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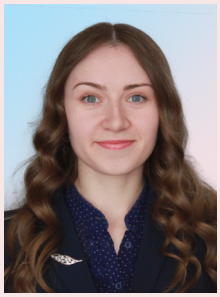
Ecosystems for the Sustainable Development of Local Territories: A Review of Theoretical Approaches



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Abstract. The disproportions of Russia's spatial development (shrinkage of the developed space, polarization of the settlement system, distortion of the support frame) are challenges for sustainable development and for ensuring national security. In such conditions, local territories are most vulnerable, which, if located far from the centers of resource attraction, have limited opportunities to respond to current challenges. In turn, it is at the local level that the practical implementation of the goals and objectives of sustainable development is carried out, which ultimately determines the situation at higher levels. The ecosystem approach, which assigns a significant role in this process to the participants of the territorial ecosystem and their interaction with each other and with the external environment, seems promising for the study of the sustainable development of local territories. The aim of the review is to analyze scientific discourse on the sustainable development of local territories in the context of an ecosystem approach. The work uses general scientific methods of critical analysis, comparison, generalization, grouping and classification. The information base includes Russian and foreign scientific literature on the sustainable development of individual territorial units and the ecosystem approach, as well as international and Russian regulatory documents in the field of sustainable development. The article discusses terminological features of the concepts "sustainable development", "ecosystem approach" and "local sustainable development territories". We reveal the intersections of the concept of sustainable development and the ecosystem approach, and the possibility of their logical combination into a single conceptual framework in relation to local territories. On the basis of generalization and systematization of scientific literature, we define the terms "sustainable development of local territories" and "ecosystem for the sustainable development of local territories", and identify key structural and functional elements of the ecosystem for the sustainable development of local territories.

Key words: sustainable development, local territories, ecosystem approach, ecosystem for the sustainable development.

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Introduction

The development of local territories is becoming an increasingly relevant topic of scientific research and management activities in the context of the growing impact of global and regional challenges to socio-economic development. Climate change and scarcity of some natural resources, population growth and demographic aging, expanding migration flows, depopulation of rural settlements and problems of urbanization of urban areas, manifestations of digital inequality, poverty and growing commercialization of social services – these and other challenges of our time exert significant pressure not only on global development and individual states, but also on local territories, requiring the development and implementation of sustainable development strategies that will preserve natural resources, improve the quality of life and ensure long-term economic growth of individual territorial entities. The development of local territories is essential for achieving the global sustainable development goals set by the United Nations (UN SDGs), as these territories have a unique opportunity to adapt global strategies to their specific conditions, taking into account their geographical location, socio-economic characteristics, local resources, cultural, and environmental features.

Achieving sustainable development of local territories is impossible without the development and implementation of effective management strategies that take into account the peculiarities of each territory, local and national development goals outlined in the program and strategic documents of the states. In addition, building a balanced and effective system of sustainable development of local territories is necessary for cooperation between different levels of government and involvement of local communities in the decision-making process, which can be practically realized through the principles of the ecosystem approach.

The aim of the review article is to analyze the scientific discourse on the sustainable development of local territories in the context of the ecosystem approach. The first part of the paper provides a brief overview of the concept of sustainable development, its meaning, evolution and key principles. In the second part, attention is paid to approaches to the construction of the definition of sustainable development of local territories. The third part outlines the essence of the ecosystem approach, reflects its role in the practice of local governance, analyzes studies of ecosystems for the sustainable development of local territories, identifies structural and functional elements of the ecosystem for the sustainable development of the local territory.

We used the methods of critical analysis, comparison, generalization, grouping and classification to implement the research objectives. The information base consisted of Russian and foreign scientific literature on the research problem, as well as international and Russian conceptual-strategic and regulatory-legal documents in the field of sustainable development. The selection of scientific papers on sustainable development of individual territorial units and the ecosystem approach was carried out in the scientific search systems eLibrary, Taylor & Francis Online, Google Scholar by keywords (in Russian and English[1]). Based on the analysis of abstracts, we selected papers that directly address the issues of sustainable development, the ecosystem approach and sustainable development ecosystems, including in relation to local territories. When selecting sources, we took into account the relevance of materials in terms of their contribution to the ongoing discourse on the stated topics. The remaining publications were systematized into several groups in accordance with the analytical framework of our study.

Sustainable territorial development: brief discourse

The sustainable development concept emerged as a response to the growing concern about socio-economic (high poverty levels, inequality between rich and poor countries, use of resource-intensive technologies, inadequate pricing of natural resources, increasing consumerism, etc.) and environmental (anthropogenic disturbance of landscapes, pollution, reduction of species diversity, availability of drinking water, etc.) problems (Fauser et al., 2018). Quite quickly, the sustainable development concept became a kind of platform for transforming international cooperation and intensifying the multilateral search for answers to global challenges. Its unifying idea was the convergence of three conceptual pillars – economic development, social justice, and environmental protection.

The evolution of the sustainable development concept reflects changes in the understanding of the relationship between the economy, society and nature. The early stages (1960s–1970s) focused on environmental protection and the negative environmental impacts of industrial development. Central events were the publication of the Club of Rome "Limits to Growth" report and the UN

[1] The keywords used in the search were sustainability, sustainable development, sustainable urban development, sustainable development of cities, sustainable rural development, sustainable development of rural areas, local territories, small territories, urban areas, rural areas, municipality, municipal entity, ecosystem approach, ecosystem of sustainable development.

Stockholm Conference on the Environment (1972). The understanding of the need to harmonize economic growth with the ecological potential of the planet was formed. The concept is associated with the Brundtland Commission and its report "Our Common Future" (1987). The term "sustainable development" acquires generic features – trinity of economic, social and environmental aspects of development; consideration of long-term consequences and interests of future generations. The concept of sustainable development was recognized worldwide after the Earth Summit in Rio de Janeiro (1992) and the adoption of Agenda 21, which established it as a basis for international policy and an important component of national policies of the world's countries. Many European countries began developing environmental legislation and pursuing environmentally oriented economic policies (Andrianov, 2005). At the beginning of the 21st century, the focus shifted to the creation of integrated models of sustainable development (green, circular, low-carbon economy) based on the application of innovative approaches and environmentally friendly technologies in production. The concept gained new impetus after the UN General Assembly adopted the Sustainable Development Goals in 2015, which became the global agenda for the coming decades and covered a wide range of issues – from eradicating poverty and hunger, ensuring quality education to preserving marine ecosystems and combating climate change. As a result, the sustainable development concept has evolved from an initial environmental focus to an integrated approach that considers the balance of economy, society and nature, as well as intergenerational equity.

At present, sustainable development is not an unchanging state of harmony, but a process of constant change, in which the scale of resource exploitation, the direction of investment, the orientation of technical development and institutional changes are consistent with the current and future needs of humanity[2]. Currently, there is no unified approach to understanding the essence of the category "sustainable development", which is due to both the multivariant translation of this term from English and its use in relation to different-level economic systems (Shchukina, 2015). All the concepts used are united by the following: preservation of the system equilibrium; care for future generations; qualitative and quantitative changes in three interrelated components – economic, social and environmental; growth in the standard of living and quality of life; rational use of natural resource potential; environmental conservation (Gutman, Basova, 2017; Fauser et al., 2018).

The main criticism of sustainable development is that it does not question the ideology of economic growth and does not provide a working alternative to the philosophy of consumption. In addition, no document or program has formulated specific criteria for sustainable development. The prevalence of anthropocentric views over ecocentric views is also often noted (Du Pisani, 2006). Overall, sustainable development is difficult to achieve because it is essentially limited by the regenerative capacity of the ecosystems that sustain the planet (Mensah, 2019).

Thus, sustainable development is related to the principle of achieving human development goals and at the same time maintaining the ability of natural systems to provide the resources and ecosystem services on which the economy and society depend (Mensah, 2019). The issue of sustainable development is centered around inter- and intra-generational equity anchored on three-dimensional separate but interrelated pillars, namely environment, economy and society. Sustainable

[2] Development and international economic cooperation: Environmental: Report of the World Commission on Environment and Development. UN. Available at: https://www.un.org/ru/ga/pdf/brundtland.pdf (accessed: 15.01.2025).

development cannot be achieved through isolated initiatives, it requires integrated efforts at various levels. Decision makers must be constantly mindful of the relationships, complementarities and trade-offs between all spheres of the sustainable development and ensure responsible human behavior at international, national, societal and individual levels to support and promote the principles of this paradigm for human development (Mensah, 2019).

Local territories in the context of sustainable development

The achievement of the sustainable development goals at the local level, unlike the higher levels (global and country), implies not declarative and framework statements, but concrete actions, practical implementation of sustainable development principles (Schwab, Brower, 1997; Ilyina, Mirenkova, 2014; Oosterhof, 2018; Krasnoshtanova, 2022). The activities of local governing structures in this direction contribute to solving not only local, but also national and global problems of sustainable development (Schwab, Brower, 1997). Nevertheless, in the practice of research on the sustainability of territorial systems, in most cases the factors and parameters of sustainability at the global and regional scale are considered, less often – at the district spatial level, and very little attention is paid to local territorial systems (Gogoberidze et al., 2022).

In Russian and foreign studies of sustainable development at the local level, an administrative-territorial approach is most often applied to the definition of local territories, according to which they are understood as territories limited by the boundaries of municipalities (Kovaleva, Kucherenko, 2019). They include both municipalities themselves and their associations or part of the territory within the boundaries of municipalities (Uskova et al., 2013). Thus, separate studies are devoted to the sustainable development of municipal districts (Sevastyanova, Yatsenko, 2020), intra-district municipal formations (Khvorostukhin, 2014), cities (Zhang et al, 2025), urban areas (Alipour, Galal, 2021), rural territories (settlements) (Zakshevsky et al., 2023), or groups of municipalities identified on some basis, for example, geographically – local coastal territorial systems (Gogoberidze et al., 2022). In studies of sustainable development at the local level there are also other terms synonymous with local territories, in particular, local spatial formations (Menshchikova et al., 2014), local territorial systems (Gogoberidze et al., 2022), territorial systems of local communities (Balanced Development Management..., 2016), but in practice their essence is also reduced to territories within the boundaries of municipalities. Therefore, the administrative-territorial approach is seen as relevant in the context of the study of sustainable development of local territories.

Sustainable development in the research and management planes is mainly considered separately for cities and rural areas. The international community paid attention to the problems of sustainable development of local territories at the end of the 20th century. Since then, a number of profile concepts, declarations, charters and programs have been adopted. All of them contain principles and goals of sustainable development, practical recommendations for their implementation at the local level, as well as outline the obligations of local authorities and communities to comply with these principles. *Table 1* presents the main milestones in the development of international, European and Russian policy in the field of sustainable urban and rural development, including its key documents. Thus, by now there is a base of international, European and domestic documents regulating the issues of sustainable development of all types of local territories, as well as urban and rural settlements separately.

Table 1. Key stages of development and documents of international, European and Russian policy in the sustainable development of local territories

In the area of sustainable urban development	In the area of sustainable development of rural areas
International	
1976–1978: *United Nations Human Settlements Program*, adopted as a follow-up to the UN Conference on Human Settlements and Sustainable Urban Development Habitat I (Vancouver, Canada).	
1996: *World Plan of Action for Sustainable Human Settlements Development "The Habitat Agenda"* and "*Istanbul Declaration on Human Settlements*", adopted at the Habitat II Conference (Istanbul, Turkey)	
2001: *Declaration on Cities and Other Human Settlements in the New Millennium*, adopted at the 25th Special Session of the UN General Assembly "Istanbul + 5" (New York, USA)	
2015: *17 Sustainable Development Goals (SDGs)*, including SDG 11 "Ensure inclusive, safe, resilient and sustainable cities and human settlements".	
1996 *Sustainable Cities Program*, adopted jointly by the United Nations and UNEP	**1992:** *"Agenda 21"*, Chapter 14 "Promoting Sustainable Agriculture and Rural Development", adopted by the United Nations Conference on Environment and Development (Rio de Janeiro, Brazil).
2016: *Urban Development Program*, adopted at the United Nations Conference on Housing and Sustainable Urban Development Habitat III (Quito, Ecuador)	**1996:** *Regulations for Sustainable Agriculture and Rural Development*, adopted at the session of the Food and Agriculture Organization of the United Nations (Rome, Italy).
European	
1985: *European Charter of Local Self-Government* (Congress of Local and Regional Authorities of the Council of Europe)*	
1994: *Aalborg Charter* (Aalborg, Denmark) **2007:** *Leipzig Charter for a Sustainable European City* (Leipzig, Germany) **2008:** *EU Covenant of Mayors*	**1991:** *EU LEADER Program to support sustainable growth and development of rural communities, businesses and the rural environment* **2000:** *EU LEADER+ Program aimed at developing competitiveness of rural regions*
Russian	
2003: *Federal Law 131-FZ "On General Principles of Organization of Local Self-Government in the Russian Federation"* **2025:** *Federal Law 33-FZ "On the General Principles of Organization of Local Self-Government in the Unified System of Public Power"*	
2002: "*Moscow Declaration*", adopted at the All-Russian Meeting 'Ensuring Sustainable Development of Russian Cities' (Moscow, Russia) **2006:** *Priority Program "Integrated development of single-industry towns".* **2023:** *Charter of Sustainable Cities of Russia (ESG Charter)*	**2006:** *Federal Law "On the Development of Agriculture"* **2010:** *Concept of sustainable development of rural areas of the Russian Federation for the period up to 2020* **2013:** *Federal Target Program "Sustainable Development of Rural Territories for 2014-2017 and for the period up to 2020"* **2015:** *Strategy for Sustainable Development of Rural Areas of the Russian Federation for the Period until 2030*

* In accordance with the Federal Law 43-FZ, dated February 28, 2023 "On the termination of international treaties of the Council of Europe with respect to the Russian Federation" from March 16, 2022 the European Charter of Local Self-Government does not apply to Russia. However, the provisions of the Charter are of interest in terms of reflecting the global policy of sustainable development of territories and its evolution.

According to: (Sustainable development of rural areas…, 2013; Fauser, Smirnov, 2023); regulatory documents; (Dolgikh E.I., Antonov E.V. (2015). Rating of sustainable development of Russian cities. *Demoscope Weekly*, 631–632. Available at: http://demoscope.ru/weekly/2015/0631/tema01.php (accessed: 16.01.2025).

Theoretical approaches to the study of the sustainable development of local territories

Despite the presence of studies devoted to the problems concerning the sustainable development of local territories (districts, cities, rural settlements), most of them lack a definition of this concept. The few scientific papers and regulatory documents that contain its definition mainly use the categories of "sustainable development of municipalities", "sustainable development of rural areas" and "sustainable development of cities". O.V. Shumakova and M.A. Rabkanova identified two approaches to the definition of sustainable development of local, particularly rural, territories – process and systemic. The first one considers sustainable development of rural areas as a process of changing various spheres of life of the rural community (social, economic and environmental) aimed at increasing agricultural production, improving the efficiency of agriculture, achieving full employment of the rural population and raising its standard of living, rational use of land, etc. The authors call it a disadvantage because it does not take into account the features of rural areas and does not reflect the mechanisms of influence on the process of their development (Shumakova, Rybkanov, 2014). The system approach, along with the process approach, considers sustainable development as a process of change in various spheres of life of the rural community (social, economic, and environmental), but additionally indicates the mechanisms of impact on the development of rural areas, i.e. reflects management of the sustainable development. The advantage of this approach is the description of a set of interacting and interrelated components of sustainable development (Shumakova, Rybkanov, 2014).

The analysis of the concepts presented in *Table 2* allows concluding that the process approach to the definition of the sustainable development of local territories prevails in regulatory and legal documents and research works. Basically, sustainable development is understood as a continuous process that implies both stability (preservation, maintenance) of individual socio-economic parameters and quantitative and qualitative changes (increase in production volume, increase in efficiency). In addition, a number of definitions equate sustainable development with balanced development, which implies taking into account the interests of all actors. At the same time, an important goal of the sustainable development is to meet the needs of the population, which is expressed in the improvement of the standard of living and quality of life. According to T.V. Uskova, sustainable development is a harmony of opposites: stability and changeability, preservation and renewal, unity and diversity (Uskova, 2009).

Some researchers include not only balanced socio-economic and environmental, but also spatial development in the definition of the sustainable development of local territories, particularly rural ones (Zakrzewski et al., 2023). We agree with this point of view, since the spatial factor plays a key role in access to resources: territories remote from the centers of attraction of resources have limited opportunities to respond to current challenges and threats (depopulation, poverty, unemployment, population aging, digital divide, etc.), which carries significant risks for their sustainable development. In addition, most definitions emphasize the importance of sustainable development in addressing local, site-specific problems.

Based on the analysis of the scientific discourse, *the sustainable development of local territories* can be understood as a *process of balanced socio-economic, environmental and spatial development of local territories of different levels (districts, urban and rural settlements) for the purpose of rational use of available resources, environmental conservation and ensuring a high quality of life in the interests of present and future generations, allowing solving local problems.* At the same time, balanced development

Table 2. Definitions of the sustainable development of local territories

Term	Definition	Authors/documents
Sustainable development of municipalities	Mode of functioning and development of self-organizing local system, oriented toward harmonization of community and environment life activity, provided by economic reproduction to improve the level and quality of life.	E.A. Pastukhova
Sustainable development of rural areas	Stable socio-economic development, increased agricultural production, improved agricultural efficiency, rational use and protection of land, full employment of rural population and improved living standards, provided, inter alia, as a result of activities not related to agricultural production, including activities to provide services in the field of rural tourism.	Federal Law of the RD 264-FZ, dated December 29, 2006 "On the Development of Agriculture"; Strategy for Sustainable Development of Rural Areas of the Russian Federation for the period up to 2030.
	A complex dynamic process of positive changes in indicators characterizing the social, economic and environmental condition of rural areas, controlled and monitored by the state with the help of the monitoring system, aimed at expanded reproduction of agricultural producers, diversification of their agricultural production, attraction of investments, use of innovations through effective actions of state authorities, local initiatives and elements of self-organization of economic entities.	O.V. Shumakova, M.A. Rybkanov
	Purposeful process of transition to a new level of spatial and balanced development of interrelated socio-ecological-economic subsystems, localized within the boundaries of rural areas, which allows to ensure increased efficiency of the rural economy, preservation of the natural basis of life and a high level of quality of life of rural population.	V.G. Zakshevskii et al.
	Maintaining the quantitative and qualitative characteristics of the rural community at a level that allows solving key problems of internal development of the rural area, as well as ensuring the fullest fulfillment of its main functions and, consequently, the competitiveness of the area in the conditions of the changing external environment.	A.Ya. Trotskovskii et al.
Sustainable urban development (sustainability of urban development)	An integrated process that leads to solving urban problems, improving the living conditions and quality of life of citizens by achieving a balanced socio-economic and environmental development through the rational use of resource potential (including geographical, urban planning features of the urban area, potential capabilities of the population, economy, industry, infrastructure) and not exceeding the maximum permissible environmental loads.	D.A. Denevizyuk
	The multi-dimensional capacity of a city to successfully function in economic, social and environmental dimensions simultaneously.	I.A. Shmeleva, S.E. Shmelev
	A process that leads to a balanced solution of social, economic and environmental problems of urban settlements, improving the comfort of life of citizens through the rational use of urban resources, effective urban planning and not exceeding the assimilation potential of urban ecosystems, in the interests of present and future generations of people.	A.P. Anisimov, G.Sh. Uzakova
According to: (Pastukhova, 2007; Denevizyuk, 2012; Sustainable development of rural areas …, 2013; Shumakova, Rybkanov, 2014; Shmeleva, Shmelev, 2019; Zakshevskii et al., 2023; Anisimov, Uzakova, 2023); regulatory documents.		

in relation to the economic space implies reliance on several principles: the presence of proportionality of development and the absence of significant disproportions in social, economic, infrastructural and other systems of territories; achievement of connectivity of local territories based on sustainable, intensive and parity links between them; consistency of development goals on the part of all stakeholders – population, business, authorities (Uskova, Patrakova, 2024).

The presented definition of the sustainable development of local territories, on the one hand, agrees well with the existing interpretations of sustainable development in international and Russian regulatory and legal documents, on the other hand, deepens and complements them, because it takes into account the spatial aspect in addition to economic, social, and environmental aspects. In addition, the proposed definition facilitates the process of operationalization of the concept, strictly outlining its theoretical framework.

Studies concerning the sustainable development of local territories have become one of the natural stages in the evolution of the global concept of the sustainable development. In foreign science, the study of sustainable development at the local level took shape in the concept of sustainable local development (SLD), which appeared relatively recently (in the late 20th – early 21st century) and was designed to solve localized socio-economic and environmental problems in such a way as to ensure sustainability for future generations (Batar et al., 2024). It is based on the concept of local development, which implies the process of improving the economic, social and environmental situation of a given territory based on the use of endogenous resources to improve the well-being and quality of life of its population (Dawkins, 2003). At the same time, endogenous resources are the most characteristic element of the concept, as they take advantage of the economic and social dynamics of a certain territory (Milán-García et al., 2019).

In Russian science, the issues concerning the sustainable development of local territories are often covered from the position of *L. Heisenberg's theory of central order and entropy approach* (Tatarkin, Gershanok, 2006; Tolstuch et al., 2020; Gamidullaeva et al., 2022), the essence of which is that the optimality of the vector of society's development is determined by human activity, corresponding to the requirements of moral relations, aimed at the development and improvement of human well-being and preservation of natural resources. At the same time, the development of society should not lead to an increase in the entropy of ecosystems (Gamidullaeva et al., 2022).

In the study of the sustainable development of local territories, more and more attention is paid to the spatial aspect, which is associated with the processes of urbanization, compression and fragmentation of developed space (especially rural areas), depopulation and depopulation of rural areas. This issue is mainly considered in the context of spatial localization (Zakrzewski et al., 2023) and center-periphery differences (Sustainable Development of Rural Territories..., 2013).

Ecosystem approach to sustainable development: essence, principles, role in management

The sustainable development of territories is a priority direction of modern planning and management, reflecting the need for a balanced approach to solving economic, social and environmental problems of life, involves changes in the economic system of territories in the direction of improving the socio-economic efficiency of its functioning (Kosygina, 2020). The current situation actualizes the need to mobilize additional resources and involve stakeholders in economic relations to solve the problems of territorial development, which is possible to implement within the framework of the ecosystem approach.

When considering the concept of "ecosystem" in scientific discourse, an analogy with natural

(biological) ecosystems is made (Ritala, Almpanopoulou, 2017). Natural ecosystems are a set of jointly functioning organisms interacting with the physical environment in a certain area (Ramenskaya, 2020).

However, in contemporary Russian and foreign studies, this definition covers socio-economic (Vigren, Eriksson, 2025), technological, platform (Kuimov et al., 2023) and other ecosystems that function within a certain external environment, including territory, industry, cluster, and form a complex of interacting elements (actors, stakeholders). Unlike natural ecosystems, everything that concerns socio-economic development is an artificial formation. The main goal of an ecosystem is to maintain or ensure its sustainable development, including by obtaining the best results through the integration of dissimilar resources of different actors. In this case, the interrelationships between the constituent elements serve as the basis for the structure of the ecosystem (Solovieva, 2019). In a generalized interpretation, an ecosystem is a set of actors that interact to achieve a common goal or create value. Interactions take place at different levels, with varying degrees of dependence on each other. In ecosystems, actors have freedom of action and the right to make independent decisions, but they must inevitably be willing to cooperate and work coherently within a unified system (Jacobides et al., 2018). A successful ecosystem is one in which all actors are satisfied with their positions. In this case, the structure of an ecosystem is made up of actors, positions, relationships and actions (Adner, 2016).

In the context of the study of the sustainable development of territories, we pay special attention to socio-economic ecosystems. In G.B. Kleiner's interpretation, a socio-economic ecosystem is understood as "a localized complex of organizations, business processes, innovative projects and infrastructural formations capable of long-term independent functioning due to the circulation of resources, products and systems" (Kleiner, 2019). In turn, the ecosystem of territories is a system of interactions between all elements of economic activity, including territorial authorities, enterprises of the production industry, population, social institutions, mass media, civil society institutions (Popov, Skvortsov, 2023). At the same time, the definitions of researchers also emphasize the voluntary nature of interaction between ecosystem participants (Tolstykh et al., 2021).

Theoretical justification and study of ecosystem functioning in scientific discourse are united by the ecosystem approach, which requires researchers to develop new strategies and tools for managing ecosystems, primarily of the socio-economic type. Its application to the sustainable development of territories is reflected in the practice-oriented management concepts of "public-state management", "municipal public policy" and "intersectoral partnership/interaction". In this respect, we are talking about the formation of an interdisciplinary approach, synthesis of the provisions of economic, sociological and management theories. The noted concepts are also based on the joint responsibility of government bodies, public institutions and economic entities for solving the problems of territories (Smotritskaya, 2024).

The application of the concept of public-public management opens up opportunities for the creation of socio-governmental horizontal ties that allow for a more flexible and responsive response to the challenges faced by territorial communities (Nisar, 2012; Smorgunov, 2022). Modern approaches to municipal public policy are similarly aimed at creating conditions for achieving public interests through partnership on the principles of building constructive interaction. L.I. Nikovskaya and V.N. Yakimets define municipal public policy as "programs and priorities of public authorities, mechanisms and technologies of their implementation, developed with the expectations

and with the participation of the main groups of civil society – small and medium businesses, non-profit and public organizations through their representatives" (Nikovskaya, Yakimets, 2019).

The importance of intersectoral partnership as a tool for solving social problems emphasizes the need to create a synergetic effect from combining the resources of various organizations. This not only contributes to improving the quality of life in the territories, but also involves all stakeholders in the decision-making process, which, in turn, strengthens the responsibility and interaction between them. The principles of cross-sector partnership are the development of network communication, continuous improvement of system productivity, constructive consideration of partners' interests, diversification of partnership mechanisms, resource synergism, conscious interdependence, equal access to participation in interaction (Yakimets, Nikovskaya, 2018). An extended interpretation of the principles of ecosystem organization, as well as the ecosystem approach in general, is given in the works of L.A. Gamidullaeva and co-authors. The research team identifies a number of key principles, including self-organization and self-development; trust and partnership; corporate culture; customer focus; project orientation; innovation and openness to change. They emphasize the importance of cooperation based on the exchange of information and resources. Equally important are transboundary and interdisciplinarity, which emphasize the need to integrate different knowledge to achieve sustainable ecosystem development. Each of the above principles serves as a basis for creating harmonious and productive interaction between all ecosystem participants, which, in turn, contributes to its dynamic growth and evolution in a rapidly changing world (Gamidullaeva, Grosheva, 2024). The principles outlined by the authors correlate with the development and functioning of the ecosystem for the sustainable development of territories. Thus, the revision of traditional governance models towards horizontal interactions becomes the key to successful sustainable development, which is confirmed by the SDG targets. The seventeenth SDG calls for strengthening the means of implementation and revitalizing the global partnership for sustainable development[3].

Although elements of the ecosystem approach to territorial development are reflected in various theories and concepts, it remains a framework and generalization due to its complex structure. This structure includes not only a plurality of actors, but also a holistic system of relationships that cannot be reduced to a simple set of bilateral interactions to achieve a result. Interactions play a key role in the functioning and development of ecosystems, although the external environment is also important in determining the conditions and drivers of these processes. Changes in the external environment can significantly affect the balance of an ecosystem, leading to changes in its structure and function. The ecosystem approach requires consideration of all these factors and interactions for the sustainable development.

Thus, the ecosystem approach allows moving to a new qualitative level of socio-economic space development (Alikaeva et al., 2020). The sustainable development of territories requires a comprehensive and multilevel approach, which cannot be realized only by the efforts of government structures. Effective mobilization of resources and active involvement of interested actors in the process of planning and implementation of activities become key development factors. The ecosystem approach brings together the efforts of different actors, helping to create synergies between economic, social and environmental interests. This cooperation not only increases the sustainability of development strategies, but also helps to adapt to the changing

[3] Sustainable Development Goals 2015. United Nations. Available at: https://sustainabledevelopment.un.org (accessed: 23.01.2025).

external environment, ensuring flexibility and innovation in solving problems.

Ecosystems for the sustainable development of local territories

The ecosystem approach for the spatial development of local territories is currently recognized as extremely promising, since the focus on ecosystems, rather than on industry, enterprise or region, makes it possible to maximize the use of the existing potential (natural, human, scientific, technical, etc.) of territories. Ecosystems, forming a special development environment, connect cities, centers of industrial production with remote areas (local communities). Thus, the sustainable territorial ecosystems contribute to the development of local communities and influence the spatial development of the whole country (Gamidullaeva et al., 2022). Nevertheless, there are few studies of the sustainable development ecosystems. Their current state is generally characterized by fragmentation, which is expressed in the study of individual aspects of sustainable development, and the lack of comprehensive empirical measurements.

One of the examples of studies that comprehensively consider ecosystems for the sustainable development is the work of T. Tolstykh, L. Gamidullaeva and co-authors (Tolstykh et al., 2020), in which, based on the entropy approach, it is proposed to assess the sustainability of the territorial ecosystem, namely through the level of utilization of various types of territorial capital (human, productive, natural). According to the authors, the sustainability of a territorial ecosystem depends on the sustainability of its constituent ecosystems and is determined by such factors as the potential of actors (uniqueness of technologies, resources, competencies) included in the internal ecosystems of the territory, the degree of links between internal ecosystems, the degree of links between actors and other actors within ecosystems, and the degree of coherence between different types of territorial capital (Tolstykh et al., 2020; Gamidullaeva et al., 2022).

In another paper by L. Gamidullaeva et al., the ecosystem approach is applied to the development of rural territories, in particular, its practical application is proposed in terms of organizing the process of selecting participants of the rural ecosystem to ensure its balanced development (Gamidullaeva, Grosheva, 2024). Researchers consider the rural ecosystem as an association of several administrative districts with common resource, institutional and socio-economic potential within a vast region. The actors of the rural ecosystem can be agro-industrial, industrial and engineering enterprises, IT-startups, research and knowledge-intensive organizations, resource providers, sectoral regulators and territorial authorities. The paper shows that in practice, a rural ecosystem should be created around an industrial cluster in such sectors as agriculture, industry, housing and catering. Its creation should be facilitated by a competent and balanced policy aimed at improving the quality of life in the area and counteracting the trend of migration outflow (Gamidullaeva, Grosheva, 2024).

Despite the identified progress in the field of research on territorial ecosystems for the sustainable development, there is still no conceptual framework for local territories, in particular, there is no definition of ecosystems for the sustainable development of local territories, and their structural elements have not been identified. To fill the existing gaps, we propose a definition of the concept *"ecosystem for the sustainable development of local territories"*. This is a *complex dynamic institutional environment that encourages various actors to mutually beneficial cooperation on issues of balanced socio-economic, environmental and spatial development of local territories of different levels (districts, urban and rural settlements) based on the principles of voluntariness, mutual benefit, self-organization and self-development to preserve the environment and ensure a high quality of life in the interests of present and future generations.*

Table 3. Structural and functional elements of the ecosystem for the sustainable development of the local territory

Structural and functional element	Description
Internal environment	Formed by formal (normative-legal acts, state support organizations, etc.) and informal institutions (habits, rules, stereotypes, patterns of behavior and interaction of individuals in society)
Internal ecosystems (microecosystems)	Ecosystems functioning and interacting within the local territory. These are production, innovation, social, environmental, cultural, communication ecosystems, business ecosystems and others.
Actors (stakeholders)	Actors (participants) carrying out activities and interactions. Actors can be participants in several ecosystems simultaneously. These are territorial authorities, enterprises of the production sector, population, social institutions, mass media, civil society institutions, and others.
Functions	Activities defined by individual actions of actors
Opportunities for influence	The ability of actors to influence internal and external conditions of ecosystem functioning (e.g., local government initiatives, investment projects of local enterprises, etc.).
Interactions	Establishing and maintaining links between different actors and elements of the ecosystem (e.g., partnership agreements, joint projects, information exchange, etc.)
According to: (Adner, 2016; Tolstykh et al., 2020; Gamidullaeva et al., 2022; Kotomina, 2024).	

The ecosystem for sustainable development can be characterized by such structural and functional elements as internal environment, microecosystems, actors, functions, opportunities for influence, and interactions *(Tab. 3)*. Actors, actively interacting with the help of special technologies, methods and tools, realize their functions and influence key microecosystems (Kotomina, 2024). They are united by functional-target interests, forming numerous sectoral, entrepreneurial, innovation, business and other ecosystems. Functional ecosystems form a single ecosystem of the territory, overlapping and complementing each other (Tolstykh et al., 2020). In addition to interconnections with each other and with internal ecosystems, actors interact with the external environment. In the course of their communication, knowledge, information, resources and technologies are exchanged. The quality of performance of functions by actors and their impact on micro-ecosystems determine the achieved level of the sustainable socio-ecological-economic development of the territory (Kotomina, 2024). At the same time, the internal environment ensures the functioning of actors and the possibilities of their influence on micro-ecosystems.

The external environment for the ecosystem of the local territory is society, territories, and industries that interact with it. As well as the internal environment, it is formed by formal and informal institutions, but functioning outside the local territory. These are institutions of higher levels – regional, national, global. At the same time, the external environment can both ensure sustainable development and create barriers to it.

Thus, ecosystem behavior depends on both the external environment and the behavior of actors and their interactions with each other (Gamidullaeva et al., 2022).

Conclusion

The territorial aspect of sustainable development is of particular importance in the context of growing urbanization, growing pressure on natural resources and increasing anthropogenic pressure on ecosystems. The sustainable development of territories implies integrated resource management, minimizing negative environmental impacts, improving the quality of life and ensuring fair conditions for all citizens. At the same time, the implementation of SDGs at the territorial level requires taking into account the specifics of each individual area, including its geographical location, socio-economic characteristics, cultural features, and environmental conditions.

A common trend in both international sustainable development policy and research is a shift in focus from global and national levels to regional and municipal levels. This is evidenced by the 11th SDG "Making cities and human settlements open, safe, resilient and sustainable"[4]. In addition, the ecosystem approach to studying the sustainable development of territories is gaining popularity, which makes it possible to take a new look at the structure of socio-economic systems at different levels, to rethink their structure and connections, to optimize the ways and forms of economic activity to enhance the benefits of synergy from the symbiotic interaction of various economic agents in the form of increased overall performance and efficiency due to the coordination of their interests, the achievement of common goals and the development of the economy (Tret'yakova, Freiman, 2022). The ecosystem approach creates synergy between economic, social and ecological interests by combining the efforts of various actors and ensures sustainable development of local territories, helping them to adapt to the challenges and shocks of the external environment.

The review has shown that currently the topic of ecosystems for the sustainable development of local territories is at the stage of conceptualization and is rarely found in the Russian scientific literature. Despite the fairly widespread studies of the sustainable development of municipalities, cities, rural areas, there is still no universally recognized definition of the concept of the "sustainable development of local territories". Based on the systematization and synthesis of scientific literature, the research framework of local sustainable development ecosystems was conceptualized, including operational definitions of the concepts "sustainable development of local territories" and "ecosystem for the sustainable development of local territories". We identified the key structural and functional elements of the ecosystems for the sustainable development of local territories: internal environment, microecosystems, actors, types of activity, opportunities for influence, and interactions.

Within the framework of the research project, we are planning to substantiate the conceptual scheme of functioning of the ecosystem for the sustainable development of local territories, to develop and approbation of complex tools, including quantitative and qualitative research methods, to assess the state of ecosystems for the sustainable development of local territories.

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