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# BIOSPHERE COMPATIBILITY: HUMAN, REGION, TECHNOLOGIES

## The founders

- Federal state budget educational institution of higher education «Southwest State University»
- Federal state budget educational institution of higher education «Orel State University named after I.S. Turgenev»
- Federal state budget educational institution of higher education «Bryansk State Engineering and Technological University»
- Research institution of construction physics under the Russian academy of architecture and construction sciences
- Federal state budget educational institution of higher education «Moscow State University of Civil Engineering (National Research University)»
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M. V. SHUBENKOV, M. YU. SHUBENKOVA

## NEW APPROACHES TO DESCRIBING BIOTECHNOSPHERIC INTERACTIONS BETWEEN URBAN AND NATURAL ENVIRONMENTS

**Problem statement.** *The article proposes to consider the use of biosimilar approaches as a basis for solving the problems of finding a balanced development of society and the natural environment. The proposed concept is directly related to the formulation of new foundations of the country's state strategy for the near and long-term development. The goal is to develop a strategy for the globally changing interactions between humans, society, and the environment.*

**Results.** *The basis of the proposed approach to solving issues of environmental development is proposed to adopt the principle of embedding human life in natural processes. It is necessary to develop appropriate ideas about architectural and urban planning activities as an integrated model for the development of the biotechnosphere, combining all the possibilities of building a balanced interaction of society with the natural surrounding context.*

**Conclusion.** *The strategic direction in the development of society should be the transition to biosimilar technologies not only in Economics, sociology and ecology, but also in urban planning, construction and architecture through the development of "green architecture" and the introduction of biosimilar technologies.*

**Keywords:** *the ecological crisis, biosimilar approaches, urbanbiogeocenosis, urbanbiotop, the urban ecosystem, urbanecotop*

S.V. NEPOMNYASHCHI

## RELAXED BUILDING AND SUPER DENSITY OF FREE SPACES

*The article analyzes the modern possibilities of implementing the concept of 1931 of the home-city of Academician Yoffe, which do not require the search for an uncomfortable compromise between a number of opposing aspirations of a person, which seem mutually exclusive today. These are contradictions between the desire for communication and comfort created by other people, and the desire for solitude in the bosom of nature. Between the desire to enter nature and transform it to fit your needs, and at the same time keep from complete destruction. Between the preservation of traditional values and the desire for novelty and maximum mobility. Between the desire for immediate and maximum use of resources, and the endless status quo. We are talking about the achievement of urban planning singularity with negative values of the ecological footprint by solar technologies.*

**Keywords:** *heliotecture, urban planning and ecological singularity, amphibian city, superdensity, supercomfortableness, insolation, light channels, panoramic view, anisotropic facades, decompaction buildings, negative ecological footprint.*

T.V. KARAKOVA

## OPPOSITION TO THE IDEA OF A "SMART CITY" AND HOUSEHOLD URBANIZATION

*The article deals with the development of urban areas in the context of changing the role of the city in the settlement system, primarily from the point of view of urban improvement and "household" urbanization. The author draws correlations between the types of models of regional city development, the level of urbanization of the environment, and the assessment of basic potentials for implementing the "Smart city" concept.*

*The study of the processes of agglomeration development of urban areas allows to predict the prospects for the formation of all urban infrastructures to identify the most efficient and balanced solution in the context of sustainable development of urban territories, preservation of favorable environment and natural-resource potential to meet the needs of present and future generations through the implementation of environmental protection measures in residential areas. Special attention is paid to the issues of "household urbanization".*

*The author analyzes the current state of engineering networks of cities on the example of the Samara region included in the Federal program "Smart city", concludes that at the start of the formation of the base for the implementation of this concept, it is necessary to assess the actual potential of the city and develop a set of priority measures to determine the vector of materialization of innovative proposals.*

**Keywords:** urbanization, settlement system, "Smart city" concept, urban improvement, "household urbanization", environment, consumer qualities of the environment.

N. G. YUSHKOVA, YU. V. ALEKSEEV

## IMPROVEMENT OF COORDINATION IN THE SYSTEM TERRITORIAL PLANNING, URBAN ZONING AND TERRITORY PLANNING REFERENCES

*The improvement of the system of urban planning activities in Russia at the present stage of its development is due to the formation at the state level of socio-economic priorities for a significant increase in the quality of life. The essential characteristic of urban planning decisions at all levels and one of the most important components is the comfort of the environment for human life. Work on territorial planning, urban zoning and planning of the territory is aimed at ways to achieve the comfort of the material-spatial environment, where the formation and its elements formed are subject to the action of the principles of structural and functional integrity. Among themselves, tendencies for their isolation have been established. As a result, the problem of dissonance-building decisions arises, as applied to single and indivisible fragments of the territory and their implementation. This is evidence of insufficient systemic-building activity, which is also manifested in the actions of the authorities of the governing bodies. The substantiation substantiates the determination of the classification features of its types (territorial planning, urban planning zoning and territorial planning) and the identification of the target functions implemented by them: the formation of a strategy, the determination of resources and the provision of variable forms of reform-organization. This makes it possible to regulate the powers of the governing bodies, ensures the complexity of the process of development, approval and implementation of urban planning documentation so that it corresponds to the regulations for the development of the territory. Their authors associate the achievement of the consistency of urban planning decisions with the purposefulness (framework) of development, continuity and targeting, which make it possible to personify the applied means of managing territorial systems.*

**Keywords:** living environment, comfort, town planning activity, system approach, manageability, reorganization, regional settlement system.

I.Y. GLINYANOVA, V.T. FOMICHEV

## **MONITORING RADIOACTIVE CHEMICAL ELEMENTS (Th, U) IN OBJECTS OF THE ENVIRONMENT AS THE SUBJECT OF ENGINEERING AND ECOLOGICAL SURVEYS AT THE STAGE OF PRE-DESIGN WORKS**

*Monitoring of the content of radioactive chemical elements in the composition of aquatic plants in the village of Kilyakovka revealed significant excess of thorium (Th) in them - 166 times; uranium (U) - 26-62 times compared with clarks. The data obtained coincided with the results of previous radiation monitoring of water points in Kilyakovka and its environs, indicating an increased content of uranium in water. The results of the study made it possible to predict natural pollution in the territory of Kilyakovka, expressed by a possible ore occurrence due to the presence of a brachiantical line at the base of Kilyakovka, passing through the Kilyakovka "Akhtuba dump" (fault) and numerous archaeological finds, indicating the centers of ancient metallurgy. In this regard, we can conclude that the development of the residential zone of the village of Kilyakovka and its environs took place and is taking place without the proper implementation of a set of environmental engineering studies, without taking into account the radioecological situation, etc.*

**Keywords:** monitoring radioactive elements; thorium; Uranus; ore occurrences; thorium-uranium ores; water points, brahiantikinal, Akhtubinsky discharge, environmental engineering surveys.

M.I. AFONINA, V.V. ALEKSASHINA, M.E. SKURIDIN

## **STIMULATING THE DEVELOPMENT OF PUBLIC TERRITORIES BY CREATING THEME PARKS ON THE EXAMPLE OF KHODYNSKOE PARK AT THE MOSCOW CITY**

*The paper presents a large-scale transformation of the Khoroshevsky metropolitan area, which has a rich history of the metropolitan area. The historical data on the use of the territory with. Good as a space for exhibitions and large social events. The strategic position of the territory along the Moscow - St. Petersburg highway has been used since the 17th century for comfortable living, and in the Soviet period link here is an airfield with all the attributes of a military object. The prerequisites for the creation of a new public space and the stages of its implementation are argued. The presented diagrams of changes in the balance of the territory after the work carried out confirmed the impact on the investment attractiveness of the area. By the authors in the work of the industry-schedule, the attendance of the facility in the period spring - autumn 2020, which clearly demonstrates its demand, despite the difficult conditions associated with Covid-19. A survey conducted among students of the University of Civil Engineering shows that this place is known to young people, despite the short term of operation. The authors planned to continue the work on monitoring the territory, determining the zone of influence within the region and the dynamics of intracity attractiveness.*

**Keywords:** Khoroshevsky District, Khodynskoe Pole Park, former airfield, recreational areas, theme park, Aviapark, "locomotive territory".

V.M. NGUYEN, E.Y. ZAYKOVA

## **PROBLEMS OF URBAN DEVELOPMENT OF THE AREA, ALONG THE CANALS OF HO CHI MINH CITY AND THE THEORETICAL BACKGROUND OF THE METHOD**

*The paper presents characteristics of the development of the territory and the change in surface coating types in the area around the three canals of Ho Chi Minh City. The increase in the area of construction land and inundation of canals such as Ong Lon, Hiep An, and Ba Lon is determined by using the interpretation of Earth remote sensing (ERS) images for the period 2003-2019. On the basis of these results, an assessment of the impact of urbanization and urban construction on the increase in "sealed" surfaces of different types is proposed, which is one of the main factors that can increase inundation in Ho Chi Minh City. Besides that, the paper will consider cases in order to solve that problem based on a methodological analysis of modern world projects on this topic and typological modeling in the contour of the canals of Ho Chi Minh City.*

**Keywords:** *encroachment on canals, inundation of canals, changing surface types, spontaneous flooding, drainage systems, Earth remote sensing (ERS), GIS.*

P. A. ZHURAVLEV

## **RESOURCE AND TECHNOLOGICAL MODELING OF THE DEVELOPMENT OF ENLARGED STANDARDS, TAKING INTO ACCOUNT THE REENGINEERING OF THE CAPITAL CONSTRUCTION OBJECT**

*Resource and technological modeling of indicators of integrated construction price standards (NCS) is a multi-criteria process, in which the problem arises of choosing the best option from a variety of acceptable solutions that meet the relevant requirements. The existing procedure for the formation and application of NCC indicators does not adequately reflect the current situation in the economy, architectural, structural, spatial planning, organizational and technological features of construction production, depending on the specifics of the territorial climatic, transport and logistics conditions, as well as the material and technical and labor resources used. An additional problem is the lack of procedures for the development of quality resource-technological model of the object, allowing you to anticipate and cater for the moral and physical deterioration of objects, and as a consequence the necessity of reengineering of object of capital construction, the possibility of extending its effective operation thus to provide the most flexible variety of use, redevelopment, modernization, technical re-equipment, reconstruction and renovation. Purpose – the resource-technological modelling, taking into account the climatic conditions of construction, current applicable technologies, existing material resources, the relevant construction industry the construction area, the criteria description of qualitative simulation process, the results of which will provide the possibility of realization of reengineering of object of capital construction, the formation of an additive criterion of optimality of the estimated parameters ntss, including in territorial aspect. The procedure (integrated approach) for organizing resource and technological modeling for capital construction projects is formulated, including taking into account the territorial natural and climatic conditions of construction, current technologies and construction resources corresponding to the construction industry of the construction area at different stages. The key nomenclature of methodological principles and requirements for building a resource-technological model for construction resources is presented. The article describes the importance of the quality of the resource and technology model in the implementation of reengineering of a capital construction object. The execution of the given sequence, and requirements, including territorial climatic conditions of the area of construction, current construction technology and resources for capital construction projects in the resource and process modeling, will lead to the effective assessment of compliance of the investment project, the requirements, the implementation of the reengineering of object of capital construction, the possibility of extending its effective operation.*

**Keywords:** *reengineering; resource and technological modeling; assessment, planning and justification of investment; enlarged standards (indicators) of construction prices.*