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DIGITAL BACKBONE FOR CLIMATE NEUTRALITY OF THE GLOBAL ECONOMY: UKRAINIAN AND THE EU CONTEXT

Climate neutrality has become a major challenge for global society on its vital path to the greener future. Despite the fact, that international actors are more likely to engage in global climate initiatives such as Paris Agreement, Green Deal, European roadmap 2050, Fit for 55 and others, the pace of change remains insufficient to achieve “zero” emissions and prevent irreversible climate change [1]. Moreover, the mentioned year 2050 was not chosen by chance as a year of achieving climate neutrality of the economy. Delaying this countdown may lead to the irreversible climate change and global struggle for natural resources [2], [3].

With this in mind, digitalization could be considered as a driving force for the climate neutrality, enabling a wide range of digital tools and applications in climate governance and regulations. Furthermore, European Commission declares the necessity of namely “twin green and digital transition” of the economy [4]. Modern scientists maintain the idea of synergetic linkages in “eco-digital” space [5], [6] and emphasize fundamental role of technology clusters in climate stability, particularly in metallurgy, agriculture, energy consumption and transportation [7], [8], [9].

The implementation of digital technologies may effectively address ecological concerns, caused by global manufacturing. Moreover, there are at least three areas in which digitalization can contribute to environmental sustainability.

The first area focuses on reducing greenhouse gas emissions throughout digitalisation and optimization of production processes, resource consumption and transportation logistics.

The second area involves eco-innovations to absorb harmful substances in urban environments and mitigate the impact of the greenhouse effect.

Finally, the third area implies regulating framework for climate neutrality within the creation of digital platforms for monitoring and controlling environmental impacts, both positive and negative, while also engaging stakeholders in this process.

Modelling the dynamics of GHG emissions in the EU and Ukraine revealed their significant variations under different decarbonisation scenarios (Figure1).

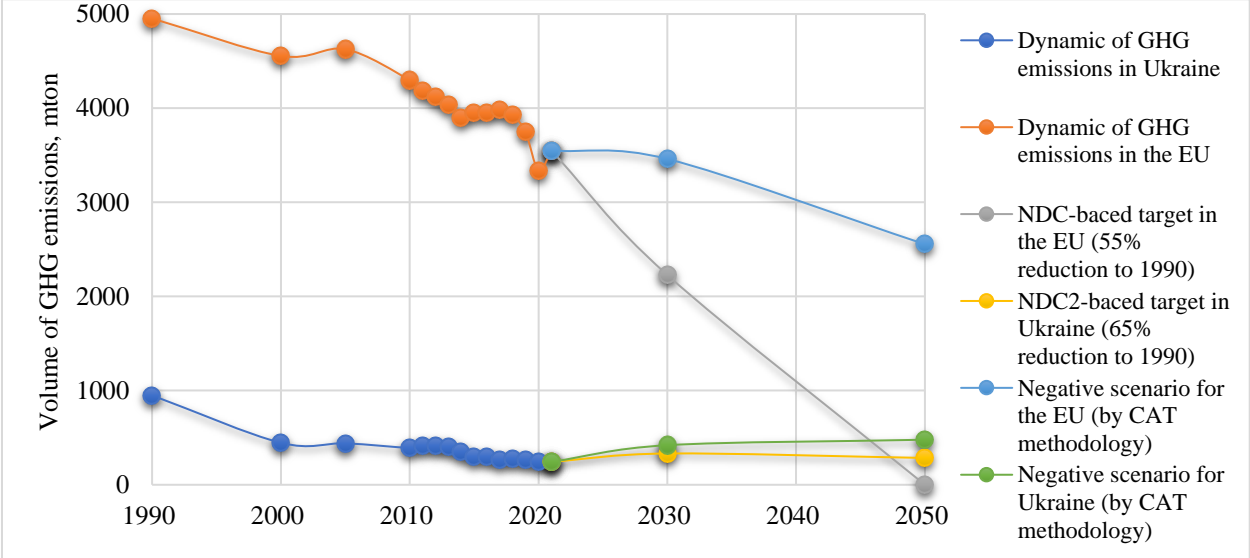


Figure 1. The dynamics of reaching climate neutrality by the EU and Ukraine

The diagram illustrates the impossibility to fulfil the Paris Agreement by the milestone years of 2030 and 2050. When analyzing the effectiveness of climate policies of Ukraine and the EU, the main obstacles to integrating the climate policies of Ukraine and the EU currently include the following [10]: different levels of technology and infrastructure development; the possibilities of providing resources for the implementation of joint policies; different standards and concepts of environmental security; different levels of development of climate governance and monitoring at the state level and at the level of individual industries; different levels of environmental awareness demonstrated by economic actors and citizens; discrepancies in the amounts of financial instruments available for the implementation of green transition; differences in standardization and regulatory support of climate policies; unfavourable investment climate in Ukraine, as well as geopolitical instability and conditions of the martial law.

Digitalization will help to overcome the mentioned barriers to integration between Ukraine and the EU in the sphere of climate policy thanks to comprehensive application of the modern digital toolkit:

1. Introducing the system of monitoring and analysis of climate change data: Using detectors, drones and satellite technologies for deep analytics of climate changes and emissions in individual industries and regions of Ukraine and the EU.

2. Using the “big data” concept as a tool for performing assessments of the current state of climate change and forecasting its consequences.

3. Creating EU-Ukraine information platforms and international research clusters so that to directly develop and introduce innovative technologies in the fields of energy efficiency, renewable energy and other areas related to reduction of GHG emissions. The use of artificial intelligence will facilitate improvements in energy efficiency of buildings and optimization of energy consumption.

4. Integrating digital instruments into the network of climate diplomacy and EU-Ukraine communications – through development of web portals, mobile applications, social networks and study materials, in particular – in order to engage general public in the process of decision-making and increasing the awareness of Ukrainian economic actors about the opportunities, directions and sources of green transformation projects.

5. Developing digital education, joint education and science programmes in the sphere of climate governance with the aim of further bridging the gap in project resource provision and developing the environmental mindset.

6. Integrating the digital tools of the FinTech and GovTech sectors in order to ensure the transparency of interaction in the context of implementing joint investment programmes in the sphere of combatting climate change.

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

8. Creating a joint electronic emissions trading system primarily for the products that are subject to CBAM mechanism. At the present stage, Ukraine is more interested in the development of the mentioned instruments in view of its Eurointegration aspirations and prospects for strengthening its economic partnership with the EU, which is increasing its levers of climate pressure on producers.

However, taking into account the EU’s and Ukraine’s shared ambitions to build climate-neutral economy, there is a need to design a global system for the digitalisation of “green” transition of national economies – the one that would allow developing a comprehensive understanding of the digital paradigm of climate neutrality. In particular, at the global level, digital transformation can be considered across three dimensions: as a tool for “green” transition at the level of individual production units and industries; as a process of optimising and coordinating sectoral industrial policies; and as a shared information and communication environment for climate interaction and implementation of joint intergovernmental programmes.

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