

Economic research of the Southern Urals recreational potential on the criteria of synergy and real option

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Abstract—*Research of prospects and innovative aspects of strengthening of health of the population and rehabilitation of athletes in the tourist and recreational complex of the southern Urals had been carried out. Organization and methods of research: from the regions of the Southern Urals, the Chelyabinsk region with average indicators was been selected, in the research of the tourist and recreational complex of which attention is focused on the resort area of Kisegach. Was been revealed the state and prospects of the complex development on the basis of quality assurance of natural water resources, implementation of innovative programs of services digitalization, institutional changes both in the field of formation of the specially protected territories status, and implementation of integration programs. Have been made the assessment of the local integration projects effectiveness for health resort organizations on the basis of criteria of synergy and real options cost, including the new regional status of protected areas. Methods of comparison and situational analysis, expert assessments, economic and mathematical modeling, data of regional statistics, author's field research, reporting of organizations, publications analysis have been used. The obtained results can be used for the formation of sectoral development programs.*

Keywords—*tourism and recreation complex, innovations, digitalization, local integration.*

I. INTRODUCTION

The object of the research is the recreational potential of the region as an important element of health promotion and rehabilitation of athletes. The subject of the research is the prospects of using the recreational potential of the Southern Urals is in the conditions of innovative programs and institutional changes implementation. The purpose of the research is to identify and assess the economic potential of the territories on the basis of the regional status of specially protected natural areas and the integration programs implementation. The relevance of the research is due to the need to preserve the unique natural resources of the region and maintain the high quality of natural water resources of resort and recreational complexes as one of the most important competitive advantages, and the need to strengthen

the sustainability of their development on the basis of innovations and integration programs.

Tourist and sanatorium-resort complexes focused on the implementation of recreation and health restoration programs, as well as providing one of the stages of medical rehabilitation of athletes are one of the important elements of the infrastructure of the modern sports industry. According to experts of the World Trade Organization, this element of infrastructure is the most profitable sector of the world economy, ranks first in terms of growth, remains the main source of employment on the planet and has the most optimistic forecasts of development prospects. Against the background of global development, the state of this industry in Russia can be considered unsatisfactory (the potential is used by no more than 8-10%), the country occupies a very modest place in the international market of tourism and Spa services (less than 1.5% of the world flow), and the contribution of this sector to national income is just over 1%.

The market of Spa services is competitive, and one of the important competitive advantages of domestic complexes is the high quality of natural resources, the basis of which is the quality of water resources. The research of the ecosystems state of the lakes included in the resort area of Kisegach has great practical importance for the further functioning and development of recreational activities. Maintaining a balance in investments for the development of economic activities of recreational organizations and the restoration of the ecological status of recreational areas will preserve the recreational potential of the resort area Kisegach in the long term. Recreational natural use of water bodies belongs to the most sparing, and corresponds to category 1 (reservoirs used in natural form) [3]. Nevertheless, on small reservoirs the recreational economic cycle can lead to negative changes of water objects. In turn, the decrease in the attractiveness of the natural object leads to a decrease in the therapeutic and recreational potential of the resort. The paper considers the aspects of recreational development (development) of a separate territory and the changes in lake geosystems, actively involved in the recreational economic cycle on the example of the resort area Kisegach of the southern Urals.

The intensity of recreational services provided to the population and the state of lake geosystems were assessed.

II. MATERIALS AND METHODS

To research the problems of lake geosystems transformation under the influence of recreational activities, four lakes of the resort area of Kisegach were selected, which for about 90 years, to a greater or lesser extent, were subjected to recreational effects (lakes Big Kisegach, Small Terenkul', Tabankul and Yelovoye). According to the author's field researches on these lakes in the period 1994-2018 (with the involvement of data from earlier researches) revealed a change in transparency on the white disk in the Central part of the waters of the resort area Kisegach for a long period. Observations were carried out in the period July-August (the season of the most pronounced development of green and blue-green algae), to calculate the change in the trophic status of the reservoir in terms of transparency, the Carlson trophic index (TSI) was used.

Spa organizations included in the resort area Kisegach, can be divided into two systems – one is located on lake Yelovoye, the second – between lake Big Kisegach and lake Small Terenkul'. The first system includes: 1) State Unitary Enterprise Sanatorium "Yelovoye"; 2) State Unitary Enterprise Sanatorium "Sosnovaya Gorka"; 3) LLC "Lesnaya Skazka"; 4) Sanatorium of the Ural military district; 5) JSC "Ural Zory". The second system includes: 1) LLC Sanatorium "Kisegach"; 2) LLC Resort "Kisegach"; 3) State Unitary Enterprise Boarding house with treatment "Utes". In addition to these organizations, recreational activities on these lakes are dozens of small and medium-sized businesses, but the main burden on the resort area is provided by these organizations.

As a universal indicator reflecting the scale of the sanatorium-resort organization activity, and, accordingly, the degree of load on the environment, was chosen the annual income determined by the volume of services rendered [4, 5]. The annual volume of the sanatorium organization services, in addition to the amount of income, is also characterized by the number of service personnel, which, taking into account the families employed in the provision of services, gives an additional burden on the ecosphere. The paper compared the data on changes in the transparency of water bodies and the development of the eutrophication process of lakes Big Kisegach, Small Terenkul', Yelovoye with modern (2012-2018) data on the use of recreational infrastructure of the resort area Kisegach (cash income and the number of tourists).

To radically improve the situation in the work proposed local integration of health resort organizations and the formation of a new regional status of protected areas for the resort areas of the Southern Urals. To assess the effectiveness of projects in the conditions of the resort area Kisegach selected synergy criteria and the cost of real options, used methods of comparison and situational analysis, expert assessments, economic and mathematical modeling, black-Scholes model and the model of the binomial tree Cox-Ross-Rubinstein, regional statistics, author's field research, reporting organizations, analysis of publications in the open press. Expert researches were carried out by the Delphic method with the involvement of 15 experts.

III. RESULTS AND DISCUSSION

Lakes Big Kisegach, Yelovoye, Small Terenkul' – tectonic lakes, located within the Eastern foothills of the Ilmen range, are part of the group of Chebarkul' lakes (formerly – Ilmen lakes) (table 1).

In its natural state (until the 1930s), these lakes had high-quality water. Lake Yelovoye was a typical mesotrophic reservoir with water transparency on the white disk 4 m, lake Big Kisegach – oligotrophic with water transparency 8-10 m, lake Small Terenkul' – oligomesotrophic, water transparency 6-7 m [7, 9]. At the beginning of the XX century these reservoirs were located in the picturesque southern taiga area, practically untouched by man, there were no settlements on their banks (category 0 – unused reservoirs [3]).

TABLE 1. MORPHOMETRIC PARAMETERS OF LAKES OF RECREATIONAL STRUCTURE OF RESORT "KISEGACH" [13-16]

Parameters of lake	Name of lake			
	Yelovoye	Tabankul'	Small Terenkul'	Big Kisegach
1 Absolute level mark (Baltic mark system), m	322.5	321.4	319.0	317.0
2 Lake mirror area, km ²	3.25	0.43	0.98	14.90
3 Maximum depth, m	13.5	5.1	18.8	33.0
4. Average depth, m	8.1	2.6	9.0	15.4
5 Volume of water mass, mln. m ³	26.5	1.1	8.7	230.0

Since 1926 on the basis of old pre-revolutionary dachas the Sanatorium "Kisegach" begins to function, in 1929 the first cases of sanatorium are put into operation, active water use on lakes Small Terenkul and Big Kisegach begins (recreational and improving activity; water intake from lake Big Kisegach; water disposal – In lake Small Terenkul'). The development of the recreational area around lake Yelovoye began later, in the post-war period. In the 1950s the first rest houses were organized, on their basis in the 1960s the sanatorium "Yelovoye", the Boarding House "Sosnovaya Gorka", the Sanatorium of the Ural military district were created. In the same years, about a dozen pioneer camps and recreation centers began functioning on the banks. Due to the small size of the reservoir, centralized water intake from it was not made, and systematic discharge of effluents was not made. In contrast to lake Big Kisegach, where a significant part of the catchment remains little affected to date (the land of the Military forestry and Ilmen state reserve), on lake Yelovoye, almost the entire coastal zone is occupied by sanatorium and other recreational institutions.

From 1929 to 1953, from 300 to 800 m³ per day of municipal sewage was dumped into the lake Small Terenkul' practically without cleaning [1], waste from the cattle yard and stables of the Sanatorium "Kisegach" accumulated on the shores of the lake [8]. After 1953, the discharge of sewage (which had undergone the most primitive mechanical treatment, almost untreated) was transferred to the lake Tabankul', and only in 1981 Tabankul' treatment facilities were put into operation. But the efficiency of purification by nitrogen and phosphorus compounds was insufficient, and

the possibility of diluting the treated effluents with Tabankul lake water was undermined by that time. Runoff from the lake Tabankul' fell into the Small Terenkul' lake, and from the Small Terenkul' lake – the lake is Big Kisegach. In addition to the discharge of sewage, there was also pollution of the waters of lakes Yelovoye and Big Kisegach from unorganized recreational activities (the shores of lakes of the Chebarkul' group were visited by 100-200 thousand people during the summer period).

Until the early 1980s, no significant changes in the ecosystem of lake Big Kisegach were observed, it continued to preserve oligotrophic features. The oligotrophy of lake Big Kisegach was confirmed by studies of 1960-1970, carried out by the Institute of geography of the USSR Academy of Sciences [8] and The Institute of lake studies of the USSR Academy of Sciences [1].

Thus, by 2010, the lakes had accumulated environmental damage; their assimilation capacity to recreational impact was significantly reduced, and the lakes themselves experienced a restructuring of natural hydrobiocenoses. The total impact of the recreational complex on the lakes Big Kisegach and Small Terenkul' for the period 2012-2018 has steadily decreased, which illustrates the reduction in the total volume of services rendered in monetary terms from 2.2 mln. euros in 2012, up to 1.3 mln. euros in 2018, the same process was observed for lake Yelovoye. The reduction in the impact of recreational facilities located along its coast was reflected in the reduction of their total annual services from 4.3 mln. euros to 2.9 mln. euros over the period 2012-2018. Assessing the decline in Spa services in quantitative terms, we can note almost a twofold decrease in the number of tourists in the Spa organizations from 2012 to 2018: from 11.9 to 5.9 thousand people for the coast of lakes Big Kisegach and Small Terenkul' and from 23.1 to 12.6 thousand people for the coast of lake Yelovoye (table 2).

TABLE 2. CHANGE OF INDICATORS OF THE SANATORIUM-RESORT ORGANIZATIONS LOADING IN A RECREATIONAL ZONE OF LAKE KISEGACH IS IN THE PERIOD OF 2012-2018

Location of health resort organizations	Load rates, by year						
	2012	2013	2014	2015	2016	2017	2018
Annual income, mln. euros							
Lake Big Kisegach, Lake Small Terenkul'	2.2	1.8	1.9	1.8	1.3	1.3	1.4
Lake Yelovoye	4.3	2.5	2.1	2.3	2.2	2.5	2.9
Total annual income	6.5	4.3	4.0	4.1	3.5	3.8	4.3
Number of persons placed in sanatorium-resort organizations, people							
Lake Big Kisegach, Lake Small Terenkul'	11.9	9.5	9.8	8.0	5.9	5.8	5.9
Lake Yelovoye	23.1	12.9	10.4	10.6	10.6	11.6	12.7
Total, number of people placed, thousand	35.1	22.4	20.2	18.6	16.5	17.4	18.6

The decrease in recreational impact was expressed in the reduction of centralized water intake from lake Big Kisegach and in the reduction of wastewater discharge into lake Tabankul'. Consequently, decreased and the number of waters of lake Tabankul' by duct enters the lake Small Terenkul'.

Despite the General degradation (eutrophication) of natural ecosystems of lakes Tabankul', Small Terenkul', Big Kisegach during the period of 1930-2000s (Fig. 1) since 2008, the water quality of lake Maly Terenkul' (at least, its surface layers) has improved somewhat.

In 2008-2018, there was a further deterioration in the water quality of lake Big Kisegach (in terms of transparency and increasing concentrations of phosphorus compounds) – due to the flow of contaminated water from lake Small Terenkul' and additional load from unorganized vacationers in the summer. Dynamics of the state of lake Yelovoye (Fig. 1) shows increasing instability in the system of the lake ecosystem and the growing instances of "bloom" of water 3 degrees, against the background of a reduction of load beach rest from stationary rest with a vengeance compensate uncontrolled to date, the influence of unorganized tourists and restructuring of beach recreation (introduction of water rides and the widespread use of motor vehicles on the waters).

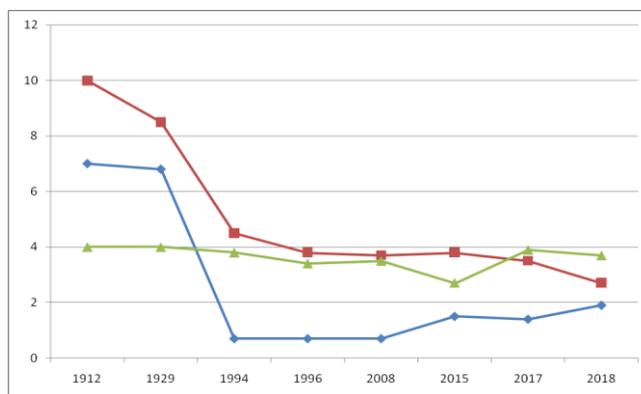


Fig. 1. Dynamics of change of lakes waters transparency in July-August on a white disk, m (Big Kisegach – red, Small Terenkul' – blue, Yelovoye – green; author's data on lakes Big Kisegach, Yelovoye, Small Terenkul' for 1994-2018; data on lakes Big Kisegach, Yelovoye for 1929 [3], for 1912 [8])

Almost the entire coast of lake Yelovoye is developed for beach and swimming recreation (with a few exceptions – the wetland area of the Western shore); the total length of the beach area is 15% of the length of the shoreline of the lake [15].

Considering the impact of beach-bathing holiday from unorganized vacationers, it should be noted that in the specific ratio for the other lakes of the resort area Kisegach it is small. On lake Big Kisegach beach area is about 6-7 % of the length of the coastline; a significant part of the coast (more than 80%) is forested landscapes. There is no beach area on lake Small Terenkul'. Significant (in comparison with lake Big Kisegach) continuing load from recreational institutions (table 2) and the undiminished load from unorganized vacationers (caused, in particular, by such an attractive factor as cleaner and warmer waters) and taking into account the morphometric parameters of the lakes (see table. 1) put lake spruce under threat of rapid depletion of natural and recreational potential.

For lakes Big Kisegach (since 1979) and Yelovoye (since 2008) was characterized by the phenomenon of "flowering" of blue-green algae (cyanobacteria) in the period from late

July to mid-August. This reduces the recreational attractiveness of the coast and waters of these lakes, weakens the therapeutic effect of the sanatorium area.

Earlier (in 2002-2007) comprehensive preventive and rehabilitation measures for de-eutrophication of lakes Big Kisegach and Yelovoye were proposed to optimize the regime of recreational water use [13-15]. The system of lakes Tabankul' – Small Terenkul' – Big Kisegach requires a combination of restoration and preventive measures aimed at reducing nutrients in ecosystems. Currently, they can be divided into a number of stages and individual activities.

The first stage: cut-off of contaminated runoff from lake Small Terenkul' to lake Big Kisegach; construction of biopруд in the area Of the Small Terenkul' – Bolshoy Kisegach Bayou (possibly in part of the coastal waters of lake Small Terenkul') and implementation of a purification system for phosphorus compounds and biological runoff (cyanobacteria cell retention) directly in the channel between the lakes.

Second stage: the complex restoration activities in the lake system of Tabankul' – Small Terenkul', consisting of individual events:

- reconstruction Tabankul' treatment facilities, increasing the degree of purification on nitrogen compounds and phosphorus or termination of the discharge of insufficiently treated wastewater into lake Tabankul';
- in lake Tabankul it is necessary to extract the top layer of bottom sediments that retain a persistent fecal odor;
- reclamation of waterlogged ducts Tabankul' – Small Terenkul', followed by planting of reeds, cane, cattail;
- increase of littoral sites on lake Small Terenkul' in the area of the channels connecting the lakes, landing on them VVR; landing of VVR in boxes on pontoons; in winter – aeration of the deep layers of the lake, in summer-oxygenation by destruction (mixing) of the thermal jump layer.

For lake Yelovoye, which still retains the features of a mesotrophic reservoir, it is necessary to strictly comply with the regulatory restrictions of the coastal protection zone, to exclude emergency discharges and leaks into the reservoir and to streamline the further development of the coastal zone in terms of limiting the construction of new residential and recreational infrastructure. It is imperative to limit the use of motorized means (best of all, a complete ban), negatively affecting the quality of water, causing stress of hydrobionts, oppression (in some cases, destruction) of higher aquatic vegetation. Keeping a balance in investments for the development of recreational organizations economic activities and the restoration of the ecostatus of recreational areas will preserve the recreational potential of the resort area Kisegach in the long term.

For this purpose, it is advisable to form and implement programs of an institutional and innovative nature. First of all, it is necessary to give the resort areas a new status of specially protected natural areas, which will eliminate environmental risks and create compensatory mechanisms

for the elimination of environmental damage to the territories, bring them to a civilized state for comfortable rest, recreational and tourist activities. Improving the recreational potential of the territory is also possible on the basis of the formation of modern type Spa complexes with the widespread use of digitalization and the implementation of targeted treatment and rehabilitation, Wellness and SPA Wellness programs. A key element of innovative programs is a comprehensive preventive nature and systematization of services based on the use of information technologies, the formation of large databases and the widespread use of electronic document management systems.

The proposed digital model of a typical sanatorium-resort complex functioning is made by the authors on the basis of developments and consultations of specialists of JSC SKO "Profkurort", IT-company "Medicalcoft", "Sanatorium+", "UP Resort", Association "Professional Guild of Resort Business" and includes a number of fundamentally new, innovative aspects. The basis of the model is a permanent electronic program of acquaintance and consulting of potential clients on programs of health improvement and treatment of the sanatorium complex. The model also includes computer multi-scanning of vacationers with an assessment of the health potential, their direction to the target audience, SMART-familiarization with the route of medical and health programs Wellness and Spa, rehabilitation routes. A mandatory element is computer and medical control of experts of targeted treatment programs, computer medical control over the implementation of programs, identification of the effectiveness of the stay of vacationers based on the assessment of their health potential and degree of satisfaction.

Analysis the prospects of development for the modern sanatorium-resort organizations of the South Urals showed the presence of significant problems related to self-financing of investment programs, which also points to the need for radical institutional changes implemented by the integration activities (formation of sanatorium complexes on the basis of rational enterprises private organizations) and participation of state agencies in financing the development of complexes on the basis of public-private partnerships and government programs of population health [2, 4-6, 11, 12 and others].

One of the topical options for ensuring the competitiveness and financial stability of modern recreational organizations is their local integration with the formation of Spa complexes that provide a variety of complex services and ensure their individualization on the basis of the formation of IT infrastructure and large databases [4, 5].

The problem of tourist and recreational organizations integration has its own background. The change in the system of state financing of tourist and recreational organizations in the crisis of 2008-2009 led not only to a decrease in the availability of these services for the General population, but also caused a radical transformation of regional health resort complexes, putting almost every organization on the brink of survival. The current situation was caused by a decrease in funding, as well as institutional changes: the State Agency that distributed the state order for sanatorium treatment (the Social Insurance Fund of the Russian Federation) was replaced. Reduction of volumes of the state order and increasing social and economic differentiation of the population led to forced transition of

the sanatorium sphere to the plane of paid services and increase of functional risks.

In the future, the powers of the state in the organization of Spa treatment under Federal and regional programs gradually passed from the Social Insurance Fund of the Russian Federation to the Ministry of Health of the Russian Federation, which at the Federal and regional level did not have enough organizers and specialists of the resort business, so regional Spa complexes currently have problems of effective coordination. The analysis shows that in the health resort sector, continuity in personnel policy is weakened due to a series of bankruptcies and changes of owners, the accumulated unique experience of functioning of health resort systems is not in demand, and funding limitations are acutely felt.

Today, regional health resort organizations operate in conditions of high institutional and financial risks. Today, it is also problematic for them to preserve their identity by engaging in classical resort treatment using natural and preformed factors due to the weakness of the sanatorium-resort (rehabilitation) paradigm in the mentality of consumers and service producers. On the one hand, the Spa complex begins to be associated with health tourism, when medical and medical services give priority to food, accommodation and leisure. On the other hand, some Spa organizations are turning into medical centers, replacing the use of natural factors with medical treatment using expensive diagnostics and high-tech methods of treatment.

In the last decade, Russian medicine, using state investment programs, has made significant progress in the organization and quality of treatment, the restoration of public health, but in strategic terms, it is important not only to ensure the restoration of health, but its rehabilitation, preservation and strengthening. This is facilitated by tourist and recreational activities in the regions of Russia, which need effective regulation. At the same time, the number of sanatorium organizations of the Chelyabinsk Region in the period from 2002-2018 significantly varied in the range of 47-77.

As numerous publications show, the sustainable development of the modern economy to a significant extent depends on the integration processes that create the necessary prerequisites and conditions for more efficient economic activity in the context of globalization. Scientific research and business practice both in Russia and abroad show that integration with the use of scientific methods of management contributes to the proportional development of associations and organizations included in their structures, increasing their efficiency, sustainability, competitiveness.

At the global level, the effects of integration processes can be achieved from international specialization and cooperation, international trade, more rational use of labor resources and other factors of production, as well as from the global use of the latest achievements of science and technology in the economy. However, modern economic science is not yet able to determine the full effect of the implementation of integration processes at the global level, due to not only the complexity of the calculus of integration, but also the multiplicity of consequences in time and in space. Along with the above-mentioned consequences, integration at the global level creates many new forms of economic relations, in which cooperation and competition

are intertwined, and market ties are replaced by contract-market relations, including on the basis of public-private partnership.

A number of approaches to the construction of a financial model of an integration project are widely used in practice to assess the resources spent: a model based on EVA (Economic Value Added), a model of residual income ReIM (Residual Income Model), a model of cash Flow return of Investment CFROI (Cash Flow Return of Investment) and others. Each of these models includes complex systems of interrelated factors of a financial and non-financial nature and is focused on linking the benefits received by the owners of capital with the results of the organization. The algorithm for assessing the potential of integration projects is reduced to the following main provisions. The main indicator of creating and increasing the value or advantages of the organization (for example, economic value added) is differentiated into two main components-the value of the integration project accepted by the organization NPV (Net Present Value) and the current value of the real option created by the integration solution PVRO (Present Value of the Real Option):

$$EVA = NPV + PVRO . \quad (1)$$

Obviously, the option to continue integration must meet the condition $PVRO > 0$, and the option to wait or abandon the integration project meets the condition $PVRO < 0$. The condition for the effective implementation of the project should be based on the assessment of its value (ΣPV_{bas} – cash flows generated as a result of the implementation of the integration project (current value of the underlying asset); ΣPV_{opt} – investments in the implementation of the integration project), that is the exercise of the option):

$$\Sigma PV_{bas} > \Sigma PV_{opt} . \quad (2)$$

Both the Black-Scholes model and the Cox-Ross-Rubinstein binomial tree model are used to estimate the value of the option. The matrix approach BCG (Boston Consulting Group) is used to evaluate integration solutions. it allows to distribute projects in four quadrants depending on the potential of market growth and return on assets, which can be adapted to the problem of distribution of integration solutions depending on the net present value of the project and its potential:

$$NPV = \Sigma PV_{bas} - \Sigma PV_{opt} . \quad (3)$$

The results of a comprehensive assessment for the effectiveness of local integration individual projects for recreational organizations of the Southern Urals on the basis of synergy criteria and the cost of a real option are presented in table 3.

The results of calculations on mathematical models and evaluation by the criterion of synergy and cost of real options for local integration projects of LLC Resort "Kisegach" show that of the considered options the most promising local integration with LLC Sanatorium "Kisegach" and LLC Sanatorium "Sungul". Can be considered a promising option and with the help of the Resort "Uvildy", for which the method of modeling were obtained the following results: the value of synergy (without a new regional security status) – 0,6 ... 0,9 mln. euros; cost synergies (with the new regional security status) is 0.9 ... 1.4 mln. euros; the value of the option (without a new regional security status) – 1,5 ... 1,9

mln. euros; the value of the option (with a new regional security status) – 2,6 ... 3,2 mln. euros.

It should be noted that integrated integration projects (involving three or more organizations) may be important, but in such cases, calculations of the effectiveness of integration policy on the criteria of synergy and the cost of real options are higher, multi-level and require additional development.

TABLE 3. EVALUATION OF EFFECTIVENESS OF LOCAL INTEGRATION PROJECTS FOR LLC RESORT "KISEGACH" IN THE RECREATIONAL ZONE OF THE SOUTHERN URALS (AT PRICE 2018)

Evaluation parameter	Sanatorium and resort organization		
	Sanatorium "Kisegach"	Sanatorium "Sosnovaya Gorka"	Sanatorium "Sungul"
1 Main activity	Treatment Eating Residence Climatotherapy	Treatment Eating Residence Climatotherapy	Treatment Eating Residence Diagnostics
2 Management quality assessment, %	50	25	50
3 Evaluation of sales management effectiveness, %	25	25	50
4 Assessment of security resources, %	75	75	75
5 Cost of synergy (without new regional protection status), mln. euros	0.6 ... 1.0	0.4 ... 0.6	0.6 ... 0.9
6 Cost of synergy (with new regional protection status), mln. euros	0.9 ... 1.5	0.6 ... 0.9	0.9 ... 1.4
7 The value of the option (without a new regional security status), mln. euros	1.5 ... 2.1	0.9 ... 1.3	1.5 ... 1.9
8 The value of the option (with a new regional security status), mln. euros	2.6 ... 3.6	1.5 ... 2.2	2.6 ... 3.2

The analysis also shows that it is possible for health resort complexes of the Southern Urals to participate in state programs for the development of health resort activities and health promotion of the population, including in the framework of public-private partnership. It seems that such options are possible in the case of significant investment programs for the development of health resort organizations (on the basis of self-financing), as well as in the presence of integration projects for the development of health resort complexes.

IV. CONCLUSION

Research of prospects and innovative aspects of strengthening of the population health and athletes rehabilitation is in the tourist and recreational complex of the

Southern Urals (on the example of the Chelyabinsk Region) is carried out. Dangerous tendencies of increase the ecological, institutional and financial risks of modern sanatorium-resort complexes for which management effective state regulation in which emphasis shifts towards regions is required are revealed.

Preservation and effective use of natural preformed factors of the population health improvement and athletes rehabilitation requires adequate organizational and managerial measures for the protection of natural areas, especially their water resources. Progressive anthropogenic eutrophication and deterioration of water quality of the main lakes of the resort Kisegach (Big Kisegach and Yelovoye), reducing opportunities for recreational activities on these lakes, are revealed. Currently, the geosystem of lake Yelovoye is experiencing a higher specific load from recreational activities of health resort organizations than the system of lakes Big Kisegach and Small Terenkul'. The threat of rapid depletion of the recreational potential of lake Yelovoye, as well as a positive correlation between the decrease in the intensity of Spa activities in the period 2012-2018 and the increase in the transparency of the waters of lake Small Terenkul' were revealed.

Preventive and restoration measures are proposed to improve the quality of lake waters as the main competitive advantage of the Southern Urals complexes, to reduce the trophic status of Tabankul' and Small Terenkul' lakes as sources of permanent pollution of lake Big Kisegach. One of such measures should be the return of the lakes Big Kisegach and Yelovoye to the status of a hydrological natural monument and the development of a phased program of their rehabilitation.

The possibilities and positive results of assessment the development prospects of the Southern Urals recreational and tourist complexes on the basis of quality assurance of natural water resources, implementation of innovative programs of services digitalization, institutional changes both in the field of formation of the new regional status of specially protected territories, and implementation of integration programs are defined. According to the results of the evaluation for LLC Resort "Kisegach" recommended for the implementation of projects with local integration of LLC Sanatorium "Kisegach" and LLC Sanatorium "Sungul", also promising option with the participation of LLC Resort "Uvildy". Calculations of complex integration (involving three or more organizations) using the method of real options have a higher, multi-level nature and requires separate development.

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