



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)»
- Federal state budget educational institution of higher education «Volgograd State Technical University»

Journal is included into the List of the Higher Examination Board of the Ministry of Education and Science of Russian Federation for the group of scientific specialties 05.23.00 – Building and architecture: 05.23.04, 05.23.08, 05.23.19, 05.23.21, 05.23.22

Editor-in-chief

V.A. Ilyichev academician RAACS,
Doc. Sc. Tech., Prof.

Editor-in-chief assistants

S.G. Yemelyanov corresponding member of the RAACS,
Doc. Sc. Tech., Prof.
V.I. Kolchunov academician of the RAACS,
Doc. Sc. Tech., Prof.

Editorial committee

V.N. Azarov Doc. Sc. Tech., Prof.
E. M. Akimkin Candidate. Sc. Socal.
V.V. Aleksashina Doc. Arc., Prof.
I.A. Aseva Doc. Sc. Phil., Prof.
N.V. Bakaeva Doc. Sc. Tech., associate professor
T. Bock Doc. Sc. Tech., Prof. (Germany)
H. Brandl Doc. Sc. Tech., Prof. (Austria)
V.V. Bredihin Doc. Sc. Econom., assoc. prof.
A.G. Bulgakov Doc. Sc. Tech., Prof.
A.A. Volkov Doc. Sc. Tech., Prof.,
corresponding member of the RAACS
V.A. Gordon Doc. Sc. Tech., Prof.
V.A. Egorushkin Cand. of agricultural sc., assoc. prof.
V.S. Yezhov Doc. Sc. Tech., Prof.
N.S. Kobelev Doc. Sc. Tech., Prof.
V.I. Ledenev Doc. Sc. Tech., Prof.
K.I. Liseev Doc. Sc. Philos., Prof.
V.V. Nedelin Prof.
V.I. Osipov academician of the RAS,
Doc. Sc. Tech., Prof.
O.V. Pilipenko Doc. Sc. Tech., Prof.
O.V. Sergeychuk Doc. Sc. Tech., Prof. (Ukraine)
V.I. Telichenko Doc. Sc. Tech., Prof.,
academician of the RAACS
V.V. Tur Doc. Sc. Tech., Prof. (Belarus)
V.S. Fyodorov Doc. Sc. Tech., Prof.,
academician of the RAACS
N.V. Fyodorova Doc. Sc. Tech., Prof.
E.M. Chernyshev Doc. Sc. Tech., Prof.,
academician of the RAACS
R. Shah Doc. Sc. Tech., Prof. (Germany)
I.L. Shubin corresponding member of the RAACS,
Doc. Sc. Tech., Prof.

Responsible for edition

A.G. Kolesnikov Candidat Sc. Tech, assoc. prof.

The edition address: 305040, Kursk,
str. 50 let Otyabrya, 94
+7 (4712) 22-24-61, www.swsu.ru
E-mail: biosfera_swsu@mail.ru

Journal is registered in Russian federal service for monitoring communications, information technology and mass communications
The certificate of registration: III № ФС77-56639

© Southwest State University, 2018

© Orel State University named after I.S. TURGENEV, 2018

© Bryansk state engineering and technological university, 2018

© Research institution of construction physics under the RAACS, 2018

© Moscow State University of Civil Engineering (National research university), 2018

© Volgograd State Technical University, 2018

Contents

Questions of the theory of biospheric compatibility of the cities and settlements

- Sergeeva N. D., Tsygankov V. V, Abramnikov S.A.* The scientific basis of organizational and technological design of construction objects near trunk road greening ecological urban environment..... 3

Environmental monitoring, humanitarizing balance and rationing

- Prilepova O.Y., Shelukho V.P.* The reaction of forest phytocenosis as a basis for the rate setting of recreational load on suburban forests..... 13
- Derbenko L.V.* Inclusive approach to designing preschool institutions as a way of solving ethno-confessional problems..... 25

Biosphere technologies

- Roshchupkina I. Yu., Abdrakhimova E. S, Abdrakhimov V. Z., Kolpakov A.V.* Decreasing environmental damage for the account of the use of burners and microcycleans in the production of a porous filler..... 35

Problems and programs of regions development

- Siniak N., Marina N., Lozanoska D.* International labor migration issues in the context of eu integration and smart sustainable development – the case of Macedonia 46
- Melnikova V.M.* Sociological research in urban planning as a method of studying migration processes in the city and the region..... 54
- Kolobova S.V.* Socio-economic efficiency renovation of residential buildings in Moscow 64

Ecological safety of construction engineering and municipal services

- Seleznev A.A., Yarmoshenko I.V., Malinovsky G.P., Baglayeva E.M.* Total amount of contemporary dirt and dust sediments in an urban environment (on the example of Ekaterinburg, Russia)..... 74
- Khetsuriani E. D. Kolmakova T. S., Akimenko M. A., Khetsuriani T. E.* Ecological safety of water environment - the key to a healthy future..... 86

The cities developing the person

- Knauerhase L.* Housing solutions to aid the integration of refugees and migrants..... 96
- Herslund L.* Refugees as a resource for small town development. Will they stay or will they go?..... 103
- Karakova T.V.* Migration trend in development of city-planning systems..... 107
- Melnikova M.V.* Aerotropolis as a means of activating migration processes 116
- Dear authors!** 125

N. D. SERGEEVA, V. V. TSYGANKOV, S.A. ABRAMENKOV

THE SCIENTIFIC BASIS OF ORGANIZATIONAL AND TECHNOLOGICAL DESIGN OF CONSTRUCTION OBJECTS NEAR TRUNK ROAD GREENING ECOLOGICAL URBAN ENVIRONMENT

The article deals with the issues of improving the efficiency of industrial activity of enterprises of urban construction and economy for the implementation of programs of comfortable existence of the population in the ecological urban development. It is established that the enterprises specializing in construction of objects of gardening and improvement in the Bryansk region are characterized by low productivity of work, decrease in level of mechanical equipment of technological processes, and consequently growth of cost of construction. Developed scientific basis of organizational and technological design of construction objects near trunk road landscaping. The system of indicators for technical and economic evaluation of the enterprise is presented.

Key words: *urban ecology, near trunk road, the sound proofing, organizational and technological preparation of production, structure, technical and economic parameters, the module performance.*

O.Y. PRILEPOVA, V.P. SHELUKHO

THE REACTION OF FOREST PHYTOCENOSIS AS A BASIS FOR THE RATE SETTING OF RECREATIONAL LOAD ON SUBURBAN FORESTS

Urbanization of society leads to an increase in recreational impact on suburban forests, which dictates the need to determine the permissible loads at the initial stages of recreational digression for expansion of forest recreational capacity.

The article examines the changes of pine plantings' sanitary state in the green zone of Zhukovka, Bryansk region, changes in the parameters of the current stand mortality and indicators of diversity and projective coverage of living ground cover (LGC).

With the rising of loads from weak to intense stand passes to the category of weakened, current mortality doubles and even triples, there is an increase in relative diameter of mortality, in alfa-diversity LGC at the expense of reduction of covering with acidophilic plants and increase in covering of neutrophilic and alkalitrophic spaces, pratal and weed spaces. Environmental coefficients reflect the increase in illumination of surface, trophism and humidity of soil, reduction of soil solution acidity in measure of increase in recreational impact.

The author proposes indicators and groups and types of herbaceous vegetation for complex bioindication of the degree of recreational impact on pine forests.

Key words: *recreation, state of pine stands, diversity and projective covering of ground plants, ecological groups of plants, ecological coefficients.*

L.V.DERBENKO

INCLUSIVE APPROACH TO DESIGNING PRESCHOOL INSTITUTIONS AS A WAY OF SOLVING ETHNO-CONFESSIONAL PROBLEMS

The article considers the issues of creating architectural environment of preschool institutions on the basis of inclusive education principles. It recognizes the value of every child regardless of their origin, religion, physical abilities or achievements. The author believes that universal design contributes to the programming of the social interaction scenario of preschool children, the mutual enrichment of their creative experience and the successful integration of migrants into the structure of the children's collective. In this article inclusiveness is considered not only as a universal way of integrating children into the established society, but also as a broader concept. In the architectural aspect, this concept is manifested in the form of a universal approach to the design of the landscape-object environment of children's playgrounds and the territory of a pre-school educational institution as a whole; in the interior design and industrial design.

This approach allows for instill in children a sense of respect and tolerance to people of different ethno-demographic groups from an early age. The article examines the experience of European countries in designing kindergartens and primary schools. Also in the article is presented the author's concept of designing an inclusive environment for children in a megalopolis (on the example of compact planning kindergartens, which are recommended by the Department of Urban Development for construction in Moscow). The author considered a key approach to the inclusive design of the architectural environment of pre-school institutions on two levels: 1) design of the territory, 2) the design of the building, including the object-space environment of the group cell.

Key words: inclusive education, integration, kindergarten, universal design, ecological friendliness.

I. YU. ROSHCHUPKINA, E. S. ABDRAKHIMOVA, V. Z. ABDRAKHIMOV,
A.V. KOLPAKOV

DECREASING ENVIRONMENTAL DAMAGE FOR THE ACCOUNT OF THE USE OF BURNERS AND MICROCRYCLEANS IN THE PRODUCTION OF A POROUS FILLER

At present, taking into account the environmental situation in Russia, which is characterized by a high level of anthropogenic impact on the natural environment, the efficiency of all industries should be evaluated in terms of the balance between the mass of the main product and the volume of generated man-made waste. One of the most promising areas for the use of waste production is - involvement in the secondary turnover as a secondary material or energy resources. Due to the involvement of industrial waste in the production of thermal insulation materials, it is possible to radically change the parameters of the raw material base of Russia, which also helps to reduce environmental tensions in the regions.

The purpose of the work is to obtain a porous filler based on liquid glass with the use of waste oil shale, used as a filler and a burning additive and a waste of ferrous metallurgy of microsilica used as a silicon filler to reduce the temperature coefficient of linear expansion, which will increase the temperature resistance of porous fillers.

The porous material on the basis of liquid glass with the use of burnt rocks - waste of burnt rocks and microsilica, which is a man-made raw material from the production of ferrosilicon.

The use of industrial waste to produce a porous filler contributes to: a) recycling of industrial waste; b) environmental protection; b) expansion of the raw material base for the production of ceramic building materials. The authors of this article obtained 2 patents of the Russian Federation for the method and compositions of the developed compositions proposed for the preparation of porous filler. Recycling of industrial waste is environmentally friendly.

Key words: ecology, porous filler, burnt rocks, microsilica, liquid glass, oil shale, environmental protection, waste disposal.

SINIAK N., MARINA N., LOZANOSKA D.

INTERNATIONAL LABOR MIGRATION ISSUES IN THE CONTEXT OF EU INTEGRATION AND SMART SUSTAINABLE DEVELOPMENT – THE CASE OF MACEDONIA

The Balkan is well known as part of changes and migrations on a global level. This paper discusses about the relationship between labour migration and poverty in Macedonia, during a period of rapidly growing inequalities on a basis of a Jinni coefficient in EU, Macedonia and Belarus. The focus is on the emigration structure and reasons of emigration. The results are compared with changes in the structure of the society stratification in the period of economic liberalization. The question is analysed whether economic growth signifies a route out of poverty, and the specific policies that exist and should be improved and recommended. The Lucas paradox is analysed in a connection with the ongoing migration policy. This is directly relevant for the strategy and the Smart Sustainable Development and Inclusive Growth model and an inter-disciplinary approach to the study of migration.

Key words: sustainable development, integration, inclusive growth, labor, migration, poverty.

V.M. MELNIKOVA

SOCIOLOGICAL RESEARCH IN URBAN PLANNING AS A METHOD OF STUDYING MIGRATION PROCESSES IN THE CITY AND THE REGION

All activity of the person can be described as series of various migrations: to work, from work, to theater, at cinema, in restaurant, to the suburbs or other city, etc. By researches in the field of an urbanology it is established: the more the flow of migrants in this or that zone of the city, the more intensively it will be transformed. At the same time the urban environment created definitely is capable to stimulate or slow down migration processes. Component of urbanological researches are the concrete sociological researches delivering empirical data for development of theoretical base. Sociological researches in town planning - the experimental component of an urbanology demanding strict observance of the special methodology allowing to obtain objective information by studying of behavior of the subject in space of the city and region.

In the article the problem of interference of intracity migration processes and spatial development of the city which reveals on the example of the cities new and historically developed is put; the role of interregional pendular migration in spatial development of the region reveals. Using methods of sociological researches in town planning, the author managed to reveal influence of the planning organization of the urban environment on processes of adaptation of migrants on the territory of the new city; influence of intracity migration processes on formation of the city center of historically developed large city; to establish a role of cultural and ethnic migration in spatial development of the region; to study the system of communications of the population of the Samara region, to establish extent of integration of settlements the region and, to reveal borders of the Samara and Tolyatti agglomeration. The results of researches presented in article are author's, received during the representative inquiry of the population of the cities of Togliatti and Samara and also residents of settlements of the Samara region. Inquiries were carried out under the target, specially developed questionnaires.

Key words: sociological researches in urban planning, methods, the urban environment, social communications, the spatial environment, migrants.

S.V. KOLOBOVA

SOCIO-ECONOMIC EFFICIENCY RENOVATION OF RESIDENTIAL BUILDINGS IN MOSCOW

The purpose of the city housing policy is to improve the comfort and safety of living conditions, improve the quality of housing, the development of housing management system in Moscow. To achieve this, it will be necessary to fulfill the tasks of construction of new housing and renovation of existing residential buildings, overhaul and modernization, and other obligations to provide housing for citizens established by the legislation of the Russian Federation and the legislation of the city of Moscow. For the purpose of updating of the environment of activity and creation of favorable conditions of accommodation of citizens, public space, prevention of growth of emergency housing stock in the city of Moscow, ensuring development of inhabited territories and their improvement the Order of the Government of Moscow of August 1, 2017 No. 497-PP "about the program of renovation of housing stock in the city of Moscow" was accepted.

The article deals with the socio-economic conditions for the implementation of the state program of renovation of the city of Moscow. The main objective of the renovation Program is to prevent the mass appearance of emergency housing in the city of Moscow and at the same time to correct the imbalances of the city's development accumulated over the previous decades and to create a fundamentally new urban environment. The program includes more than 4 thousand houses of the first period of industrial housing construction, buildings with a height of five to nine floors, which are home to about 1 million people. The program is estimated at 3.5 trillion rubles from the city budget.

The effectiveness of the renovation program will be assessed in several areas: economic efficiency assessment, budget efficiency assessment, social efficiency assessment and evaluation of the effectiveness and efficiency of the State program. Socio-economic efficiency of the renovation of the territories is achieved through the use of existing urban land and infrastructure engineering; saving heat and hot water 35-50% and cold water about 40-50% and, consequently, reduce the load on the wastewater at new facilities; improving the quality of residential architecture.

Key words: renovation program, housing construction, starting houses, social and economic efficiency.

A.A. SELEZNEV, I.V. YARMOSHENKO, G.P. MALINOVSKY, E.M. BAGLAYEVA

TOTAL AMOUNT OF CONTEMPORARY DIRT AND DUST SEDIMENTS IN AN URBAN ENVIRONMENT (ON THE EXAMPLE OF EKATERINBURG, RUSSIA)

The urban environment is a complex system of interacting natural and artificial components. The tendency of the last decades is a constant increase in the amount of dust of various origins in the cities. Dust is continuously transferred accumulating on the surfaces in the form of mud sediments transferring the pollution. The objective of the study was to estimate the total amount of the contemporary surface dirt and dust sediments in an urban environment. The study was conducted on the example of Ekaterinburg (Russia). For the purposes of the study, six experimental sites were chosen within the residential area of the city. The experimental site represents a typical neighborhood of the city with a courtyard area and the adjacent part of the street. The samples of snow and dirty snow sludge in a winter season, samples of soil, ground and surface mud sediment in summer season were collected at the various landscape zones of the territory of the experimental site. Totally 60 samples of the environmental compartments were collected in the city. The 360 particle size fractions were obtained from 60 samples. According to the results of the analysis, the dust fraction <0.1 mm on the average represents 2/3 of the mass of solid material of mud sediment on the roads in winter. In summer, its contribution to all types of sites is reduced below 40% but remains high. The total amount of contemporary dirt and dust sediments in residential areas is estimated at about 400 thousand tons.

Key words: surface dirt and dust sediments, dirty snow sludge, snow, dust, contemporary sediments, urban environment.

E. D. KHETSURIANI, T. S. KOLMAKOVA, M. A. AKIMENKO, T. E. KHETSURIANI

ECOLOGICAL SAFETY OF WATER ENVIRONMENT - THE KEY TO A HEALTHY FUTURE

This article reviews the problem of toxicity of blue-green algae, their influence on animal and human organisms. The massive growth of makrofitov in water from surface water sources during periods of flowering of water creates significant difficulties in water treatment and has a significant effect on such standard indicators as "smell" and "taste." In this article we would like to show the importance of water for human health, and in the future to conduct scientific experiments related to the chemical and physical properties of water. The effect of blue-green algae on animals in poisoning is similar, despite the different pathogens and taxonomic difference of animals. Thus, under the action of algae Microcystis, Aphanizomenon, Anabaena, Rivularia, etc., on the gastrointestinal tract of cattle, horses, dogs and birds, clinical manifestations were weakness, nausea, vomiting, due to severe inflammation, hemorrhage and necrosis of the mucosa. The effect of these same algae on the neuromuscular tissues of the same animals manifested as a private or General paralysis, lethargy, low temperature, unconsciousness and death, which was the result of blockage of the brain and spinal blood vessels, and the membranes of the brain. Only three types of data are known about the action on the heart: Microcystis, Anabaena and Nodularia. Symptoms of poisoning were manifested in a weak and rare or Vice versa enhanced pulse, pericardial or endo cardiac hemorrhages. A person is less sensitive to the action of toxic blue-green algae, in addition, for fatal poisoning, a person weighing 70 kg needs to drink 2.5 liters of water saturated with algae. thus, blue-green algae and their toxins have a significant effect on hydrobionts. In addition, they can harm the health of animals and humans.

Key words: nature management, blue-green algae, toxicity, video source pollution, organoleptic characteristics, healthy future.

L. KNAUERHASE

HOUSING SOLUTIONS TO AID THE INTEGRATION OF REFUGEES AND MIGRANTS

Many European countries have experienced an exceptionally high demand for housing since the peak of the refugee migration in 2015. The sudden mass migration has left municipalities and governments overwhelmed. In the past centuries Germany has experienced many years of mass migration due to a high influx of refugee. Many conventional approaches for social housing in the past have been mostly pragmatic short-term solutions. In the long term, these have resulted in high risks isolation and urban segregation, called "ghettoisation". Modern and progressive approaches are supposed to support integration of social and ethnic minorities. The goal is to reinforce urban resilience, economic advantages as well as social stability.[1, 2]

A number of interviews and case studies from people of different backgrounds argues about the possibilities, chances and challenges of finding long term solutions for social housing and healthy urban structures. The goal is to find common interests and duties of every parties to minimize urban segregation as well as social and economic recession.

To find appropriate solutions for migrants one of the main objective was to actively involve them into this find appropriate solutions for migrants, one of the main objective was to actively involve them into this research through several interviews and questionnaires. Furthermore, in this research, the general outcomes were that there were high amounts of interests and duties that everyone shares. But the solution also bears particular interest and duties that don't have any interfaces between the involved parties. These are deemed to be minimized as much as possible.

Key words: migration, refugees, ghettoisation, urban segregation, resilience, integration.

HERSLUND L.

REFUGEES AS A RESOURCE FOR SMALL TOWN DEVELOPMENT. WILL THEY STAY OR WILL THEY GO?

The paper reports results from a research project on integration of refugees in small towns and what role the local community can play in this. The question is whether refugees can be a resource for small town development and how this can be supported in the local communities and in municipalities. The survey is based on interviews in 2016/2017 with refugees and local community members in seven smaller towns and other relevant actors such as municipal employees and NGOs. The results indicate that structural factors like cheap family homes and good public transport are central to whether an everyday life in a small town on refugee benefits can work. Social relations to other refugees in the town as well as to local residents are essential to cover daily social needs but also help navigate in the new everyday life. Activities for refugees are seen as social projects and not part of local efforts to attract new residents. This is the case at the level of the local communities as well as in the municipalities. Here mayors see a potential for development but the daily management in the municipalities it is business as usual.

T.V. KARAKOVA

MIGRATION TREND IN DEVELOPMENT OF CITY-PLANNING SYSTEMS

The article examines the evolution of scientific knowledge about migration processes, population movement in the framework of interdisciplinary approach to spatial planning and urban planning. The dialectical and socio-economic inevitability of the growth of international, interregional and urban migration, which determines the formation of problem-based town planning situations at macro, meso and micro territorial levels, is scientifically grounded. The ways of restructuring the town-planning frame of the territory of the regions under the onslaught of migration intervention are analyzed, taking into account the current trends in the development of urbanization in Russia. The author considers the dynamics of studying the migration of the population in the context of the transformation of territories and the growth of settlements, the influence on their planning structure of the prevailing trends of intra-urban and regional migration of the population. Particular attention is paid to the specifics of the current situation in the urban development of Russia, taking into account the growing attractiveness of the central cities and the "devastation of the provinces" in connection with the loss of their investment attractiveness and development potential. The analysis shows that the growth of regional and international migration to the largest cities, whose stable axes and links form the pendulum and irrevocable migration of the population, is intensifying, and therefore requires the increased attention of city planners and architects to the design of town planning structures of various territorial and spatial levels. This approach makes it possible to study the process of structuring of urban and rural settlements in the dynamics of various types of migration of the population in the example of the Samara region. Taking into account the revealed regularities allows us to approach the formation of control strategies at the stage of development of the Schemes of territorial planning of the subject of the Russian Federation, municipal districts, General plans of cities and detailed planning projects. The results of the author's research formed the basis for the development of the Scheme for Territorial Planning of the Subject of the Russian Federation "Samara Region".

Key words: sustainable architecture, population migration, territorial planning, urbanization, urban construction, urban development, social phenomena.

M.V. MELNIKOVA

AEROTROPOLIS AS A MEANS OF ACTIVATING MIGRATION PROCESSES

The new Concept of spatial development of the Russian Federation aims at creation of a new basic framework of the country where the centers are large city agglomerations, and linear elements - federal transport corridors. The important problem following from the offered Concept is improvement developed and formation of new city agglomerations as innovative centers of the country. The Samara and Tolyatti agglomeration is the third on population, after Moscow and St. Petersburg. Its specifics are that it is polycentric where both cores are among the largest cities of Russia. Researches have shown that her successful improvement requires embedding of her economy in global economic processes by innovative development of agglomerative cores and strengthening of integration communications between them. The solution of problems of integration of the large city centers of the region, increase in its competitiveness is closely connected with development of transport infrastructure. In the article the characteristic of a transport and logistics system of the Samara region is considered, an assessment is given to her state and advantages of her development are reflected. On the basis of researches the main directions of development of the Samara region, one of which is improvement of a transport and logistic complex, are designated. Studying of foreign and domestic experience has shown that achievement of a goal is most effective by implementation of the innovative project of an aerotropolis as new form of the town-planning formation capable to stimulate the migration processes which are an important condition of development of the urbanized territories. The evidential base of importance of formation of an aerotropolis on the territory of the Samara and Tolyatti agglomeration is presented, and the conditions providing implementation of the project are considered. The economic and town-planning principles to which is necessary to adhere in order to achieve desirable result, to accelerate development of the Samara and Tolyatti agglomeration and to make it more effective are formulated.

Key words: aerotropolis, strategic planning, functioning, integration, jobs, system of communications.