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Advancing sustainable reconstruction in Ukraine after full scale invasion: utilizing a “green” economic approach and essential guidelines for successful implementation

ABSTRACT: Study examines the potential for post-war reconstruction in Ukraine, emphasizing the role of contemporary “green” technologies and the involvement of Ukrainian political entities. With Ukraine’s partial integration into the European sphere, effective reconstruction post-military operations is seen as mutually beneficial for Ukraine and the EU. The study argues for a commitment from Ukrainian politicians to uphold high standards of professionalism and ethics. Methodologies include an analysis of existing publications on post-war reconstructions and a SWOT analysis focusing on the strengths and weaknesses of the current governance policy in Ukraine. Secondary information, such as survey results on public and business concerns about the ability of pro-government

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politicians to carry out “green” post-war reconstruction, is also considered. Findings suggest that the post-war reconstruction plan advocates for the integration of “green” technologies like renewable energy equipment production and biofuels. However, successful implementation requires addressing issues such as high corruption levels, potential misuse of funds, a lack of professionals, and political lobbying for traditional energy sectors. To address these problems, the study proposes criteria for evaluating the qualifications of candidates for positions in the Verkhovna Rada, aiming to establish an ideal standard for politicians with the necessary skills to guide Ukraine’s economy reconstruction. The achievement of eco-energy optimization is one of the most important tasks in the conditions of the post-war reconstruction of the economy. A model of “green” reconstruction of Ukraine is constructed based on systematic changes in government structures and reforms in climate and environmental policy.

KEYWORDS: sustainable reconstruction, “green” technologies, strategic analysis, eco-energy optimization

Introduction

Presently, Ukraine is facing the invasion of the Russian Federation and the occupation of a significant portion of its territory. The military actions have resulted in the extensive destruction of residential buildings, industrial facilities, and the pollution of the country’s territory with various types of waste due to direct combat operations and widespread missile strikes across the nation.

In these challenging circumstances, new demands are placed on the Ukrainian political landscape, which must now focus on effective governance and preserving and promoting Ukrainian values and ideas. Additionally, it plays a crucial role in disseminating credible information about the military actions and crimes committed by Russian forces on Ukrainian soil, as well as in seeking assistance for the country’s reconstruction. Increasing the volume of foreign aid and restoring and enhancing investment flows depend on a consistent state policy and the consolidation of efforts by governing leaders in addressing key issues of reconstruction and national development.

Considering the damage caused by military actions to the environment and climate, Ukraine needs a “green” reconstruction. Most Ukrainian and European experts are inclined to believe that when the war ends, reconstruction with environmental sustainability at the core is needed because this is the only way to ensure prosperity in the long term.

The EU has expressed and continues to declare its comprehensive support for Ukraine’s rapid “green” reconstruction after the war. Specifically, on September 5, 2022, the 8th meeting of the Ukraine-EU Association Council took place in Brussels, where the necessity of achieving Ukraine’s “green” transition within the reconstruction efforts was emphasized. The Association Council endorsed the steps Ukraine has taken in the reform process, particularly the positive advancements in combating corruption and fraud, money laundering, and the rule of law. It also urged Ukraine to continue its efforts to sustain the achieved results.

Supporting reconstruction in these new crisis conditions will be contingent on implementing reforms that ensure the rule of law, resilient democratic institutions, reduced oligarch influence, and strengthened anti-corruption measures aligned with Ukraine's European path. To accomplish this, further steps are needed from the Ukrainian side to engage a new formation of political leaders characterized by high moral values and professionalism, especially in the realm of a "green" economy.

In essence, achieving the "green" reconstruction goals requires Ukraine to continue striving for elevated moral values and professionalism in its political leadership, thus aligning with the EU's objectives and ensuring a successful transition towards a sustainable future.

1. Literature review

The primary emphasis within the post-war reconstruction literature revolves around the security and political aspects inherent in peace-building operations. The majority of scholarly exploration in this domain is constrained to the realms of history, political science, and public policy, as noted by Coyne in 2007.

The inaugural instance of international post-war reconstruction took place in Austria following the culmination of the First World War. Spearheaded by the League of Nations, this effort drew inspiration from the endeavors and recommendations of an economic commission dedicated to investigative work. The process of reconstructing Austria involved the temporary halt of reparation payments, the instigation of economic restructuring, and the designation of a High Commissioner responsible for overseeing the nation's economic affairs. A comparable yet less extensive initiative unfolded subsequently in Hungary. Moreover, during the interwar period, the third global reconstruction program centered on facilitating the repatriation of ethnically Greek individuals who had been displaced from Turkey subsequent to the 1922 conflict, as highlighted by Williams in 2005.

The most remarkable endeavor in the realm of post-war reconstruction unfolded following the Second World War. Amongst all the reconstruction initiatives, the Marshall Plan shines as an exemplar of success. This plan encompassed a substantial transfer of \$13.3 billion in aid from the United States to Western Europe, with the overarching goals of boosting production, fostering the growth of international trade, bolstering internal financial stability, and promoting the advancement of economic cooperation across Europe. This pivotal achievement was noted and documented by Lewarne and Snelbecker in 2004.

In contemporary times, global institutions like the World Bank Group and the International Monetary Fund (IMF) engage in systematic procedures aimed at enhancing the social, economic, and infrastructural conditions of nations ravaged by conflict. These entities facilitate the access of countries to financial resources and expertise, enabling them to embark on post-war reconstruction endeavors. This collaborative approach enables war-affected countries to secure

both financial support and valuable insights to facilitate their recovery, as emphasized by KPMG-Ukraine in 2022. Zakharchenko (2022) emphasizes the importance of the restoration of Ukraine by means of a neo-economy.

In the contemporary context, the revitalization of Ukraine's economy after a period of conflict should be founded on the tenets of a circular economy. This approach aligns with the principles outlined in the Green Deal and underscores the integration of novel technologies (Shvedun et al. 2023; Logosha et al. 2023). The importance of the development of a "green" economy is highlighted in the works of Skydan et al. (2022), Shpykuliak and Bilokinna (2022), Kaletnik and Lutkovska (2020), Pryshliak et al. (2021). Waste-free technologies and waste reuse as components of a "green" economy were investigated by Kaletnik et al. (2020), Tokarchuk et al. (2020), Bulgakov et al. (2020).

The state of progress regarding the circular economy in Ukraine holds significance in light of the aggression perpetrated by the Russian Federation against Ukraine. This aggression has resulted in the destruction of vital infrastructure, including critical components, leading to a severe shortage of energy resources, particularly during the winter season (Shvedun et al. 2023).

An effective process of post-war reconstruction is marked by extensive coordination. To achieve this objective, the establishment of various mechanisms, including metis, expectations, and the political order, becomes crucial. These mechanisms play a pivotal role in reshaping the dynamics of interactions by emphasizing cooperative aspects within social, economic, and political spheres, thereby outweighing conflict-oriented elements (Cowen and Coyne 2005).

The process of reconstruction is inherently intertwined with politics, as highlighted by Brown in 2018. Additionally, Hamilton's work in 2020 delves into the connection between the progression and establishment of Iraq's political arrangement after 2003, elucidating how this has influenced the motivations encountered by decision-makers when executing economic policies. In the examination of post-war reconstruction in Afghanistan, Surke, in 2007, observed that the outcome was not completely successful. Notably, under the control of political elites and warlords, informal enterprises continue to wield substantial influence within the economy.

Bereziuk et al., 2020 investigate the phenomenon of political power in Ukraine. Researchers are currently addressing several challenges concerning Ukrainian politicians in the context of post-war reconstruction. Jenkins (2023) directs attention toward corruption concerns and underscores the imperative of establishing transparency, fostering competitive strategies, and instituting effective oversight mechanisms within reconstruction endeavors. On the other hand, Rudolph and Eisen (2022) express apprehensions about the substantial consolidation of power within the Office of the President, noting that this concentration facilitates informal decision-making that tends to favor influential entities and sidestep democratic checks and balances.

In light of the EU's support and commitment to Ukraine's "green" transition, further research and discussion are warranted to identify the specific policy measures, funding mechanisms, and international partnerships required to realize a successful "green" post-war reconstruction in Ukraine. The imperatives and challenges of adopting "green" technologies and practices within a complex political and economic landscape necessitate a holistic approach that encompasses multiple disciplines and stakeholders. Consequently, this study aims to contribute to the ongoing

discourse by shedding light on the potential of a “green” economy as a pathway to building a sustainable future for Ukraine’s post-war reconstruction.

2. Aim of the research

The purpose of this study is to (1) identify the specific characteristics of post-war reconstruction in Ukraine and the role of Eurointegration processes and “green” initiatives; (2) conduct an analysis of the current governance policy in Ukraine in the implementation of the Ukraine Recovery Plan and develop criteria for selecting candidates for leadership positions in the country (in particular, members of parliament), which will bring to power professionals who will be able to ensure post-war reconstruction based on “green” economy principles; (3) investigate the achievement of eco-energy optimization in the post-war economic reconstruction on the principles of the “green” economy and (4) construct a model of “green” reconstruction of Ukraine.

3. Results and discussions

Post-war economic reconstruction in any country is an immensely complex process. Key considerations for initiating post-crisis recovery include assessing the damage caused by military actions, natural disasters, or technological accidents, identifying needs (with priority setting), and detailing all necessary actions. At the country level, this entails comprehensive recovery plans and the supervision and control of relevant processes, with a clear distribution of responsibilities between governmental and sectoral structures. Notably, it involves determining possible sources of funding and making urgent legislative and regulatory changes. At the city and regional levels, it involves approving master plans and other accompanying documentation.

In addition to the unprecedented destruction caused by the Russian aggressor in recent decades, a distinctive feature of Ukraine’s post-war reconstruction is its consideration as an integral part of the master plan for integration into the EU. During the Ukraine-EU meeting on September 5, 2022, the energy component of Ukraine’s “green” economy was discussed, and the Association Council welcomed the successful synchronization of Ukraine’s power grid with the continental European network. The parties acknowledged the commencement of commercial electricity exchange between Ukraine and the EU and hailed the gradual increase in electricity trade on equal terms and compatible environmental and safety standards. The meeting participants emphasized the necessity of reducing dependence on Russian resources, nuclear fuel, and technologies.

On January 9, 2022, Frans Timmermans, the Executive Vice-President of the European Commission, held productive meetings with the President of Ukraine, the Prime Minister, and other officials in Kyiv. Among other topics, they discussed Ukraine’s recovery through green technologies, the European Green Deal, the environmental impact of the war, and the EU’s assistance in developing the environmental sector in Ukraine.

During the International Conference in Lugano, Switzerland, on July 4, 2022, Prime Minister Denis Shmyhal presented the Ukraine Recovery Plan (Fig. 1).

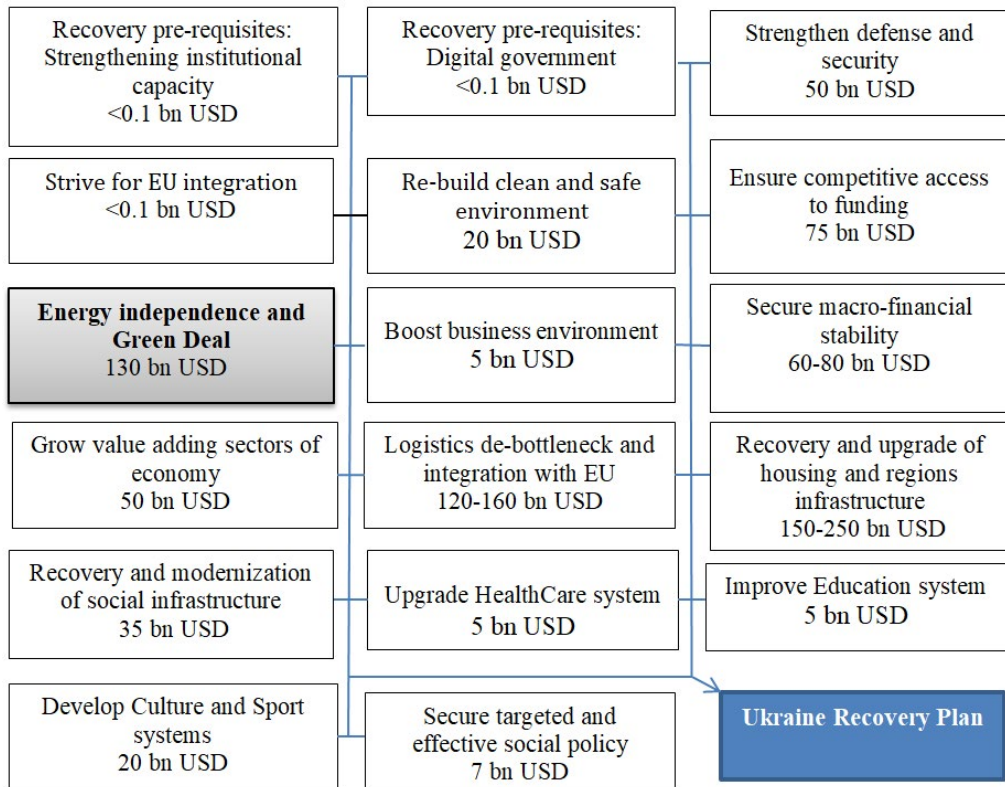


Fig. 1. Components of Ukraine Recovery Plan

Source: formed by the authors based on the data from Ukraine Recovery Plan (2022)

Fig. 1. Elementy Planu Odbudowy Ukrainy

The plan encompasses a series of national programs for reconstruction, with a significant focus on Energy Independence and the Green Course, as well as the Restoration of a Clean and Protected Environment. The Energy Independence and Green Deal program includes several key initiatives:

- ◆ Localizing the production of Renewable Energy Sources (RES) equipment, such as towers, transformers, cables, electrolyzers, and Li batteries.

- ◆ Testing and developing H2 (hydrogen) transport infrastructure.
- ◆ Modernizing gas transmission and distribution networks to reduce methane emissions.
- ◆ Expanding hydro and pumped hydro capacities by 3.5 GW.
- ◆ Establishing over 30 GW of RES capacity for H2 production.
- ◆ Developing biofuels (bioethanol, biodiesel, biomethane, biomass) production from agricultural produce, residues, and waste.

In line with the Eurointegration processes, a portion of the resources for post-war reconstruction, accumulated through Ukraine's efforts and assistance from international partners, will need to be allocated to institutional reforms. Personal and professional qualities of governing political forces, responsible for implementing the Ukraine Recovery Plan, will play a crucial role in this endeavor.

Another issue in the domestic political scene is the abuse of power and the lack of professionalism among the top leadership, which ultimately hampers the effectiveness of reforms in Ukraine and fosters corruption within the country's political culture. Corruption has a negative impact on the functioning of the economic mechanism and undermines the sociopolitical climate. Despite a considerable list of implemented measures, the corrupt element continues to destabilize state institutions and civil society.

To compare the situation regarding the perception of corruption and the rule of law, four countries were selected: Georgia, which shares a post-socialist past with Ukraine; Poland, which had a similar level of economic development at the beginning of the "transition" as Ukraine; and two European countries that hold leading positions in the post-industrial world – Denmark and Germany. The example of Georgia demonstrates that the establishment of a rule of law state depends directly on an effective anti-corruption policy, starting from the pivotal events in the country known as the "Rose Revolution" in 2003. The main reform directions included decentralization of power, eradicating tolerance towards corruption, and a focus on replacing the bureaucratic layer of public servants with younger individuals. These directions yielded positive results and should be considered by the Ukrainian government, as it is responsible for reforms and should actively work in this direction. Georgia achieved success in combating corruption at lower levels of authority. However, it has not been able to overcome "elite corruption". In recent years, corruption perception index indicators in Georgia have shown a slight decrease but still remain higher than those of Ukraine.

Poland, being a geographically and mentally close neighbor, also had its history of building a new state structure. Since 2019, Poland's Corruption Perception Index has shown a slight decrease, but the country continues to outperform Ukraine by more than 80 positions. High achievements in state development were accomplished through a focus on small and medium businesses' growth rather than nurturing a large bourgeoisie from the remains of Soviet-era industrial enterprises bought for a pittance, which reflects the current realities in Ukraine.

According to Transparency International's research in 2021, Ukraine scored 32 out of 100 possible points on the Corruption Perceptions Index and ranked 122nd out of 180 countries (Fig. 2).

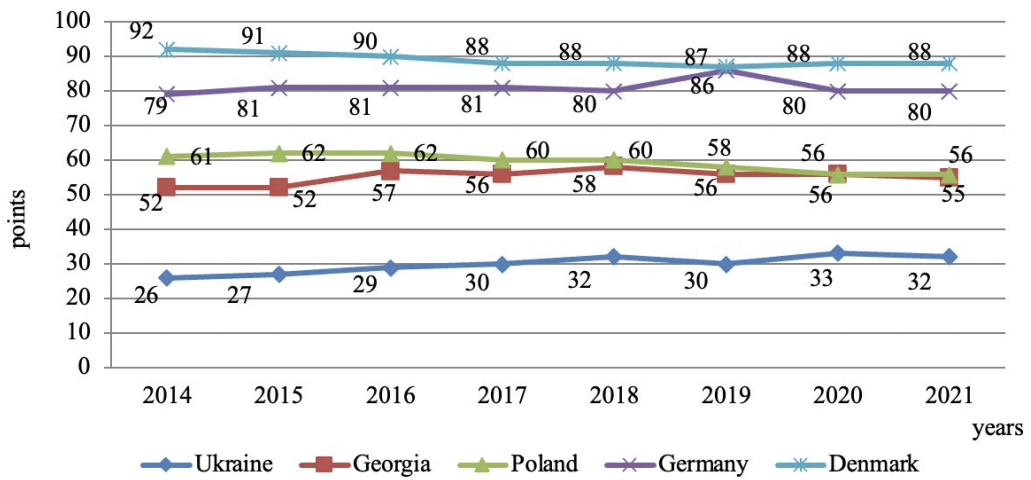


Fig. 2. Dynamics of the Corruption Perceptions Index (100 – maximum) in Ukraine and selected European countries
Source: formed by the authors based on Transparency International Ukraine (2022)

Rys. 2. Dynamika Wskaźnika Percepcji Korupcji (100 – maksymalnie) na Ukrainie i w wybranych krajach Europy

Regarding the Rule of Law Index, in Ukraine, during the analyzed period (2011–2021), its maximum value was 0.51 out of 1.00 (maximum) in 2020 and 2021 (Fig. 3). This indicates significant room for improvement in upholding the rule of law within the country. The fluctuations in the index over the years highlight the challenges faced by Ukraine in establishing a robust and consistent legal framework that ensures the equal protection of rights and justice for all citizens. Moreover, the relatively low score in the Rule of Law Index raises concerns about the effective-

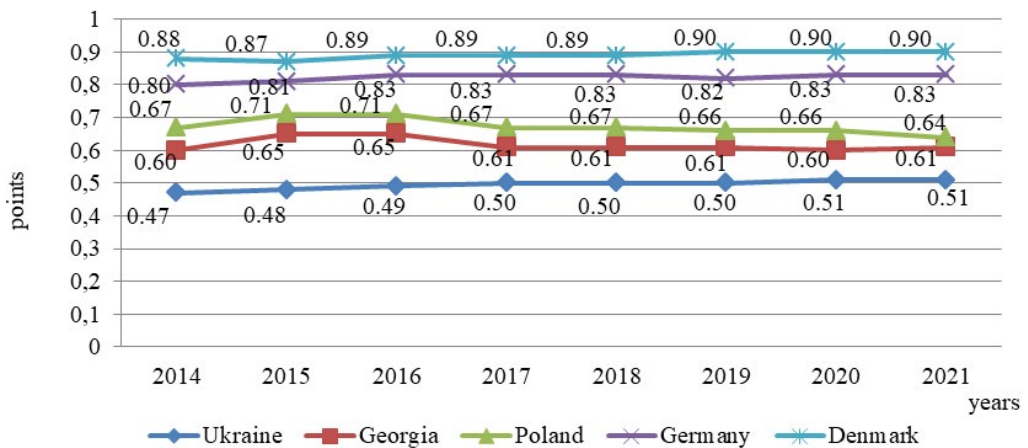


Fig. 3. Dynamics of the Rule of Law Index (1 – maximum) in Ukraine and individual European countries
Source: formed by the authors based on the data from World Justice Project (2022)

Rys. 3. Dynamika wskaźnika praworządności (1 – maksymalna) na Ukrainie i w poszczególnych krajach europejskich

ness of legal institutions and the enforcement of laws, which can hinder socio-political stability and economic development.

To achieve substantial progress in both the Rule of Law Index and the Corruption Perceptions Index, Ukraine must prioritize comprehensive legal reforms, enhance the independence and efficiency of its judicial system, and actively combat corruption at all levels of governance. Implementing measures to promote transparency, meritocracy, and public trust in institutions will be crucial for building a just and equitable society, fostering sustainable development, and aligning with the European values of democracy and the rule of law.

Based on the dynamics of the indicators' data, Ukraine has been in a state of “stagnation” over the past few years.

For the effective functioning of the newly elected government amidst post-war reconstruction, attention should be given to changing the political culture of future (potential) candidates.

Transparency International Ukraine (2023) has published the results of a sociological survey conducted by the research agency Info Sapiens on behalf of the USAID Project “VzaemoDia” (“Supporting Leadership of Organizations in Countering Corruption in Ukraine”). The survey was carried out among the population and representatives of Ukrainian businesses regarding their needs and expectations for the future reconstruction of Ukraine.

Among the main concerns of Ukrainians regarding the future reconstruction, corruption takes the first place among other potential risks. Specifically, 73% of Ukrainians and 80% of business representatives are most worried about the return of corrupt practices in the reconstruction processes. Additionally, 63% of citizens and 73% of entrepreneurs fear the lack of control and, consequently, the embezzlement of public funds. Both business (45%) and the population (55%) mentioned concerns about the return of hostilities in third place. Worries about the absence of professionals in the government take fourth place for the population and fifth place for business,.

In the upcoming post-war reconstruction phase in Ukraine, there are increasing demands for both professional and personal qualities among the political leadership. The effectiveness of their managerial activities greatly depends on the professionalism and competence of individuals holding positions in the government, that is, their understanding of the processes they oversee.

The problem of a low level of professionalism within the Ukrainian government during the reconstruction period could become a significant inhibiting factor. Quite often, key positions in the government or parliamentary mandates are given to individuals lacking the necessary foundational professional knowledge and relevant experience.

Today, among the companies involved with representatives of the legislative power, there are enterprises in the processing industry, energy, transportation, trade, information, and telecommunications sectors. When a parliament member takes office, they are obligated to transfer management rights to another person who is not a family member and divest from their business structures. However, in practice, this requirement is not fulfilled due to the imperfections in Ukrainian legislation. The “Law of Ukraine on Prevention of Corruption” (2014) does not stipulate the possibility of criminal or administrative penalties in such cases. The only consequence for a deputy is the possibility of facing disciplinary action. Consequently, the response to

such obligations is rather weak and inconsistent, allowing offenders to continue exercising their legislative functions.

Due to the disregard for ethical norms and principles of integrity, which should be fundamental characteristics of today's public servants, many individuals in high-level politics often get involved for the purpose of advancing their own business interests, in other words, lobbying for business concerns.

In many developed countries, lobbying is considered a legitimate phenomenon that connects the state and civil society, serving as a mechanism that regulates lawmaking activities. However, in Ukraine, this phenomenon has a purely negative connotation due to its association with violations of anti-corruption legislation. This explains the significant number of entrepreneurs among the members of the Verkhovna Rada (Ukrainian parliament).

The lobbying by representatives of traditional energy sectors in positions of power is of particular concern, as this could pose a threat to Ukraine's reconstruction plans based on the principles of a "green" economy.

A SWOT analysis has been conducted to analyze current trends and identify necessary steps for enhancing the effectiveness of governance at different levels. This analysis aims to explore the strengths and weaknesses of the Ukrainian political landscape (Table 1).

The main reason for the existence of a large number of threats and weaknesses in the Ukrainian political landscape is the absence of a clearly defined ideology in society. This is caused by the diversity of political forces that have come to power in Ukraine, systematically changing one another and having different visions of the state's development and the involvement of the public in these processes. Currently, we have a pro-presidential coalition, which could become a significant foundation for shaping a unified course of state development. Additionally, opportunities and strengths are influenced by the European integration processes taking place in our country and the decentralization reform, which opens up new prospects for regional and national development.

One of the main threats to the domestic political landscape is the low level of professionalism among government representatives. In the conditions of post-war reconstruction, there is a need for experts who are adaptable to innovations and have an understanding of the development of the "green" economy, as this direction has been taken as the basis for Ukraine's reconstruction.

For the successful implementation of the tasks set in the Economic Recovery Plan, it is necessary to have a broader representation of professions such as economists, financiers, energy experts, and scientists both in the government and in the Verkhovna Rada of Ukraine (the parliament).

At the same time, the question of the procedure and mechanism for evaluating candidates for deputies of the Verkhovna Rada of Ukraine remains open. We propose a brief description of the procedure for analyzing the candidate's compliance with the position of a parliamentary deputy and their ability to carry out legislative activities in accordance with the requirements of the existing legislation (in case of full compliance with the requirements of the Law of Ukraine "On the Status of People's Deputies of Ukraine" (Fig. 4).

TABLE 1. SWOT analysis of the current governance policy in Ukraine in the implementation of the Ukraine Recovery Plan

TABELA 1. Analiza SWOT bieżącej polityki zarządzania na Ukrainie w realizacji Planu Odbudowy Ukrainy

Strength	Weaknesses
<p>1. Desire to implement reforms in all branches of power (legislative, executive, judicial), achieved through numerous reforms and the digitalization of the state. This includes the implementation of initiatives like “Diia” – the “State in a Smartphone” mobile application, allowing access to and storage of personal documents, and electronic identification. Another example is “ProZorro” – an online platform for public procurement through tender announcements.</p> <p>2. Having a majority in the Verkhovna Rada from the pro-presidential faction, which facilitates the swift enactment of laws and their subsequent signing by the President.</p> <p>3. Maintaining a close dialogue with Western partners, which has been further strengthened amidst the conditions of martial law.</p> <p>4. Ensuring active engagement with the public, as evidenced by the President’s daily addresses and the transparent workings of the Verkhovna Rada.</p>	<p>1. Lack of dialogue between the ruling coalition and the opposition (the opposition is poorly represented in the Verkhovna Rada).</p> <p>2. Inadequate knowledge and experience of the deputies (over 80% of the 9th convocation deputies (323 individuals) obtained their mandates for the first time), and a lack of professional diversity among them.</p> <p>3. Influence on media operations (support and “advertisement” of parliamentarians by owners of television channels and periodicals).</p> <p>4. Utilization of administrative resources to achieve political goals.</p> <p>5. Lack of willingness from the ruling coalition to compromise with opposition parties.</p> <p>6. Lobbying by politicians for their own business interests in the traditional energy sector, which hinders progress in the “green” direction of reconstruction.</p>
Opportunities	Threats
<p>1. Youthful rejuvenation of power: The average age of deputies in the 9th convocation of the Verkhovna Rada is 40 years, the youngest in Ukraine’s history. The current President was elected at the age of 41, while previous Presidents were Kravchuk L. – 57 years, Kuchma L. – 56 years, Yushchenko V. – 51 years, Yanukovych V. – 60 years, and Poroshenko P. – 49 years. This ensures that the organs of state power are enriched with creative and innovative individuals.</p> <p>2. Efforts to create a democratic and humane society: There is a push to discard the post-Soviet mentality and choose the path of European integration.</p> <p>3. Gradual “cleansing” of the government from corrupt politicians: Steps are being taken to remove politicians involved in corrupt practices.</p> <p>4. Prohibition of political forces with pro-Russian interests: Activities of 12 political parties with pro-Russian interests have been banned based on evidence of their destructive activities. Pro-Russian deputies have been stripped of their mandates, and pro-Russian representatives have been dismissed from the Government.</p> <p>5. Inclusion of professionals from various fields among deputies: The Verkhovna Rada includes professionals with diverse expertise, enabling informed decision-making and effective committee work.</p> <p>6. High percentage of deputies with higher education: 97% of deputies have higher education qualifications.</p>	<p>1. The single-party majority and coalition in the Verkhovna Rada (254 out of 424 deputies from the “Servant of the People” party) can lobby for their own interests, potentially leading to a concentration of decision-making power within the Presidential hierarchy.</p> <p>2. Corruption, which will not disappear with the renewal of the Verkhovna Rada, the composition of the Government, and the judiciary.</p> <p>3. Unjustified decision-making by deputies and the government due to a lack of necessary education and experience.</p> <p>4. Inadequate professional representation of the Verkhovna Rada deputies and Government officials, given the increasing demands for expertise in various fields during the post-war reconstruction period (economists, financiers, energy experts, etc., who are poorly represented in the parliament and the Government).</p> <p>5. A sense of being “above the law”, with a distorted perception of power as a means to achieve personal goals rather than working for the benefit of society.</p> <p>6. Misuse of funds intended for post-war state reconstruction due to incompetence within the Government and Verkhovna Rada, as well as corrupt schemes.</p>

Source: formed by the authors.

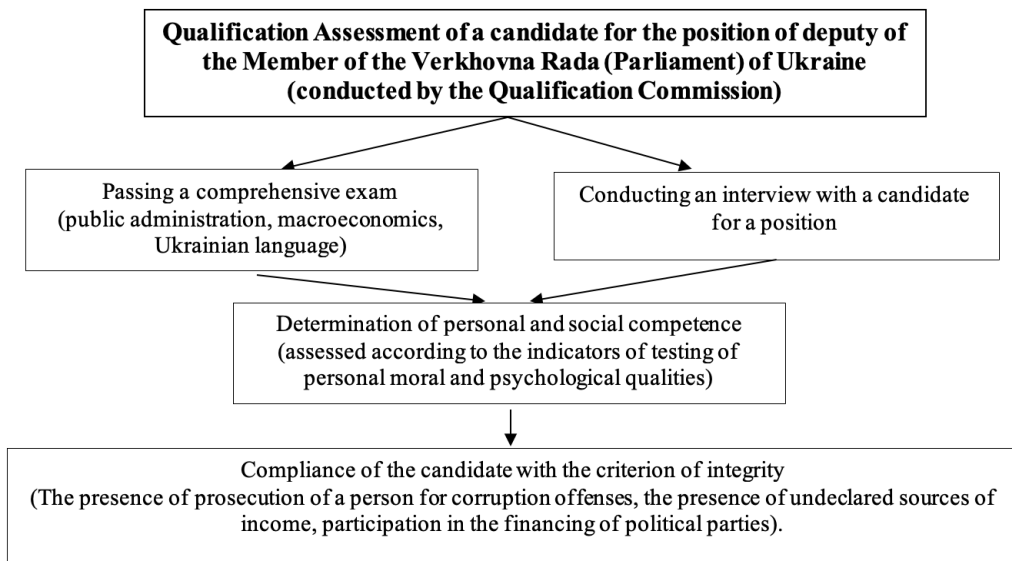


Fig. 4. Criteria for Qualification Assessment of Candidates for the Position of Member of the Verkhovna Rada (parliament) of Ukraine

Source: formed by the authors

Rys. 4. Kryteria oceny kwalifikacji kandydatów na członka Rady Najwyższej (parlament) Ukrainy

Therefore, the most important criteria during the assessment of candidates should be their professional capacity and competence, as well as their alignment with the criterion of integrity. To collect information regarding the latter criterion, a Council on Integrity can be involved, comprising members from civil society organizations, academics, human rights activists, and international experts. The Council on Integrity gathers and analyzes information and provides an evaluation of the candidate's level of professional ethics and integrity to the qualification committee, aiming to facilitate its work and reduce the level of subjectivity in judgments.

A politician with the necessary professional and moral characteristics will achieve at least two types of synergistic effects in their professional activities – intellectual and resource-based (Fig. 5).

This will effectively enhance the efficiency of managerial processes at various levels, ultimately leading to socio-economic growth within the country and facilitating the successful implementation of the Ukraine Reconstruction Plan based on the principles of the “green” economy.

To achieve its full potential at the national level, it is necessary to optimize its individual components. In the context of post-war economic reconstruction on the principles of the “green” economy, achieving eco-energy optimization is one of the most crucial tasks. This is because military actions result in significant destruction, the generation of large amounts of waste, and a shortage of energy resources due to damage to energy infrastructure. The factors influencing the attainment of eco-energy optimization include aspects such as the choice of raw materials for fuel production (favoring waste) and methods of processing and final consumption (Fig. 6).

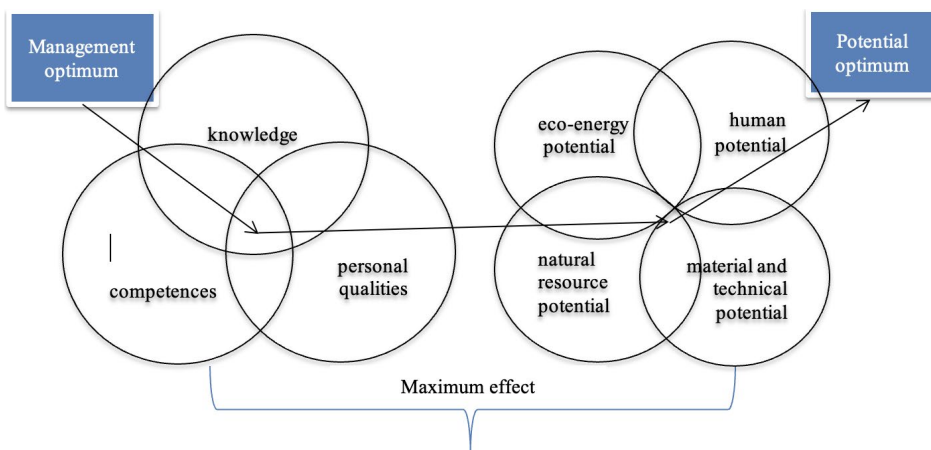


Fig. 5. Synergistic effect in the managerial activities of exemplary political leaders during the reconstruction of the economy based on “green” principles
Source: formed by the authors

Rys. 5. Efekt synergiczny w działaniach zarządczych wzorowych przywódców politycznych podczas przebudowy gospodarki w oparciu o „zielone” zasady

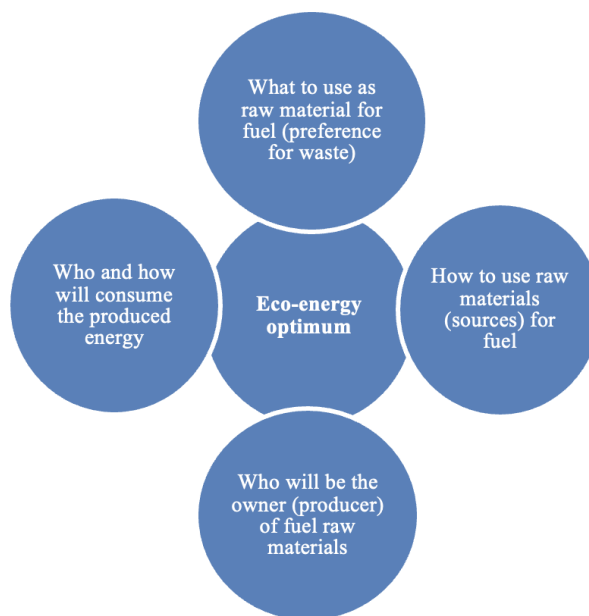


Fig. 6. Factors influencing the achievement of eco-energy optimization during “green” economic reconstruction of Ukraine
Source: formed by the authors

Rys. 6. Czynniki wpływające na osiągnięcie optymalizacji ekoenergetycznej podczas „zielonej” przebudowy gospodarczej Ukrainy

By properly addressing these aspects and focusing on “green” principles, Ukraine can pave the way for a sustainable and ecologically responsible recovery that will lead to long-term social and economic prosperity.

The presence of professionals in the government will be instrumental in helping Ukraine achieve eco-energy optimization as a component of the “green” economy, characterized by minimizing ecological pollution and ecosystem destruction while simultaneously obtaining the necessary energy resources for the most efficient and environmentally friendly economic recovery of the country (Fig. 7).

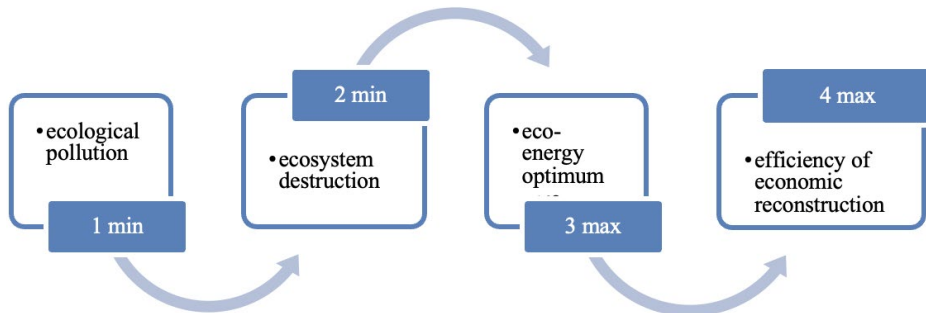


Fig. 7. Structure of eco-energy optimization and its impact on the economic reconstruction of Ukraine based on “green” principles
Source: formed by the authors

Rys. 7. Struktura optymalizacji ekoenergetycznej i jej wpływ na odbudowę gospodarczą Ukrainy w oparciu o „zielone” zasady

In conclusion, the presence of competent professionals in positions of power is crucial for Ukraine’s successful transition to a green economy and for achieving eco-energy optimization during the process of economic reconstruction. These skilled individuals will play a pivotal role in formulating and implementing policies that prioritize sustainable practices, resource efficiency, and environmental protection.

By leveraging the expertise of these exemplary political leaders, Ukraine can effectively minimize ecological harm and preserve its precious ecosystems while harnessing renewable energy sources to drive economic growth. This synergy between ecological consciousness and energy optimization will pave the way for a greener and more resilient economy and contribute to a healthier and more sustainable future for the nation.

Furthermore, the expertise of these political leaders will enable effective communication and collaboration with international partners and donor countries. This will facilitate access to funding, knowledge exchange, and technological advancements, ultimately enhancing Ukraine’s ability to build back better and emerge as a model for environmentally conscious economic development.

In summary, a model of the “green” post-war reconstruction of Ukraine was built, which takes into account possible progressive changes in political circles and the maximum use of “green” technologies in all spheres (Fig. 8).



Fig. 8. The architecture of the green reconstruction model of Ukraine

Source: formed by the authors

Rys. 8. Architektura modelu zielonej przebudowy Ukrainy

Conclusions

As Ukraine faces post-war reconstruction and strives to align with European standards, the significance of effective governance and capable leadership cannot be overstated. This study emphasizes the critical role of political competence and integrity in shaping the country's recovery plan. By evaluating the attributes of political representatives and addressing potential conflicts of interest, Ukraine can pave the way for a prosperous and sustainable future.

As a result of the investigation, such conclusions have been delivered:

(1) Post-war reconstruction in Ukraine is seen as an opportunity to align the country with EU rules and standards, especially in the development of "green" technologies, embracing the principles of the European Green Deal, such as moving away from fossil fuels (primarily coal), reducing CO₂ emissions, improving energy efficiency, and minimizing energy loss.

(2) SWOT analysis of the current governance policy in Ukraine in the implementation of the Ukraine Recovery Plan showed weaknesses and threats, including corruption and a low level of professionalism in the government. The proposed investment in skilled and environmentally aware political leaders will be a catalyst for Ukraine's journey towards a prosperous and sustainable future, where economic growth goes hand-in-hand with ecological responsibility and resource efficiency. Combining knowledge, expertise, and high moral standards in Ukrainian politicians will lead to a synergistic effect, optimizing the management and potential of various macro-level aspects (ecological-energy, natural-resource, human, and material-technical), which will be instrumental in realizing Ukraine's recovery plan.

(3) Eco-energy optimization is considered to be an important task for the future economy of Ukraine, and its impact on the economic reconstruction of the country, which is based on “green” principles, is significant.

(4) The proposed model of the post-war reconstruction of Ukraine is the necessary collective effort through which Ukraine can truly realize the vision of a thriving “green” economy that benefits its citizens and sets an inspiring example for the global community.

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Postępy w zrównoważonej odbudowie Ukrainy po inwazji na pełną skalę: wykorzystanie „zielonego” podejścia gospodarczego i niezbędnych wytycznych dla pomyślnego wdrożenia

Streszczenie

W opracowaniu zbadano potencjał powojennej odbudowy Ukrainy, podkreślając rolę współczesnych „zielonych” technologii i zaangażowanie ukraińskich podmiotów politycznych. W obliczu częściowej integracji Ukrainy ze sferą europejską skuteczne operacje powojenne w zakresie odbudowy są postrzegane jako obustronnie korzystne dla Ukrainy i UE. Badanie przemawia za zobowiązaniem się ukraińskich polityków do utrzymywania wysokich standardów profesjonalizmu i etyki. Metodologie obejmują analizę istniejących publikacji na temat powojennych rekonstrukcji oraz analizę SWOT skupiającą się na mocnych i słabych stronach obecnej polityki rządów na Ukrainie. Uwzględniane są także informacje wtórne, takie jak wyniki ankiet dotyczących obaw społecznych i biznesowych dotyczących zdolności prorządowych polityków do przeprowadzenia „zielonej” powojennej odbudowy. Ustalenia sugerują, że powojenny plan odbudowy opowiada się za integracją „zielonych” technologii, takich jak produkcja sprzętu wykorzystującego energię odnawialną i biopaliwa. Pomyślne wdrożenie wymaga jednak zajęcia się kwestiami takimi jak wysoki poziom korupcji, potencjalne niewłaściwe wykorzystanie funduszy, brak specjalistów i lobbing polityczny na rzecz tradycyjnych sektorów energii. Aby rozwiązać te problemy, w opracowaniu zaproponowano kryteria oceny kwalifikacji kandydatów na stanowiska w Radzie Najwyższej, mając na celu ustalenie idealnego standardu dla polityków posiadających umiejętności niezbędne do kierowania odbudową gospodarki Ukrainy. Osiągnięcie optymalizacji ekoenergetycznej jest jednym z najważniejszych zadań w warunkach powojennej odbudowy gospodarki. Model „zielonej” przebudowy Ukrainy budowany jest w oparciu o systematyczne zmiany w strukturach rządowych oraz reformy polityki klimatycznej i środowiskowej.

SŁOWA KLUCZOWE: zrównoważona odbudowa, „zielone” technologie, analiza strategiczna, optymalizacja ekoenergetyczna