

Research Journal of Pharmaceutical, Biological and Chemical Sciences

Ecovillage As A Tool To Attract The Working Population To The Countryside.

Elena Nikolaevna Belkina^{1*}, Mariya Vladimirovna Zaytseva¹, Natalia Nikolaevna Galenko²,
Anna Genrikhovna Volkonskaya², and Oleg Igorevich Kurlykov².

¹Kuban State Agrarian University named after I.T. Trubilin, Kalinina str. 13, Krasnodar 350044, Russia.

²Samara State Agrarian University, Training str., 2, Kinel 446442, Russia.

ABSTRACT

At the present stage of development of the Russian Federation, there has come a deep awareness of the importance of agro-industrial production in ensuring food security of the regions. The created legal framework forms the prerequisites and conditions for increasing agricultural production, technical and technological re-equipment of agriculture, and modernization of the processing industry. At the same time, an acute problem remains the social degradation of a significant part of the rural population and rural areas. There is an increase in the outflow of the able-bodied population and youth from the village. In this study, content analysis approaches were used: query statistics on the topic under investigation, indirect references, the presence of archival and active records, the number of participants in the thematic groups. Based on the information obtained, a forecast was made of the number of ecosettlements and population size based on linear trends.

Keywords: ecovillage, countryside, village, re-equipment, agriculture

**Corresponding author*

SHORT REVIEW

During the study period, the demographic situation in the Krasnodar Territory improved due to a sharp increase in the birth rate among the urban population. However, the natural movement of the rural population is in the negative zone and continues to decline. During the study period, the decline in the rural population increased by 3 times, which is associated with the aging of the rural population, the migration of young people to the city, and the imperfect health care in rural areas. The analysis performed indicates that the tendency of unfavorable changes in the age composition of the population remains. The rate of decline in the economically active rural population is increasing, the process of demographic aging of the population is intensifying [1].

Table 1: Vital Indicators in the Krasnodar Region

Indicators	2013	2014	2015	2016	2017	2017 r. to 2013, %
Population, total, thousand people	5230,0	5330,2	5404,3	5453,3	5513,8	105,4
The proportion of the rural population in the total, %	47,1	46,5	46,1	45,9	45,7	-
Number of births, total, people including:	69193	70298	73347	74117	72986	105,5
- urban population	39292	41254	43546	45344	45344	115,4
- rural population	29901	29044	29801	28773	27448	91,8
Total mortality, total, people including:	69814	68714	70091	71378	71550	101,9
- urban population	38291	38228	37788	38909	39190	102,3
- rural population	31523	30486	32303	32469	32360	102,7
Infant mortality, pers. including:	449	412	405	398	366	81,5
- urban population	247	246	229	210	205	83,0
- rural population	202	166	176	188	161	79,7
Natural decrease (-), increase, total, pers. including:	- 621	1584	3256	2739	1436	-
- urban population	1001	3026	5758	6435	6348	6,3 раза
- rural population	-1622	-1442	-2502	-3696	-4912	3 раза
Life expectancy at birth of the rural population, years	72,1	72,9	72,3	72,6	73,1	101,4

Today, rural settlements with a population of up to 5,000 people prevail in the structure of the rural settlement of the Krasnodar Territory, their share is 56.25% of the total number of rural settlements in which 26.3% of the rural population lives [2].

In the context of the implementation of the concept of securing labor resources in rural areas, it is advisable to identify tools that contribute to the development of promising forms of organization of "villages of the future." Promising in this aspect is the development of alternative types of settlement on the principles of environmentally friendly approaches to the organization of the vital activity of the population. The main employment of the inhabitants of eco-villages is handicraft agricultural production, agrotourism, production of niche products, various creative and event industries related to the exploitation of historical, cultural and resource-recreational potential, various types of remote activities in the "remote office" format [3].

Considering the ecovillage from the standpoint of a group of people initiating their creation, we can distinguish the following main features:

- ecosettlement is a place of residence and at the same time a place of application of labor without clearly delineated production areas;
- the qualitative composition of the population is represented mainly by the urban population who migrated as a result of deterioration in the "quality of life" in urban areas or by migrants from regions with harsh climatic conditions;

- focus on environmentally friendly products, environmentally friendly forms of energy to preserve health and the environment;
- denial of the doctrine of consumer behavior, promotion of the harmony of man with nature (man as part of the noosphere);
- the presence of local rules, norms, traditions and principles;
- Attracting like-minded people in life stance, type of consumer behavior;
- satisfaction with minimum benefits, improvement of the “quality of life” is perceived through the prism of nature conservation, health and resources.

From the position of the administrative-territorial and socio-economic aspects of ecosettlements, they have the following positive and negative features:

- these settlements often have an illegal, spontaneous nature, without registering as new administrative-territorial units, housing construction processes are not coordinated within the existing regulatory field;
- there are difficulties in monitoring population size and living conditions due to autarky of communities;
- as an economic base, shadow (informal) entrepreneurship prevails [4].

But at the same time:

- alternative forms of settlement reduce the fragmentation of rural areas, form a road and spatial-economic network;
- independently decide the issue of security and employment, reducing social tensions;
- develop new types of agricultural business;
- allow poor families and families with many children to improve their living conditions and improve the “quality of life”;
- promote a healthy lifestyle and labor education of the younger generation, forming the image of the “village of the future” [5].

At the moment in the Krasnodar Territory there is a whole array of eco-settlements, differing in form and profile of activity, but having identical organizational goals [6].

On the basis of generalization of information about the methods of lawful creation and placement of eco-settlements on the territory of the Krasnodar Territory, let us present their possible variants.

1. The method includes the available options and the necessary measures when registering eco-settlements in new territories with inter-settlement status. In this case, it is necessary to take into account the distance from nearby settlements and the possibility of joining them to give the official administrative-territorial status of the ecosettlement (the organization of ecosettlements in accordance with the Law of the Krasnodar Territory of 03.07.2012 No. 2536-kz "On rural estates in small rural settlements of Krasnodar the edges"). The advantage of this method is the full involvement of the new settlement in the system of administrative-territorial division and local self-government, which is connected with the possibilities of developing the infrastructure and creating a full-fledged social environment taking into account the specifics of the settlement.
2. The method consists in forming a new type of settlement in the territory of abandoned rural settlements of the region, which will significantly reduce the costs of the initiators due to the presence of a certain infrastructure and the absence of the need to go through all the stages of the administrative establishment of the settlement. In this case, it is sufficient to re-register ownership of the property.
3. The method allows, within the framework of legislation, to carry out the placement of an ecosettlement on lands not intended for these purposes, which have a certain status. In this case, it is necessary to link the future production activity of the settlement with the specific purpose of the land (gardening, horticulture, dacha farming).

Considering the location of the population, we can conclude that the network of rural territories of the Krasnodar Territory appears to be relatively even. But at the same time, processes are developing that lead

to the degradation of ultra-small settlements. For example, according to the 2010 All-Russian Population Census, 19 empty villages were identified in the Krasnodar Territory. The exodus of the population occurred under the influence of a number of factors: the elimination of the economic base of the settlements and the subsequent unemployment, the natural aging of the population, the optimization of the rural social infrastructure and others [7].

In this case, a positive trend can be considered a massive migration of able-bodied people from other regions of the Russian Federation with the initiative of restoring abandoned rural settlements and maintaining on their base various types of entrepreneurship related to the exploitation of local elements of the natural resource base. Often, immigrants are a secured economically active population who wants to experience the benefits of a rural lifestyle, but in its modern version.

We have sampled the abandoned settlements of the Krasnodar Territory, indicating their localization:

1. City GoryachyKlyuch: Kura-Provayl settlement;
2. Lazarevskiy urban district: the village of the Fourth Company;
3. Absheron district: Osinovskoye village;
4. Caucasian region: the village of Sadovy;
5. Krymsky district: Kalinovka first farm, Podgorny farm, Shibik farm;
6. Novokubansky district: the village of Leskhoz;
7. Otradnensky district: the village of Udobno-Pokrovsky;
8. Seversky District: Aleksandrovsky Farm;
9. Tbilisi district: Dolins farm;
10. Temryuk District: OrekhovKut farm, Zakubansky village, Ordynsky village;
11. Tikhoretsky district: the village of West, the village of railway crossing Forward;
12. Assumption district: Pervokubansky farm;
13. Ust-Labinsky district: Sokolsky farm.

On the basis of these settlements, it is possible to recreate completely new in content, but traditional in the form of the village in the format of eco-settlements. The main advantage of this method of organizing eco-settlements is the partial availability of infrastructure and engineering facilities in the territory of abandoned villages (electricity, gas, water supply). The main purpose of restoring abandoned villages is to maintain the network structure of settlements for administrative and social control over the territory [8].

As initiators of processes on the organization of ecosettlements may be the following subjects:

- individual individuals, in terms of the implementation of personal initiative;
- A group of like-minded people and activists, in terms of attracting new members of communities and investors;
- bodies of state regional and federal government, in terms of developing projects for the development of alternative ecosettlements, the restoration of abandoned villages, and the solution of institutional and organizational issues;
- associations K (F) X, agribusinesses, in terms of the provision of jobs at the initial stage to residents of eco-settlements.

The organization of eco-settlements and their settlement are voluntary activities based on personal initiatives that will allow to realize the whole variety of functions of traditional rural settlements and to obtain a set of intended effects (Table 2).

Table 2: Effects about organization of eco-settlements in the Krasnodar Region

Social effects	Spatial effects
<ul style="list-style-type: none"> - Improving the quality of life of the population due to the comfort of a life-supporting environment; - Demographic increase; - Increasing the level of attractiveness; region for external positive migration; 	<ul style="list-style-type: none"> - Strengthening control over the territory; - Involvement of empty sites in the spatial system of the region; - Development of the transport and logistics network in the region.

- Labor education of children (patriotic education); Self-employment and food self-sufficiency.	
Economic effects	Effects in the field of entrepreneurship
- The growth of tax revenues in the municipal and regional budget; - Additional jobs; - Impulse for the growth of unpopular types of agricultural production (horticulture, walnut growing, fruit growing); - Formation of additional competitive advantages of the region; - Increasing the investment attractiveness of the region; - Reducing unemployment.	- Diversification of production through the development of niche types of agricultural activity and agrotourism; - Contribution to the implementation of the tasks of import substitution of food; - Increased competition in the production of eco-products; - Active use of alternative environmentally friendly technologies and energy sources.

Assessing the prospects for creating eco-settlements, let us use the prognostic apparatus. Predicting the number of eco-settlements in the Krasnodar Territory is possible under certain conditions:

- availability of information, in our case these are electronic sources (forums, chats, articles and websites of existing settlements);
- Target indicators to create a simulation model for the development of alternative settlements.

In this study, content analysis approaches were used: query statistics on the topic under investigation, indirect references, the presence of archival and active records, the number of participants in the thematic groups.

Based on the information obtained, a forecast was made of the number of ecosettlements and population size based on linear trends [9]. Table 3 presents the equations of the trends, and also the coefficient of approximation is calculated, allowing to determine the degree of accuracy of calculations for subsequent prediction. The linear functions were chosen as predictive functions due to the simplicity of their use and the high level of the approximation coefficient.

Table 3: Drawing up the trend function of ecosettlements number and the size of their population in the Krasnodar Region

Trend Line Functions	The number of eco-settlements	Approximation factor	Eco-population	Approximation factor
Linear	$y = 2,255x + 3,757$	$R^2 = 0,984$	$y = 98,45x - 4,954$	$R^2 = 0,942$
Logarithmic	$y = 10,38\ln(x) + 1,116$	$R^2 = 0,917$	$y = 431,0\ln(x) - 82,89$	$R^2 = 0,794$
Polynomial (2 degree)	$y = -0,037x^2 + 2,745x + 2,613$	$R^2 = 0,986$	$y = 4,874x^2 + 35,08x + 142,9$	$R^2 = 0,964$
Power	$y = 4,8x^{0,734}$	$R^2 = 0,984$	$y = 115,7x^{0,909}$	$R^2 = 0,974$

The following forecasting scenarios can be distinguished:

- realistic. It represents the forecast values, which are based on current information and the conditions prevailing at the time of the study to create new and develop existing eco-settlements. For a realistic forecast, an extrapolation of the linear trend for the period up to 2026 has been carried out.
- optimistic. As the basic indicators of forecasting, realistic forecast data is used, as well as additional components and conditions, including:
 1. The number of deserted villages in the Krasnodar Territory is 19 and when assessing the likely timing of their restoration, we proceed from the possibility and feasibility of developing project documentation on this issue in the period from 2018-2020. During this time, it is necessary to develop the provisions of the projects and form potential sources of financing.

2. It is assumed that in the first year of the project implementation 3 rural settlements will be restored, in subsequent years, 6, 9, 1 stages.
3. Since 2023, with existing experience, an active phase of filling in inter-settlement, empty and inter-municipal territories with eco-settlements with the assignment of special territories for them is possible.
4. The average population of rural settlements to be restored will be from 150 people in each village. This indicator is determined based on the grouping of rural settlements by population in the Krasnodar Territory. Most of them have from 100-500 resident population. In this regard, the sustainability threshold for eco-settlements is set at a size of 150 people or more.
5. For new ecosettlements, the maximum population threshold is set at up to 100 people, due to additional difficulties during resettlement.

The forecast results are presented in Table 4. Thus, with the implementation of the optimistic scenario, it is possible to bring the number of eco-settlements to 63 with a total of 2,661 people.

Table 4: Forecast the number of eco-settlements implementing new functions and their population in the Krasnodar Region

Years	Realistic forecast		Optimistic forecast	
	The number of eco-settlements	Ecovillage population	The number of eco-settlements	Ecovillage population
2020	42	1570	45	2020
2021	45	1669	51	2569
2022	48	1767	57	3117
2023	50	1866	56	2516
2024	53	1964	58	2464
2025	55	2062	60	2562
2026	58	2161	63	2661

CONCLUSION

Summing up, it should be noted that the presented idea of consolidating and attracting the economically active population to the countryside of the Krasnodar Territory through the development of eco-settlements can be applied in many regions favorable in natural and climatic terms.

REFERENCES

- [1] Belkina E.N., Zaytseva M.V., Abramyan R.T. Problems of development and self-realization of human capital in rural areas. Moscow Economic Journal. 2018; 5.
- [2] Belkina E.N., Agibalova V.G. Analysis of the social aspects of the development of rural territories of the Krasnodar Territory. Bulletin of the Academy of Knowledge. 2018; 26(3): 50-56.
- [3] Eco-settlements as a form of internal migration: motivation and distribution prospects. The final comprehensive analytical report on the results of the study. Research group "ZIRCON". Version 27.11.2012.
- [4] Starchenko V.M. Innovative projects of rural development. Economics of Agriculture of Russia. 2009; 4: 57 - 61.
- [5] Metelkin A.N. Modern eco-settlements - a real alternative to urbanization / A.N. Metelkin // Ecology of urbanized territories. 2011; 1: 13-19.
- [6] Ragulina Y.V., Semenova E.I., Zueva I.A., Kletsikova E.V., Belkina E.N. Perspectives of solving the problems of regional development with the help of new internet technologies. Entrepreneurship and Sustainability Issues. 2018; 5(4): 890-898.
- [7] Belkina E.N., Agibalova V.G. Conceptual bases of formation of the organizational-economic mechanism of multifunctional development of rural territories: monograph. Krasnodar: FSBEI HE KubGAU, 2017: 106.
- [8] Lapygin Yu.N., Krylov V.E., Chernyavsky A.P. Economic forecasting: study guide. M.: Eksmo, 2009: 256.