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Socio-Ecological Well-Being of the Population (the Regions of the Central Federal District are Example)

N V Yakovenko¹, O V Didenko¹, I V Safonova¹

¹Socio-economic geography and regional studies Department Voronezh State University, Khol'zunova str. 40, Voronezh, 394068, Russia

E-mail: n.v.yakovenko71@gmail.com

Abstract. The article analyses the methodological issues of the socio-ecological and economic justification for the multidimensional indicator of the quality of life of the population - the welfare index of the population. Particular attention is paid to the scientific substantiation and quantitative assessment of this index, calculated for the subjects of the Central Federal District and differing in the parameters of both socio-economic and environmental development. The proposed methodology for calculating the integral indicator of the well-being of the population will allow to assess the level of socio-economic and ecological well-being of the population living in the territory of Voronezh region, taking into account the influence of institutional factors. The index of the well-being of the population reflects such indicators as the level of social and economic development, incomes of the population, the cost of living, the quality of medical care, education, the state of the environment, security, cultural level, the level of development of small and medium-sized businesses, etc. By this method, we have obtained integral indices for 18 regions of the Central Federal District for a 5-year period (from 2012 to 2016), which allow to reveal general information about the social and ecological well-being of the studied region for a certain period. The obtained generalizing indicators can be used to assess the effectiveness of the administration of municipal entities in the field of socio-economic and environmental policy.

1. Introduction

Increasing interest towards the issue of life quality within three last decades is highly connected with public awareness of contemporary global problems, requirements of international standards and EU countries over social and economic state optimization, modernization of economic potential on the base of innovations and intention of Russia to become a fully-fledged member of WTO. State of the regional environment directly influences other spheres of human-being, number of which is steadily increasing. In its turn regional ecological situation depends on a combination of factors of natural, social, economic, legal and political character, which are interlinked. These may include: availability of natural resources, industrial potential of the region, industrial sectors performance, level of introduction of innovations, existence or absence of environmentally hazardous production facilities, consumption of fixed capital within the enterprise, amount of funding of environmental activities, education level and level of health-care, quality of life of people in the region, state of environmental legislation and social and environmental policy, level of environmental culture, etc.[1-4].



2. Theoretical consideration of the issue

In accessible domestic and foreign literature investigations over problems connected with the quality of life, particularly on the regional level, are inconsistent. Practically small number of research of the issue appears as a complex multidimensional parameter, devoted to the study of the environmental and economic aspects of the quality of life, health and well-being of the population [6-20].

Many Russian and foreign authors raise the general issues of interaction between the society and environment. Foreign studies are represented by works of scientists, who devote their activity to the questions of development and application of the notion "ecological complex" in environmental sociology, the notion which is very close to the essence of socioecosystem [5-15], but the works do not consider peculiarities of modern Russia and its regions.

3. General presentation of the study

A crucial step in realisation of the model of sustainable development is research for its practical and measurable indicators. The objective is formulated in the chapter 40 of "Agenda 21": "In order to create reliable base for decision-making at all levels and provision of easier self-regulated sustainability of complex ecological systems and development systems it is necessary to elaborate indicators of sustainable development". International organisations and scientific community are working now on identification of its practical and measurable indicators. One of the most comprehensive systems in terms of indicators coverage is the indicator system of sustainable development, developed by the United Nations Commission on Sustainable Development in 1996. Before 2007 selection of indicators was held by the scheme: pressure (on environment), state (of environment) and reaction (necessary activities). The list of indicators consisted of 134 indexes, divided into 4 groups:

- Social indicators of sustainable development;
- Economic indicators of sustainable development;
- Environmental indicators of sustainable development (including evaluation of state of atmosphere, water environment, soils, natural resources and amount of waste);
- Institutional indicators of sustainable development (scientific research and development, state policy planning, international legal institutions, information support, strengthening of the role of major groups in society).

Beginning with 2007 the conception was substantially revised, as it became evident that sustainable development requires a multidimensional approach. Partial waiver of the scheme "pressure - state - reaction" took place in favour of the scheme "Partial rejection of the "pressure-state-response" scheme in favor of the scheme «theme - sub-theme - indicator» has been made.

The main emphasis during the selection of the indicators was put on the possibility of their application for political decision-making.

Social and environmental well-being is characterized by the existence of favourable parameters in all components of social and environmental system: natural and technology-induced, economic, social, public-health and demographic, ethnic and cultural, etc. As evaluation criteria of social and environmental well-being of the society, it is possible to use public-health indicators of a country (countries), which seems to be a benchmark for economically and socially developed state, but not significantly different from our state (region) in natural and climatic conditions. Thus, a benchmark for public-health and demographic characteristics could be any of the Scandinavian countries or group of developed countries.

We have reviewed and analysed different approaches towards estimation of well-being in the society and defined the number of estimation indicators, which significantly influence on social and environmental well-being of the society. The indexes were united into several groups of factors, such as: public-health criteria; standard of living; social sphere; consumer market of goods and services; labour sphere; housing provision; transport provision; communication and ecology (table 1). Some of the aforementioned indicators are both of quantitative and quantitative-qualitative nature.

Table 1. Factors, which influence the level of social and ecological well-being of the population.

Criteria of public health	Life expectancy, years; Fertility rate per 1000 people; Mortality rate per 1000 people; Infant mortality rate per 1000 children, born alive.
Standard of living	Average salary for those who work in economic sector, rub.;; Ratio between average monthly income and the minimum subsistence level, %.
Social sphere	Ratio of spaces at pre-school institutions for children from 1 to age 6, per 1000 children number of places; Number of pupils per 1 teacher at municipal general education establishments, people; Proportion of the learners at general-education State day schools, who attend classes in the second shift, for the beginning of the school year, % (negative indicator); Number of hospital beds per 10 000 people; Number of doctors per 10 000 people; Number of middle-level medical personnel per 10 000 people; Number of middle-level medical personnel at municipal health-care institutions, on average per 1 doctor, people; Number of places at the institutions of the culture-and-leisure type per 1000 people; Number of books at public libraries per 1000 people, th. copies.
Consumer market of goods and services	Retail trade turnover per capita, rub.;; Volume of paid services per 1 citizen.
Labor field	Number of small and medium-sized enterprises per 10 000 people, units; Level of registered unemployment, % to the economic active population (negative indicator).
Provision of housing	Housing, sq. m.;; Average amount of housing space available, sq. m of the total area per 1 citizen.
Provision of transport and communication means	Provision of the population with vehicle in private property per 1000 people, cars; Provision of the population with Internet connection per 100 families.
Ecology	Emission of (harmful) agents in atmosphere from stationary sources, located within the territory of the municipality, th. tonns. Emission of harmful agents from stationary sources per capita, kg/person (negative indicator); Discharges of polluted waste water into surface bodies, mln. cubic metres (negative indicator); Proportion of wastelands within the municipality, % Ratio of captured and defused emissions to the general quantity of emissions from stationary sources, located within the territory of the municipality, %

In order to consolidate and systematize diverse parameters, the index method for consolidation of indicators with different dimensionality was applied. A scale range of real indexes for each indicator of the regions under research was based to get the scores. Next the ranges were split into 100 equal

intervals, where each interval meets certain scores, equal to the number of the interval. Total sum of the scores over all indicators of the particular region, formed in accordance with 100-score gradual range, appeared to be «index of social and environmental well-being of the population».

$$I_R = \sum_{i=1}^n P_i \quad (1)$$

where:

i - index;

N – number of indexes within the set;

P_i - score, corresponding values of the index i .

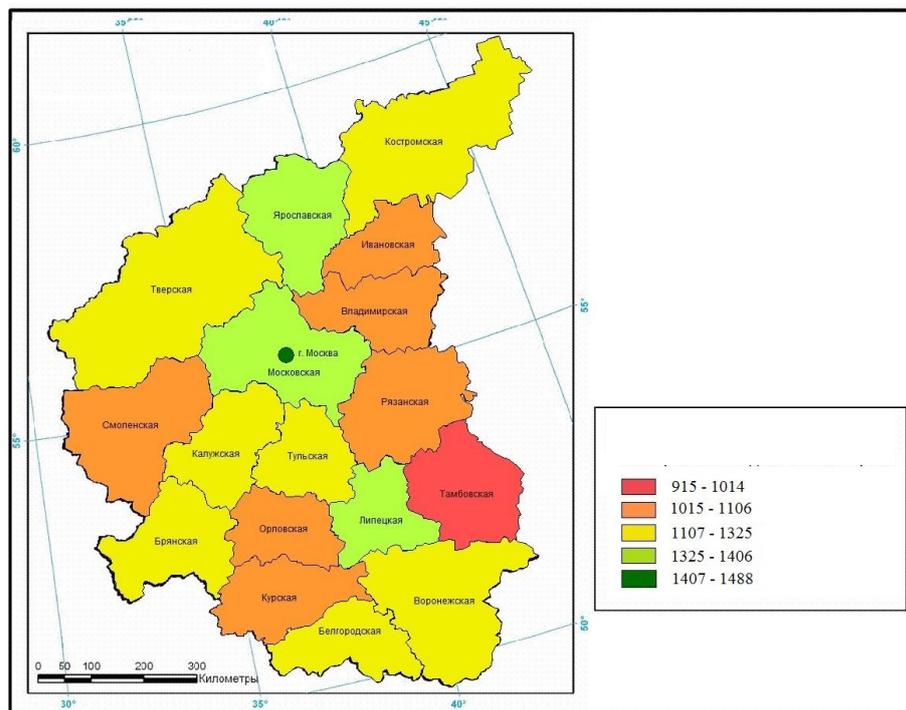


Figure 1. The integral index of social and ecological well-being of the population in the Central Federal District's regions (2016).

According to the proposed methodology we have received integral indexes over 18 regions of the CFD for 5-year period (from 2012 to 2016), which allow to identify general information about social and environmental well-being of the region under consideration for a specific period of time. At the same time, it is evident, that the most authentic data could be obtain only on the base of a detailed analysis of each group of factors. Such detailed investigation allows to define weak and strong positions of the particular region and consequently, define priority activities to take further steps to improve the situation in the region

Calculated integral indexes of social and environmental well-being of the population show, that the tendency of the index growth are typical to Belgorod, Vladimir, Tambov and Tula regions, and the tendency of the index decrease is typical to Kursk and Russian regions and the Moscow City.

More or less stable integral indexes of social and environmental well-being of the population are typical to Bryansk, Voronezh, Ivanov, Kaluga, Kostroma, Lipetsk and Orlov regions (Figure 1). It also appears clear that in 2014 integral indexes of social and environmental well-being of the population within the majority of the regions were the least in comparison with previous and following years in the groups «Standard of living», «Consumer market of goods and services», to the less extent in the groups «Provision of transport and communication means» and «Environment».

4. Conclusion

Thus, in order to define quantitative quality of life, health and wellbeing of the nation indicators, several groups of factors, which have the most impact on the quality of life and health of the nation or well-being index were identified on the base of a comprehensive multidimensional study. The obtained indicators might be used to evaluate the effectiveness of the activities of Administrations within the entities of the Russian Federation in the sphere of social, economic and ecological development.

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