

Principles of Deploying the Objects of Social and Transport Infrastructure in Regional Strategic Planning Documents



Vadim N. KABANOV

Moscow State University of Civil Engineering (National Research University)

Moscow, Russian Federation, 26, Yaroslavskoye highway, 129337

E-mail: kabanovvn@yandex.ru

Abstract. In Russia, the development of strategic socio-economic development programs is regulated by Federal Law 172-FZ of June 28, 2014, according to which long-term development ideas should be displayed on the schemes of territorial development. The main problem in the development of territorial planning schemes concerns the accuracy of forecasting the number of population living in municipal entities in relation to the time horizon determined by strategic plans. Practical application of the correlation between the population and the number of jobs created or saved can translate the amount of financial resources provided for the implementation of long-term development programs into quantitative indicators necessary to calculate the number and capacity of social and transport infrastructure facilities. The goal of our research is to prove the existence of statistical dependence of the number of population on the number of jobs in the regional and municipal economy. To achieve the goal we determined the statistical correlation between the population of Russia's regions and the number of jobs in the economy (employed population). We propose to discuss the findings of the study in the form of a debate on the principles of formation of territorial development plans. Without denying the importance of self-identification of the population, we substantiate the possibility to receive the means to satisfy human needs as a fundamental criterion for choosing the place of residence. Since employment is the most common way of obtaining such means, the indicator "number of jobs in the economy of the territorial entity" is justified as the main quantitative indicator that can accumulate the most common strategic ideas of socio-economic

For citation: Kabanov V.N. Principles of deploying the objects of social and transport infrastructure in regional strategic planning documents. *Economic and Social Changes: Facts, Trends, Forecast*, 2018, vol. 11, no. 3, pp. 71–83. DOI: 10.15838/esc.2018.3.57.5

development. Based on the requirements of existing legislation, we conclude that it is advisable to apply the ratio of the number of jobs to the number of population as 1 to 2. We conclude that this approach to forecasting the number of population provides the most reliable system of substantiation when making decisions about deploying the objects of regional significance in the scheme of territorial development of constituent entities of the Russian Federation. The development of territorial planning schemes as part of strategic planning documents ensures concretization of long-term ideas of socio-economic development that are worked out and approved by local authorities.

Key words: strategic planning, population, jobs, social infrastructure, objects of regional significance, territory of settlements, socio-economic development, territorial planning scheme.

Introduction

The law on strategic planning in Russia¹ stipulates the necessity to develop a strategy for its spatial development (Article 20, Federal Law 172-FZ). At the regional level, spatial development is determined by the territorial development scheme of the RF subject (Article 38, 172-FZ). Requirements to the regional scheme of territorial development are set out in Chapter 3, Articles 9–28 of the Urban Development Code of the Russian Federation². Schemes of territorial planning of Russian Federation subjects, according to Item 3, Article 14 of Federal Law 190-FZ, contain the following information:

“1) location of transport (railway, water, air transport), highways of regional or inter-municipal importance;

2) prevention of emergency situations of inter-municipal and regional character, natural disasters, epidemics and elimination of their consequences;

3) education;

4) healthcare;

5) physical education and sports;

6) other areas in accordance with the powers of constituent entities of the Russian Federation”.

¹ On strategic planning in the Russian Federation: Federal Law 172 of June 28, 2014 (as amended July 3, 2016)

² Urban Development Code of the Russian Federation: Federal Law 190 of December 29, 2004 (as amended July 29, 2017)

Based on the above provisions of the current legislation, the government, in accordance with the Constitution (Articles 39–43) assumes the obligations concerning the establishment, maintenance and development of social infrastructure in settlements. It goes without saying that making decisions on the placement of regional social infrastructure depends on the number of residents in the settlement (in this case the settlement can be a large metropolis, a rural settlement, etc.). The number and capacity of social infrastructure facilities are established in accordance with current design standards³ and depend on the number of residents of urban and rural settlements. New social infrastructure facilities are constructed and existing financed at the expense of budgets of all levels, and the amount of funding depends on the number of residents⁴. Unfortunately the above-mentioned normative documents do not contain recommendations for determining the number of residents in settlements. The search for other related documents in the available reference and legal systems did not give a positive result.

³ Items 4.4, 11.2, Appendix D SP 42.13330.2016. Set of rules. Urban development. Planning and development of urban and rural settlements. Updated version of SNiP 2.07.01-89: approved by the Order of the Ministry of Construction of Russia dated December 30, 2016 No. 1034/pr.

⁴ On the requirements to the allocation of medical organizations of the state health care system proceeding from the needs of population: Order of the Ministry of Health of the Russian Federation No. 132n dated February 27, 2016.

In this regard, the search for quantitative indicators that describe regional socio-economic development strategies and can ensure the reliability of the population forecast are among topical problems of strategic planning. Forecasting changes in the number of population in the regions and municipal entities remains a particularly acute issue. It is difficult to overestimate the importance of the reliability and accuracy of the forecast showing changes in the number of residents resulting from the implementation of long-term socio-economic development programs and projects.

Having studied periodicals containing scientific research findings that consider the reasons for the change in the number of rural and urban settlements, we can draw the following conclusions.

Some foreign researchers consider that fluctuation of the number of residents is a result of territorial development, which, in turn, is considered as a function of business development (entrepreneurship):

- depending on the volume of “export” revenue, that is, the volume of export of goods and services outside the territory in question⁵;

- depending on one center where economic activity is concentrated (modernization of J. von Thünen’s theory⁶), which is a condition for achieving economic balance in a situation when the number of residents is small⁷, and in the case of joint consideration with A. Lösch’s

model⁸, it is possible to assess socio-economic implications of population growth⁹;

- depending on the production capacity of industrial enterprises involved in the global technology chain of mass production goods¹⁰;

- depending on the value of transactional (primarily transportation) costs¹¹.

- Others consider the number of residents to be a function that depends on the efficiency of infrastructure:

- providing diversification of the economy¹²;

- promoting self-employment of households¹³;

- reducing the gap between rural and urban settlements¹⁴;

- contributing to the growth of the efficiency of commodity exchange¹⁵.

In our country, the change in the number of urban and rural population is multidirectional

⁸ Lösch A. Population cycles as a cause of business cycles. *The Quarterly Journal of Economics*, 1937, no. 51(4), pp. 649-662.

⁹ Fujita M., Mori T. Structural stability and evolution of urban systems. *Regional Science and Urban Economics*, 1996, no. 27, pp. 4-5.

¹⁰ Venables A. Equilibrium Locations of vertically linked industries. *International Economic Review*, 1996.

¹¹ Pugo D., Venables A. *The spread of industry spatial agglomeration in economic development. CEPR Working Paper № 1354*. 1997.

¹² Hemalata C., Dandekar. Rural Planning: Genera 1. *International Encyclopedia of the Social & Behavioral Sciences (Second Edition)*. Elsevier, 2015. Pp. 801-806.

¹³ Abdulaziz Shehua, Shaufique F. Sidiquea. A propensity score matching analysis of the impact of participation in non-farm enterprise activities on household wellbeing in rural Nigeria. *International Agribusiness Marketing Conference 2013, IAMC 2013, 22–23 October 2013, Kuala Lumpur, Selangor, Malaysia*.

¹⁴ Jiang Shijie, Shen Liyin, Zhou Li. Empirical Study on the Contribution of Infrastructure to the Coordinated Development between Urban and Rural Areas: Case Study on Water Supply Projects. 2nd International Conference on Challenges in Environmental Science and Computer Engineering. *Procedia Environmental Sciences*, 2011, vol. 11, part C, pp. 1113-1118.

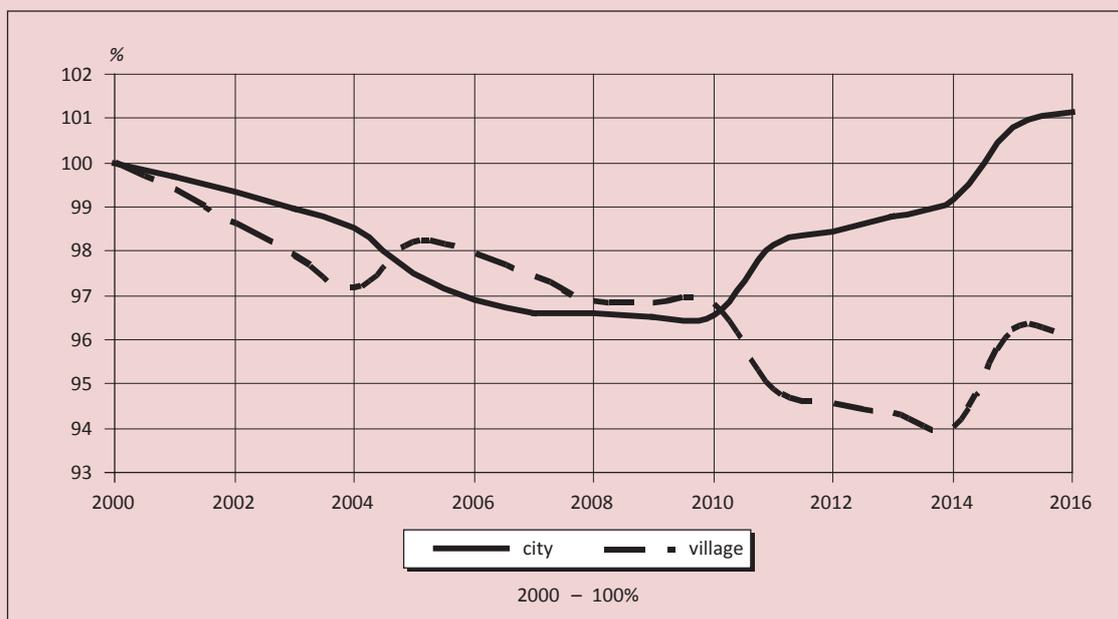
¹⁵ Ennen E. *Die europäische Stadt des Mittelalters*. Göttingen, 1975. P.84.

⁵ Pred A.R. *The Spatial Dynamics of U.S. Urban-Industrial Growth*. Cambridge: MIT Press, 1966. Pp. 1800-1914.

⁶ Thünen J.H. *Der naturgemäße Arbeitslohn und dessen Verhältnis zum Zinsfuß und zur Landrente*. Zweite Abtheilung, hrsg. von Hermann Schumacher. Rostock. Leopold, 1863. 160 p.

⁷ Fujita M., Krugman P. When is the economy monocentric: von Thunen and Chamberlin unified. *Regional Science and Urban Economics*, 1995. 254 p.

Figure 1. Dynamics of the number of urban and rural residents in the Russian Federation in 2000–2016



Source: Russian statistical yearbook. 2016. P. 69, Tab. 4.2: statistics collection. Rosstat. Moscow, 2016. 725 p.

(Fig. 1). Due to a higher rate of rural population reduction (the dotted line in the figure) Russian scientists study in more detail the issues of socio-economic development in rural areas. On the part of public administration authorities, the change in the dynamics of rural population is associated with the implementation of the relevant federal target program¹⁶ and the strategy for socio-economic development¹⁸.

The integrated approach is of critical importance in promoting sustainable and

¹⁶ Mikhailova E.V. Assessment of the efficiency of management of regional economy. *Biznes. Obrazovanie. Pravo=Business. Education. Law*, 2017, no. 1, pp. 101-106.

¹⁷ Federal target program “Sustainable development of rural areas for 2014–2017 and for the period up to 2020”: approved by the Resolution of the Government of the Russian Federation No. 528 dated July 15, 2013.

¹⁸ Strategy for sustainable development of rural areas of the Russian Federation for the period up to 2030: approved by the Resolution of the Government of the Russian Federation No. 151-r dated February 2, 2015.

dynamic development of Russian villages¹⁹. Russian researchers point out the following major efforts that can promote positive dynamics of socio-economic development:

- “preserving” labor potential²⁰;
- strengthening demographic capacity with the help of economic prospects, including those related to the revival and creation of transport²¹ corridors²²;

¹⁹ Bondarenko L.V. Social development of rural territories of Russia: problems and prospects. *Agroprodovol'stvennaya politika Rossii=Agri-Food Policy of Russia*, 2017, no. 4, pp. 13-18.

²⁰ Bukhval'd E.M., Valentik O.N., Kol'chugina O.N., Odintsova A.V. Strategic planning for towns of Russia. *Vestnik Instituta ekonomiki Rossiiskoi akademii nauk=Bulletin of the Institute of Economics of the Russian Academy of Sciences*, 2017, no. 3, pp. 53-70.

²¹ Litovskii V.V. The concept of placing in the Arctic the productive forces on the basis of A.E. Yunitsky infrastructure of the second level and the spatial model of the transport network “Polar lace” for “mobile sett”. *Vestnik Murmanskogo gosudarstvennogo tekhnicheskogo universiteta= Proceedings of the MSTU*, 2016, no. 2, pp. 431-442.

²² Mostakhova T.S. Geographical aspects of population development in the Republic of Sakha (Yakutia): problems of territorial concentration of population. *Nauka i obrazovanie=Science and Education*, 2016, no 2, pp. 65-71.

- creating a favorable investment climate with the aim of establishing new and preserving current enterprises²³;
- creating advanced development territories (zones)²⁴;
- creating conditions for promoting agricultural production competitiveness²⁵.

According to a brief review of foreign and Russian publications, most researchers believe that the number of population depends on the effectiveness of economic activity. Effective economic activity is provided by labor resources, therefore, it is logical to assume that the number of population in settlements depends on the number of jobs distributed in the territory of urban or rural settlements. Thus, the goal of our research is to prove the existence of a statistical dependence of the number of population on the number of jobs in the economy. To achieve this goal, we performed a statistical analysis of the dependence of the population in the regions of Russia on the number of jobs.

Research methods

The main source of information on the population in Russia's regions is official statistics published by the relevant state agency (Federal State Statistics Service – Rosstat). It is logical to assume that such information can be used most effectively in research

methods like mathematical statistics including systematization and identification of statistical regularities in order to build probability models of mass random phenomena²⁶. Since the subject of our study covers socio-economic processes (population and jobs) that belong to economic categories, it will not be a mistake to narrow down the tools we use to the tools traditionally used by econometrics. We believe that the construction of pair regression will make it possible to avoid the discussion initiated by J. Keynes²⁷ and I. Tinbergen²⁸ concerning the effectiveness of correlation analysis.

Results

The change in the number of population and jobs in Russia's regions was executed in relation to the maximum value. Moscow has the maximum values. *Table 1* shows regional changes in the number of population relative to the capital of the Russian Federation.

The above distribution of changes in the number of population in Russia's regions has some features that are worth paying attention to:

- first, the maximum value of the sample is constant and equal to the maximum population in the region (in the above samples it is Moscow);
- second, the minimum value of the sample reduces progressively relative to the highest value (Tab. 1, columns 1, 4, 7);
- third, the number of regions in the first interval is steadily increasing (Tab. 1, columns 3, 6, 9).

²³ Gorokhov A.Yu., Gorokhov D.A., Ignat'ev A.Yu., Smirnov V.G. Managing the processes of local development on the example of urban and rural settlements of the Kaliningrad Oblast. *Ekonomicheskie nauki=Economic Sciences*, 2016, no. 144, pp. 64-70.

²⁴ Kabanov V.N., Mikhailova E.V. Criteria for the formation of rural area priority development zones (on the example of Volgograd Region). *Nauchnyi zhurnal Rossiiskogo NII problem melioratsii=Scientific Journal of the Russian Scientific Research Institute of Land Improvement Problems*, 2016, no. 4, pp. 232-249.

²⁵ Drokin V.V., Zhuravlev A.S. Enhancing the competitiveness of the agricultural sector of the economy. *Teoriya i praktika mirovoi nauki=Theory and Practice of World Economy*, 2016, no. 3, pp. 4-11.

²⁶ Prokhorov Yu.V. (Ed.). *Probability and Mathematical Statistics: Encyclopedia*. Moscow: Bol'shaya Rossiiskaya Entsiklopediya, 1999. 914 p.

²⁷ Keynes J. M. Professor Tinbergen's Method. *The Economic Journal*, 1939, vol. 49, no. 195, pp. 558-568.

²⁸ Tinbergen J. On a Method of Statistical Business-Cycle Research. A Comment Author(s): J. M. Keynes. *The Economic Journal*, 1940, vol. 50, no. 197 (Mar.), pp. 154-156.

Table 1. Distribution of the number of population in Russia's regions in relation to the number of population in Moscow

2005			2010			2015		
Interval, %		Number, units	Interval, %		Number, units	Interval, %		Number, units
1	2	3	4	5	6	7	8	9
0.47	12.91	45	0.43	12.88	49	0.40	12.85	52
12.91	25.35	20	12.88	25.32	18	12.85	25.30	15
25.35	37.79	8	25.32	37.77	8	25.30	37.75	8
37.79	50.23	4	37.77	50.21	2	37.75	50.20	2
50.23	62.67	1	50.21	62.66	1	50.20	62.64	1
62.67	75.11	0	62.66	75.10	0	62.64	75.09	0
75.11	87.55	0	75.10	87.55	0	75.09	87.54	0
87.55	100.00	1	87.55	100.00	1	87.54	100.00	1

Source: Regions of Russia. Socio-Economic Indicators. 2016: data from Tab. 2.1, pp. 37, 38.: statistics collection. Rosstat. Moscow, 2016. 1326 p.

The distribution of the number of jobs (*Tab. 2*) observed by the state statistics of the Russian Federation is very similar to the distribution of population (see *Tab. 1*).

Having compared the values given in Tables 1 and 2 we see that the dynamics of changes in the minimum values of the statistical samples under consideration (columns 1, 4, 7, in *Tab. 1* and columns 1, 4, 7 in *Tab. 2*) is similar. The number of the interval in which major changes take place should be considered as a notable difference. If the distribution of regions by the number of population shows major changes in the first interval of values (columns 3, 6, 9 in *Tab. 1*), then the distribution of Russian Federation subjects by the number of jobs (employed population) shows major changes in the second and third intervals (columns 3, 6, 9 in *Tab. 2*). *Figure 2* provides graphical representation of the data from Tables 1 and 2.

It is well-known that the number of people living in a territory depends on the number of jobs available there. However, we did not find any published research findings that would assess the degree of such dependence. It is common knowledge that the pace of demographic changes is slow; for example, in relation to the duration of human life. Taking

into account the above statements, we can say that the increase in the extent of impact of the number of jobs on the number of population in RF subjects by 2% over the past 15 years (line 1 in *Tab. 3*) can be estimated as significant. This conclusion is based on the results of a standard statistical study of the two arrays of values (population in RF subjects and the number of employees in RF subjects); the main results of quantitative values processing are given in *Tab. 3*.

Statistical significance of the dependence of the number of population on the number of employees in RF subjects is confirmed by the test according to the standard Student's and Fisher's criteria. Thus, we can speak with confidence about the existence of a statistical relationship between the number of population and the number of jobs in RF subjects. This important statement is necessary when designing long-term (strategic) directions of socio-economic development; it can also be used in the assessment of implications (both social and economic) of investment programs and projects.

It should be noted that our attempt to study the dynamics of changes in the dependence of the number of population on the number of jobs for the period from 2000 to 2015 does not

Table 2. Distribution of the number of jobs in the regions of the Russian Federation relative to the number of jobs in Moscow

2005			2010			2015		
Interval, %		Number, units	Interval, %		Number, units	Interval, %		Number, units
1	2	3	4	5	6	7	8	9
0.62	13.04	53	0.55	12.98	53	0.44	12.89	53
13.04	25.46	14	12.98	25.41	15	12.89	25.33	17
25.46	37.88	9	25.41	37.84	8	25.33	37.77	6
37.88	50.30	2	37.84	50.27	2	37.77	50.22	2
50.30	62.72	0	50.27	62.70	0	50.22	62.66	0
62.72	75.15	0	62.70	75.13	0	62.66	75.10	0
75.15	87.57	0	75.13	87.56	0	75.10	87.55	0
87.57	100.00	1	87.56	100.00	1	87.55	100.00	1

Source: Regions of Russia. Socio-Economic Indicators. 2016: data from Tab. 3.4, pp. 108, 109.: statistics collection. Rosstat. Moscow, 2016. 1326 p.

Figure 2. Distribution of Russian Federation subjects relative to the indicators of Moscow: a) by the number of population; b) by the number of jobs (the number of employed population)



Source: Tables 1 and 2 of the present paper.

Table 3. Statistical characteristics of the results of mathematical processing of statistical values describing the dependence of the number of population in RF regions on the number of employed population (pair regression)

Indicator	Year		
	2005	2010	2015
Degree of influence (slope of the line to the abscissa axis), k	1.920	1.926	1.953
Correlation coefficient, r	0.986	0.987	0.990
Mean square deviation, R^2	0.972	0.975	0.979

Source: our own compilation according to the results of the study of pair correlation of the arrays of values given in Tab. 2.1 on pp. 37, 38, in Tab. 3.4 on pp. 108, 109 in the statistics collection *Regions of Russia. Socio-Economic Indicators. 2016*. Rosstat. Moscow, 2016. 1326 p.

allow us to speak about the existence of a significant dependence. For example, correlation coefficient was $r = 0.33$ for the values describing the change in the number of population in relation to the number of people employed in the economy for the period from 2000 to 2015. Similar studies carried out for each RF subject show a significant spread of values of the correlation coefficient and in the negative range of values, as well. Having studied annual population distribution and the number of workers in Russia's regions made we obtained mathematical calculations that meet the requirements for statistical significance (i.e. tested on Student's and Fisher's criteria).

The findings of the study indicate that no contradictions have been found both from the aspect of the logic of functioning of the socio-economic system and from the aspect of formalization of such logic into statistical dependence. On the basis of this, it seems quite convincing to conclude that when designing long-term programs for development of regional economy it is advisable to proceed from the fact that for each job there are at least two residents. This proof is of particular importance when it is necessary to work out territorial planning schemes relating to an integral part of the system of documents of regional and municipal strategic planning.

Our desire to build a system of justification for a similar conclusion in relation to rural areas has not yet been successful. Main reasons for this failure lie in the difficulty of defining the employed population living in rural areas. For example, if the number of people employed in agriculture is registered by state statistics bodies, then it is not yet possible to divide jobs into urban and rural ones in trade, education, health care, and transport. In addition, according to statistics agencies, urban population comprises not only the residents of urban districts, but

also those of urban settlements. At the same time, the infrastructure of urban settlements does not always correspond to even a minimum level of that in urban districts. At the same time, quantitative assessment of the impact of the number of jobs on the number of population in RF regions is unlikely to be lower in rural areas. This assumption is based on the dynamics of changes in the number of urban and rural population in the Russian Federation (see Fig. 1).

Discussion

The fact that territorial development schemes are now included in regional strategic planning documents specifies the provisions of long-term socio-economic development programs to include objects of regional importance. Due to the fact that the federal legislation has no clear regulations concerning the list of objects of regional importance, each RF constituent entity has its own regulatory framework, reflecting the view of its local government. In addition, territorial development schemes should help overcome "mismatch between socio-economic and spatial components of regional planning"²⁹. We agree with the fact that socio-economic and territorial development programs in most regions exist independently of each other³⁰.

²⁹ Yushkova N.G. Improvement of tool support of the spatial approach to regional planning: problems, specifics, trends. *Ekonomicheskie i sotsial'nye peremeny, fakty, tendentsii, prognoz=Economic and Social Changes, Facts, Trends, Forecast*, 2014, no. 6, pp. 225-242.

³⁰ Yushkova N.G. Strategic directions in planning spatial development of regional systems and imperatives of state administration. *Region: ekonomika i sotsiologiya=Region: Economics and Sociology*, 2014, no. 3, pp. 94-112.;

Yushkova N.G. Improvement of tool support of the spatial approach to regional planning: problems, specifics, trends. *Ekonomicheskie i sotsial'nye peremeny, fakty, tendentsii, prognoz=Economic and Social Changes, Facts, Trends, Forecast*, 2014, no. 6, pp. 225-242. DOI: 10.15838/esc/2014.6.36.17; Yushkova N.G. Development of space systems and strategic planning: adapting to the imperatives of the features of the innovation economy. *Vestnik UrFU=Herald of the Ural Federal University*, 2014, no. 4, pp. 72-86.

Our practical experience of participation in the work on the development of regional schemes of territorial planning shows that creative teams that design such documents should include representatives of a number of fundamental sciences: urban planners, geographers, economists, environmentalists, EMERCOM specialists, road workers, and specialists in the construction and operation of modern urban engineering systems. It is important to note that “the need to consider the strategy of socio-economic development in the territorial aspect” for many years was emphasized by A.G. Granberg³¹. However, the fact that the necessity of territorial planning schemes is stipulated by federal legislation does not guarantee that socio-economic development strategies will be designed in conjunction with the schemes of territorial location of objects of regional importance. There are many reasons for this. Among the most significant ones is the lack of a common point of view on the processes taking place in the territory of RF subjects³². Let us provide some debatable viewpoints as examples.

Periodicals often contain works on the study of regional identity. We agree with the opinion of their authors concerning the importance of people’s regional identity. We consider it an interesting proposal to construct “mental maps describing people’s ideas of their surrounding

area”³³. However, designing such maps as alternatives to physical, geographical and economic ones is unlikely to contribute to the preservation and even more so to the growth of the number of population. We can prove it by the results of the above studies: they show that the place of residence of people in modern society is often determined by the source of their income (work), rather than by how they identify themselves. Since jobs are a product of investment activity and are associated with the location of production facilities, it should be concluded that the most populated areas are determined by the owners of capital rather than by the majority of people.

Some authors believe that the landscape of a territory primarily determines its attractiveness as a place of residence for people³⁴. We cannot say for certain that such a point is not true. During a long period of time, indeed, settlements emerged not only in economically more profitable areas (near transport communications), but also in those with convenient landscapes, providing the opportunity to produce a sufficient amount of food. The ever-deepening division of labor against the background of high rates of scientific and technological progress has led to the fact that a person does not need to participate in the production of food. Consequently, the choice of residence is often determined by the amount of income received for labor. It would be incorrect to say that the price of labor in a capitalist society is fair.

Investors’ interest in funding the projects that create production facilities and, as a result,

Glaz’ev S.Yu., Ivanter V.V., Makarov V.L., Nekipelov A.D., Tatarkin A.I., Grinberg R.S., Fetisov G.G., Tsvetkov V.A., Batchikov S.A., Ershov M.V., Mityaev D.A., Petrov Yu.A. Development Strategy of the Russian Economy. *Ekonomicheskaya nauka sovremennoi Rossii*=*Economic Science in Modern Russia*, 2011, no. 3, pp. 7-31.

³¹ Granberg A.G. Strategy for territorial social and economic development of Russia from idea to realization. *Voprosy ekonomiki*=*Economic Issues*, 2011, no. 9, pp. 34-40.

³² Aganbegyan A.G., Mikheeva N.N., Fetisov G.G. Modernizing the real sector of the economy: spatial aspect. *Region: ekonomika i sotsiologiya*= *Region: Economics and Sociology*, 2012, no. 4, p. 7-44.

³³ Sharygin M.D. Public geography in Russia: a thorny path of development. *Geograficheskii vestnik*=*Vestnik of Geography*, 2017, no. 2, pp. 17-25.

³⁴ Pankov S.V. Rural settlements in the structure of boundary contrast. *Sotsial’no-ekonomicheskaya geografiya. Vestnik rossiiskikh geografov-obshchestvovedov*=*Socio-Economic Geography. Bulletin of Russian Social Geographers*, 2017, no. 1, pp. 137-148.

provide the territory with jobs (employment) is associated with the desire to make profit. If we consider profit as part of the value added created by employees, then the conflict between labor and capital is inevitable³⁵. The level of such a conflict is usually measured by the indicator of “social tension”. Government institutions are working to reduce such tension by limiting the desire for profit and by ensuring the social security of employees.

It is important to emphasize the role of public administration authorities in determining the territories that have the most favorable conditions for the development of entrepreneurship (location of production facilities). These conditions include the availability of all kinds of resources necessary for the production of goods or services and for the sales of finished products. In this regard, the location is not always chosen according to the criteria of suitable landscape. Often, the reduction of non-production costs is considered one of the main criteria in this regard. At the same time, the impact of production capacities on population growth is difficult to underestimate (the opposite is also true: the reduction in production capacities (jobs) leads to a reduction in the number of residents).

We see the coincidence of positions in the proposals related to “the need to shift to the level of territorial socio-economic systems of different ranks and types”³⁶. This approach reflects the current processes of “pulling” the population to major settlements. Such centers

of attraction (“pulling” centers) have features such as the availability of jobs in the economy, cost of labor, and quality of living environment. The formation of territorial socio-economic systems in Russia’s rural areas is considered particularly relevant. We think that the essence of such systems is to unite several settlements on the basis of equal partnership of several municipal entities. The difference from the modern unification of settlements in municipal entities consists in the fact that each settlement within the agglomeration is a subject of law and takes an equal part in addressing issues of local importance. Such an association may be called a rural agglomeration.

The Russian legislation provides for various forms of cooperation for such an association: on the basis of multilateral agreements on joint activities, the creation of one legal entity or the delegation of authority to a single management body (execution of decisions). In agreement with the point of view on the impact of rural lifestyle on the quality of human capital³⁷ it is possible to identify areas of rural lifestyle at a new level of comfort in the proposed rural agglomeration. Under the level of comfort we mean the provision of housing with water supply, sanitation, and energy resources in the amount sufficient for heating in the winter time. Rural way of life includes owning a house and a cultivated land plot with the possibility to engage in animal husbandry in the amount determined by the household.

Realizing the inevitability of the convergence of the quality of urban and rural infrastructure, it is important to provide the rural agglomeration with the areas where urbanization degree is higher and is chara-

³⁵ Marx K. *Capital*. Moscow: AST, 2001. Vol. 1. 1697 p. P. 201.

³⁶ Baklanov P.Ya. Spatial development of a region: basic principles and approach to analysis and estimation. *Sotsial’no-ekonomicheskaya geografiya. Vestnik Rossiiskikh geografov-obshchestvovedov=Socio-Economic Geography. Bulletin of Russian Social Geographers*, 2017, no. 1, pp. 4-12.

³⁷ Patsiorkovskii V.V. Sociology of resettlement as a special sociological theory. *Sotsiologicheskie issledovaniya=Sociological Studies*, 2012, no. 4, pp. 25-34.

cterized by low-rise multi-dwelling development. In this case, the demand for housing of any kind can be satisfied, and the number (density) of the population will meet the existing regulatory requirements for the provision of public services in the field of education and health care in the amount guaranteed by the Constitution of the Russian Federation. It is important to emphasize that housing construction is traditionally considered to be a locomotive in the development of territorial economy³⁸.

Conclusions

It is for a reason that we have provided logical and mathematical proof in relation to the conclusion that seems obvious at first glance. Our participation in the work on the formation and justification of regional schemes of territorial planning shows that not all representatives of the academia and public administration are supporters of the thesis about, probably, a critical role of the indicator “number of jobs in the economy”. Ongoing studies of the impact of the number of jobs suggest that the impact of jobs on the number of residents depends on the type of economic activity. Even today we can say that the extent of such influence largely depends on other factors rather than on the amount of labor spent on the production of a single volume of production.

If we use the number of jobs created or maintained in the territorial economy as one of the main indicators for the formation of a regional socio-economic development strategy, then the formalization of the ideas of long-term development in the schemes of territorial

development becomes reasonable and quite specific. The application of the indicator “number of jobs” does not exclude the use of indicators describing the achievement of strategic objectives for the growth of the quality of population in regions and nationwide. However, the change in the employment potential of the population in the joint and integrated socio-economic and territorial planning can provide the concentration of efforts of public administration and local self-government to achieve specific results, which can lead to synergistic effects that can be manifested in human development, as well.

The practical application of the dependence of the number of residents on the number of jobs in the economy of a region or municipality will help ensure the accuracy of socio-economic development forecasts and plan the placement of objects of regional importance in areas that can ensure high efficiency of capital investments from the budget. In this case the number of jobs can be determined depending on the amount of investment in fixed capital, taking into account specific features of each type of economic activity.

Forecasting the number of people living in the municipality depending on the number of jobs, for example, in the ratio of 2:1, respectively, greatly simplifies the assessment of the need for socio-economic infrastructure objects. Such objects, as a rule, include education, health care, security, and transport communications facilities. All of these objects in most cases belong to the objects of regional importance. Thus, the scheme of territorial planning is transformed into a document that contains a map which registers strategic development ideas adopted by local authorities in accordance with the current Russian legislation.

³⁸ Oleinik P.P., Kuzmina T.K., Zenov V. Intensification of the investment process of construction. *MATEC Web of Conferences*, 2016, vol. 86, pp. 05019; Lapidus A.A. Integral potential effectiveness of organizational and technological and managerial decisions of building object. *Applied Mechanics and Materials*, 2014, vol. 584–586, pp. 2230–2232.

References

1. Baklanov P.Ya. Spatial development of a region: basic principles and approaches to analysis and estimation. *Sotsial'no-ekonomicheskaya geografiya. Vestnik rossiiskikh geografov-obshchestvovedov=Socio-Economic Geography. Bulletin of Russian Social Geographers*, 2017, no. 1, pp. 4-12. (In Russian).
2. Bondarenko L.V. Social development of rural territories of Russia: problems and prospects. *Agroproduvol'stvennaya politika Rossii=Agri-Food Policy of Russia*, 2017, no. 4, pp. 13-18. (In Russian).
3. Bukhval'd E.M., Valentik O.N., Kol'chugina O.N., Odintsova A.V. Strategic planning for towns of Russia. *Vestnik Instituta ekonomiki Rossiiskoi akademii nauk=Bulletin of the Institute of Economics of the Russian Academy of Sciences*, 2017, no. 3, pp. 53-70. (In Russian).
4. Prokhorov Yu.V. (Ed.). *Veroyatnost' i matematicheskaya statistika: entsiklopediya* [Probability and mathematical statistics: encyclopedia]. Moscow: Bol'shaya Rossiiskaya Entsiklopediya, 1999. 914 p.
5. Gorokhov A.Yu., Gorokhov D.A., Ignat'ev A.Yu., Smirnov V.G. Managing the processes of local development on the example of urban and rural settlements of the Kaliningrad Oblast. *Ekonomicheskie nauki=Economic Sciences*, 2016, no. 144, pp. 64-70. (In Russian).
6. Granberg A.G. Strategy for territorial social and economic development of Russia from idea to realization. *Voprosy ekonomiki=Economic Issues*, 2011, no. 9, pp. 34-40. (In Russian).
7. Drokin V.V., Zhuravlev A.S. Enhancing the competitiveness of the agricultural sector of the economy. *Teoriya i praktika mirovoi nauki=Theory and Practice of World Economy*, 2016, no. 3, pp. 4-11. (In Russian).
8. Kabanov V.N., Mikhailova E.V. Criteria for the formation of rural area priority development zones (on the example of Volgograd Region). *Nauchnyi zhurnal Rossiiskogo NII problem melioratsii=Scientific Journal of the Russian Scientific Research Institute of Land Improvement Problems*, 2016, no. 4, pp. 232-249. (In Russian).
9. Litovskii V.V. The concept of placing in the Arctic the productive forces on the basis of A.E. Yunitsky infrastructure of the second level and the spatial model of the transport network "Polar lace" for "mobile sett". *Vestnik Murmanskogo gosudarstvennogo tekhnicheskogo universiteta= Proceedings of the MSTU*, 2016, no. 2, pp. 431-442. (In Russian).
10. Marx K. *Kapital* [Capital]. Moscow: AST, 2001. Vol. 1. 1697 p.
11. Mikhailova E.V. Assessment of the efficiency of management of regional economy. *Biznes. Obrazovanie. Pravo=Business. Education. Law*, 2017, no. 1, pp. 101-106. (In Russian).
12. Mostakhova T.S. Mostakhova T.S. Geographical aspects of population development in the Republic of Sakha (Yakutia): problems of territorial concentration of population. *Nauka i obrazovanie=Science and Education*, 2016. № 2. S. 65-71.
13. Pankov S.V. Rural settlements in the structure of boundary contrast. *Sotsial'no-ekonomicheskaya geografiya. Vestnik rossiiskikh geografov-obshchestvovedov=Socio-Economic Geography. Bulletin of Russian Social Geographers*, 2017, no. 1, pp. 137-148. (In Russian).
14. Patsiorkovskii V.V. Sociology of resettlement as a special sociological theory. *Sotsiologicheskie issledovaniya=Sociological Studies*, 2012, no. 4, pp. 25-34. (In Russian).
15. Sharygin M.D. Public geography in Russia: a thorny path of development. *Geograficheskii vestnik=Vestnik of Geography*, 2017, no. 2, pp. 17-25. (In Russian).
16. Yushkova N.G. Improvement of tool support of the spatial approach to regional planning: problems, specifics, trends. *Ekonomicheskie i sotsial'nye peremeny, fakty, tendentsii, prognoz=Economic and Social Changes, Facts, Trends, Forecast*, 2014, no. 6, pp. 225-242. (In Russian).
17. Abdulaziz Shehua, Shaufique F. Sidiquea. A propensity score matching analysis of the impact of participation in non-farm enterprise activities on household wellbeing in rural Nigeria. *International Agribusiness Marketing Conference 2013, IAMC 2013, 22–23 October 2013, Kuala Lumpur, Selangor, Malaysia*. Pp.184-191.
18. Ennen E. *Die europaische Stadt des Mittelalters*. Göttingen, 1975. 84 p.
19. Fujita M., Krugman P. *When is the economy monocentric: von Thunen and Chamberlin unified Regional Science and Urban Economics*. 1995. 254 p.

20. Fujita M., Mori T. Structural stability and evolution of urban systems. *Regional Science and Urban Economics*, 1996, vol. 27, pp. 4-5.
21. Hemalata C. Dandekar. Rural Planning: *Genera I. International Encyclopedia of the Social & Behavioral Sciences (Second Edition)*. Elsevier, 2015. pp. 801-806.
22. Jiang Shijie, Shen Liyin, Zhou Li. Empirical Study on the Contribution of Infrastructure to the Coordinated Development between Urban and Rural Areas: Case Study on Water Supply Projects. 2nd International Conference on Challenges in Environmental Science and Computer Engineering. *Procedia Environmental Sciences*, 2011, vol. 11, part C, pp. 1113-1118.
23. Keynes J.M. Professor Tinbergen's Method. *The Economic Journal*, 1939, Vol. 49, № 195, pp. 558-568.
24. Lapidus A.A. Integral potential effectiveness of organizational and technological and managerial decisions of building object. *Applied Mechanics and Materials*, 2014, vol. 584–586, pp. 2230-2232.
25. Lösch A. Population cycles as a cause of business cycles *The Quarterly Journal of Economics*, 1937, vol. 51 (4), pp. 649-662.
26. Oleinik P.P., Kuzmina T.K., Zenov V. Intensification of the investment process of construction. *Matec Web of Conferences*, 2016, vol. 86, pp. 5019.
27. Pred A.R. *The Spatial Dynamics of U.S. Urban-Industrial Growth*. Cambridge: MIT Prees, 1966, pp. 1800-1914.
28. Pugo D., Venables A. *The spread of industry spatial agglomeration in economic development. CEPR Working Paper, 1997, No. 1354*. pp. 808-816.
29. Thünen J.H. *Der naturgemäße Arbeitslohn und dessen Verhältnis zum Zinsfuß und zur Landrente*. Zweite Abtheilung, hrsg. von Hermann Schumacher. Rostock: Leopold, 1863, 160 p.
30. Tinbergen J. On a Method of Statistical Business-Cycle Research. A Comment Author(s): J.M. Keynes. *The Economic Journal*, 1940, vol. 50, no. 197, pp. 154-156.
31. Venables A. Equilibrium Locations of vertically linked industries. *International Economic Review*, 1996, pp. 212-220.

Information about the Author

Vadim N. Kabanov – Doctor of Sciences (Economics), Professor, Moscow State University of Civil Engineering (National Research University) (26, Yaroslavskoye highway, Moscow, 129337, Russian Federation, e-mail: kabanovvn@yandex.ru)

Received November 22, 2017.