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**DRIVERS OF GREEN ECONOMIC GROWTH: GLOBAL
CHALLENGES IN LOCAL CONTEXT**

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Abstract

The main scientific problem of the research is to overcome the current “gap” between the practice of developing a green economy at the local level and theoretical constructs that allow explaining this process. The objectives of the study were to determine the specifics, identify patterns, main directions and incentives for the development of a green economy and substantiate approaches to assessing the potential of green growth at the local level. The object of the research was the existing environmental practices of local communities as points of growth and diffusion of a green economy. The methodological basis of the study was a combination of systematic, neoinstitutional and synergistic approaches. Along with traditional methods for economic research, the methodological tools included some specific research methods: sociological (expert methods and case studies), as well as econometric and statistical methods that allow “analyzing” large amounts of empirical data and representing them reliably. Based on an empirical study, we propose an approach to assessing the local potential for the development of a green economy, which allows assessing the possibilities of its implementation, systematizing the drivers of green economic growth, which form and strengthen the initiatives of the population, business community and local government in six main areas of “greening” the local economy. The authors suggest their own definition of the concept of “environmental transformation of the structure of the local economy” and present its structural-graphical model.

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Keywords: Green economy, green growth drivers, eco-transformation of the economy.



1. Introduction

The development of the global economy is currently undergoing significant changes, due to, according to many experts, the transition to the new, sixth technological order, which is based on "green" technologies, as well as the reduction of power and material consumption intensity of production. An important political factor guiding this process is the international commitment to reduce greenhouse gas emissions voluntarily accepted by most countries under the Paris Agreement.

The design of the green economic development policy is formed, therefore, by strengthening the environmental component in the global economy and politics, as well as technological and institutional changes occurring at the level of most developed and developing countries (Mundaca, Neij, Markandya, Hennicke, & Jinyue, 2016). At the same time, green technologies demonstrate higher competitiveness compared to the traditional ones. According to the Green Economy Coalition for the period 2007-2017 global investments in the green economy, excluding government funding, amounted to more than 8.13 trillion dollars. According to Ethical Markets Media forecasts, by 2020 private "green" investments could reach \$ 10 trillion (Green Economy Coalition, 2017).

According to the well-known definition of UNEP, a green economy is a "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. It is low carbon, resource efficient and socially inclusive". Thus, the theoretical discourse of the green economy forms three basic concepts: the desire to improve well-being as the main driver of economic activity, the concept of environmental constraints on economic development, largely based on the principles of the theory of sustainable development and the concept of social justice (Loiseau et al., 2016).

The main tasks of modern scientific research, developing the conceptual and methodological approaches of the green economy, focus mainly on the global impulses of the green economy, the specific features of the transition to a green economy in different countries and are associated with global environmental problems. At the same time, many global problems are most acutely felt at the regional and local levels.

The architecture of the transition to a green economy is a complex and multi-level process that develops in varying degrees of intensity in the institutional and legal field, the field of scientific research, the use of green materials and the introduction of environmentally friendly technologies in the production and logistics of goods, as well as form and strengthen a consumer's commitment to green goods and services.

Lutz, Zieschank, & Drosdowski (2017), for example, distinguish six dimensions of a green economy in their concept:

1. Use of natural resources and environmental damage caused.
2. Natural capital.
3. Environmental quality of life.
4. Green economy: Economic dimension and fields of action.
5. Policies: Institutional framework and measures.
6. Background information on economic and social development.

The researchers emphasize that the mechanism of influence on economic processes is one of the components of the general mechanism for regulating relations in the “man-nature” system (Druzhinskaya, 2017).

Most experts emphasize the leading role of the political and administrative resources of state actors in decision-making and advancing along the path of green economic growth. The confirmation of this thesis finds expression in both foreign and domestic experience. Macroeconomic incentives (the “top-bottom” approach) are determined by the state’s ability to create economic incentives through taxes, subsidies and fines, promote the development of the infrastructure of the green economy, form the necessary institutional, social and cultural context of development and influence business practices structures, etc.

Nevertheless, in recent years, there has been an intensification of incentives for the development of a green economy at the level of local socio-economic systems: local communities and business structures (the “bottom-up” approach) (Fücks, 2016; Jackson & Victor, 2013).

The main factors contributing to the institutionalization of this process include the strengthening of the environmental component in the structure of the objective needs of local communities, increasing public and business resources to influence environmental decision-making, the development of various forms of green cooperation between the state and business, formation of hybrid forms of financing environmental projects at the local level, strengthening of regulatory and financial support by the state of local projects in the field of green economy (Matsushashi & Takase, 2015). At the same time, the pace and qualitative characteristics of the transition to a green economy as well as its promising scenarios at the level of individual local socio-economic systems differ significantly among themselves.

2. Problem Statement

The scientific task of the research is to overcome the current “gap” between the practice of developing a green economy at the local level and theoretical constructs that allow explaining this process. Solving this problem will not only combine individual scientific results into a holistic cognitive structure, but also create an opportunity to explain and predict the development of the potential for green growth in the local economy.

Greening the economy at the local level is largely associated with the relevant programs of a state and municipal authorities, as well as the increase of social and environmental responsibility of businesses and demand from local communities for green consumption.

Marguerat & Cestre (2004) and later scholars (e.g., Lin & Chen, 2016) identify different types of green consumption motivation at the local level.

Research also focuses on the relationship between the level of awareness of individuals about the state of the environment and the sensitivity of customers to the degree of environmental cleanliness of products offered on the market (e.g. Mundaca, Neij, Markandya, Hennicke, & Jinyue, 2016). A number of studies are related to the construction of mathematical models that reveal the relationship between government subsidies, the level of production and pricing for green goods, the level of environmental cleanliness of a product, its cost and the willingness of consumers to pay a higher price (Cohen, Lobel, &

Perakis, 2015). The task of separation environmental values and the commitment to the green concepts of all actors in the chain of production and supply of products is rather important.

A number of Russian researchers focus on regulatory support for sustainable development. They consider the purpose and current functioning of specially protected natural areas in Russia (Khasaev, Sadovenko, & Isaev, 2016).

Researchers point out that in the context of the formation of a new model for the development of the Russian economy it is important to integrate the principles of a green economy into new government programs and commercial projects. A scientific search is under way for tools to improve the methodology of the project approach for the transition to sustainable development and increase the efficiency of projects, taking into account their promising impact on the environment (Bobylev, Goryacheva, & Nemova, 2017).

Agreeing with the majority of leading experts on the importance of the role of global incentives for the process of transformation of the existing economic models towards “greening”, however, it seems to us important to explore the new reality of the green economy at the local level.

The novelty of the research consists in substantiating an approach that allows identifying possible “growth points” of a green economy in the future and developing a new explanatory model of the process and results of the ecological transformation of the economy of local communities (Potravny, Novoselov, & Guengut, 2016). The relevance of the study is determined by the need to form the theoretical and methodological prerequisites for the introduction and dissemination of the practices of a green economy for sustainable development at the local level.

3. Research Questions

We raised the following research questions:

- What local community practices determine the potential for developing a green economy?
- Are there specific features and patterns in the development of processes for greening the economy at the local level?
- How is it possible to assess the resource potential of the development of a green economy at the local level, allowing to evaluate the possibilities of its implementation and, in the long term, determine the priorities of private financing and state support?
- What are the main drivers for the development of a green economy at the local level?
- What are the main structural components of the environmental transformation model of the local economy?

4. Purpose of the Study

We highlighted the following main research objectives:

- Identify specifics, patterns and main trends of development of the green economy based on an analysis of relevant practices of local communities in Krasnodar region.
- Systematize drivers of green economic growth at the local level and propose an approach to assessing the local potential for the development of a green economy based on statistical and mathematical methods, which allows assessing the possibilities of its implementation.

5. Research Methods

The methodological basis of the study is a combination of systematic, neoinstitutional and synergistic approaches.

Research method includes both traditional and specific methods of economic research: sociological (expert methods and case studies), econometric and statistical methods analyzing large amounts of empirical data and reliably represent them.

6. Findings

6.1. Trends of green economic growth in Krasnodar region

The significance of green growth strategy for sustainable development of local communities in Krasnodar region is determined by the high population density, specially protected areas with unique biological resources, significant dependence of the regional economy on industries sensitive to environmental quality parameters, and the close integration of natural, economic and social components of the regional system as well as an increase in the negative anthropogenic impact on the environment. In addition, Krasnodar region objectively possesses a significant basic (natural resource) potential for the development of the main directions of the green economy.

The study of local practices of local communities in the development of green economy allowed us to identify six main areas of green economic growth (Figure 01).

At the same time, different trends of green growth demonstrate different degrees of institutionalization and development intensity (Tereshina, Tambovceva, & Khalafyan, 2018). Thus, initiatives of local population aimed at creating renewable energy generation systems are mainly a response to the unsatisfactory condition of the centralized power supply system in remote settlements, as well as in the settlements with a high frequency of occurrence of emergency natural situations.

Appeal to the technologies of green power generation is also associated with high administrative barriers to connect constructed residential and commercial buildings to the central power system, restrictions on increasing power or the desire to minimize costs.

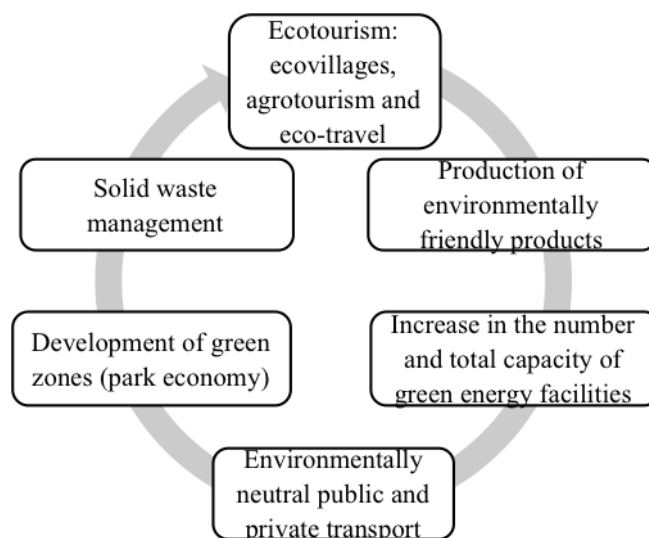


Figure 01. Trends of green economic growth in Krasnodar region

We identified the following features of greening the economy in Krasnodar region:

- Green initiatives affecting the economic processes in the local economy come mainly from the local population and business.
- Readiness of members of local communities for collective action in order to optimize environmental, economic and social interests forms a certain ecological identity.
- Incentives for the implementation of green projects are both economic rationality and intangible factors.
- With increasing awareness of local people about current environmental issues in their place of residence, volunteering and participation in environmental organizations are increasing;
- Use of network resources for the development of a green economy is often a more efficient tool than normative regulation.
- Replication and rapid diffusion of the most successful and viable practices occur.

It seems that the analysis and systematization of the existing practices of the green economy can become an important tool for determining the trends and methods of management impact on the development of a green economy at the local level and optimize the distribution of limited resources.

6.2. Approaches to assessing the resource potential of local territories in the development of a green economy

It's necessary to improve the efficiency of public and private investments in the development of a green economy at the local level, an assessment of the existing potential of a green economy of local territories in the context of their resource.

The resource potential of local territories in the development of a green economy was considered by us as a set of quantitative indicators selected and verified with the help of experts, divided into 4 blocks: natural-technical, infrastructure, demographic, financial and investment. The main criteria for selecting indicators were identified: reflection of the basic resources for developing a green economy, compliance with the objectives of green development, ability to manage resources at the local level, availability of information about resources, ability to measure resources based on objective quantitative data.

37 administrative divisions of Krasnodar region have become objects of study. System of 19 quantitative indicators forming 4 subsystems has been the basis for the assessment of district 'green' economy development potential.

Natural-engineering potential included such indicators as total solar radiation on the territory of district, annual waste production, forest cover of territory, area of agricultural land, and volume of pollutants emitted by stationary sources.

Infrastructure potential indicators included number of waste processing plants, mileage of local roads including those that do not meet state requirements, share of population that do not have regular public transport connections with administrative center of the district, as well as such energy effectiveness indicators as energy consumption in apartment buildings per one inhabitant, thermal energy consumption in apartment buildings per one square meter. Infrastructure potential characterized current infrastructure resources and confines, as well as possible directions of their transformation for gaining of additional

social, economic and ecological effects.

Demographic potential included annual number of permanent residents, number of working age population, as well as natural population growth.

Finance and investment potential of administrative divisions was assessed according to surplus/deficit of local budget, current environment protection spending, volume of investment in fixed assets (except for budget financing) per person, the number of small and medium-size enterprises per 10 thousand people.

Metric approach was used in determination of perspective territories for ‘green’ economy development. Pair Euclidean distances between municipal districts were determined as the points of multi-dimensional space (19 dimensions). As a tool the procedure of hierarchical classification of module, as well as STATISTICA software cluster analysis were used. Hierarchical clustering is the most widely known method of representation of distance matrix; it is based on the principle of tree diagram, which provides a graphic representation of the results of consecutive grouping of the objects into homogeneous groups (clustering).

Complete data on the structure of similarities and differences among the objects can be obtained with a use of distance matrix between them. The tree diagram, as the most known method of distance matrix visualization, can provide the graphic representation of objects grouping into homogeneous groups (clusters) (Figure 02).

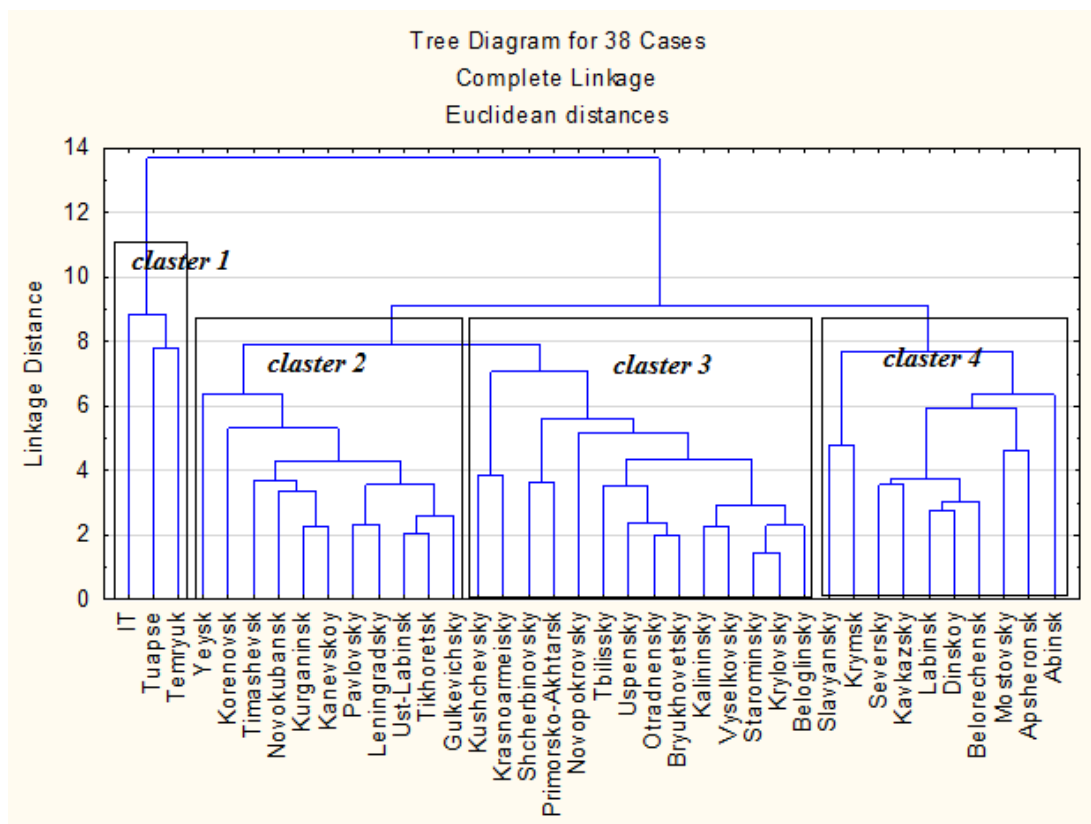


Figure 02. Tree diagram of the clustering of Krasnodar region by indicators of green development potential

As a result of multivariate analysis authors determined resource rich (cluster 4), medium resource-rich (cluster 3), resource poor (cluster 2), resource deficient territories (cluster 1).

6.3. Drivers of green economic growth in local communities of Krasnodar region

The analysis of green practices at the level of cities and municipal districts of Krasnodar region allowed for the systematization of external and internal factors and processes that, within the framework of specific municipal entities, led to the formation and strengthening of environmental initiatives in the local economy (Table 01).

Table 01. Drivers of green economic growth in local communities of Krasnodar region

Trends of green economic growth	Drivers of green economic growth	
	internal	external
1. Ecotourism in the form of eco-settlements, agrotourism and eco-travel	<ul style="list-style-type: none"> - Natural potential of the city or municipal district for the development of ecological tourism - Search by the local population for such types of organization of recreation for tourists in recreational areas that would minimize the negative effect on the environment and promote the development of small forms of management with a low level of initial investment 	<ul style="list-style-type: none"> - Increasing demand in society for alternative forms of recreation and tourism, organized on the principles of ecological neutrality, preservation of the cultural characteristics of the visited territories and consideration of the interests of local residents - The growing popularity of environmental goods and services in society - improvement of environmental legislation
2. Production of environmentally friendly products	<ul style="list-style-type: none"> - Increasing demand for environmentally friendly products - Voluntary environmental certification of local food industry 	<ul style="list-style-type: none"> - Ordering, updating and partial raising of state standards for food production in Russia - increasing the popularity of healthy nutrition ideas in the society, consumption of natural and environmentally friendly products - Raising environmental standards for food industry enterprises - Prospects for the entry into force of the Law "On Organic Products and Amendments to Certain Legislative Acts of the Russian Federation"
3. Increase in the number and total capacity of green energy facilities	<ul style="list-style-type: none"> - Favorable climatic conditions for the use of power plants on renewable energy sources - Successful practices of local community members in the field of installation and operation of solar panels and wind power plants - Frequent technological outages of the central power supply - Accidents of power lines associated with emergency situations 	<ul style="list-style-type: none"> - Remoteness from points of connection to the central energy supply network - Consumer restrictions on the connected power - Increase in electricity tariffs

4. Environmentally neutral public and private transport	<ul style="list-style-type: none"> - The growing demand of the local community to increase the level of environmental cleanliness of the transport system - Increasing the popularity in the local community of ecologically neutral types of movement in the city space: walking, cycling, using electric vehicles 	<ul style="list-style-type: none"> - Tax and other incentives for the use of electric vehicles by individuals and companies; - Higher prices for gasoline and diesel fuel; - Lower prices and increase the popularity of electric vehicles in society
5. "Green" zones development (park economy)	<ul style="list-style-type: none"> - The growing demand of the local community for park zones within a city - Increasing the popularity of the concept of conservation of natural landscapes with the integrated development of the municipality - The conflict between the long-term interests of the local population and the medium-term goals of the economic activities of construction companies, associated with the negative consequences of scattering of the territory or improper building of recreational lands - Development of local volunteering initiatives 	<ul style="list-style-type: none"> - Climate change and increase in average annual temperatures in urban and rural areas - An increase in the number of natural disasters compared with previous periods of observation in the relevant area
6. Solid waste management	<ul style="list-style-type: none"> - The lack of space for solid waste in the municipality - Negative externalities for the health and life quality of local population, associated with the expansion of solid municipal waste landfills - A significant deterioration in the appearance of the urban or rural settlement due to the presence of landfills 	<ul style="list-style-type: none"> - The ongoing process of a fundamental change in legislation in the field of separate collection, removal and disposal of municipal solid waste - High volatility of tariffs for the export of municipal solid waste - The threat of an incinerator within the municipality

The above drivers of green economic growth in the six main areas of environmental transformation of the local economy can be used in the formation of explanatory and predictive models, as well as in the framework of strategies and programs for greening the economy of municipalities and their sustainable development.

6.4. Model of ecological transformation of the local economy structure

Different local territories are characterized by profound differences in economic specialization, a rather variegated institutional design, spatial polarization of human capital, varying degrees of investment activity and a wide variety of natural conditions. That is why it is hardly possible to create a universal guide to “green track” development. Naturally, for different types of territories, both the tasks in this area and the tools for solving them will be different. The main goal of management should not be an abstract

“improvement of the environment” but progressive structural changes in the economic system (environmental transformation), which can be assessed using the decoupling effect - the separation of trends in the increase in production and changes in the consumption of natural resources.

Under the “environmental transformation of the local economy” the authors understand such a change in its existing internal structure and interrelations between its elements, which leads to a change in the quality of economic growth, reducing the resource intensity of the product and the negative impact of production on the environment. The main structural elements of the model of environmental transformation are presented in Figure 03.

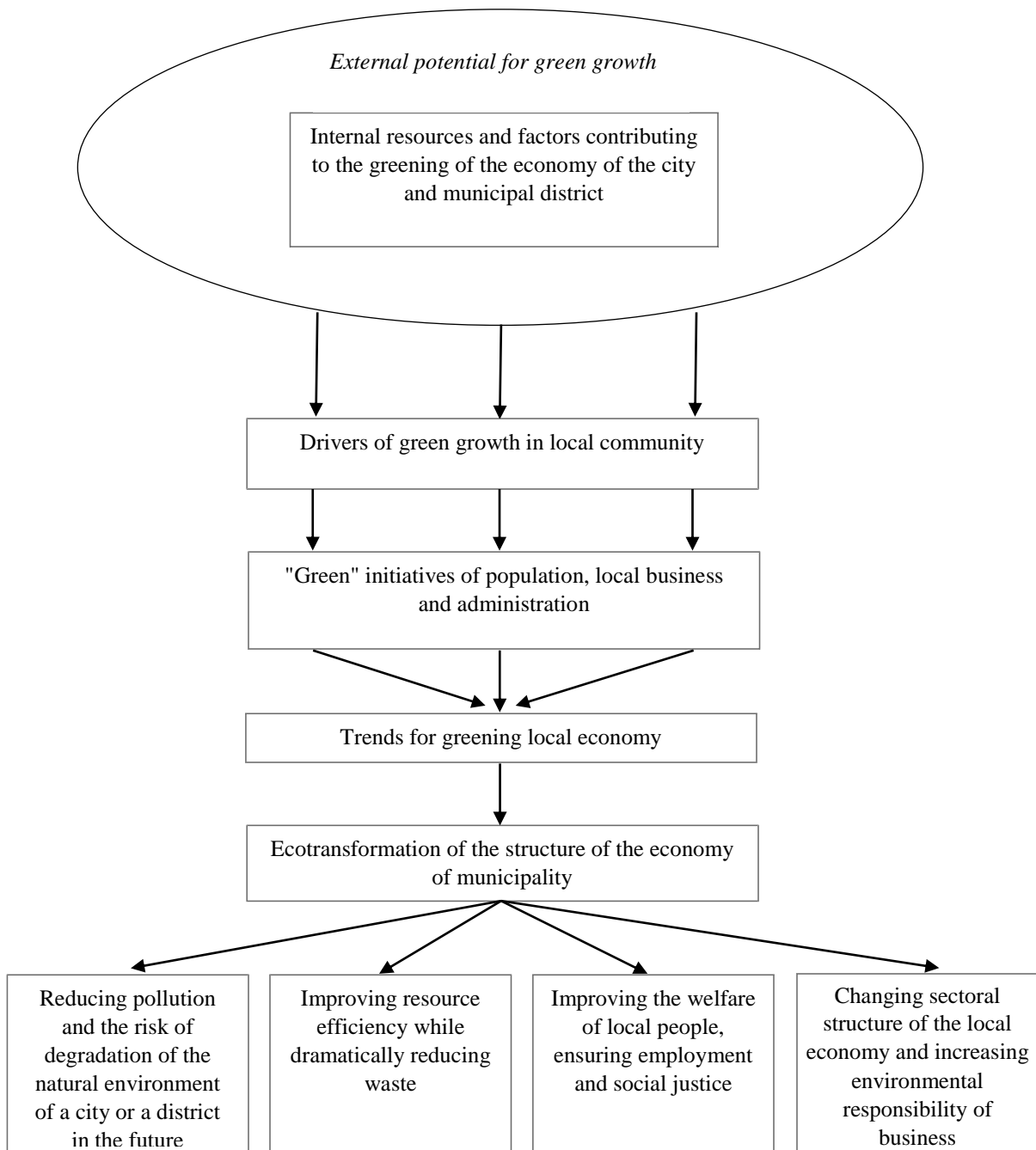


Figure 03. The initiation model of eco-transformation of the structure of local economy under green growth drivers

At the same time, the environmental transformation of the structure of the municipal economy does not imply a significant current increase in the gross local product and the tax base of the local economy but contributes to sustainable development in the future.

7. Conclusion

1. In recent years, the green economy has received new impulses of development, largely “feeding” with the social demand for benefits associated with green economic growth from local communities. At the same time, there are more and more signs of the emergence of elements of the new economic model at the micro level - single cities and settlements.

2. In Russia, as in other countries, the transition to a green economy depends not only on the federal agenda but on the local communities as well. This thesis is confirmed both by a wide range of issues of local importance established by federal legislation in the field of land use, education, public transport, municipal solid waste management, landscaping and urban planning, and by the trends of decentralization of resources and the development of green economy practices at the local level. Moreover, the viability of green initiatives “from the top” is largely determined by the degree of readiness of local communities to the corresponding changes.

3. On the example of Krasnodar region, the main features of the development of a green economy at the level of local territories were highlighted.

4. The impulses of the development of a green economy are formed depending on the resource potential and conditions prevailing in specific local communities. Differences in the resource potential of communities determine the differences in the pace and quality of the transition to a green economy, as well as its possible scenarios at the level of individual local socio-economic systems. To determine the directions and methods of management impact, as well as improve the efficiency of public and private investments in the development of a green economy at the local level, it is necessary to assess the existing potential of the green economy of local territories in the context of their resource potential.

5. The authors proposed an approach that allows identifying possible “growth points” of the green economy based on the principles of multidimensional analysis and developing a new explanatory model of the process and the results of environmental transformation of the local economy. The ranking of the territories of Krasnodar region by the potential for the development of a green economy, made in relation to administrative entities, allowed in the first approximation to locate four main clusters (high-resource, medium-resource, low-resource and resource-deficient). With regard to the conditions of other regions, it is possible that specific indicators of the components of each potential block will require addition and clarification, but the authors believe that the approach proposed in this study is able to demonstrate its methodological capabilities in general.

6. Analysis of green practices of local communities of Krasnodar in six topical directions of development of the green economy allowed to systematize external and internal factors and processes that, within specific municipal entities, led to the formation and strengthening of environmental initiatives in the local economy. These drivers of green economic growth of environmental transformation of the local economy can be used in the formation of explanatory and predictive models, as well as in the

framework of strategies and programs for greening and sustainable development of the economy of municipalities.

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References

- Bobylev, S.N., Goryacheva, A.A., & Nemova, V.I. (2017). Green Economy: A Project Approach. *Public Administration*, 64, 34-44.
- Cohen, M., Lobel, R., & Perakis, G. (2015). The Impact of Demand Uncertainty on Consumer Subsidies for Green Technology Adoption. *Management Science*, 62(5), 1235-1258. <https://dx.doi.org/10.1287/mnsc.2015.2173>
- Druzhinskaya, O. I. (2017). The Economic Mechanism of Environmental Protection. *Scientific Idea*, 2(2), 62-70.
- Fücks, R. (2016). *Intelligent wachsen. Die grüne Revolution*. Berlin: Hanser.
- Green Economy Coalition. (2017). *The Green Economy Barometer*. London: Green Economy Coalition Publ.
- Jackson, T., & Victor, P. (2013). *Green Economy at Community Scale*. Toronto: Metcalf Foundation.
- Khasaev, G. R., Sadovenko, M. Y., & Isaev, R. O. (2016). Biosphere Reserve – The Actual Research Subject of the Sustainable Development Process. *International Journal of Environmental and Science Education*, 11(16), 8911-8929.
- Lin, D., & Chen, H. (2016). A Review of Green Consumer Behavior Based on the Social Perspective. *Theoretical Economics Letters*, 6(5), 1088–1095. <https://dx.doi.org/10.4236/tel.2016.65104>
- Loiseau, E., Saikku, L., Antikainen, R., Droste, N., Hansjürgens, B., Pitkanen, K., Leskinen, P. Kuikman, P., & Thomsen, M. (2016). Green Economy and Related Concepts: An Overview. *Journal of Cleaner Production*, 139, 361–371. <https://dx.doi.org/10.1016/j.jclepro.2016.08.024>
- Lutz, C., Zieschank, R., & Drosdowski, T. (2017). Measuring Germany’s Transition to a Green Economy. *Low Carbon Economy*, 8(1), 1–19. <https://dx.doi.org/10.4236/lce.2017.81001>
- Marguerat, D., & Cestre, G. (2004). Determining Ecology-Related Purchase and Postpurchase Behaviors Using Structural Equations. *Institute University Management International (IUMI), Working Paper*, 12, 1-24.
- Matsuhashi, R., & Takase, K. (2015). Green Innovation and Green Growth for Realizing an Affluent Low-Carbon Society. *Low Carbon Economy*, (6), 87-95. <https://dx.doi.org/10.4236/lce.2015.64010>
- Mundaca, L., Neij, L., Markandya, A., Hennicke, P., & Jinyue, Y. (2016). Towards a Green Energy Economy? Assessing Policy Choices, Strategies and Transitional Pathways. *Applied Energy*, 179, 1283-1292. <https://dx.doi.org/10.1016/j.apenergy.2016.08.086>
- Potravný, I. M., Novoselov, A. L., & Guengut, I. B. (2016). Formalization of The General Model of Green Economy at The Regional Level. *Regional economy*, 12(2), 438-450.
- Tereshina, M., Tambovceva, T., & Khalafyan, A. (2018). Integrated Assessment of Socio-Economic Potential of Rural Communities for Development of Green Economy. In L. Malinovska (Ed.), *Proceedings of the 17th International Scientific Conference Engineering for Rural Development. Jelgava, 23-25.05.2018* (pp. 1153-1159). Jelgava: Latvia University of Life Sciences and Technologies. <https://dx.doi.org/10.22616/ERDev2018.17.N264>.