

TRANSITION OF RUSSIA TO SUSTAINABLE DEVELOPMENT: THE GEOGRAPHICAL SUBSTANTIATION

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ABSTRACT

The paper considers the concept of sustainable development of Russian regions according to documentation of UN. It is emphasized that the core reason of social, economic and ecological instability is the military and economic competition. Till now this contradiction exists, and the well-being of states is interrupted by crises. The development can be considered as sustainable when crises can be eliminated. The critical situation in Russia, possible ways out, and corresponding tasks of the "geography of sustainable development" are clarified. The content of the atlas is suggested reflecting the problems and showing the ways of their solution.

PROBLEM OF SUSTAINABLE DEVELOPMENT

The modern understanding of mankind sustainable development appeared in WCED report "Our common future" (1987) and documents of the 1992 UN Conference on Environment and Development (Program..., 1993). It was noted in these documents, that current economic and demographic processes in the world are accompanied by deepening of poverty, inequality between the countries, degradation of natural environment, and other negative phenomena, fraught with danger of destruction of life on the Earth (Our..., 1987, p. 13). These processes should be changed so that to make development sustainable - to ensure that it satisfies needs of the present people generation without exposing to risk the ability of future generations to satisfy their own needs. "Sustainable development is the way of struggle against poverty and environment degradation (Program..., 1993, pp.V-IX a.o.). To achieve the development sustainability, it was recommended to the rich part of mankind to reconsider its excessive pretensions and prodigal life style, to the poor one - to put the population growth into ecologically permissible limits (Program..., 1993, pp.6-9).

It was supposed, that shortcomings of development policy and practice of all countries can be eliminated by scientific research, education, state regulation (Program..., 1993, pp.14, 50-58 a.o.), businessmen initiatives (Schmidheiny, 1994) and other measures, which are believed to be effective on the basis of universal historical progress conception. However, these hopes do not proved to be correct; general tendency in the sustainable development sphere since 1992 grows worse (Program..., 1998, section 1.4 a.o.). This prompts us to search a deeper look at the causes of development unsustainability.

Such a look can be found in publications of L.N.Gumilev (1993), P.A.Sorokin (1994, articles “War and militarization of society”, “Hunger and social ideology”, a.o.), A.J.Toynbee (1996) and other historians and sociologists, who have shown, that evolution of civilizations, peoples and states is not linear but undulatory, or cyclic. From the socio-ecological point of view, their ideas can be summarized shortly as follows.

Emergence and growth of a civilization occur as response on historical challenge; its breakdown and decay are the result of inability to response on next challenge. The most important historical challenges come in form of wars and economic rivalry. For the sake of self-preservation each state is forced to increase its power and to fight. Overstrain and war losses lead once to decline of genetic and social quality of population, decadence of ethnical culture and/or exhaustion of natural resources. Especially important is the decline of quality of governing strata. They lose creative power, initiative, ability to response on historical challenges, and become stagnant spiritually, ideologically and socially (Toynbee, 1996, pp.279-280).

Inside the state there also arises the rivalry between different groups of governing strata - metropolitan and provincial, bureaucratic and enterprising, etc. Their competition too strains resources of the country, declines the population quality, and once leads to social system breakdown and state desintegration. These results come on usually two or three generations after a severe war (Sorokin, 1994).

Under favorable circumstances the population can rehabilitate, to pass again phases of strengthening and weakening. In such a way the cycles of civilizations and states evolution arise, with typical duration of the full cycle up to 10-12 centuries (Gumilev, 1993; Vasiliev, 1994).

The phases of state breakdown and decay manifest themselves as socio-ecological crises (SEC). Historically known SECs were complex by their essence, though are discussed now usually as specifically resource-ecological, ethno-social, or economic ones, or even as the results of natural catastrophes (Myagkov, 1995). It is important to understand, that SECs are not the consequence of casual and eliminatable shortage of knowledge about nature, society etc., but the result of actions, compelled by military and economic rivalry between the states and inside them, the result of readiness of acting groups to disregard remote socio-ecological risks for the sake of current self-preservation. Only the cessation of military and market rivalry should terminate the historical row of SECs.

The SEC-accompanied development of mankind may be called as cyclically-unstable. But optimists would call it as cyclically-stable, as long as SECs turn to be surmountable, i.e. activity of each generation of the people does not deprive of the next generations viability. If so, development cycle would be considered as composition of the initial phase of sustainability and final phase of instability, or transition to next cycle. Historically known duration of transition phases is about a few generations of the people, or a century (Vasiliev, 1994; Sociology, 1996).

CURRENT SOCIO-ECOLOGICAL CONDITION OF THE WORLD

Current socio-ecological condition of the world, by assessment done in (Our..., 1987; Program..., 1993; Program..., 1998), is close to critical. The coming global SEC will be caused, as previous ones, by rivalry of countries and social groups. In the XX century the war losses and consequent decline of population and governing strata quality, on P.A.Sorokin estimations, are the greatest for all the known history. In large masses of people the conception of vital values has come to an individual self-seeking and prestige consumption. The growth of rivalry technological means is misinterpreted as the desired progress. These means themselves have got such volumes and properties, which lead to exhaustion of world resources and genetically dangerous contamination of world environment. It is impossible to abolish the action of rivalry factors by the UN resolutions, education etc. Therefore the SEC will deepen spontaneously.

Probable scenarios of the natural resources extinction have been considered by Rome Club initiative, especially in details - in (Meadows, Meadows, Randers, 1994). In this publication is shown, that the present world economic system can desintegrate in 21st century, and that this event will entail an essential decrease of the world population number and mean duration of a person's life; however, later these parameters will increase, in accordance with post-SEC rehabilitation of the world economy. Specific and not considered in (Meadows, Meadows, Randers, 1994) factors, which would deepen the SEC, are the anthropogenic change of climate, expected in 21st century (Global Warming, 1993), and the destruction of biosphere under mankind pressure, if this pressure rises above permissible maximum (Gorshkov, 1990).

In the UN materials (Our..., 1987; Program..., 1993; Program..., 1998) has been disregarded also the factor of ethno-social destabilisation, though it is investigated rather in detail (Sorokin, 1994; Sociology, 1996) under the name of social anomia. The anomia is understood, by R.Merton and other, as the demoralisation of social consciousness, caused by loss of common system of vital values and behaviour norms, and displeing itself in "atomisation of society", increase of criminality, suicides, alcoholism, decrease of birth-rate, etc. Anomia unevitably develops in societies, where economic rivalry is strong, and goes especially deep by military losses. Deep anomia is equivalent to ethnical culture desintegration. The last can be followed by culture transformation from obsolete to new vital values system. Some futurologists (Brown, Flavin, Postel, 1991) apprehend, that social desintegration, caused by anomia, can come on developed countries before the world economic desintegration, caused by natural resources exhaustion.

So, coming global SEC:

- arises, as former ones, due to objective causes, during the long time, and without anyone's personal responsibility and fault. Rivelry and consumerism, advancing the SEC, cann't be cut down otherwise than by the SEC itself;
- will have in different countries the different, mainly resource-economic or ethno-social (ethno-cultural) character;

- will be heavier, than former SECs, but nevertheless surmountable, if the nuclear war or biosphere destruction will not happen.

It is useful to foresee, which peoples and countries shall maintain the sufficient vital capacity after the SEC ends.

For the SEC development is important, how will mass-media reflect the course of events. Now SEC events are reflected to calmly - as insignificant expenses of technological progress, or - in extreme case - as deserved punishments of same irresponsible peoples. On the other hand, there is no reason to give information to dramatically, as do “greens”, because frightening does not add understanding and energy to society. Authors believe, that if we really wish to help to SEC mitigation, we must abandon the ideological partiality, the praising or blame of one or another political and economic system as more or less “ecological”, etc. Otherwise we should serve the cause of rivalry.

PECULIARITIES OF SOCIO-ECOLOGICAL SITUATION IN RUSSIA

Peculiarities of socio-ecological situation in Russia are connected to current Russian ethnical culture desintegration and transformation. According to (Gumilev, 1993; Sorokin, 1994), reviewed in (Kurbatova, Myagkov, Shnyarkov, 1997), the present (Great) Russian ethnos has generated on the base of Old Russian one in 14th century. Its military emaciation became apparent by negative socio-demographic phenomena first in the beginning of the 19th century. On time present falls the two-century long final phase of Russian ethnogenesis breakdown (Gumilev, 1993, p. 152). In 1922 P.A.Sorokin has estimated military losses of Russia during the First World War and the Civil War 1914-1920 and has warned, that close recurrence of bloody war should terminate the Russian State history (Sorokin, 1994, pp. 425, 427).

The Soviet Union desintegration and other occurring nowadays negative socio-ecological events correspond to the Sorokin’s prognosis, and testify, that in Russia there has come a deep phase of SEC, predetermined by multicentury military exhaustion of the people and governing strata quality. First symptoms of ethno-social decay in the Soviet Union have appeared in 1960s and included the next (Kurbatova, Myagkov, Shnyarkov, 1997). Elaboration of Soviet ideology ceased. The former increase of mean duration of a person life stopped; from 1991 this index decreases. “Shadow economics” appeared. Criminality, alcoholism, number of failures in industry began to increase. In alcohol consumption per head the USSR stood in 1960 on the 12th position among developed countries, in 1980 on the first one. In 1990s the alcohol consumption per head in Russia has exceeded the genetically danger level. Failure rate in the USSR industry stood in 1960s on the mean world level, in 1980s it was much higher. In 1990s number of technological failure and catastrophes per year in Russia has increased many folds. Especially sharp rises of failures number per month was noted just after two social-political shocks - the USSR desintegration in the end of 1991.

In 1990s social-demographic indices in Russia decrease relatively slowly in traditionally-minded (“red-voting”) regions and national republics, relatively fast - in “reformately-voting” regions. In Russia at large number of population, mean duration of life expectancy, volume of production (Fig. 1-5) are decreasing as never before in XXth century, except war time. The ratio of this decrease is close to one, predicted in (Meadows, Meadows, Randers, 1994, scenario 2) for the world in the case of global SEC. Current socio-ecological events in Russia can be regarded as a model of the similar events to come in other industrial countries.

As soon as Russian SEC has the ethno-social causes, it is reasonable to suppose, that the SEC will be finished together with the spiritual regeneration of the people and revival of governing strata. Corresponding processes of ethno-cultural transformation will take probably a few decades or a century (Gumilev, 1993; Sociology, 1996). Within this period it is hardly possible to expect improvement of socio-ecological situation.

The “Conception of the Russian Federation’s transition to the sustainable development” (Conception..., 1996) has been approved in 1996. This conception is drawn up in the spirit of (Program, 1993; Schmidheiny, 1994). As the principle of sustainable development, it proclaims the protection of favorable environment with increase of quality of population living. Present situation in the state is called economically critical and transitional. As the principal targets are indicated:

- the stabilisation of ecological situation in the period of withdrawal of the country from current economic crisis,
- the resolute improvement of ecological situation in the next period by ecologisation of economic activity,
- the putting of the economic activity in the limits of ecosystem capacity, on the base of the new ecologically adjusted technologies, as well as the changes in structure of economy, and individual and community consumption, in the third period.

Duration of these three periods are not estimated. Current socio-demographic situation is not mentioned. Origin of Russia ecological problems is explained as connected with the Soviet ideological dogmatism; solution of these problems is seen as connected with democratization and market economics.

ROLE OF GEOGRAPHY IN A SUBSTANTIATION OF TRANSITION TO SUSTAINABLE DEVELOPMENT

So, Russia is in the phase of deepening SEC. Duration of this phase is determined by processes of ethno-cultural transformation. Later the phase of sustainable development would begin. This scheme does not correspond with the three periods, mentioned in the Conception (Conception..., 1996). Obviously, any technological and economic steps toward sustainability cannot be done ahead of spiritual and ideological ones.

As to scientific researches of transition-to-sustainability problems, they should include observation, explanation, and forecasting of conditions of the society, economy, natural resources, and environment. On a share of geographical research fall spatial difference and laws of changes of these objects conditions. It is expedients to reveal not only regions with the worst socio-ecological situation, as do geographers now, but also these regions, which would serve as hotbeds of socio-ecological revival.

Russian geography has formed in centuries as the science, promoting growth and strengthening of the state. The “geography of growth” period was notable for branch character of researches. The fundamental monographies, published in all the branches of geography, will stay rich and, probably, unique heritage. However, how a special “geography of sustainable development” (GSD) is required. First, the GSD has to be conceptually connected with social, ethnical, and other sciences, included in a field of knowledge, named socioecology. Secondly, the main subject of GSD attention should become the vital capacity of territorial complexes of population and economy with their natural resource basis (TPEC). Thirdly, the GSD has to use a system of notions and parameters, co-ordinated with the colleagues on socio-ecology and with possible users of research results (Global..., 1991).

Let us consider the third item. In order to prevent overdue, but still continued discussions, the authors prefer to agree with the term “sustainable development” and with the presented in (Conception..., 1996, p. 3) explanation of the way to sustainability through the balanced solution of socio-economic tasks and problems of environment and natural resources preservation, with the purposes of satisfaction of requirements of present and future generations of the people”. However, the parameters, offered for the description of the development, for estimation of its stability, and for revealing of regional problems and ways of their solution, have to be specified. In the UN documents and scientific publications tens of life quality and environment condition parameters are called already. In the Russian Conception (Conception..., 1996, p.5) the following parameters of the life quality are listed: duration of a person life, condition of a person health, deviation of natural environment condition from normative, level of knowledges or educational skills of the population, income per a head, level of employment, degree of human rights realization. This list meets the linear conception of history only and has to be supplemented with parameters, answering the cyclic conception. For example, knowledges of native ethnical land-use culture, participation of a person in family or community economy, the ethnoses’ rights on originally seem to be not less significant for development measurement, than standard education etc. In short, the life quality estimation requires the system of parameters, excluding any gaps from any point of view on SEC causes and evolution.

Proceedings from above mentioned global problems, this system would include two blocks - biospheric and human. First is connected to determination of resources volume, which mankind may use, not breaking biosphere total stability (Gorshkov, 1990), second-with ways of life quality optimisation. What parameters are necessary and sufficient in the first block, is hard to decide now, because the scientific conception of natural environment

(biosphere) stability is not developed yet, and even this task is not raised seriously (Danilov-Danilyan, et al, 1994, p. 15). Vagueness in this parameters system hampers the strict characteristic of the environment condition. Therefore there are no exact answer to questions, for example, about what portion of Moscow area should remain green, as far Norilsk's industrial pollutants discharge is bearable for the Arctic, etc. The parameters, in which natural resources and impact of pollution on the population health are described, concern to the second block - to quality of the population life.

To exclude the discrepancy in the life quality assessment, it is necessary to choose among all the parameters offered the main one, in relation to which all other are subordinated. The most important among all is the parameter of the mean expected duration of a person's life expectancy (LE). According to the World Health Organization approach, the high LE is universal indicator of high life quality as physical, mental, and social well-being, or health of population. Obviously, the TPEC development can be considered as sustainable, if there the LE is increasing to the highest biologically possible level or stands on this level; in other words, continuous reproduction of healthy population is ensured. The difference between the highest possible and actual LE is the parameter of underliving. This parameter can be analysed as manifestation of shortcomings in the quality of people life and/or environment conditions and/or economy.

For an objective choice of the way to sustainability, for construction of sustainable development model of TPEC it is necessary and sufficient: (1) to reveal the factors of underliving, and (2) to find that version of community organization, and natural resource exploitation, which allows to eliminate these factors. The first can be done by means of statistical correlation of the kind "duration of underliving is the function of such-and-such social, economic, ecological factors". The second can be done by means of simulation modelling, describing a TPEC as dynamic system of natural and labour resources and technologies of their use for population maintenance. In both causes application of cartographical and geoinformatics methods is required.

POTENTIALITY OF CARTOGRAPHY AND GEOINFORMATICS IN SUSTAINABLE DEVELOPMENT SUBSTANTIATION

Here we mean not only geoinformatics technologies, allowing to visualize spatial data as electronic maps, but also fullscale multimedia systems (Tikunov, 1995), and especially decision support systems (Decision..., 1996). It has to be told, that advocates as well as opponents of the TPEC sustainable development idea agree, that, first, the problem of complex characteristics of socio-ecological systems do exist, together with the problem of their management rationalization; secondly, the most acceptable instruments for these purposes is geoinformatics in its wide understanding (Koshkariov, Tikunov, 1993; Ecology..., 1997). For revealing of geoinformatics production users, it is important, that the Conception (Conception..., 1996) assumes compiling of a number of state, regional, local programs, based on TPEC conditions evaluation and forecast, on recommendations of population's sanitation measures, etc.

In this light the ideal task for beginning may be fixation of present socio-ecological conditions of Russia in the form of special atlas, offered in (Tikunov, Tsapyk, 1997) as continuation and development of the Ecological Atlas of Russia, being compiled on Geographical Faculty, Moscow State University, since 1995. The main purpose of the new atlas should be an estimation of closeness of regions current condition to sustainable one, on the LE parameter. The consequent purposes consist in revealing specific regional problems of transition to sustainable development. The structure of the atlas, initial data, and problems of their analysis are formulated as follows.

The socio-ecological atlas consists of three sections, reflecting: (1) components of natural, social, and economic systems, (2) particular problems of development, (3) integrated estimations of closeness of regions condition to sustainable. In the first section are characterized environment and natural resources, demographic situation, the basic branches of economy. In the second are pictured key ecological, social, economic problems (pollution of environment, potential sources of heavy technological disasters, exhaustion of natural resources, morbidity and mortality rates, alcoholism rate, etc.

Temporal changes of these parameters and their mutual correlation are traced. In the third section are presented and correlatively explained MLD values and their change with time, as well as the most important causes of MLD decrease (total environment pollution, incomes per person, socio-psychological situation, etc.). Within the environment protection problem are shown the natural resource requirements of economy, anthropogenic pressure on environment, stability of landscapes to these pressures. In an ideal, it is necessary to reveal limits of irreversable decrease of population health and natural environment stability, that it was possible to assess region conditions in terms of closeness to these limits.

General ideology of socio-ecological researches, required for the atlas compilation, is described in (Global..., 1991). In the field of complex geocological cartography rather wide experience has been accumulated (Evteev, Tikunov, Yanvareva, 1997). But parameters of life quality in the set are new objects for study and mapping. The initial data majority would be taken from official sources. However, are foreseen problems of the data accuracy and also complex estimations of such parameters, as socio-psychological stability of population (anomia), etc.

Let us look closer at the illustrations. On fig.1 the change of the population number from January 1, 1996 to January 1, 1997, in percents, is shown. For display of this parameter is used the anamorphosis, based on January 1, 1997 population number. Attributing of demographic and social parameters to administrative territorial divisions, when traditional maps are used, creates commonly visual presentation of the data. So, in fig.2 the same characteristics are shown, as on fig.1, and it is seen, that fig.2 gives deformed presentation of the scale first and last gradations relation. Wider illustrations of current situation are given in anamorphosises of birth-rate and mortality rate in 1996, in relation to MLD for

new-born and to part (in percent) of children up to 1 year old in total number of the dead (fig.3 and 4). Volume of industrial output is shown in fig.5.

Compiling of the electronic atlases and, further, multimedia systems, including three-dimensional dynamic images, videofilms, stereosounding, etc., would be a step to development of electronic systems of life quality monitoring, management of compound socio-ecological objects, training, and education. At last, expansion of intellectual systems functions, based on expert and multimedia technologies, will allow to improve methods and techniques of support to decisions adoption on management of society transition to sustainable development.

So, we believe, Russia shall turn in the time to sustainable development and this transition can be promoted by geographical researches, concentrated on people of Russia maintenance, and presented their results in cartographic and geoinformatic shape.

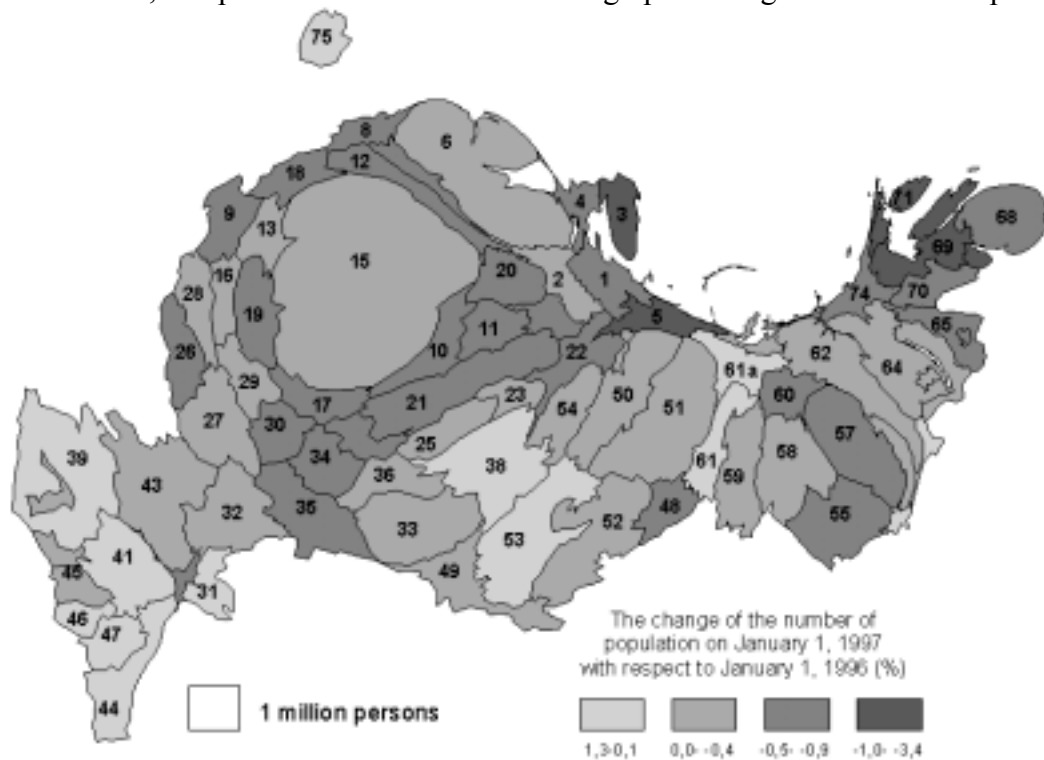


Fig 1.Number of population on January 1, 1997.



Fig 2. Number of population on January 1, 1997 (traditional map).

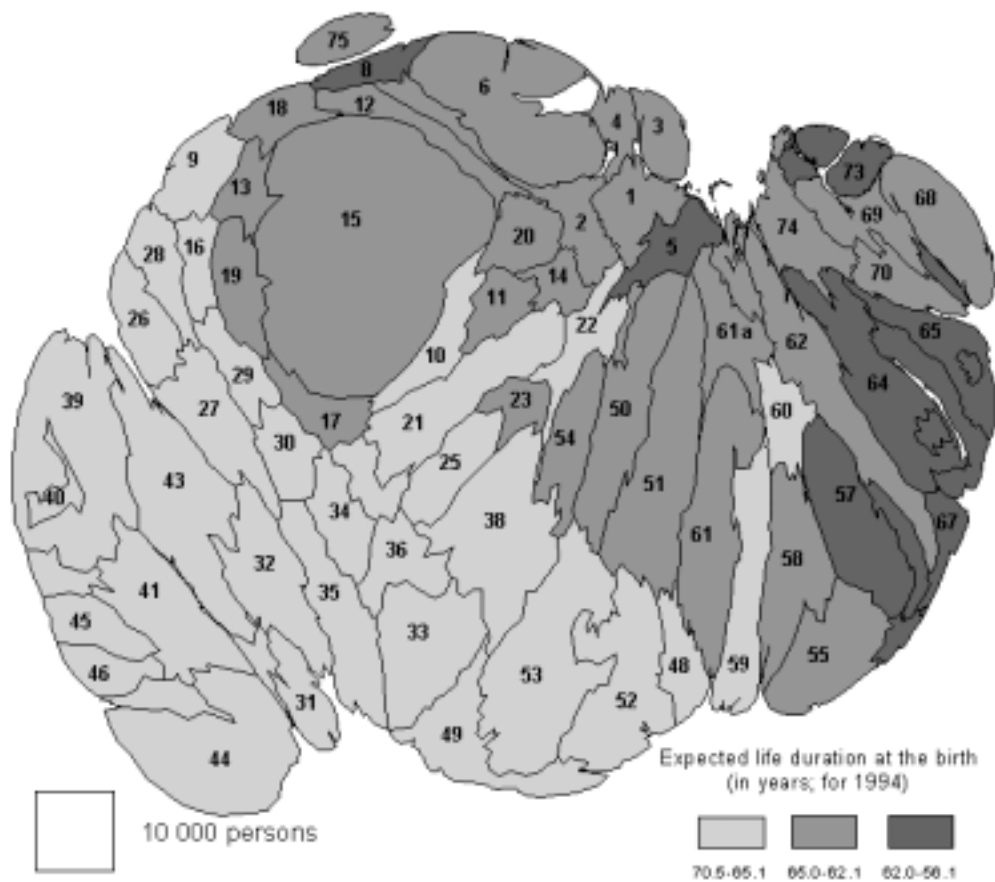


Fig. 3. The number of being born in January-November 1996.

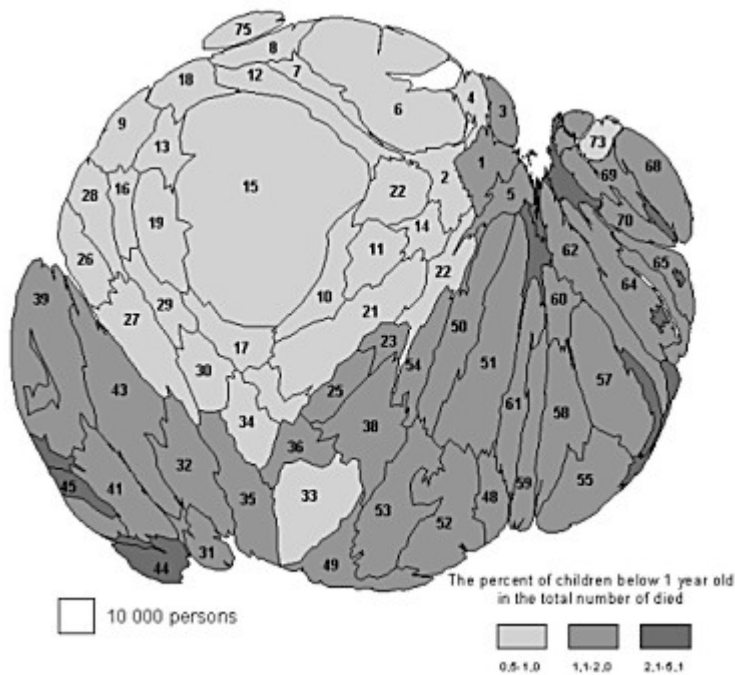


Fig. 4. The number of died in January-November 1996.

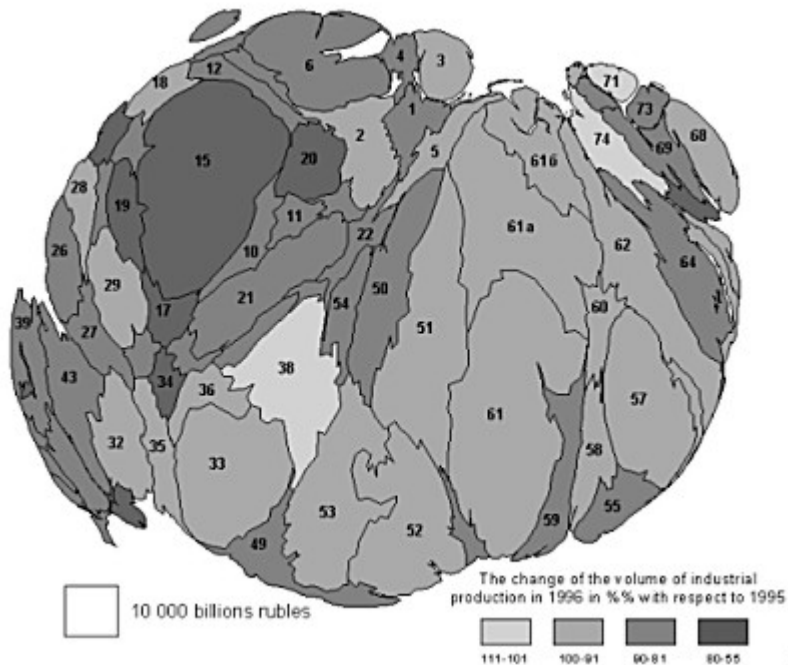


Fig. 5. The volume of industrial production for 1996.

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