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UKRAINE'S POST-WAR RECOVERY IN LINE WITH GLOBAL BENCHMARKS FOR DEVELOPING A CLIMATE-NEUTRAL ECONOMY

Climate sustainability is one of the fundamental guidelines for the development of the global economy in the coming decades, which requires coordinated action by the global community to ensure a green transition of production systems and climate leadership.

The war waged by the russian federation against Ukraine exacerbates the problem of climate-neutral development not only in terms of its economic impact, but also through a significant increase in the carbon burden. Its structure and nature have a direct impact on the economy (Figure 1).

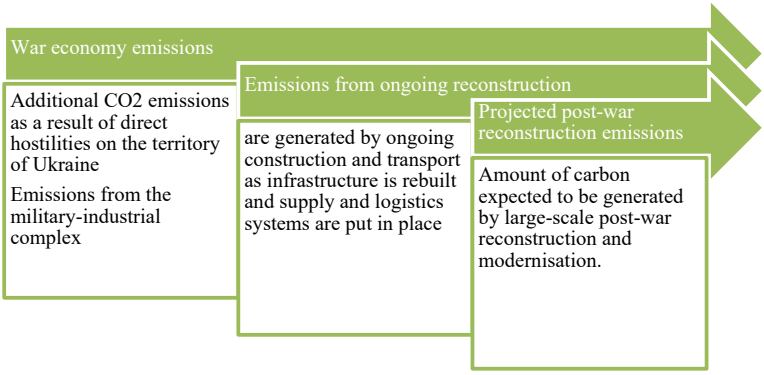

Figure 1. Fields of additional carbon burden of the economy during the war

Source: summarised by the author based on analysis [1]

It should be noted that these areas of emissions significantly increase Ukraine's carbon footprint, place an additional burden on the economy in terms of compensation, and should be completely eliminated in the post-war perspective through appropriate penalties from russia. According to preliminary estimates, during the first year of the russian-Ukrainian war, an additional 120 megatonnes of carbon were generated on the territory of Ukraine [1], which is almost equivalent to the annual carbon footprint of the national economy in the pre-war period.

As a result of the war, Ukraine has a double carbon burden, which, in the context of the economic downturn, makes it difficult to move towards climate neutrality. On the other hand, this makes it even more important to identify and implement low-carbon practices now to ensure the climate neutrality of the recovery.

Emissions from the military operations account for 40% of the current carbon footprint of the war in Ukraine, with the lion's share coming from fuel burning by the russian invaders and the resulting fires. However, the ongoing reconstruction is accompanied by the generation of an even larger share of the carbon footprint (up to 60%), almost half of which is generated by the restoration of energy-related industries. In practice, these figures may be even higher. Under these conditions, it is difficult to ensure green standards for construction or transport if they have not been developed and introduced earlier. In the future, the modernisation and recovery of Ukraine's economy will require significantly more resources and, consequently, carbon intensity.

In view of the above, there is a need to intensify national climate policy measures and orientate the national climate course towards stricter emission criteria. This conclusion is confirmed by the calculations of the required emissions of the national economy in the post-war perspective under two scenarios at once: the Paris Agreement target (194.5 megatons/year in 2030, a 79.5% reduction compared to 1990) and the alternative CAT methodology (236.5 megatons/year in 2030, a 75% reduction compared to 1990) [2].

The green post-war recovery of Ukraine's economy on the basis of climate neutrality is critical to ensuring the country's sustainable future and the realization of its European integration aspirations. Its key aspects include the following important issues (Figure 2).

One of the key aspects is the implementation of the concept of sustainable digitalisation in the realities of martial law and post-war reconstruction. Ukraine is actively integrating digital solutions into various areas of the socio-economic system and public administration, which allows us to talk about a fairly solid foundation for using digitalisation opportunities

for a green transition. However, the challenges of post-war reconstruction require widespread digital transformation of domestic industries and a faster pace of bridging the digital divide.

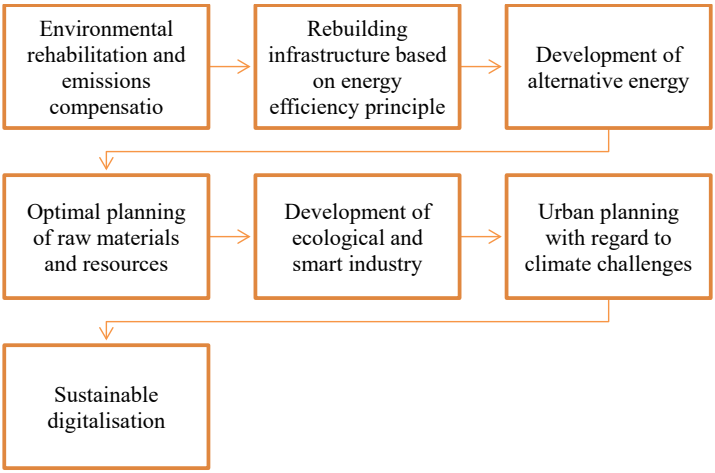

Figure 2. Aspects of green reconvery of Ukraine to ensure climate neutrality

Source: compiled by the author

Given that military operations lead to significant soil, water and air pollution due to the destruction of infrastructure, the use of weapons, and leaks of harmful substances, the priority is to carry out environmental rehabilitation, clean-up and restoration of natural ecosystems. On the other hand, it is important to build the imperative of emissions compensation into post-war economic growth. This implies the involvement of reconstruction actors in the implementation of the EU's 'reduce and offset' model from the very first steps of recovery. When rebuilding the destroyed infrastructure, it is necessary to use the latest energy-efficient technologies and integrate renewable energy sources to the maximum extent possible. This may include the construction of green buildings, the use of solar and wind energy, and the development of energy storage and distribution infrastructure.

It is worth noting that post-war reconstruction provides a unique opportunity to build some industrial clusters virtually from scratch, in particular, to move to more modern production and management practices focused on achieving climate neutrality, circularity and sustainability in general. This involves reducing waste, reusing resources and materials to

ensure the long-term sustainability of the national economy in the post-war period.

Sustainable digitisation will help to strengthen these aspects of climate policy through the integrated use of modern digital tools [3–5]:

1. Systems for monitoring and analysing climate change data. The use of sensors, drones and satellite technologies for in-depth analysis of climate change and emissions in the context of individual industries and regions of Ukraine and the EU.

2. Applying the concept of 'big data' as a tool for assessing the current state of climate change and predicting its consequences.

3. Establishment of information platforms and international EU-Ukraine research clusters for the direct development and implementation of innovative technologies in the field of energy efficiency, renewable energy and other areas related to the reduction of greenhouse gas emissions.

4. Integration of digital tools into the EU-Ukraine climate diplomacy and communication network. In particular, through the development of web portals, mobile applications, social media and educational materials to engage the public in decision-making and to raise awareness among Ukrainian economic actors of the opportunities, directions and sources of green transformation projects.

5. Develop digital education, joint education and research programmes in climate management to bridge the gap in project resources and shape environmental thinking for the future.

6. Integration of digital tools of the financial and public sectors (FinTech and GovTech) for transparency of interaction processes in the context of implementing joint investment programmes in the field of climate change.

7. Mutual recognition of systems for monitoring and reporting on climate change and its impacts, gradual implementation of information support for monitoring environmental information in Ukraine in accordance with EU standards. Create a single digital platform for regulatory support.

8. Establish a common electronic emissions trading system, primarily for products covered by the CBAM mechanism.

At present, Ukraine is interested in developing these instruments, taking into account its European integration aspirations, the prospects for post-war recovery and the strengthening of the economic partnership with the EU, which increasingly increases the leverage of climate pressure on producers.

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