

DECARBONIZATION OF THE STEEL INDUSTRY. POSSIBLE SOLUTIONS FOR UKRAINE

The issue of decarbonization is being actively articulated in international economic relations. At the same time, today different countries show different understanding and different degree of readiness for active actions in this direction. What should Ukraine do? In addition to the environmental approach, the economic component so play an important role in the problem of decarbonization: decarbonization has become a source of additional competitive advantages for those who set, lobby or follow the rules. The article examines the economic conditions and factors that determine national decarbonization policies, as well as their consequences for national economies and the European Union (EU). The conclusion is drawn on the heterogeneity of their approaches to solving the problem of climate change under the influence of carbon dioxide emissions, as well as on the significant influence of the degree of economic development of countries on their willingness to approach the problem of decarbonization more strictly.

According to the World Steel Association, global steel production accounts for 7-9% of global greenhouse gas emissions. Every ton of steel produced in the world generates on average 1.83 tons of CO₂. The industry therefore faces a critical challenge: to reduce emissions to net zero within the next decades, in line with the Paris Climate Agreement. The flagship of this process is European metallurgy, which must demonstrate a result in the form of a 55% reduction in CO₂ emissions already in 2030 and achieve climate neutrality in 2050 under the European Green Deal.

There are three steelmaking technologies in the world: martensitic, oxygen-converter and electric arc furnaces. martensitic has the highest level of CO₂ emissions – on average 2,500 kg per ton of steel, oxygen-converter technology – 1800-2000 kg CO₂ per ton of steel, electrometallurgical technology – 100-300 kg CO₂ per ton of steel. Nowadays, the main and relatively cheap method of making steel is the basic oxygen furnace method: iron ore and coal are mixed and the output is liquid iron, which is then converted into steel. Here, the main raw material is scrap metal, which is melted in electric furnaces using electrical energy. Electric arc furnaces are the most realistic and accessible way for metallurgists to meet the stringent standards of the European Green Deal.

In Ukrainian steel mills there have been no fundamental changes in steel production processes for 150 years. According to the Association "Ukrmetallurgprom", only 5.5% of steel in Ukraine is produced in electric arc furnaces, the rest comes from Martin and oxygen converter technologies. Outdated technologies not only lead to excessive greenhouse gas emissions, but also pollute air, water and soil, negatively impacting public health and the environment.

Moreover, Ukraine is a part of Europe and its development is impossible without taking into account the environmental component. Decarbonization is not a fashion, but a global trend and process for the coming decades. But should Ukraine in its current situation "blindly" follow the EU on this issue? We see that China, which accounts for 30% of global CO₂ emissions, and India, which accounts for about 12%, are in no hurry and are looking for their own way in this matter. Too much financial effort is required.

The issue of decarbonization and its financing is complex for all countries in the world, and even more so for Ukraine as a developing country. Ukraine needs to develop its own decarbonization formula.