Post-war recovery of Ukraine: rebuilding for a better future

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This analysis paper and recommendations were developed as part of the “Green Recovery: Rebuilding for a Better Future” initiative. The document is intended to be used by specific sectoral ministries and other official structures, as well as representatives of local government and authorities for management of amalgamated territorial communities for explanations regarding the proper implementation of green agenda in the sectoral and territorial/local plans for the post-war reconstruction efforts in Ukraine.

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The Ukrainian National Platform of the Eastern Partnership Civil Society Forum (http://eap-csf.org.ua) is a network of more than 140 non-governmental organizations in Ukraine that advocates Ukrainian interests within the framework of the Eastern Partnership. The platform is part of the Eastern Partnership Civil Society Forum (EaP CSF).

The Eastern Partnership Civil Society Forum (https://eap-csf.eu) is unique multi-layered regional civil society platform aimed at promoting European integration, facilitating reforms and democratic transformations in the six Eastern Partnership countries — Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine. Serving as the civil society and people-to-people dimension of the Eastern Partnership, the EaP CSF strives to strengthen civil society in the region, boost pluralism in public discourse and policy making by promoting participatory democracy and fundamental freedoms. The EaP CSF is a non-partisan bona fide non-governmental organisation.

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Summary

The post-war recovery of Ukraine must be green — most of the environmental organizations and experts in the field of environment and climate are convinced of this. This is also the official position of the Ukrainian National Platform of the Eastern Partnership Civil Society Forum, published as the result of the discussion at the platform.

However, what does it mean exactly? How is the environmental component to be integrated into industrial and regional strategies and plans? Which are the obstacles to be expected on the way? These questions have been carefully studied by the research group as part of the implementation of the initiative “Green recovery: rebuilding for a better future.”

Green recovery is a systematic rebuilding of the country’s infrastructure and economy to a new sustainable development model that minimizes existing and future risks and with the environmental and climate consideration as an integral part.

The green recovery is a systematic rebuilding of the country, using a new model of the infrastructure and economy based on the principles of sustainability and minimizing existing and future risks, taking the environmental and climate as a cross-cutting component.

The risks include risks associated with: Russia’s military aggression, extreme weather events, degradation of ecosystems due to the global climate crisis, obstructed logistics and reduced access to global markets due to various political or economic crises, etc. The goal of the new development model is the continuous and sustainable functioning of the country, even under crisis conditions.

Post-war economic development of Ukraine should become a fundamental shift toward green and zero emissions economy. The rebuilding should not be a reproduction of the pre-war economy — based on fossil fuel, energy-intensive and intensively polluting. The priority should be to change the economic model by building more energy-efficient and less energy-consuming industrial and transport systems, infrastructure and housing, as well as the use of low-carbon materials and technologies. It is important to clearly define and articulate the goals of breaking from the dependence on fossil fuel and to include the green transition and sustainability as key approaches to all aspects of post-war economic development. This should apply not only to the territories most affected by the war, but extend to all of Ukraine.

The post-war recovery of Ukraine must be green because we share the EU values and aspirations of and want to become its full member and strive to build a better and more sustainable future. In accordance to the European Green Deal, our country also should proceed with economic modernization and decarbonization. The green transition is to
ensure greater economic efficiency and competitiveness of Ukraine on the European and worlds markets. The green recovery is an opportunity for Ukraine to take a giant leap forward in its development.

**Systemic, holistic and sustainable economic recovery requires first of all the national framework requirements to be set.** We have to define what do we want to build, set clear tasks for reaching the sustainable development goals and observe Ukraine's international obligations and list mitigating measures to minimize potential risks, including climate risks. A set of recommendations for regional and local development plans based on the best available technology and management practices use is also required.

At the regional level, it is necessary to set clear plans for rebuilding based on the principles of sustainable development and the national framework requirements but taking into account local conditions, resources and needs. Such regional development plans must address economic, social and environmental challenges of the regions, solutions to which should be based on the sustainable use and preservation of local resources (natural and human). In addition to the targeted economic and social indicators, such plans must contain a mandatory environmental component with an analysis of the current situation and a list of mitigation measures for solving existing and preventing potential environmental issues.

Currently, it is the lack of a systematic approach that gives room for hesitation and speculation regarding the sustainability of Ukraine's rebuilding plans. The current lessons of the war have illustrated that focusing on risks and threats against limited resources available, strategic planning and flexibility of decision-making at the local level contributed greatly to the country's resilience and successful resistance to military aggression. The same approach should be used for planning national recovery and building a sustainable economic model in post-war Ukraine.

As for sectoral recovery programs, they must take into account the lessons of the war and even revise the concepts of development. For instance, over the past several years, national natural water resources have been severally affected. However, the systemic relationship between the availability of water resources and climate change on the one hand and energy, industry and agriculture on the other so far has been recognized only in position papers and legislation, but not translated into real policy. The russian aggression has aggravated the already difficult situation with water resources. A radical change in approaches to water management policy within the framework of the green recovery will enable full implementation of the strategy of integrated water resources management (IWRM) — the priority of state policy in this area in accordance with the Association Agreement, in particular the Water Framework Directive, which has already been adopted into national legislation. It is obvious that there is an urgent need to change the current Ukrainian energy industry development model to one based on fundamentally different approaches — making the ecosystem approach and energy efficiency the
key in search for energy grid balancing solutions. Ukraine should urgently move toward the decentralization of the energy system, which has already been recognized at the national government level. It is quite possible, that in the new economic and energy model, the need for large hydropower will disappear.

Large-scale Russian aggression has added new challenges to the agricultural sector and revealed critical weaknesses of the existing system. The war has demonstrated the high vulnerability of intensive agricultural production models with long logistic chains. The power outages have affected severely large livestock production facilities, which also have proved to be easy targets for airstrikes in wartime conditions. Due to the damage to transport infrastructure and logistics operations, the entire country has felt the effects of the high vulnerability of long supply chains. We have to rethink agricultural and the agri-food systems to find more efficient and rational models. Rethinking and changing the entire global system of food production and consumption is on the global agenda, and Ukraine, as a significant global supplier of agricultural products, should provide examples of new management and lead the global movement for fair and safe food system.

Russia’s full-scale invasion of Ukraine once again showed the high vulnerability of monoculture forests, in particular artificial pine plantations, to forest fires, which can become catastrophic in dry weather spills. There is a need for a significant transformation of the forestry sector during the post-war economic recovery, taking into account modern environmental challenges and the requirements of the European Green Deal. The future model of forest management should include measures for the implementation of these requirements into both, managed industrial forest plantations and nature-protected woodlands.

Before Russia’s military aggression, Ukraine has not built a modern waste management system. Today, we see that the problem of safe waste disposal must be addressed urgently as the war devastation has brought significant volumes of specific waste accumulation with no system of handling and processing of which in place. We have to create a waste management system with maximum reuse of secondary materials — to reduce the accumulation of waste, dependence on primary raw materials extraction, and commodities’ import, which increase environmental and economic risks. Today, the solutions for the problems that existed before and were aggravated by the war need to be a stepping stone toward a more sustainable future.

Rebuilding Ukraine after devastations caused by the Russian invasion is an extremely difficult task. Moreover, today it is not known how much more damage the invaders and deadly air attacks will inflict. But the liberated territories are already coming back to life, and it is very important to learn from the mistakes of the destroyed past and instead build better. The definition of “better” cannot be determined without taking into account the
opinion of citizens and local residents. Therefore, recovery plans must take public opinion into account from the very beginning. In particular, environmental experts should be included in the creation of programs at all levels, and the corresponding Ministries should create institutional opportunities for greater public and experts’ participation and advocate for the implementation of green recovery principles in all sectoral policies.
The main goals of this research

Discussions about the post-war recovery of Ukraine began shortly after liberation from the Russian occupation in the northern regions. Several versions immediately appeared — from economists, politicians, public activists, both Ukrainian and international communities. For example, the U4U (United for Ukraine) network, initiated by a member of the European Parliament, former Prime Minister of the Republic of Lithuania Andrius Kubilius, from the very beginning united more than 200 current and former deputies and officials from more than 30 countries, who are actively working to support Ukraine in their countries and at the international level (now there are more than 500 participants). A group of economists presented a detailed vision of post-war recovery. Business communities of Ukraine have also decided on their own vision on the matter. In the end, the European Commission published an official communiqué on this matter.

All these proposals became the basis of the great movement to create a national recovery plan, in which the government officials of all levels and branches have been joined by several thousand experts and representatives of civil society and causing numerous on-going discussions.

The question of a green approach to the recovery was raised from the very beginning of the development of the Plan. Soon enough, environmental organizations and experts came together to discuss the topic, to monitor the process of preparing the plan. At the beginning of May, a joint position was developed, which was published as a list of the main principles for green recovery.

Representatives of eco-NGOs and experts tried very hard to join all working groups of the official process, and in order to have a real influence on it, they constantly share information and make statements if they disagree with something. However, even when the process is closely followed by the ecologists, the sectoral developers react very weakly to the comments of the eco-community and the environment-related proposals are mostly ignored.

On the one hand, it seems that the statement about the need for reconstruction on the basis of sustainable development, taking into account the global climate crisis, is constantly repeated — that is, the language of European partners is approved. On the other hand, it feels that these correct words are purely declarative, and as for the implementation of these principles — it either does not find place in sectoral plans, or only mentioned in plans for the distant future. For example, measures to join the European Green Deal in the agrarian part are planned to begin in 2026. And the recently adopted national legislation amending the regional policy approved four functional types of territories (territories of recovery, regional poles of growth, territories with special conditions for development, territories of sustainable development); according to this division,
sustainable development should not be a general approach, but a feature of particular territories.

The European Green Deal was adopted at the end of 2019, it is a set of measures that defines EU policy for the coming years in such areas as climate, energy, biodiversity, industrial policy, trade, etc. The main goal is a sustainable green transition of Europe to a climate-neutral continent by 2050. Active military actions on the territory of our country intensify the negative impact on the climate and natural environment, causing land contamination, water quality and availability deterioration, natural landscapes degradation, air pollution, which in turn also affect the soil and water quality, aggravate problems with logistics (especially in relation to long supply chains), cause food crises.

Ukraine has already declared joining efforts in the implementation of the European Green Deal. With Ukraine gaining EU candidacy in mid-2022, the European Green Deal became not only important, but also compulsory for implementation since we share the values and aspirations of the European Union. Adopted within the European Green Deal framework strategic documents must be integrated into our legislation: for example, the 17 key indicators declared in the EU Biodiversity Strategy, became our common goals. Therefore, rethinking food production and consumption models is now also about us. And the introduction of a circular economy has become critically important, especially in connection with the vast destruction of our infrastructure by the russian aggression.

The financing of rebuilding, which we count for and which the EU and donor countries already committed to provide, will include procedures related to the implementation of the principles of green recovery, which the eco-community keeps reminding about.

The participation of civil society in the rebuilding of Ukraine generally becomes one of the main priorities of the entire international process. This was also emphasized by the participants of the Berlin Conference. The civil society of Ukraine, which has already taken upon many responsibilities during full scale war, should become a fully pledged participant, a partner to the authorities in the rebuilding the country.

And this must be thought through now, so not to make unnecessary mistakes from the very beginning.

In this study, we draw attention to the main contradictions between the approaches to the post-war rebuilding of Ukraine from the point of view of implementing the principles of sustainable development and adhering to the main slogan — to build a better future, not to recreate the bad past (build back better). We analyze some sectoral policies and regional development approaches and provide recommendations on how to avoid potential problems.
An overview of green recovery proposals

The approach of the EU and international partners

The U4U (United for Ukraine) network, initiated by the member of the European Parliament, former Prime Minister of the Republic of Lithuania Andrius Kubilius, began with more than 200 current and former deputies and civil servants from more than 30 countries who are actively working to support Ukraine in their countries and at the international level, and now has more than 500 participants. At several online meetings, the network outlined the main principles of rebuilding Ukraine. And from the very beginning, contradictions between the approaches of Ukrainian and European government officials emerged. During these months, numerous studies were conducted, meetings and training events held, and close communication with Ukrainian structures was established. And finally, on November 11, a joint statement on the sustainable future of Ukraine and the task of creating a new Green Marshall Plan for Ukraine was published.

The Communiqué adopted by the European Commission on May 18 on aid and reconstruction of Ukraine provides for four main pillars of reconstruction:

- Rebuilding the country, including infrastructure, health services, housing and schools, as well as digital and energy resilience, according to the latest European policies and standards.
- Continue to modernize the state and its institutions to ensure good governance and respect for the rule of law by supporting administrative capacity and technical assistance, including at the regional and local levels.
- Implementation of the structural and regulatory agenda with the aim of deepening the economic and social integration of Ukraine and its people with the EU, in accordance with its European path.
- Supporting the recovery of Ukraine’s economy and society by promoting sustainable and inclusive competitive economic, sustainable trade and private businesses development, while simultaneously contributing to the country’s green and digital transformation.

Reconstruction must comply with the European green and digital agenda, the European Commission insists. And the support mechanisms will have to include a specific governance structure that will simultaneously ensure full ownership of Ukraine and ensure that investments — including in strategic digital, transport and
energy infrastructure — will be aligned with EU climate and environmental policies and standards.

The Organization for Economic Cooperation and Development (OECD) provides analytics on the importance of green recovery in Ukraine in the study “Environmental impact of the war in Ukraine and prospects for a green reconstruction.”

The OECD analysts specify, that the post-war rebuilding and development plan should be developed in accordance with the principles of green and low-carbon economy, contain short-term and long-term priorities identified through broad stakeholder consultation, and include close cooperation and coordination of support to the country by international organizations, mobilization of financial resources for reconstruction measures that correspond to defined environmental priorities.

In particular, the authors believe, in the short term, Ukraine should focus on eliminating and minimizing risks for humans and the environment: cleaning the environment, repairing and building more efficient environmental infrastructure to ensure the supply of clean drinking water, proper sanitation, collection, storage and processing of numerous wastes, especially the war-related waste.

In the long term, the process of post-war economic development should become Ukraine’s fundamental transition to a green and clean economy. The reconstruction should not reproduce the pre-war economy — fossil fuels based, energy-intensive and intensively polluting. The priority should be to change the economic model by building more energy-efficient and less energy-consuming industrial and transport systems, infrastructure and housing, as well as the use of low-carbon materials and technologies. It is important to clearly define and articulate the goals of breaking dependency on fossil fuels and to include the green transition and sustainability as key approaches to all aspects of post-war economic development. This should apply not only to the territories most affected by the war, but extend to all territories of Ukraine.

Environmental regulation, policies and legislation should facilitate the green transition as much as possible. Granting Ukraine the status of a candidate country for EU membership is a good opportunity to speed up the progress of harmonising Ukraine legislation with the EU including:

- reforming building and operational rules and standards, especially for large polluters, in accordance with modern practices in the countries of the European Union and the OECD;
- wider use of SEA (strategic environmental assessment of policies, plans and programs) and EIA (environmental impact assessment of individual projects) procedures to enable the development of alternatives with less pressure on the environment;
- effective supervision and regulatory support.
The approach of the Ukrainian government and experts

On April 21, the President of Ukraine signed a decree on the formation of the National Council for the Recovery of Ukraine from the Consequences of the War. The Ukrainian government presented the first version of the Recovery Plan at the Conference on Recovery of Ukraine (July 4–5, Lugano, Switzerland). The ten-year plan is aimed at accelerating sustainable economic growth. Among the main principles, in particular, build back better, which stands for “A unique opportunity to build with better quality, more advanced technologies and fairer principles than what was destroyed,” also refers to the key principles of long-term green transformation and sustainable development.

The plan identifies national programs and 850 projects to achieve key results. In particular, two national programs — “Restoration of clean and protected environment” and “Energy independence and the green deal” — are directly related to environmental issues.

For several months, the Plan was discussed at various venues and with various participants. It is obvious that each of the participants is concerned with own problems. Business, for example, published a Memorandum in which, although sustainable development is mentioned in the vision, there are no environmental components in the entire document. (Memorandum of the Coalition of Business Communities for the Modernization of Ukraine).

Moreover, business structures are actively lobbying the government to review and simplify the procedures for environmental assessments, thereby leading to a dead end in one of the important directions of European integration and doing an ill service to themselves, because in the absence of environmental assessments, it is unlikely that European funding can be hoped for.

The Manifesto of Civil Society 2022 (Lugano Declaration) was also presented at the conference in Lugano, in which more than 100 respected political and economic organizations declared a common vision and principles for the future of Ukraine and which also did not find a place for the green transformation.

Although civil society organizations and experts actively participated in the process of developing the Plan and in the events in Lugano, still civil society is not properly represented in the entire process. There are no representatives of the third sector in the National Recovery Council, and the numerous proposals of public activists are not taken into account by government officials responsible for sectoral developments. That is, civil society currently plays a very active role as experts and advisers, but has no influence on the decision-making process.

In the declaration of the general principles of rebuilding the government programs are repeating the language of European partners about the need for reconstruction on
the basis of sustainable development. However, these principles are not followed in the sectoral development plans, or mentioned only in plans for the distant future.

**The main contradictions of the existing positions and threats**

_**Valery Pekar**, an active participant of the conference in Lugano, a representative of the community of economists and business, analyzing the government’s Recovery Plan of Ukraine, in a speech at the conference in Lugano, draws attention to the contradictions in the plan itself and outlines the so-called “strategic triangle.” “Reconstruction, European integration and modernization should be carried out, preferably in parallel. The problem, according to Mr. Pekar, is that they contradict each other. “Fast, cheap and high-quality cannot happen at the same time. It is impossible to build a system that is stable, open and efficient at the same time. This is the so-called strategic triangle. We will have to sacrifice something.” He also cites the “three biggest pitfalls of Ukraine’s recovery,” which, in his opinion, can be overcome through the involvement of a third party, that is, civil society, as well as through the search for solutions to problems at the local level thanks to decentralization.

Representatives of environmental organizations see numerous shortcomings in the government’s plans. They insist that taking into account the principles of sustainable development and provisions of climate policy, minimizing the negative impact on the environment of new projects is a necessity, that should be a part of all strategic and program documents in all spheres of social life and at all levels.

Perhaps, the main threat lies precisely in the poor awareness of the Ukrainian Plan developers and government officials of the comprehensiveness of the principles of sustainable development and the need to integrate climate policy into all sectors. Declaring the right statements after European colleagues, our respected experts do not envisage their implementation in specific development plans and projects. That is why, for example, the national program “Energy Independence and the green course” appears, which includes 20 projects on energy (there are two on the production of biofuels and RES!), but it is difficult to understand what they have to do with the European Green Deal.

At the same time, OECD experts, on the contrary, are convinced that it is a well-thought-out green transformation that can help addressing many indeed very difficult issues.

The second threat is the lack of awareness on the importance of the European Green Deal (EGD), which provides basis for the modernization and decarbonization of the entire economy, i.e., the EGD should be taken into account in all programs and projects. And since Ukraine has declared its accession to the EGD and is already a candidate for EU membership, the implementation of EGD into the economy should also be consistent throughout.
The concept of the green economy is closely related to EGD. The green economy should be low-carbon and energy-saving, nature-oriented, have efficient and clean production, balanced consumption and be based on the following principles: joint responsibility, innovation, cooperation, solidarity, flexibility and interdependence. Development should be focused on expanding opportunities and choices for the national economy, using targeted and appropriate fiscal policies. To be sustainable and green, economic development must be subordinated to climate goals, environmental policy and social security policy. It should be guided and supported by professional and independent regulatory bodies designed to protect legal principles, including environmental and social components.

And of course, this set of contradictions and misunderstandings leads to a financial threat.

The European Commission is creating a Platform for the reconstruction of Ukraine and financial instruments for its support. The “Rebuild Ukraine” program will become the main legal instrument of European Union support through a combination of grants and loans. It will be embedded in the EU budget and thus should ensure transparency, accountability and sound financial management of this initiative with a clear link between investment and reforms. But compliance with the conditions stipulated by the EU is not determined by declarative phrases in official documents. This should be clearly provided for in specific programs and projects that our partners are willing to finance.

Numerous environmental NGOs joined the discussion. In particular, the working groups of two pro-European platforms (Ukrainian national platform of the Eastern Partnership Civil Society Forum and the Ukrainian side of the Ukraine-EU Civil Society Platform) issued a joint statement, an appeal and letters to European colleagues and EU leaders regarding the need transparent and accountable financing. The participants of the thematic group “Green recovery” believe that, taking into account the multiplicity of intentions to provide Ukraine with financial and technical assistance for recovery, the established funds should work in a coordinated manner and on the basis of effective and transparent administration of their activities, best available technologies and management practices, and also accompany its work with activities to increase the capacity of all stakeholders for green recovery and sustainable development at national and local levels. The use of donor funds should be transparent and public with broad involvement of all stakeholders.

How to deal with the financial threat? The same OECD analysts believe that sustainable funding for coherent and strategic environmental investment plans will be crucial. In this context, financial flow aimed at investment in reconstruction should be properly monitored and analyzed to ensure that they also contribute to environmental and green objectives. Using the EU green taxonomy for sustainable activities and the OECD’s analysis of the mobilization of green finance and investment can be a guide. Developing a
package of financeable green investment projects can help mobilize national and international private and public funding.

Reformed technical regulations should be supported by market mechanisms in line with the OECD’s polluter pays principle. Priorities include reforming existing environmental taxes and fees, ending environmentally harmful fossil fuel subsidies, introducing emissions trading schemes and other market-based instruments that provide economic incentives to comply with environmental requirements and, where possible, strive for more.

The reconstruction and green transformation of Ukraine will certainly face many problems. For example, there may be pressure to rebuild quickly using existing technologies, especially where the initial investment costs of greener alternatives are perceived to be higher. In general, Ukraine may face difficulties in attracting sufficient funds for environmentally sustainable reconstruction, as well as problems related to the transparency and efficiency of the use of these funds.

There is a need to continue to modernize environmental policy implementation and enforcement at the national and subnational levels to ensure high administrative capacity to plan and implement environmentally sustainable reconstruction efforts. The establishment of ad hoc or permanent inter-ministerial and cross-sectoral committees, working groups or task forces involving environmental authorities should help ensure that environmental and green growth principles are reflected in agreed sectoral strategies, policies and plans. The involvement of civil society is also essential for the success of post-war transformations.

Green recovery should be considered as an economic necessity for the future development of Ukraine. **The green transition will ensure greater economic efficiency and competitiveness of Ukraine on the European and world markets. Reconstruction offers Ukraine the opportunity to jump to greener technologies, reduce dependence on fossil fuels, and strive for a zero-emissions economy.**

We will cover the situation in several specific areas in more detail in the following sections. But in general, the situation does not look very optimistic — with existing conflict situations, and the principles of green recovery are located precisely in these conflict areas. As well as ways out of the impasse — in the involvement of the public and the development of regional initiatives.
General principles of green recovery

The green recovery is a systematic rebuilding of the country, using a new model of the infrastructure and economy based on the principles of sustainability and minimizing existing and future risks, taking the environmental and climate as a cross-cutting component.

Such risks include risks associated with war-related devastation, extreme weather events, degradation of ecosystems due to the global climate crisis, constrains in the logistics and restricted access to global markets goods and commodities due to potential political or economic crises, etc.

The goal of the new development model is a long-term sustainable functioning of the country even under crisis conditions. And we have already had many such crisis conditions in recent years — the Covid-19 pandemic, droughts and unpredictable climatic conditions due to global climate change, the crisis of pollution and loss of biodiversity due to the sudden degradation of ecosystems and the destruction of infrastructure during military operations, humanitarian crisis due to military operations of russia on the territory of Ukraine, threats to the physical safety of citizens under war conditions and extreme weather events and scarcity of vital resources, etc. It is not enough to arm yourself with already developed recommendations and agreements. Although the implementation of both the European Green Deal and the Association Agreement between Ukraine and the EU, with the adoption of the status of EU candidacy, it becomes a mandatory minimum for our country, the basis for further movement, on which more difficult tasks await ahead.

For the green recovery in Ukraine it is also necessary to take into account completely new challenges, which European countries have not yet seen.

We must learn the lessons of the crises that our country has passed and is currently going through, draw conclusions and determine development priorities in accordance with international obligations, systematically setting goals and limitations at the national level, according to which our country should develop and which should be embodied in regional development plans, serve as a framework for planning the development of local communities.

Civil society environmental organizations proposed 7 principles of green recovery as the basis of Ukraine’s post-war reconstruction strategy:
1 Integration of environmental and climate policy into all sectors. It is necessary to consider provisions of environmental and climate policies, their conditions and limitations in all the documents of strategic and program nature in all spheres of public life and at all levels. The priorities of the European Green Deal (EGD), including modernization and decarbonization of the economy, clean industrial production, biodiversity conservation and transition to sustainable agricultural practices, should be key tasks in Ukraine’s post-war recovery.

2 Reconstruction should serve the needs of Ukrainians and promote the sustainable development of Ukraine. Investment policy and the attraction of financing for economic recovery should be consistent with the goals of sustainable development and should be aimed primarily at the development of high added-value production chains, rather than at development of a resource-export economy.

3 Development toward green economy — a low-carbon and energy-saving, nature-oriented and circular economic model, efficient, resource-saving and clean production, balanced consumption on the basis of joint responsibility, innovation, cooperation, solidarity, flexibility and interdependence; with a focus on expanding opportunities and choices for the national economy, using targeted and appropriate fiscal policies.

4 Environmental standards at all levels. Environmental standards for monitoring and quality, in contrast to the standardization of the permissible impact on environmental components, should define monitoring methods and relevant requirements for the quality of soil, air, water and the environment as a whole. The ultimate goal is to ensure a safe and desirable state of the environment. Restoration of infrastructure and enterprises should be based on the use of the best available technologies and management methods.

5 Compliance with European environmental planning tools — environmental legislation, in particular, regarding strategic environmental assessment (SEA) of plans and programs and assessment of the environmental impact of planned activities (EIA), in order to take into account environmental priorities during development and recovery planning in Ukraine.

6 The role of local self-government, transparency, and involvement of the public and communities in decision-making. Important documents, such as strategies or plans for post-war recovery, should be developed with the active participation and involvement of all stakeholders, including local governments and civil society organizations. Decisions, strategies and action plans must be adopted on a subsidiary basis (“Bottom-up”), contributing to the further development of successful decentralization reform. Local governments need to be leaders in their communities and have a
sense of ownership of community recovery processes. The ideas of civil society, their ini-
tiatives and analyses should be taken into account in decision-making.

7 Effective functioning and use of targeted/donor funds for post-war recovery and green economic development. Given the multiplicity of intentions to pro-
vide financial and technical assistance to Ukraine for the country’s reconstruction, the funds should operate in coordination based on effective and transparent administra-
tion and on best global practices. Funds operation should be combined with the efforts to increase the capacity of all stakeholders to work toward green recovery and develop-
ment at the national and local levels. The use of donor funds should be open and public with the broad involvement of all stakeholders.

However, the already published proposals and thorough principles of rebuilding still do not provide a systemic picture, so far we lack the definition on what do we want
in place of the destroyed and what will this new development model is to look like. The
general approach — better than before — still does not give an idea of what exactly it supposed to include or what do we definitely shouldn’t build. Framework require-
ments at the national level must be developed for systemic and holistic sustain-
able recovery. We have to define what are we building. Set tasks for achieving the
goals of sustainable development and fulfilling Ukraine’s international obligations (such as achieving climate neutrality by 2060 and full harmonization with EU policies and prac-
tices). List measures to minimize risks for the country, including climate risks. And, also, develop the national recommendations for regional and local development plans, taking into account the best available technologies and management practices. On the basis of these national goals and recommendations, regional development plans with target indicators adapted to local needs and resources can be developed.

Currently, it is the lack of a systemic approach that gives room for hesitation and specula-
tion regarding the sustainability of Ukraine’s rebuilding plans. The current lessons of the war have illustrated that focusing on risks and threats against limited resources available, strategic planning and flexibility of decision-making at the local level contrib-
uted greatly to the country’s resilience and successful resistance to military aggression. The same approach should be used for planning national recovery and building a sus-
tainable economic model in post-war Ukraine.

Environmental watch groups, official and civil society, play a decisive role in this process. Environmental experts should be included in the development of develop-
ment programs at all levels, and the environmental ministry is to create institution-
al opportunities for public and expert representatives participation and advocate the implementation of the principles of green recovery in sectoral policies, in ac-
cordance with the principles of Good Environmental Governance.
Implementation of green recovery principles in sectoral plans and territorial policy

Integration into territorial strategies and plans

At the regional level, clear plans for reconstruction on the principles of sustainable development are required. These should be based on national-level recommendations but adapted to account for local conditions and needs. Such regional development plans require an understanding of the economic, social and environmental challenges of the regions with provisions for solutions based on sustainable long-term use and preservation of local resources (natural and human). It is necessary to take into account the presence and need for qualified workforce in the region, available technologies and potential for innovations, providing for basic needs and safety of the population, sustainable use of available resources, and preservation/restoration of natural territories for the sustainable long-term ecosystem functioning and global climate crisis mitigation.

Therefore, besides targeted economic and social indicators, such plans must contain an environmental part with an analysis of the current situation, a list of measures/solutions for existing now and prevention of potential environmental problems in future. Target indicators for the environmental quality and sustainable spatial planning of regions and communities are also required to be a part of the plans, which are to be based on science, analysis of the current state of the environment, best available technologies and the results of public consultations.

Analysis of the current situation

The analysis of the current state of the environment should include:

- environmental, economic and physical risks (critical dependence on resources, pollution and vulnerability of ecosystems, unsustainable practices of nature and resource use, access to logistics hubs and services, etc.);
- losses and damage from the war;
- sites which restoration and/or investment is insensible (for example, agricultural lands, forests and natural areas contaminated by mines and ammunition);
- nature damaging industrial sites (quarries, coal mines, etc.), industrial operations and businesses that undermine sustainable land and water management practices...
in the region (such as landfills, enterprises polluting air and water) and operations
and businesses that reduce the ability of natural areas to provide ecosystem ser-
vices (such as use of peat, development of floodplains, draining the wetlands, etc.);
• human resources (including the required qualification) and the quality of life of the
population (available housing stock and communal infrastructure).

Mitigation measures and solutions for existing problems
Based on the analysis of current and future risks — war destruction and economic insta-
Bility, disruption of traditional logistics chains, climate crisis (extreme weather events,
droughts, floods, dust storms, etc.), it is necessary to develop a list of possible and rec-
ommended measures to increase the resilience of infrastructure and economic devel-
opment models that will work to increase the sustainability of regional development.

Lessons of the war

Use of alternative energy sources
The war in Ukraine provided much proof of wind and solar power being the key to
the physical survival of the population under crisis conditions. After the beginning
of the Russian invasion, many settlements in Ukraine found themselves on front
lines or occupied and therefore cut off from the centralized electricity, water and
gas supply due to infrastructure damage. As periodic power outages are not some-
thing new for many villages and towns in Ukraine, many residents have diesel or
gasoline generators for backup power. However, with war bringing devastation and
disruption of logistics chains, such backup power sources proved to be rather use-
less when the fuel supply was disrupted. Without electricity, water and gas, many
people had only one option left to warm themselves and cook food — use of stoves
on firewood. However, these stoves cannot provide access to water and communica-
tions. Therefore, for the latter many people have relied on low-power solar pan-
els: during the occupation in the north of the Kyiv region, domestic roof-top solar
panels became the only accessible source of electricity. The operator of Ukraine’s
gas pipelines announced in mid-March that it will equip all gas distribution stations
with solar panels to provide backup power — this became a necessity to ensure
uninterrupted operation due to significant damage to power lines and energy infra-
structure in war-affecter regions. Thus, the use of decentralised renewable genera-
tion units, in addition to the benefits of off-grid independence and climate change
mitigation, enables the physical survival of people during extreme events, providing
not only a backup energy source, but also access to water in wells and, most
importantly, to telecommunication services.
It is very important to review sustainable solutions and establish indicators or targets to monitor the achievement of the goals set in the development plans. The plans and indicators should be understandable and manageable for local communities. For example — indicators for ensuring reliable, comfortable and accessible shelters for the population to reduce human losses from shelling: technical characteristics, construction schedule, requirements and locations, etc. Another example targets for reducing dependence on

Lessons of war

Long logistics chains are unreliable and highly vulnerable during extreme events

Each of us witnessed how in the first two or three weeks of the large-scale invasion of Russia, many products have simply disappeared from stores due to the disruption of existing logistics chains the physical destruction of large logistics hubs (like the destruction of warehouses with food and manufactured goods near Kyiv, for example) or isolation of production sites (like Artemivsk salt production, located near Bakhmut — a center of a heavy fighting line for many months now). There were many examples of businesses inability to sell the produce to long-established business partners due to obstructed transport infrastructure. Many farms ended up giving away their produce to the local residents, because they could not even ensure storage due to the accumulation of a large amount of produce, disruptions in power supply, and disrupted transport services. Intensive animal farms under extreme events turned out to be very sensitive to the disruption of logistic chains for feed supply and sales (as the produce requires proper storage), outages in of power and water supply, as well as potential direct hits by the enemy weapons destroying not just animals but their feed and water sources and shelter and bringing brutal death from hunger and thirst.

On the other hand, our agricultural producers are significantly dependent on foreign markets to sell their products, on the imported diesel fuel, mineral fertilizers, pesticides, seeds, etc. With the beginning of the war, the supply chains of many goods necessary for agrarians were disrupted. The availability of mineral fertilizers, pesticides and seeds (in particular, high-quality certified and disease- and pest-resistant seeds) has decreased, while the prices on what was still available have jumped, all of which significantly increased the risks of crop loss (in particular, due to poor soil conditions, low-quality seeds and the spread of pests and diseases). In addition, the availability of irrigation and accurate weather forecasts in the presence of disrupted power supply and access to communications is questionable, increasing the risks of crop loss.
external resources and centralized electricity, heat and water supply in order to increase resilience during damage to infrastructure: it can be solved through the insulation of buildings and the minimization of their energy consumption, or installation of decentralized renewable energy units to meet the needs of the population, maintenance requirements for local infrastructure, such as pumping stations, telecommunications equipment, etc. — all depending on local needs and available resources.

**Recommended measures:**

- ensuring the physical safety and survival of the population in emergency situations;
- measures to reduce dependence on long logistics chains for the continuous supply of food and essential goods to the population, as the war has shown the significant dependence of most communities on long and highly vulnerable supply chains;
- measures to increase business operations resilience under emergency situations (for example, reducing dependence on imported resources and fossil fuels, provisions for greater flexibility in accessing logistics hubs and international markets, emergency finance options for small businesses, etc.).

**Required:**

- measures to minimize potential and existing environmental risks, such as the impact of waste generation, pollution, fragmentation and degradation of ecosystems, biodiversity loss, deterioration quality of atmospheric air and surface water bodies, etc.;
- clear instructions and requirements for monitoring the quality of the environment and a ban on the use of unsustainable practices in spatial planning and management of natural resources and waste management;
- provide a list of possible nature-oriented solutions for the use of communities to prevent air pollution, ensure the quality of natural water bodies, restore natural territories and protect the population and business from physical and climatic risks (military actions, droughts, floods, storms, extreme temperatures, pests, epidemics, etc.);
- establish clear recommendations and principles for the development of small and medium-sized businesses on the basis of social and environmental responsibility, the development of green innovations and the use of the best available technologies.

**Armed with national recommendations, local communities will be able to plan own development and seek local solutions based on local problems, needs and resources within the framework of goals and restrictions introduced at the national level in accordance with regional development plans.**
Unfortunately, today we do not find such approaches in regional politics. Instead, the Verkhovna Rada adopted the Law, which defines the basic principles of the restoration and development of regions and communities (the Law of Ukraine “On Amendments to Certain Legislative Acts of Ukraine Regarding the Basics of State Regional Policy and the Policy of Restoration of Regions and Territories”). Although the Law speaks of “taking into account the environmental component in strategic planning documents” and “adaptation of the regional economy and human habitat to climate changes, strengthening the resilience of territorial communities to climatic, demographic and economic challenges”, at the same time, so-called “functional types of territories”. Four of them are defined: 1) recovery areas; 2) regional poles of growth; 3) territories with special conditions for development; 4) areas of sustainable development. “Sustainable development territories are self-sufficient micro-regions, territorial communities with the existing socio-economic potential of the territories and are capable of balanced development in the economic, social and ecological spheres,” the law states. That is, we are not talking about a general approach, sustainable development according to this law is a privilege of individual territories. And the “functional types of territories” will be determined by the Cabinet of Ministers of Ukraine.

Another law that will not contribute to the green reconstruction, “On amendments to certain laws of Ukraine on priority measures for reforming the sphere of urban development”, involves cancellation of the Strategic Environmental Assessment (SEA) of recovery programs, in particular programs for the recovery of regions and territories of territorial communities. This may lead to a worsening of the ecological situation in the long term perspective in the settlements destroyed by Russia, and deprive Ukraine of part of the investment funds for reconstruction.

Hydropower generation

Current status

Over the past several years, the availability and quality of Ukraine’s natural water resources have been severely affected. However, the systemic relationship between the availability of water resources and climate change on the one hand and energy, industry and agriculture on the other so far has not been recognized beyond position papers and legislation, and has not translated into the real policy. The Russian aggression has aggravated already difficult situation with water resources. At the end of 2022, the Cabinet of Ministers finally approved the Water Strategy of Ukraine. One of its goals is the introduction of integrated water resources management according to the basin principle, as well as the principles of the Organization for Economic Cooperation and Development (OECD) on water governance.
The bulk of Ukraine’s energy generation consists of nuclear (more than 50%) and thermal (about 30%) generation capacity. The explosive development of renewable energy sources (RES) in recent years, reaching over 8% share in generation in 2021, has brought the issue of scarcity of the available maneuvering generation to balance the energy system during peak hours. Currently, this task is performed by hydropower plants, which is no more than 6–7% in the total generation, however, it provides balancing services in the national power grid system during peak loads. This important function cannot be performed with the same effect by other generation facilities, such as thermal and other classical types of generation. However, it should be taken into account that Ukrainian hydropower is based on facilities built or designed during the Soviet era. This determined the characteristics of the energy system, that does not meet any modern requirements, for instance for energy efficiency or geographical location for generation and consumption. One of the important factors is the aging of hydropower’s technical structures and equipment, and need for their constant repair or renewal. First of all, this concerns the cascade of 6 hydroelectric power plants on Dnipro river. However, there is one more factor, the impact of which cannot be underestimated: the decreased water flow through Dnipro river and other rivers in the country. Over the past few decades, the Dnipro’s water flow (Ukrainian largest river flow) — has decreased by approximately 10%. This is primarily caused by draining wetlands and disappearing small rivers — tributaries of the Dnipro — due to unsustainable water use and climate changes; additionally, snowless winters do not contribute to the accumulation of water in reservoirs either.

The development of hydropower in Ukraine is still determined by a consumerism approach to natural resources. During the design and construction of dams in the last century, environmental impact was not considered at all. Today, the Dnipro’s reservoirs are among the biggest contributors to the unsatisfactory state of the river: large shallow reservoirs are characterized by low flow rates, increased water temperature, eutrophication and accumulation of contaminants, which, consequently, results in biodiversity loss and decreased ecosystem’s resilience. Similar negative effects were caused by the construction of small hydropower plants on the tributaries of the Dnipro and other rivers. The construction of two hydro accumulative power facilities on the rivers Dniester and Pivdenny Buh became a powerful factor in the negative impact on their basins and ecosystems.

Ukrainian hydropower generation facilities cause a number of long-term negative changes and impacts on:

- landscapes;
- geological environment;
- natural water resources (underground and surface);
- water ecosystems;
• biodiversity;
• climate and air quality;
• acoustic environment;
• electromagnetic environment.

A number of social and cultural factors that are influenced by the development of hydropower generation include:

• flooding or destruction of populated areas;
• resettlement of local residents;
• quality and safety of local residents;
• agriculture and rural development;
• historical and cultural heritage sites and traditional economies;
• visual landscape impact.

On the other hand there is an issue of safety of hydro technical structures to be considered — these facilities are defined as both, sites with high potential technological and environmental risks. The actuality of these risks have been effectively illustrated by the Russian aggression: under wartime conditions, the potential risks of the dams and dikes destruction, causing significant flooding with catastrophic impact on the natural and social environment became reality.

Analysis of the problem

Ukraine needs to implement new progressive principles of hydropower development, based on modern technologies and sustainable approaches to energy systems and natural resources management. However, recent government decisions proved the choice of the opposite developmental scenario. The hydropower program until 2026 plans to build a number of facilities that will have a devastating impact on water ecosystems and the main large rivers. The construction of hydropower facilities envisaged by the program will affect significantly the not only the environment, but also local communities, nature-protected areas, and cultural and historical heritage sites, creating new economic, environmental and social risks. The document was adopted without public consultations, in violation of the established procedures, contrary to the warnings of the Ministry of Environment, did not comply with a number of European Directives, therefore it was widely criticized by scientists and the civil society demanding its revision. However, the relevant authorities did not respond to the numerous appeals, repeatedly confirming the same intentions in other official documents. At the same time, the protocol for assessing the compliance of hydropower projects with the principles of sustainable development — actively used all over the world — has not yet been implemented in the country.
Lobbying for the outdated solutions in the field of hydropower is not only harmful for natural and social environment, but has systemic corruption risks and inhibits the development and innovations in the industry. The probability of finance from international financial institutions for the construction of such projects is close to zero, since the environmental and social requirements of banks exclude the financing of projects that do not meet the environmental requirements of the EU.

Global trend is to put the balancing of large energy systems onto innovative facilities. In particular — industrial energy storage systems (ESS) — mechanical, chemical, electrical, etc., as well as the introduction of “smart networks,” which not only ensure effective balancing in systems, but also increase their stability and cost-effectiveness. Moreover, these technologies do not require long construction and capital investments. The global ESS market trends currently show the greatest potential for growth in the energy industry. It has been a year since the Verkhovna Rada of Ukraine adopted a law regulating the use of ESS, however, there still has not been neither any further government decisions on the implementation of this technology nor any attempt from the government to analyze the feasibility and effect of hydropower development in new conditions.

**Solutions**

It is obvious that there is an urgent need to change the current model of development of the Ukrainian energy industry and to one based on fundamentally different approaches. The ecosystem approach and energy efficiency should become the keystone in building solutions for power grid balancing technologies. Ukraine should urgently take up the decentralization of the energy system, need for which has already been recognized at the government level. Such new approach will allow not only ensuring the stability of the entire energy system, but also increasing its resilience and use of innovative modern technologies for generation and power grid balancing, which shall lead to operational costs reduction and energy efficiency increase.

In the context of the Ukraine’s post-war rebuilding and economic development under the conditions of Ukraine’s transition to a clean and circular economy, supporting the current model of Ukrainian hydropower development is a nonsense. And even more so after Ukraine declared its accession to the EGD, which will probably become one of the key indicators of success on the way from EU candidacy to a full EU member country. Under the circumstances, the ecosystem approach and energy efficiency must become a keystone in building solutions for power grid balancing. It is quite possible that under the new economic and energy model the need of the large hydropower facilities will disappear, which will also contribute to the decentralization of the energy system.

A radical change in approaches to water management policy within the framework of the green rebuilding will make possible full implementation of the strategy of integrated water resources management (IWRM), which is a priority of state policy in this
area in accordance with the Association Agreement, in particular the Water Framework Directive, and has already been implemented into national legislation.

**Transformation of the forestry system**

Russia's full-scale invasion of Ukraine once more illustrated the high vulnerability of monoculture forests, in particular artificial pine plantations, to forest fires, which can become catastrophic in dry weather conditions. In addition to significant economic losses, forest fires also cause significant damage to biodiversity, in particular to the protected species of flora and fauna at the national and international levels. The destruction of forest stands as a result of explosions and the construction of military fortifications has an equally damaging impact.

Therefore, there is a need for a significant transformation of the forestry sector during the post-war economic recovery, taking into account modern environmental challenges and the need to implement the European Green Deal in Ukraine.

In general, the future model of forest management should provide for their division into operational and protected forestry. Within operational forestry practices the process of post-war recovery must be ensured the gradual formation of highly productive and sustainable mixed (multi-species) woodlands, with possibility of intensive forestry practices (first of all, maintenance trees felling), aimed at the rapid formation of forests with target timber quality. Achieving high productivity must be combined with ensuring resilience to fires and pests. A clear list of invasive species should be developed and approved by regulative bodies to ensure the practical implementation of the ban on the use of such species during reforestation and afforestation.

At the same time, within the protected woodlands (nature-protected areas and other non-operational categories of forests), the main goal during the restoration should be creation of favorable conditions for biodiversity preservation and providing for the needs of the population in non-timber forest resources. This requires extensive use of natural forest regeneration practices, along with active measures to remove species that are officially recognized as invasive. Reshaping tree felling only allowed in artificial wood plantations as a measure for natural forests structure formation. At the same time, virgin natural forests should be exempted from economic use as soon as possible and preserved as reference sites for woodlands ecosystems.

As for the plans to extend Ukraine's woodlands, they should be implemented by including self-seeded woodlands in the forest fund (pursuant to the Law of Ukraine 2321-IX of June 20, 2022), as well as creating favorable conditions for the afforestation of degraded arable lands (in particular, through the implementation of mechanisms of private forestry in such areas). Afforestation of steppe and meadow areas for such purposes is unacceptable.
Lessons of the war

Restoration of natural ecosystems.

Natural wetland ecosystems provide many ecosystem services for nature, agriculture and water management, tourism and climate. However, during the last 100 years, these systems on the territory of Ukraine have undergone significant transformations, which on the background of the climate crisis brought a significant increase in risks to the natural landscapes, water supply, and the country’s economy. Most of the rivers have been heavily damaged by construction of numerous dams and dikes, banks’ development and unsustainable water use, “incarcerated” in concrete collectors and often serve as collectors for untreated sewage. Lakes, especially within cities, were filled in and built over, and river floodplains and wet peatlands were drained and developed into cottage towns.

The full-scale war showed that the preservation of wetlands is the key to the survival of the population during the war hostilities. First, preserved swamps, wet peatlands, and flooded river valleys become a significant obstacle to the advance of heavy military equipment of the invaders, as it happened north of Kyiv on the Irpin River, where the advance of the invasion to Kyiv was stopped precisely by the river valley, which the spring flooding turned into an insurmountable obstacle. Secondly, maintaining sufficient soil moisture reduces the spread of fires in ecosystems that occur in warm, dry weather or during intense military fire. Reducing the number of fires is directly related to air quality and the risk to public health. Thirdly, rivers and lakes are a reserve source of water for the needs of the population in the event of the interruption of centralized water supply and for extinguishing fires caused by war hostilities, especially in the conditions of large cities. The lack of available water bodies in cities carries direct risks for the population’s health and property during the war. Again, preserved and functioning wetland ecosystems provide high groundwater levels, well-filled traditional wells, and sufficient water quality in surface reservoirs and springs that can much better meet the population’s water needs, including drinking water. The war has shown that relying on drilled wells to meet the needs of the population carries high risks, as wells require power to pump water, which may also be unavailable during hostilities or emergencies.

Rebuilding the agricultural sector and food security

Upon obtaining the EU candidacy status, Ukraine must not only continue fulfilling its obligations under the Association Agreement, but also more actively implement EGD, in particular, in the field of agriculture and food security. These obligations became es-
especially important in the context of a great war and must be taken into account during post-war recovery.

Before the full-scale invasion, the agro-industrial sector was one of the drivers of the national economy — the annual growth of the industry was 5–6%. The share of agricultural production in the country’s GDP was 10%, and together with food processing — 16%. Trade in agricultural commodities and products annually brought about 22 billion dollars to Ukraine and accounted for 41% of all exports. Ukraine supplied food products, raw materials and feed to almost 130 countries of the world, including half of the world’s sunflower oil reserves, a third of the world’s corn and wheat reserves.

Ukraine was and, we hope, will remain a global supplier of agricultural products, an important player in ensuring the global food system’s sustainability and security.

At the same time, before the full-scale invasion, Ukraine did not have achieved much in sustainability in the agricultural sector’s development. Ukraine has one of the highest share of tilled land in the world, which covers almost 54% of the entire territory of the country. Large areas tilled, soil and water contamination, insufficient moisture content, wind and water erosion caused by the destruction of field protective woodland strips, non-observance of crop rotation, etc. led to a significant soil degradation, which before the start of active military operations amounted to about 8 million hectares — this is almost 20% of all agricultural land.

At the same time, we witness a gradual development of agro-ecological methods of farming in the country — such as organic, no-till or low-till production methods, etc. Although yet all together they are practiced on no more than 2% of the total amount of agricultural land in Ukraine.

The large-scale aggression launched by Russia has added new challenges and problems to the industry, as well as revealed other flaws in the existing system.

The blockade of sea ports in the first months of the aggression led to a significant reduction in exports from 6—7 million tons per month to 1.5 million tons, which was reflected in a drop in agricultural commodity prices and a significant increase in costs for logistics by alternative transport routes. Although the grain corridor has been established later in the year, there has been a significant decrease in exports.

There was an increase in the cost of production due to the increase in the prices of fertilizers, fuel and seeds. Considerable areas of land have become unsuitable or too risky for continuing production activities due to heavy shelling and mines. Agricultural infrastructure sites, such as warehouses, transport, energy supply and processing facilities also suffered significant destruction.

In particular, the war in Ukraine demonstrated high vulnerability of intensive production and long supply chains. Due to power outages, large livestock complexes
were severely affected, became easy targets for airstrikes and proved to be unprotected in wartime conditions.

Due to the destruction of transport infrastructure facilities, we felt the imperfection of supply chains spread over large territories due to the remoteness of production facilities from logistics centers.

Direct losses, according to the data of KSE and the Ministry of Agrarian Policy and Food of Ukraine, as of September 2022, reach $6.6 billion. Indirect losses are equal to $34.5 billion. Due to military actions, 23% of the industry has been lost or damaged.

Currently, it is difficult to assess the damage caused, in addition to the unaccounted environmental damage and the subsequent impact on climate change. If we continue agricultural production as it was until February 24, we can predict that there will be further degradation and depletion of land resources under intensive production; further soil and water contamination and the impact of climate change will intensify. For example, last year there was a lot of discussion around the Second Nationally Determined Contribution (NDC2) project of Ukraine to the Paris Agreement, which was finally approved by the Cabinet of Ministers of Ukraine on July 30, 2021. According to calculations, the adaptation of the agricultural sector within the framework of NDC2 required (as of 2021) about 2.3 billion euros of investments until 2030. At the same time, according to the calculations of the International Finance Corporation (IFC), over the past 20 years, Ukrainian farmers have already lost 2 billion US dollars due to the risks associated with climate change, and further losses will only increase if the approaches to farming are not changed. Instead, the IFC estimated the investment potential of Ukraine in the field of climate-oriented agriculture at 11 billion US dollars.

We are now at the stage where we have to rethink and find more efficient and rational ways for agricultural production and the entire food system. The EGD aimed at achieving climate neutrality by 2050 has the corresponding provisions, covering all spheres of human activity and laying the foundations for establishing climate-oriented production. In addition, the EGD provides momentum to sustainable rural development, because it emphasizes the localization of supply chains and the development of localized production for local consumers. The key should be to reduce the distance between producers and consumers, allowing the producer to maintain fair prices to the produce.

The principles laid down in the EGD should become the base in the development of post-war recovery plans for the agro-industrial sector of Ukraine. Currently, unfortunately, the sustainable recovery of agriculture is considered only as one of the components of the industry, along with the recovery of traditional farming methods. The EGD is mentioned in the draft of the Recovery Plan of Ukraine entitled “Development of the “Smart Green Deal” and provides for “the gradual bringing of requirements for Ukrainian agricultural production into compliance with the requirements of the EGD, taking into
account Ukrainian specific conditions” in the third stage, starting in January 2026 until December 2032.

Nevertheless, rethinking and changing the entire global system of food production and consumption is on the global agenda, and **Ukraine, as a global supplier of agricultural products, should provide example of new management and lead the global movement for a safe food system for all.**

**Development of a waste management system**

Waste management in Ukraine before the war has become a national issue of great significance, both due to the dominance of resource-intensive and wasteful technologies in the national economy and due to the absence of adequate addressing for a long time. The resource-intensive production within the energy and commodity imports specialization of the national economy, together with the outdated technology use determines present and future high rates of waste generation and accumulation.

Before Russia’s military aggression in 2022, no effective waste management system has been created in Ukraine. Today, it has become evident that the issue of waste disposal must be addressed urgently due to the accumulation of large volumes of specific waste, the safe disposal procedures for which simply do not exist in our country. Ukraine already got problems when, during the COVID-19 pandemic, the amount of medical waste increased dramatically, and there was no adequate system for their safe disposal. Today, we have another huge problem — the increase in waste due to significant destruction caused by war hostilities, air raids and shelling of populated areas and civilian infrastructure. **We have to create an effective waste management system relying on maximal reuse of secondary materials** — to reduce the accumulation of waste, dependence on mineral extraction and import of materials carrying significant environmental and economic risks. This involves ensuring fully functional national waste prevention system, as well as effective collection, environmentally safe handling, processing, and disposal. The effective waste management system is a key to the energy and resource independence of the country, natural resources preservation, and an urgent strategic task (priority) in the national policy.

For example, construction waste, when processed (shredded), can become the foundation for new roads and buildings. Scrap metal can be carefully collected and returned to the production cycle. Plastic can be recycled into new products or crushed and added to primary raw materials. Glass can be recycled almost limitless times.

It is necessary to organize systems of collection, safe handling and return of useful materials from hazardous waste to the production cycle (WEEE, destroyed industrial equipment and equipment for the generation and distribution of electricity, ELVs, huge amounts of military equipment). Special attention should be paid to carcinogenic asbes-
tos-containing waste formed due to widespread housing and infrastructure destruction. Ukraine has already banned the use of asbestos in construction, in accordance with its obligations to the EU, but many such materials have been used in the past (for example, as roof covers) and after significant destruction caused by military actions, the problem of their safe disposal arose.

The war has interfered with the logistics of collecting, storing, processing and removing solid waste in many regions of Ukraine. Planned and existing regional waste management systems must be updated taking into account the consequences of military operations and future economic challenges. Perhaps, somewhere, local authorities will have to re-design the logistics of solid waste management almost from scratch.

The development of recycling facilities can give momentum to new modern investment projects and ideas, and innovations development. Environmentally safe use of various categories of secondary materials in for rebuilding and reconstruction, as well as in production and technological processes should be encouraged at all levels.


After the adoption of the Law “On Waste Management” in the summer of 2022, a number of other laws related to the framework, necessary for Ukraine to launch a European-style waste management system, must be brought to the agenda of the parliament.

Therefore, addressing problems long ignored and intensified by the war can become a significant step toward the more sustainable future. A smart approach to post-war reconstruction, using the best available technologies and management practices can become a platform for innovation in the field of waste management.
Conclusions and recommendations

The post-war reconstruction of Ukraine must be green.

Why?

- We share the European values and aspirations of the European Union and want to become its full member.
- We strive to build a better future on the basis of sustainable development.
- Europe must become stronger and more resilient to energy security and the climate crisis risks.
- The European Green Deal is closely related to geopolitics.
- The European Green Deal envisages the modernization and decarbonization of the entire economy.
- The energy transition is critically important for the security and resilience of the EU.
- The green transition will ensure greater economic efficiency and competitiveness of Ukraine on the European and world markets.
- The green recovery is an opportunity to leap to a higher level of development in Ukraine.

How?

- Learn the lessons of previous and current crises.
- Define what we want to build.
- Define development priorities in accordance with international obligations.
- Establish a system of national goals and restrictions, which should be implemented into regional development plans, serve as a framework for planning the development of local communities.
- At the regional level, design development plans on the principles of sustainable development, based on national recommendations adapted to local conditions and needs.
- Local communities should seek their own local solutions based on local problems, needs and resources but within the framework of goals and constraints introduced at the national level and in accordance with regional development plans.
- Compliance with the European green and digital agenda.
Post-war recovery of Ukraine: rebuilding for a better future

- Integration of the strategic documents adopted within the framework of the EGD into our legislation.
- Modernisation of Ukrainian industry for decarbonization and economic development.
- Full observance of climate and environmental policy at all levels, in all sectors, all specific development plans and projects.
- Observance of all procedures related to the implementation of the principles of green recovery in financing.
- A unified Ukraine’s recovery platform and supporting financial tools in EU need to be created and become the main legal instrument recovery efforts, to be a combination of grants and loans and the EU target budget; ensuring transparency, accountability and reliable financial management with a clear connection between investments and reforms.
- Use of donor funds must be transparent and open to the public involving all stakeholders.
- Ensuring the institutional capacity: modernization of environmental protection institutions at the national and sub-national levels on the basis of proper environmental governance.
- Ensuring administrative capacity for planning and implementation of environmentally sustainable rebuilding efforts.
- Involvement of environmental experts and watch groups in the creation of programs at all levels, the Ministry of Environment should create institutional capacity for this and advocate for the implementation of green restoration principles in sectoral policies.
Post-war recovery of Ukraine: rebuilding for a better future

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Post-war recovery of Ukraine: rebuilding for a better future


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The Ukrainian National Platform of the Eastern Partnership Civil Society Forum is a network of more than 140 non-governmental organizations in Ukraine that advocates Ukrainian interests within the framework of the Eastern Partnership. The platform is part of the Eastern Partnership Civil Society Forum (EaP CSF).

The Eastern Partnership Civil Society Forum is unique multi-layered regional civil society platform aimed at promoting European integration, facilitating reforms and democratic transformations in the six Eastern Partnership countries — Armenia, Azerbaijan, Belarus, Georgia, Moldova and Ukraine. Serving as the civil society and people-to-people dimension of the Eastern Partnership, the EaP CSF strives to strengthen civil society in the region, boost pluralism in public discourse and policy making by promoting participatory democracy and fundamental freedoms. The EaP CSF is a non-partisan bona fide non-governmental organisation.

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