

## INFORMATION AND CARTOGRAPHICAL SUPPORT OF SUSTAINABLE DEVELOPMENT OF THE BAIKAL REGION

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For Baikal region it is reputed: «The sustainable development is united process, providing with optimal development economics, to secure of work places and increase of level of life on basis of rational use of resources, ecological limitations for a preservation natural complex of the Lake Baikal.

We need most reliable informational bases, forming with assistance of monitorings of all levels and computer technologies.

It let to lead an operative analyse of conditions and perspective decisions for diverse suppositions, to make offers for removal of digressions, formerly a technical-economical development of region it turned out ecological limits.

To imagine, that the base of this security automatic informational-cartographical system. It is scientific-technical methods' system and automatic collection, keeping, operative transformation and presentation of various (first of all ecologo-economical information and other comfortable form.

Among the main problems, decided by this system, there are inventarisation and ecologo-economical and other information's generalization, estimation and prognosis of indicators of regional development and in particular, ecological situation into point of departure's variouses, informational support actions, warning crisis situations.

Principal peculiarities of system are systematisation, big operativion and diversetion by generation of new computer maps.

Those properties is made by large scientific capacious of system, putting into operation geographical, cartographical and other knowledge's bases, original models and applied mathematics methods and artificial intellect man-made, in particular, logical conclusion inference's meanses and mansided adoptions of decisions.

Not long ago main job of cartographers was creating series of thematical maps and atlases. There were capital cartographical works, accumulating stabil and control statistics, owing to those atlases are counted on many figures, over and over again use. They make mach of fundamental basis of knowledges. There are many cartographical works on Baikal region, and the new ones are in work now. And it is created great basis for working out of actions of substainble development of lake Baikal region.

First, we need to mark relative big providing with cartographical matherials of total fixing on Baikal region.

We have total geographical and topographical maps of scale 1:1 000 000, 1:500 000, 1:300 000, 1:200 000, 1:100 000). Most main national-economic areas have maps of scale 1:50 000, 1:25000 and bigger.

Besides a large group of thematic maps and atlases found near of the lake Baikal is created.

The first of those maps were «Atlas of Irkutsk region» and «Atlas of Zabaikalye».

In atlases for big territories the scales can't be so large (1:4 000 000, 1:3 500 000). But even unimportant increase of scale in thematical cartographics lets considerably to raise scientific and practical

possibilities of maps. United maps's serie of natural, population and economical maps in East Siberian south of scale 1:1 500 000 lets to attain most large-scale reflection of Baikal region's areas in Russian map. The first map of this serie was «Economical map of East Siberian South» was published in 1969. Next, they worked out and published: «Vegetation of the East Siberian South», «Landscapes of East Siberian south» (in 1972), «Population of East Siberian south» (in 1979), «Land use of the East Siberian south» (1988). It was published grown map of Irkutsk region in scale 1:1 500 000 in 1988. Besides we published a special serie «Agroclimatical resources of East Siberia south», containing 9 maps in scale 1:2 500 000 in 1969.

Baikal region and its areas are reflected in other thematic maps: serie Asiatic Russia (in scale 1:3000 000 and 1:7500 000), maps serie for the High School in scale 1:2 500 000, thematic maps's serie of Nord Baikal in scale 1:500 000 and etc.

Also the atlases for Mongolia territory was elaborated. For instance «The National atlas of Mongolia», (1990), «The atlas of the lake Hubsugul» (1989). In those maps territory, near of the Lake Baikal was reflected. In a new atlas «Baikal» we have information about natural conditions and resources both the lake and its watershed.

We have some serieses of thematic maps: geological, hydrogeological, geochemical, minerals and etc. For example: «The special conservation territories of the Lake Baikal watershed», «Landscape-ecological map of Buryatia», «Forests of Buryatia» and etc.

The Institute of Geography SB RAS created serie of 105 ecologic-geographical maps on Irkutsk and its zones in scale from 1:50 000 to 1:500 000. The Institute of Geography and PGO «Sosnovgeologia» worked out scale of snow - and land- geochemical maps.

The elaboration of new large ecological atlas of the Irkutsk region was completed. This atlas has 212 maps, general scale 1:2500 000. And south areas of this region have larger scale (1:1 000 000 and 1:500 000).

The complex ecologic-geographic map of Russia was published in scale 1:4 000 000 and it's worse to be named.

Fundamental cartografical works are not only a basis of knowledge now, they serve as an efficient instrument of analysis of many occurences in ecology and economics of the region and as a basis for solutions.

Nowdays, besides the creation of the fundamental works the expeditions cartography, creation of cartografical representation, reflecting the quickly changed situations became the main task. Promotion of the man-made brains systems, eliminating the problem of labour consuming cartografical synthese, intensifies this tendency. Prompt service and a lot of variations show the high level of modern cartography, science and technology.

The modern period of the ecological-geographical cartograp- hics in Siberia is characterized by the rapid transition to the regional and local levels of the environmental investigations and the working-out of the most modern principles and methods of the cartografical analysis and synthesis on the base of new technologies, i.e. ecological geoinformational cartographics.

In the process of complex and expeditions ecological cartography in Baikal region, the information systems should be elaborated, which consist of the data about the stsnd of natural resources and environment, adapted for decisions on management of nature use processes, on design of natural-

economical systems and basis of realization of territorial ecological verification on different levels. Unique and performance of such information systems can be reached by cartographical form of information representation and expeditions possibilities of modern information technologies. The subject maps are the main means of geographical interpretation and organization of remote exploration data and other information using in GIS (static, analytic, meteorological etc), synthesis of information in the course of acceptance of solutions, management, performance of estimations, preparation of geosystem development's predications etc.

Combined and expeditious cartographical providing can be an efficient means for management of nature use process and regional development in the whole.

A plan of cartographical provision of management of steady regional development, where the maps are united into series, groups and blocks, are elaborated in Geography Institute SB RAS.

The main function of management maps is presentation of such parameters and methods where by we can eliminate deflections in system of nature use on concrete territory or improve this territorial system for achievement of main aims of steady development. It causes in its turn, the necessity estimation of state, degree of vulnerability and prediction of environmental steadyness to negative anthropogenous influence, what gave impetus to elaboration of maps preparation methodics for estimation of critical loads and concentrations, environmental steadyness and vulnerability etc.

A combination of experience in foundation and use of complex mathematics models and methods of analysis of complected social-ecological-economical objects permits to achieve a new quality when preparing ICS for information and analytic support for development of Baikal region as a module, integrated, distributed, multilevel and polyfunctional system (collection of information, predication, planning, management).

Typical blocks of such an ICS are sets of data, models of development, expert systems and information-cartographical blocks.

For the foundation of regional ICS solution of many intercommunication tasks is foreseen by may their realization by stages. Top priority tasks will be: 1) foundation of geoinformation model of the territory containing initial figures and cartographical (on different scales) material; 2) elaboration of structure, principles, methodes and information provision of ICS; 3) elaboration of methods of mathematic simulation based on cartographical knowledge.

The next stage will be: 1) generalization of concrete experience in initial model building into technology of working-out of authentic and regulary renovating problematic-oriented geoinformation territorial model for tasks of steady development; 2) development of mathematic simulation methods mated with data and knowledge in cartographical motion; 3) exposure of conditions of encode, connection and reflection of simulation results in cartographical-geoinformation model of territory.

The third stage will be: 1) expeditions generalization of computer maps in different applications, their normative-legal estimation; 2) forming of communication system of connections and exchange of information with widespread use with regard to their level of perception of spatial-problematic situations.

The problems of foundation and application of ICS for analytic support of territorial development permit to form applied to Baikal region many international projects in an effort of solution of different tasks of steady development of regions having fundamental importance.