

the performance quality of executive authorities consists in introduction of modern methods of quality management, including quality management systems.

Nowadays Russia has established the Technical Committee 115 “Sustainable development of administrative-territorial units” (ATU), headed by Academician V.V. Okrepilov, Director General of the FBI “Test-St. Petersburg”. The task of the TC 115 is to develop criteria for assessing the activity of ATU management bodies and to create systems for ATO management. Technical Committee 115 “mirrors” the international TC 268 “Sustainable development in communities”.

Currently TC are working to create national standards, clarify terminology, establish a common conceptual framework, develop a system of performance indicators for management bodies, and methodologies for implementation of quality management techniques in them. The discussion of the draft national standard “Quality management systems – guidance on the application of ISO 9001:2008 in the executive power bodies” is in the final phase. The standard takes into account the specifics of activity of state executive authorities. This will help accelerate the introduction of modern methods of quality management in this sphere.

One of the directions for the improvement of the quality management system in the bodies of state executive power is its application to reduce corruption risks. The article considers the management system for combating corruption, developed on the basis of the quality management system. The authors describe the model of such a system and its cycle of operation.

Key words: standardization, innovations, public services, sustainable development, quality management system, management system for combating corruption.

At present Russia is shifting into a new phase of its socio-economic development characterized by the rise of interest in understanding the concept of “sustainable development” as a fundamental phenomenon that is essential for human activity. This is due to several reasons. The first one is globalization. It leads to the fact that Russia’s regions act more and more often as separate economic subjects by interacting and sometimes even competing with each other, for example, in the issues concerning attraction of investment. The degree of sustainability of the region’s development becomes an important criterion when a potential investor makes decisions on investing.

We can talk about the emergence of a kind of chain reaction of quality. People search for places where they could live better, and investors – where they could make profitable investment.

Regions with the high level of the quality of life, as a rule, are characterized by high sustainability, and therefore, they are more attractive for investment.

Investments, in turn, promote the growth of the quality of life, which leads to increased sustainability.

On the contrary, regions with low investment attractiveness experience gradual deterioration in the quality of life. This tendency can be overcome only if the government undertakes appropriate steps.

As we know, sustainable development is ensured by creating and applying innovation in economy, social development and environment. Innovation process always results in a higher level of quality. In other words, quality is the foundation of sustainable development. High product quality ensures seamless operation of enterprises, and the high quality of life provides social stability, enhances competitiveness of each region and nationwide [4].

It should be noted that the quality framework should be set out in legal and regulatory documents that also include standards.

Foreign research shows that standardization activities have great influence on the development of industry and business. With regard to interaction between suppliers and consumers, standards provide economic benefits such as the reduction of costs of business operations and assessment of market opportunities, the improvement of the quality and competitiveness of products, the elimination of market barriers.

Standardization, as one of the main elements of technical regulation under market economy, can provide a contribution to economic growth more significant than that from the introduction of patents and licenses. So, the studies conducted in several countries in the Asia-Pacific region show that the effective use of technical non-tariff regulation increases the share of profit by an average of 0.26% of GDP, while the profit from tariff regulation does not exceed 0.14%. Most studies indicate that the benefits of standardization can be considered

as a contribution to the gross profit of the company at the level of 0.15–5% of annual sales revenue [2].

According to the research carried out in the WTO countries (Germany, UK, Canada, Australia and France), the impact of standardization on GDP growth is more than 27%, and on the productivity growth – 30%.

A study conducted recently by experts from the ISO and specialists from Baltika Breweries shows that the application of standards along with a number of qualitative advantages saves 5.8% of the cost of the five core business processes: procurement, logistics, manufacturing, distribution and maintenance service.

According to ISO estimates, total benefits from the use of standards for the majority of cases range from 0.5 to 4% of the annual sales revenue of companies.

A characteristic feature of modern standardization is the establishment of requirements not only to performance indicators but also to processes, including management processes. If there are no innovations in management, innovations in other sectors of human activity become inefficient.

It is obvious that management needs innovations. Enhancement of the efficiency and quality of public administration is a key condition for promoting Russia's socio-economic development. After all, today the majority of our citizens assess the quality of state and municipal services as low and average [1], while the society expects and demands high quality from state authorities, namely:

- strict compliance with the law;
- effective and responsible governance;
- provision of high-quality administration and management services to the population as a whole and each citizen in particular;
- high qualification of managers.

Compliance with the interests of citizens, who are the main consumers of services, is a major condition to meet these requirements. It is necessary to establish a modern system of public administration, working for the population and in the interests of the population. In other words, public authorities need an effective management system that ensures the establishment of values that satisfy consumers. This system will enhance public confidence in the authorities, and therefore, improve the entire public administration system, which will lead to sustainable development and improve stability in the society.

However, the standards governing the quality of public and municipal services have not been developed so far. The methodologies and systems do not provide the opportunity to evaluate it. However, some countries have different systems of quality management of public services based on national and international standards and on the models of national quality awards. Such systems enable an authority to achieve effectiveness and performance efficiency and to build national ratings of agencies. In particular, 39 countries use the management valuation model in organizations financed from the state or municipal budget (Common Assessment Framework (CAF), the users of this model point out that this method of

quality management is the most accessible, cheap and adapted to the budgetary sphere. We can also mention the British “Good Governance Standard for Public Services”, the Latin American model of excellence, the Canadian model for assessing the quality and effectiveness of public administration, the Australian model of excellence. Quality awards in public administration are established in the UK, Denmark, France, Malaysia, Bulgaria, Ireland and several other countries [5].

The experience in the application of models and awards proves that the introduction of modern methods of quality management, in particular, the establishment of quality management systems (QMS) is a necessary condition to achieve comprehensive effect of enhancing the quality of executive authorities’ performance.

Scientific research shows that countries, which widely use quality management systems in state and municipal authorities, have a high human development index (HDI), which is considered an indicator of the quality of life. This is not surprising. The improvement of management quality provides for making more effective decisions with lower costs, and for rendering services of better quality. It directly affects, for example, the health of citizens, which, naturally, affects the increase in life expectancy, i.e. the increase in one of the components of the HDI.

Prerequisites for such actions are the following characteristic features of modern quality management:

- versatility of construction, when a single scheme and structure is used for different spheres of human activity;

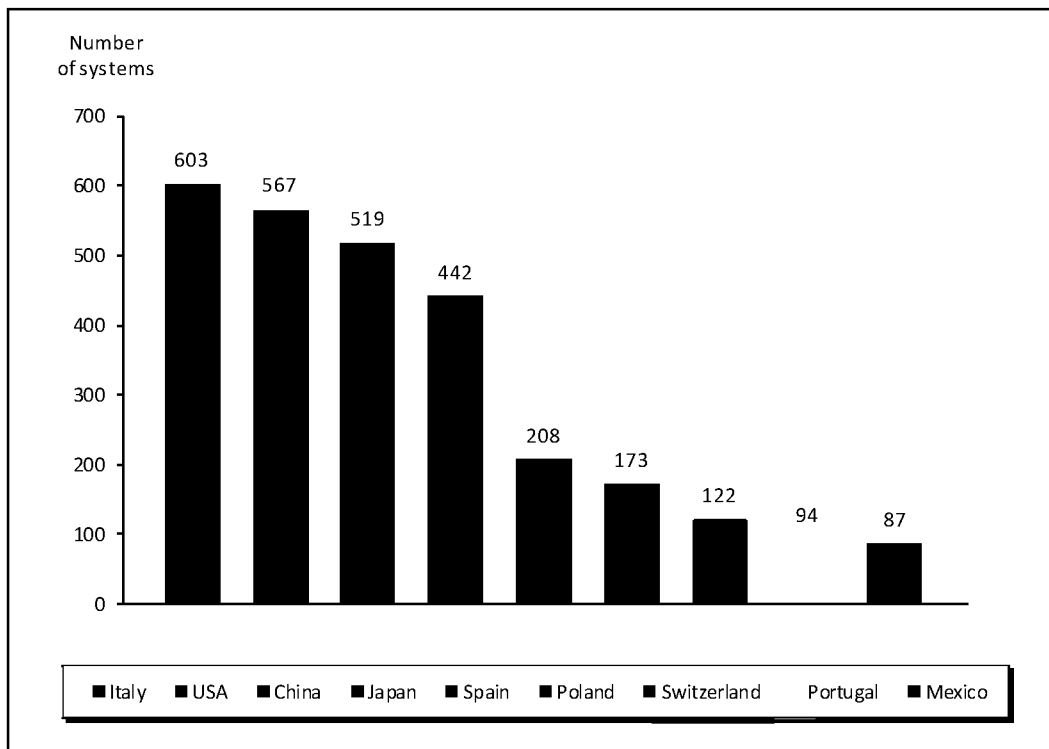
– versatility of application, when single quality management techniques in accordance with a “quality has no limits” principle are applied in any kind of human activity, for enterprises and organizations of any size and any form of ownership in any economic and political system, and they cover the entire economic space.

The United States in the 1970s was the first country to use quality management systems to improve the quality of government services. And today they are being implemented in many countries [3]. About three thousand state and municipal authorities in different countries use QMS in their activities.

Italy, the U.S., China, Japan, Spain, Poland, Switzerland, Portugal, and Mexico are leaders in this area (*fig. 1*).

Nowadays Russia also recognizes the need to introduce the standards for management systems in public authorities. For example, ISO 9001 is used by the Central Office of the Federal Antimonopoly Service and its territorial offices (in 2012 – in 5 territorial offices, in 2013 – in 6 offices). The standard is widely used by the administration of the city of Shakhty, the government and municipalities of the Chuvash Republic, the government and executive authorities of the Kaliningrad Oblast, etc.

Figure 1. Implementation of quality management systems in state and municipal authorities



However, the rate of implementation of quality management systems in public authorities is low. This can be explained by the fact that ISO 9001 was initially focused on organizations engaged in commercial activity, and does not fully reflect the specifics of public and municipal service.

This specificity is manifested, for example, in the fact that public authorities do not choose their mission and consumer. They have no competition and industry specifics. At the same time, the values and personal qualities of a government agency official affect the quality of services no less than his/her professional knowledge. The principles of interaction with the external environment and the approaches to this interaction should be established on the basis of the objectives of “transparency and information openness”. It is also necessary to identify the principles, approaches and methods to create a corporate culture that meets, among other things, the ethical requirements to a modern official. In addition, it is necessary to define approaches to work throughout the entire life cycle of an employee – from candidate to the position to termination of employment, including retirement.

We note that international community understands the importance of standardization as the crucial factor in management efficiency increase. The new technical committee ISO/TC 268 “Sustainable Development in Communities” was established in the beginning of 2012. The TC aims to develop criteria for assessing the activity of community management bodies and to create community management systems. A community is

understood as an administrative-territorial formation, whose goal is to provide safety and favourable conditions for human activity, to limit the negative impact of economic and other activity on the environment and to ensure protection and rational use of natural resources in the interests of the present and future generations. That is, we can say that municipality, city and oblast are communities.

The national TC 115 “Sustainable development of administrative-territorial formations”, headed by RAS Academician V.V. Okrepilov, General Director of the FBI “Test St.-Petersburg”, has been established in Russia. The technical Committee is a “mirror image” of TC 268: their tasks are similar. The TC 115 comprises two sub-committees (SC1 and SC2) in accordance with their main work directions; i.e., their task is to develop a methodology for the system approach to quality management in administrative-territorial units, and to develop performance indicators and methods of performance assessment.

The following activities are implemented within the framework of the TC: the creation of national standards, clarification of terminology, the formation of the common conceptual framework, the development of the system of performance indicators for government authorities, the development of methodologies for implementation of quality management techniques in them. Currently, the discussion of the draft national standard “Quality management Systems – Guidance on the Application of ISO 9001:2008 in the Bodies of Executive Power” is in its final phase.

In comparison with the international standard ISO 9001:2008, the national standard has a number of specific features. For instance, the introduction includes an additional paragraph that sets out twelve core principles of quality management system in state executive authorities. The wording of seven of them was taken from the international standards ISO 9000:2005 and ISO 9004:2009, but the content takes into account the specifics of this sphere of activity. The wording of the eighth principle is changed to “Mutually beneficial relationships with interested parties”. The other four principles: “Efficiency”, “Introspection and self-development”, “Transparency of activity”, “Ethical behavior” – are new.

The draft specifies that the quality management system is the means by which the executive authorities can plan and implement their actions aimed to meet the needs and expectations of interested parties, and to ensure high quality of their services. The quality management system is a set of plans, processes, procedures and resources required to achieve the objectives in the sphere of quality and aimed at ensuring continuous improvement of services.

The project specifies the application of the process approach. That is, special attention should be focused not on the functions of departments and employees, but on the main processes that integrate specific activities and are aimed at the performance results of a state executive authority. At that, horizontal relationships (between functional units) rather than vertical (hierarchical)

relationships are of principal importance. This kind of relationships is less stable and therefore it is more likely to impede the achievement of planned results.

Appropriate guidelines have been developed in order to facilitate the creation and implementation of QMS. The guidelines identify that the main stages of development and implementation of QMS are as follows: designing of QMS documentation of QMS, implementation of QMS and (if necessary) preparation for certification. This work should be organized according to the following principles: responsibility and dominating role of management, overall training and involvement of the staff, sequence of execution of work, and innovativeness. As for the latter principle, we can explain that the development and introduction of QMS is the innovation that affects all the aspects of activity and levels of management of a state executive authority. Therefore, when planning, developing and implementing QMS, one should take into consideration how well the executive authority as a whole and its individual components will respond to innovations.

The recurring external and internal assessment is a necessary condition for quality management. The research supervised by RAS Academician V.V. Okrepilov served as the basis for elaborating the concept of the National Rating Assessment of Agencies of Executive Authorities of the Russian Federation. The Concept is a comprehensive mechanism for assessing the level of efficiency and potential of activities

of executive authorities on the basis of integrated assessment combining qualitative and quantitative indicators.

This system includes not only the indicators of performance and achievement of immediate results – for citizens (consumers), for employees, for society, but also key indicators of opportunities that help evaluate the capacity of state authorities, their willingness and receptivity to change. We can name the following indicators: leading role of management, planning of the activity, employees, partnership and resources, processes carried out by the agency.

The CAF model, which was significantly improved with regard to Russian specifics and best Russian practices, is taken as the basis of the national rating. In particular, the model of prizes of the Government of the Russian for quality was used [6].

The system offers:

- the methodology for diagnostic self-assessment and expert assessment of performance of state executive authorities in Russia;

- the tools to identify strengths and weaknesses in the performance of institutions, the approaches to the development and implementation of measures to improve and enhance the quality and effectiveness of activities;

- the methods to determine the best examples of activities, collection and processing of information on successful experience in the field of public administration and the mechanisms to provide this information through a multi-level database.

The strength of this assessment system is that it is carried out on a regular basis according to established efficiency criteria, rather than randomly, by the results of inspections based on one-time complaints and alarms.

The quality management system can be applied to reduce corruption risks, which is one of the directions to enhance its quality. This helps to improve the use of available resources when implementing anti-corruption measures. In essence we are talking about the implementation of an anti-bribery management system (ABMS). ABMS is designed to meet the requirements of ISO 9000 series and also the requirements of the British standard BS 10500:2011 “Specification for an anti-bribery management system”, which allows this system to be an integral part of the overall system of quality management; and the basic principles of quality management applied by a state authority are supplemented with the principles to combat corruption.

The implementation of ABMS in the state power body has a necessary condition: the availability of a unified approach to risk management, including corruption risks that can occur when public authorities exercise their functions. This means that we need a single definition of concepts such as, for example, “risk”, “corruption risk”, and the development of methods and procedures associated with their management. At that, it is necessary to take into account not only the requirements of Russia’s legislation, but also the external and internal environment of a state authority, the requirements of

interested parties (e.g. citizens), as well as the professional ethics of the employees of the authority. A program for combating corruption and annual plans should be based on these definitions.

To facilitate the implementation of ABMS in a state authority, it is necessary to determine whether combating corruption would be an independent process. Otherwise it has to be determined which of the identified processes of the quality management system include anti-corruption measures. This will ensure the visibility of the link between the objectives and activities implemented.

It is advisable that the documentation of the quality management system include internal and external regulations, and anti-corruption methodological documents. The structure of the documentation, in addition to the Mission, Policies and objectives, can be supplemented by an element of ABMS, for example, a code of ethics.

The objectives in the field of quality can be supplemented by the objectives that reflect the reduction of corruption risks in a state executive authority. This extends the policy in the field of quality and spreads it to interpersonal relationships.

In accordance with paragraph 4.1 BS 10500 a state authority shall adopt and record an anti-bribery policy. The policy need only be a brief statement by the organization that it prohibits bribery and will implement reasonable and proportionate measures to prevent bribery and detect, report and deal with any bribery which occurs. But anti-corruption policy can be reflected in the adopted code of ethics as well.

In both cases the information that the state authority has developed and adopted an anti-corruption policy or that this policy is reflected in the code of ethics should be communicated not only to all the members of staff, but also to all the interested parties (primarily, the citizens). Moreover, the level of corruption can be used as the characteristic quality of a public service.

The report on the quality management system functioning can include an analysis of the implementation of anti-corruption measures. Thus, taking into account additions, the information on the functioning of the quality management system should reflect the following:

- the activities and processes of the quality management system are consistent with the policies in the field of quality, human resources management, code of ethics (anti-bribery policy); they are coordinated with the values of the state authority and its mission, and help achieve the goals in the field of quality;
- the implemented corrective and/or preventive actions are effective;
- the quality of services provided to meet the requirements of citizens;
- there is a decrease of significant corruption-related risks;
- there is an increase in the effectiveness of the processes and the overall functioning of the quality management system;
- the quality management system is appropriately resourced.

It should be noted that the process of development and implementation of the QMS should take anti-corruption policy

into consideration. For example, the analysis of functional duties, responsibility and authority of the staff involved in the development and functioning of the QMS should take into account the risk of corruption. A suitably qualified or experienced member of staff, who is allocated responsibility for overseeing implementation of anti-corruption measures should analyze the anti-corruption measures, assess their effectiveness, oversee compliance by the organization's members of staff with the anti-bribery policy; ensure that the anti-bribery policy and corresponding internal regulations are consistent with all relevant laws, and provide advice and guidance to members of staff on the established requirements in the issues relating to bribery.

We should pay special attention to the last statement, because it is the staff of a public authority that ought to implement anti-corruption policy in practice. In this connection it is necessary to expand requirements for the competence of a member of staff by supplementing them with knowledge of and adherence to not only the mission and values of the organization, its policies in the field of quality, human resources management, but also to the code of ethics (anti-corruption policy). In the course of training it is necessary that members of staff get a clear idea about the anti-bribery management system and about the risks and losses for the activities of a public authority, which can occur as a result of bribery, and under what circumstances there is a threat of a bribe, and what should be done to avoid such a threat.

Since the anti-bribery management system was developed on the basis of the quality management system, the model of such a system will be similar to the general model of QMS under ISO 9001 (*fig. 2*).

Organizational block includes the management of the state power body and the relevant organizational documents, the system management bodies.

The second block is the system's functioning mechanism, which consists of the following main elements:

- system of target indicators that reflect the dynamics of reduction of corruption risks;
- target anti-corruption plans and programs;
- monitoring and analysis of achievement of the targets;
- corrective actions.

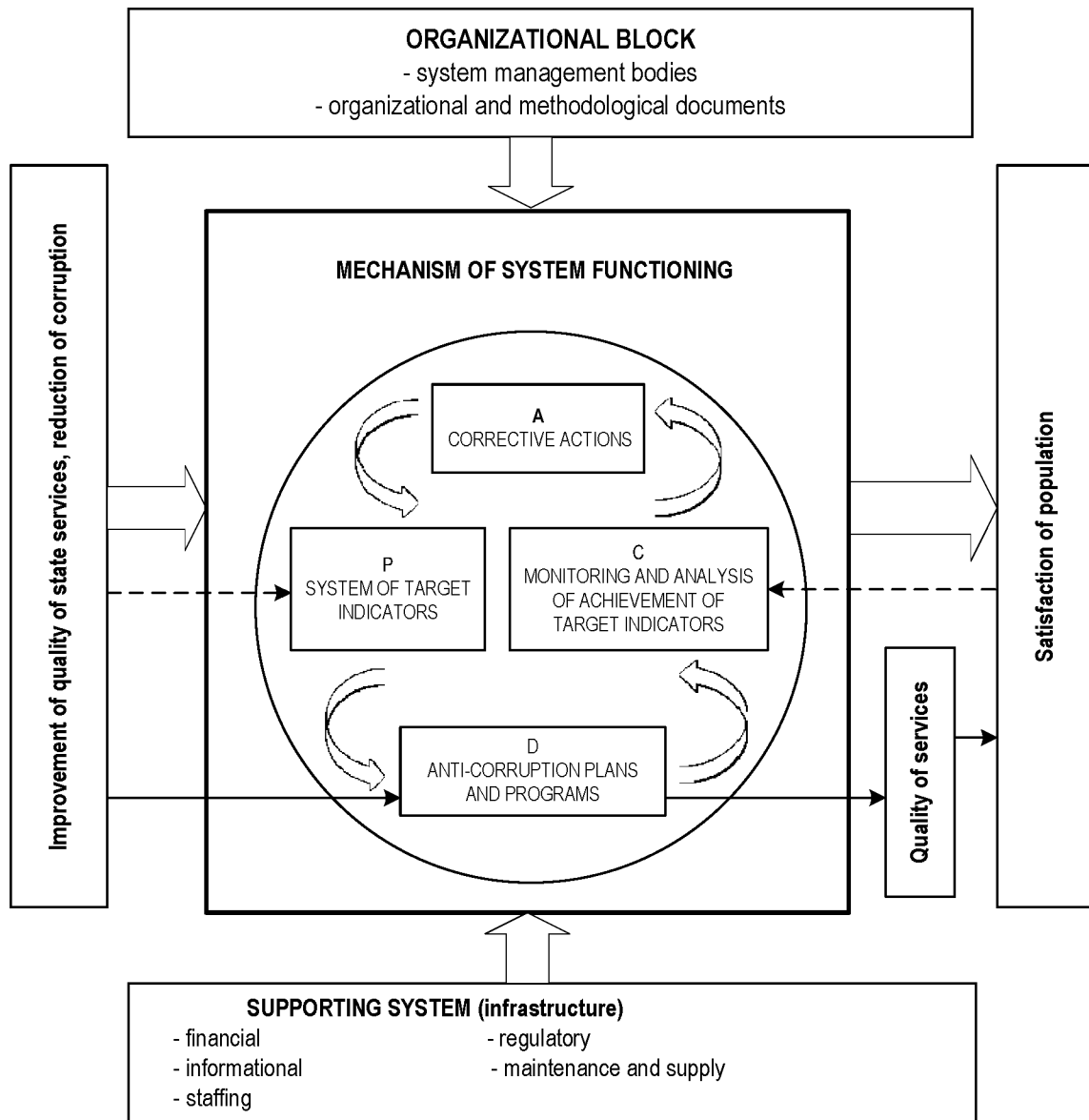
The third block is the supporting system (infrastructure). In this case, infrastructure refers to financial, regulatory, informational, maintenance and supply, and staffing provision of the system. This should include the legal framework (the legislation of the Russian Federation).

In accordance with the general theory of management, ABMS has the “input” and “output”.

The “input” of the system comprises the needs and requirements of the region's population. In this particular case we mean the necessity to improve the quality of public services by combating corruption.

The “output” is the satisfaction of the population achieved by implementing all planned activities and actions.

Figure 2. Model of the anti-bribery management system



The cycle of ABMS begins with the formation of target indicators, which should clearly reflect the results of anti-bribery activities. Therefore, these indicators can be expressed in numeric or descriptive form. For example, they can include the total number of training hours for employees or the total number of offences, or the establishment of regular analysis of the possibility of corruption risks arising in the functioning of a public authority.

In order to achieve the planned targets it is necessary to develop and implement the relevant target plans and programs that will determine what should be done, when and by whom.

Implementation of programs is assessed by comparing the current values of the indicators with those specified in the plans. This comparison is performed through internal audit of activities of a public authority, and by monitoring the customers' satisfaction. The results of the analysis provide the necessary

information basis for identifying the existing trends, for predicting the emergence of new needs and demands; and they also provide an opportunity for decision-making concerning the necessity of the next phase – corrective actions. Corrective actions conclude one cycle of ABMS and begin the next one. Steps are being taken to strengthen anti-corruption activities and, consequently, to accelerate the implementation of plans and programs. Improvement can be expressed, for example, in the increase of the amount of information communicated to members of staff, more severe penalties, improvement of internal regulatory documentation, etc.

We can hope that an integrated and system approach to the improvement of the quality of public services will ensure the formation of mobile modern system of public administration that will have the most favorable impact on the competitiveness of the domestic economy and welfare of the citizens.

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BRANCH-WISE ECONOMY

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Methodology for assessing the transport security of the territory for the availability of social services



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Abstract. The formation of a rational transport network and the development of vehicles should be marked by the achievement of socio-territorial justice, which is understood as a guarantee of transport accessibility of social services, increase and economy of man's free time, reduction in the degree of uncertainty of economic activity in the part that depends on transport factors. According to the author, the priorities of the assessment of transport security include the duration of the trip from the settlements to the centers of social services and year-round transportation. Each type of social services has normative values of transport accessibility, corresponding to the needs of a particular region, and they are the basis for strategic planning in the services sector. For instance, the standard time for provision of emergency medical aid is 40 minutes. The level of transport discrimination is defined as the proportion of the population living outside the standard time. The author proposes a formula for determining the weighted average costs of time that a transport user needs for reaching a certain destination (e.g., hospital, school, etc.) from any other departure point. Transport security is assessed on the example of the Komi Republic; the calculation includes all its settlements, considers the distance to the regional centers, condition of roads, obstacles to year-round road communications, transport vehicles, including animal-drawn transport, and going on foot, the speed of movement and other factors. The results of the developed differentiation methodology can be used for interbudgetary control and distribution of resources of the Fund of financial support of municipal formations according to the rate of transport increase in the cost of public services through the coefficients of transport security.

Key words: transport security, weighted average costs of time, availability and rise in the cost of public services.

Transport creates conditions for economic independence and development of RF subjects, including municipalities of districts, villages and settlements. Economic entities only benefit from transport infrastructure development. Transport remoteness of many settlements from centers of social services is one of the most important factors affecting the level of life of the population and expenditures of budgets and production.

The process to form a rational transport network and develop vehicles involves achievement of two goals:

1) socio-spatial justice, understood as a guarantee of transport accessibility of social services (education, culture, medicine, trade, consumer services, passenger traffic, etc.), growth and economy of people's free time [2];

2) decrease in the degree of uncertainty (risk) of economic activity in terms of transport factors. Reduction of time spent on freight service is of importance.

The problem to increase "transparency" of territorial levelling should be addressed through the improvement of methods of formal registration of remoteness indicators. The indicators of transport security are relevant in the standards of budget costs appreciation, used for the allocation of funds to support administrative-territorial entities of different level (from subjects to settlements) by means of fiscal capacity adjustment.

The priorities of transport security assessment aimed at the accessibility of social services include:

- taking timing into account when moving from settlements to centers of social services;
- year-round transportation.

The transport availability indicator can be defined as weighted average costs of time required for a vehicle user to reach a certain point of destination (medical and institutions, schools, educational institutions, clubs, shops, settlements, etc.) from any other departure point (settlements, etc.).

All types of services have normative values of transport availability, which should correspond to the needs of a particular region. It is important to consider them while developing each of the services.

For instance, the standard time for provision of emergency medical aid is 40 minutes, which corresponds to a 30-km distance that a medical ambulance passes. In the services sector the level of transport discrimination is defined as a share of the population living outside this normative time.

According to the preliminary calculations, the discrimination level is significantly lower in urban districts than in municipalities and settlements. The standards of transport availability should be taken into consideration when deciding on the location of new schools, tourist camps and other facilities.

The levels of transport provision and transport availability are the same for passenger traffic services. Timetables help transport users estimate the time from a point of departure to a point of arrival and choose means of transport, a trip and a route that satisfy their needs (time, money, a service level, etc.).

Let us consider the issues of internal transport provision of the territory when determining the transport availability of settlements.

The settlements have not usually developed real approaches to the formation of a transport network due to external and internal factors.

The external factors include undere-stimation of the role of transport infrastructure and the residual principle of its funding. The internal factor is associated with a diversified composition of transport infrastructure, a lack of a single customer, maintenance of transport infrastructure by different agencies, different standards and approaches to the development of transport infrastructure in different departments (agriculture, forestry, oil, gas industry, etc.).

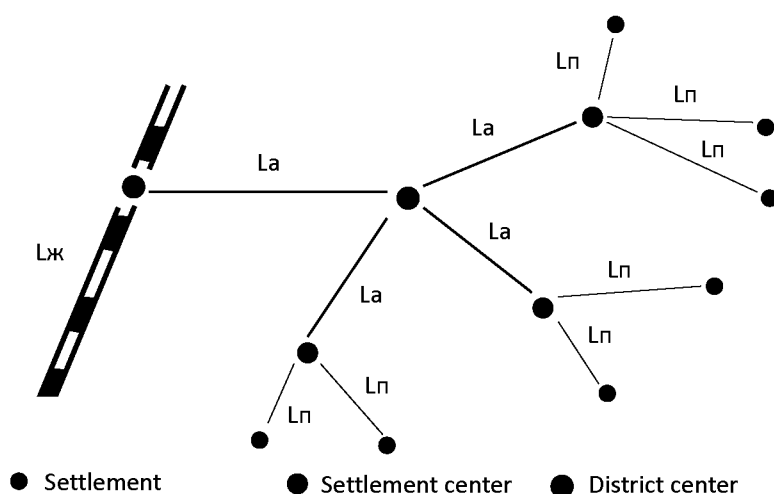
Transport accessibility of settlements is characterized by remoteness and presence of obstacles in the traffic road. *Figure 1* shows that remoteness is defined through the indicators of the distance between settlements and settlements centers, and then, in turn, between them and district centers, railway stations, centers of RF subjects. One should

also take into account remoteness (closeness) from main road and rail routes, types of the upper surface of roads, seasonal roads (winter roads), ensuring communication between settlements even in winter, water crossings and bus service.

The location of settlements at highways, roads and in the areas of their immediate impact is the most important factor of the transport and geographic position determining opportunities for further growth and development.

The livelihood of the population depends on seasonality of transport connections. In spring and autumn at the time of freeze-up and thaw traffic service becomes problematic. In summer rivers are crossed by ferries and boats, in winter – by cars. Constant communication is only available in winter due to winter roads and ice crossings. Annual maintenance and upkeep of winter roads and ice crossings are expensive.

Figure 1. Diagram of spatial organization of transport



The bus route network and commuter trains reduce the temporary link between settlements. The 30 km distance from the “ordinary” settlement to the settlement or district center (a 6 hour “tourist” trip) includes walking. Small and medium-sized towns are covered by bus service only if the route is mapped through them or they are at a distance of not more than 5 km (a 1 hour walk). The problems in this sphere are the following: intensity of bus and rail links, number of trips, involving loss of time on waiting. People have to get to a place of destination by a car share.

The presence and nature of obstacles, leading to a decrease in the rate and seasonality of transportation vary greatly by municipalities. Taking into account the parameters of transport provision, one can distinguish municipalities with year-round (with minor exceptions), limited and discriminatory (in bad road conditions) transport links between settlements.

Year-round transport link provides transit communications through the territory of settlements. They are covered by railway, road and other communication networks. This may also include the settlements, which centers are not covered by a route network, but they are located near main roads and there are roads leading to federal and local highways.

Limited transportation is characterized by the presence of river obstacles that require maintenance of pontoons and ice crossings, purchase of ferries and boats; it is also characterized by a low level of development of the transport network (predominance of winter roads).

The territory maintenance requires investment support.

Discriminatory transport connection is characterized by a small share of hard-surface roads, a great length of winter roads and a lack of river crossings. These settlements also need investment support.

To calculate the weighted average cost of time within settlements, local systems, districts, the capital, etc., taking into account the presence/lack of bus, rail and other types of transport connection and the average speed of vehicles and walking (of a horse) we have suggested a formula¹:

$$T_i = \frac{\sum_1^n (t_a \times l_a + t_n \times l_n + t_{r/w} \times l_{r/w})}{\sum_1^n (l_a + l_n + l_{r/w})},$$

n is a number of settlements in the region;

l_a is a length of hard surface roads from the settlement n to the center of social services, the settlement, the local system, the district, the capital, etc.;

t_a is time costs associated with the trip by bus or other vehicles;

l_n is a length of dirt roads from the settlement n to the center of social services, the settlement, the local system, etc.;

t_n is time required to get to the place of destination on foot (by horse);

$l_{r/w}$ is a length of the railway from the settlement n to the center of social services, the settlement, the local system, the district, the capital, etc.;

$t_{r/w}$ – time costs associated with the trip by train.

¹ The given measures of transport security through the length of transport lines are generally accepted indicators in the UN system and are comparable among the countries.

To assess transport security in the Komi Republic the given study uses the formula to calculate the weighted average cost of time. The calculation includes all settlements (more than 700), takes into account the distance from the settlements to regional centers, state of communication routes, obstacles to year-round communication, transport vehicles, walking (horse-drawn traffic), speed of movement and other factors. The assessment is based on the data on the administrative-territorial division of the Komi Republic, data on the condition of roads, transport enterprises – on route networks, winter roads, water crossings, vehicle characteristics, speed of their movement and other sources.

The main land transport, connecting the settlements of the Komi Republic with the centers of municipalities, is motor transport.

The state network of public roads is divided into federal – within the boundaries of the republic (0.3 thousand km) and territorial – within districts (6.7 thousand km), of which 0.9 thousand km of roads are dirt roads [1]. Most settlements have local dirt and winter roads.

Figure 2 shows that the settlements with year-round accessibility are covered by a route network; the settlements are compactly located and have ferry and pontoon crossings. It is efficient to build local roads with the access to federal and territorial roads leading to regional centers and the capital and railway stations.

The group of settlements with limited accessibility is characterized by the presence of river obstacles that require maintenance of

pontoons, ice crossings, the purchase of ferries, boats, boats and by a very low level of development of the transport network (predominance of winter roads). This is a rather large group that needs investment support for infrastructure equipment of its territory. The settlements with discriminatory accessibility are characterized by a great length of winter roads, a lack of river crossings, aggravating the socio-economic situation of the population. This is the most remote settlements that require significant financial investments in the transport network.

Figure 3 discloses transport discrimination of the population in Ust-Tsilemsky (17 hours), Vuktylsky (15 hours), Usinsky (12 hours), Pechorsky (11 hours), Izhemsky (10 hours), Koygorodsky, Ust-Kulomsky, Intinsky, Udorsky and other districts.

To range districts by the types of transport accessibility we have used the time periods, characteristic of the Komi Republic (*table*).

Optimal transport accessibility implies the possibility to establish closer cultural and economic ties, joint use of resources and social infrastructure. High transport security is ensured by available railways and highways, good bus and other transport service, location of many settlements near the roads.

Acceptable transport accessibility involves the possibility to develop services and production. This group is characterized by a relatively well-developed network of surface roads. It includes the municipalities located near the railway and a small number of remote settlements. It demands the maintenance of the roads leading to highways and improvement of bus service.

Figure 2. Transport accessibility of settlements in the Komi Republic

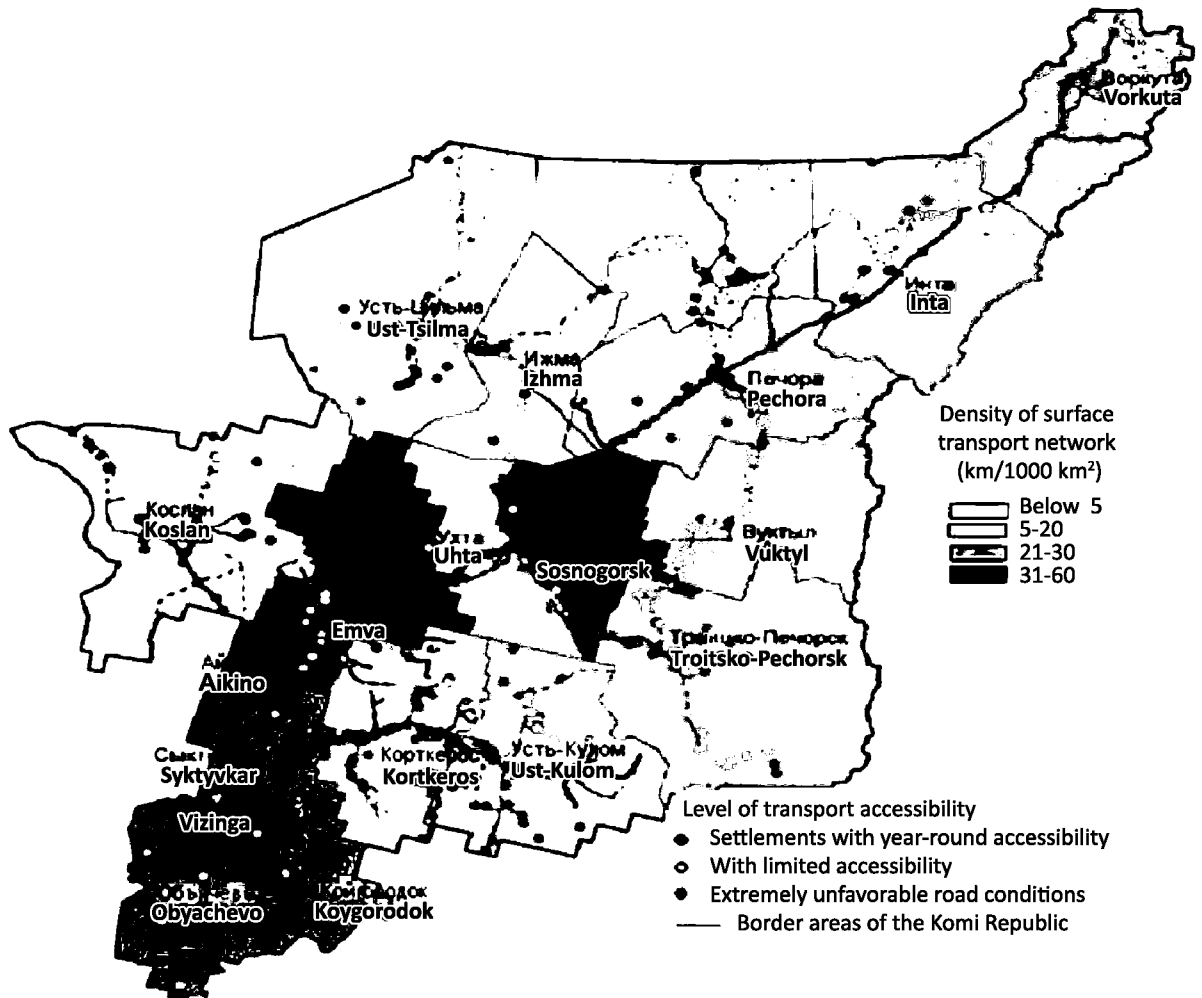
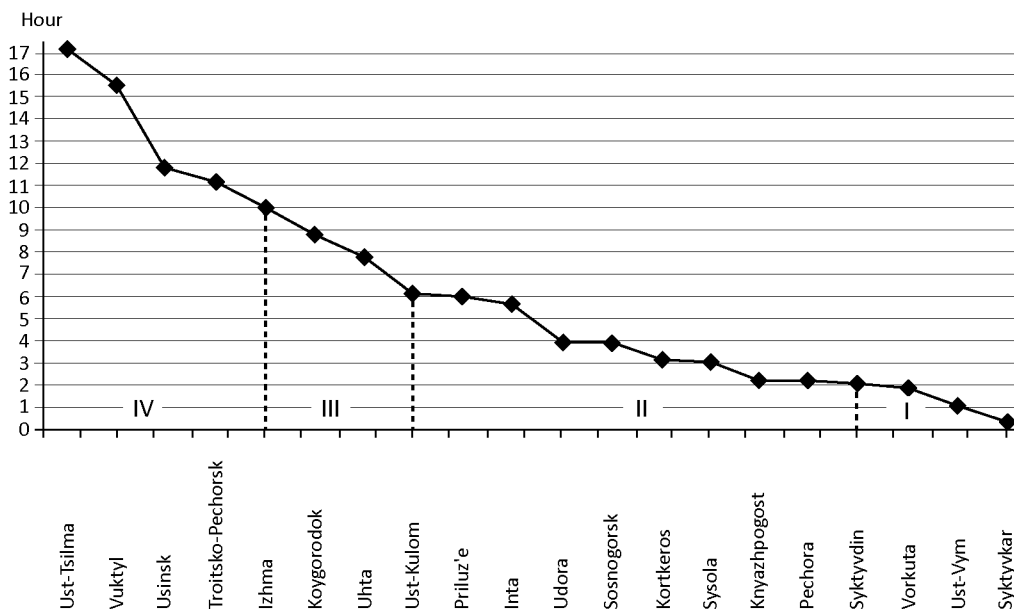


Figure 3. Weighted average cost of time required for the population's movement within certain districts of the Komi Republic



Type of transport accessibility

Weighted average cost of time required to get to the center	Accessibility	Type
0.1–2 hours	Optimal	I
2.1–6 hours	Acceptable	II
6.1–10 hours	Limit	III
More than 10 hours	Discriminatory	IV

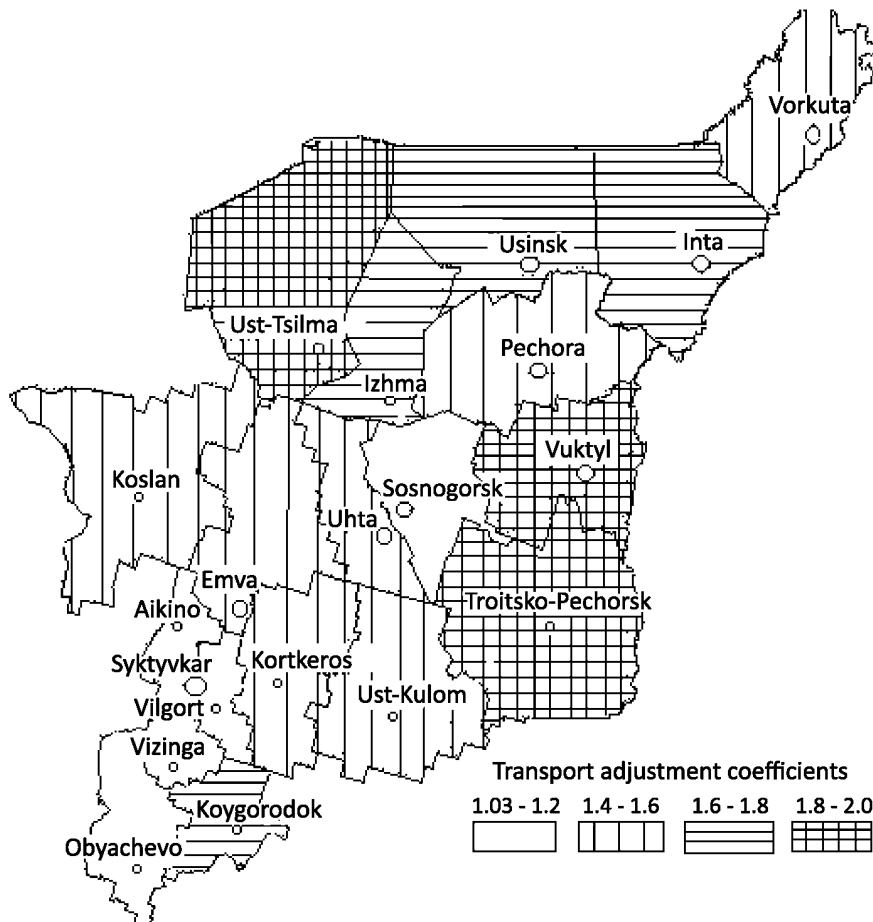
Limit transport accessibility presupposes a 6–10 hour time interval to get to the regional center. It is rural areas located far from the settlements. The most remote settlements of the municipality belong to the group “discriminatory accessibility” (10–18 hours).

The decrease in living standards in rural areas, rise in ticket prices, reduction and initial lack of bus routes, poor road conditions make it difficult for many villagers even to

get to the regional center. And therefore it is important to develop all rural settlements regardless of their type and the number of residents and select key rural settlements, centers of social services.

As it has been noted, the differentiation of transport provision areas can be used for budgetary control and distribution of funds, allocated by the Fund of financial support for municipalities.

Figure 4. Transport adjustment of the potential cost of public services in the municipal districts of the Komi Republic



The rise in the cost of public services is calculated by means of the ratio of transport security $K_i = (1 / T_i)$, according to the formula:

$$K_i^{increas.} = 1 + T_i \times (1 / T_{i\ max}) .$$

Figure 4 reveals that within the transport adjustment of the potential cost of public services in the municipal districts of the Komi Republic amounts to 1.03–2 points. The coefficients of transport provision and

transport adjustment of budget services value have been calculated at the request of the Ministry of Finance in order to improve budgetary control and distribution of funds allocated by the Fund of financial support for municipal formations of the republic.

The quantitative assessment of transport security in the region has resulted in the following conclusions:

- the relevance of the assessment results is high due to the impact, which the rise in

transportation prices has on the volume and cost of providing services to the population;

– the first assessment of the transport accessibility at the level of settlements that considers the influence of obstacles (the lack of hard surface roads, the gap in the transport network associated with the river obstacles that results in the limited bus routes and the level of highways) has elaborated on the idea of remoteness and connectedness of settlements within districts of the RF subject; the assessment results have revealed the

predominance of territories with limit and discriminatory accessibility.

It is possible to increase the social status and the efficiency of market processes in the economy of the Komi Republic only with government support for the development of the transport network. The main direction of the transport service enhancement is to strengthen the connection of the settlements with social service centers, villages, district centers, and the latter – with the capital and the nearest railway stations.

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