, green construction, alternative energy, the circular economy, etc.

The relevance of this study is determined by the need to identify challenges and new opportunities facing countries, their governments, businesses and populations in the post-war reconstruction of economies based on sustainable development. Today, many countries around the world are developing their economies on the basis of sustainability. Non-financial reporting, which reflects the impact of economic activity on the environment, is becoming mandatory, and preference is increasingly being given to financing advanced energy- and water-efficient technologies, renewable energy, green building, smart agriculture, eco-transport, etc. Post-war economic reconstruction is a necessity, a challenge and, at the same time, a unique opportunity to introduce all the best practices generated by science and practice. Financial flows from private investors, state and local authorities, within individual countries and at the international level, should be guided by sustainable development goals, take into account possible ESG risks and prevent greenwashing[1]. This approach, therefore, provides a foundation for the restoration of what has been lost, the renewal and development of the economy, and the assurance of environmental and social sustainability. This is ultimately essential for making progressive political decisions that will lead to lasting and reliable peace on Earth.

Previous theoretical and empirical contributions. Research into the problems of post-war economic reconstruction is not new in science. For example, as far back as 1815, David Ricardo explored the topic of post-war economic recovery and considered issues such as the reorientation of capital flows towards peaceful activities (Coulomb, Fanny, 2004).

At the present stage, the topic of post-war reconstruction has been studied mainly using Ukraine as an example. In particular, Kushnirenko O., Gakhovich N., and Venger L. (2023) considered the most likely scenarios and identified strategic directions and effective tools for the restoration of Ukrainian industry that will ensure economic stability in the face of military challenges. Klopov I., Ohrenych J. (2024) developed a model for Ukraine's economic recovery in the post-war period, which, according to their estimates, could become an economic strategy. Ostapenko T., Kolesnyk M. (2022) analysed the impact of the nanoeconomy on the sustainable development of various national economies and the global economy as a whole. The aim of their research was to identify a separate innovation factor in global sustainability.

An article by M. Nahtigal (2022) examines the activities of the recovery and resilience fund, while Best M. (2020) advocates the importance of a production-centric economy that focuses primarily on innovation.

Despite the considerable number of studies on the topic of post-war economic reconstruction, the

[1] Greenwashing is a deceptive marketing tactic in which companies falsely portray their products, services or activities as environmentally friendly in order to mislead consumers.

authors believe that the risks (challenges) and new opportunities arising from the financing of such reconstruction require more detailed consideration.

Objective of the study. The purpose of this article is to study past experiences of post-war economic reconstruction, the characteristics of sustainable economic activity and sustainable financing, and, on that basis, to identify challenges, risks, new opportunities and prospects for businesses, governments and populations in the event of post-war reconstruction based on the principles of sustainable development.

Research methodology. In preparing this article, the authors relied not only on widely recognised fundamental methods of scientific research such as abstraction, analysis and synthesis, induction and deduction, modeling, and historical and logical approaches, but also on specific principles, criteria, taxonomies, and standards characteristic of sustainable economic activity and sustainable finance, which serve as benchmarks for identifying and assessing sustainability in the economy and finance.

The key points of the methodology used in this article are as follows:

Firstly, civilisational values that have been defined at the global level for the 21st century and enshrined in the 17 Sustainable Development Goals (SDGs) adopted at the Paris Conference (2015). These goals are: no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation, technology, and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice, and strong institutions (partnerships for the goals) (Transforming our world: The 2030 Agenda for Sustainable Development. Resolution adopted by the UN General Assembly, 2015).

Secondly, the methodology for identifying the very concept of "sustainable economic activity and sustainable financing". The approach taken by the United Nations Environment Programme (UNEP) (2016) (UNEP. Definitions and Concepts, September 2016) is key here, as it clearly differentiates between the basic concepts of a sustainable economy/finance. It is determined that sustainable economic activity is focused not only on economic/financial goals, but also on environmental and social goals, as well as appropriate (environmentally and socially oriented) corporate governance. Climate change mitigation and climate change adaptation are globally recognised environmental goals. In addition to these, there are other environmental goals that are determined by the geographical and economic characteristics of each country and region.

Thirdly, it is methodologically important to identify sustainable economic activities that may be aimed at environmental goals other than climate change. This refers to the taxonomy of sustainable economic activity that a particular country focuses on. Different countries, given their geographical and economic characteristics, have different environmental priorities. For example, in addition to the two climate goals mentioned above, the European Union has set the following four environmental goals (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, 2020): sustainable use and protection of water and marine resources; transition to a circular economy; prevention and control of pollution; protection and restoration of biodiversity and ecosystems.

Fourthly, the criteria used to assess economic activity and finance, and their contribution to sustainable development, are methodologically important. For example, the European Union has formulated the following four criteria for environmentally sustainable economic activity (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, 2020): contribute significantly to the achievement of one or more environmental objectives; not cause significant harm to any of the environmental objectives (DNSH[2]); comply with minimum social guarantees; meet technical selection criteria.

The EU Taxonomy of Sustainable Economic Activity mentioned above focuses on six environmental objectives and four criteria for sustainable economic activity; as of 2025, it covers 90 types of economic activity that generate more than 93% of the European Union's greenhouse gas emissions. The EU Taxonomy can be used to determine whether a particular economic activity falls within the sustainable category. Many countries have based their national taxonomies of sustainable economic activities on the EU Taxonomy. The EU Taxonomy is a "living" instrument, as it is updated as the European Commission establishes new technical screening criteria through new delegated acts (these may become more stringent or change as a result of scientific and technical advances) and the list of economic activities may be expanded.

Fifthly, and finally, the methodological basis of this study is the standards for disclosure of information on sustainable development by business entities. *International Financial Reporting Standards (IFRS)* apply at the global level. In particular, *General Requirements for Disclosure of Sustainability-related Financial Information*– IFRS S1 establish general requirements for disclosure of information on risks and opportunities related to sustainable development. Another standard, *Climate-related Disclosures (IFRS S2)*, establishes requirements for disclosing information about climate-related risks

[2] DNSH stands for "do no significant harm" to any of the environmental objectives.

and opportunities. European standards for reporting on sustainable development apply to European Union Member States (*The European Sustainability Reporting Standards, ESRSs)* (Commission Delegated Regulation (EU) on Sustainability Reporting Standards). The standards comprise twelve in total, divided into four categories of sustainability disclosure requirements. The first category covers general requirements, represented by *ESRS 1 – General requirements* and *ESRS 2 – General disclosures*. The second category addresses environmental disclosures, including *ESRS E1 – Climate change*, *E2 – Pollution*, *E3 – Water and marine resources*, *E4 – Biodiversity and ecosystems*, and *E5 – Resource use and circular economy*. The third category pertains to social disclosures, namely *ESRS S1 – Own workforce*, *S2 – Workers in the value chain*, *S3 – Affected communities*, and *S4 – Consumers and end-users*. Finally, the fourth category relates to governance disclosures, represented by *ESRS G1 – Business conduct*.

2. Global Experience in Post-War Economic Reconstruction

The experience of post-war reconstruction around the world is multifaceted. The following proposal is put forward: a brief examination of the matter using the examples of Germany, Japan, Singapore, Bosnia and Herzegovina, and South Korea–countries with successful experience in financing post-war reconstruction.

After World War II, the Marshall Plan (European Recovery Programme), combining significant American investment with effective local recovery strategies, became the main plan for the economic recovery of Western European countries. Germany has come a long way from post-war reconstruction to becoming one of the strongest economies in the world through the implementation of the Marshall Plan. This reconstruction programme provided assistance in the development of infrastructure, industry and agriculture, and social protection for the population. It was also envisaged to reduce customs barriers and support export and import operations, which contributed to the development of foreign trade and the attraction of foreign investment to the country. Education and training were developed to prepare qualified specialists. A reform of the tax system was carried out with the aim of improving the efficiency of the taxation system, which included the unification and simplification of tax procedures, accounting and administration. Tax rates were reduced to stimulate investment, in particular corporate income tax was reduced, but at the same time a value added tax (VAT) system was introduced, which became an important source of government revenue. At the same time, tax breaks and incentives were introduced to revive certain industries, such as incentives to encourage research and development, energy efficiency improvements, and environmental projects. Equally important was a comprehensive anti-corruption system (Rimar, Kornienko, 2020).

Another striking example of post-war reconstruction from the second half of the 1940s to the mid-1960s is the experience of Japan, whose economy was completely destroyed during the war. Despite huge losses during the war, Japan's economy tripled in size during 20 years of reconstruction, and the country became one of the world's leading economic powers. The Japanese government implemented a series of reforms that contributed to the liberalisation of the economy, reduced state intervention in the economy, and created favourable conditions for private enterprise. In particular, business taxes were reduced and foreign investment was attracted. It is important to acknowledge that the phenomenon referred to as the "Japanese economic miracle" was facilitated by the dissolution of the zaibatsu, which were substantial industrial holdings that were accused of contributing to militarism during the war (Ekonomichna Pravda, 2022).

The war in Bosnia and Herzegovina took place in the 1990s and caused significant destruction in these countries. When rebuilding their economies, the focus was mainly on restoring damaged infrastructure: roads, schools and hospitals. There was also a programme to support entrepreneurship, which consisted of simplifying business procedures, privatising state-owned enterprises and attracting foreign investment. The co-operation of these countries with the United Nations (UN), the European Union (EU) and the World Bank Group (WBG) played a huge positive role. The development of their tourism industry became extremely important for these countries, contributing to job creation, attracting investment and promoting themselves on the international stage. Much attention was paid to anti-corruption measures and reforms in the taxation system. In particular, the tax administration system and the system for introducing tax incentives were reformed. To create a reliable source of revenue for state budgets, value added tax (VAT) was introduced (Kosarevych).

The experience of Singapore is also interesting. Singapore did not participate in major wars as an active participant in armed conflicts, but became the target of the Battle of Singapore (the Singapore Defence Force) during World War II, when Japanese troops captured the city in 1942. The experience of this country is noteworthy because it has become one of the richest countries in the world in a short period of time. First of all, Singapore has created a favourable investment environment by reducing taxes. It has created favourable conditions for starting a business

and introduced incentives for foreign investors. Considerable attention was paid to education and the training of highly qualified personnel. At the same time, tough anti-corruption measures were introduced. The development of projects based on smart city technologies contributed to the effective recovery of the country's economy. The establishment of a special tax regime for foreign investors, known as the Global Investor Program, is noteworthy. This programme provides privileges to foreign investors who have invested significant amounts of money in industries that contribute to the country's economic development (Cherkas, Tezbir, 2020; Reznikova, Panchenko, 2020; Anti-corruption efforts in Singapore are one of the best examples of systematic work aimed at overcoming corruption, 2016; Nonik, 2017).

The "Miracle on the Han River" as South Korea's rapid economic development is often called, has become an example of success in technological development, industrialisation and exports. After the Korean War of 1950-1953, the country was able to become one of the most developed countries in the world thanks to the implementation of effective post-war reconstruction measures, which consisted of developing high-tech industries, investing in human capital and focusing on exports. It is important to note that it was the state that played a significant role in the development of the country's economy through effective regulation and planning. The state provided financial and technical support for the implementation of innovative projects and exercised strict control over the banking system, which contributed to attracting investment and financial stability (Amelin, 2022; Mygal, 2022).

The experience of many countries shows that for successful post-war reconstruction of the economy, it is necessary to focus on and strive to ensure the following set of post-war recovery tools: indicative planning with subsequent liberalisation of the economy; active job creation; export orientation of the economy; predominance of high-tech industries in manufacturing; creation of a tax incentive regime.

Studying the experience of post-war economic reconstruction in countries prior to 2015 is extremely useful, but at that time, the concept of a sustainable economy resistant to ESG risks had not yet been formed. Moreover, it took at least another ten years for the key components of sustainable economic activity to be clearly defined in the regulatory and legal frameworks of individual countries and globally, and for the first results to appear in practice, showing that for all participants in the economy, development based on sustainability is accompanied by certain challenges/risks, but at the same time opens up enormous new opportunities for them.

3. The Essence of Post-War Economic Reconstruction Based on Sustainable Development

The concept of sustainable economic development stems from a broader and more comprehensive understanding of social development processes. Based on the principle of balance, it combines three key subsystems of existence: the economy, social issues and ecology. Some countries turned to the idea of sustainable economic development as early as the 18th century. At the global level, the sustainable economic growth programme was announced in 2015 during the 70th session of the UN General Assembly in New York, at the UN Summit on Sustainable Development (the 2015 United Nations Climate Change Conference). Sustainable development has been defined as a comprehensive process aimed at harmonising social, economic and environmental components with a view to the effective use, conservation and restoration of the natural environment.

At this summit, representatives of the participating countries drafted and signed a final document entitled "Transforming our world: The 2030 Agenda for Sustainable Development" (Transforming our world: The 2030 Agenda for Sustainable Development. Resolution adopted by the UN General Assembly, 2015). The document formulated 17 Sustainable Development Goals (SDGs), which included 1 69 targets. The goals of sustainable development are defined as follows: no poverty; zero hunger; good health and well-being; quality education; gender equality; clean water and sanitation; affordable and clean energy; decent work and economic growth; industry, innovation, technology and infrastructure; reduced inequalities; sustainable cities and communities; responsible consumption and production; climate action; life below water; life on land; peace, justice and strong institutions; partnerships for the goals. Each country participating in this Agreement shall formulate its National Sustainable Development Goals based on these 17 SDGs and in accordance with its economic, natural, climatic and other characteristics.

The summit also produced the Paris Climate Agreement, which aims to limit global temperature rise to well below 2 degrees Celsius, preferably to 1.5 degrees Celsius, compared to pre-industrial levels, by reducing global greenhouse gas emissions (The Paris Agreement, 2015). This agreement was concluded within the framework of the United Nations Framework Convention on Climate Change (UNFCCC), replacing the Kyoto Protocol. Unlike the Kyoto Protocol, the Paris Climate Agreement stipulates that all countries, regardless of their level of economic development, must commit to reducing harmful emissions into the atmosphere. Today, the Paris Climate Agreement is the main international legal

act adopted to strengthen the global response to the threat of climate change in the context of sustainable development and efforts to eradicate poverty.

Given the nearly decade-long experience that now exists since the official adoption of the concept of sustainable economic development at the global level, nine key components necessary for successful post-war economic reconstruction based on sustainability can be identified:

1) The existence of a clear post-war reconstruction programme based on sustainable development. It is necessary to have a roadmap and an action plan for financing post-war reconstruction at the national and local government levels. Since the financial sector is a kind of driver of economic processes, it is important that banks and, if possible, other financial institutions also develop their policies and action plans for sustainable financing based on the national reconstruction policy.

It is important to include clear reconstruction goals and objectives in action plans, along with the necessary financial, human, material and time resources. Since resources are always limited, priorities must be set. A model for financing post-war reconstruction based on sustainable development can focus on the reconstruction of energy and transport infrastructure, resource efficiency (including energy and water efficiency), green building, smart agriculture, eco-transport and more.

When developing plans, various scenarios should be considered (at least conservative and optimistic ones). It is essential to take into account possible ESG risks and establish an appropriate system for managing such risks.

2) The development of sustainable economic activity must be based on reliable and effective mechanisms for selecting and evaluating projects that meet sustainability criteria. For example, the European Union has introduced a Taxonomy of Sustainable Economic Activities (Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020 on the establishment of a framework to facilitate sustainable investment, 2020). At the end of 2024, the UN Climate Summit emphasised the need to harmonise similar taxonomies across different countries in order to reduce the risk of discrepancies and greenwashing.

3) Appropriate financial instruments are necessary for the development of a sustainable economy: green and other bonds and loans. To date, financial market participants (banking and capital markets) have already developed a number of recommendations for sustainable/green lending.

The International Capital Markets Association (ICMA) has developed a series of recommendations relating to green, social and sustainable bonds. For example, green bonds can be any type of bond instrument whose proceeds or equivalent amount will be used exclusively to finance or refinance, in whole or in part, new and/or existing eligible green projects and which comply with the four core components of the Green Bond Principles. To be classified as green, bonds must meet the following four components: use of proceeds, project assessment and selection process, fund management, and reporting. In addition, there are key recommendations for green bond policy and independent (external) auditing.

European Union has a *Regulation on European Green Bonds and Optional Disclosures for Bonds Marketed as Environmentally Sustainable and for Sustainability-linked Bonds (2023*). This Regulation establishes uniform requirements for bond issuers wishing to use the designation "European Green Bond" (EuGB) for their bonds; establishes a system for the registration and supervision of external auditors; and provides additional disclosure templates for bonds sold in the European Union as environmentally sustainable and for sustainability-linked bonds.

The Loan Market Association (LMA) also has a number of similar recommendations regarding bank lending. For example, according to the Green Loan Principles (GLP), green loans are any type of credit instrument and/or contingent lines (such as bond lines, guarantee lines or letters of credit) the proceeds or equivalent amount of which are used exclusively to finance, refinance or guarantee, in whole or in part, new and/or existing eligible green projects, and which comply with the four core components of the GLP.

4) Proper disclosure of information is an essential component of sustainable economic activity. Financing post-war reconstruction based on sustainable development principles should include both financial and non-financial reporting in accordance with international or European reporting standards. This means that, in addition to the usual IFRS requirements, companies must report in accordance with IFRS S1 and IFRS S2, or the relevant European Standards on Reporting (ESRS). Investors need to be confident that their funds are actually being directed towards sustainable economic activity.

Information should be disclosed not only about the impact of a particular economic activity on the environment, but also about how the environment affects that activity. This approach is known as "the concept of double materiality": companies must consider how sustainable development affects their financial performance, as well as how their activities affect society and the environment. This approach goes beyond traditional "financial materiality" (i.e., the impact of external factors on the company) and includes "impact materiality" (how the company impacts the world).

5) It is necessary to ensure that projects selected for funding are independently assessed for their actual impact on the environment. Similar to the already familiar external independent audit of financial

statements, independent verification of environmental, social, and governance (ESG) aspects of economic activity must be effective.

6) Unfortunately, on the path to sustainable economic activity, there is a risk of greenwashing, when companies claim to be more environmentally friendly than they actually are. In other words, this is the practice of creating a false impression about the environmental impact or benefits of a product, which can mislead consumers.

To prevent greenwashing, certain actions are permitted in the EU. First of all, it prohibits: general claims about the environmental performance of products without evidence; claims that a product has a neutral, reduced, or positive impact on the environment because the manufacturer offsets emissions; and sustainability labeling that is not based on approved certification schemes or established by public authorities. It is also envisaged to prohibit: advertising of products that have design features that may shorten the service life of the product, unfounded claims about durability in terms of time or intensity of use under normal conditions, as well as presenting products as repairable when they are not (Stopping greenwashing: how the EU regulates green claims. European Parliament, 2024).

7) For successful post-war reconstruction based on sustainable development, it is necessary to ensure that this process is supported by appropriate personnel. The concept of sustainable development is relatively new, and the vast majority of economic actors at the beginning of the second quarter of the 21st century do not yet have the necessary knowledge to successfully implement post-war reconstruction plans based on sustainability. Properly trained human capital is the key to successful post-war reconstruction. This involves not only providing appropriate training for employees of financial institutions, but also improving the financial literacy and awareness of sustainable economic development among employees in the real sector of the economy, who are the clients of financial institutions. It is necessary to raise awareness among the general public, because it is here that demand is generated for products that are characteristic of a sustainable economy (energy-efficient, water-efficient, environmentally friendly, characteristic of a circular economy, etc.), and it is the public that is the main driving force that politicians focus on when formulating and implementing their development programs. Civil servants and parliamentarians, on whom the implementation of incentives for post-war economic reconstruction, monitoring of reconstruction processes, and international co-operation on reconstruction largely depend, must also be adequately prepared.

8) Communication is an important component for the successful financing of post-war reconstruction based on sustainable development. It is necessary that not only investors are well informed about the progress of affairs, but also that the general public and the international community are informed about the plans and progress of reconstruction, successes, and possible challenges (risks). This approach is pivotal in garnering support from the public and the international community, thereby demonstrating the feasibility of implementing the planned strategy.

9) An essential component of successful post-war reconstruction is the absence of corruption schemes. This can be achieved through the introduction of appropriate anti-corruption legislation and effective monitoring of its implementation. Transparency and proper disclosure of information, as well as oversight by both professional auditors/verifiers and the general public, are essential tools for combating corruption schemes.

4. Possible Challenges/Risks in Post-War Economic Reconstruction Based on Sustainable Development

Post-war economic recovery based on sustainability is a complex and difficult process, which, as already mentioned, has a number of mandatory (key) components. In particular, this refers to the need for clear action plans for sustainable development and its financing, the establishment of an ESG risk management system, processes for selecting projects that meet sustainability criteria, special bank lending, as well as capital market instruments (bonds) and mandatory non-financial reporting. The preparation and implementation of each of these components is a challenge for a country that has recently been at war, as it requires adequate human resources, which are unfortunately lacking, as well as financial and other capabilities. In such a situation, the first piece of advice is to seek external financing and advisory assistance from reputable development institutions, such as the World Bank (WB) and the International Finance Corporation (IFC). The international expertise of these financial institutions, their thorough knowledge of other countries' practices, and their vast financial capabilities make co-operation with them effective in achieving the goals of post-war reconstruction based on sustainability.

In this article, the authors consider it appropriate to mention, first of all, the challenges and risks that may arise during post-war reconstruction and are caused by climate change and environmental degradation. As stated in the documents of the European Central Bank (ECB), physical damage caused by climate change and environmental degradation can have a significant impact on the real economy and the financial system (Guide on climate-related and environmental risks. ECB, Nov., 2020). In 2025, the European Banking Authority (EBA) published the

ESG Dashboard, which established a broader ESG risk monitoring system and provided centralised access to comparable climate risk metrics. This dashboard provided benchmarks and improved the assessment and monitoring of transitional and physical climate risks in the banking sector (ESG Dashboard. EBA, 2025).

Attempts by individual participants in the reconstruction process to engage in greenwashing may pose a challenge/risk for a country undergoing post-war reconstruction. To prevent greenwashing, the state and professional participants in the financial market should conduct appropriate information and awareness-raising activities among market participants. In addition, legislation aimed at preventing/eliminating greenwashing should be adopted. After all, the risk of greenwashing causes enormous damage to the process of sustainable economic development, undermining participants' trust in sustainable development and in specific participants, as well as causing direct financial and other material/physical damage to those involved in the process.

A huge challenge for post-war reconstruction is the shortage of human capital: a reduction in the number of people able to work due to those who have died, been injured or simply emigrated to other countries. In addition, changes in the balance of the workforce across regions are usually observed after a war. For example, according to expert estimates, as a result of full-scale aggression by Russia, Ukraine's working-age population will have shrunk by approximately 40% in 2024 compared to the pre-war period (The National Bank of Ukraine, The Ministry of Economy of Ukraine, 2025).

5. New Opportunities/Perspectives as a Result of Post-War Economic Reconstruction Based on Sustainable Development

The post-war reconstruction phase is invariably associated with the emergence of novel opportunities and prospects. Moreover, if reconstruction is carried out on the basis of sustainable development, it has been demonstrated that this can engender even greater opportunities for all participants in the process.

The amount of investment required for post-war reconstruction is usually enormous. For example, according to expert estimates, by the end of 2024, direct damage to Ukraine's infrastructure alone amounted to nearly 170 billion USD. The total cost of reconstruction and restoration in Ukraine is estimated at 524 billion USD, which is 2.8 times higher than Ukraine's nominal GDP for 2024 (Rapid assessment of damage and recovery needs RDNA4, 2025). Ukraine's reconstruction and restoration needs are highest in the following sectors (Updated assessment of Ukraine's needs for recovery and reconstruction, 2025):

– Housing sector (almost 84 billion USD);
– transport sector (almost 78 billion USD);
– energy sector and extractive industry (almost 68 billion USD);
– trade and industry sector (over 64 billion USD);
– agriculture sector (over 56 billion USD).

It should be noted that in all sectors, the costs of waste collection and management alone amount to almost 14.1 billion USD.

Unfortunately, the war in Ukraine continues, and it is currently impossible to determine the total amount of damage. Residential buildings, transport infrastructure and energy have suffered the most losses. Therefore, there is enormous potential in these areas for the development of decentralised energy (to replace centralised energy), renewable energy, green construction, resource efficiency (including energy and water efficiency), environmentally friendly transport, smart agriculture, etc.

Crowdfunding platforms offer promising prospects for post-war reconstruction based on sustainable development principles. The funds mobilised in this way can be used to finance projects based on sustainable development: in particular, the production of renewable energy, environmentally friendly products, investments in education, healthcare and other areas that combine financial and social benefits.

New prospects are opening up with the widespread use of innovative technologies, which are set to become one of the main drivers of post-war recovery.

6. Conclusions

To summarise the above, the following should be pointed out:

1) In the 21st century, post-war economic reconstruction based on sustainable development is the only correct solution, as this approach can ensure economic growth, competitiveness, and the economic and social well-being of those involved in the process. In addition, reconstruction requires significant financial resources, attracting foreign investment, and therefore taking into account the interests of international financial institutions, private equity funds, and individual private investors, who are now focused not only on the return on investment but also on ESG factors. They are prompted to do so by legal requirements, mandatory reporting standards, and image considerations. Being environmentally and climate conscious, caring about social issues and demonstrating good ESG practices is becoming increasingly popular, and ultimately this approach to investing is becoming more financially profitable.

2) Post-war economic reconstruction, while opening up enormous and unique opportunities, is not an easy process. It requires a detailed study of the experience of other countries, the characteristics of the national economy and national sustainable

development goals. Therefore, for successful economic recovery, it is advisable to attract not only foreign investment but also international advisory assistance. Utilising the knowledge and experience of leading international development institutions (e.g., IBRD, IFC, EBRD) greatly facilitates the post-war recovery process.

3) Successful post-war economic recovery based on sustainable development must be supported by detailed action plans (roadmaps) at both the national and local government levels. It is extremely important that regulatory documents governing the country's financial sector (primarily the banking services market and capital market) provide for the development of sustainable financing, ESG risk management and the prevention of greenwashing. Given the limited time and resources available, it is advisable to identify priority areas for post-war reconstruction.

4) The experience of past decades proves the importance of anti-corruption practices in post-war reconstruction. Proper disclosure of information, mandatory financial and non-financial reporting, and the involvement of an independent third party to evaluate projects selected for funding and their results are essential elements of effective post-war reconstruction.

5) Rebuilding the economy on the principles of sustainable development brings new opportunities and prospects: new projects, industries and market segments are emerging. This requires additional knowledge and new investments. Digital technologies and artificial intelligence capabilities are increasingly being used. Post-war reconstruction projects should focus on resource efficiency (including energy and water efficiency), the effective use of limited human resources, take social aspects into account as much as possible (be inclusive), provide for the development of a circular (closed-loop) economy, as well as environmental protection and biodiversity development.

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