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## Conceptual Bases of Business Activities' Management Grounded on Sustainable Development and Energy Self-Sufficiency of United Territorial Communities in the Context of the European Green Deal Implementation in Ukraine

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**Abstract:**

The idea of developing energy self-sufficiency of the united territorial communities was presented in the article from the standpoint of the European Green Deal implementation in Ukraine, taking into account the national interests. The current situation in Ukraine was analyzed in the article, as well as the promising ways of European integration of Ukraine in the context of the European Green Deal, the conceptual foundations of energy self-sufficiency development in united territorial communities were defined, taking into account the existing and implementing new mechanisms to stimulate energy transformation in communities. The structure of basic components' interrelation in developing and increasing energy self-sufficiency of the united territorial communities was proved. Peculiarities of the ways of Ukrainian united territorial communities' development in the context of the European Green Deal implementation were investigated. The concept of the model of functioning of the State Agency of Ukraine on Management of Natural Resources for the requirements of developing energy self-sufficiency of the united territorial communities and practical recommendations on increasing energy self-sufficiency of the united territorial communities were worked out.

**Keywords:** energy self-sufficiency; united territorial communities; energy efficiency; renewable energy sources; ecological energy provision; energy policy.

**JEL Classification** Q28, Q32, Q 42, Q43, Q47, Q48

**Introduction**

For a long time, energy issues in Ukraine were resolved centrally and had a ruinous impact on the country's energy security. The existing dependence on the import of energy resources, non-transparency of the extractive and energy supply industries, the system of internal energy subsidies have deprived the country of opportunities for proper development of energy efficiency and the use of renewable energy sources. As a result, the country's economy is one of the most energy-intensive in Europe, and the share of greenhouse gas emissions is one of the highest among industrially developed countries. Thus, low energy efficiency, combined with the use of fossil fuels, has a negative impact on the environment and does not contribute to combating climate change.

After signing the Association Agreement between Ukraine and the European Union, decentralization reform was launched in Ukraine, which enabled the transfer a part of authorities, resources and responsibilities from the central power body to the local level. Now, more favorable conditions have been created for communities for the effective functioning of local self-governing bodies, which has enabled to integrate citizens as much as possible in solving urgent regional and local problems. At present, the decentralization reform creates the basis for conducting further reforms, in particular in the field of energy efficiency and other sectors of the economy, and provides more active involvement in the implementation of European environmental plans. The formation of capable united territorial communities significantly depends on the availability of the necessary infrastructure, human resources and the ability to provide the appropriate level of providing social services to the population. As a result of the power decentralization, the communities have received basic tools for their own social and economic development. The priority directions for the local self-governing bodies have now to be the implementation of measures that are more aimed at improving the level of safety and comfort for local residents. The new form of local authorities' organization has all the opportunities to implement measures for the development of infrastructure, public utilities and energy supply systems. Sufficient independence of the local communities will enable to improve the rational use of local resources and master new approaches to solving environmental problems.

From the viewpoint of ensuring energy self-sufficiency of the united territorial communities, it is necessary to fulfill the basic conditions: systemic implementing energy efficiency measures, ensuring diversification of imported energy resources, replacing fossil energy resources with local renewable energy sources. If one has a look at the ambitious plans of the European Green Deal, they are much broader and cover all sectors of the economy. The European Union strives for making the economy more stable by using circular economy methods, implementing biodiversity measures and reducing harmful emissions.

In our opinion, while implementing the European Green Deal in Ukraine, significant attention should be paid to the development of energy self-sufficiency of the united territorial communities, because increasing energy security and the competitiveness of the country's economy as a whole depends largely on the level of communities' energy self-sufficiency.

**1. Research Background**

In the Ukrainian communities, the effects caused by the global climate change have already been quite noticeable, especially at analyzing the statistical data of outdoor air temperatures in recent decades (Ivaniuta 2020). The maximum air temperature in summer and the minimum air temperature in winter increase, rivers and



lakes become shallow, which leads to the deterioration of conditions for the entire environmental systems, adversely affects agricultural activities and worsens human living conditions (Adamenko 2014).

In addition to the global challenges that we have already faced, there are a number of internal factors and circumstances that significantly affect the perception of global climate and environmental threats. The low level of social and economic development is a characteristic feature of rural infrastructure (Yasnolob 2019). Agrarian production, as the main direction of local business activity has a raw material character and a pronounced seasonality of work. High unemployment level and the absence of the proper quality of social services do not contribute to the proper development of rural areas and communities living in them. At the same time, almost a third of the country's population lives in communities located in rural areas (Khomiuk 2020).

One of the driving forces in the development of Ukrainian communities was the reform of decentralization, which is aimed at building more effective local self-government (Andriichuk 2019). The financial and organizational self-sufficiency of local communities will allow them to respond more dynamically to everyday and more global challenges. As a result of decentralization, the Ukrainian communities have had a direct impact on building and improving their own social and economic indicators (Demianenko, N. 2021) The organization of more effective local self-government has allowed the communities to be independently involved in environmental initiatives, participate in European development programs and more actively integrate the principles of the circular economy (Yasnolob 2018). The existence of self-sufficient local communities that are able to develop in the context of the general state strategy of energy development, will certainly affect positively the success of its implementation.

Global threats related to climate change motivate the world community to take more thorough and decisive actions. Thus, at the end of 2019, the European Commission adopted the strategic concept – the European Green Deal, on the transition to the principles of climate neutrality by 2050 (The European Green Deal, 2019). The aim of the Deal is to transform the economies of the European Union member-countries to climate-neutral development. It is envisaged that the issues of ecology, biodiversity and energy security will not be limited to the borders of one country but will be a common priority for all countries of the European Union. The joint and comprehensive approach to solving urgent environmental problems will provide the synergistic effect that can change the fate of the whole European society (Dorohan-Pysarenko 2021). The European Green Deal plan envisages consolidated approach therefore the possibility to mobilize the neighboring countries and partners to implementing ambitious ideas is considered.

The research and analysis of energy strategies of the European countries, conducted by Ukrainian scientists, demonstrates the positive dynamics of using renewable energy sources in the overall energy balance of most countries (Heletukha 2015). At the same time, Ukraine has a rather modest share of renewable energy sources in the overall energy balance of the country and quite a high level of energy intensity of the gross domestic product (Diachuk 2015).

From the viewpoint of priority measures, in order to increase the competitiveness of the national economy and strengthen energy security, the complex measures to improve energy efficiency, use renewable energy sources and replace imported fossil fuels remain the most topical (Gorb 2020). Ukraine's involvement in the European climate initiatives and implementation of the best practices enables to realize gradually the existing potential of energy efficiency and renewable energy sources. At present, there are already a significant number of financial and administrative instruments to reduce environmental impact in Ukrainian communities (Boiko 2020).

## 2. Methodology

The purpose of the article is to determine and work out conceptual foundations for the development of energy self-sufficiency of united territorial communities in the context of implementing the European Green Deal in Ukraine.

The systemic and dialectical-cognitive methods were used to study the scientific papers of leading European and Ukrainian scholars on energy efficiency increase, the use of alternative energy sources, the replacement of traditional fuel types with local renewable energy sources and analysis of the best European practices. In the research topic, the use of practical experience is an important part for the formation of theoretical and methodological basis.

During writing the article, the following methods were used: abstract-logical (for conceptual bases of united territorial communities' development in the context of the European Green Deal); systemic analysis (to determine the general principles of united territorial communities' development); regulatory (to determine the strategy of united territorial communities in the context of the European Green Deal); grouping (to define the characteristics

of the general principles and effectiveness of united territorial communities' functioning under circular economy); modeling (to create the concept of energy self-sufficient united territorial communities).

### 3. Results and Discussion

For a long time, our country's economy relied considerably on cheap energy resources, which temporarily allowed it to have certain competitive advantages. However, the formation of such a model of the economy, combined with its export of raw materials with a low level of surplus value, has led to a significant technological and social lagging behind. At present, the availability of cheap energy resources can no longer ensure the internal development the significant competitive advantage due to the high energy intensity of the economy. The high energy intensity of the economy means more expenses for the same product, compared to our European neighbors; we use many times more resources for the production of a ton of steel or a ton of grain. As a result of this approach to production, we get a non-competitive product cost and more greenhouse gas emissions. All this has a negative effect not only on the nature of economic development, but also on the environmental performance of territories. Inefficient extraction, transportation and conversion of fossil fuels lead to their excessive consumption, which in turn provokes an increase in emissions. As a result, the exclusive circle has been created, which adversely affects the conditions for economic and social development of both new and existing united territorial communities and the whole country.

According to the data on the Greenhouse Gas Inventory in Ukraine, the largest greenhouse gas emissions are caused by the energy sector. Coal mines, oil and gas mines and their service systems are one of the biggest sources of environmental pollution. Agriculture also significantly affects the overall rate of greenhouse gas pollution. If one compares the emissions as of 2018, relative to 1990, the base year, there is a significant reduction of more than 63% (Ukraine's Greenhouse Gas Inventory, 1990-2019). However, the specific indicators of greenhouse gas emissions in Ukraine are still at an unsatisfactory level.

Considering the European experience in the energy sector development, significant energy intensity and the use of fossil fuels cannot ensure decent economic growth. Therefore, Ukraine is gradually changing the direction of its development towards the European environmental and energy trends, given the ambitious plans of the Government to implement energy efficiency measures and the use of renewable energy sources. One of them is the European Green Deal, which is the strategic course and dynamic program of measures of the European Commission, as the highest executive body of the European Union. The implementation of the Green Deal, as an ambitious plan for the transition to a climate-neutral European economy, creates both new opportunities and new barriers to Ukraine's European integration. The roadmap of measures to economies' eco-balance has been developed, which outlines the direction of regulatory and legislative policy for the nearest decades and clearly signals about the high priority of problems for the European Union connected with the climate change.

A new stage in the development of our country since 2014, has been announcing the readiness of all power branches to implement long-awaited reforms. With this aim, the Verkhovna Rada of Ukraine and the European Parliament adopted the Association Agreement between Ukraine and the European Union, thus declaring their European direction of development. In the context of sustainable development, aimed at increasing the response to climate change threats, in 2016 Ukraine ratified the Paris Climate Agreement. This Agreement is an important tool in the global combating climate change. It is worth mentioning that the European Green Deal is part of the European Commission's strategy to achieve the sustainable development goals adopted at the United Nations Summit in 2015. Our country, like other member states of the United Nations Organization, joined in supporting the proclaimed global goals of sustainable development. Taking into account the national interests and existing development, the global goals of sustainable development and the results of their implementation are reflected in the national report (Low-carbon development strategy of Ukraine until 2050,). The national strategy of low-carbon development adopted by the Government has to serve as a signal for the development and implementation of economic measures to ensure the reduction of greenhouse gas emissions and eco-balance of Ukraine's economy. At present, the updated national action plan is being developed to outline new ambitions in combating climate change. Also, a fundamentally new system of quota trading is being developed.

At the end of 2020, the Government presented the draft concept of Ukraine's energy transition until 2050 (Ministry of Environmental Protection and Natural Resources of Ukraine, 2020), which takes into account the updated general European trends in developing climate, energy and social policies. Timely response and adaptation of the Ukrainian policy to modern European conditions will improve our country's position on the way to becoming an equal member of the European community. The Ukrainian concept of energy transformation is



based on the multidimensional model that considers several scenarios of economic development in the future until 2050 in the context of implementing the European Green Deal. It is envisaged that the plan for the implementation of the Ukrainian energy transformation concept has to touch on all socially and economically important spheres of the country's life. Accelerating the implementation of international obligations, state strategies and policies directed at de-carbonization of the economy is possible due to the comprehensive integration of united territorial communities in this process. The dynamic and successful response to the global threats to climate change, the solution of urgent internal energy and environmental problems is possible only owing to the broad involvement of the public. Drawing the local communities in making managerial decisions will increase their awareness of climate change and look at their own everyday challenges from a different, more global perspective. One of the main tools for this is decentralization reform that provided self-governing bodies with the necessary authorities and resources.

The development of united territorial communities in the context of the European Green Deal implementation has primarily to be based on improving energy efficiency and introducing energy saving measures. The high carbon content, relative to the specific indicators of Ukraine's gross domestic product, compared to the average indicators of the European countries, indicates an extremely high potential for increasing the efficiency of using the available energy resources. Considering the experience of the European countries, we can state that the accessibility of this potential realization for energy efficiency is absolutely real. One of the most wide-spread approaches to saving when using the available energy sources is improving the existing approach of establishing and controlling the requirements to the level of energy consumption of budget and commercial buildings. To a large extent, the level of energy consumption depends on the availability and cost of energy resources, so it is also necessary to review the policy of fixing tariffs on energy resources. Providing the flexible system of fair tariffs that would directly encourage consumers to use less is one of the main tools for improving energy efficiency. The introduction of energy monitoring and management system is the least costly measure to reduce expenses for energy consumed in the united territorial community. The formation of the internal effective strategy of community development is possible only taking into account its energy component. Therefore, the integration of the energy management mechanism in the local government system has to be the basic measure.

The process of reducing the level of energy resources consumption to satisfy the same needs will enable not only to accelerate the introduction of new technologies, but also improve the material and technical base of the community. The lower level of specific energy consumption will increase the profitability of introducing the alternative technologies of energy supply systems and using renewable energy sources. The transformation of the Ukrainian energy sector from the widespread using of traditional energy sources to maximizing the using of local renewable energy sources will improve the environmental friendliness and quality of energy supply systems. Implementing the principles of distributed generation and the use of intelligent energy management approaches will significantly increase the level of energy security and reliability of energy supply. The development of more environmentally friendly technologies of energy production will enable to minimize greenhouse gas emissions and improve the level of the regional environmental load. In comparison with the traditional approaches to energy production, the following energy sources have the minimum impact on the environment: solar, wind, geothermal and bioenergy. Introducing the technologies of using solar, wind and environmental energies usually requires significant investments, but with the increase in the cost of traditional energy sources and cheaper technologies, the economic profitability of the former for the united territorial communities will grow. Increasing the use of biofuel should be considered taking into account the local peculiarities of development, because the technologies of getting energy vary widely: from rather inefficient (direct burning down in ineffective equipment without any cleaning of burnt products); to efficient (the application of modern automated systems for the use of biofuel with the system of cleaning burnt-down products). Therefore, the role of local self-governing bodies is very important for raising the community awareness and controlling the spontaneous and inefficient use of biomass.

In our opinion, one of the most promising directions on the way to increasing the energy self-sufficiency of communities is the development of available wastes of plant origin from agricultural production for energy use. At present, in Ukraine, the share of agricultural waste used to satisfy energy requirements, given the available potential, is extremely insignificant. For the communities located in rural areas where the agrarian sector is developed, it seems important to help increase the level of using agricultural waste to meet basic energy requirements. The availability of technologies and the significant potential of agro-waste create favorable conditions for the formation of closed energy processes for the needs of not only agricultural processing, but also to satisfy the local requirements in commodity biofuels. The success of using the available potential of plant farm residues for energy purposes largely depends on many factors, in particular on the willingness of all interested

parties – local self-governing bodies and agricultural producers – to develop this direction. Also, the public plays an important role; it is still largely biased towards the use of agricultural production waste for the needs of local communal heat production or regional power plants. The communities' bias is not unsubstantiated, as the mechanisms for quality control of biofuel use and the appropriate level of cleaning burnt down products at such facilities are usually not transparent and do not meet the modern European standards. As a result, the available significant local energy potential of biomass is not used. Extensive information and educational activities for the communities and increasing the level of openness and standards to the objects of bioenergy infrastructure can help solve these issues.

That is why, in our opinion, the process of developing the national energy security has to be based on the regional and local energy self-sufficiency. The development of the united territorial communities has to be oriented primarily on improving the well-being and security of citizens. An important aspect of improving people's living conditions is the implementation of the principles of rationality and efficiency in the use of available energy sources. The presented model of developing the Ukrainian united territorial communities in the context of the European Green Deal implementation (Figure 1.), reflects the basic global aspects and internal national tasks which require attention. The tasks of the regional level have to be urgently solved, as they slow down the process of energy transformation and the transition to the low-carbon model of economic development. The development of the communities' energy self-sufficiency can be organically carried out in the context of the European Green Deal implementation.

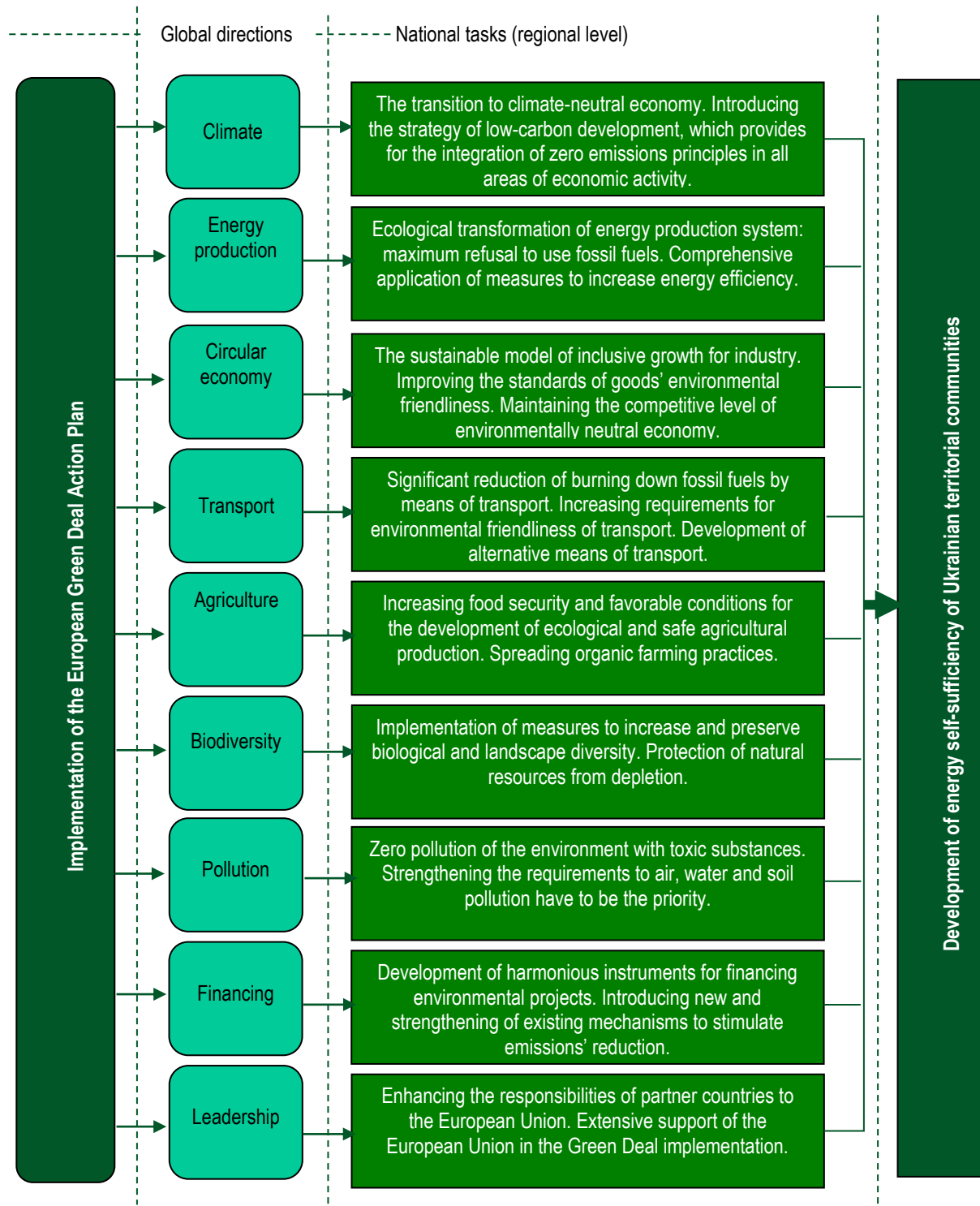
The implementation of the European Green Deal's ambitious plans opens up a number of promising opportunities for Ukraine's national transformations, in particular in the energy sector. The main bases in the state, regional and local development strategies have to be directed at increasing the energy self-sufficiency of communities as key elements of the state (Figure 2). The strengthening of the process of regulatory and legal harmonization, digitalization of state services and energy transformation seem to be urgent. At complex approach, the interaction of implementing the basic principles of the state, regional and local strategies aimed at increasing the energy self-sufficiency of the united territorial communities, will enable to get the synergistic effect.

That is why, in our opinion, the state policy on energy efficiency, the use of renewable energy sources and combat climate change has to be integral and reflect realistically the achievable results. The harmonization with the international and, most importantly, the European laws and legal standards, taking into account the national interests, has to be the priority task. The implementation of measures aimed at combating climate change must be comprehensively justified and introduced in all sectors of the economy without exception. An important element is also the reproduction of biodiversity and the preservation of ecosystems. Starting real work in this direction will allow Ukraine to receive information support and access to the European and international financial resources necessary to implement specific measures. Clear state position and the readiness of the united territorial communities to introduce particular systemic measures directed at the economy's de-carbonization will attract the attention of private investors and additional financing for their own development. Investments in ecological power engineering and energy efficiency, for the needs of the united territorial communities, can be additionally considered as an opportunity for the formation of new types of business activities that will serve as additional sources of filling the local budgets.

The united territorial communities, having the necessary authority and resources, can independently contribute to the development of their own territories. Real responsibility for one's own future encourages the communities to be more active, in particular, in matters of conscious involvement in state energy and environmental strategies aimed at combating climate change. As of the end of 2019, more than 1.7 million hectares of farmlands located outside settlements were transferred to community management. Also, the communities received forest, water and all other natural resources located within the community. Such unprecedented events open up both new opportunities for community development and new challenges. Local self-governing bodies will be responsible for the effective and targeted management of communal property therefore, the activity of the local community in these issues is extremely important. The availability of such a large amount of natural resources in ownership requires effective management, synchronized with the implementation of the state strategies and development plans. The natural question arises as to whether the local authorities will be able to implement systemic measures for the effective management and development of the available natural resources, in the context of the general European environmental and energy trends. It is obvious that the separate effective state coordinator is necessary for the successful development of available natural resources at the local level, in particular in the context of the European Green Deal implementation. When planning the implementation of state development strategies, the coordinator has to take into account the local specifics of community development and have its own wide range of powers and resources to stimulate the

implementation of state programs. The harmonization of the local and state policy is the guarantee of the effective state management.

Figure 1. The model of the development of Ukraine's united territorial communities in the context of the European Green Deal implementation

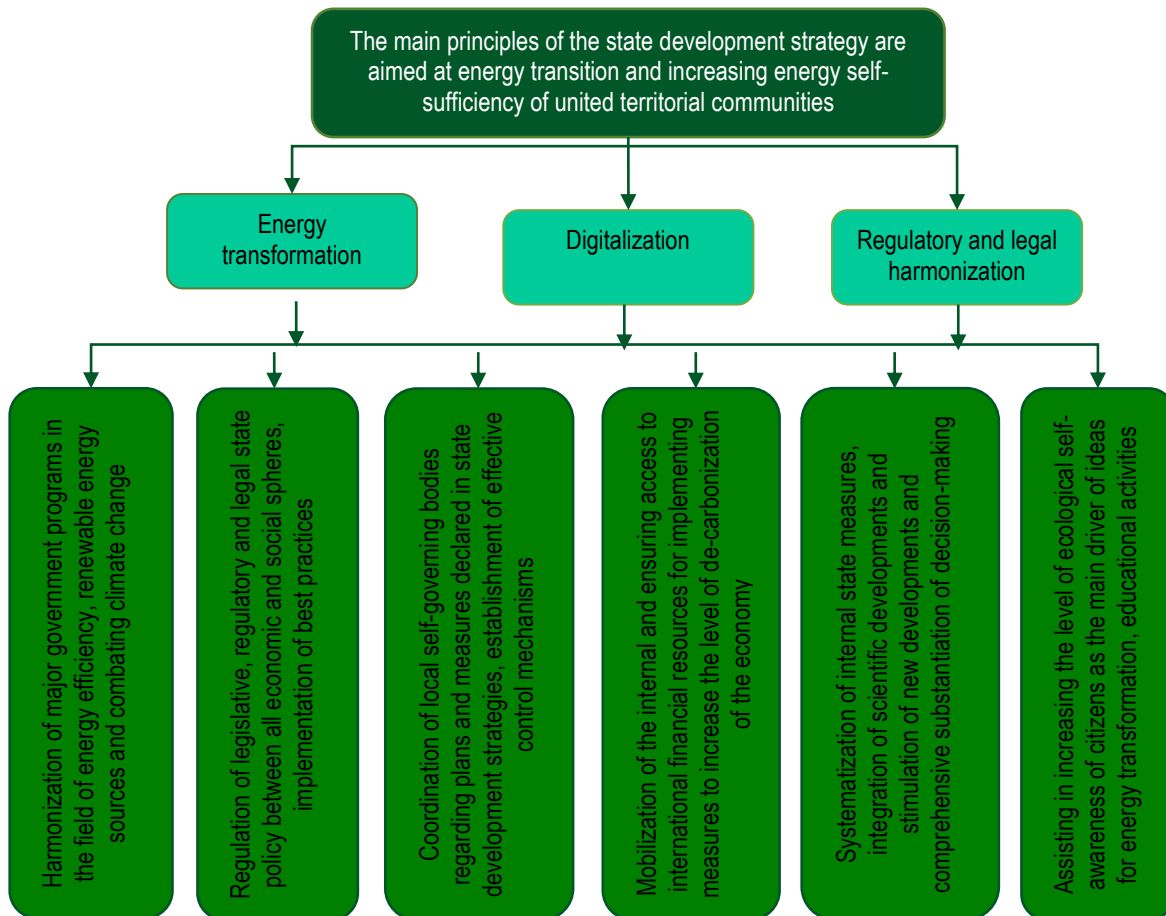


Source: the authors' development

With this purpose, the concept of creating the new central body of executive power, the activities of which are directly coordinated by the Government of Ukraine, and which will implement the state policy in the field of combating climate change, is proposed. The aim of the Agency would be to implement systemic measures to

manage natural resources in the context of protecting human health and life, preventing climate change, protecting and improving biodiversity.

Figure 2. The structure of the relationship between the main components of developing and increasing energy self-sufficiency of the united territorial communities

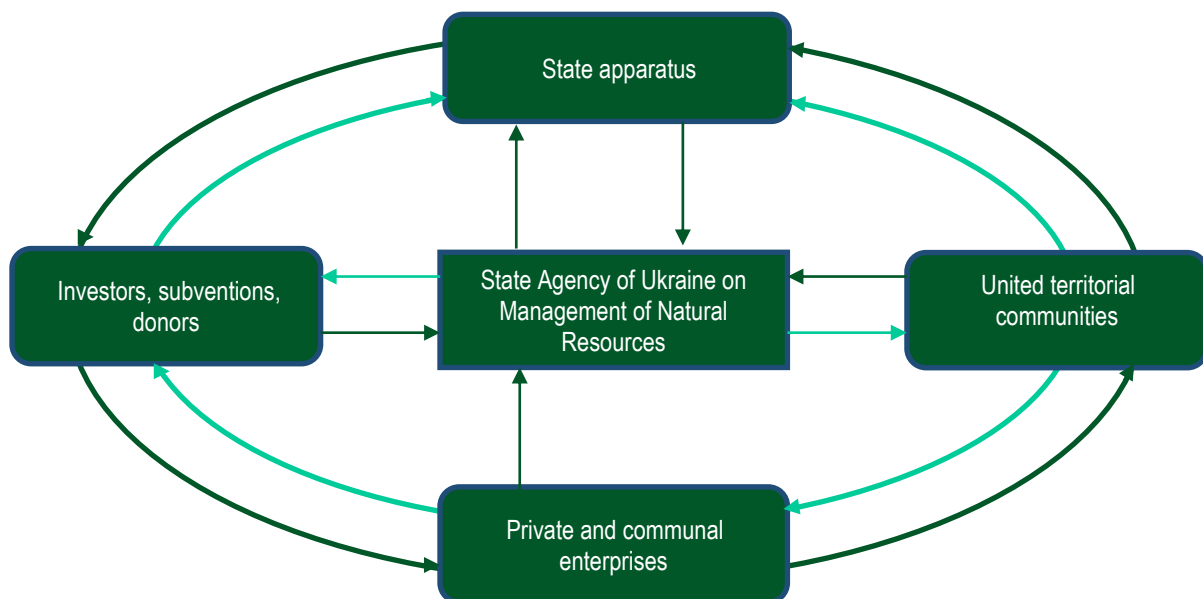


Source: the authors' development

The key idea of the Agency's concept is to support and organize the process of cooperation of all the interested parties in implementing measures for the use of renewable sources and direct the management of natural resources for this purpose. The most appropriate name for the new Agency is: the State Agency of Ukraine on Management of Natural Resources (Figure 3).

The Agency has to become the main tool for ensuring the active use by the communities of their own natural resources in order to develop the available renewable energy sources and replace the traditional energy sources with them. The basis of the Agency's cooperation with the united territorial community will be the voluntary agreement for the long-term use of part of the community's natural resources to organize business activities in the field of renewable energy, in exchange for financing local community-initiated projects to implement energy efficiency or renewable energy sources. It is the community that has to initiate the involvement of the Agency in cooperation by submitting the corresponding application; in its turn the Agency must consider this application and assess it in terms of compliance with the objectives of the Agency. The application must contain the desired projects for implementation and in exchange, the proposed resources for management, as well as the prior consent of the local authorities to participate. The Agency has to determine the level of technical feasibility of using the proposed natural resources, for example, with the aim of organizing energy crops' cultivation, installation of solar, wind or hydropower plants, and other activities aimed at developing the potential of renewable energy sources. The next step for the Agency is to determine the level of economic expediency of implementing the desired projects in the communities, taking into account the possible effectiveness of the proposed natural resources' management. As a result of the application's approval, the Agency receives the proposed natural resources for using, and the community has the access to financing of the previously proposed projects.

Figure 3. The model of functioning of the State Agency of Ukraine on Management of Natural Resources for the needs of developing energy self-sufficiency of the united territorial communities



Source: the authors' development

The existence of such a state administrative body, with clear powers and specific goals, will openly signal to our European partners about the readiness to participate more actively in the implementation of global tasks in order to control climate change and receive financing from international and European development funds. An important aspect of the Agency's work will be not only technical and economic assessment, but also taking into account the environmental component of the project's implementation impact on the environment. The approach to natural resources management has to be strategic, and the effective development has to be based on the principles of biodiversity preservation and environmental improvement of territories.

The existence of the state Agency to ensure the strategic and efficient management of local natural resources has to accelerate energy modernization, improve infrastructure and social position in the united territorial communities. The cooperation of the community with the Agency will ensure the creation of new types of business activities and new jobs, and will enable to modernize the social infrastructure, increase the investment attractiveness of the region, and promote environmental friendliness and energy self-sufficiency of the community. The harmonious combination of state development programs with solving urgent infrastructural and energy problems in the communities and the interests of Western partners and international financial organizations will provide a reliable foundation for the development of both separate communities and the country as a whole.

### Conclusion

Ukraine's economy suffers from significant energy intensity and dependence on imported energy resources. For the majority of the communities, the existing energy supply problems are typical. The consumption of fossil fuels to satisfy almost all energy needs in the country has formed the misconception about power engineering in the society. The low level of technologies' development and the state policy to stimulate the introduction of alternative energy production has deprived of the possibility of a proper level of its application. Taking into account the level of energy consumption of the Ukrainian economy, the potential for improving the efficiency of using the available energy resources is extremely high.

Thus, social and economic problems are only deepening with each passing year and require urgent and effective ways to solve them. The dynamic improvement and adaptation to the best European standards of the state policy in the field of climate change will enable to improve the chances of achieving sustainable development goals for our country. The gradual transition to the low-carbon economy and the improvement of environmental friendliness and safety of the power industry sector will improve the conditions for social and economic development, in particular of the united territorial communities.

It is necessary to develop a comprehensive and effective program to involve the united territorial communities in implementing the measures of energy efficiency and renewable energy sources. The concept of



the state energy security must take into account the regional specifics of communities' development and provide maximum stimulation for developing distribution energy generation. It is the public demand that has to become the main driver of energy transformation of Ukraine's economy and its transition to the low-carbon model of development. The formation of internal self-awareness and increase in ecological responsibility in communities will enable to implement the state initiatives at local levels more successfully. Taking into account the aspirations of Ukraine, declared in the Constitution, to become an equal member of the European Community, it is necessary to consider the serious ambitions of the European Green Deal, which will affect the membership requirements. Understanding the importance of the adopted European environmental initiatives has to serve as a clear signal for Ukraine to work out and implement effective tools to adapt the development of energy self-sufficiency of the united territorial communities in the context of the European Green Deal implementation in Ukraine. The new State Agency of Ukraine on Management of Natural Resources may be one of such tools. The creation of the Agency will become an opportunity to obtain at the national level an effective tool to implement systemic measures of eco-balancing energy supply methods by the united territorial communities, with the maximum use of local resource potential and the introduction of renewable energy sources.

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