

# INTERNATIONAL COOPERATION FOR SUSTAINABLE DEVELOPMENT

## HYDROGEN PRODUCTION AS A FACTOR OF ECONOMIC DEVELOPMENT OF UKRAINE

**Rodion Sevastyanov**, PhD in economics, associate professor  
National University “Zaporizhzhia Polytechnic”, Ukraine

The war on the territory of Ukraine, the loss of industrial and energy capacities, business relocation and migration have all contributed to a decline in the economic potential of the state. A factor in economic development is the transition from technically worn-out and environmentally polluting thermal power plants to hydrogen production. The relevance of developing hydrogen power generation in Ukraine in the context of cooperation with the EU countries is confirmed in the current environment. This development is driven by such problems as dependence on fuel imports, deterioration of production facilities, and lack of homogeneity in the distribution of energy production and consumption among regions.

Hydrogen plays a special role in the modern economy. It can balance the ever-increasing energy consumption with the reduction of CO<sub>2</sub> emissions. Modern hydrogen energy technologies include hydrogen production, storage, transportation and use. The most efficient way to produce hydrogen for energy needs is to use the electrolytic water decomposition method; modern electrolysis plants have high technical characteristics and are easy to maintain. As a primary source of electricity, both surplus electricity from renewable energy sources and peak energy from traditional power plants can be used. The use of renewable wind and solar energy to power entire sectors of the economy poses insurmountable challenges if not supplemented by hydrogen.

Hydrogen production technology involves the electrolytic decomposition of water. The source of electricity can be either surplus electricity from renewable energy sources or peak energy from nuclear, thermal and hydroelectric power plants. The use of solar and wind energy to supply entire sectors of the economy is not always sufficient. That is why the development of hydrogen energy is a relevant factor.

Ukraine has the potential to use the possibilities of transporting mixtures of natural gas and hydrogen through main and distribution pipelines.

Ukraine has been an associate member of the EU since 2014. International cooperation is an important part of the EU's hydrogen strategy. The EU intends to develop cooperation on green hydrogen production with neighbouring countries and regions to facilitate their transition to clean energy and their sustainable development. Ukraine has an Association Agreement with the EU and is a party to the Energy Community Treaty. In 2019, the European Commission presented a programme to transform the European Union into a carbon-neutral continent - the European Green Deal [1]. This project is supposed to reduce CO<sub>2</sub> emissions by 50-55% in 2030. The overall goal of the European Green Deal programme is to completely decarbonise the energy

sector by abandoning the use of fossil fuels (coal, oil and natural gas) and replacing them with renewable energy sources. Ukraine is an energy partner of the EU. In the future, Ukraine may become a partner of the EU in the production, transportation and storage of greener gases on the basis of the existing infrastructure.

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- Thus, the benefits of developing hydrogen technologies in Ukraine include
- additional investments from the EU countries;
  - new opportunities for Ukrainian business;
  - additional jobs;
  - improvement of the environmental component;
  - active participation in measures to combat climate change.

No author. Energy Strategy of Ukraine until 2035. Verkhovna Rada of Ukraine. (2017). Document. Date of visit: 17.04.2023. URL: <https://zakon.rada.gov.ua/laws/file/text/58/f469391n10.pdf>

No author. Official site of European Commission. European green deal. (2020). 1. Date of visit: 17.04.2023. URL: [https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal\\_en](https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal_en)

## **THE PROBLEM OF WAR IN THE CONTEXT OF THE GREEN ECONOMY**

**Lesya Korolchuk, PhD**

Lutsk National Technical University, Ukraine

Since the 70th session of the UN General Assembly in New York in 2015, which adopted the final document “Transforming our world: the 2030 Agenda for Sustainable Development” (Transforming our Wor., 2015), the issue of transition to a green economy to preserve our planet for future generations has become particularly important. Having embarked on the path of sustainable development, the international community declared its intention to green all spheres of public life, but the bloody war unleashed by the Russian occupiers on the territory of Ukraine and the natural build-up of the military-industrial complex by all countries of the world in this situation reverse the green initiative in their own way.

The problems of greening the economy and sustainable development are the subject of works by such domestic scholars as A. Starostina, V. Kravchenko, B. Paton, Y. Kulchytskyi, B. Kulchytskyi, S. Panchyshyn, and such foreign scholars as E. Loiseu, L.