Transformation of Industrial Parks in the Direction of Providing of the Purposes Achievement of Sustainable Development

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Abstract
The presented research is devoted to the problems of achieving the goals of sustainable development, which will contribute to the development of industrial parks and their transformation into eco-industrial parks. The importance of the functioning of industrial parks and their transformation into eco-industrial ones in the direction of achieving sustainable development goals is substantiated. The development of industrial parks and their transformation through the coordination of dynamic development processes and the establishment of a system of mutually beneficial relations, due to the peculiarities of their functioning aimed at achieving sustainable development goals ensure the achievement of sustainable spatial development. Transformation of industrial parks will contribute to: increasing tax revenues of local budgets, increasing employment in the regions, raising public awareness of the need for environmentally friendly, energy efficient production, increasing the balance and harmony of social, economic and environmental development, modernization of territorial communities and regional enterprises resources and increase entrepreneurial initiative, rational use of available resources, intensification of small and medium enterprises, including innovation. The authors' scientific achievements are the substantiation of the principles of functioning of industrial parks in order to achieve the goals of sustainable development, which are based on a systematic approach and provide for the transformation into eco-industrial parks.

Key words:
industrial park, eco-industrial park, sustainable development, sustainable development goals, transformation.

1. Introduction

For more than a decade, sustainable development has been the main paradigm of social development. Today, the phrase sustainable development is observed and found in everyday life every day, and the concept of "sustainable development" was first published in 1980 at the UN Conference "World Conservation Strategy", held under the auspices of the International Union for Conservation of Nature and Natural Resources.

In the sense of how we perceive it today, sustainable development was proclaimed in 1992 at the Earth Summit of the United Nations Conference "Rio + 20". It was at this Earth Summit that the basic principles of the correct behavior of the planetary society in relation to the environment and economic development in accordance with the principle of meeting existing current needs without endangering future generations were declared. This is the basic meaning of the concept of "sustainable development".

The aim of the article is to substantiate the principles of transformation of industrial parks into eco-industrial ones in the direction of ensuring the achievement of sustainable development goals.

Achieving this goal has necessitated the identification and solution of specific tasks, which include:

- clarifying the goals of sustainable development for the near future;
- substantiation of the importance of the functioning of industrial parks and their transformation into eco-industrial in the direction of achieving sustainable development goals;
- identification of conceptual bases and directions of functioning of industrial parks;
- substantiation of the advantages of transformation of industrial parks into eco-industrial ones.

The methodological basis of the study is a systems approach, which allows from the standpoint of systematics to consider the totality of all processes occurring within the industrial park and its relationship with the environment. An industrial park is a structured system that has its own interconnections, principles of operation, relations between the initiator of the creation, which can be the authorities and local communities, the management company and the park participants. The industrial park, like any system, is a subsystem of a higher level, such as the regional economic space. It is an open system because it has common socio-economic ties and produces products that are in demand outside the system. The study also used general economic and specific methods of scientific knowledge of the transformation of industrial parks in the direction of achieving sustainable development goals.

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2. Literature review

The research of the following leading scientists is devoted to the problems of achieving the goals of sustainable development, as well as the analysis of current trends in the development of economic, social and environmental components: Benedek J. (2021) [1]; Butko M. (2020) [2]; De Laurentis C. (2020) [3]; Grigoraș-Ichim C.E. (2018) [4]; Guo J. (2020) [5]; Hatayama H. (2022) [6]; Ionescu G.H. (2021) [7]; Ivanova N. (2016) [8]; Kaldiyarov D. (2021) [9]; Kholiavko N. (2021) [10]; Popelo O. (2021) [11]; Kuznetsova E. (2020) [12]; Lindsay A. (2021) [13]; Mabe, F. (2021) [14]; Madurai Elavarasan R. (2021) [15]; Mensi A. (2021) [16]; Ngo T. (2021) [17]; Nundy S. (2021) [18]; Paulus C. (2020) [19]; Pohrebniak A. (2021) [20]; Petrashko L. (2021) [21]; Tkachenko T. (2021) [22]; Tulchynckiy R. (2021) [23]; Prus P. (2021) [24]; Radwan N. (2021) [25]; Revko A. (2020) [26]; Samoilovych A. (2021) [27]; Saqr A. (2021) [28]; Sekarlangit L.D. (2021) [29]; Severyn-Mrachkovska L. (2021) [30]; Shiyan D. (2020) [31]; Shkarlet S. (2020) [32]; Sugak E. (2021) [33]; Surówka M. (2021) [34]; Toscano D. (2020) [35]; Chobitok V. (2021) [36]; Kleshchov A. (2021) [37]; Saloid S. (2021) [38]; Volkov A. (2020) [39]; Vovk, O. (2021) [40]; Wu, T. (2020) [41]; Yoon I. (2021) [42]; Zhang, W. (2020) [43]; Ziglio L. (2019) [44] and others.

In order to achieve the SDGs, the authors [6] recommend that metal producers take into account the values and benefits that metals provide in the process of value creation. As a result of the study, the authors argue that their study will help expand knowledge about the strengths and weaknesses of the metallurgical industry within the SDGs.

The authors of the study [28] claim that they are the first scientists to study the Sustainable Development Goals (SDGs) related to the practice of groundwater management to minimize episodes of overexploitation. The authors obtained a result that characterizes the interaction between all thematic criteria and vulnerability indices strongly correlated with the SDGs. Among them, the authors highlighted the goals of ending poverty and hunger, ensuring safe and affordable water use, supporting economic growth and protecting land and aquatic ecosystems. The authors are convinced that identifying links with the SDGs will contribute to the rational and efficient use of water resources.

The article [25] is based on a study of existing practices and future opportunities for solid waste collection, storage and disposal. The authors determined that solid waste is generated in Saudi Arabia and has great potential for wealth. Scientists have analyzed the prospects of energy and defined a strategy for solid waste management.

The results of the authors' research [7] reveal the peculiarities of the implementation of the Sustainable Development Goals in Bulgaria, as well as consider the development potential. The authors made calculations to determine the level of implementation of the intended objectives. Researchers have suggested ways to transition to a low-carbon economy and a more sustainable and inclusive society.

According to a study by scientists [42], they analyzed the current state and trends in achieving the Sustainable Development Goal of 14 coastal states around the Korean Peninsula. The authors claim that the analysis of the SDGs of the 14 coastal states around the Korean Peninsula was conducted for the first time and the results of the study will contribute to a more successful achievement of this goal.

The aim of the article [1] is to analyze the progress in achieving the SDGs at the local and regional levels in Romania. The authors propose to calculate the SDG index based on 90 indicators. According to the results of the analysis, the concentration of the highest indicators of sustainable development in certain geographical areas was determined, the poorest were identified rural areas and peripheral areas of the eastern and southern parts of the country.

The research [18] examined the Sustainable Development Goals (SDGs) and determined that they are aimed at a peaceful world in which human life will take place in a safe, healthy, sustainable environment without any inequality. The study examined the impact of COVID-19 on human life, the economy, the environment, and the energy and transport sectors compared to the pre-pandemic period.

The article [29] analyzes the commitment of the Board of Directors to the Sustainable Development Goals (SDGs). The authors tried to empirically study the influence of the board of directors on the disclosure of SDGs in public companies from five countries in Southeast Asia. Researchers have studied that companies with a high commitment to sustainable development are characterized by a higher level of SDG disclosure.

The authors [15] have developed strategic directions for the implementation of the post-pandemic scenario in the framework of sustainable development. Researchers have identified priorities for energy sustainability to coordinate actions to achieve the SDGs. As a result of the study, a new quantitative analysis is presented, which reveals the interaction of the SDGs. The authors argue that SDG 7 is the main target compared to other SDGs.

The paper [16] argues that only ten years from now, there will be slow progress towards the SDGs, including Goal 2.2. The authors propose to intensify efforts to implement the acquired knowledge in a practical way, and it is necessary to establish cooperation between researchers, industry, politicians and consumers.

3. Results

Sustainable development has a three-pronged basis, including social, economic and environmental. The tasks of sustainable development for the future until 2030 are:

- in accordance with the paradigm of sustainable development, building a favorable, peaceful and open society with a transparent justice system, building an effective system of institutions at various levels;
- ensuring full and highly productive employment and decent working conditions for all segments of the population, which will be the basis for progressive, comprehensive economic growth;
- providing conditions for a full and healthy lifestyle and creating conditions for the well-being of all citizens regardless of age;
- overcoming poverty in all its manifestations;
- building sustainable infrastructure that will promote inclusive and sustainable industrialization and innovation;
- ensuring environmental sustainability and environmental safety of cities and settlements;
- providing lifelong learning for all segments of the population, etc.

Today, the UN Summit, in accordance with the social, economic and environmental components, has set global goals for sustainable development, which are the efforts of the entire world community. Within the framework of the outlined goals, each state will have its own main tasks to achieve them. Ukraine is no exception (Fig. 1).

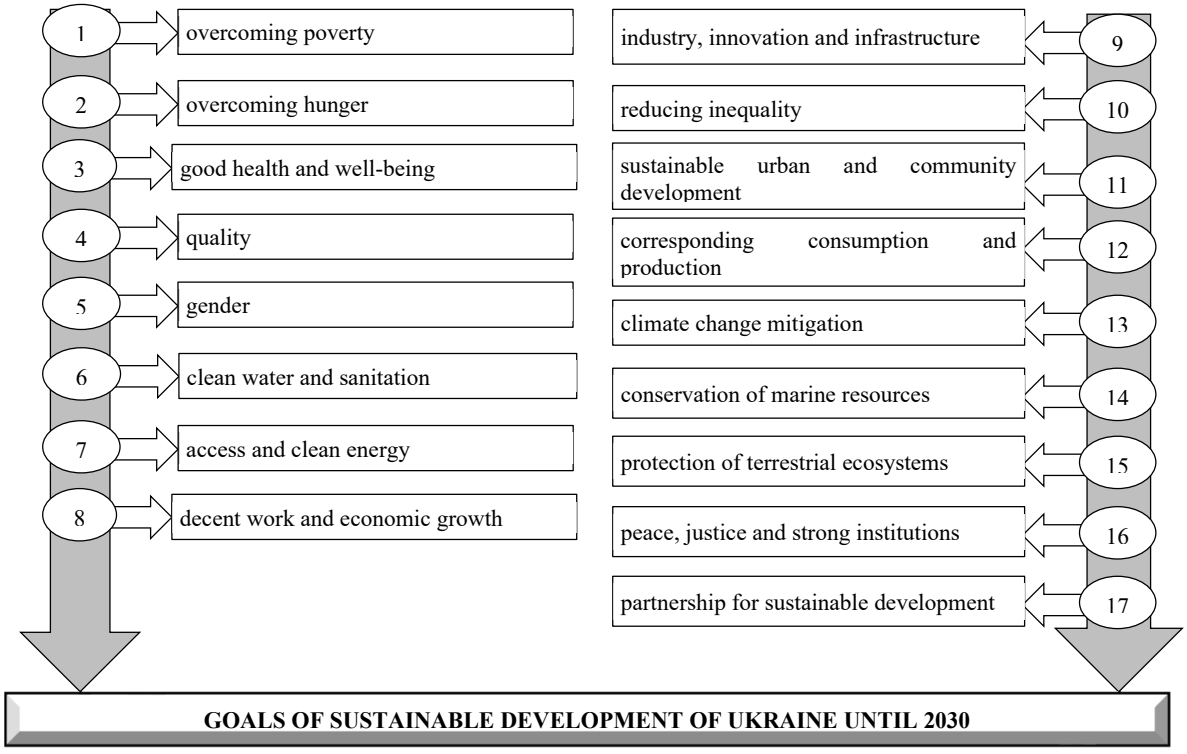

Fig. 1 Goals of sustainable development of Ukraine until 2030
Source: based on the authors [https://www.ua.undp.org/content/ukraine/uk/home/sustainable-development-goals.html].

If we study the goals of sustainable development from the point of view of the transformation of industrial parks of Ukraine into eco-industrial parks, it can be noted that this is fully consistent with the paradigm and goals of sustainable development (Fig. 2).

Thus, overcoming poverty, which meets the first goal, is associated with increased incomes through increased economic development as a result of the transformation of industrial parks into eco-industrial ones, which, in turn, through redistribution through the budget mechanism can return as social support. Good health and well-being, as well as clean water and sanitation, are directly linked to the country's environmental situation. Eco-industrial parks differ from industrial parks in the environmental friendliness of production, provide the principles of operation on the basis of a circular economy, which ensures zero-waste production and a closed production cycle.

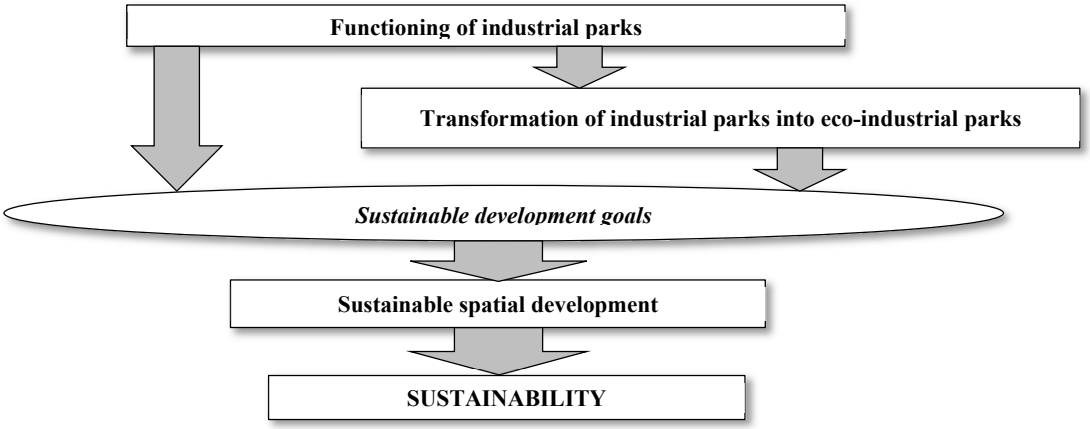

Fig. 2 Factors influencing the intensification of small innovative entrepreneurship
Source: built by the authors.

Regarding the sustainable development of cities and communities, it should be emphasized that industrial parks and their transformation into eco-industrial parks are directly related to the development of communities and territories. The initiator of the creation of the industrial park, as well as its transformation into eco-industrial is the body of state power and local self-government, which has the rights of landowner and represents the interests of the population of the state and community.

The development of industrial parks and their transformation into eco-industrial through the coordination of dynamic development processes and the establishment of a system of mutually beneficial relations, due to the peculiarities of their functioning aimed at achieving sustainable development goals ensure sustainable spatial development. Sustainable spatial development is possible only on the basis of the use of spatial resources and existing features and potentials. This is facilitated by industrial parks and their transformation into eco-industrial ones.

In turn, the management company of the eco-industrial park aims to optimize the use of natural resources, including the supply of electricity from renewable sources, and maximum energy efficiency of the entire park.

Also, the transformation of industrial parks into eco-industrial ones is subject to such sustainable development goals as industry, innovation and infrastructure. Since the operation of industrial parks is aimed at:

firstly, attracting investment and developing Ukraine's economy;

secondly, equalization of economic development of regions and improvement of quality of life of the population (equalization not at the expense of redistribution of incomes between regions, namely at the expense of stimulation of their economic development), increase of incomes of local budgets;

thirdly, the introduction of energy-saving and innovative technologies (which is especially convenient for all park participants);

fourthly, the creation of new jobs (the functioning of industrial or eco-industrial parks stimulates increased employment not only through the creation of new jobs in the enterprises included in the park, but also through the purchase of raw materials needed for production);

fifthly sustainable development and environmental protection;

sixthly, the development of engineering, transport and logistics infrastructure and services;

seventhly, increasing export potential, including through the export of innovative products.

The functioning of industrial and eco-industrial parks is based on the following conceptual principles:

- ensuring equality of all residents of the park, regardless of areas of activity, investment, business size, etc.;
- provision of various services within the park, simplification of communications and access to the use of the park infrastructure to all park participants;
- non-interference in the production activities of park participants;
- priority of development of those kinds of activity of subjects of park that is provided by the purpose of its creation;
- stimulating new jobs;
- establishing close, mutually beneficial relations based on the common interest in achieving the goals of sustainable development between the representatives of the industrial park, as employees and their employers, the management company, local governments and communities;
- clear delineation of powers and responsibilities between park participants;
- introduction of public-private partnership mechanisms for park participants;

- creation and expansion of the park infrastructure;
- rationality in nature management and greening of production activities of parks.

The transformation of industrial parks into eco-industrial parks not only absorbs the advantages of industrial parks, but also multiplies them. Such advantages include (Fig. 3):

- increase of tax revenues of local budgets and increase due to this level of self-sufficiency of territorial communities and regions;
- growth of employment of the population of regions and increase of average incomes of the population that also influences at the expense of payment of taxes on incomes of local budgets;
- growing public awareness of the need to implement environmentally friendly, energy efficient production;
- increasing the level of balance and harmony of social, economic and environmental development of territorial communities and regions;
- modernization of enterprises of various activities, which will increase the efficiency and environmental friendliness of their activities;
- attracting investment resources and increasing entrepreneurial initiative;
- infrastructure improvement and development;
- rational use of available resources (natural, land, labor, investment), stimulating the use of potential opportunities and regional and local characteristics;
- increasing the purchasing power of the population and increasing demand;
- intensification of small and medium enterprises, including innovative ones.

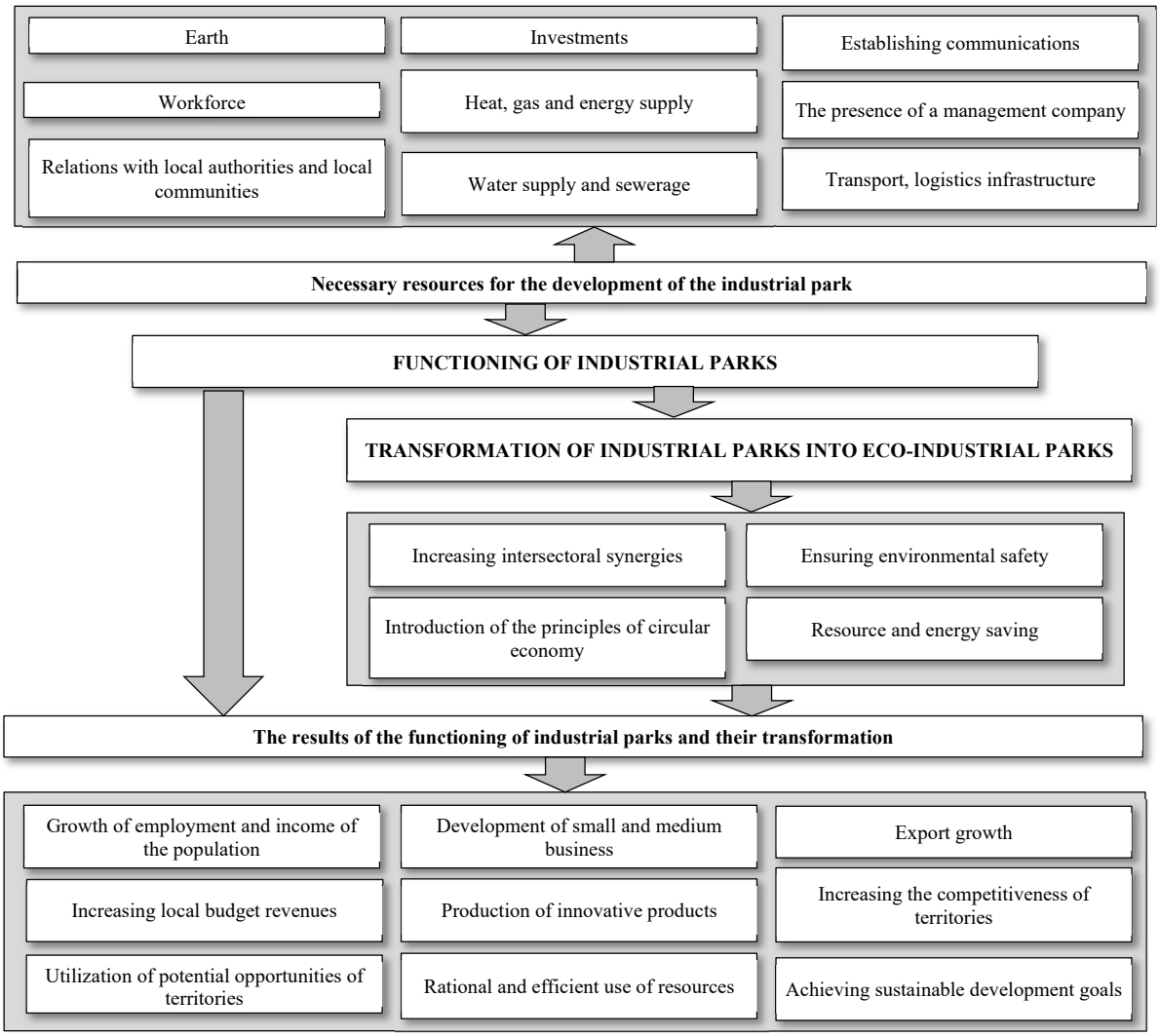

Fig. 3 Transformation of industrial parks into eco-industrial and the results of their operation
Source: built by the authors.

In general, the idea of creating industrial parks is not new, but modern globalization challenges lead to the intensification of this idea, which can give synergies for the development of territories. Industrial parks intensify investment and innovation processes and thus intensify innovative production, production of innovative products, create additional opportunities for small and medium-sized businesses, increase employment. The competitiveness of the entities operating in the industrial park due to the possibility of using common infrastructure is increasing, as well as the competitiveness of the territories where the industrial parks operate.

4. Conclusions

The study makes it possible to note that the principles of sustainable development determine the process of revising the concept of functioning of industrial parks and their transformation into eco-industrial. The transformation of industrial parks in the direction of eco-industrial is fully consistent and in line with the principles of sustainable development and aimed at achieving its goals. Eco-industrial parks increase the competitiveness of the park and the territories in which they are located, create new jobs, stimulate the production of innovative products, intensify the introduction of resource-saving and energy-efficient technologies, increase local budget revenues and thus increase their social self-sufficiency development and provision of the population of communities and regions.

The scientific novelty of this study is to substantiate the principles of functioning of industrial parks in order to achieve sustainable development goals, based on a systematic approach and providing for the transformation into eco-industrial parks.

Further studies of the transformation of industrial parks into eco-industrial ones in the conditions of sustainable development are in the field of monitoring the work of industrial parks and identifying the necessary criteria for their transformation into eco-industrial ones. Such research will be the basis for the development of guidelines for such a transformation and the basis for improving the institutional support of this process.

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