

# PROSPECTS OF BIOECONOMY AS A PRECONDITION FOR SUSTAINABLE DEVELOPMENT IN UKRAINE

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**Introduction.** Sustainable development as a world goal and at the same time as a new model for production and consumption as well as the resource allocation has been one of the biggest challenge for humanity over the last decades. From one point of view, sustainable development has been agreed and discussed by all the world actors. Common acceptance of its concepts as the only one possible way of making progress turned it into almost new global way of thinking and evaluating efficiency. Nevertheless, from another point of view, in its being proclaimed fair and fully proved as balanced development for current and future generations, the sustainable development agenda still has been contributed poorly and featured by low level of achievement. In terms of it, we find exploring key issues of the sustainable development dynamics and ways of their solving to be topical especially for Ukraine as a developing country.

**Presentation of the main research.** One of the sustainable development pillars, which is discussed and studied hard now days, is bio economy. In Europe, we may observe a trend towards building a new bio economy strategy for sustainable Europe since as futurists forecast the humanity would face a competition for natural resources due to growing population and climate change. It means that EU officers consider bio economy as a strategic vector for regional development that must be sustainable. They vision sustainability as a steadily growing primary production and processing industries for farming and making goods and services with fewer natural resources consumed and more food and other goods produced. Bio economy is seen as a main assistance mechanism in making a transition towards sustainable society that is based on the resource efficient technologies, depends on renewable sources of energy and keeps the planet safe for future generations. As Europe strives to follow a path of growing competitiveness in the world,

its industries must be ensured with stable availability of raw materials and energy. However, some give prognosis that by 2050, oil and liquid gas production is expected to decrease by almost 60 per cent. As one of the sustainable goals states, food waste represents another serious concern. As long as developing and depressed countries meet unprecedented number of hunger people not able to satisfy their basic needs because of absence of any type of agricultural production, an estimated 30 per cent of all food produced in developed countries is discarded. Obviously, major changes are needed to reduce this amount and to tackle the issue (EC, 2021).

At the same time, bio economy as a part of a green strategy has been actively debated and put under critiques. The stumbling block for the bio economy as a model for new society and production is impossibility to leave the era of fossil fuels. Opponents of the bio economy do not believe that renewable energy may meet all the demands from industries and households for energy supply. Some engineers say that no wind, no solar and no water natural sources can provide the amount of renewable energy enough for fast growing economies of the EU and the world (Fatheuer, 2015). Nevertheless, bio economy as being one of paths for sustainable development must be explored and evaluated from various sides.

There are many definitions and statements explaining the term of bio economy, but, in our research, we decided to rely on the definition provided by the European Commission. Thus, according to it, bio economy is “encompassing the sustainable production of renewable resources from land, fisheries and aquaculture environments and their conversion into food, feed, fibre bio-based products and bio-energy as well as the related public goods – is an important element of Europe’s reply to the challenges ahead.

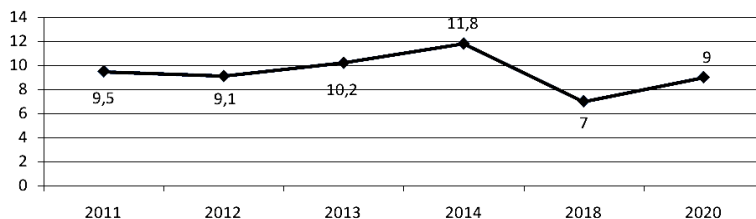
The bio economy includes primary production, such as agriculture, forestry, fisheries and aquaculture, and industries using / processing biological resources, such as the food and pulp and paper industries and parts of the chemical, biotechnological and energy industries” (EC, 2021). By taking into consideration main parts of the bio economy definition provided by the EU, we chose and studied three main indicators that from our perspective fit the term best of all and reflecting the state of bio economy in relation to Ukraine. To do this, we used the following methodology.

First of all, we have divided the essence of bioeconomy into parts and discussed which of them are the most representative and reflective in order to showcase the state of sustainable development and bioeconomy in Ukraine realistically. Thus, we obtained three main indicators that we would have liked to study: value added by agriculture industry, poverty headcount ratio and total number of population over the years. Then, we searched for specific data over the years via the platform of the World Bank. Since it is better for Ukrainian sources of statistics to be verified by more precise and wide international ones, we selected to process information provided exactly from the World Bank platform that usually accumulates correct and reliable information from around the world, giving an opportunity to compare countries' development. Research results as for the data range are given below.

As Figures 1, 2 and 3 shows, Ukraine is now facing its greatest challenges to the achievement of sustainable development goals. They concern such areas of bio economics and sustainable development as agriculture production, poverty and amount of population that, apart from all said above, contribute much to strengthening the convergence of living standards across Ukrainian regions. Over the last decade, agriculture value added in % of GDP has not grown in Ukraine (Figure 1), which is an evidence of the economic stagnation and unsatisfactory readiness of Ukraine to tackle the issue of food, feed and fibre-based production.

**Figure 1**

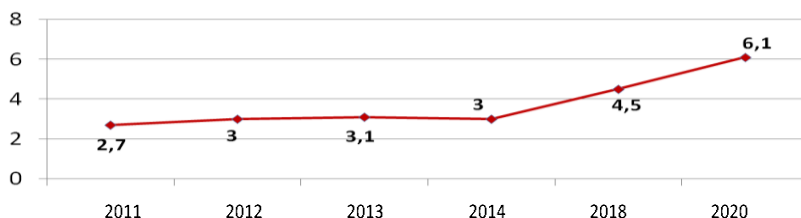
*Agriculture, value added, % of GDP, Ukraine (including forestry, hunting and fishing as well as cultivation of crops and livestock production) (compiled from World Bank Data, 2021)*



Despite the sustainable development goals call for addressing various inequalities within and across countries, Ukraine has shown steady rise in poverty level over the last decade (Figure 2). The sustainable development goals as well as bio economy incorporate an important fundamental that says that everybody must have equal rights and access to basic services for satisfying natural needs within a country.

**Figure 2**

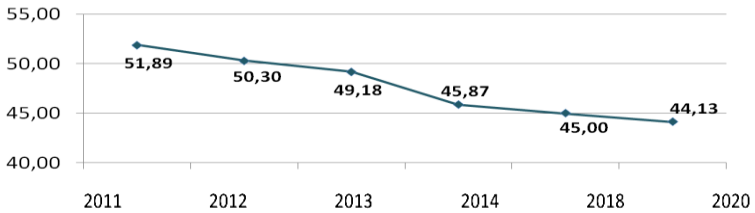
*Poverty headcount ratio at 1.9 US dollar per day, % of population, Ukraine (compiled from World Bank Data, 2021)*



Yet according to the poverty ratio in Ukraine, we may find the principle broken in reference to inequality within it. While compared with the rest of the world, Europe may be said to meet equality goals, Ukraine that is striving to join the European Union, has still stayed far behind. In addition, while in Europe, few people face extreme poverty and undernourishment and in general there is widespread access to key services (including health and education) and infrastructure, in Ukraine in 2020, more than 6 per cent of total population lived at 1.9 US dollar per day and less. Moreover, the share of such people rose dramatically from about 3 per cent in 2011 showing maintenance of the strong disparities across Ukrainian regions in equity. Thus, trends in relation to some equity measures are not moving in the right direction in Ukraine, breaking the principles of sustainable development and bio economy (Europe SD Report, 2020). Another negative trend preventing Ukraine and its society from meeting sustainable development goals and building up bio economy is dramatic decrease in total number of population (Figure 3).

**Figure 3**

*Population, total millions, Ukraine (compiled from World Bank Data, 2021)*



It shrank from almost 52 million of Ukrainians in 2011 to more than 44 million in 2020. Participants of the latest Dnipro Economic Forum representing business, government and public service sectors delivered relatively pessimistic assumption of population scenario ahead, which was a prognosis that by 2030 Ukraine will have had about 35 millions of people. Despite shrinking population trend is also common for European countries, it provokes alarm against the backdrop of rapidly rising number of population in China. Certainly, this scenario would not be welcomed by countries striving to avoid it by means of various political measures.

Obviously to tackle the issues blocking the achievement of sustainable development goals, Ukraine needs an integrated and comprehensive approach to implementing bio economy principles and must communicate clearly against them. Therefore, taking into account indicators analysed above, we should assume that an integrated approach to the sustainable development goals and bio economy must focus on three broad areas: agriculture production; addressing the problem of poverty and undernourishment; and negative trend of population amount. Achieving the objectives of the 2030 Agenda, the sustainable development goals and the Paris Agreement in Ukraine requires us to address negative impacts generated by poverty, agriculture underproduction and shrinking population, including those embodied into them.

**Conclusion.** Whereas sustainable development goals and bio economy remains to be seen as a long-term future prospect, attempts

to prevent climate change, poverty, declining population and food crisis must already affect current policy-making. All indicators discussed above in reference to Ukraine, in fact are topical for countries around the world and reflect fundamental challenges that must be tackled. Moreover, we offer to consider them now as the central issues of the global environmental crisis and at the same time as a starting point for numerous political initiatives focused on building up bio economy and achievement of sustainable development goals. Unlike sustainable development, which remains a long-term objective, the notion is that the bio economy and political measures focused on it can already make a significant contribution to the reduction of poverty level, increase in agricultural production and stop of rapid decline in total number of population in Ukraine.

The bio economy measures may finally serve Ukraine as strategic developments that would eventually substitute the current production and consumption system; today, however, the focus is on the concept's potential to solve environmental challenges. We may assume that Ukraine's reply to the above mentioned challenges preventing the achievement of sustainable development goals should concern integrated projects encompassing three main areas: recovering wide territories left uncomfortable for living after mining and metallurgical industries' closure due to introduction of specific innovations-based engineering solutions; then invoking the principle of equality based on the tool of minimum basic income for all citizens; and taking into mind challenges arising due to the industrial revolution 4.0 requiring substitution of human beings with robots.

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