

«Green» Vector of the Economic Development of the Country*

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The article is devoted to finding ways to ensure «green» economic growth in Ukraine. «Green» economic growth means growth based on stimulating environmental and economic development while ensuring the safety of natural assets and their uninterrupted provision of the resources and ecosystem services on which our well-being depends. The purpose of the study is to find the main factors of economic development for the development of an effective «green» strategy for economic development. The object of research is the process of ensuring the «green» economic growth of the country in modern conditions. The methods of analysis, synthesis, comparison, dialectical and abstract-logical methods were used in the work. The main goals and objectives of the «green» economy at the national and global levels are identified, the issues of factors influencing «greening» in Ukraine are revealed, and the issues of genuine savings as a result of nature management are considered. Based on this, the problems and threats to the «green» economy in Ukraine are analyzed. The genuine savings of Ukraine for 2010–2019 are calculated and possible ways to overcome the problem of their reduction are identified, which will contribute to the «green» development of the economy. It was found that in the system of reproduction of economic processes, investments play an important role, as they contribute to the restoration and increase of production resources, as well as accelerate the economic growth of the recipient country. It has been found that it is necessary to develop an adequate response to global environmental threats, which is a consequence of the unlimited use of natural resources. To achieve this goal, «green» economic growth must act as a catalyst for investment and innovation, which will promote sustainable growth and lead to new economic opportunities.

Keywords: «green» economy, renewable energy, genuine savings, environmental pollution, depletion of natural resources, gross domestic product, sustainable development.

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JEL Codes: F43, Q26, Q28, Q55, Q57

Introduction. In the XXI century, the issue of sustainable development and stimulating the development of a «green» economy has acquired social, environmental, and economic significance for all countries. After all, pollution of water, air, soil, and global warming causes a shortage of clean drinking water and food, increase the risk of famine and cataclysms.

Having adopted a strategy of sustainable development, the countries have set a course for

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the practical implementation of the «green» economy, because it creates new jobs, promotes the development of renewable energy, organic products, environmentally neutral goods, and services, the introduction of waste-free production.

The rapid development of science and technology meets a significant number of needs of society with specific economic and social problems. But at the same time, this development is accompanied by the deterioration of existing and the emergence of new environmental conflicts. The results of the study show that every year there is a clearer link between economic development (increase in gross domestic product, the emergence of new technologies, etc.) and its impact on the environment (climate change, etc.). That is why the relevance of the work is explained by the increased interest in finding a balance between the components of sustainable development of the country, and the «green» vector of such development is a fundamental element in the strategy of sustainable development at the national and international levels.

Problem statement. Many both domestic and foreign scientists have shown interest in studying «green» development. The work of such authors as B. Burkinsky et al. [3] deserves special attention. For example, Musina L. [7] in her works highlights ways to solve problems of interaction between the economy and the environment. It aptly describes the foreign experience of attracting investment and provides recommendations for the introduction of some foreign instruments. Nikolaev Yu. [8] studied the concept of sustainable ecological and innovative development considering integration processes. His work is devoted to the analysis of macroeconomic indicators of stability of the national economy, which directly depend on the ecological environment in the country. Among foreign researchers, it is necessary to highlight the work by J. A. Puppim de Oliveira et al. [2], which in their work reveal the issues of providing an investment-attractive environment for attracting foreign investment and consider the relationship of sustainable development of the country through the prism of environmental trends, namely the vector of «green» economy. However, despite a large number of studies, many questions remain open about the mechanisms for assessing the real state of the economy and the formation of an effective «green» strategy for economic development.

The purpose of the article is to determine the basic prerequisites for the development of the economic environment to build an effective «green» strategy for economic development.

Results of the research. Today, Ukraine is in the process of reforming the economic, social, political, and environmental aspects of the state system. Each of these components of the sustainable development of the country is important in the formation of national welfare. One of the main and advanced directions of realization of the set purposes is the development of a «green» economy which comprehensively considers the symbiosis of these components. The task facing Ukraine is the transition of the national economy to a «green» model of development based on sustainable production and consumption, efficient use of resources, as well as promoting business activities in the direction of resource- and energy-efficient, environmentally friendly production.

Ukraine must be guided by sustainable and «green» principles, develop in accordance with the principles of the circular economy (which provides for efficient use of resources, reduction of resource consumption per unit of output, and the amount of waste generated during consumption). Further development of renewable energy, ensuring the maximum level of energy efficiency and energy saving (providing for the transition to low-carbon and resource-efficient development), the formation of «green» cities, taking immediate collective action to combat climate change, etc. remain important.

According to the research and the importance of the transition to a «green» economy, there is a need to analyze methods and ways that will help in the implementation of developed projects

and the preservation of national savings. One such method is to attract foreign investment. Ukraine, even more than developed countries, faces the problem of organizing «green» investments. Today, there is no consensus among stakeholders in this area of action on what constitutes «green» investments. And this leads to the formation of ideological, methodological, political, regulatory, and economic contradictions. There is an acute shortage of appropriate risk assessment methods and tools, the development and especially the mutual harmonization of which is an extremely complex process and requires a long time. In Ukraine, there is no systematic vision of the model of financing «green» growth, its formation is not yet complete.

Ukraine is characterized by a low level of coordination of actions of various public administration bodies, which often makes it impossible to consistently implement certain policy guidelines. This is especially negative in the case of the development of «green» investment markets, which, as international experience shows, require high coordination in the direction of spreading new tools or platforms for «green» business. Such coordination should be facilitated by an organization that would take the lead in ensuring interaction and coordination between the initiators of «green» projects, investors, and regulators. There is no such organization in Ukraine.

In general, it should be noted that in Ukraine the topic of «green» investment is attracting more and more attention from politicians, experts, scientists, and the public. However, in the absence of clear political signals and a single focal point, most of the efforts in this area remain fragmented and do not contribute to the consistent development of «green» finance in Ukraine. Despite the fact that the importance of developing «green» funding is well understood, concrete actions that would contribute to this are still under discussion or are not being implemented too quickly.

In the system of reproduction of economic processes, investments play an important role, as they contribute to the restoration and increase of production resources, as well as accelerate the economic growth of the recipient country. Despite the fact that the investment attractiveness of sustainable development is quite high, the actual investment in a developed «green» economy remains extremely insufficient: actual investment in this area (even in the renewable energy sector, which is the largest recipient of such investment) is much less than objective needs.

Note that the implementation of environmentally friendly projects requires significant amounts of investment, for which most countries with economies in transition and developing countries do not have sufficient domestic financial resources. The problem is often complicated by institutionally underdeveloped and imperfect banking systems and domestic financial markets. The main internal source of change in the volume and structure of capital is savings. An exceptional role is played by genuine savings that implement the canons of «green» national accounts [1]. Genuine savings reflect some extent the «green» growth of the country.

Genuine savings is the rate at which savings are multiplied after a proper calculation of the depletion of natural resources and the damage caused by environmental pollution. This indicator was proposed by the World Bank [8]. The theory of «genuine savings» is closely linked to the attempt of the latest method of determining the national wealth of countries. The indicator of genuine savings of countries is needed as an indicator that forms an assessment of the effectiveness of the implementation of strategies for the development of environmental activities of the country. Regarding the peculiarities of the development of countries, a modified version of the calculation of the genuine savings is proposed to calculate by the formula [3]:

$$GS = GDP - I_1 - I_2 + I_3 - I_4 - I_5 \quad (1)$$

where GS – the indicator of the genuine savings of the country;
 GDP – the gross domestic product;

- I_1 – the private expenditures of the population;
- I_2 – the expenditures from the state budget;
- I_3 – the expenditures on education from the state budget;
- I_4 – the depletion of natural resources in monetary units;
- I_5 – the environmental losses in monetary units.

Consider this figure in more detail. Gross domestic savings are calculated as the difference between the gross domestic product and totally private and public expenditures [3]. Calculations of genuine savings across many countries show a large discrepancy between these indicators and traditional economic indicators such as gross domestic product (GDP). That is, there is a situation that with the economic growth of countries, many are degrading their environment. Calculating environmental indicators, such as genuine savings, can show only a slight increase, or even a negative value. At present, the real savings are calculated by the World Bank for more than a hundred countries and they are very different from the traditional economic indicators of these countries [6].

Prediction of genuine savings can be done using the method of extrapolation based on the average absolute increase. But this requires identifying past trends in the dynamics of true savings. Calculations of past genuine savings are made using information that corresponds to the time for which the calculation was made. That is, the price of natural resources corresponds to the average annual price of the year for which the calculation is made. If the price of natural resources was denominated in USD, the transfer to Ukrainian hryvnias should be at the average annual exchange rate of the year for which the calculation is made. Genuine savings can be calculated both in Ukrainian hryvnias and as a percentage of gross domestic product [6]. The results of such calculations can provide an objective idea of the need to select and implement a strategy for environmental and economic development, which will in the future lay the foundations for sustainable development.

The depletion of natural resources for Ukraine can be calculated as the product of the amount of coal mined for a certain period and the average annual cost of coal for a certain period. That means, coal has been chosen as the main type of fuel for which depletion occurs in Ukraine. This choice is due to the fact that this type of fuel is the main one for extraction from the subsoil, as well as for obtaining energy from stationary sources. Environmental losses in monetary form for Ukraine can be defined as the product of the amount of carbon dioxide (CO₂) emitted per year by the amount of damage from CO₂ emissions. This choice is due to the fact that CO₂ emissions into the environment are the largest among all pollutants. The cost of the marginal global damage is 20 USD per 1 ton of emitted CO₂ [6]. Table 1 shows the results of calculations of genuine savings for Ukraine for the period 2010–2019. Data for calculations received from the State Statistics Service of Ukraine [10].

Table 1

Genuine savings for Ukraine for the period 2010–2019

Indicator	Monetary units	2010	2011	2012	2013	2014
<i>GDP</i>	mln UAH	1 079 346	1 299 991	1 404 669	1 465 198	1 586 915
I_1	mln UAH	680 164	858 905	950 212	1 047 096	1 120 876
I_2	mln UAH	209 264	225 707	261 967	272 271	296 210
I_3	mln UAH	68 941	74 228	88 802	93 427	93 403
I_4	mln UAH	6 710	39 551,2	43 362	30 860,48	22 215,6
I_5	mln UAH	26 301	32 392,4	32 306,6	31 576,48	42 392,6
Genuine savings	mln UAH	225 848	217 663	205 623	176 821	198 624

Continuation of table 1

Indicator	Monetary units	2015	2016	2017	2018	2019
<i>GDP</i>	mln UAH	1 988 544	2 385 367	2 983 882	3 560 596	3 974 564
<i>I₁</i>	mln UAH	1 331 526	346 774	420 649	2 438 778	2 954 221
<i>I₂</i>	mln UAH	376 315	443 727	616 621	739 537	791 571
<i>I₃</i>	mln UAH	105 160	106 765	149 841	180 476	202 308
<i>I₄</i>	mln UAH	32 242,1	67 470,93	42 592	66 670,5	45 920
<i>I₅</i>	mln UAH	57 226,8	74 697,6	64 584	70 278,4	60 652
Genuine savings	mln UAH	296 394	1 559 462	1 989 277	425 808	324 508

According to the data from Table 1, Ukraine spends more than it saves. That means nothing is saved for future generations. If the trend continues, the rate of genuine savings will show a decrease in savings further. A comparison of genuine savings and GDP for Ukraine for 2010–2019 is shown in Fig. 1.

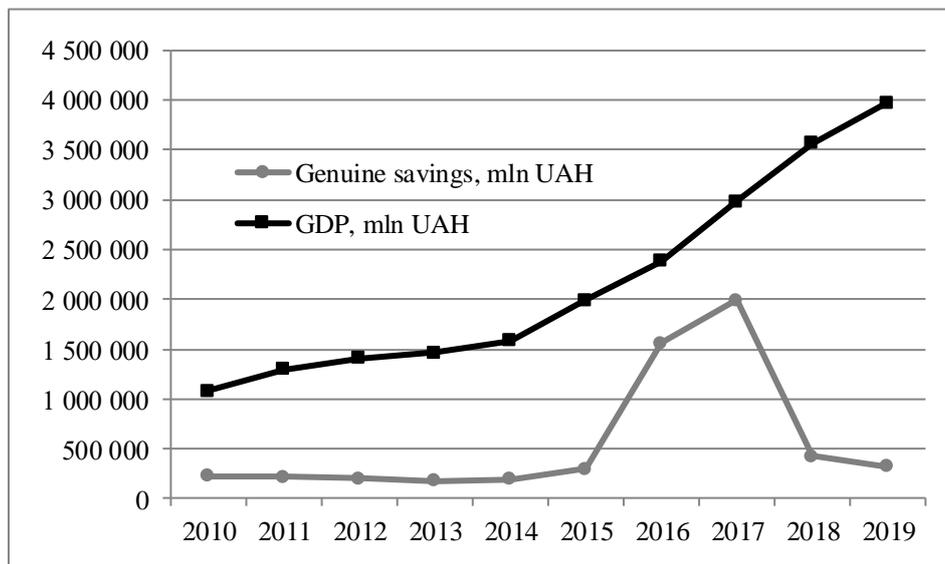


Figure 1. Comparison of genuine savings and GDP of Ukraine, 2010–2019

Growth in the value of genuine savings in 2016–2017 occurred due to decreasing in CO₂ emissions. This can be seen from the graph in Fig. 2, which shows CO₂ emissions into the atmosphere in Ukraine.

For reducing CO₂ emissions, it is necessary to switch to alternative energy sources, while replacing thermal power plants operating on hydrocarbons. In Ukraine, coal is mainly used at thermal power plants. But at the same time, there is a gradual increase in energy production from renewable sources, which is shown in Fig. 3. This growth is mainly due to the current «green» tariff for electricity from alternative sources in Ukraine, which is much higher than tariffs for electricity from traditional sources. But on the other hand, there are constant calls to abolish the «green» tariff because it's too high and compensated for producers by the state budget. In this case need a rational, balanced approach for solving this issue. For example, it is possible for

enterprises producing energy from alternative sources to introduce tax incentives, or to give the opportunity to sell a limited amount of energy at a «green» tariff. In order to overcome these problems, one can use the experience of the European Union (EU), where the institutional and technological infrastructure is already being built. New «green» measures are being developed in the field of energy, development of public transport, construction of eco-cities, recycling of used cars.

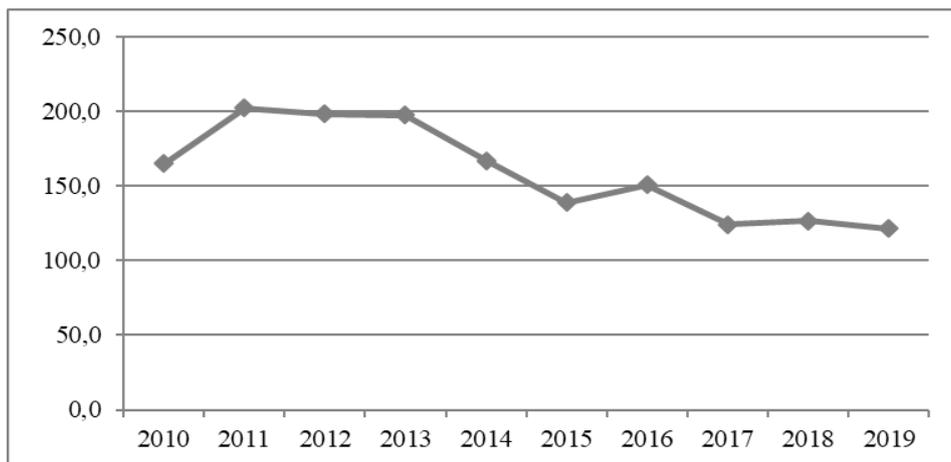


Figure 2. CO₂ emissions into the atmosphere in Ukraine (thousand tons), 2010–2019

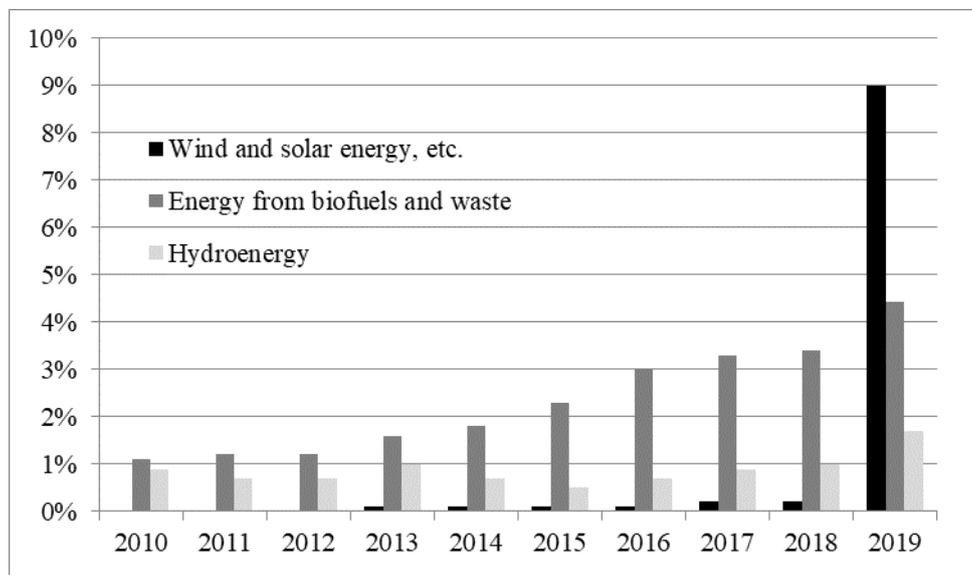


Figure 3. Energy production by renewable sources (%), 2010–2019

The «green» sector of the EU economy is about 300 billion euros per year (2.5% of EU GDP). 25% of all EU investments are directed to the development of «green» technologies. For example, Germany has taken a course towards closing all thermal and nuclear power plants for

the sake of «green» energy. Ukraine also should take this experience into account, because other countries of the world have taken this course.

Currently, scientists around the world are trying to develop adequate responses to global environmental threats, which is a consequence of the unlimited use of natural resources. «Green» economic growth refers to a means of stimulating ecological and economic development in which natural assets continue to provide the resources and environmental services on which the well-being of people depends. For implementation of this aim, «green» economic growth must act as a catalyst for investment and innovation that will underpin sustainable growth and lead to new economic opportunities.

So, it can be noted that the development of a «green» economy is one of the ways to overcome the global problems of mankind. Undoubtedly, the concept and the mechanism for its implementation require improvement in accordance with the conditions of a particular country, in particular, with regard to the internal distribution of financing for «green» technologies, state programs to support «green» investments.

Conclusions and prospects of further research. Difficulties of the transition to a «green» economy provide for the introduction of energy-efficient measures and increase in the level of environmental protection, the active implementation of measures to reduce the impact on climate change, the creation and implantation of «clean» technologies. This transition requires an organic combination of the role of international organizations in the process of creating such an order that will be strategically oriented to national policies, which, in turn, is formed to improve the efficiency of resource allocation and include a wide range of governmental instruments for regulation and incentive.

The main reason for the low level of «green» development and investment in it due to, on the one hand, the weak interest of governments, and on the other hand, the absence of a global system of motivation to reduce anthropogenic impact comparing with the interests of stimulating economic growth. The implementation of environmentally friendly projects requires large amounts of investment, for which most countries with economies in transition and developing countries do not have sufficient domestic resources.

The challenges of transitioning to «green» economic growth are often compounded by underdeveloped domestic financial markets. The development of the «green» investment market is limited by insufficiently developed capital markets technologies, difficulties in accessing long-term «green» financial instruments.

Environmental problems resulting from rapid climate change, depletion of natural capital and pollution threaten the international competitiveness as well as the international positions of Ukrainian companies. Therefore, Ukraine should make a transition to alternative sources of energy and introduce effective measures to achieve the sustainable development.

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«Зелений» вектор економічного розвитку країни

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Стаття присвячена знаходженню шляхів забезпечення «зеленого» економічного зростання в Україні. «Зелене» економічне зростання означає таке зростання, що засноване на стимулюванні екологічного та економічного розвитку, одночасно забезпечуючи як безпеку природних ресурсів, так і безперерйне користування екосистемними послугами, від яких залежить добробут суспільства. Метою даного дослідження є знаходження основних факторів розвитку економічного середовища для розроблення дієвої «зеленої» стратегії розвитку економіки країни. Об'єктом дослідження є процеси забезпечення «зеленого» економічного зростання країни у сучасних умовах. В роботі були використані методи аналізу, синтезу, порівняння, діалектичний та абстрактно-логічний метод. Визначено основні цілі та задачі розвитку «зеленої» економіки на національному та глобальному рівнях, розкриті питання факторів які впливають на екологізацію в Україні, а також розглянуто питання істинних заощаджень як результату природокористування. На основі цього проаналізовано проблеми та загрози для «зеленої» економіки в Україні. Розраховано істинні заощадження України за 2010-2019 роки на основі чого визначено можливі шляхи подолання проблеми їх зменшення, що сприятиме «зеленому» розвитку економіки. Виявлено, що в системі відтворення «зелених» економічних процесів інвестиції відіграють важливу роль, оскільки вони сприяють відновленню та збільшенню виробничих ресурсів, а також прискорюють економічне зростання країни-реципієнта. Встановлено, що необхідно розробити адекватну відповідь на глобальні екологічні загрози, що є наслідком необмеженого використання природних ресурсів. Для досягнення цієї мети «зелене» економічне зростання має виступати каталізатором інвестицій та інновацій, які сприятимуть сталому зростанню та приведуть до нових економічних можливостей.

Ключові слова: «зелена» економіка, відновлювальна енергетика, істинні заощадження, забруднення довкілля, виснаження природних ресурсів, валовий внутрішній продукт, сталий розвиток.

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