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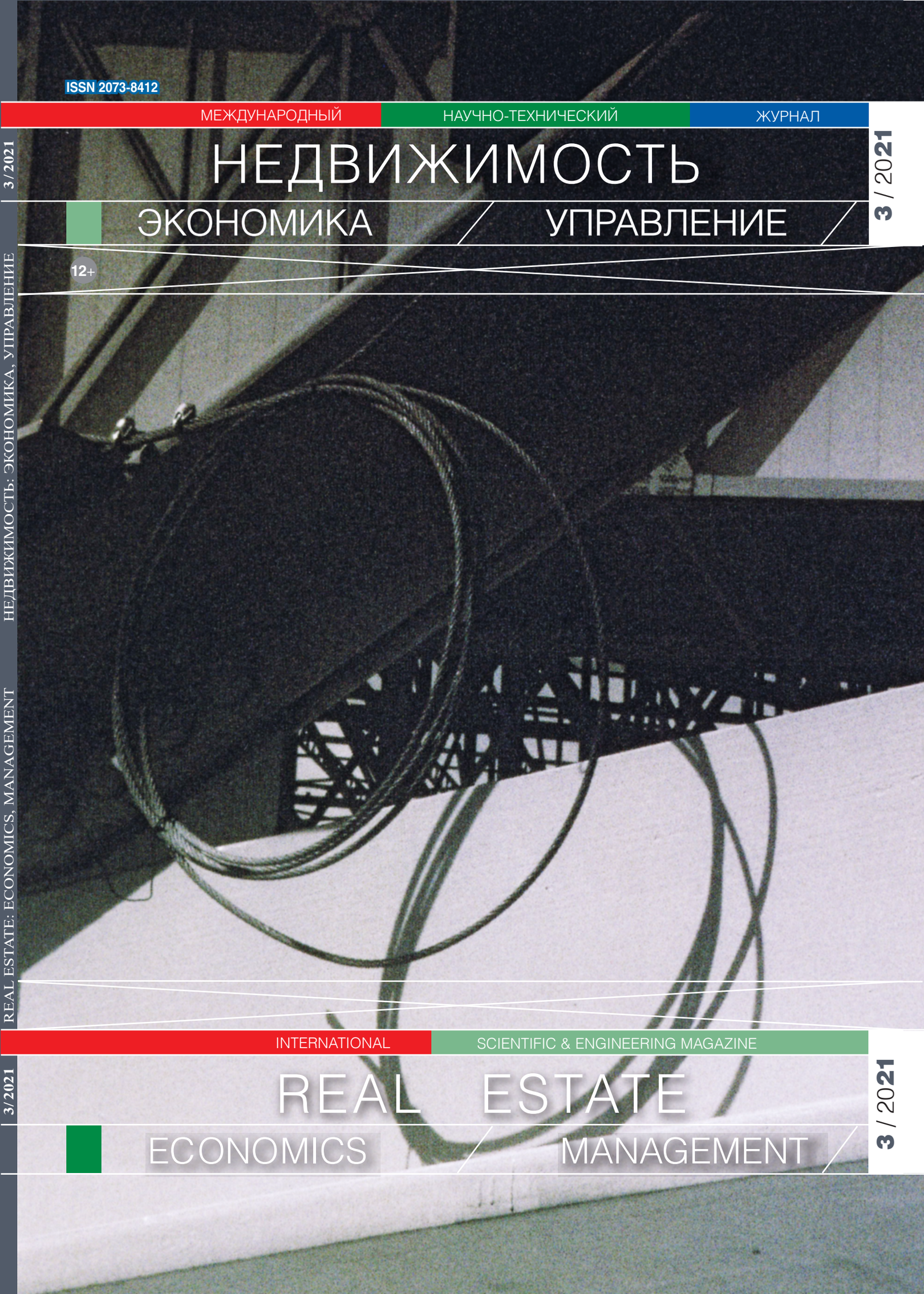
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НЕДВИЖИМОСТЬ

ЭКОНОМИКА / УПРАВЛЕНИЕ

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Уважаемые читатели!

Одним из приоритетных направлений, обозначенных Президентом Российской Федерации В.В. Путиным в обращении к Федеральному Собранию Российской Федерации, является внедрение специального механизма поддержки индивидуального жилищного строительства и обеспечение его широкого применения (пп. дп. 2 перечня поручений от 02.05.2021 № Пр-753д).

Разные виды строительства, в том числе массовое малоэтажное, — процесс чрезвычайно сложный, в котором прямо или косвенно задействовано множество участников. Следовательно, и препятствия на пути строительного процесса имеют самое различное происхождение.

Одна из причин, тормозящих обеспечение россиян доступным малоэтажным жильем, — отсутствие у властных структур четкой политики в части технологического обеспечения строительного процесса. Чиновникам пока не ясно, каким технологиям отдать предпочтение, в результате чего реализуются некие пробные проекты, но массового строительства нет.

Нетрудно понять, что выбор строительной технологии зависит от того, что желательно получить на выходе. В связи с этим возникает вопрос: какие дома нужны в России? Очевидно, что малоэтажный серийный дом должен быть дешевым, быстровозводимым (т.е. состоять из легких конструкций), безусловно, теплым и, наконец, эстетически привлекательным, причем с учетом вкусовых пристрастий потенциальных потребителей. Кроме того, требуются дома долговечные, а в случае их сноса — утилизируемые без ущерба для окружающей среды. Исходя из этого, для массового многоэтажного строительства в России нужно выбирать соответствующие технологии. Но преимущества той или иной технологической схемы легче всего оценить в ходе открытого конкурса среди производителей. В Европе подобные конкурсы проводятся в форме застройки коттеджных поселков. Обычно события развиваются по следующей схеме: администрация города выделяет свободную территорию за пределами существующей застройки. Далее на этом участке различные компании по своим технологиям возводят малоэтажное жилье, а конечный потребитель голосует кошельком. Подобные акции постоянно проводятся в Германии, Австрии, Финляндии.

Фактически государственная поддержка индивидуального жилищного строительства осуществляется как инструмент по решению проблем льготных и отдельных групп населения, использующих при строительстве неэффективные и дорогостоящие технологии. Вводимые в эксплуатацию объекты индивидуального жилищного строительства с привлечением бюджетных средств не всегда отвечают современным требованиям и осуществляемым затратам. Используя зарубежный опыт, с целью развития индивидуального малоэтажного жилищного строительства необходимо обеспечить государственную поддержку внедрения современных технологий строительства, отвечающих параметрам финансовой доступности строительства, комфортности, долговечности, экологичности, энергоэффективности и т.п.

Реализация эффективного развития малоэтажного индивидуального строительства предполагает организацию ежегодных выставок-продаж с целью формирования предложений для индивидуальных заказчиков, реализации государственных программ индивидуального малоэтажного строительства для отдельных категорий лиц (пострадавших от природных катаклизмов, аварий техногенного характера, государственных служащих и муниципальных служащих и т.п.), а также формирования конкурентного рынка предложений застройщиков в рамках вышеперечисленных критериев.

Реализация предлагаемого проекта развития индивидуального малоэтажного строительства в России предполагает участие в его реализации как федеральных, региональных органов, органов местного самоуправления, так и негосударственных организаций (строительных, банковских и т.п.).

Заметная роль в этом процессе отводится доступному малоэтажному жилью. Предполагается, что развитие сферы загородного малоэтажного домостроения поможет решить целый комплекс жилищных проблем в регионах и тем самым создаст предпосылки для их развития.

Вместе с тем, темпы строительства малоэтажки пока далеки от желаемых. Почему это происходит? Какие барьеры стоят на пути строительства массового малоэтажного жилья? Эти и другие проблемы будут рассмотрены в данном номере журнала.

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жилищной политики отсутствует, однако в публичных информационных ресурсах этих стран имеют место наборы показателей, способных отразить такую оценку На текущий момент цели и задачи, сформированные в рамках государственной политики развития жилищно-коммунальной сферы, в полном объеме не выполняются

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Innovative approaches in the field of low-rise housing construction and digital transformation of investment and construction activities as the main focus of the All-Russian Housing Congress

This July, All-Russian Housing Congress brought together about five thousand participants, including specialists in housing construction, real estate business, mortgage lending, information technologies, interregional transactions, education and training in the real estate market. Among the most relevant topics, discussed by the researchers and practitioners, the following ones can be highlighted: at present, the market of standard private housing construction is not mature enough, construction is mainly performed by the citizens themselves; the mortgage market, focused on this segment, is in its infancy; there is a need to introduce a standard for the integrated development of territories in respect of low-rise suburban housing construction, as due to its absence banks and investors do not have clear guidelines for assessing the investment attractiveness of projects; innovative approaches in the field of low-rise construction, latest methods of digitalization of investment and construction activities at all stages and levels of the project life cycle; developing a reliable mortgage lending mechanism for this market segment; adoption and implementation of up-to-date standards for the integrated development of low-rise construction areas. According to the co-authors, the above-listed topics encompass the main directions for the development of this industry.

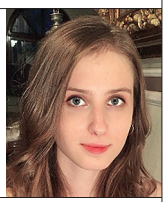
Keywords: *low-rise construction, digital transformation, All-Russian Housing Congress, private housing construction, standard for integrated development of territories*



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On June 11, 2021, All-Russian Housing Congress[1], one of the most important events in the Russian real estate market, completed its work. It brought together about 5,000 participants. During five days of the Congress work about four hundred events were held; they were focused on housing construction, real estate business, mortgage lending, commercial and foreign real estate, information technologies, advertising and public relations, interregional transactions, education and training in the real estate market, as well as many other relevant topics. About five hundred participants spoke at the event; many master classes and training sessions were conducted by leading business trainers and practitioners of the real estate market.

The event was attended by the representatives of major development companies, leading real estate agencies and Russian banks. Presentations were delivered by the representatives of high-profile players in the Russian investment and construction market, including Etalon, Samolet, Setl City, Glavstroy, YugStroyImperial, Kortros, Brusnika, Strana Development, KVS, TEKTA GROUP, RBI holding company, AVA Group, and many others.

In addition to the Congress work and exchange of opinions at the conferences and seminars, participants could get to know the latest industry trends at more than forty specialized exhibition stands (Fig. 1).

The conference "Low-rise suburban construction: investments, development, marketing" aroused great interest among numerous Congress participants. At the event, representatives of public organizations, government agencies, banks, as well as practicing builders and developers from different regions of Russia could discuss the most relevant development issues of this market segment.

Ilya Ivanov, Head of the Mortgage Market Development Department, DOM.RF JSC, spoke in detail about the existing and prospective instruments for the support of private housing construction in the Russian Federation. The summary of national project "Housing and Urban Environment"[2] specifies its goal to increase the commissioned area of private housing in the sector of private housing construction (PHC) from 35-39 million to 50 million square meters by 2030 (Fig. 2).

The demand for private housing is high enough: according to the polls, conducted by the All-Russian Public Opinion Research Centre[3], about 70 % of Russians would like to live in their own houses; the COVID-19 pandemic and remote working have boosted the demand for private housing [1]. However, substantial constraints depress the demand in this segment in comparison with apartment residential buildings (ARB) (Table).

Thus, we can make a conclusion that at present the market of standard liquid private housing is not mature, the amount of construction work, performed by the citizens, prevails (70 %, according to

1 About the Congress. URL: https://sochicongress.ru/congress/about _congress.html

2 Passport of the National Project "Housing and Urban Environment". URL: http://government.ru/info/35560/

3 Poll VTsIOM and ДОМ.РФ "The most demanded characteristics of housing in 2020" URL: https://дом.рф/analytics/polls/



Fig. 1. Interaction at the Congress stand

the speaker). Among the main reasons for this state of affairs, it is necessary to highlight the following points:

- Infrastructural development of land plots is cost intensive and involves a time-consuming approval process (commercial projects cannot endure the infrastructure load on their own, while the programs in progress, for example, "Stimulus"[4], are ineffective, since it is more profitable to co-fund the infrastructure of ARB than AHC);
- the lack of guarantees issued to the participants of the AHC market makes it untransparent and highly risky (there are no quality control and construction deadlines, construction facilities are not standardized, no project documentation is available, obsolete technologies are often used, contracts are not subject to registration in the Federal Register, and payments to developers are made without using escrow accounts);
- the mortgage market is not sufficiently developed (there are no public-access low-interest mortgage lending programs, PHC interest rates are 2…3 % higher than the those applied to ARB, credit risks and operating costs are high);
- there are no regular state support measures (unlike the implementation of ARB projects).
- Against this background, JSC "DOM.RF" suggests the following set of actions:
- Standardization of houses:
- involvement of specialized technical representatives of the construction owner and developers;
- using a library of standard design and land-use planning solutions;
- stimulation of the use of modern energy-efficient, energy-saving technologies and materials that reduce the negative impact on the natural environment.

Enhancing the protection of citizens and creditors:

- Norms and mechanisms, specified in Federal law 214-FZ[5] (use of escrow accounts, registration of agreements in the Russian State Register, protection of rights of citizens and banks, consolidation and management of common property in settlements) should be applied to PHC.

Getting banks to work with PHS:

- applying state-subsidized mortgage programs to PHC;
- standardizing the PHC market to increase the liquidity of collaterals.

Subsidizing the infrastructural development by means of:

- issuing infrastructure bonds;
- adopting independent regulations that govern subsidies for PHC.

Increasing market transparency through digitalization of customer interaction tools and services:

- submitting PHC project information to the Unified information system of housing construction (UISHC)[6];
- implementing the "PHC Construction" customer interaction tool within the framework of the "Digital construction" tool[7] designated for the conversion of principal operations and services to the electronic format.

In his report, Anton Minedzhyan, Head of a real estate development company, specializing in low-rise construction, addressed the need to introduce a standard for the integrated development of territories in terms of the private housing construction, since the absence of such a standard deprive banks and investors of any clear guidelines for evaluating the investment attractiveness of projects, and it takes much more time for consumers to make decisions.

The practice of development of suburban and rural areas, market research and analysis of sales and consumer requests, the long-term experience of living in cottage villages that have ready houses for sale, the analysis of the international experience [2, 3], effective technical standards of engineering support, as well as effective urban planning standards[8], if taken as a whole, are efficient enough: Russia has learned to implement ergonomic, liquid, effective projects of low-rise suburban residential buildings. However, according to the speaker, the experience of the professional community alone

4 Execution of FB under the program "Stimulating programs for the development of housing construction in the constituent entities of the Russian Federation" — Official site of the Ministry of Construction of Russia. URL: https://minstroyrf.gov.ru/docs/74283/?sphrase_id=1325805

5 On participation in shared construction of apartment buildings and other real estate and on amendments to some legislative acts of the Russian Federation (with amendments and additions) : Federal Law of December 30, 2004. No. 214-FZ.

6 Unified information system for housing construction. URL: https://наш.дом.рф/

7 Passport of the national project "National Program" Digital Economy of the Russian Federation (approved by the Presidium of the Council under the President of the Russian Federation for Strategic Development and National Projects, Minutes of 04.06.2019 No. 7).

8 SP 30-102-99. Planning and development of territories for low-rise housing construction / Set of rules dated December 30, 1999 No. 30-102-99.

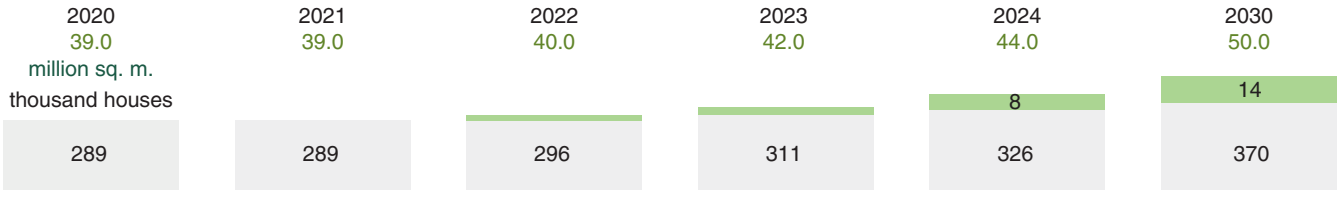


Fig. 2. Planned increase in commissioned housing in the private housing construction sector

is insufficient for the well-balanced work and synchronization of the efforts of the construction process participants [4]: a stable sector of the economy also needs a legal framework, as well as research and economic substantiation.

However, there are no standards for comfortable modern family homes (for example, high-speed Internet, security and access control systems); there are no criteria for the sufficient liquidity of projects on the integrated development of suburban areas.

What should be done at the stage of inception of the institute of integrated development of PHC territories? According to the speaker, supported by many practitioners who attended the session, a more detailed rate setting system is needed, binding legal documents shall be adopted by the state, benchmark-setting teaching standards must be developed and disseminated. It is necessary to determine:

- the width of streets in a particular location;
- the difference between a summer cottage project and a cottage village for the year-round use;
- parameters determining the feasibility of developing a territory for the year-round residence and those of a seasonal (country) residence;
- features of new suburban and rural areas of integrated development;
- the difference between the parameters of an economy-class project and a premium class project;
- methods of regulating uniformly built-up areas using a range of fasade colour solutions.

The speaker informed the audience that the Ministry of Construction of the Russian Federation, acting together with the Russian State Register, was establishing the All-Russian Institute of Spatial Planning at its subordinate research organization TsNIIP. This institute should develop appropriate projects for regions that lag behind in terms of the area of commissioned housing, since they have no funds for the development of urban planning documents. In addition, this institute will be engaged in the compilation of a library of standard projects that will be used in different climatic zones of the country after minor revisions.

Proceeding from the results of this part of the conference, a decision was made to submit the following proposals to the Ministry of Construction of the Russian Federation in terms of the development of a standard that will govern the integrated development of PHC territories:

- the composition of the standard: the general part and the local (regional) part;
- guidelines for the breakdown of housing construction projects (standard, highly comfortable, top-category ones);
- project typology guidelines (suburban, rural, country house territories);
- standardization of the use of technological innovations (communications, video surveillance and access systems, “smart city”, “smart housing and utility services”);
- setting the parameters of walking and transport accessibility of amenities that are in demand in the modern society (co-working spaces, cafes, eco-farms);
- development of standards for architectural and stylistic solutions.

The majority of the Congress participants believe that digitalization of nearly all business processes must be and is becoming another direction for the development of investment and construction activities in the country. Construction digitalization is gradually developing into full-scale digital transformation of the construction industry. In addition to known BIM technologies[9] [5, 6], which are widely used in design, several Congress participants presented cutting-edge digital ecosystems of the full cycle [7], allowing to encompass nearly all stages of the life cycle of an investment and construction project.

Irina Rudakova, Vice President of the International Association of Housing Construction and Mortgage Funds[10], expert.ipoteka project director (mortgage lending education activities in social networks), presented innovative digital platform Banki.shop[11] as a modern tool for the prompt and highly efficient interaction between a client, a bank and a developer in respect of the purchase of real estate, including low-rise construction facilities.

According to the speaker, developers of low-rise building projects have started connecting to the Banki.shop digital platform. Nevertheless, all platform users (for now, these are only professional market players) have access to low-rise housing construction facilities for sale and can select banks to issue mortgages; hence, their clients get an opportunity to purchase houses and choose the most optimal mortgage lending programs (that meet the specific needs of a client). In fact, this leads to an increase in the demand for the developer's product among the intermediaries connected to the platform.

The platform is attached to the regularly updated database of mortgage programs offered by more than 60 banks, of which 34 banks have low-rise construction programs, 30 banks finance the purchase of ready-made houses, 23 banks finance the purchase of

9 BIM and IoT are the Internet of Things. Association of organizations for the development of information modeling technologies in construction and housing and communal services. URL: https://bim-association.ru/bim-iot-1

10 Official website of the association and Housing Funds and Mortgage. URL: http://npmaif.ru

11 Banki.shop. URL: https://banki.shop

Characteristics of PHC and ARB markets

	PHC	ARB
Housing stock	1 bln m^2 (42 % in the cities)	2.7 bln m^2 (89 % in the cities)
Commissioned housing stock	32…39 mln m^2 (260–290 thousand houses)	40…49 mln m^2
Standardization	Low • No regular land-use planning • Heterogeneous designs of houses	High • Construction concentrated in the cities • Liquid market of standardized apartments
Share of mortgage transactions	< 2 %	> 50 %
Share of project-funded construction	< 0.1 %	> 50 %

townhouses and 4 banks finance the construction of private houses. The platform has digital scoring modules that use 168 parameters and help to select mortgage solutions out of 500 loan programmes. In each region, the platform is customized to the specific features of local banking programs (including social programs and new mortgage products), and it takes into account the previous experience of specialists working with mortgage programs and specific bank managers.

According to the speaker, the project financing of private housing construction encompasses two vital issues: they are timely construction and timely selling of constructed houses before the expiry of the credit term. Therefore, the proposal consists in using all new available tools that will reduce the time for making a deal, as well as provide a reliable lending mechanism for individuals. Such tools include the Banki.shop platform, which not only offers a selection of new mortgage programs, but is also able to ensure interaction between participants of construction, sale and lending processes all over the Russian Federation.

CRM platform Banki.shop is a hardware and software system, registered by the Federal Service for Intellectual Property (Rospatent), that allows all registered users — professional participants of the real estate and mortgage lending market (developers, realtors, brokers) — to use artificial intelligence to select loan products that fit the needs of a client and ensure a 93 % likelihood of a positive decision, send generated applications to partner banks, monitor and record submitted applications, conduct checks on individuals and real estate items, etc.

As the speaker said, presently, the system is being proactively introduced in the regions of the Russian Federation, that have reputable unions of real estate agents. The Banki.shop service is already in operation in the following regions: St. Petersburg, the Leningrad Region, the Moscow Region, the Khanty-Mansi Autonomous District (Surgut), the Chelyabinsk Region, the Novosibirsk Region, the Samara Region, the Saratov Region, the Krasnodar Territory (Sochi), the Rostov Region, the Tyumen region, the Nizhny Novgorod region, the Republic of Crimea and the city of Sevastopol. 1,600 users are already connected to the platform. In the near future, all regions of Russia, as well as the CIS countries, can be connected to the platform.

Therefore, we can make a conclusion that innovative approaches to low-rise construction, demonstrated at the Congress, latest methods of digitalization of investment and construction activities at all stages and levels of the life cycle of development projects, including the organization of their investment support [8], the development of a reliable mortgage lending mechanism for PHC projects, the adoption and implementation of modern standards towards the integrated development of low-rise construction areas represent new principal directions for the development of the industry in the coming years.

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Инновационные подходы в сфере малоэтажного жилищного строительства и цифровая трансформация инвестиционно-строительной деятельности — основные акценты Всероссийского жилищного конгресса

В июле текущего года состоялся Всероссийский жилищный конгресс, собравший около 5 тыс. участников — специалистов по жилищному строительству, риэлтерскому бизнесу, ипотечному кредитованию, информационным технологиям, межрегиональным сделкам, образованию и подготовке кадров на рынке недвижимости. Среди наиболее актуальных тем, обсуждавшихся учеными и практиками, можно выделить следующие: в настоящее время рынок стандартного индивидуального жилищного строительства не сформирован, преобладает строительство собственными силами граждан; рынок ипотеки в сегменте находится в зачаточном состоянии; назрела необходимость внедрения стандарта комплексного развития территорий для малоэтажного пригородного жилищного строительства, так как вследствие отсутствия такого стандарта банки и инвесторы не имеют четких ориентиров для оценки инвестиционной привлекательности проектов. Инновационные подходы в сфере малоэтажного строительства, новейшие методы цифровизации инвестиционно-строительной деятельности на всех стадиях и всех уровнях жизненного цикла проектов, выстраивание надежного механизма ипотечного кредитования в данном сегменте, принятие и внедрение современных стандартов комплексного развития территорий малоэтажной застройки являются, по мнению авторов, главными магистральными направлениями развития отрасли.

Ключевые слова: *малоэтажное строительство, цифровая трансформация, Всероссийский жилищный конгресс, индивидуальное жилищное строительство, стандарт комплексного развития территорий*

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On the issue of revitalization of urban real estate in the post–COVID world

The structural labor market crisis, being one of the main consequences of the COVID-19 pandemic, caused a significant correction in the real estate sector. Given its well-known features, state support measures are aimed at preventing stagnation in the real estate development. The loss of investment attractiveness by infrastructure-focused projects not only hinders the market recovery, but also deprives the economy of a promising advantage due to less intensive investment activities, reducing the number of new well-paid high-tech jobs associated with the operation of commissioned construction projects.

The pandemic adjusted urban planning plans that now take account of the suburban migration of the working urban population. The study allowed to systematize the factors influencing the business activity in suburban construction. State support measures are crucial there; they range from the project funding for low-rise buildings to the expansion of mortgage programs that support the demand for realty developed outside of urban areas.

A decline in the population density in the historic centres of cities also requires a new wave of occupancy, that ranges urban residents by the income, marital status, professional structure, forms and types of employment, etc.

Having studied real estate restructuring trends, shaped by the national development priorities in the context of the coronavirus crisis, the author added new urban space vitalization requirements, taking into account the synchronization of settlement "counter waves", new housing elevators, the technological renewal, etc., that will bring in new resources, among which human capital becomes a development trigger.

Keywords: *urban space, historic centre, structural factors, vitalization, real estate, suburban construction, problems and challenges of the pandemic*



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One of the most important consequences of the COVID-19 pandemic is the structural crisis that has been underway in the labor market of developed and developing economies for quite a long time. Statistics showed a steady increase in the corporate labor productivity and profits; however, real wages remain unchanged or even decline. In fact, the cost of human capital has remained unchanged in recent years, while production capacity has increased its potential. The analysis of the situation, conducted by the University of Denver, showed that these factors, coupled with the pandemic, significantly aggravated the income inequality, both within and between the countries [1]. In almost every country, the share of the middle class has declined, breaking all record lows. State support measures have turned from a stimulating factor into a necessity, due not so much to the problem of development as to the task of survival [2, 3].

The growing influence of state regulation and state support cannot but affect the emerging trends of the post-covid development. The inevitable inflation of the productive capital, which manifests itself in the sale of assets and job cuts, causes the revaluation of all types of assets, including real estate, industrial and raw materials, which a straight way to a slowdown in business and investment activities [4]. As a result, the state of any country takes measures to improve the economic environment, primarily by issuing emergency loans to businesses and local authorities and developing infrastructure construction, mortgage programmes, etc. It is quite obvious that regardless of where public investments will be directed (the construction of roads, schools, kindergartens or stadiums), they will create new jobs, which will replenish the income of citizens, and, consequently, increase their purchasing power, which, as we know, precedes the growth phase of any business activity.

A fundamental study by professor Haider Hahn [1] shows that investments in green development projects actually create more jobs than other types of undertakings. Thus, "green" investments outstrip the number of jobs created by investments in non-military sectors of the national economy by 1.5 times, and in the defense complex — by 2.2 times. Given that nowadays construction and real estate serve as development triggers in the Russian Federation [5], the "greening" of construction technologies and the living space in general is an emerging trend in sustainable development. First of all, it deals with the development of cities that refine their development goals, revise their programmes and projects, encourage large companies, including those focused on real estate, by improving the terms of debt servicing and providing loan-focused and financial assistance.

The expert community is sure that the main beneficiaries of the pandemic include business service providers, public catering, the travel industry and the construction sector[1]. Meanwhile, the global community has seen a steady increase in the housing availability over the past 10 years, which allows to treat the housing segment of the real estate sector as the most viable constituent of the national economy. This is especially true for historically developed cities. Their population growth contributes to the active development of the service industry, the social security industry, public spaces, etc. Meanwhile, the pandemic has identified a number of problems in the urban real

1 Gaidar Forum — 2021 "Russia and the World after the Pandemic". URL: https://gaidarforum.ru/ru (rus.).

estate development. The analysis carried out in Kazan, Russia, has shown that:

First, in the days of the coronavirus crisis in Kazan in 2020, due to the 40 % level of the office use, the closure of the majority of urban hotels and all shopping centers at the peak of the virus, as well as the maximal use of remote employment opportunities, the historic centre of the city "depopulated". The temporary relocation of citizens outside the city reduced the population of its historic centre by 35 % of the total number of citizens residing there. This led to the closure of catering establishments, small convenience stores, as well as, even in the conditions of a return to the regular lifestyle, the break-even point of shopping centres. In general, the population density of the historic centre of Kazan decreased from 30 residents per hectare to 24 residents per hectare, which is 1.6 times below the optimal population density in a large city [6–8]. This means that we cannot expect a high efficiency of investments in the infrastructure or operating cost savings. Also, according to foreign scientists, indicators of accessibility, connectivity, permeability and trafficability of the urban environment [9–11], as well as the level of manageability, environmental quality and socio-cultural development will be significantly lower in the cases of excessively high and low population density. There is no doubt that the current situation reduces the economic security of the key functions of the territory (jobs) in the centre of Kazan. The balance between different types of real estate is disrupted by excessive retail, entertainment, hotel and office spaces. Thus, the potential of new housing construction in the historic centre of Kazan has increased and, according to the experts, it has reached 700-800 thousand square meters.

Secondly, the pandemic has brought about some opportunities for the suburbs of Kazan. Remote employment, that has become possible due to the availability of medical, education, culture, entertainment and sports services, as well as a comfortable urban environment, has boosted the demand for low-rise residential buildings close to the nature and within the walking distance from commercial real estate facilities, especially those in the historic centre. Especially promising in this regard is the intensification of suburban low-rise construction. It is not by chance that the suburban real estate market turned out to be the development driver in Tatarstan. Remote employment and foreign travel restrictions have given rise to the need for a "country house" lifestyle. But due to the influence of a number of factors, the demand "is down". First of all, market factors stepped in. Thus, purchase prices for suburban real estate went up by an average of 20 % in the Kazan agglomeration in 2020 for the two main reasons:

1) the limited supply of low-rise real estate. Almost all items offered for sale in the existing settlements and those in construction are already sold, and many new projects were frozen during the pandemic and the lockdown;

2) the analysis showed that the cost of construction increased due to a combination of factors: rising prices for building materials (for example, wood prices went up two-fold as a result of the growing demand in the United States, China and Europe) and the workforce (temporary workers from neighboring countries, who left for places of their permanent residence, could not come back) [12, 13].

In addition, it is not possible to forecast cash flows in an uncertain environment. Consequently, risks are growing for all suburban real estate market players. How the anti-covid campaign will develop, how large the deferred demand will be, what the real level and dynamics of the household income is, which of the customers and contractors will remain on the market, what scale of bankruptcies is possible, etc. –– these questions can only be answered by the practice itself[2, 3].

The need for the technological substitution will have a significant impact on development trends in suburban construction in the post-pandemic recovery period, since more expensive construction materials (metal, wood, etc.) will be replaced by the new ones that require the application of new construction technologies.

There are almost no large high-tech developers in Kazan. This fact will complicate construction management and quality control. They are not expected to appear too soon, and conversion of multi-level construction technologies is impossible. Hence, appropriate policy measures are needed. However, state support measures are clearly limited, both in terms of the formal nature of mortgage programmes, subsidiary support for suburban construction, and due to the actual lack of project funding. The development of project funding mechanisms for suburban low-rise construction will link the tools of project funding and mortgage lending.

In addition, the insufficiency of social real estate that must accompany residential real estate (kindergartens, schools, hospitals, etc.), as well as the poorly developed transport infrastructure reduces the liquidity of constructed facilities. In this regard, it is obvious that it will be impossible to create a comfortable suburban environment without budgetary allocations.

From the point of view of the quality of low-rise construction, we note that the low level of its industrialization, coupled with the multiplicity of small developers, does not allow to build an effective quality management system focused on suburban real estate.

Thus, suburban construction that meets the needs of the population, will require a system of state support measures in order to maintain effective demand, a transfer to industrialized construction, and create the infrastructure for a comfortable suburban environment.

In general, in this context, the target development focus of the real estate sector is reduced to the vitalization of the living space. However, it is necessary to bear in mind that deserted centres of historic cities, on the one hand, reduce the load on the transport infrastructure and physically outdated utilities, and, on the other hand, they affect the economic efficiency of commercial real estate items due to the lower commodity turnover and demand for services. The author has identified another regularity: empty buildings and structures have revealed obvious imbalances and pathogenic urban zones (Fig.). Before the crisis, they were unclear. Among them are:

a) the functional duplication of several types of real estate facilities. Thus, chain grocery stores were often located in close proximity, or beauty parlours even shared the same buildings. This is a reason to adjust urban development plans;

b) the deterioration of a number of real estate facilities, including historic housing and offices in large cities, which requires the demolition of dilapidated buildings and the refinement of the major repair programme;

c) the littering of certain areas in city centers (gutters, park areas) that need an improvement to be followed by the unlocking of their hidden investment potential;

d) an excessive number of cultural and entertainment facilities in certain "spots". In this regard, functional restructuring becomes an essential part of refined urban development plans;

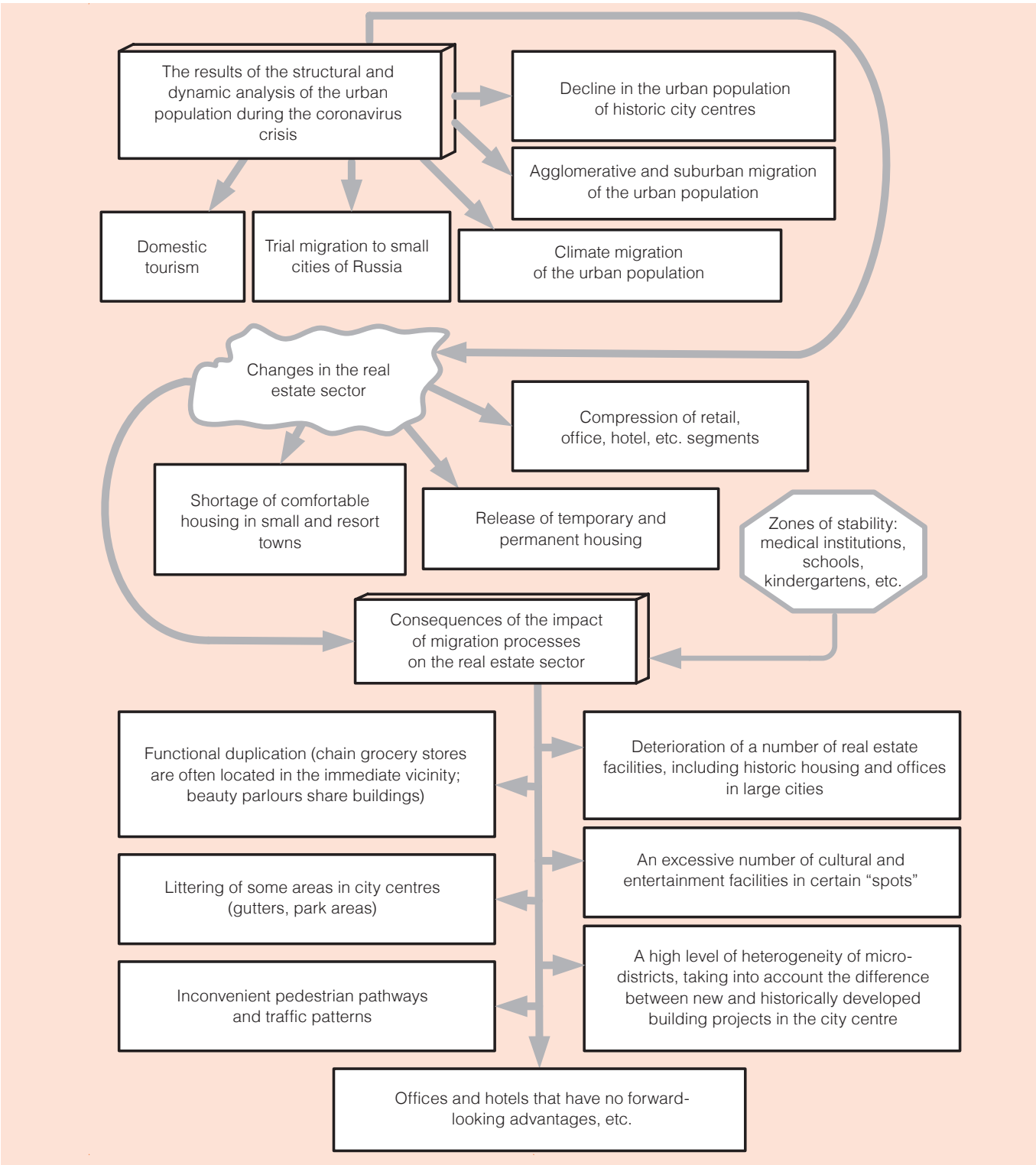
2 The impact of coronavirus on the construction industry. URL: http://konkir.ru/articles/stroitelstvo/vliyanie-koronavirusa-na-stroitelnuyu-otrasl-anton-moroz

3 COVID-19: how the countries of the world support the construction business. URL: https://realty.rbc.ru/news/5e8efebc9a79471ea1ab0065

e) inconvenient pedestrian pathways and traffic patterns. The expansion of the Big Kazan Ring and the construction of the ring railroad will relieve the traffic and significantly reduce the travel time and transport accessibility;

f) a high level of heterogeneity of micro-districts, which will need measures to increase the housing per capital in Kazan from 27 m² per person in 2020 to 35 sq. m. per person in 2035;

g) offices and hotel offices that do not have forward-looking advantages, etc. The idea is either to convert them into residential housing, or to use this territory for the construction of small-size rental housing in a historical settlement. It is advisable to design apartments having few rooms (one, two bedrooms) as rental housing, so that the apartment area per capita reaches 18…24 m² per person in the estimated period up to 2035. The



The impact of the coronavirus on the real estate sector of historically formed cities (developed by the author)

appropriateness of rental housing in the city centre is confirmed by the lower level of availability of social and cultural facilities close to this type of housing and the minimal areas of yards, which mean s higher construction density and the efficient use of the territory. Calculations have shown that 60…90 thousand m² of municipal rental housing can be accommodated in a historic settlement if it is funded by the municipality and subsidized by the federal and regional sources (for example, DOM.RF). From the point of view of territorial localization, these facilities can be constructed along the lanes of the Big Kazan Ring and the planned Ring railroad, since groups of such houses feature higher density due to smaller courtyards and the lack of such requirements as the accessibility of childcare institutions.

Therefore, the vitalization of historical centres cannot be reduced to the supplementation, completion, extension or reconstruction of existing items of real estate. It involves the rethinking of urban functionality that requires the reconstruction of industrial buildings and potential resettlement to new buildings and areas that are rebuilt and adapted for housing. The idea is not to neglect the buildup of several floors. About 200 buildings of the historic settlement have the potential for adding floors (approximately 1–3 floors) up to 15…17 m (4–5 floors), which is cheaper by about 30 % in relation to new construction, that can become the subject of the initiated Programme of major repairs and buildups.

It was the period of the coronavirus crisis that allowed to understand the significance of the "human factor". Provided that the priorities of national development and parameters of the current budget policy remain unchanged and support the directions of structural maneuvers, urban spaces should not only be comfortable, but they should also be able to develop Man as the main resource of their development.

With regard to historically developed cities, we believe that the pandemic has only reinforced the earlier trends. In particular, difficulties are associated with residing in the city centres characterized by heavy traffic, developed office, retail, sports and entertainment real estate. This requires the revitalization of urban centres, which in turn gives rise to the need for the scientific justification of the processes of revitalization of urban centers and new waves of settlement.

The analysis and suggestions that take account of particular urban planning factors, allow to add a number of requirements needed to vitalize the space of historic cities. They include:

1) the synchronization of processes of urban residential and related real estate development, if built-up areas have identical or nearly identical functional content;
2) the technological renewal of multi-storied and low-rise construction towards maximal environmental friendliness of construction of buildings, structures, as well as the industrialization of construction processes;
3) the implementation of residence improvement mechanisms encompassing small-size rental housing, countryside cottages and urban-type estates;
4) the organization of a new wave of settlement in the historic centres of cities, with regard for the income inequality and differentiation of the urban population according to the age, marital status, employment, etc.;
5) the resource competitiveness, investment attractiveness and stimulating nature of revitalization processes.

The revised requirements for the vitalization of urban spaces do not exclude the equalization of comfort levels and long-term advantages (functional content, infrastructure support, transport accessibility, etc.) in all urban districts, and they should also have access to the open and interactive mode of urban real estate vitalization processes implemented using information and communication technologies.

These requirements, formulated by the author, have systematized the creation of an investable environment in historically developed cities. Nevertheless, these requirements serve as a kind of a nucleus, which can be supplemented depending on the specific situation in each city. Triggers of revitalization processes may include traveling or medical services, art spaces or sports schedules, etc. Accordingly, there emerges a different type of a resource attraction mechanism, in which the decisive role is played by the human capital, which is in turn "attracted" to the points of investment and business activities.

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К вопросу о ревитализации городской недвижимости в постковидном мире

Структурный кризис рынка труда, будучи одним из основных последствий пандемии COVID-19, вызвал существенную коррекцию в сфере недвижимости. Учитывая общеизвестные особенности последней, меры государственной поддержки направлены на недопущение стагнации развития недвижимости. Потеря инвестиционной привлекательности инфраструктурных проектов не просто затормозит восстановительный рост, но и лишит экономику перспективного преимущества в связи с возникающим вследствие потери инвестиционной активности сокращением создания новых высокотехнологичных и хорошо оплачиваемых рабочих мест по эксплуатации введенных в действие объектов строительства.

Пандемия вынудила скорректировать градостроительные планы с учетом загородной миграции работающего городского населения. Проведенное исследование позволило систематизировать факторы, влияющие на деловую активность в сфере загородного строительства. Среди них решающее значение имеют меры государственной поддержки в диапазоне от развития проектного финансирования малоэтажной застройки до расширения использования ипотечных программ, поддерживающих спрос на объекты за пределами городских территорий.

Понизившаяся плотность населения исторических центров городов также потребовала организации новой волны заселения с учетом дифференциации горожан по уровню доходов, семейного положения, профессиональной структуры, форм и видов занятости и др.

В результате изучения тенденций реструктуризации сферы недвижимости, формируемых под влиянием национальных приоритетов развития в условиях преодоления коронакризиса, требования витализации городского пространства были дополнены автором с учетом синхронизации «встречных волн» расселения, запуска жилищных лифтов, технологического обновления и др., что позволит обеспечить ресурсное притяжение, в составе которого триггером развития становится человеческий капитал.

Ключевые слова: *городское пространство, исторический центр, структурные факторы, витализация, сфера недвижимости, загородное строительство, проблемы и вызовы пандемии*

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Small business in construction: new products and new markets

The problem of getting out of an economic recession is equally relevant not only for all countries without exception, but also for all segments of national economies. Analysis of the response of small and medium-sized businesses, as well as individual entrepreneurship, showed that this is perhaps the most affected segment of the national economy from the coronavirus crisis. At the same time, the study showed that the recovery potential of the economy significantly depends on the degree of development and scale of small business. And if the pattern of achieving sustainability in overcoming crisis shocks identified by the authors is higher, the lower the share of SMEs in the global economy, the lower the share of SMEs in the global economy, the higher the share of SMEs in GDP, the more successful recovery growth is.

Unlike developed countries, Russia has a three-fold lower share of SMEs in GDP, but a significantly higher volatility of the shadow economy. Preventive measures that prevent the expansion of the latter and support small businesses have not been able to stop the bankruptcy of small and medium-sized enterprises and have not yet led to the desired results in terms of the recovery rate of business and investment activity in the small business segment. Their effectiveness is assessed by the business as insignificant. At the same time, from the authors point of view, not only inclusive incentive and supportive measures can cope with the recession of the small business segment. It is important to find drivers of development in the specified segment. They are the ones who will be able to give an impetus to development at the high level of economic efficiency maintained during the crisis.

In the context of the search for economic clusters that need construction services and have proven their ability to implement investment and construction projects in a cost-effective manner, the authors identified eight starting types: creative economy, innovative economy, green economy, health and sports economy, festival and farm economy, and service economy of small towns and settlements. Targeted focus of government support measures for these segments can become a real trigger for the development of SMEs.

Keywords: *small and medium-sized enterprises, coronavirus crisis, development shocks, economic growth potential, government support measures, new markets, investment and construction projects*



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The scale of losses of the national economy during the coronavirus crisis cannot yet be accurately estimated, both due to the uncertainty of the pandemic's course and as a result of many latent processes. Losses are also, undoubtedly affected by the external environment, structural features of the Russian economy, the effectiveness of state regulation, etc. It is currently impossible to predict the degree of impact. That is why the estimates differ significantly. According to official data of the Ministry of Economic Development of the Russian Federation and Rosstat on the results of 2020 GDP fell by just over 3.8 %[1, 2]. RANEPA studies show a 5 % drop[3], while FBK Grant Thornton's Institute for Strategic Analysis gives an estimate of up to 6 %[4].

The problem of the recovery growth of the small business segment of the national economy has several projections:

- first, it is important to understand which of the industries that involve small and medium-sized enterprises (SMEs), as well as individual entrepreneurs (sole proprietors), will be able to start quickly after removing all restrictions, using and stimulating the development of related industries and areas of activity;
- secondly, to establish expectations and opportunities for achieving high-speed development characteristics of various segments of the production sector that can enhance the development of SMEs and sole proprietors;
- third, investigate how the structure of forms and types of employment should change;
- fourth, to determine what resource provision is necessary for a set of high-speed characteristics of the development of SMEs and sole proprietors;
- fifth, to predict what может the structure of sources of investment of activities in the field of small business and individual entrepreneurship may be;
- sixth, to indicate the direction in which development institutions should be developed, including: Russian Export Center, Skolkovo Foundation for Innovation Promotion, VEB.DV, razvivai.rf, OPORA, DOM.RF, etc.;
- seventh, to determine what measures of state support are capable of ensuring the recovery growth of the small business segment, etc.

Discussing a number of issues raised at the Gaidar Forum 2021 and the St. Petersburg International

1 Ministries of Economic Development of the Russian Federation. URL: https: //www.economy.gov.ru

2 Federal State Statistics Service. URL: https: //rosstat.gov.ru

3 Gaidar Forum-2021 "Russia and the world after the pandemic". URL: https: //gaidarforum.ru/ru

4 FBK Grant Thornton. URL: https: //www.fbk.ru

Economic Forum[5], many experts are inclined to believe that the drivers of growth in the share of small businesses in the national economy will be business services, including information, construction, domestic tourism, and public catering. Seriously accelerate the pace of recovery growth of the Russian economy, and this is extremely important in the current conditions of increased foreign economic competition, according to Western scientists[3] is not possible without including small and medium-sized enterprises. At the same time, SMEs have less potential to overcome the challenges associated with suspension of operations. The costs of switching to remote employment, making changes to production processes, and compensating for the rise in the cost of a number of services and raw materials fall on an already tight and deficient budget, usually formed by SMEs without redundancy. Given the limited resources of small and medium-sized enterprises and existing barriers to access to capital, the period during which SMEs can survive a shock is more limited than for larger firms. The author's assessment of the impact of the COVID-19 crisis on small and medium-sized businesses is based on the results of 41 surveys of SMEs. It was conducted all over the world and showed that more than half of SMEs suffer serious losses in income. A third of small and medium-sized enterprises are afraid to go out of business without further support within 1 month and up to 50 % within three months.

The scale of SME concern is confirmed in a recent NBER paper [1], which presents the results of a survey of more than 5,800 small businesses in the United States. The study shows that 43 % of the responding businesses are already temporarily closed. On average, businesses cut employees by 40 %. Three-quarters of respondents indicated that they have two months or less of cash in reserve [2]. Similarly, according to a survey of SMEs in 132 countries conducted by the World Trade Center, two — thirds of micro- and small firms report that the crisis has severely affected their business operations, and one-fifth indicate the risk of final closure within three months [3]. Based on several surveys conducted in 2020 in different countries McKinsey estimates that between 25 and 36 % of small businesses may close permanently due to disruptions in the first four months of the pandemic[6].

The analysis of the survey results allowed the authors to identify the dependence of the consequences of the coronavirus crisis on the share of SMEs in the GDP of countries. Thus, the contribution of SMEs to the Russian economy is currently about 20 %, while in European countries the contribution is estimated at least 60 % of GDP. For this reason (and experts agree), the Russian economy has not "sunk" as much as the economies of developed countries during the pandemic. According to the Organization for Economic Cooperation and Development (OECD), the only country that has only slowed down is China. South Korea, Turkey, and Indonesia showed the lowest rates of GDP decline. The Russian Federation, the United States, and Australia all slowed to about the same level, down to 5 %. European countries "sank" from 10 % (Great Britain) to 6 % (Germany). At the same time, countries with a large share of SMEs (more than 50 % of GDP) suffered the most. In the crisis phase, a small share of SMEs in GDP actually results in smaller losses.

What is the reason for the incomparably small share of SMEs in GDP at the stage of recovery growth? First of all, this means that the initial potential for accelerated development of the service sector is significantly lower than in developed countries, as well as high technological specialized production facilities. It is clear that having received state support during the pandemic, Russian raw materials industries will recover synchronously with the growth of demand, including along the external contour. Domestic production demand also has a chance to grow significantly due to the development of state infrastructure programs. As for consumer demand, the situation in this segment is aggravated by falling incomes of the population since 2013[2].

Given that the tax and credit holidays are expected to end in 2021, there is no reason to expect revenue growth, especially in the SME segment. The actual situation, therefore, actualizes the need for state support for those industries and segments that are most capable of activating the sphere of consumption, accelerating foreign trade turnover, especially in exports.

It should be noted that the EU plans to increase GDP by at least 4 % in 2021, as a result of an unprecedented powerful program of subsidizing the real sector in the amount of 1.3 trillion euro[3]. The US economy is recovering even faster, expecting more than 5 % growth. At the same time, support measures were estimated at $1.9 trillion. China expects 8 % GDP growth[3].

Table 1 shows the main measures systematically taken by developed countries to support SMEs.

The study of the content and structure of measures allowed us to state that the approach of the Chinese authorities to the result was the most effective and requires study for many countries, including Russia. The implementation of policies aimed at helping small and medium-sized enterprises in connection with the pandemic, continued the traditional attitudes and priorities of the state policy of the People's Republic of China [1]. Great Chinese government has implemented measures can be divided into the following groups: lower administrative fees and rent payments on the public deed of real estate, tax incentives and government subsidies (in special activities on research, innovation, development), as well as special financial and credit policies, involving a reduction of the reserve ratio by 1 %[7]. Small and medium-sized enterprises were granted deferred loan repayments and the VAT rate was reduced to 1 % [1]. Also, among other measures to support SMEs, we can highlight the creation of a specialized infrastructure for providing assistance and advice to business entities through a hotline. China has introduced measures to encourage enterprises to adopt new technologies, business practices (such as driverless retail, contactless delivery, standardized fresh food packaging), and business models (such as online shopping, online health care, online education, online office, online services, digital entertainment, and digital living). To accelerate digital adoption, China supports cloud computing for SMEs and cloud technology acquisition, as well as for online work such as remote office, home office, video conferencing, online learning, collaborative research and development, and e-commerce. In addition, China uses tools to subsidize training for SMEs and offers free access to online training platforms. Technical know-how and management lessons were offered free of charge to SMEs during the pandemic through mobile platforms. Online training is also supported [4]. In the Chinese province of Hubei, small and medium-sized enterprises can receive a grant to hire new college graduates.

5 St. Petersburg International Economic Forum. URL: https: //forumspb.com/?lang=ru

6 How to rebuild and reimagine jobs amid the coronavirus crisis. URL: https://www.mckinsey.com/industries/public-and-social-sector/our-insights/how-to-rebuild-and-reimagine-jobs-amid-the-coronavirus-crisis

7 The Central Bank of China reduces reserve rates for banks amid the coronavirus. URL: https://investfuture.ru/news/id/cb-kitaya-snijaet-normy-rezervirovaniya-dlya-bankov-na-fone-koronavirusa

Table 1. Government support measures for small and medium-sized businesses adopted in the United States, Canada, Italy, and China during the COVID-19 pandemic

Measure	*USA*	*Canada*	*Italy*	*China*
Percentage of GDP allocated for direct support measures	1.5	3A	1.4	0.15
Tax measures	Deferred payment of taxes for legal entities and individuals for 90 days	Deferred payments on taxes on any income until the end of August 2020		Reduction of the VAT rate by 1 %
Fiscal and credit policy	Loans to small businesses up to $ 10 million		Increase of the SME loan guarantee fluid (guarantees of up to 5 million euros): freezing of payments for repayment of SME loans	The right to defer payments on loans for SMEs until 30.06.2020. The Central Bank's interest rate for commercial banks providing loans to SMEs has been reduced to 2 %. Issuance of stabilization loans to businesses, cooperation between small and large businesses is encouraged
Government subsidies		Subsidies for employee remuneration (10 % of salary)		Compensation of salary payments dining the quarantine period
Other measures				Online services have been launched, additional measures are being applied to digitalize business processes

So, it can be concluded that a comprehensive approach was implemented to support SMEs, including financial and non-financial measures, which significantly offset the negative consequences of the COVID-19 pandemic. However, China has already faced the need to deal with the consequences of a pandemic (the SARS epidemic in 2003). This largely influenced the actions of the Chinese authorities in 2020 [5]. As a result, an "economic miracle" was achieved and the recession of the economy was contained in a relatively short time and the small and medium-sized business sector, which is most important for the recovery of the economy as a whole, was supported.

Comparing the set of measures taken to support the economy in the crisis period of the PRC and the Russian Federation, we can conclude that Russia was guided and largely took into account the Chinese experience in overcoming the negative consequences of the pandemic. Despite the fact that the absolute volume of financial support with developed countries is not comparable with developed countries, however, The Russian government allocated 4 % of GDP for these purposes (Table 2).

The measures taken have generally restrained the processes of total bankruptcy, but in order to ensure recovery growth, as well as around the world, a rethinking of businessой policies is being actualized.

In 2020, the UN issued a report calling on all countries to start building a new economy. "There will be no return to the "old normality". The massive reallocations of financial resources carried out by Governments in these weeks and months are a glimpse of the future. The COVID-19 crisis is plunging the world economy into a recession with historic levels of unemployment and poverty" [6]. Worst of all, experts predict the possibility of a third wave of

Table 2. Budget support during the pandemic

Areas	RUB billion	% of GDP
Health and epidemiological measures	246.8	0.3
Population	665.9	0.7
Including self-employed citizens	9.6	0.01
Large companies, SMEs, individual entrepreneurs and non-profit organizations	2.590	2.7
Regions of the Russian Federation	373.0	0.4
Total	3,876.0	4.0

coronavirus. Some of the consequences of the current situation will appear later, which may prolong the recession for a long time, cause further growth in unemployment and a fall in real GDP.

For the current assessment of the measures taken, we will analyze their assessment by business, given on the website of the Russian Union of Industrialists and Entrepreneurs. An important aspect of the assessment is the availability of state aid to small businesses and the number of available limiting factors [7].

Thus, small businesses noted the following limitations in receiving the declared support:

1) the difficulty of meeting certain conditions for obtaining financial support (such as maintaining the full number of employees);

2) collision with additional conditions on the part of banks;

3) complex reporting procedures.

According to a survey conducted by the Russian Union of Industrialists and Entrepreneurs, 61.8 % of companies that took part in the survey were not able to take advantage of financial support measures [8]. Among the reasons, respondents mostly identified the fact that they do not belong to any of the allocated preferential categories, as well as the inability to meet all the stated requirements. In the course of the survey, respondents also indicated those state support measures that they considered necessary during the crisis period [9].

At the epicenter of representatives' opinions for SMEs, there was a need to remove excessive requirements for companies applying for support, and the possibility of obtaining state support also for long-term loans for updating production funds, modernization, and so on. It should also be noted that most of the government support measures described earlier have a limited duration, although the consequences of the COVID-19 pandemic will have a negative impact on business activities for a long time, especially on small businesses. The survey of the Russian Union of Industrialists and Entrepreneurs showed that small and medium-sized businesses are generally negatively assess the state support provided. Thus, according to the results of the survey, more than 17 % of respondents called support measures ineffective[8].

HSE specialists (V. Gimpelson) consider unemployment to be the most acute problem of recovery growth [10]. Thus, Rosstat informed that from April 2020 to April 2021, the officially registered number of unemployed people increased by 5 times. Their employment is mainly based on the experience of previous crises falls on the shoulders of SMEs. At the same time, the Russian SME sector, as well as the foreign one, is in a difficult situation. So, by the beginning of 2021, 5.7 million SMEs were operating in the Russian Federation, which is 3.8 % less than a year earlier. The negative dynamics of small businesses developed in 79 of the 85 regions of the Russian Federation. And if a small increase has been observed in medium-sized enterprises since the beginning of 2021, and small enterprises have a two-thirds positive assessment of their capabilities, then for the first time in several years, despite state support, the number of individual enterprises has decreased by 214 thousand people, i.e. by 7.6 %.

The SME business activity index by the end of 2020 was 46.1 points8. At the same time, 54 % of the surveyed managers reported an actual decrease in income and 60 % reported the presence of arrears. Only 6 % of respondents plan to expand their staff. According to the heads of enterprises with only a sad state of affairs a consequence of the curtailment of state support programs. In fact, subsidies for maintaining the number of full-time employees were discontinued, the number of loan guarantees and sureties was reduced, and property support measures (rental benefits and deferred lease payments) were discontinued.

In this regard, based on the study of the best practices of supporting SMEs, professional assistance is undoubtedly important for Russian enterprises in ensuring the availability of state support measures, out-of-court methods of dispute resolution, debt restructuring, inclusion in the system of placing state orders, delivery of goods with the creation of cargo processing centers, transport services, advertising, design, etc., which will allow reorienting SMEs. Many measures and best practices of supporting SMEs at the regional and local levels, systematized by the authors and presented in Table 3, should also be used in Russian practice.

Retraining will also be required. Decree of the Government of the Russian Federation of 13 March 2021, No. 369 “About granting grants in the form of subsidies from the federal budget to non-profit organizations for the implementation of measures for the organization of vocational training and additional vocational education of certain categories of citizens within the framework of the federal project «Employment Promotion” of the national project “Demography” it provides for the implementation of professional retraining measures for certain categories of citizens-citizens who are looking for work and have applied to the employment service bodies, including unemployed citizens, citizens aged 50 years and older, citizens of pre-retirement age, women on parental leave under the age of 3, women who are not in labour relations and have preschool children.

At the same time, incentive measures do not eliminate the need for supportive measures. Among them, the development of a program for restructuring the debt of SMEs is of primary importance. It is important to emphasize that commercial banks are not interested in solving the problems of small businesses and restructuring proposals should come from the Bank of Russia, which will also have to weigh the possibility of continuing to reduce preferential lending rates to SMEs.

The construction sector, as Deputy Prime Minister M. Khusnullin noted at the Gaidar Forum 20213, has quite successfully coped with crisis shocks. At the same time, the authors' analysis of SMEs in construction showed:

1) despite the bankruptcy and freezing of activity, the construction services market has grown significantly, as evidenced by the active growth in the volume of consumed construction materials in the entire range of names [3]. The pandemic has accelerated the growth of repairs in residential areas of existing development, suburban real estate, construction of low-rise buildings, etc. Comparing the trends of positive dynamics of sales of construction materials, the growth объемовrate of construction volumes and the number of people employed in the construction sector, we can conclude that the active labor force in the construction sector is also used in the shadow segment and this trend is stable;

2) the spheres of activity of SMEs in construction have significantly expanded. Thus, due to the development of domestic tourism, facade, repair, and construction works in the low-rise construction segment have become in demand. For example, MP “Fasadnik” in Irkutsk developed an initiative to put wooden architecture facades in order during the pandemic. According to the project coordinator V. Kazimirenka “it was important to show how small efforts can achieve noticeable transformations, and to give the owners of such houses a sense of personal responsibility for the appearance of their property, because all this in general forms

8 OPORA ROSSII. URL: http: //opora.ru

Table 3. Best practices for supporting SMEs at regional and local levels

Support measures	*Result / performance evaluation*
Cluster policy: incentives for cooperation between companies and universities in certain industries: Germany (Bavaria)	The growth of innovation activity, an increase in people employed in R & D, cooperation with universities (Falck et al.)
Export support: training, consulting, licensing, transfers, verification of counterparties: USA (Kansas world trade center; Wichita)	Exports reached one third of production (Istrate et al. 2019) Employment in the municipality increased by
Economic gardening: selection of motivated entrepreneurs, "soft" services, etc.: USA (Litleton's Economic Gardening strategy)	2 times, tax collection-by 3 times (Gibbons)
Grants for the payment of business consultants: United Kingdom (UK Enterprise initiative)	The survival rate of funis increased by 4 %, the growth rate — by 10 % (Wren, Storey)
Support system for innovative firms with growth potential (accelerators, consulting, PPP) Finland VIGO Programs	Revenue growth at a higher rate, taking into account the selection effect (Raimikko, Autio)
Science parks, business incubators at leading universities; Business services: the EU. the Cambridge case	The growth of the number of startups, attracting foreign investors (Lofsten, Lindelof; Garnsey, Heffernan)
Digital platforms (Alibaba, Airbnb, Uber, etc.), "Digital Solidarity" (Italy); "Digital Team Austria" — free digital services for SMEs (Austria), etc.	Digitalization, growth of the number and turnover' of small firms, ensuring demand (Srinivasan, Venkatraman; Nambisan et al.)
Increasing the share capital of startups and SMEs (Fund for Strengthening SMEs, French Technological Bridge-France)	Launch of convertible bonds, co-financing, bankruptcy prevention
Export support (Canada, Italy, Czech Republic, Denmark, Indonesia, etc.)	Recovery of export positions of SMEs by the end of 2021

the aesthetics of the city". On the basis of collecting applications from citizens who participate organizationally and financially in the project, a search for volunteers is carried out, interaction with architects, restorers, builders, etc. In 2019–2020 alone, more than 100 homes were restored with the involvement of 1,200 volunteers.

In the last two years, there has been a boom in the organization of museums ("Provincial life", "Kommunalka", "Sad-ogorod" and many others). In search of a unique image of small towns in Russia, small and medium-sized enterprises are creating a cultural and entertainment network to scale tourist flows. The experience of the Kolomenskiy Posad Museum cluster is not only interesting, but also worthy of scaling. It includes small and individual businesses, covering people of various professions from builders and restorers to bakers and tour guides. At the same time, construction professions are mastered by all project participants without exception, undoubtedly being in demand in the personal economy. As a result, this is almost the only segment of the city that was not affected by the crisis. Services around the newly built museums and revived historical spaces attracted not only visitors to the city, but also new residents with the prospect of moving out of the capital. Interesting and diverse types of employment in the city attract both creative youth and mature people, in short, those who are ready to participate in the "creative economy".

So, if the first of these consequences characterizes the trend of "survival", then the second one forms a long-term direction of development that is attractive to the creative class, has the property of resource attraction and, accordingly, requires first of all state support.

As the results of a sample study (Moscow, St. Petersburg, Kazan, Krasnoyarsk, Irkutsk, as well as 10 small cities) of the Department of Investment and Construction Business of the RANEPA under the President of the Russian Federation showed, where there is an initiative from below, several types of clusters of the new economy are inevitably formed with the basis of SMEs and sole proprietors and with the prospect of their subsequent development. The conducted research revealed the following new projects and new markets for SMEs and sole proprietors:

1) creative economy. Projects: Kolomenskiy Posad (Moscow region); Bereg Art residence (Crimea); "Podelniki" (Yekaterinburg); "Fasadnik" (Irkutsk), etc.;

2) innovative economy. Projects: Dubna Nanotechnology Center (Moscow region); special economic zone "Innopolis" (Tatarstan); Astrophysical Laboratory (Crimea), etc.;

3) green economy. Projects: "Novaya Zemlya" in Bogorodsk (Tula region); Quarter of the Agrarian University in Omsk, etc.;

4) health economics. Projects: "Kivach" Republic of Karelia, etc.;

5) sports economics. Projects: "Sochi-2014"; "Accessible sports in every yard": (Kalmykia);

6) festival economy. Projects: "KAZantip", "Tavrida" (Crimea); "Awaz" (Tatarstan), etc.;

7) farm economy. Projects: Eco Camp, Lasli (Crimea), etc.;

8) service economy, which provides a cost-effective and environmentally safe mode of life in urban-type settlements, townhouses and other types of suburban real estate that have grown up everywhere.

All these projects are based on investment and construction activities, the quality and readiness of which, and most importantly, the project format, explicated in the information space, will provide both a cost-effective mode of subsequent operation, the possibility of scaling, and the potential for capitalization. The main thing is that new types of development drivers are based on the initiatives and interests of citizens. In short, it is obvious that changes in the SME segment are beginning and gaining momentum: difficult, overcoming passivity and requiring public approval and state support.

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Малый бизнес в строительстве: новые продукты и новые рынки

Проблема выхода из экономической рецессии одинаково актуальна не только для всех без исключения стран, но и для всех сегментов национальных экономик. Анализ реакции малого и среднего бизнеса, а также индивидуального предпринимательства показал, что это — едва ли не самый пострадавший от коронакризиса сегмент национальной экономики. При этом исследование показало, что восстановительный потенциал экономики существенно зависит от степени развития и масштаба малого предпринимательства. И если выявленная авторами закономерность достижения устойчивости в преодолении кризисных шоков тем выше, чем ниже доля МСП в ВВП стран, то восстановительный рост тем успешнее, чем выше доля МСП в ВВП.

В отличие от развитых стран России свойственна втрое меньшая доля МСП в ВВП, но существенно большая волатильность теневой экономики. Превентивные меры, пресекающие расширение последней и поддерживающие малый бизнес, не смогли остановить банкротство малых и средних предприятий и пока не привели к желаемым результатам по темпам восстановительного роста деловой и инвестиционной активности в сегменте малого бизнеса. Их эффективность оценена бизнесом как несущественная. В то же время, с точки зрения авторов, не только инклюзивные стимулирующие и поддерживающие меры способны справиться с рецессией сегмента малого бизнеса. Важен поиск драйверов развития в указанном сегменте. Именно они на высокой планке экономической эффективности, удержанной в период кризиса, смогут дать толчок к развитию.

В контексте поиска экономических кластеров, нуждающихся в строительных услугах и доказавших способность экономически эффективно реализовывать инвестиционно-строительные проекты, авторы выявили восемь стартовых видов: творческая экономика, инновационная экономика, зеленая экономика, экономика здоровья и спорта, фестивальная и фермерская экономика, а также сервисная экономика малых городов и поселений. Целевая фокусировка мер государственной поддержки этих сегментов способна стать реальным триггером развития МСП.

Ключевые слова: *малые и средние предприятия, коронакризис, шоки развития, потенциал экономического роста, меры государственной поддержки, новые рынки, инвестиционно-строительные проекты*

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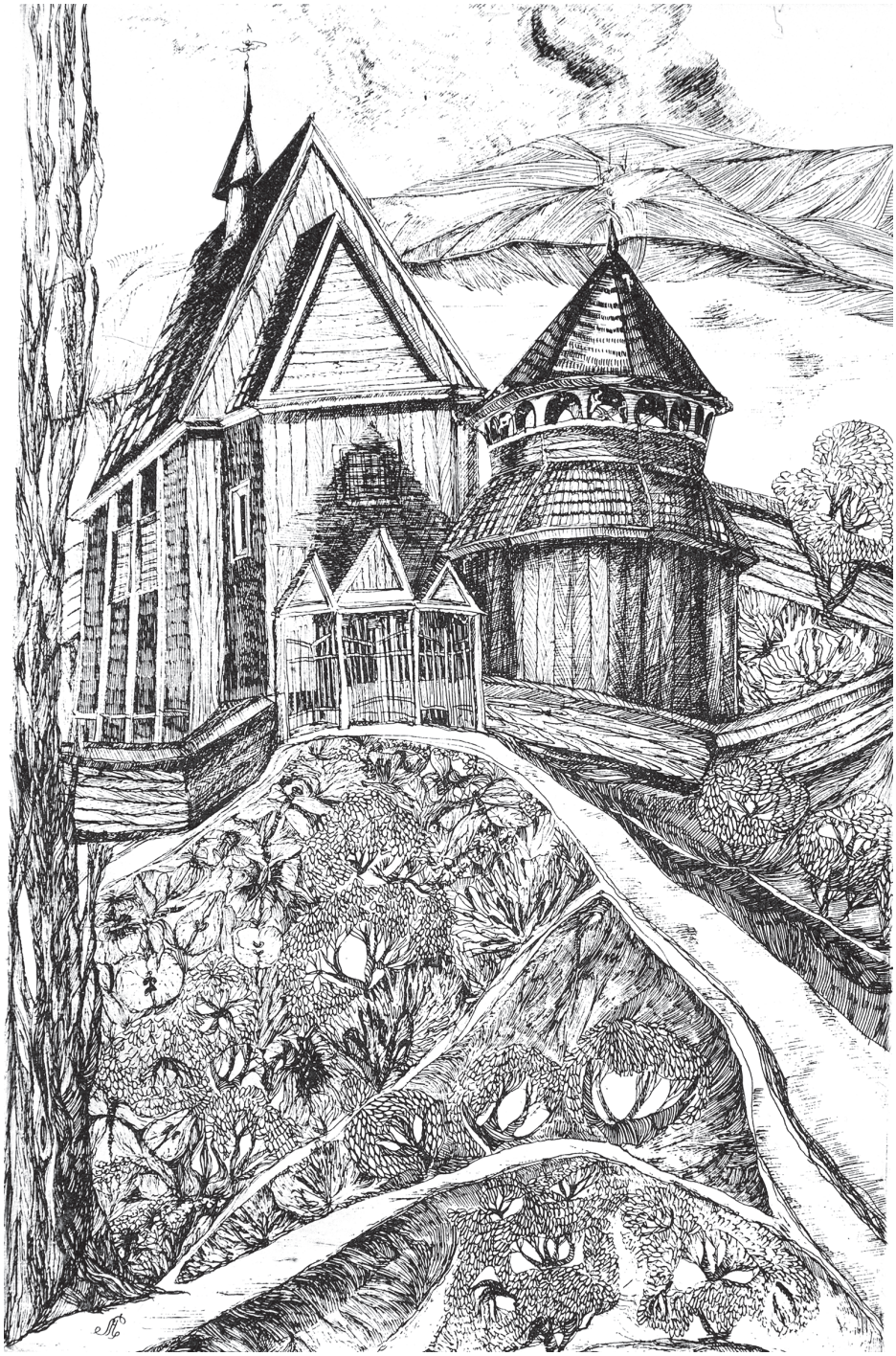
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Ensuring the strategic focus of a corporate project management system for commercial real estate

Corporate trajectories ultimately determine economic growth or recession. They depend on the choice of development strategies selected for corporate management systems designated for commercial real estate projects. Strategic focusing tools of corporate management systems are used to select the best corporate development strategies.

This article identifies the objectives and methods of strategic focusing of corporate project management systems for commercial real estate. The co-authors describe the algorithm of a foresight project and options of the criteria-based choice of the strategic focus for a corporate system. The principal criteria for a portfolio of commercial real estate projects are defined.

The implementation of corporate management strategies by the company engaged in the construction of commercial real estate in Europe (France) is considered.

The strategic focusing of a corporate management system, designated for commercial real estate projects, allows to make a statement that there is no universal solution to the general problem of multi-criteria optimization of strategic alternatives in the long run, but the very formulation of the choice problem requires a detailed quantitative description of the subject area. The solution allows to set the main strategic trend of a corporate management system focused on commercial real estate projects, taking into account the polycentric format of the interruptive-extended type of activity.

In practical terms, this phenomenon means the need for:

• the multi-criteria restructuring of a real estate portfolio by the type of real estate, its spatial localization, as well as by the steps and stages of the life cycle of commercial real estate projects;

• the regard for the economic efficiency of the project cycle as a whole and its separate steps and stages, in particular, tempo-based drops in project capitalization broken down by the stages of its life cycle, the dynamics of the total cost of ownership, integration and outsourcing opportunities, social and environmental filters, etc.

• ensuring high mobility of the corporate management organization structure, that is, a continuous type of organizational restructuring as a modern feature of corporate performance.

Hence, a full-fledged solution to the problem of strategic focusing of a corporate management system for commercial real estate projects requires the clarification of scientific approaches and the development of an organizational model of the system, taking into account the continuous nature of its restructuring.

Keywords: *strategic focusing, foresight approach, "scenario funnel" method, criteria-based selection*



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1. THE GENERAL PART

Integrated fundamentals of the "Structure – Behaviour – Performance" concept allow to study corporate activities taking into account the influence of external structural factors, the industry, and the "Total cost of ownership" concept. They also allow to establish the methodological basis for the strategic focusing of the corporate management system designated for commercial real estate projects.

2. THE STRATEGIC FOCUSING OF A CORPORATE MANAGEMENT SYSTEM

It is advisable to consider the strategic focusing of a corporate management system for commercial real estate projects at all stages of the life cycle of real estate, in other words, throughout the entire cycle of its development, operation and liquidation.

The task of strategic focusing encompasses the strategic analysis of commercial real estate projects with regard for project management functions, or the task of managing the objectives, time frames, costs, risks, quality, contracts, personnel, relationships and data flows, and the identification of potential options of a corporate management system strategy within the framework of long-term economic growth as a corporate task.

In the process of strategic focusing, it is necessary to take into account the interruptive and extended nature of the corporate involvement in the implementation of commercial real estate projects, as well as all strategic options regarding changes in the structure of needs and resource support for the complete implementation of all steps and stages of real estate project cycles.

As the analysis of practice has shown, the strategic focusing of the corporate management system for commercial projects can be achieved using various methods:

1) internal corporate forecasts and development plans with "road maps" and single breakthrough projects, allowing not only to organize the continuous monitoring of deviations from the strategic goal, but also to develop in-house corporate performance standards;

2) specific economic and administrative, technical and technological, regulatory, socio-psychological or information and communication solutions for the restructuring of a corporate project portfolio of commercial real estate (for example, to stop

the growth of the share of non-core projects and return to the implementation of industry-specific projects);

3) mechanisms of economic incentives, including the financial responsibility for interim and final results of corporate activities as a whole and within the framework of separate ongoing projects (especially relevant for the implementation of strategically important projects having a tight schedule);

4) measures for the distribution/redistribution of corporate resources aimed at rising investments in certain projects with regard to their location;

5) legislative initiatives and permissive or prohibitive measures taken by the authorities (at the regional and federal levels) towards reducing the project cycles of economical resource consumption [1];

6) methods that consolidate project effects not uniform in quality but necessary to ensure the integrated economic efficiency of corporate activities and implement the tasks related to various reorganization methods ("mergers", "acquisitions", etc.)

The strategic focusing of a corporate management system involves the implementation of consistent activities that allow to eliminate or mitigate (weaken the manifestations) of emerging contradictions in the long run. The objective of the economic growth model should set the strategic focus of development by outlining the trajectories towards overcoming the influence of negative factors and challenges. Their identification at the early stages of deciding on the inclusion of a particular project in the corporate portfolio is impossible without the use of forecasting methods. Nowadays it is especially relevant in connection with the global pandemic, which allows to identify unfavorable trends in the development of corporations in the preventive mode [2, 3].

3. PREDICTIVE METHODS OF STRATEGIC FOCUSING

The past experience and current forecasts of future events are used in forecasting. The predictive method is a method of researching an object and developing a forecast. Simplified predictive methods are broken down into quantitative and qualitative. The quantitative methods are based on numerical, mathematical procedures and formulas, while the qualitative ones take advantage of the experience, knowledge and intuition of researchers [4].

Analytical methods, that allow to study the dynamics of indicators over time, include sensitive forecasting and cluster analysis (Table).

4. PREDICTIVE METHODS OF STRATEGIC FOCUSING

By means of consolidating alternative methods, foresight methods allow:

1) to develop a high-quality database necessary and sufficient to justify strategic decisions;

2) to identify the main factors of influence and their potential impact (strengthening or mitigating) on the effectiveness of corporate performance;

3) to take account of seemingly impossible, but probable under certain circumstances trajectories of corporate development scenarios, including non-linear development of future scenarios;

4) to ensure the relationship between generally accepted ideas and specific empirical factors, etc.

A distinctive feature of foresight projects is the assumption of alternative situations and consequences of a particular decision, or the use of a scenario approach.

A good scenario with a high strategic potential must meet the criteria, including the potential that enables the management team to make various decisions, realism, probability of alternatives, logical construction, structural differentiation, logical simplicity, testability [5, 6].

In a broad sense, the essence of foresight is reduced to taking account of all kinds of challenges pertaining to current decision making. Prompt resources mobilization is needed to take preventive measures. At the same time, the general focus of the latter is determined by the preset project capitalization pace. Thus, in fact, foresight expands the understanding of the driving forces of the «Man – Society – Nature» system, increasing the level of readiness of a corporation for inevitable challenges.

The generalized foresight algorithm is shown in Fig. 1.

The generalized algorithm means that at the third stage the management system faces the task of creating the adaptive potential, while the forecasting of possible alterations in a dynamically changing environment allows to adjust the goal contour by providing

Predictive methods of strategic focusing

No.	Method title	Basic methodological principles	Usage peculiarities	Adjustment to the subject of research
1.	The method of "sensitive forecasting"	"Bottom-up" forecasting (from the project to the portfolio, from the stage to the cycle, etc.)	Forecasts for all functional parameters as components of a common goal (by the resource attribute, by sections of linear objects, etc.)	Adjustment by the scope of partners and the competitive contour in the context of core and non-core projects
2.	Cluster analysis method	Costs, efficiency, and projects structuring principles	Determination of variables with an assessment of their reliability and significance	A decision-making basis for the organizational structure, "mergers", "acquisitions", etc.
3.	Foresight methods	Scanning horizons to identify a link between factors, subjects, etc. Network analysis allowis to identify signs that accompany the emergence of new trends. The method of evolutionary scenarios that separate potential trends	Foresight consolidates quality management, time management, cost management, human resources management, material resources management, communications management, etc. using road mapping, scenario planning and network analysis	The use of technological foresight within the framework of large-scale construction projects towards the market-focused foresight implementation perspective. The adaptation of strictly informative foresight functions towards complete integration into the project cycle

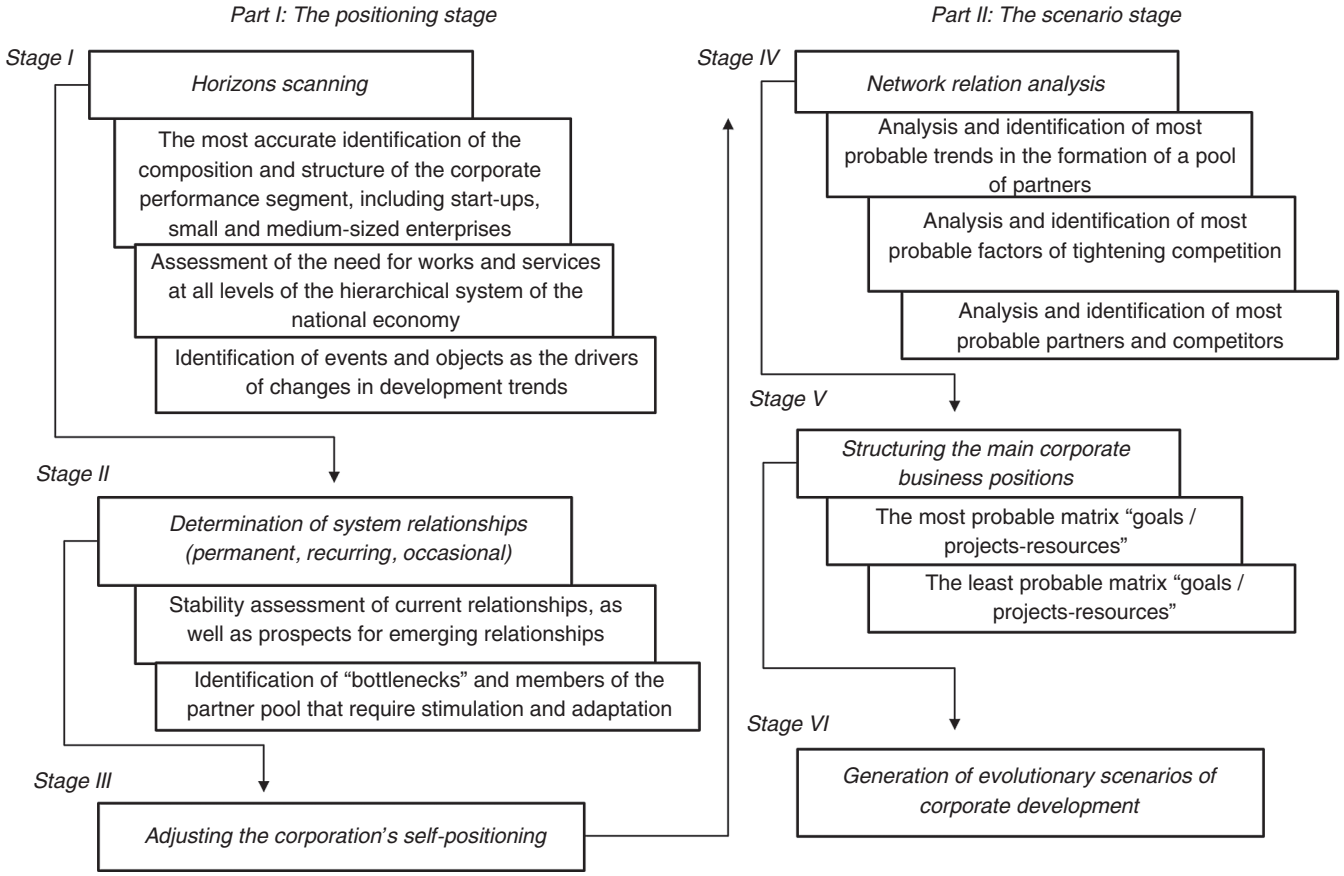


Fig. 1. Generalized foresight algorithm as a method of strategic focusing of corporate performance

susceptibility to new trends, resistance to potential shocks, problems and challenges.

The identification of turning points and the strategic focus was preceded by the use of a multi-level Delphi research method, aimed at ensuring the consistency of expert opinions, as well as the "road mapping" method, based on deductive decomposition of any goal attainment process.

The analysis of mechanisms used to implement foresight methods in large corporations has shown that their modern format has significantly expanded the methodological principles of the Delphi method and the use of "road mapping", by adding the capabilities of the expert panel method, that allows special experts to jointly develop probable future scenarios for a certain time period, both in terms of traditional works and services, and for those that are potentially possible.

Within the framework of the foresight approach, we also focus on the method of the "scenario funnel", whose mission is to expand the space of the future. The cross sections of the funnel become, according to a certain scenario, a matrix or a system of parameters for a possible future at a given time. The method represents parity-based joint efforts of different industry experts and scientists specializing in various fields of science. They initially formulate the questions whose future development is of particular interest. Then they determine the time horizon that should be investigated. The most important task of the group is to identify impact factors (descriptors). At the same time, according to the portfolio modeling methodology, the value of each descriptor and idea is expressed as the weighted average sum of criteria scores, and the total value of the portfolio is calculated by summing up the values of the ideas that it contains [7].

5. OPTIONS FOR THE CRITERIA-BASED SELECTION OF STRATEGIC FOCUSING AREAS

The experience and current forecasts regarding the development of future events are used in forecasting. The forecasting approach is the method of the object study aimed at developing a forecast. Simplified forecasting methods are split up into quantitative and qualitative. The formers are based on numerical, mathematical procedures and formulas, while the latter are based on the use of the experience, knowledge and intuition of researchers [4].

The analysis of the foresight method, which is essentially combinative, has shown that the target focusing of project management systems, depending on the planning time-frame, can use truncated variants of forecasting methods in the short-term, since they are becoming more complicated both in terms of computational work and due to the coupling of methods used to find optimal solutions depending on the remoteness of the forecast time-frame.

The practice of modern approaches to strategic focusing is based on a combination of non-formalized task solutions with the potential of formalized methods and decision support tools.

The main idea of the foresight concept is to choose the trajectory of strategic measures from a variety of alternatives. As a result, a certain subset of acceptable actions to be implemented is selected on the basis of strategic settings. The selection of possible actions occurs as a result of comparing subsets with each other. In this regard, it is necessary to identify the criterion of preference for the strategic orientation.

The options for the criteria-based selection of strategic focusing areas are presented in Fig. 2.

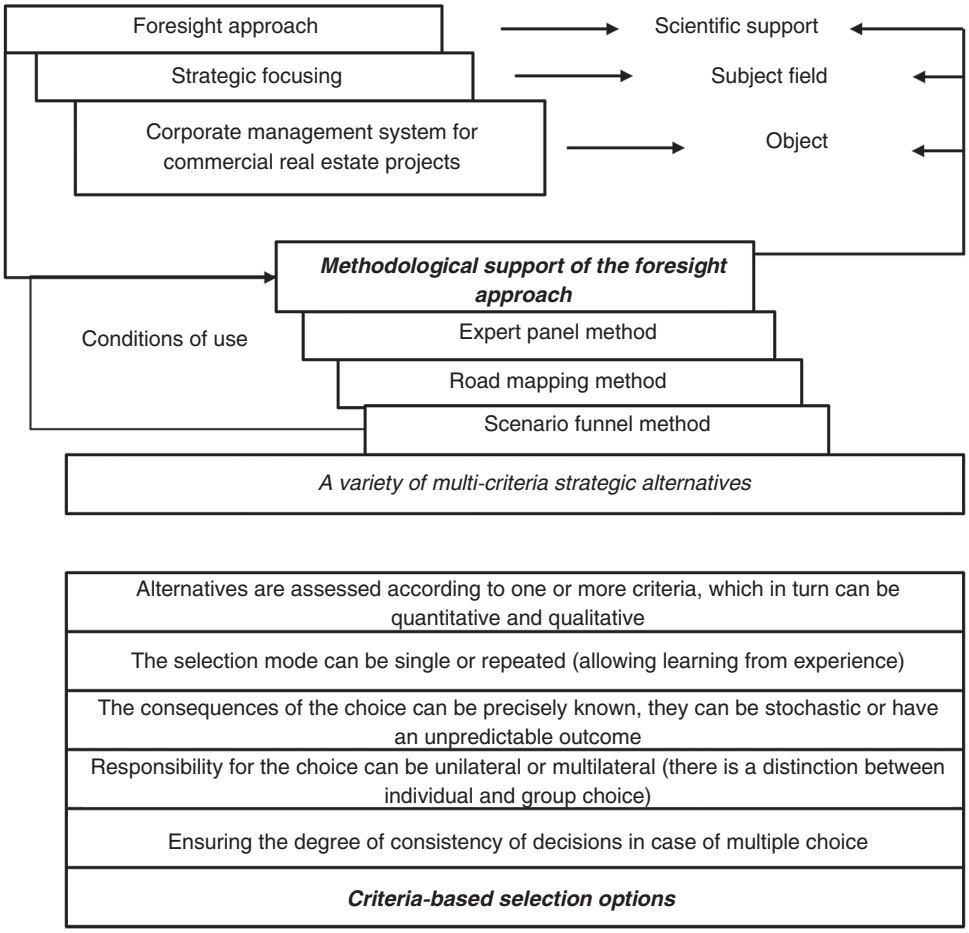


Fig. 2. The options for the criteria-based selection of strategic focusing areas of a corporate management system focused on a commercial real estate project

The analysis of the process of choosing strategic alternatives has shown that the degree of their consistency in determining the preferred alternative may vary. The interests of expert panels may partially coincide, suggesting the need for a coalition choice, or they may turn out to be completely contradictory, urging the need for a choice amid a conflict. Various options require a proper assignment of tasks. Most often, in these cases, the statements of criteria-based selection problems are used, studied within the framework of the methodology for focusing investment and construction activities.

The comparative analysis of forecast methods of criteria-based strategic focusing confirms the advantage of the foresight approach, and allows not only to identify the "turning points" within the life cycle of a commercial real estate facility, but also to identify the potential for the parallel development of events [8].

The task of identifying the best acceptable alternatives is complicated due to the need to evaluate them using several criteria. The choice of strategic alternatives in the process of building a portfolio of commercial real estate projects involves the use of a variety of criteria [9]. For instance:

1) the economic efficiency of the type of a commercial real estate project (strives for the maximum);

2) the venturousness of project cycles as a whole and their stages (strives for the minimum);

3) the pace of capitalization of projects (strives for the maximum);

4) the construction period before commissioning (strives for the minimum);

5) the total cost of ownership (strives for the minimum) etc.

The problem formulation can be decomposed into the choice of the whole set of foresight methods for determining the best alternative and identifying the best alternative based on the use of the selected method [10].

6. THE PRACTICAL APPLICATION OF CORPORATE MANAGEMENT STRATEGIES TO THE ORGANIZATION OF CONSTRUCTION OF COMMERCIAL REAL ESTATE IN EUROPE (FRANCE)

A case of corporate management of a commercial real estate construction undertaking in Europe (France) is considered in respect of an area occupied by a high-speed railroad, in the process of development of such territories and the setup of commercial development zones adjacent to new or existing railroad stations. Due to high-speed traffic and the arrival of high-speed trains, the corporate management of commercial real estate construction projects is deployed, it represents a combination of political will and funding.

As a rule, an urban planning organization, selected in a tender, initiates the design process and performs the following assignments, with regard for the habits and partnerships, behavioral patterns of customers[1]:

- pre-project design of railway junctions,

1 Urban Planning Code of the Republic of France : Paris: edited on July 21, 2021.

- design of commercial urban built-up areas adjacent to railroad complexes,
- pre-project design of new urban services at railroad stations or development of multimodality accompanied by the implementation of multimodal transport interchange hubs (TPUs) that consolidate various means of transport, etc.

At the next stage, decision makers, including political leaders and investors, address architectural bureaus in order to:

- ensure the development and modernization of existing built-up blocks around the railroad complexes, creating multimodal transport hubs that meet the new requirements. For example, the improvement of entrances to transport interchange hubs (TPUs), construction of new parking zones, office buildings, hotels, large shopping areas, new commercial residential real estate, refurbishment of existing buildings, structures and facilities,
- ensure the large-scale redevelopment of territories around new railroad complexes.

At this stage of design, the main parameters of the project are specified, including the project budget, the project payback period, buildings, structures and facilities, the management of real estate and territories, including their operation and maintenance.

An urban planning organization prepares the necessary documentation by conducting:

1) public opinion polls and regional public hearings (at least, a poll and a questionnaire to collect information on compliance with the above)[2, 3, 4, 5]:

- environmental protection, development of nature protection and compensatory measures;
- land plot and real estate purchase legislation;

2) modeling aimed at the preparation of final tenders, resulting in the selection of a construction architectural bureau working in cooperation with various design organizations and acting as the project guarantor, or the general designer (to be selected after the presentation of a detailed layout, supported by a feasibility study)[6, 7, 8, 9].

At this stage, the preparation process takes a long time and is directly related to[1]:

- the provisions of the effective legislation and, often, the need to develop and put into effect new legislative and subordinate acts;
- search for public and private financing.

Architects, urban planning organizations, large railroad and facility management groups, design bureaus and construction organizations implement this project initiative under the guidance of political leaders and investors.

Bold innovative initiatives of the general designer, based on the use of cutting-edge technologies and supported by:

- an innovative approach to production in the metallurgical industry;
- an innovative approach to the construction buildings, structures and facilities;
- new information and computer technologies that assure the safety of property and people, given the use of such technologies by clients and employees;
- allow to build extremely modern structures and arrange territories and spaces in compliance with the current legislation, using cutting-edge information, electronic and high-quality remote operation and maintenance technologies. Thus, a faster return on investment is achieved.

The planned sale of such real estate, development of territories, buildings, structures and facilities are connected with the operation of the HSR system/VSPS (high-speed railroad/high-speed railroad rolling stock). The organization of the construction of such commercial real estate is often a long-lasting process. This process often has neither any specific construction procedure, nor any priority deadlines, just political decisions and requests from operators. The priority objectives are determined and attained in strict compliance with the provisions of the Urban Development Code, building rules and regulations, fire safety standards and rules, maintenance standards and rules, etc.[10, 11, 12].

7. FINAL PART

The strategic focusing of the corporate management system designated for real estate projects allows make a statement that there is no single solution to the general problem of multi-criteria optimization of strategic alternatives in the long run, but the very formulation of the choice problem requires a detailed quantitative description of the subject area. The solution allows to establish the main strategic trend of the corporate management system for commercial real estate projects, taking into account the polycentric format of interruptive and extended type of activity.

In practice, this means the need for:

1) the multi-criteria restructuring of the real estate portfolio by the type of real estate, its spatial localization, as well as the steps and stages of the life cycle of commercial real estate projects;

2) taking into account the economic efficiency of the project cycle as a whole and its separate steps and stages, the irregular pace of the project capitalization at different stages of the life cycle, the dynamics of the total cost of ownership, integration and outsourcing opportunities, social and environmental filters, etc.;

3) ensuring a highly mobile organizational structure of corporate management, that is, a continuous type of organizational restructuring as a modern feature of corporate performance.

Thus, a full-fledged solution to the problem of strategic focusing of a corporate management system for commercial real estate projects requires the clarification of scientific approaches and

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development of an organizational model of a system, with regard for the continuous nature of its restructuring.

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Обеспечение стратегической фокусировки корпоративной системы управления проектами коммерческой недвижимости

От выбора стратегий развития корпоративной системы управления проектами коммерческой недвижимости зависит в конечном итоге направление движения корпорации — экономический рост либо спад. Для выбора наилучших стратегий развития корпорации применяются инструменты стратегической фокусировки корпоративной системы управления.

В данной статье раскрыты задачи и методы стратегической фокусировки корпоративной системы управления проектами коммерческой недвижимости. Описан алгоритм форсайт-проекта и варианты критериального отбора направлений стратегической фокусировки корпоративной системы. Определены основные критерии формирования портфеля проектов коммерческой недвижимости.

Рассмотрено практическое применение стратегий корпоративного управления организацией строительства коммерческой недвижимости в Европе (Франция).

Стратегическая фокусировка корпоративной системы управления проектами коммерческой недвижимости позволяет констатировать: на длинном временном плече единственного решения общей задачи многокритериальной оптимизации стратегических альтернатив не существует, но сама постановка задачи выбора требует детального количественного описания предметной области. Результат ее решения позволяет установить основную стратегическую тенденцию корпоративной системы управления проектами коммерческой недвижимости с учетом полицентрического формата прерывисто-пролонгированного типа деятельности.

На практике это означает необходимость:

1) многокритериальной реструктуризации портфеля недвижимости по типу недвижимости, ее пространственной локализации, а также по этапам и стадиям жизненного цикла проектов коммерческой недвижимости;

2) учета экономической эффективности проектного цикла в целом и его отдельных этапов и стадий, темповых перепадов капитализации проекта по стадиям жизненного цикла, динамики совокупной стоимости владения, интеграционных и аутсорсинговых возможностей, социальных и экологических фильтров и др.;

3) обеспечения высокой мобильности организационной структуры корпоративного управления, т.е. непрерывного типа организационной реструктуризации как современной особенности корпоративной деятельности.

Таким образом, полноценное решение проблемы стратегической фокусировки системы корпоративного управления проектами коммерческой недвижимости требует уточнения научных подходов и разработки организационной модели системы с учетом непрерывного характера ее реструктуризации.

Ключевые слова: *стратегическая фокусировка, форсайт-подход, метод «сценарной воронки», критериальный отбор*

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Assessment of the project management system in the context of the implementation of large–scale projects: approaches and indicators

A constant search for effective management tools becomes necessary against the background of economic globalization, growing competition, fast changing environmental factors, increasingly stringent product quality requirements. The project management methodology can boost management efficiency by focusing efforts on a specific area of activity and implementing the necessary strategic changes. As management problems become more complicated, the project management system itself undergoes changes and moves to a new level of organizational maturity, but the process of these changes cannot be considered complete. It is necessary to use performance indicators to boost the motivation of a project team.

The research shows that it is necessary to improve the tools used to assess in-house project management systems that rely on the international experience of using both the key indicators and expert assessments that entail a comparison with a certain reference state of the system. The system of indicators should have an integrated management framework designed in the format of a project-oriented structure.

The purpose of the article is to consider and generalize the approaches, goals and principles of a system of indicators for assessing project management in an organization and drafting a system of indicators. The co-authors take advantage of the provisions of the project management methodology and framework management models to develop a system of indicators used to assess project management processes and results. Their novelty stems from an approach to the systematization of indicators in the context of subject- and management-focused process groups, specified in the Russian project management standards with a focus on the function of control.

Keywords: *project management, system maturity characteristics, system structure, motivation and control, project management assessment indicators*



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1. PROBLEM RELEVANCE

It is necessary to take account of a long-term period, a large number of participants, their economic interests, functions, management regulations, and a large number of interrelated targets to develop a system for the performance evaluation of a team of large-scale project developers. Only well-organized project activities, project team's motivation to succeed, team consistency, and competence development can ensure the achievement of project goals.

A team motivation system, can supplement the current motivation system, designated for all employees of the company, and a project needs information support and a system of key performance indicators, both general, reflecting the functions and mechanisms of project management, and specific, reflecting the subject area of project changes.

In fact, it is necessary to create an information and analytical system to provide prompt hierarchical problem-focused access to reliable and relevant information presented in the form convenient for decision-making. A well-organized system correctly assesses achieved levels, timely adjusts management actions, and improves the efficiency of project teams.

Development of an integrated management framework for decision-making and information exchange is a complex though solvable task to be tacked using a unified model of processes, their standardization, horizontal and vertical integration. Conversion of unreasonably large amounts of "confidential" information into publicly available data will allow to manage projects more effectively by taking advantage of each strength of the project management methodology [1].

It is necessary to consider different approaches to the unified project management framework of an information and analytical system of project management. At the same time, it is necessary to comply with existing project activity regulations. In particular, the document titled "Fundamentals of professional knowledge and national requirements for the competence of project management specialists (NRC)" addresses the system model of project management, and its core element represents a folded tree that has a wide range of tasks and procedures representing the theoretical basis of project management. The model has three main blocks[1]: management objects, management subjects, and management processes.

Each block has a hierarchical structure, that correlates with the indicators characterizing project goals, project participants, their interests, and the organizational structure of project management.

It is necessary to identify the indicators that correspond to the levels of management associated with management subjects in compliance with the national requirements for the competence of specialists[1]:

- the strategic level encompasses the entire

1 Basics of professional knowledge and national requirements for the competence of project management specialists (STC). URL: https://pmpractice.ru/knowledgebase/normative/evaluation/ntk (date of access: July 2, 2021).

project life cycle; indicators characterize its implementation at each phase (goal achievement broken down by project milestones);

- project activities that are scheduled to be completed in the course of the year;
- project activities that are scheduled to be completed in the course of the quarter;
- the operational management level (shorter implementation periods).

According to articles 4–7 of the PMBOK guidelines, there are five object-processes, that are subject to evaluation, that can serve as the basis for key project performance indicators (KPIs)[2]:

1. Initiation encompasses development of the project implementation schedule, the budget, and technical support regulations. In the course of designing the KPI system, project developers determine scheduling quality indicators, deviations from the project schedule and budget, conditions of the resource-intensive and technical project support, as well as revisions of these parameters in the process of the project implementation. In particular, the co-authors propose to employ the following indicators to evaluate the project scheduling quality[3]:

- accumulated deviations due to rescheduling, in days;
- accumulated deviations due to rescheduling, as a percentage of the total project implementation period.

These indicators will not only demonstrate errors in project scheduling, they will also help to identify the faulty organization of management processes that will necessitate adjustments. The system does not take account of deviations, caused by the external environment and considered as factors of risk. Deviations must be measured in relation to their origin, including the accuracy of resource planning, poor work quality, and violation of agreement terms by suppliers.

2. Scheduling means compiling a detailed list of suppliers, contractors, formulating the need for and sources of human resources.

3. Performance means compliance with the schedule, the project budget, the quality of work and contractual performance.

4. Monitoring and control encompass the adjustment of processes, the evaluation of the work quality performance and budget expenditures.

5. The project completion allows to assess the comprehensiveness of the achievement of project objectives, the actual results of the economic, budgetary and social effectiveness of projects. At the project initiation stage, performance indicators are calculated; however, at the end of the project implementation period, values of indicators may differ from the projected ones and these discrepancies allow to make a conclusion about the success of the project.

Each project has specific, quantifiable indicators, whose values indicate the achievement of project goals. Long-term projects entail a staged change in the project scope accompanied by the attainment of the target indicators. In particular, the target indicator of national project “Safe and high-quality motor roads” represents the share of regional roads that meet regulatory requirements. In 2024, the value of this indicator is expected to reach 50.9 % (the base level is 43.1 %)[4]. Almost every project has a group of target indicators whose values are pre-set for each project year; hence, the performance is re-assessed each year.

A corporate project management system needs revisions due to ever developing economic relations, tightening competition, and other factors that make the function of management more complicated. Ongoing monitoring of the state of affairs allows to determine the level of the system maturity and outline its further development patterns. In this case, values of project management efficiency indicators will go up for each subsequent project.

The organizational maturity of project management is the ability of an organization to select projects and manage them in such a way that most effectively supports the achievement of corporate strategic goals.

In the course of studying project management tools, many authors arrived at the conclusion that a systematic independent assessment of project management maturity is as important as the evaluation of efficiency of each implemented project[3] [3–5]. The evaluation of the organizational maturity of project management allows to analyze the state of affairs at an organization, identify the opportunities for the implementation and development of project management techniques. The results of such an evaluation can serve as the source information for a tree of project management goals [5].

One of the first project management maturity evaluation models was developed by G. Kerzner; it has five levels of project management maturity [6]:

Level 1 — common language;
Level 2 — common process;
Level 3 — singular methodology;
Level 4 — benchmarking;
Level 5 — continuous improvement.

This approach has boosted the development of a project management system; it guides and inspires the emergence of other approaches to assessing project management maturity. Later, other approaches appeared, each having its own number and composition of levels.

Having analyzed various approaches to the maturity level of project management, the researchers came to the conclusion that the requirements applied to the maturity levels are most fully disclosed in the IPMA-SOVNET methodology [4], that has four clearly defined levels of project management maturity. Top level 4, or “Continuous improvement and benchmarking”, has the following characteristics:

- compliance with the best international practices;
- continuous adaptation of a comprehensive project management system to the best practices;
- massive basic training and career development events;
- the strategic role of the project office.

This level emphasizes the strategic role of the project office, as well as the impact of project management competencies on the in-house career advancement. The availability of the system of key performance indicators will facilitate the comprehensive attainment of these goals.

2 Guide to the Project Management Body of Knowledge (PMBOK Guide). URL: https://www.litres.ru/raznoe-4340152/rukovodstvo-k-svodu-znaniy-po-upravleniu-proektami-rukovods (date of access: June 2, 2021).

3 Malakhov V. Examples of KPIs for measuring the success of a project office. URL: https://www.advanta-group.ru/blog/primery-kpi-dla-proektnogo-ofisa/ (date of access: June 21, 2021). (rus.).

4 Passport of the national project “Safe and high-quality highways”. URL: https://bkdrf.ru/uploads/doc/%D0%BF%D0%B0%D1%81%D0%BF%D0%BE%D1%80%D1%82%20%D0%BD%D0%B0%D1%86%D0%B8%D0%BE%D0%BD%D0%B0%D0%BB%D1%8C%D0%BD%D0%BE%D0%B3%D0%BE%20%D0%BF%D1%80%D0%BE%D0%B5%D0%BA%D1%82%D0%B0.pdf (date of access: May 22, 2020).

2. APPROACHES TO KEY INDICATORS NEEDED TO ASSESS A PROJECT MANAGEMENT SYSTEM

The compilation of a system of indicators, that showcase the staff motivation, entails a set of sources, including the project management system, programs, and the project portfolio.

A slightly adapted balanced scorecard, developed by Norton and Kaplan, was applied in various areas of activities and converted into the system of key performance indicators (KPIs), also applied by project-oriented businesses. A project-oriented organization is an organization that chooses project management as an organizational strategy, that makes temporary teams or maintains permanent organizational structures designated for project management. The following advantages are emphasized in respect of the applicability and strengths of a balanced scorecard in a project-oriented organization [7]:

- the ability to optimize budgets;
- the transformation of strategic project goals into clear business unit objectives, having measurable targets and deadlines to be met by certain managers in charge;
- the focus of business units and divisions on strategic goals;
- the concentration of resources in an effort to solve strategic problems.

Research projects address (1) the project evaluation approach, taken by groups of people concerned with project results, (2) the consideration for and coordination of the interests of business owners, company managers, project initiators, and project office employees3. Along with other indicators, the co-authors propose to assess the project scheduling quality, that needs no adjustments in the process of the project implementation, if it is ideal, and that can be characterized by the following indicators in other cases[3]:

- accumulated deviations due to rescheduling, days;
- accumulated deviations due to rescheduling, as a percentage of the total project period.

This method does not take account of the deviations caused by the external environment, it merely considers the deviations related to project changes, which is not quite logical, since the idea is to analyze the project risks as a function of the project management. It is necessary to identify the causes of the failure to comply with the project schedule before measuring deviations caused by delays. The causes may include resource planning inaccuracies, poor project work quality, and violations of agreement terms by suppliers. A timely evaluation helps to improve the project management procedure.

Project management needs a system of performance indicators to motivate personnel to solve problems in the context of numerous limitations typical for project activities; the unique nature of projects is determined not only by the composition of tasks to be tackled, but also by motivation. This phenomenon stems from the scale of projects, the unique features of the subject area exposed to changes, the composition and interests of the project participants.

In particular, the following factors are recommended to be taken into account in the process of designing a project motivation system[5]:

- goals pursued by the project managers and the project team;
- interests of the company employees and independent participants;
- the period of activity of the motivation model;
- the list of KPIs and calculation procedures;
- penalty regulation and incentivization procedures;
- scheduled KPI calculations;
- motivation budget regulations.

The co-authors propose to focus on the three elements of the "triangle of restrictions" with a focus on the main management functions, objects, subjects, project stages, restrictions and risks[5]:

- budget constraints;
- time limits;
- project indicators.

The effectiveness of projects is largely determined by the skillful use of these three aspects, and it is these three aspects that should serve as the basis for the system of evaluation indicators. The earned value method (EVM) is proposed as the basis for the appropriate KPIs. The purpose of developing indicators for this group is to determine whether the actual amount of work performed corresponds to the planned amount within the budget[5]. In general, this approach is consistent with the essence of project management.

An integrated motivation system was developed on the basis of project-focused motivation principles for the benefit of project management at the national, federal and regional levels. The system can be integrated into practical corporate activities. Key performance indicators (KPIs) are structured as follows[6]:

- project KPIs determine the project implementation efficiency with regard for the attained results, and the same for all project team members;
- KPIs of the event block determine the efficiency of the block of interrelated activities, if the specific nature of the project requires its formation;
- an individual KPI reflects an individual efficiency of each project participant (in addition to the work quality and timeliness, team interaction efficiency is also taken into account).

Key performance indicators, that apply to projects and blocks of project activities, are most important for evaluating the work of the project director manager, while an individual key performance indicator is of maximal importance for project executors. An individual KPI is determined by the project manager. The problem is that the evaluation system must be based on accurate measurement methodologies and standardized requirements applicable to project competencies. If a biased approach dominates, the motivation of project office employees to develop competencies will go down [8].

It should be noted that the indicator of each level should be defined as an integrated value of the system of indicators that reflect the specific nature of the project scope and the responsibility of a particular executor.

In accordance with GOST R ISO 21500-2014[7], project management processes are divided pursuant to two characteristic features, including subject and management groups. Given this approach and the purpose of the study, we consider the subject groups of processes in relation to the management "control" group and offer the following indicators (Table).

5 Sultanov I.A. Using the KPI methodology in projects. URL: http://projectimo.ru/strategicheskoe-planirovanie/klyuchevye-pokazateli-ehffektivnosti-kpi.html (date accessed: July 2, 2021). (rus.).

6 Methodical recommendations for the implementation of project management in executive authorities. URL: https: //admlip.ru/doc/app/adm/dep_ecn/metod_2.pdf (date accessed: July 2, 2021).

7 GOST R ISO 21500-2014. Project Management Guide. URL: http://docs.cntd.ru/document/1200118020 (date of access: June 12, 2021).

Indicators of project motivation broken down by the subject groups of processes

Subject groups of processes	Meaningful interpretation from the standpoint of control	Indicators
Integration	Control over changes. Control over project activities	Target project indicators. Total actual deviation from target indicators. Actual deviation from target indicators due to specific reasons
Resources	Managing project resources	The number of violations of resource delivery schedules. Losses caused by schedule violations
Deadlines	Control over the project calendar plan	The number of violations of work performance deadlines that do not extend the project implementation period. The number of violations of work performance deadlines that extend the project implementation period. An increase in the work performance period as a percentage of the scheduled deadlines. The number of violations of work performance deadlines due to in-house reasons. The number of violations of work performance deadlines due to external reasons
Cost	Cost control	Project cost overrun, in monetary units. Project cost overrun, in %. Cost overrun by the types of work, in monetary units. Cost overrun by the types of work, in %
Risks	Risk management	The planned financial reserve of the project. The used financial reserve of the project
Quality	Quality control	The quality of individual events. The quality of a block of interrelated events
Purchases	Contract management	The percentage of contracts whose terms are violated

The quantitative efficiency assessment of corporate project activities should reflect not only the achievement of project goals in various contexts, but also the teamwork, that determines project success, including the staffing of the project team, the stability of the team composition at each phase of the team's life cycle; the loyalty of the project team; the responsiveness to project problems. It is difficult to use computational and economic indicators alone to characterize teamwork. Besides, an expert examination of project management is needed, a comparison with some benchmark characteristics of the system.

3. CONCLUSION

The current state of economic relations is characterized by high competition. This feature is equally typical for various sectors of the economy. Project management tools are highly efficient in project management if applied to maintaining or strengthening competitive positions. Effective project management means the availability of project management competencies among the staff, a motivation mechanism needed to achieve project goals, and the maturity of the corporate project management system. High maturity means a strong project focus of an organization, when special project offices are created for the attainment of strategic goals. These project offices have special authorities and perform integratory functions aimed at the implementation of a project or a portfolio of projects.

The research shows that the motivation mechanism of project management requires further development. In particular, this statement applies to the systems of indicators needed to evaluate the efficiency of project management. When compiling a system of indicators, a project manager should take account of project goals and the project management system as a whole, since this approach will arrange the conditions for boosting the project management maturity.

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Оценка системы проектного управления в условиях реализации крупномасштабных проектов: подходы и показатели

В условиях глобализации экономики, роста конкуренции, значительной динамики факторов внешней среды, возрастающих требований к качеству продукции необходим постоянный поиск эффективных инструментов управления. Применение методологии проектного управления способно обеспечить эффективное управление за счет концентрации усилий на развитие конкретного направления деятельности, обеспечить необходимые стратегические изменения. По мере усложнения управленческих задач сама система проектного управления претерпевает изменения, переходит на новый уровень организационной зрелости, однако процесс этих изменений нельзя считать завершенным. Необходимо совершенствование мотивационного механизма команды проекта на основе оценочных показателей деятельности.

Исследования показывают, что необходимо совершенствование инструментария оценки самих систем проектного управления в организации, опираясь на мировой опыт применения не только ключевых расчетных показателей оценки эффективности систем проектного управления, но и на экспертные оценки систем, предусматривающие сравнения с некоторым эталонным состоянием системы. Построение системы оценочных показателей должно базироваться на формировании единого управленческого контура в формате проектно-ориентированной структуры.

Целью статьи является рассмотрение и обобщение подходов, целей и принципов формирования системы показателей оценки проектного управления в организации, разработка предложений по развитию системы показателей. Базируясь на положениях методологии проектного управления, моделях формирования управленческого контура, авторы предлагают систему показателей для оценки результатов и процессов проектного управления. Их новизна определяется подходом к систематизации показателей в разрезе предметных и управленческих групп процесса, предусмотренных российскими стандартами управления проектами с ориентацией на функцию контроля.

Ключевые слова: *проектное управление, характеристики зрелости системы, структура системы, мотивация и контроль, показатели оценки проектного управления*

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Comparative inter-country analysis of assessment of the effectiveness of state housing policy: statistical instruments

The article provides a comparative analysis of assessment of the effectiveness of housing policies in Austria, Germany and Russia in the context of the adequate housing concept. In modern world management practice, there is no universal set of criteria for assessing the housing policy effectiveness, however, there are sets of indicators in the public information resources of these countries that can reflect such an assessment. The only problem is information asymmetry, in which each country forms its own set of estimated indicators, which leads to their incomparability. At that, the need for such data exists in connection with the need to update the current results of the housing policy implementation and the assessment of current trends in the housing sector development.

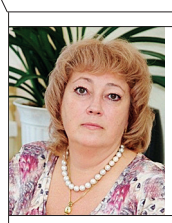
Each country has its own mechanism for assessing the effectiveness of housing policy, based on its own set of parameters corresponding to the determined goals and directions of the housing sector development.

Adequate housing as a criterion for assessing the effectiveness of the housing policy implementation allows a full demonstration of the effectiveness of measures implemented by the state in the housing sector.

The concept of adequate housing, as an actual doctrine of the national development of the housing sector, allows for a comparative analysis of the housing policy of different countries by assessing and comparing the effects of its implementation.

According to the study of housing policy in Austria, Germany and Russia, it was determined that the national model of housing policy evolves in the development of concepts, goals, implementation mechanism and depends both on the level of satisfaction of the need for housing, and on historical experience, traditions and socio-economic characteristics of management at this stage.

Keywords: *public housing policy, inter-country studies, adequate housing, housing provision, housing affordability, housing comfortability, statistical information*



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INTRODUCTION

It is known that providing the population with decent living conditions is the primary social task of the state.

Each country has its own individual set of instruments for providing the population with housing, which is associated both with a single concept of housing policy in any country and the role of the state, as well as with the traditions and historical path of the state development in this economic environment [1]. Taking into account the housing policy direction and the peculiarities of implementation of the state socio-economic policy in general, an individual set of criteria and indicators is formed in each country for a comprehensive assessment of the results achieved in implementing the housing policy goals [2].

The inter-country comparison in order to analyze the assessment of the housing policy effectiveness in the context of individual areas of its implementation is possible only at an integrated approach to assessing the results of the housing policy of each individual country [3].

For the analysis, three countries were selected with different goals in the mechanism of the housing policy implementation and the level of implementation of the concept of adequate housing as a basic methodology. A study of the experience of Austria and Germany shows that these countries, at various stages of their development, faced solutions to problems in the housing sector similar to those of modern Russia [4–6]. The consideration of estimated indicators of these countries will make it possible not only to compare the approaches to the selection of indicators of the housing policy performance, but to understand how this or that information base and grouping of estimated indicators makes it possible to form the basis for effective management decisions. In addition, such a comparative assessment will allow determination of the criteria and parameters that most objectively and comprehensively reflect the success of the achieved results of housing policy, and the assessment of the effectiveness of implementation of the concept of adequate housing in a given country [7, 8].

Each country has its own mechanism for assessing the housing policy effectiveness and is based, at the same time, on its own set of parameters corresponding to the given goals and directions of the housing sector development [9]. Organizations conducting inter-country comparisons often use their own monitoring databases and proprietary methods for assessing the available data. The comparative analysis of the effectiveness of modern housing policy in Austria, Germany and Russia also requires a certain unification of the assessment system and becomes possible at analyzing and comparing data on the provision of the population with adequate housing.

The adequate housing provision of the population, as a criterion for assessing the housing policy effectiveness, fully shows the effectiveness of measures implemented in the country's housing sector.

The main parameters for characterizing housing as adequate were formulated by the UN Center for Human Settlements in the Habitat Agenda at the Second Conference on Human Settlements (Habitat II) in Istanbul (1996): The adequate housing implies "adequate privacy; adequate space; physical accessibility; adequate security; security of tenure; structural stability and durability; adequate lighting, heating and ventilation; adequate basic infrastructure, such as water-supply, sanitation and waste-management facilities; suitable environmental quality and health-related factors; and adequate and accessible location with regard to work and basic facilities: all of which should be available at an affordable cost" [10].

The housing comfortability is expressed in its convenience, healthy living, as well as the favorable emotional effect of this housing on a person's life [10]. However, in the definition of "adequate" housing, there is a clear requirement that it should be affordable. And only with the combination of a sufficient level of comfort and affordability, the housing can be considered "adequate". At the same time, affordability means not only the possibility of acquiring real estate for private ownership, but the ability to bear the burden of maintaining the housing in proper condition, as well as the ability to provide adequate housing for all categories of the population, including those who cannot do it on their own in market conditions [11, 12].

RESEARCH MATERIALS AND METHODS

This study is based on theoretical and empirical research by leading scientists dealing with the implementation of housing policy goals in the context of the implementation of the adequate housing concept, as well as inter-country comparative studies (A. Andreenkova, W. Amann, V. Busch-Geertsema, J. Kirchner, N. Kosareva, W. Mundt, T. Ovsiannikova, T. Polidi, A. Puzanov, K. Wagner, et al).

In the course of the study, the methodology of comparative analysis and the grouping of data from open statistical materials were used, including: Federal Statistical Office of Germany (Destatis), Federal State Statistics Service of the Russian Federation (Rosstat), Federal Statistical Office of Austria (Statistik Austria).

When studying and comparing the housing policies of Austria, Germany and Russia, special attention was paid to the search for conceptual approaches to an objective assessment of the effectiveness of housing policy in the studied countries and the instruments for its implementation.

RESULTS AND DISCUSSION

It is possible to characterize the housing policy effectiveness and individual aspects based on official statistics, on the basis of which various assessment methods are formed, both in Russia and in other countries [13]. In this case, the quantitative data of official statistics are an instrument to fix the parameters available for measurement and being important for the state, by the state itself. At the same time, unimportant or non-measurable data are excluded in order to unify and reflect the information of the highest priority for the state, which causes a certain dependence of final indicators of official statistics, which are an instrument for demonstrating the features of the real situation, on the priority directions of development of state policy and its socio-economic orientation. The possibility of using statistical data is limited by their array, while the data of official state statistics primarily fix the parameters that are important from the point of view of the state itself.

In Austria, Germany and Russia, official statistics show housing policy outcomes in the concept of adequate housing in varying degrees of detailed elaboration. There are data from the array of statistical information presented in the public domain on the Internet resources of the official statistics bodies of the studied countries, which directly characterize the housing provision of the population, the housing comfortability and living conditions, as well as the housing affordability (Table 1)[1, 2, 3] [14–16].

In the proposed grouping, indicators are grouped according to conceptual criteria for adequate housing: housing provision, housing comfortability and affordability. It is clear that since there is no single methodological basis for the assessment, the sets of indicators used in the studied countries are different, but this still allows assessing the detailed elaboration of the used policy

[1] United Nations 1996 *Report of the United Nations Conference on Human Settlements (Habitat II)*, preliminary version, Istanbul, 3-14 June 1996.

[2] Federal Statistical Office of Austria. 2021. URL: http://www.statistik.at/web_en/statistics/PeopleSociety/housing/index.html

[3] Federal State Statistics Service of the Russian Federation. 2020. Russian statistical yearbook. URL: https://rosstat.gov.ru/folder/210/document/12994

Table 1. Comparison of official statistics indicators in Austria, Germany and Russia

Russia	Austria	Germany
Housing provision of the population		
Total area of dwellings, average per one inhabitant (end of year) — total, m^2	Number of dwellings (main residences) in 1,000	Dwellings (residential and non-residential buildings) in 1,000
Apartments — total, mln	Average living space per dwelling in m^2	Rooms, total in 1,000
Average size of one apartment, total area of dwellings, m^2	Average number of rooms per dwelling	Living floor space, total in mln m^2
Families, registered as requiring dwellings (end of year), thou., percent of total number of families	Average living space per person in m^2	Dwellings per 1,000 inhabitants, number
Families, received dwellings and improved their housing conditions during the year, thou., percent of total number of families registered as needing dwellings	Average number of rooms per person	Living floor space per dwelling in m^2
Overhauled premises in apartments of residential buildings per year, thou. m^2 of total area	Quota of rented dwellings (including sub-tenancy) in %	Living floor space per inhabitant in m^2

Continuation of the Table 1

Privatized dwellings, thou.; total area, mln m²	Quota of owner-occupied dwellings and houses in %	Rooms per dwelling, number
	Number of rented dwellings in 1,000	Proportion of unoccupied dwellings, %
		Households owning real property, %
		Households in owner-occupied property or in rented dwellings, by household structure in dwelling unit, 1,000
Comfort of living conditions and housing stock improvement		
Share of total area equipped with: • piped water, %; • sewage (canalization), %; • heating, %; • bath (shower), %; • gas (pipeline, liquefied), %; • hot water supply, %; • electric stoves, %	Quota for the best equipped dwellings (equipment category A) in %	Types of energy used for heating occupied dwellings, by year of construction of the residential building in 1,000
Households by type and amenity of occupied dwellings, %	Share of households with single heating furnace or no heating in %	Building characterized by improved accessibility of dwellings: • Flush access to the dwelling in 1,000; • Building entrance door sufficiently wide, in 1,000; • Hallways sufficiently wide, in 1,000
Households with different level of money income by type of occupied dwelling, %		Dwelling characterized by improved accessibility: • No thresholds or floor unevenness in 1,000; • All rooms accessible without steps in 1,000; • Dwelling entrance door sufficiently wide in 1,000; • Room doors sufficiently wide in 1,000; • Hallways sufficiently wide in 1,000; • Kitchenette: sufficient space in 1,000; • Bathroom/sanitary facilities: sufficient space in 1,000; • Floor-level shower in 1,000
Households by average dwelling size per one inhabitant, %		Burden induced by the residential area and the dwelling: • There is noise from neighbors or from the street, percentage of the population; • There is crime, violence or vandalism in the area, percentage of the population; • There is environmental pollution in the self-used flat or the self-used house, percentage of the population; • There is damage due to damp, percentage of the population
Housing affordability and housing costs		
Households consumption expenditures by group of population with different level of disposable resources: housing utilities, water, electricity, gas and other types of fuel, %	Rent and running costs per dwelling in Euro	Rent and rent to income ratio of main tenant households: • Net rent exclusive of heating expenses, average in EUR per m²; • "Cold" incidental expenses (not including heating and hot water), average in EUR per m²; • Gross rent exclusive of heating expenses, average in EUR per m²; • "Warm" incidental expenses, average in EUR per m²; • Gross rent inclusive of incidental expenses, average in EUR per m²; • Rent to income ratio, %

End of the Table 1

Provision of subsidies to citizens to pay for dwellings and municipal services: • Families, received subsidies in the reporting year, mln families; • Share of families using subsidies in total number of families, %; • Amount of accrued subsidies, bln roubles; • Monthly average subsidy per a family, roubles	Rent and running costs per m^2 in Euro	Rent per square metre and dwelling, by household structure: • Net rent exclusive of heating expenses, per m^2, per dwelling in Euro; • Gross rent exclusive of heating expenses, per m^2, per dwelling in Euro; • Gross rent inclusive of incidental expenses (heating and water, etc.), per m^2, per dwelling in Euro
Citizens using social support, mln persons	Rent (running costs not included) per dwelling in Euro	Housing costs as a proportion of disposable net household income, percentage of housing costs
Amount of money for provision of social support to citizens, bln roubles	Rent (running costs not included) per m^2 in Euro	Housing cost share and housing cost overload: • Share of housing costs in disposable household income, %; • Percentage of the population living in households overburdened by housing costs (i.e. more than 40 % of the disposable household income is spent on housing costs), %
Monthly average social support per one user, roubles	Running costs per dwelling in Euro	Financial burden of the total housing cost: • Percentage of population perceiving monthly housing costs to be: no burden, %; • Percentage of population perceiving monthly housing costs to be: some burden, %; • Percentage of population perceiving monthly housing costs to be: a heavy burden, %
Share of citizens using social support in total population size, percent	Running costs per m^2 in Euro	Economic burden due to arrears of payment: • Percentage of population living in households in arrears on mortgage or rent payments, % • Percentage of population living in households in arrears on utility bills, %
	Average housing costs (rent and running costs) per dwelling in Euro	
	Average housing costs (rent and running costs) per m^2 in Euro	
	Median of housing costs in Euro	
	Median of housing costs per m^2 in Euro	

performance markers that are put into the methodology by the countries.

In the countries under study, official statistics reflecting the situation in the field of housing provision are represented, first of all, by the same indicators characterizing the housing stock and some housing conditions of the population, such as: total housing stock volume, m^2; number of residential premises, pcs; average size of a living space, m^2; etc. At the same time, there are country differences in the system of indicators in the housing stock statistics, reflecting the specifics of the analysis of the housing industry through the size, structure, dynamics and housing provision of the population.

In Germany, statistics on the housing conditions of the population is represented by an extensive group of indicators characterizing the housing provision in relation to households or individuals. At that, it is the household, and not the individual, that is often the considered unit of the aggregate. In addition, statistical data are presented in the context of the household structure, which takes into account the number of persons of which the household consists, whether there are children under 18, the monthly net income and the age of the main recipient of income. In addition to the per capita housing provision of the population, the comfortability and affordability of housing is detailed in Germany. Among the indicators for demonstrating the housing policy results, there are such specific indicators as: “Building characterized by improved accessibility of dwellings” and “Dwelling characterized by improved accessibility”, etc., which demonstrates the social orientation of the housing policy being implemented in the country. At that, the availability of statistical information on the financial burden from the total cost of housing and the economic burden due to late payment allows the state to track possible failures and imbalances in the implementation of measures to provide the population with housing in the existing socio-economic conditions.

In Austria, as well as in Germany, statistics showing the living conditions of the population, as the studied units of the population, uses such categories as household, person and housing unit, but

the basic characterized unit in the course of accounting and analysis is the housing unit. As a result of the above, it should be noted that both in Germany and in the Austrian system of statistics on housing conditions there is a distribution of households when considering their provision with certain types of utilities. The presence of the indicator "Quota for the best equipped dwellings" as an evaluation unit for housing improvement, without dividing into separate types of communal amenities, demonstrates an integrated approach to assessing the quality of housing conditions of the population, and the variability of indicators of housing affordability, including rent, allows concluding that the housing policy in Austria is highly socially oriented.

Housing statistics in Russia use dominants based on the parameters of the housing area; at that, the main objects of study are housing units, and the accounting units of the survey are a person, a family and a household. In addition, the Russian statistical system also contains features of living conditions of households, such as: distribution of households by type and improvement of the occupied housing unit; distribution of households with different levels of cash income by type of the occupied housing unit; distribution of households by area of housing units per person on average, which makes it possible to assess the housing comfortability and affordability.

It should be noted that the indicators characterizing the living conditions of the population in Russia are shown in the statistics of the standard of living of the population as a section of social statistics, while in Austria and Germany they are separated into an independent section of housing statistics.

Analyzing the conceptual approaches of the methodology for calculating indicators characterizing the living conditions of the population, it can be stated that significant differences in the final parameters of the housing stock, assessed in the countries under consideration, relate mainly to the ownership. For Austria and Germany, it is typical to use the parameters of the household and the housing unit in the assessment, while in Russia the parameters of these survey units are used to a much lesser extent, and statistics consider the individual person (citizen) as the main unit of the population and the leading parameter of the housing unit is its area (m^2). Some indicators that are present in the statistical systems of Austria and Germany (e.g. the share of rented housing, the average number of rooms per person) are absent in Russian statistics at all. Such indicators for inter-country comparisons can be obtained either from scientific articles or authors' assessments of scientists and analysts, or from databases of authoritative international organizations that study the living conditions of the population.

CONCLUSION

In general, the current situation with regard to the provision of housing for the population in Austria and Germany, in comparison with Russia, is more positive.

Despite the fact that on average there are 445 and 460 dwellings per 1,000 inhabitants in Austria and Russia, respectively, and in Germany this value reaches 511 dwellings, the total provision of the population with living space in Russia is almost two times lower than in Austria and Germany. For Russia, as for Austria and Germany at proper time, the transition to a new stage in the development of the housing sector is currently relevant, when it is important not only to increase the volume of construction, but also to improve the housing quality. More than 60 % of housing in Russia is one- and two-room apartments. In terms of rooms availability, Russia is distinctly behind Austria and Germany According to the OECD estimates, this figure in Russia is 0.9 rooms per person. While in Austria and Germany this indicator is twice as high, at the same time it is almost twice the Russian and average size of an Austrian or German apartment.

According to the OECD calculations, the most favorable housing conditions, including the number of rooms per person, the provision of necessary utilities, as well as the amount of housing costs, have now developed in Germany and Austria. The provision of the necessary utilities is the basic feature of the housing comfortability. According to this parameter, Austria and Germany are significantly ahead of Russia.

In contrast to Austria and Germany, the state housing policy in Russia at the present stage focuses on the quantitative parameters of housing provision of the population, which are expressed in the physical provision of the population with the total area of housing, and the qualitative parameters of such provision are not a priority and are assessed as long-term and strategic. This state policy agenda contributes to the formation of a package of measures in Russian cities aimed at increasing the volume of housing construction outside the assessment of such construction in accordance with the balanced use of urban areas, the need to replace dilapidated and emergency housing and utilities infrastructure.

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Сравнительный межстрановой анализ оценки эффективности государственной жилищной политики: статистический инструментарий

В статье проводится сравнительный анализ оценки эффективности жилищной политики Австрии, Германии и России в контексте концепции надлежащего жилья. В современной мировой управленческой практике универсальный набор критериев оценки эффективности жилищной политики отсутствует, однако в публичных информационных ресурсах этих стран имеют место наборы показателей, способных отразить такую оценку. Единственной проблемой становится информационная асимметрия, при которой в каждой стране формируется свой набор оценочных показателей, что приводит к их несопоставимости. При этом потребность в таких данных существует в связи с необходимостью актуализации имеющихся текущих результатов реализации жилищной политики и оценкой сложившихся тенденций развития жилищной сферы.

В каждой стране имеется свой механизм оценки эффективности жилищной политики, базирующийся на собственном наборе параметров, соответствующем заданным целям и направлениям развития жилищной сферы.

Надлежащее жилье как критерий оценки эффективности реализации жилищной политики позволяет в полной мере продемонстрировать результативность реализуемых государством мероприятий в жилищной сфере.

Концепция надлежащего жилья, как актуальная доктрина национального развития жилищной сферы, позволяет проводить сравнительный анализ жилищной политики разных стран путем оценки и сопоставления эффектов ее реализации.

Согласно исследованию жилищной политики Австрии, Германии и России, определено, что национальная модель жилищной политики эволюционирует в развитии концептов, целей, механизма реализации и зависит как от уровня удовлетворенности потребности в жилье, так и исторического опыта, традиций и социально-экономических особенностей хозяйствования на данном этапе.

Ключевые слова: *государственная жилищная политика, межстрановые исследования, надлежащее жилье, обеспеченность жильем, доступность жилья, комфортность жилья, статистическая информация*

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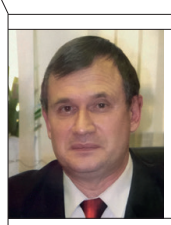
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An organizational and economic mechanism for planning the development of systems that are part of the urban utility infrastructure

The systems that comprise the utility infrastructure are a structural element of the housing and utilities sector; they make an essential contribution to the quality of life in municipalities. The development of these systems is particularly relevant now, since the utilities sector is characterized by the high depreciation of fixed assets and the limited profitability of economic activities of organizations in this sector. A combination of the above-mentioned circumstances creates industry-wide problems that hinder the effective operation of public infrastructure systems. The analysis of statistical information has shown that approaches to the development of housing and utility services are insufficient for the renewal and modernization of public infrastructure systems, so there is a practical need to develop innovative approaches to their management. This article focuses on an integrated approach to the development planning of utility systems with regard for the strengths and weaknesses of traditional forecasting tools. Today, the main planning tool is a set of programmes on the integrated development of utility infrastructure systems; however, this tool has a number of disadvantages, including the lack of performance indicators applied to the implemented activities, the predominance of general goal formulations, an unclear relationship between specific projects and programme results, etc. In order to clarify the requirements for the selection of development projects on infrastructure systems, an economic and mathematical model has been designed that allows for the selection of measures based on objective criteria, that will ensure the generation of the most effective programme on the development of utility infrastructure systems in the cities. This economic and mathematical model can be used to develop an organizational and economic planning tool that allows to eliminate the drawbacks of traditional tools.

Keywords: *housing and utility services, utility infrastructure, development, planning*



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Housing and utility services and utility infrastructure systems are essential structural elements of the urban economy. In accordance with Decree No. 204, issued by the President of the Russian Federation on May 7, 2018 "On the national goals and strategic objectives for the development of the Russian Federation for the period up to 2024", one of Russia's strategic priorities is to create the conditions for the sustainable development of utility infrastructure systems[1]. However, despite the high importance of utility infrastructure systems, the industry has experienced a number of difficulties in the process of its operation and development, and respective solutions require supplementary methodological research efforts [1].

The problems of development of utility infrastructure systems in the Russian Federation are determined by the behaviour of a number of essential indicators that characterize the economic state of the utility infrastructure system[2].

One of these indicators represents the performance of the housing and utility organizations, including resource-supplying organizations (RSOs). The first indicator under consideration is the share of profitable and unprofitable housing and utility organizations (Fig. 1). The shares of profit and loss making organizations across the industry are calculated as the ratio of companies demonstrating positive/negative financial performance as of the end of the reporting period, to the total number of companies. The performance of this indicator allows to draw conclusions about the effectiveness of economic activities of the industry entities [2].

The shares of profitable and unprofitable enterprises across the industry showed that the number of unprofitable organizations decreased from 42 % in 2010 to 30 % in 2018, so the difference was 12 % over the period under review. However, by 2018 the level of unprofitable organizations increased by 2 % compared to 2016, when the indicator value was 28 %. Given the positive dynamics of the indicator over the period under review, it should be noted that one third of organizations across the industry were unprofitable in 2018, which translates into the need to increase the performance of housing and utility organizations.

The aggregate economic performance of such organizations is the difference between their income and expenses as of the end of the reporting period under review. The current performance of the indicator is presented in Fig. 2.

During the time period under review, the indicator values fluctuated, but the net performance of housing and utility organizations was always negative. Compared to 2010, in 2018 the net performance worsened and reached a loss of 3.3 billion rubles, which makes us understand that the housing and utility sector experiences problems.

Given the value of the indicator representing the number of unprofitable organizations, which reaches 30 % of their total number, the losses of 3.3 billion rubles make the housing and utility services

1 On national goals and strategic objectives of the development of the Russian Federation for the period up to 2024 : Decree of the President of the Russian Federation of May 7, 2018 No. 204. URL: https://www.garant.ru/products/ipo/prime/doc/71837200/

2 Housing management in Russia 2019: Federal State Statistics Service. URL: https://rosstat.gov.ru/folder/210/document/13234

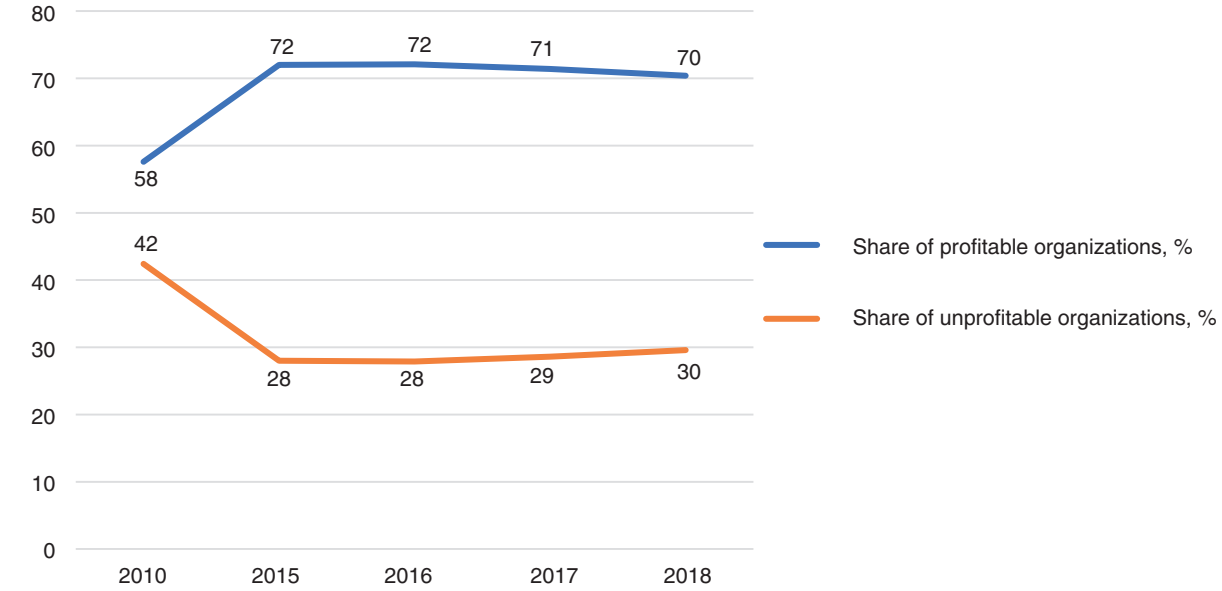


Fig. 1. Share of profitable and unprofitable housing and utility organizations, %

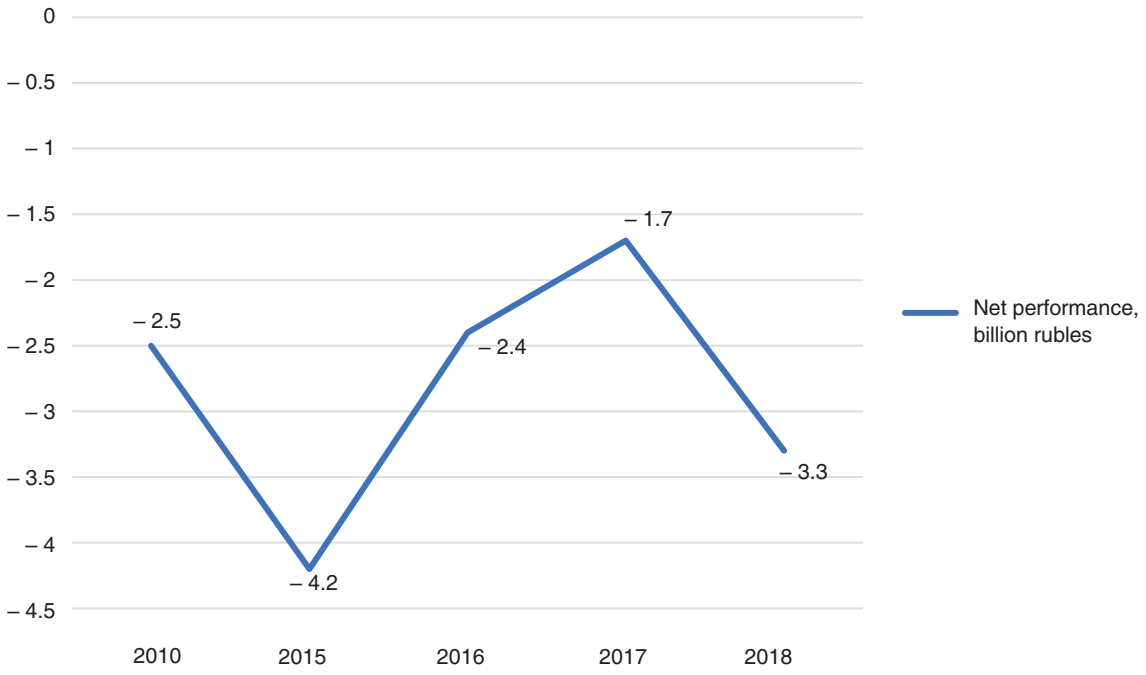


Fig. 2. Net performance of housing and utility organizations, billion rubles

sector a problematic branch featuring low performance of its subjects. The unprofitability of enterprises complicates the process of forming cash balances on the accounts of organizations, which, in turn, directly affects the development of the system. The lack of corporate profits creates difficulties in the process of reinvesting funds into fixed assets, so the updating and modernization of infrastructure facilities is untimely and insufficient.

Below is a graph of fixed capital investments broken down by the economic activities related to utility infrastructure systems (Fig. 3).

If we address the schedule of investments in the fixed assets of utility infrastructure systems, we will see that the amount of financing went up from 152 billion rubles in 2010 to 188 billion rubles in 2018, but the pace of depreciation of fixed assets was not responsive enough. Thus, if the current approaches to the development of these systems remain unchanged, additional fundraising into the industry does not significantly affect the pace of updating the utility infrastructure [3].

The pace of the aggregate depreciation of utility infrastructure systems, shown in Fig. 4, confirms the negative trend.

During the period under review, the average value of this indicator across all industries went down from 47 % in 2010 to 44 % in 2018 and reached 3 %. Hence, the approaches, used to develop the utility infrastructure, fail to ensure the sufficient renewal of utility infrastructure facilities. Dilapidated and worn-out fixed assets have a negative impact

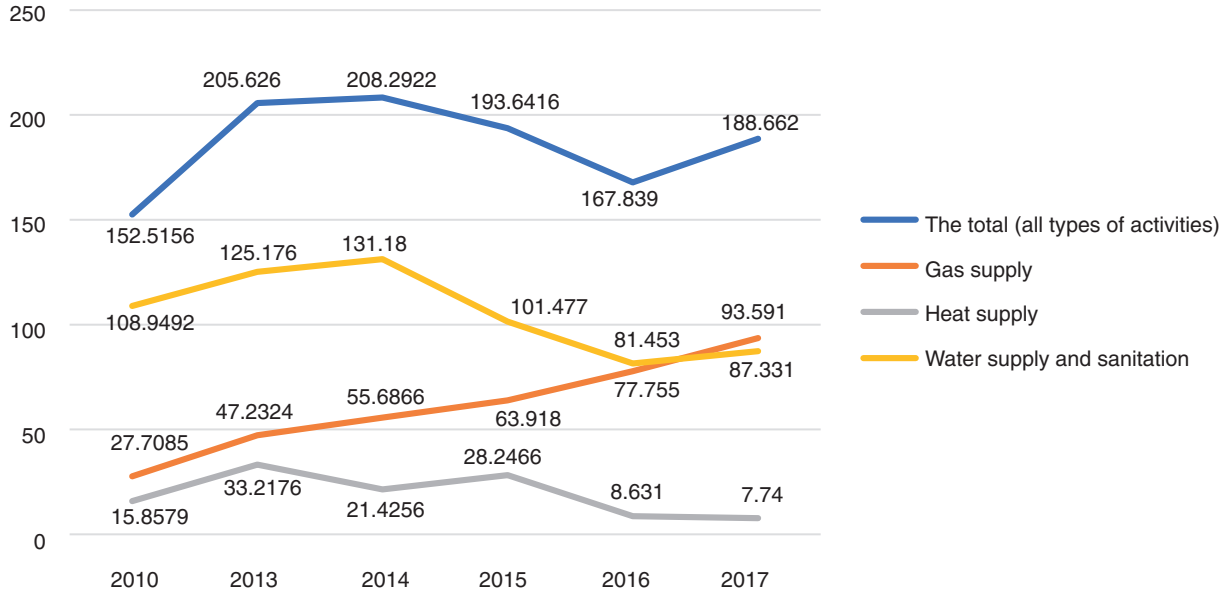


Fig. 3. Investments in fixed assets by types of activities, billion rubles

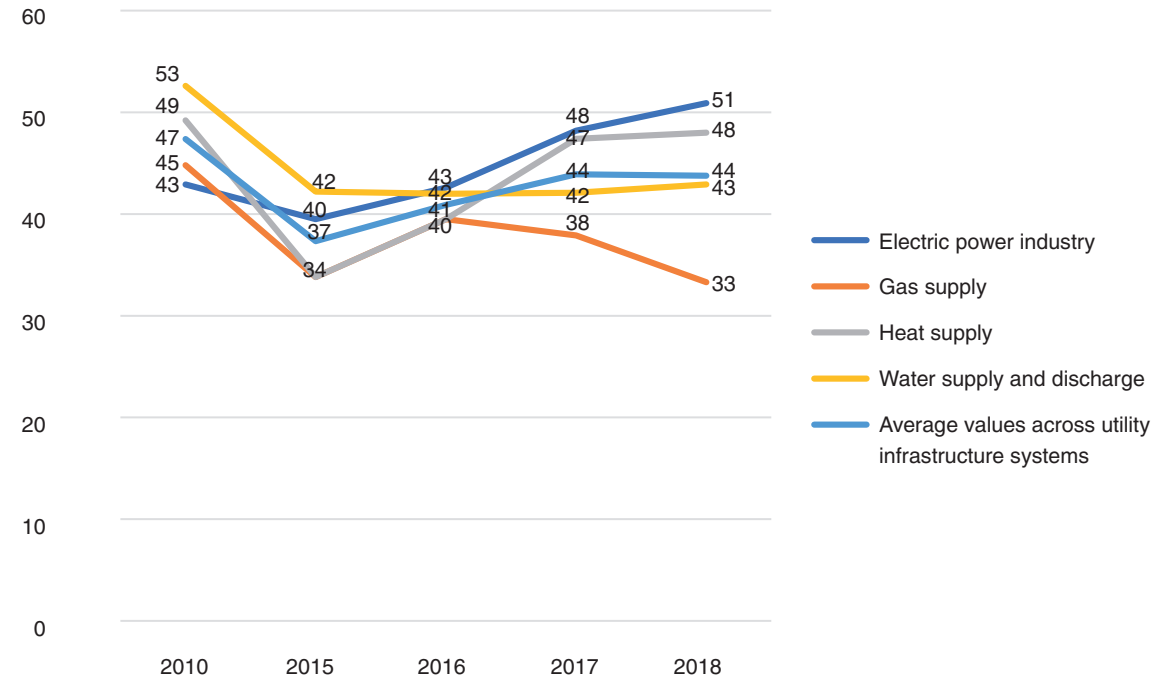


Fig. 4. Depreciation of fixed assets broken down by utility infrastructure systems, %

on the quality of services, the number of accidents, and the loss of resources during transportation. The combination of the above-mentioned difficulties causes additional losses for utility companies.

The importance of the development of utility infrastructure systems is emphasized by the priorities of the Housing and Utilities Development Strategy, which includes a transition to the most efficient technologies, as well as better living conditions for the population[3].

The statistical data, analyzed by the co-authors, demonstrate the insufficiency of the tools used to manage the development of utility infrastructure systems. At the moment, the goals and objectives, formulated within the framework of the state policy on the development of housing and utility services, are not implemented in full[4]. Thus, the combination of the above-mentioned factors necessitates an additional methodological research into this subject matter.

Many Russian scientists have studied the issues of effective development of utility infrastructure systems. The research undertakings, focused on topic of the article, feature a variety of methodological approaches to the development of the utility infrastructure, which is

3 Draft strategy for the development of housing and communal services in the Russian Federation for the period up to 2035. URL: https://www.gkhrazvitie.ru/media/174784/proekt-strategii-razvitiya-zhkh-do-2035-goda.pdf

4 On measures to provide citizens of the Russian Federation with affordable and comfortable housing and improve the quality of housing and communal services : Decree of the President of the Russian Federation No. 600 of May 7, 2012. URL: http://www.kremlin.ru/acts/bank/35264

characterized by the continuous interaction between the housing and utility sector and various social institutions. The following methods were analyzed in the research projects: methods of program-targeted planning aimed at the development of utility infrastructure systems [4], issues of the tariff regulation in the utility sector [5], energy-efficient technologies [6], the assessment of the efficiency of operation of utility infrastructure facilities, legal and regulatory framework of the utility sector [7], organizational and economic development mechanisms [8], etc. However, as evidenced in practice, despite the existence of versatile methodological approaches to the effective development of utility infrastructure systems, no solution to the current problems, experienced by the utility sector, has been developed.

Efficient modernization of the housing and utilities sector can be carried out by studying the processes that occur in the course of development of utility infrastructure systems and by means of designing an integrated economic and mathematical model that has key tasks, requirements, and restrictions that accompany the update of the utilities infrastructure.

The integrated development of utility infrastructure systems is characterized by a set of activities and projects implemented within the framework of the integrated city development programme. Economic and mathematical modeling tools can be employed to present the process of development of utility infrastructure systems. The main criteria that ensure the effective development of a utility infrastructure system as an organizational and economic system include:

- lower costs;
- optimization of the implementation time of development projects;
- higher profitability.

At the same time, the process of development of utility infrastructure systems suffers from limited labor and material resources and fixed production assets, which should also be taken into account in the process of designing an economic and mathematical model [9].

Hence, the development process can be described by the following economic and mathematical model:

$$\begin{cases} \sum_{n=1}^{N}\sum_{t=1}^{T}\frac{I}{I_{nt}}x_{nt} \\ \sum_{m=1}^{M}\sum_{n=1}^{N}\sum_{t=1}^{T}C_{nmt}x_{nmt} \end{cases} \rightarrow min, \quad (1)$$

$$\sum_{m=1}^{M}\sum_{n=1}^{N}\sum_{t=1}^{T}E_{nmt}\,x_{nmt} \rightarrow max, \quad (2)$$

$$C_{nmt} = Y_{nmt} + Z_{nmt} + W_{nmt}, \quad (3)$$

$$x_{nt} \le Q_{nt},\ x_{nt} \ge 0, \quad (4)$$

$$\begin{cases} \sum_{n=1}^{N} y_m\ x_{nt} \le Y_{mt} + \sum_{t=1}^{T}\Delta Y_{mt};\ m = 1,\ M;\ t = 1,T; \\ \sum_{n=1}^{N} z_m\ x_{nt} \le Z_{mt} + \sum_{t=1}^{T}\Delta Z_{mt};\ m = 1,\ M;\ t = 1,T; \\ \sum_{n=1}^{N} w_m\ x_{nt} \le W_{mt} + \sum_{t=1}^{T}\Delta W_{mt};\ \ m = 1,\ M;\ t = 1,T, \end{cases} \quad (5)$$

where I is the index of the year of the forecasted interval, $t = 1, T$; n is the index of the investment programme on the development of utility infrastructure systems in a particular locality, $n = 1, N$; t is the index of the year of the end of modernization of the n-th investment program, $t = 1, Y$; m is the index of local resources available for the implementation of development programmes; I_{nt} is the priority of the n-th investment programme on the development of utility infrastructure systems in the t-th year; Q_{nt} is the scope of work to be performed within the framework of the n-th investment programme on the development of utility infrastructure systems in the t-th year, million rub.; C_{nmt} is the cost of implementation of the m number of works for the n-th investment programme on the development of utility infrastructure systems in the t-th year, million rub.; E_{nmt} is the effectiveness of implementation of the m number of works for the n-th investment programme on the development of utility infrastructure systems in the t-th year, million rub.; y_{mt} is the unit cost of material resources needed to implement the m amount of works in the t-th year, in million rubles per one million rubles worth of construction works; z_{mt} is the unit labor cost for the implementation of the m amount of work in the t-th year, in million rubles per one million rubles worth of construction works; w_{mt} is the unit cost of fixed production assets needed for the implementation of the m amount of work in the t-th year, in million rubles per one million rubles worth of construction works; Y_{mt}, Z_{mt}, W_{mt} is the limit of material, labour and fixed assets available in the settlement for the implementation of the m amount of work in the t-th year, million rub.; x_{nt} is the amount of work required to implement the plan of local development of the utility infrastructure for the n-th investment programme on the utility infrastructure development in the t-th year, million rub.; ΔY_{mt}, ΔZ_{mt}, ΔW_{mt} — the increase in total resources in each year of the planning period, million rub.

The result of the economic and mathematical model is the amount of work x_{nt}, at which all the requirements for the development of utility infrastructure systems, described in the article, are met. The use of this approach in the course of designing integrated utility infrastructure development programs will ensure the effective application of available through limited resources [10].

Today, the main planning tool, applied to utility infrastructure systems, has a number of weaknesses, such as the lack of performance indicators describing the implemented measures, the predominance of general goal formulations, an unclear relationship between specific projects and programme results, etc.[5].

The proposed development planning mechanism, which meets the requirements of the economic and mathematical model, will allow to take account of the shortcomings of existing traditional tools and improve them. From the structural standpoint, the process of planning the development of utility infrastructure systems consists of the following components that reflect the functions of planning: the target block, the functional analysis block, the modernization block, and the resource planning block.

Within the target block, the primary analysis of indicators used for the development of utility infrastructure systems is carried out, and the mission and goal of the programme are set. The functional analysis block contains a more detailed study of the indicators for the development of urban utility infrastructure systems, identifying the most problematic elements and selecting activities based on the criteria determining their impact on programme results. When generating the modernization block, the most effective areas of development are identified, and options for the composition of activities, to be carried out within the framework of the programme, are drafted. The resource planning block is based on the requirements of the economic and mathematical model, including efficiency, cost, and programme implementation terms. The result of using this mechanism is the selection of the programme for the development of utility infrastructure systems that meets the criteria described in the research article. The graphic representation of the organizational and economic mechanism for the planning of the development of utility infrastructure systems is shown in Fig. 5.

5 On approval of methodological recommendations for the development of programs for the integrated development of systems of communal infrastructure of settlements, urban districts : Order of the State Construction Committee of October 1, 2013 No. 359/GS. URL: https://legalacts.ru/doc/prikaz-gosstroja-ot-01102013-n-359gs-ob/

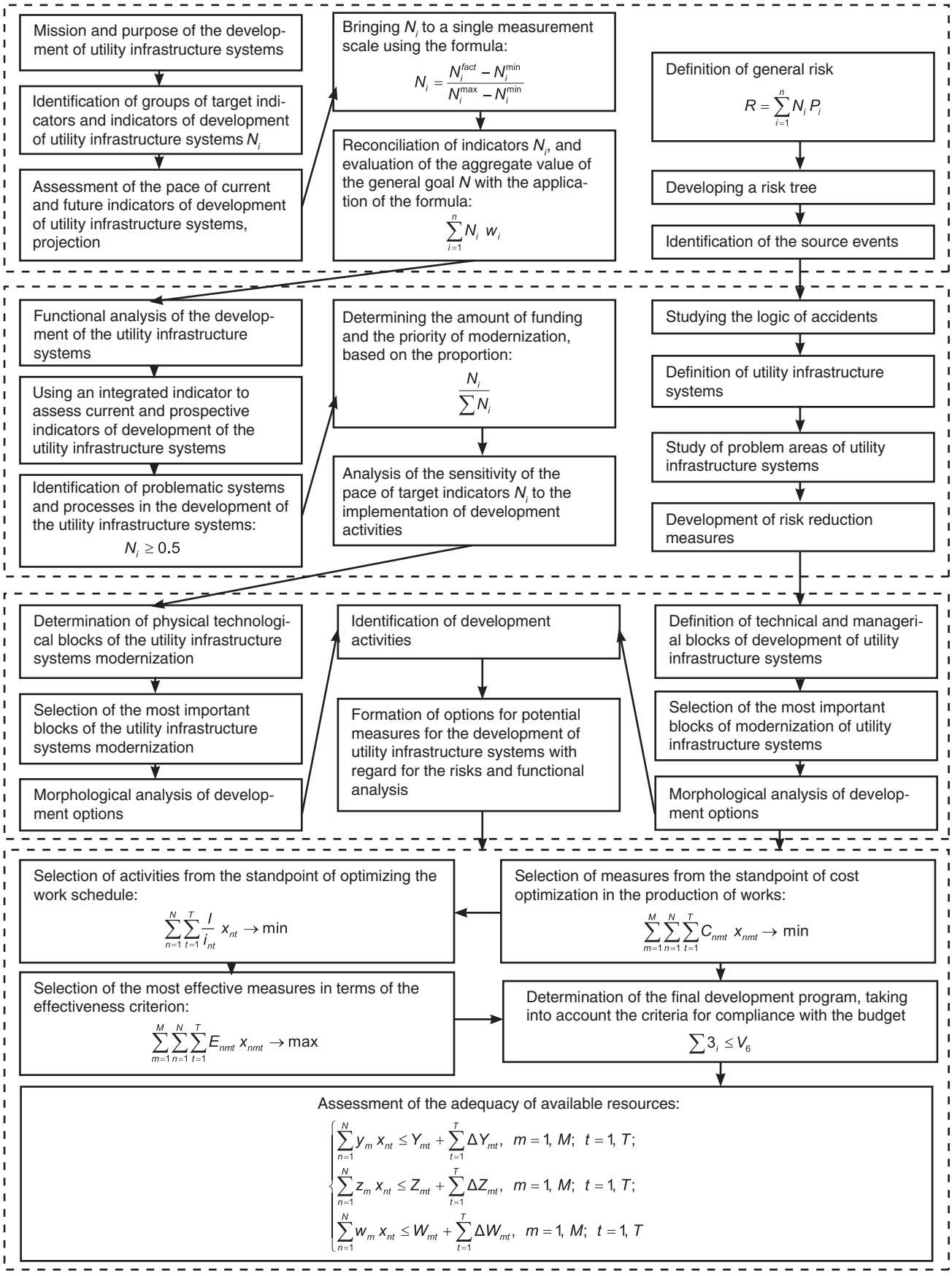


Fig. 5.Organizational and economic mechanism for planning the development of MIS

Thus, when organizing the development of utility infrastructure systems of the city using the planning mechanism developed in the framework of the article, the following results are achieved, which make it possible to supplement the existing shortcomings of traditional tools: the availability of indicators for evaluating the effectiveness of measures, the analysis of the impact of each event on the final result, the presence of a direct relationship between the implemented measures and the program targets.

It is proposed to use the developed mechanism within the framework of the executive authorities of the region or municipality responsible for the development of municipal infrastructure systems. Regular analysis, planning, and monitoring of the implementation of MIS development programs will ensure that municipal authorities are informed in a timely manner about the presence of problems in the city's municipal infrastructure, and will allow them to respond quickly and adequately to emerging challenges. The planned nature of activities for the development of MIS will provide a gradual solution to such problems of the industry as a high level of depreciation of fixed assets and low efficiency of the industry's enterprises.

CONCLUSIONS

Thus, the studied statistical information suggests that there are significant difficulties in the development and functioning of public infrastructure systems. At the same time, the dynamics of such indicators as the depreciation of MIS facilities, as well as the net result of housing and communal services organizations, allows us to conclude that the approaches used to the development of municipal infrastructure systems are ineffective. In order to provide additional methodological support for the development of municipal infrastructure systems, the article presents the main requirements for the effectiveness of MIS modernization. Based on the identified criteria that form the economic efficiency of MIS development, an economic and mathematical model describing the processes occurring within the framework of municipal infrastructure modernization is developed. The solution to the problem formed within the framework of the economic and mathematical model is the amount of work that meets the criteria of efficiency, optimal costs and implementation time, provided that the total resources allocated for the implementation of a set of measures for the modernization of MIS are limited. The formation of programs for the development of municipal infrastructure, taking into account the developed criteria, will make it possible to assess its effectiveness and optimality, which will have a beneficial effect on the quality of planning and selection of investment projects within the framework of MIS modernization.

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Организационно-экономический механизм планирования развития систем коммунальной инфраструктуры города

Системы коммунальной инфраструктуры (КИ) являются структурным элементом жилищно-коммунального хозяйства и играют большую роль в обеспечении качества жизни населения муниципальных образований. Вопросы развития систем КИ приобретают особую актуальность на современном этапе функционирования ЖКХ, для которого характерен высокий накопленный уровень износа основных фондов, а также ограниченная рентабельность хозяйственной деятельности организаций отрасли. Совокупность вышеупомянутых обстоятельств формирует проблематику отрасли, препятствующую эффективному функционированию систем коммунальной инфраструктуры. Анализ статистической информации показал, что используемые подходы к развитию ЖКХ не обеспечивают достаточные темпы обновления и модернизации систем коммунальной инфраструктуры, таким образом возникает практическая необходимость в разработке инновационных подходов к управлению КИ. Ключевым направлением исследования в рамках настоящей статьи является формирование комплексного подхода к планированию развития КИ, учитывающего сильные и слабые стороны традиционных инструментов прогнозирования. На сегодняшний день основным инструментом планирования в системах КИ являются программы комплексного развития систем коммунальной инфраструктуры, однако, данный механизм обладает рядом недостатков, таких как: отсутствие показателей эффективности реализуемых мероприятий, преобладание общих формулировок целей, неясная взаимосвязь между конкретными проектами и результатами программы и др. В целях конкретизации требований к отбору проектов развития КИ разработана экономико-математическая модель, позволяющая осуществлять отбор мероприятий по объективным критериям, что обеспечит формирование наиболее эффективной программы развития систем коммунальной инфраструктуры города. На основании экономико-математической модели сформирован организационно-экономический механизм планирования, в рамках которого были исправлены недостатки используемых традиционных инструментов.

Ключевые слова: *ЖКХ, коммунальная инфраструктура, развитие, планирование*

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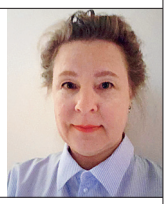


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The ecological resource of an urbanized territory



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The urbanization process is accompanied by the growth of cities and an increase in their population. Modern cities are highly complex systems that comprise material and non-material elements of life of urban residents. The development of the urban economy shapes the demand for housing and utility services. Consumer requirements have changed over the years. The aspect of environmental protection and rational use of natural resources from the standpoint of the biosphere approach is to ensure the environmental safety of residential areas in urbanized territories.

The analysis of statistical information and analytical reviews, available in the open-access sources, is carried out in the context of (1) the housing construction in the subjects of the Russian Federation, (2) ensuring the quality of the urban environment in the regions, (3) satisfaction of the local population with the living conditions in a quarter and in a city. The emphasis is placed on the volume and pace of construction of residential apartment buildings in the Russian cities from 2019 to 2021, consumer requirements for apartments, houses, and landscaping.

The ecological resource of an urbanized territory represents the rate and quality of the housing construction, including urban planning, volumetric planning, constructive and technological solutions, as well as the current state of the urban economy, including the volume and quality of housing and utility services provided to the population.

A system of parameters for calculating the ecological resource of residential areas is proposed for discussion, including the estimated indicators of the results of urban planning activities at the stages of the life cycle of a territory and the underground, surface and above-surface facilities that it accommodates. Macro-level design includes the accommodation and construction of permanent construction facilities, linear facilities and their infrastructure; the landscaping of the territory, as an element of the "green" urban framework; a system for handling solid municipal, bulky and hazardous waste. The micro-design is an ecological resource at the level of structural elements of a residential zone, it encompasses a residential area, a micro-district, a block, a complex.

Keywords: *sustainable development, environmental safety, environmental protection, urban planning activities, housing construction, urban economy*

Modern cities are highly complex systems that represent a combination of material and non-material elements of the vital activity conducted by the population [1–3]. Numerous studies, carried out in many countries, including Russia, have assessed the impact of urban development [4, 5] and urban economy on the environment and humans [6–10], since they are focused on the directions of urban development that ensure a high-quality and safe living environment [11–15].

The analysis of the regulatory framework for the environmental design and effective environmental standards in construction, conducted by V.I. Telichenko, A.A. Benouj, E.A. Sukhinina, shows that the country lacks a mature regulatory and technical framework, whose purpose would be the design of an eco-sustainable architectural and urban planning environment [16].

The task of analyzing and forecasting the ecological resource of urbanized territories in the context of their residential zones remains unsolved and needs a solution in many localities [17].

The co-authors believe that the ecological resource of the natural environment [18] is the value of the maximum cumulative indirect impact on the natural environment, at which its state meets the requirements of environmental standards within the boundaries of the pre-set target ecological zone. In the environment of vital activity, the total impact is calculated using maximum acceptable sanitary and hygienic concentrations [19].

The development of housing and the urban environment is one of Russia's national priorities[1]. There, high housing demand is caused by the low average availability of housing for the population. About 40 % of the population needs better housing conditions[2].

To achieve the target indicator of national development goal "Comfortable and safe living environment", or the commissioning of 120 mln m^2 of housing annually, it is necessary to increase the volumetric indicators of construction[2]. The area to be occupied by apartment buildings under construction should be about 140 mln m^2, and the size of annually launched new housing construction projects should increase to 70 mln m^2 [2]. Hence, the investment and construction phase of an apartment building project takes an average of two to three years, of which the development of design and initial approval documentation take from six months to a year[2].

The mass construction of multi-storeyed apartment buildings continues to be the main direction of modern urban development in the country [20]. An apartment building (AB) is a set of two or more apartments that have independent exits facing either the land plot adjacent to the residential building or the common areas in such a building[3]. An AB has

1 On national goals and strategic objectives for the development of the Russian Federation until 2024 : Decree of the President of the Russian Federation No. 474 of July 21, 2020.

2 Overview of housing, housing construction and mortgage markets in 2020. URL: https://xn--d1aqf.xn--p1ai/upload/iblock/e84/e847279b9139afd0ae3f407cd6fb7bf5.pdf

elements of common property of the owners of premises in such a house in accordance with the housing legislation[3].

The Russian Federation has 85 subjects, consolidated into 8 federal districts, which differ in the geographical location, natural and climatic conditions, territory size, population figures, and the level of socio-economic development, which affects the volume of housing construction, demand, and price levels[4].

As of 01.01.2020, the areas having the largest resident population are the Central and Volga Federal Districts, where 39.4 and 29.2 mln people reside accordingly[4]. The resident population of the Siberian Federal District is 17.1 mln, the number of residents in the Southern Federal District is 16.44 mln, the North-Western Federal District — 13.9 mln, the Ural Federal District — 12.3 mln[4]. Far Eastern and North Caucasian Federal Districts have the smallest resident population numbers with less than 10.0 mln people living in each of them[4].

As of January 1, 2020, the largest volume of the housing construction was registered in the Central Federal District, it was equal to 38.4 mln m² of AB under construction[4]. The North-Western Federal District has twice as less housing under construction, which reaches 20.0 mln m² [4]. In the Volga and Southern Federal Districts, the volume of the apartment construction is 15.0 and 14.0 mln m². The value of this indicator is below 10 mln m² of housing per each district[4].

In 2019, the floor area of 6.4 to 13.9 mln m² of new AB was commissioned in each of the Central, Volga, and Northwestern Federal Districts[4]. The volume of AB commissioned in the Far Eastern and North Caucasian Federal Districts is below 1.65 mln m², respectively[4]. The distribution of gross commissioned housing by the districts is largely driven by the population numbers[4].

The distribution of specific values of the indicator of commissioned housing (per 1,000 people, population), which largely characterizes consumer preferences and development activity in the housing construction market of a federal district, depending on the socio-economic development, geographic and climatic features of its constituent regions, differs from the distribution of absolute values of this indicator[4].

In the Ural and Northwestern Federal Districts, whose significant parts are located in the north of Russia, the volume of AB construction is 1.5–2.1 times higher than that of individual housing[4]. In other districts, this coefficient varies from 0.7 to 1.2[4]. The highest rate of AB commissioning in 2019 was registered in the North-Western Federal District , it was equal to 459.4 m² per 1,000 people[4]. In the Central and Ural Federal Districts the value reached 351.6 and 330.7 m² per 1,000 people[4].

As of January 1, 2020, 107.5 mln m² of apartment housing were under construction in the Russian Federation, of which 67.8 % was concentrated in thirteen regions, each of which accounted for, at least, 20 % of the total volume of housing construction in its federal district: Moscow and the Moscow Region — in the Central Federal District, St. Petersburg and the Leningrad Region — in the North-Western Federal District, the Krasnodar Territory and the Rostov Region — in the Southern Federal District, the Stavropol Territory — in the North Caucasian Federal District, the Republic of Bashkortostan — in the Volga Federal District, the Sverdlovsk and Tyumen Regions — in the Ural Federal District, the Novosibirsk Region and the Krasnoyarsk Territory — in the Siberian Federal District and the Primorsky Territory — in the Far Eastern Federal District[4].

All things being equal, current demographic processes have a restraining effect on demand in the housing market.

The pandemic, affecting the country's economy, also affected the construction industry. As a result of the quarantine restrictions in April – May 2020, there was a significant reduction in housing sales[2]. 44 regions out of 85 had restrictions imposed on construction work. In Moscow and the Moscow Region, construction was stopped for almost a month[2]. In addition, due to the closure of the borders, construction sites suffered for workforce shortages[2]. As a result, the commissioning of some construction facilities was postponed, but this postponement was not large-scale all over the country[2]. A set of measures was adopted to support the construction industry in pursuance of the instruction of the President of the Russian Federation. The market conditions, that were favourable for the purchase of real estate, led to the demand implementation. In June, home sales returned to the pre-crisis level, and in July they exceeded it. The area of commissioned housing also approached the values of 2019, and the launch of new projects by developers was growing steadily [2].

The largest share of mortgage borrowers are citizens under 35 years of age (62 %). In 2020, the record number of mortgages was issued: 1.7 mln loans (+35 % against 2019) worth 4.3 trln rubles (+51 %), of which 484 thousand loans (+42 % against 2019) worth 1.5 trln rubles (+62 %) were issued on the primary market. In the regional context, the largest mortgage amounts were issued in Moscow (14.7 % in terms of the amount, 6.8 % in terms of the number of loans), the Moscow region (8.2 % and 5.5 %, respectively), St. Petersburg (6.6 and 4.8 %), the Tyumen Region (4.4 and 4.2 %) and the Sverdlovsk Region (3.2 and 3.5 %). The largest share of mortgage loans is issued for the purchase of housing in the AB, which accounts for 52 % of commissioned housing[2].

Despite the pandemic, 1,121.6 thousand apartments with the total area of 82.2 mln m², were commissioned in 2020, which is comparable with the level of 2019: 82.0 mln m². As of January 1, 2021, the volume of apartment housing under construction was 94.0 mln m² in Russia. During the year it went down by 13.5 mln m² (–12.5 %) due to the lack of new projects in the first half of the year against the background of the pandemic and the demand for housing. The volume of AB housing commissioned as of the end of 2020 amounted to 42.4 mln m², 1.16 mln m² (2.7 %) below the level of 2019[2].

On average, 0.56 m² were built for each resident of Russia in 2020[2]. Per capita housing construction was most intensive in the Leningrad Region (1.41 m²/person), Sevastopol (1.34 m²/person), the Moscow Region (1.17 m²/person), the Kaliningrad Region (1.15 m²/person) and the Lipetsk Region (1.09 m²/person)[2].

By the end of 2020, there was a shortage of high readiness housing in Russia[2]. As of 01.01.2021, depending on the region, 66–79 % of housing under construction and to be commissioned in 2021 was sold[2]. The share of sold AB housing to be completed in 2022 is 32 %, in 2023 — 14 %, in 2024 — 11 %, in 2022 — 10 %[2].

As for the price behaviour in the market of new buildings for the 9 months of 2020, the price growth rate in the primary housing market exceeded the average one in Russia (10.4%) in Moscow ▶

3 Resolution of the Government of the Russian Federation No. 47 of January 28, 2006: On approval of the Regulations on the recognition of premises as residential premises, residential premises unsuitable for living, an apartment building in emergency and subject to demolition or reconstruction, a garden house as a residential house and a residential house as a garden house.

4 Review of demand and prices on the market of new buildings in the Russian Federation in 2019. URL: https://xn--d1aqf.xn--p1ai/upload/iblock/eb1/eb1a9a29c51163010b0b1969bd9d4ff6.pdf

(16.5 %), the Moscow region (16.4 %), St. Petersburg (13.1 %) and the Kaliningrad region (11.6 %)[5].

As of the end of May 2021, the area of apartment construction exceeded 1 mln m² in 21 regions, including Moscow, St. Petersburg, the Moscow Region, the Krasnodar Territory, the Republic of Bashkortostan, the Sverdlovsk Region, the Leningrad Region, the Novosibirsk Region, the Rostov Region, the Tyumen Region, the Krasnoyarsk Territory, the Republic of Tatarstan, the Voronezh Region, the Samara Region, the Ryazan Region, the Kaliningrad Region, the Perm Region, the Stavropol Territory, the Udmurt Republic, the Primorsky Territory, the Nizhny Novgorod Region, which account for the 79 % of the apartment housing construction market of the Russian Federation (75.6 mln m²)[6]. The top 3 regions account for 37 % of the apartment housing construction market: 17.2 % in Moscow, 10.4 % in St. Petersburg and 9.8 % in the Moscow region[6].

Multi-storeyed urban construction is characterized by high population density, intensive use of territories, grave social, environmental, and transport problems [20].

61.7 mln families reside in Russia, of which 64 % live in AB[2]. The key factors that determine the choice of homes are the social infrastructure and transport accessibility, ecology, landscaped curtilage, proximity to the city centre[2].

A study jointly conducted in Russia in December 2020 by DOM.RF, VTsIOM (The All-Russian Public Opinion Research Centre), that represented a formalized personal interview based on a standardized questionnaire (a sidewalk interview lasting not more than 15 min) among 1.6 thousand respondents aged 18 years, showed that in the conditions of movement restrictions, every family living in AB (37 % of respondents) believed that the most important factor was the proximity of housing to the social infrastructure; and the second important factor was the location of the house next door to a forest area or forest (21 %); transport accessibility was the third important factor (16 %); and the next important factor was the availability of courtyards and playgrounds (15 %)[7].

As for the urban real estate, new models are in demand [21]. According to the annual sociological survey "Demand for housing and mortgage lending", jointly conducted by DOM.RF and VTsIOM in September 2020, among 5,700 people from 150 settlements located in, at least, 50 subjects of the Russian Federation, the majority of respondents living in the cities with a population of over 1 million people prefer to purchase the following apartments in the AB[8]:

- 15 % of potential buyers choose apartments in buildings having 1–5 floors, 34 % — 6–12 floors, 28 % — more than 12 floors, the number of stories in a building does not matter for 23 % of consumers;
- 6 % of respondents wanted to buy a single-room apartment having the area of 35…50 m², 44 % of respondents wanted to buy a two-room apartment with the area of 45…70 m², 41 % — a two-room apartment with the area of 60…90 m², 9 % of families consider an apartment with four or more rooms and the area of 83…125 m² as the most preferable option.

A high-quality residential environment is based on a compact city model. The main criteria include a large selection of housing, safety, environmental friendliness, as well as a variety of functions and mixed development areas, where housing, cultural and social facilities share the same area[9].

The basic principles of a high-quality residential environment[9]:

- comfort: the balance between the environment and a person, safety;
- diversity: versatility, adaptability;
- sustainability: environmental friendliness, economic feasibility.

Standard housing requirements:

- transparent walk-through entrance lobbies to ensure secure and see-through access to residential areas;
- the entrance to the lobby is at the street level to ensure the accessibility of apartments for all groups of residents;
- the number of elevators in the house ensures fast delivery of residents without queues;
- spaces for air conditioners ensure their easy installation and uniform facades;
- storage areas: storage spaces are on the ground floors;
- the ground floor has a minimal number of load-bearing walls and a pre-set ceiling height;
- the minimal ceiling height in the house is 2.8 m;
- the rooms have convenient shapes to ensure the functional use of the free space.

Ratings, being both a method of scientific analysis and a means for presenting results in a form that is comprehensible by a wide range of people, bind the audience to the information that is presented, which is especially important for the environmental situation [22, 23].

Mechanisms, used to develop comfortable urban environments and integrated urban areas are devised with regard for the urban environment quality index, which is a tool for assessing the quality of the material urban environment and the conditions of its formation[10].

To determine the urban environment quality index, 36 indicators are used that characterize six types of urban spaces: housing, public and business infrastructure, social and leisure infrastructure, landscaping, street infrastructure, public space, which are evaluated using six environment factors: safety, comfort, environmental friendliness, identity and diversity, modern environment, efficiency of government management[11].

The quality of the environment is indirectly assessed by the index with the help of the following indicators: the share of solid municipal waste (SMW) delivered for processing and reclamation as part of the total generated and removed SMW; traffic; the share of green public areas in the total area of green spaces; the level of landscaping; the share of green spaces; the share of green spaces accessible by the general public in the total area of green spaces; the share of mechanically cleaned urban areas in the total area of a city[10].

The urban environment quality index, developed by the Ministry of Construction of the Russian Federation together with the

5 Analytical review: On the dynamics of prices in the market of new buildings for 9 months of 2020. URL: https://xn--d1aqf.xn--p1ai/upload/iblock/724/7246eac18a72dcc308d6db09d3c121e3.pdf

6 Overview of multi-family housing construction in the Russian Federation: May 2021. URL: https://xn--d1aqf.xn--p1ai/upload/iblock/558/558f1a545b370dc56a35b75df45aea5a.pdf

7 Analytical review: The most popular characteristics of housing in 2020. URL: https://xn--d1aqf.xn--p1ai/upload/iblock/765/76500cce2e25af9caeea6c6db6b6dfeb.pdf

8 Analytical review: Characteristics of apartments planned for purchase. URL: https://xn--d1aqf.xn--p1ai/upload/iblock/095/09510ab65b4219a0d6ce14373b5427d6.pdf

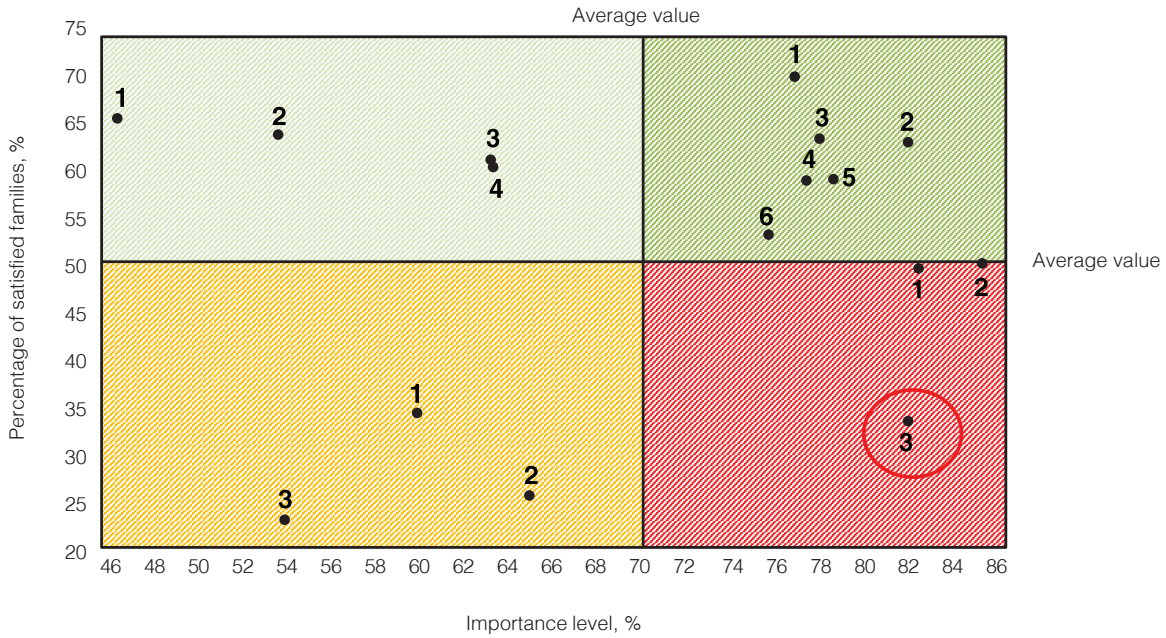
9 DOM.RF. URL: https://xn--d1aqf.xn--p1ai/urban/standard-housing/

10 Guidelines for determining the priority directions of urban environment development using the Urban environment Quality Index. URL: https://minstroyrf.gov.ru/upload/iblock/133/rukovodstvo_index_compressed.pdf

11 Decree of the Government of the Russian Federation No. 510-r of March 23, 2019: On approval of the Methodology for forming the Urban Environment Quality Index.

The urban environment quality index in the regions where the volume of apartment housing construction exceeded 1 mln m² as of June 1, 2021

Subject of the Russian Federation	Federal district	Number of cities	Land area occupied by residential housing as of 2020, thousand hectares	AB construction volume as of June 1, 2021, thousand sq. m	Population, thousand people	Urban Environment Quality Index in 2020				
						Subject of the Russian Federation, score			The largest city in the subject of the Russian Federation	
						minimum	medium	maximum	Name	Index, score
Moscow	Central	1	21.2	16,431	12,678.1	—	—	—	Moscow	288
Saint Petersburg	North-West	1	13.8	9,970	5,398.1	—	—	—	Saint Petersburg	249
Moscow region	Central	73	60.6	9,419	5,600	174	208	263	—	—
Krasnodar Krai	South	26	35.2	7,194	3,000	139	176	225	—	—
Republic of Bashkorto-stan	Privolzhsky	21	23.7	3,424	2,500	165	184	204	Ufa	189
Sverdlovsk region	Uralsky	47	49.1	3,020	3,500	151	179	216	Ekaterinburg	194
Leningrad region.	North-West	33	13.1	2,838	1,048.2	154	192	259	—	—
Novosibirsk region	Siberian	14	17.3	2,806	2,000	126	152	181	Novosibirsk	166
Rostov region	Yuzhny	23	35.5	2,395	2,800	131	174	222	Rostov-on-Don	200
Tyumen region	Uralsky	District 5	9.9	2,286	1	179	204	225	—	—
Krasnoyarsk Territory	Siberian	23	26.3	2,158	2,000	136	165	214	Krasnoyarsk	181
Republic of Tatarstan	Privolzhsky	24	26.1	2,108	2,900	163	188	216	Kazan	204
Voronezh Region	Central	15	23.1	1,674	1,500	146	179	209	Voronezh	176
Samara region	Privolzhsky	11	22.9	1,471	2,400	147	171	208	Samara	168
Ryazan region	Central	12	13.6	1,439	714.6	149	173	202	—	—
Kaliningrad region	North-West	22	8.8	1,403	780.8	154	191	224	—	—
Perm region	Privolzhsky	25	23.8	1,272	1,900	157	172	197	Perm	179
Stavropol Territory	North Caucasus	Region 19	22.1	1,147	1,500	149	171	208	—	—
Udmurt Republic	Privolzhsky	District 6	9	1,114	992.2	167	175	187	—	—
Primorsky Krai	Far East	12	29.2	1,051	1,300	128	161	186	—	—
Nizhny Novgorod region	Privolzhsky	28	24.7	1,017	2,300	158	183	220	Nizhny Novgorod	201



A high satisfaction/ high importance zone	1	Social infrastructure
	2	Landscaping of city streets
	3	Organization of public transport
	4	Organization and maintenance of public places
	5	Pedestrian friendliness
	6	Courtyard landscaping
A high satisfaction/ low importance zone	1	Public and business infrastructure
	2	Cultural and entertainment institutions
	3	The outer image of a city
	4	Landscaping of embankments
A development zone showing a lower-than-average satisfaction level	1	The quality of cleaning in public areas
	2	Safety and order
	3	Ecological situation in the city
A low significance/ low satisfaction zone	1	Convenient use of personal cars
	2	Accessibility for disabled persons
	3	Arrangement of pet relief areas

Importance and satisfaction with aspects of the urban environment[12]

DOM.RF Development Institute and Strelka Design Bureau, is not a rating, although it serves as a vehicle used by each city to identify and develop its own zones of growth. Cities are only compared within their size and climate groups.

For regions that have exceeded 1 million sq. m. in terms of the volume of AB construction as of June 1, 2021, information is taken from open-access sources about the population and the area occupied by residential development, and values of the index of the urban environment are also provided (Table).

An important indicator of the quality of the residential environment is the level of satisfaction of the population, so to obtain the objective data on the improvement of internal spaces of residential buildings, it is advisable to conduct a sociological research to identify the basic needs of residents [22–24]. The survey among three thousand respondents, permanently residing in a particular Russian city with a population of more than 1 mln residents, conducted jointly by DOM.RF and VTsIOM in November 2020, revealed that while the importance of this aspect is quite high (82 %) for residents, the share of families satisfied with the ecological situation in the city is 33 % (Fig.)[12].

Residential areas are characterized by the following sanitation and hygiene factors, that contribute to negative trends in public health:

- chemical load, including chemical contamination of drinking water, outer air and soil;

12 Analytical review: Assessment of the state and changes of the urban environment of Russia in 2020. URL: https://xn--d1aqf.xn--p1ai/upload/iblock/925/925e20f3d0f556ef2f0d505b8b2c402c.pdf

- biological load, including biological contamination of drinking water and soil;
- load associated with physical factors, including noise, vibration, ultrasound, infrasound, thermal, ionizing, non-ionizing, and other radiation.

The symbiosis of urban planning activities and urban economy is a key tool for implementing national goals and projects [20, 25].

The environmental resource of residential areas can be calculated, taking account of macro-and micro-design indicators, for the stages of the life cycle of a territory, as well as underground, surface and above-ground facilities located in it.

Whenever a macro-design of a residential area, showcased by a settlement, is to be developed, the ecological resource is provided by:

- positioning and maintenance of capital construction facilities;
- operation and maintenance of linear-type facilities and their infrastructure;
- creation of green areas as elements of the "green" urban framework;
- SMW, large-size and hazardous waste management systems.
- The micro-design at the level of structural elements of a residential area, such as a district, a micro-district, a block, a complex, takes advantage of the following indicators to generate an environmental resource:
- building density;
- number of storeys;
- spatial planning solutions for residential buildings, including the use of "green" materials and technologies [26];
- structural and technological solutions for residential buildings, including the use of "green" materials and technologies at the stage of construction;
- apartment floor plans;
- color schemes of facades, the glazing of loggias and balconies;
- availability of parking spaces in built-in and built-in/attached parking areas or detached parking lots, as well as in guest parking lots;
- temporary storage of motor vehicles near children's and sports grounds, recreation areas;
- availability and maintenance of public transport stops [27];
- need for and sufficiency of commercial premises, located on the ground floors of residential buildings [28];
- availability of the necessary facilities in children's and sports grounds, recreation areas;
- availability of pet relief areas and the necessary facilities, including toilets for animals;
- availability of engineering networks, systems and equipment and their condition, application of "green" materials and technologies;
- availability of indoor areas, equipped with containers for separate collection of municipal waste;
- organization of pedestrian traffic, as well as bicycles, scooters, etc.;
- lawns, trees and shrubs with a healthy, well-developed crown [29, 30];
- maintenance and cleaning of territories, including streets, curtilages, etc.

The analysis of statistical data and analytical reviews helped the co-authors to identify that the impact of the pandemic on the pace of housing construction in a number of regions of the country has been overcome. However, it is necessary to increase the volume of construction of apartment buildings and launch new projects to meet the need for better housing. New construction involves the development of vacant territories, renovation, infill construction. Given the low satisfaction of residents with the ecological situation in a city, it is necessary to calculate the ecological resource of residential areas in an urbanized territory, including a comprehensive assessment of the results of macro- and micro-design at different stages of the life cycle of an area and the facilities that it accommodates.

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Экологический ресурс урбанизированной территории

Процесс урбанизации сопровождается ростом городов и увеличением их населения. Современные города представляют собой сверхсложные системы, включая материальные и нематериальные элементы жизнедеятельности населения. Развитие экономики городов формирует спрос у населения на жилье и жилищно-коммунальные услуги. С течением лет требования потребителей меняются. Аспектом охраны окружающей среды и рационального использования природных ресурсов с позиции биосферного подхода является обеспечение экологической безопасности селитебных зон урбанизированных территорий.

Проведен анализ представленных в открытых источниках статистической информации и аналитических обзоров в разрезе жилищного строительства, реализуемого в субъектах Российской Федерации, обеспечения качества городской среды в регионах, удовлетворенности постоянного населения условиями проживания в жилом квартале и в городе. Сделан акцент на объемах и темпах строительства многоквартирных жилых домов в российских городах за период с 2019 по 2021 гг., требованиях потребителей к квартирам, домам, благоустройству.

Экологический ресурс урбанизированной территории формируется темпом и качеством жилищного строительства, в том числе градостроительных, объемно-планировочных, конструктивно-технологических решений, а также текущим состоянием городского хозяйства, включая объем и качество предоставляемых населению жилищно-коммунальных услуг.

К обсуждению предлагается комплекс параметров для расчета экологического ресурса селитебных зон, включающих оценочные индикаторы результатов градостроительной деятельности на этапах жизненного цикла территории и размещенных на ней подземных, наземных и надземных объектов. Макропроектирование включает размещение и обеспечение объектов капитального строительства, линейных объектов и их инфраструктуры; формирование озеленения территории, как элемента «зеленого» каркаса города; систему обращения с твердыми коммунальными отходами, а также крупногабаритными и опасными отходами. Микропроектирование формирует экологический ресурс на уровне элементов структуры селитебной зоны — жилого района, микрорайона, квартала, комплекса.

Ключевые слова: *устойчивое развитие, экологическая безопасность, охрана окружающей среды, градостроительная деятельность, жилищное строительство, городское хозяйство*

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Reducing the carbon footprint of buildings to improve sustainable development mechanisms of the construction complex

The construction industry's impact on the environment is overwhelming. Construction and industrial activities account for about 40 % of the global energy consumption that translates into about one third of global greenhouse gas emissions. The rapid growth of property development and attention to global climate change make the reduction of greenhouse gas emissions a promising area of research. The importance of the carbon impact assessment throughout the life cycle of buildings implies the improvement of emission reduction methods associated with the production and transportation of building materials, selection of optimal design solutions. Evaluation becomes key to the economic modeling of green low-carbon construction. The article addresses the current methods of the eco-economic assessment of the carbon impact of residential buildings at early stages of construction projects. Key construction resources, critically affecting the eco-performance of buildings, are identified. The comparative analysis of functionally equivalent design solutions for mid-rise residential apartment buildings, designed and constructed in the Belgorod region, is carried out. The study shows that the introduction of low-carbon principles into the design of residential buildings should and can be supported by the improved eco-economic evaluation of the construction project efficiency. This allows to capitalize the carbon impact of residential buildings and stimulate the use of effective green low-carbon motivation tools in the building market.

Keywords: *sustainable development, green building, low-carbon construction, carbon footprint of buildings, cost efficiency of construction projects*



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INTRODUCTION

The construction sector, being a material and energy intensive manufacturing industry, has a significant impact on the environment and a direct impact on the development of sustainable territories and the implementation of the concept of low-carbon state development [1]. Residential construction grows year-by-year thanks to the implementation of the state programs, focused on providing affordable and comfortable housing and directly related to the increase in the production of building materials and construction machinery. Hence, this trend emphasizes the critical importance of the construction industry as the principal indicator of the state development, in general, and the core constituent of the manufacturing and construction sector of the economy, whose eco-sustainability is impossible without effective economic motivation tools[1]. Construction intensification, being a tool for attaining the social objectives of national development, must cause a minimal increase in the environmental impact, since environmental safety is an equally important priority of the future public development. Since construction and manufacturing are among the main sources of global greenhouse gas (GHG), emissions and residential construction rise every year. Effective widescale decarbonization of construction of residential buildings and civil engineering facilities is the way to reduce GHG emissions and implement the Strategy for the long-term development of the Russian Federation through 2050, that entails low greenhouse gas emissions (according to the 2018 report of the Intergovernmental Panel on Climate Change (IPCC)) [2].

1 Global Sustainability Report 2020 — Buro Happold. 2021. URL: https://www.burohappold.com/publications/global-sustainability-report-2020/

To achieve the target values of GHG emissions by 2050, it is necessary to introduce low-carbon principles of evaluation, monitoring and capital construction management into the practice of engineering design and economic analysis and offer effective, efficient and self-sustaining instruments for the economic evaluation of the carbon impact (CI) in respect of newly constructed and renovated buildings [3].

THE MAIN PART

According to EN 15643-4:2012 "Sustainability of construction works. Framework for the assessment of economic performance", sustainable development of industrial production and construction industries is a key management task at all stages of the life cycle (LCC) of a construction project. The implementation of this principle facilitates the development of optimal cost-effective low-carbon design solutions at initial stages of a project, including the feasibility study and selection of building materials, products and structures, machinery and construction technologies. However, an extensive methodological framework, currently used for quantifying GHGs, is still not adequately represented in the instruments for its economic evaluation [4, 5]. Currently, about 70–80 % of GHG emissions are associated with the operational phase of buildings (B 1-7), while embodied emissions are primarily associated with the production of building materials (A1-A3), transportation (A4) and construction procedures (A5), as well as emissions at the end of the life cycle (C1-C4) [6]. The World Green Building Council identifies emissions at stages A1-A5 as the "upfront carbon", which is becoming increasingly important in evaluating CI during the LCC (Fig.).

Building life cycle information												
A 1-3	A 4-5		B 1-7							C 1-4		
Product stage	Construction process stage		Use stage							End of life stage		
Raw material supply Transport Manufacturing	Transport	Construction installation process	Use	Maintenance	Repair	Replacement	Refurbishment	Operational energy use	Operational water use	De-construction Demolition	Transport	Waste processing	Disposal
A1–A3	A4	A5	B1	B2	B3	B4	B5	B6	B7	C1	C2	C3	C4
The ability to influence the carbon Impact (CI) max ← min												
The variability of instruments of influence on CI			Energy-saving and energy-efficient technologies									

Carbon footprint throughout the life cycle of a building

The ratio of preliminary GHG emissions at stages A1-A5 varies depending on the type and purpose of a building, its special arrangement and structural solutions [7]. The main sources of upfront carbon include energy and resource-intensive building materials, products, structures and processes at the stages of procurement of raw materials and construction (supply of raw materials, production of materials, transportation, etc.) [8]. For the preliminary evaluation of GHG emissions for a designed building it is necessary and sufficient to determine the amounts of principal energy and resource-intensive building materials at the early stages of design. This will allow to carry out the economic analysis to identify the areas of optimization of structural and spatial solutions at the stage of design and project budget development. The building information modeling (BIM) technology is increasingly used in the design practice, also to perform the quantitative assessment of the resource intensity of design solutions, although it needs effective tools for their interpretation, including the carbon impact assessment. BIM principles, used to design efficiency evaluation instruments, have proven that the project resource intensity is highest at the pre-project stage, when the detailed amount of construction resources is unavailable. Hence, methods of analyzing the resource intensity of structural solutions at early stages of design gain in importance [9]. Therefore, further development of methods for the quantitative assessment of the resource intensity of construction and its carbon impact becomes an effective tool for the instant diagnostics of structural solutions used to assess building sustainability [10] and the implementation of its economic incentive mechanisms.

The monitoring of embodied carbon, or the total GHG emissions associated with the process of using construction resources throughout the building life cycle is a relatively new area of research, whose results have been implemented neither in any standards or regulations, nor in a preliminary carbon impact assessment of construction projects at early stages of design [11]. A variety of international developers use decarbonization methods in structural design and collect data on various types of facilities in different countries: Australian Sustainable Built Environment Council, Building Research Establishment (BRE), C40 Cities Climate Leadership Group, Danish Building Research Institute — Aalborg University, Nanyang Technological University, Saint-Gobain, Global Alliance for Building and Construction (GABC), Architecture 2030, etc.

In order to demonstrate the proposed construction principles, the co-authors developed an improved methodology for assessing the carbon intensity of a construction project at the preliminary stage of design, selected the key resources for the twenty projects of residential apartment buildings in the Belgorod agglomeration, belonging to the same group by the floorage, the functional purpose and equivalent design solutions, that represented a monolithic reinforced concrete (RC) frame (Table 1). This methodology is a basic construction management tool, that takes account of the building's carbon footprint.

The selection allowed the co-authors to analyze the relationship between the amount of key construction resources and indicators of space-planning solutions of buildings (area, number of storeys, structural density) using linear multiple regression, which demonstrated a stable, strong and qualitative regression relationship (Table 2).

These dependencies not only demonstrate a relationship between the key indicators of the resource intensity and SPS of residential buildings, but also provide an effective algorithm for the preliminary assessment of design solutions at the stage of their feasibility study, thus eliminating the most resource-intensive solutions and focusing the designer's attention on those of them that feature the highest carbon efficiency [12]. The methodology development by adding other structural and process patterns to the analyzed samples and analyzing an expanded list of construction resources (masonry, finishing, lumber, composites, plastics, etc.) will serve as the basis for a fast evaluation of the resource and carbon intensity of buildings and structures, thus, quantitatively formalizing

Table 1. Selective resource intensity of mid-rise residential apartment buildings having monolithic RC frames in the Belgorod region

Project No.	Space-planning solutions (SPS)			Construction resources		
	Total area (A), m²	Number of storeys (S), pcs.	Structural floor density (D), m³ walls/m² area	<CMa>CD: concrete, m³	<CPr>AJAA: Steel, t	<CPr>ACA: wall masonry materials, pcs.
1	1,223.5	3	0.11	331.0	13.0	290.5
2	1,395.0	3	0.13	280.7	15.6	434.1
3	1,448.1	3	0.15	359.5	13.1	274.9
4	1,475.5	3	0.13	370.6	15.6	174.0
5	1,492.2	3	0.10	331.3	14.9	336.3
6	1,984.2	3	0.10	289.8	14.3	382.5
7	3,512.0	3	0.11	711.0	47.0	620.2
8	1,876.8	5	0.13	290.7	13.7	250.1
9	2,776.0	5	0.11	759.9	21.1	481.9
10	3,257.0	5	0.15	612.8	74.6	647.6
11	3753.6	5	0.14	748.0	45.2	491.4
12	4,232.2	5	0.10	810.2	44.1	800.5
13	4,260.0	5	0.11	1,041.7	65.3	686.4
14	4,998.6	5	0.11	940.6	59.7	879.1
15	5,374.4	5	0.11	870.1	47.6	785.0
16	6,109.0	5	0.10	1,003.1	56.3	607.7
17	6,192.9	5	0.14	976.3	49.9	867.9
18	6,839.1	5	0.11	1,980.2	56.8	862.7
19	8,805.8	5	0.14	2,079.0	63.3	641.5
20	8,826.4	5	0.13	2,661.0	66.6	1,010.1

Table 2. Regression models of a number of construction resources: concrete, steel, wall masonry materials

<CMa>CD = – 514.3D + 0.27A – 31.59S	$R^2_{norm} = 0.889$, F(116.2) >$F_{nominal}$ (4.5×10-11)
<CPr>AJAA = – 65.17D + 0.005A – 6.1S	$R^2_{norm} = 0.863$, $F(75.0) > F_{nominal}$ (1.2×10^{-9})
<CPr>ACA = 300.75D + 0.07A + 61.57S	$R^2_{norm} = 0.892$, $F(122.6) > F_{nominal}$ (3.0×10^{-11})

the principle of low-carbon design. It will also enable methodology users to proceed to the design support, sustainable construction, and construction industry development [13].

Economic incentive mechanisms, that boost low-carbon development, include the preliminary evaluation (and full evaluation at further stages of design) of the resource intensity of design solutions and the cost assessment of the carbon impact of key construction resources in the form of a conditional ecological tax (EcoT) [14]. EcoT is a tool that objectively evaluates the environmental sustainability of the industry and represents an effective state regulation mechanism that allows for the additional assessment of the project, taking into account the degree of the project development, with regard for the regional market of green materials and solutions and the local specificity of the construction industry [15]:

$$EcoT = \frac{ECC_{max} - ECC_{min}}{CO_{2max} - CO_{2min}} K,$$

where ECC_{max} is the maximum estimated cost of the building construction; ECC_{min} is the minimum estimated cost of the building construction; CO_{2max} is the maximum carbon footprint of the building; CO_{2min} is the minimum carbon footprint of the building; K is the multiplier used to selectively assess and regulate the degree of economic interest of developers in the application of green technologies broken down by sectors and types of buildings. Buildings

are selected according to the construction projects of a similar focus implemented in the region.

In this case, the key factor of the green developers' efficiency is their active involvement in the implementation of state-funded construction projects. In this regard, given the initial less economically preferable bidding price offer coming from green developers, it is advisable to introduce the institution of green developer certification and using it as the basis for regulating bidding preferences and rising the competitiveness of green developers [16].

The rational use of bidding preference regulation tools will allow executive authorities to regulate the degree of involvement of the state in the green building development in the regions [17]. An example of the proposed concept of assigning bidding preferences to green developers, based on their green certification, is provided in Table 3.

Table 3. The concept of bidding preferences aimed at the effective functioning of the institution of green certification of developers

Green certificate for developers	% EcoT to the total cost of buildings completed by the developer	Bidding preferences
A	0…10	Priority right to obtain large contracts, maximum credibility in the course of evaluation of bidding documents
B	11…25	Preferences in obtaining large contracts, high credibility in the course of evaluation of bidding documents
C	26…99	General contract placement procedure, minimum credibility in the course of evaluation of bidding documents

CONCLUSIONS

Fundamental areas of improvement of the system of construction and industry sustainability support, presented in the article, employ the tools of economic stimulation of low-carbon development as an essential constituent of the building life cycle. The rapid assessment of the resource intensity of construction projects in respect of several types of construction resources and potential space-planning and structural solutions is proposed by the co-authors. The proposal has a set of initial data used for the quantitative assessment of a capitalized carbon impact of a building and generation of institutional instruments to motivate developers to use green technologies. For buildings designed using BIM, the proposed technology will enable the real-time management of estimated supplementary eco-costs by optimizing the design solutions in terms of the investment cost of construction projects. As a result, an effective tool will be implemented to assess the carbon impact of buildings throughout their life cycle in conjunction with measures aimed at reducing operational GHG emissions. It will contribute to the improvement of the instrumental support of conversion to the low-carbon sustainable development of the entire construction industry.

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Совершенствование механизмов устойчивого развития строительного комплекса путем сокращения углеродного воздействия зданий

Влияние строительной отрасли на окружающую среду неоспоримо: около 40 % общего мирового потребления энергии связано со строительной и промышленной деятельностью, что составляет около трети глобальных выбросов парниковых газов. Интенсивный рост строительства, в первую очередь в жилищном секторе, и возросшее внимание к глобальным изменениям климата делает вопросы сокращения выбросов парниковых газов и перехода к низкоуглеродному устойчивому развитию перспективным направлением исследования. Важность оценки углеродного воздействия в течение всего жизненного цикла зданий, которое становится основой эффективных инструментов экономического симулирования зеленого низкоуглеродного строительства, обусловлена перспективами оптимизации на его основе проектных и организационно-технических решений в строительстве. В статье выполнен анализ существующих методов эколого-экономической оценки углеродного воздействия жилых зданий на ранних этапах реализации инвестиционно-строительных проектов, выявлены ключевые строительные ресурсы, которые критически влияют на его экологическую эффективность с позиции минимизации углеродного воздействия, продемонстрирован механизм эколого-экономической оценки и ранжирования функционально и конструктивно эквивалентных проектных решений жилых многоквартирных домов средней этажности, запроектированных и реализуемых в Белгородской агломерации посредством сравнительного анализа их углеродного воздействия. Авторами показано, что внедрение низкоуглеродных принципов устойчивого развития в практику проектирования жилых зданий должно и может быть подкреплено совершенствованными методиками экономической оценки эффективности инвестиционно-строительных проектов с позиции декарбонизации строительства, которые монетизируют натуральное углеродное воздействие жилых зданий и становятся основой действенных инструментов рыночной мотивации участников инвестиционно-строительного процесса к переходу на зеленые низкоуглеродные технологии.

Ключевые слова: *устойчивое развитие, зеленое строительство, низкоуглеродное строительство, углеродное воздействие зданий, экономическая эффективность строительных проектов*

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A cluster policy as a fundamental component of regional economic development (the case of the Rostov Region)

The primary objective of a cluster policy is to ensure high rates of economic growth and diversification of regional economies by improving competitive abilities of enterprises, suppliers of equipment, components, providers of specialized production and customer services, R&D and education organizations that comprise geographical clusters. The cluster approach is a key constituent of the socioeconomic strategies in several Russian regions and municipalities, as shown by the project "The Cluster Policy Concept in the Russian Federation", developed by the Ministry of Economic Development of the Russian Federation. This article focuses on a methodology for successful spatial clustering and cluster specialization analysis in the Rostov Region as the subject the Russian Federation. A comprehensive analysis of the spatial development of a subject of the Russian Federation is carried out through generalization and systematization of urban planning documents, together with the analysis of the current state of spatial development in the region. Presently, there is no integrated approach to assessing this territory of the Russian Federation in terms of the cluster policy development. The co-authors suggest customizing the universal assessment methodology for the cluster development of the Russian Federation. A comprehensive analysis of spatial development of the Russian Federation is carried out through generalization and systematization of urban planning documents, together with the analysis of spatial development in the region. A comprehensive assessment of a territory represents an integrated approach to the analysis of the spatial distribution and quality characteristics of all types of resources. A comprehensive assessment of the territory was made using geographic information systems, which are extensively used in the process of managing the spatial development, particularly in the spatial analysis of territories. ArcGIS software package is used as a tool for the comprehensive assessment of the territory. Following the comprehensive assessment, functional specialization maps of the Rostov region were made. The transportation and logistics cluster was indicated on the map, and the rating of the Rostov Region's districts was displayed on the map.

Keywords: *cluster, cluster policy, methodology, comprehensive assessment, functional priority, simulation model, transport infrastructure, transport and logistics cluster*

INTRODUCTION

Clusters and cluster policies are becoming increasingly popular in the economic development, since this approach enhances the competitive ability of local industries and the country as a whole by synergizing its production, research, education, and infrastructure potential [1].

Since the establishment of regional industrial clusters is aimed at improving the efficiency of local socioeconomic development, a methodology for assessing the industrial potential of a territory is needed to project its long-term development. This fact confirms the relevance of the work aimed at improving the research and methodological framework of decision making in the area of cluster development of territories. The Strategy of Socioeconomic Development of the Rostov Oblast until 2020 and the Strategy of Socioeconomic Development of Rostov Oblast until 2030 specify the priority sectors of the economic development of the region. The analysis of the cluster development of the region allows to identify the industries to be covered by the clustering process (Table 1).

Table 1. Clusters in the priority industries of the Rostov Region

Industry	Cluster
Agriculture	Innovative territorial cluster "Don Dairy Products"
	"Don Valley" wine territorial cluster
	Innovative biotechnology cluster
Machine industry	"Southern Constellation" innovation and technology cluster
	Innovative territorial cluster of machine tool manufacturing
	Innovative territorial cluster of marine instrumentation "Marine Systems"
	Helicopter engineering territorial cluster
	Volgodonsk industrial cluster of nuclear machine engineering
Informational technologies (IT)	Information and communications technology cluster
Light industry	LegTexDon cluster
Tourism	Volgodonsk furniture cluster



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THEORETICAL PART

The co-authors have developed a methodology for planning the cluster development of territories of subjects of the Russian Federation that has five stages (Fig. 1).

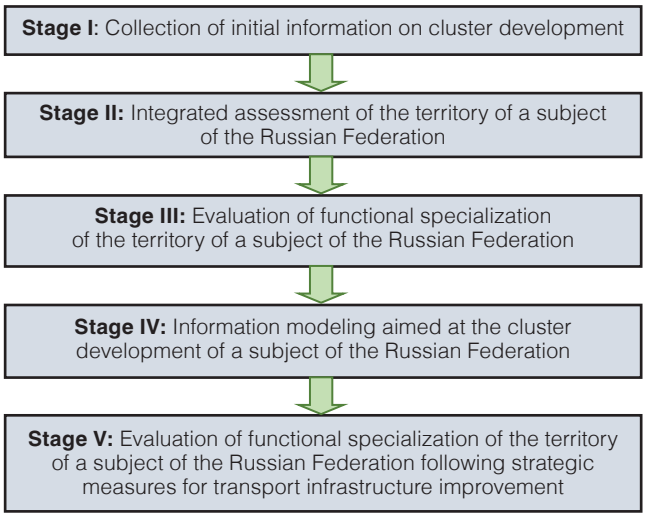


Fig. 1. Methods of cluster development of subjects of the Russian Federation

The cluster development planning technique is based on a method of integrated assessment of territories, that encompasses multiple approaches to the analysis of territories in terms of their cluster development by comparing the present and future characteristics of selected territories. We used ArcGIS software package by ESRI (USA) to perform the integrated assessment of the territory. Several evaluation factors, representing all aspects of activities in the RF subject, were selected within the framework of the integrated assessment process as a stage of the new methodology (Fig. 2). The quantification of

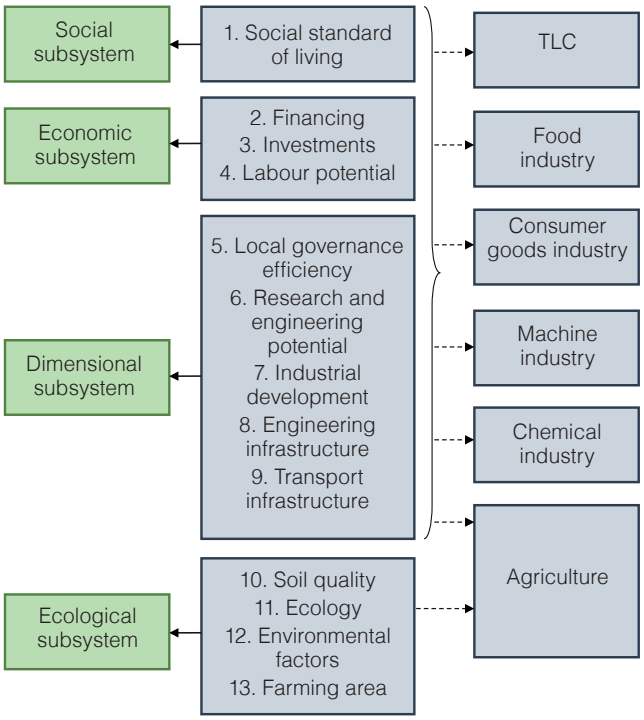


Fig. 2. Evaluation factors of industrial development

importance of the evaluation factors is made to demonstrate the value of each factor in relation to the value of the territory [2, 3].

Different factors have different effects on the development of a particular industry. The calculation of the functional priority of a given territory is carried out by assigning significance coefficients to each factor and calculating the target function. In this regard, there is a need to build a priority matrix (1):

	k_1	k_2	k_3	k_4	k_5	…	k_n
i_1							
i_2							
i_3							
i_4							
i_5							
…							
i_n							

(1)

where k_1–k_n are the significance coefficients attached to the factors having relative values;

i_1–i_n are the priority industries in the Rostov Region.

Determination of the significance coefficients of the factors of relative value is a complex statistical task, which can be solved in several ways. In the co-authors' opinion, the best one is the expert method, since it is feasible under any conditions, including the lack of any necessary information. Experts fill out questionnaires and this is how the information is collected. An expert ranks the factors by the extent of their influence on the value of the territory (Table 2) for each type of industry [4].

Table 2. Ranking significance coefficients

Degree of influence	Coefficient value	Rank of the factor
Strong influence	1	1
Moderate influence	0.5	2
Weak influence	0.25	3
No influence	0	4

This data is subject to further processing and analysis.

As a result of multiplying the significance coefficients, obtained by the expert method for specific industries, by the results of the integrated assessment of the territory, the priority rating of territories is obtained for a particular industry.

We can represent the relationship between the degrees of influence of factors on the development of local industries in form of an objective function (2):

$$P_j = \sum F_i K_i^j, \quad (2)$$

where P_j is the value indicator of the j-th type of industry; F_i is the i-th coefficient of the relative value of the territory; K_i^j is the coefficient of significance of the i-th factor for the j-th type of industry.

We use calculation results to identify the territories that are most suitable for the development of a particular industry.

Modeling as a method of studying systems is used to make complex management decisions; it represents a system of models of an object in question for the purpose of its study [5].

An information model allows to merge databases with information on the present and future situation in spatial development and generate reliable data needed for reasonable urban planning and management decisions concerning planning activities within a subject of the Russian Federation. Urban planning decisions become scientifically sound, as they are based on mathematical calculations, rather than intuition. The reliability of the results goes up because they are based on simulations of spatial development processes.

The purpose of developing an information model is to ensure the cluster development in the Russian Federation subject to the improved transport infrastructure.

The first block (Fig. 3) is a comprehensive database that includes the analysis of the following documents:

- strategy of socioeconomic development of a subject of the Russian Federation and other regulatory and legal documents;
- spatial planning scheme of an RF subject;

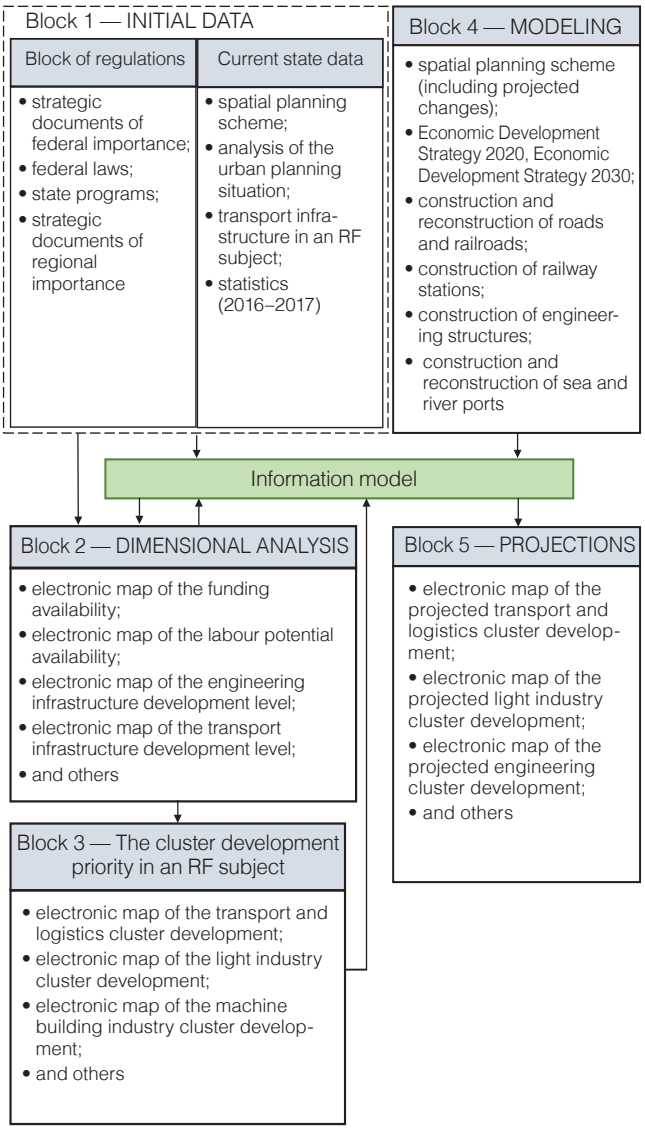


Fig. 3. Information model of cluster development in a subject of the Russian Federation

- statistical indicators of municipal development of an RF subject [6].

A comprehensive analysis of the spatial development of an RF subject is carried out by summarizing and arranging the urban planning documents alongside the analysis of the current situation in spatial development.

In the second block, a source of generalized information is available, and the information is presented in the electronic form. The results of the comprehensive analysis of a territory are displayed on the map of the Russian Federation with a breakdown into evaluation areas, which allows for a comparative spatial analysis of the territory and further management of urban development.

Having calculated the functional specialization by assigning significance coefficients to evaluation factors, depending on the type of sectoral development in Block 3, we obtain electronic maps of the priority cluster development of a subject of the Russian Federation.

The availability of the transport infrastructure in a territory is a variable factor. The better the transport availability, the better the prospects of the territory in terms of the sectoral development.

Project suggestions are simulated with the help of electronic map layers, attribute tables and logic relationships between them. Information modeling will allow to recalculate the functional priority of a territory in Block 5 in accordance with the projected pattern of development of its transport infrastructure. An integrated assessment of the territory, conducted anew, shows the effectiveness of decisions focused on the transport infrastructure improvement.

EXPERIMENTAL PART

The information model of the cluster development pattern of the Rostov Region is based on project-focused decisions and measures, specified in the strategic documents and contingent on the transport infrastructure [7, 8].

The following measures will boost the development indicators of the four means of transport (highway density, railway transport, air transport and water transport) [9–11]:

- construction of new roads of federal and regional significance;
- changing the function of roads and railroads;
- construction of a high-speed railway spur;
- revamping the air transport infrastructure;
- construction of hydrotechnical facilities and dredging of shipping lanes.

Having analyzed the projected development of the transport infrastructure in the Rostov Region, we perform an integrated reassessment of the area and recalculate its functional specialization by the branches of industry [12, 13].

Fig. 4 shows the assessment of the functional specialization of the transport and logistics sector of the Rostov Region following the implementation of strategic measures for the improvement of the transport infrastructure.

Fig. 4 illustrates a marked increase in the number of priority areas for the transport and logistics development.

CONCLUSION

Acting within the framework of a scientific research, we used a traditional methodology to identify the six industries to be

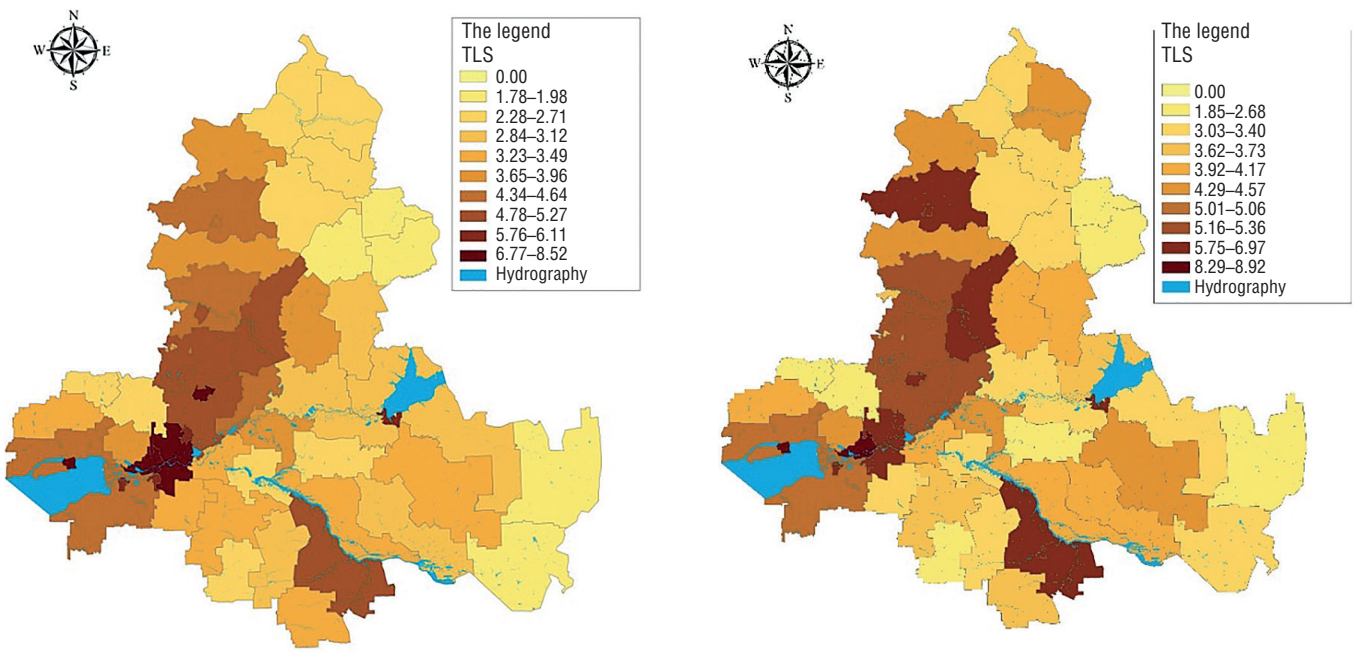


Fig. 4. Assessment of the functional specialization of the transport and logistics sector of the Rostov Region following the implementation of strategic measures for the improvement of the transport infrastructure

clustered. We generated a priority matrix, that has priority coefficients applicable to relative value factors in agriculture.

We calculated the objective function by multiplying the priority matrix by the results of the integrated assessment of the area and obtained the functional priority rating for the selected types of specialization in fifty five areas that we assessed. Electronic maps were made for each industry on the basis of the results of the functional priority assessment. The areas of Aksai and Krasnosulinsky districts, as well as the city of Rostov-on-Don are the priority areas for the development of all industries that were analyzed.

We developed an information model of the cluster development in the Rostov Region, which allowed us to re-calculate the functional specialization in respect of each branch of industry, taking into account the future transport infrastructure development.

The recalculation of functional prioritization enabled us to determine the increase in the potential development of industries in the territories of municipalities and urban districts.

An integrated assessment, being a universal methodology adaptable to different conditions, allows for a massive comparative assessment of the potential of the region's municipalities using factors of the relative value of a territory to address the priorities of strategic development of the subject of the Russian Federation [9, 14, 15]. This methodology, used as a tool for collecting the initial information about the territory regardless of the level of assessment, contributes to the scientific validity of urban planning decisions and the effectiveness of their further implementation.

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Кластерная политика как базовый элемент развития экономики региона (на примере Ростовской области)

Основной целью реализации кластерной политики является обеспечение высоких темпов экономического роста и диверсификации региональной экономики за счет повышения конкурентоспособности предприятий, поставщиков оборудования, комплектующих, специализированных производственных и сервисных услуг, научно-исследовательских и образовательных организаций, образующих территориальные кластеры. Кластерный подход занял одну из ключевых позиций в социально-экономических стратегиях ряда регионов и муниципальных образований в РФ, о чем свидетельствует разработанный Министерством экономического развития РФ проект Концепции кластерной политики в Российской Федерации. Статья посвящена методике, позволяющей успешно реализовать территориальное кластерное деление и обеспечить расчет кластерной специализации на уровне субъекта РФ — Ростовской области. На данный момент отсутствует интегрированный подход к оценке территории субъекта РФ для развития кластерной политики. В исследовании предлагается адаптировать методику комплексной оценки для кластерного развития субъекта РФ. Комплексный анализ территориального развития субъекта РФ осуществляется за счет обобщения и систематизации градостроительных документов вместе с анализом уже существующей ситуации развития территории. Комплексная оценка территории заключается в интегрированном подходе к анализу территориального размещения и качественных характеристик всех видов ресурсов, целью является стратегическое планирование и управление территориальным развитием. Комплексная оценка территории произведена с использованием геоинформационных систем, активно внедренных в процессы управления территориальным развитием, в особенности при пространственном анализе территорий. Для выполнения работ по комплексной оценке территории используется один из представителей геоинфомационных систем — программный комплекс ArcGIS. На основании комплексной оценки построены карты функциональной специализации территории Ростовской области для транспортно-логистического кластера с соответствующим рейтингом районов, отображаемым на этой карте.

Ключевые слова: *кластер, кластерная политика, методика, комплексная оценка, функциональная приоритетность, имитационная модель, транспортная инфраструктура, транспортно-логистический кластер*

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UDC 332.1

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A GIS application supporting urban management towards the attainment of the smart city development goals in Thai Nguyen city

Rapid urbanization and urban development must meet the requirements of smart green growth and sustainable development of Vietnam. Hence, these are the top challenges to be tackled by urban managers. Therefore, urban management databases must be accurate, relevant, and transparent. At the same time, simple access databases will enable users to quickly find the information they need. A combination of attribute data and spatial data is a smart and effective tool. Realistic data, integrated with the Internet of Things, or IoT, makes breakthroughs in the management of urban development by enabling managers and citizens to access real-time data and make effective urban management decisions. Within the framework of this study, a geodatabase was compiled to support effective urban management and information accessibility for the general public in Thai Nguyen city. The database was made in VB.net and later integrated into the Geographic Information System (GIS) to enable users to access, search, analyze, process, and manage the database information. The database will support decision making by urban managers. The co-authors' findings, on factors affecting urban management, show that local management does limit violations of urban construction regulations. This model will address the main factors affecting urban management (Community Participation, Information Technology, Law and Communication) and improve the urban management efficiency.

Keywords: *GIS, urban database, urban development, urban management, smart city*

1. INTRODUCTION

Publicly available data show that the rate of urbanization in Vietnam is 0.5 % higher than it was last year. Vietnam has 862 cities, including 2 special cities, 22 grade 1 cities, 31 grade 2 cities, 48 grade 3 cities, and all other cities have grades 4 and 5 [1]. Rapid urbanization and development make the government employ innovative approaches to the management of urban development. The 2018–2025 project on the sustainable development of smart Vietnamese cities encompasses the future urban development through 2030 in line with the aforementioned trend [2]. The urban system of Vietnam has been quantitatively and qualitatively developing in terms of scale. However, the process of urbanization, characterized by urban sprawl, has led to air pollution, traffic congestion, pollution of water bodies, depletion of resources, intensive use of urban land resources and the deteriorating quality of the living environment [3, 4]. The reasons underlying these phenomena, as pointed out by numerous researchers, include the poor quality of urban planning and architecture/urban construction regulations; under-revised urban planning that misses adequate technical indicators at central and regional levels; inadequate human resources and urban management capacity; insufficient construction supervision, and an incomplete urban database [5].

Thai Nguyen is located to the north of Hanoi, the capital of Vietnam, in the centre of the northern mountainous area of the country. In an effort to raise Foreign Direct Investment (FDI), Thai Nguyen has started developing the local infrastructure: new national highway No. 3, linking Hanoi and Thai Nguyen, is already in operation; it has reduced the time, needed to reach Hanoi, by more than an hour. By now, Thai Nguyen has improved its investment appeal among domestic and international investors, major economic operators, small and medium enterprises (SMEs). Many projects have been implemented; they are a remarkable contribution to the socio-economic development of the province. Thai Nguyen has become a national leader in FDI raising.

Currently, Thai Nguyen is one of the most important economic centres and locomotives of the Northern Mountainous region; it experiences rapid urbanization and vibrant urban economic development.

Thai Nguyen has successfully become a second-grade city, that provides effective support to the city of Hanoi, and boosts the development of smaller neighboring cities. The Government of Vietnam has chosen Thai Nguyen City as the beneficiary of assistance for its economic growth potential. Traditional surveying methods and land profiles have not been effective in managing urban scenarios given the contextual changes in technologies and socio-economic requirements. What does the present-day scenario need as a tool that captures, stores, analyzes, and leads to a feasible solution? GIS is a sophisticated tool, processing spatial information and making a sequential analysis of the physical environment by using the attribute data such as Canopy, Land use, Land cover, Environmental resources, water supply, sewerage and relevant topology. Given the challenges of the modern urban society, urban planners and managers should apply GIS to develop "smart cities" which are livable, well managed, safe, and sustainable. GIS will be a helpful visual tool for effective decision-making in respect of the issuance of building permits, construction discipline management and urban planning. Rapid development of the Internet, Mobile Computing, Wi-Fi, Remote sensing, VB.net has brought multidimensional societal changes [6]. These have been



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implemented in urban planning and management. The challenges that the urban management has to tackle include better controllability, easier access to updated information, appropriate, smart, and efficient decisions. It is important for the authorities to apply technological advancements in urban management and urban planning. Currently, the application of the information technology (IT) in urban management is still very limited, especially in Thai Nguyen as a province, despite the availability of numerous researches focused on the improvement of urban management in different areas and regions [5]. Therefore, the project on GIS application in support of urban management towards the development of smart cities in Thai Nguyen is a viable solution aimed at urban management improvement.

2. DATA AND METHODS

New urban management trends towards smart city development in Thai Nguyen

Sustainable urban development has been a dominant goal, governing urban management activities. Urban planners and managers can apply the following approach in order to achieve this goal, which encompasses the following aspects [7]: (1) integrating a sustainable goal into future objectives; (2) mainstreaming economic, social, and environmental sustainability within the framework of urban planning projects.

The effect of sustainable development on urban planning management can be broken down into the following aspects:

- innovative planning methods, application of the green building approach, and linking urban planning to urban transport [8]; besides, the importance of organizing and implementing urban planning projects should be considered.
- the application of information technologies, GIS to support the management of planning and construction activities in line with the approved urban development plans. This approach not only (1) changes the perception of planning methods that are community-based and participatory for developing urban areas; but also (2) facilitates the shift from the top-down urban management to the bottom-up urban management as a more competitive and partnership-oriented management model. There is a variety of smart city frameworks that facilitate the assessment and development of cities. Smart cities have been classified using six dimensions, namely, smart economy (industry), smart governance (e-democracy), smart environment (efficiency & sustainability), smart mobility (logistics & infrastructures), smart living (security & quality) and smart people (education). Many metropolitan authorities have used these six dimensions in a smart city, that uses a set of factors to measure its success and decide on further improvements [9].

These initiatives, launched by urban leaders and professional officials responsible for construction and urban development management, have shown positive signs of urban management improvement. The framework, adopted for this study, uses safe, well managed, livable, healthy, prosperous, and sustainable tools that employ GIS, AHP (Analytic Hierarchy Process), SQL (Structured Query Language), VB.net (Visual Basic) to connect the community and the authorities, manage the urban database and the development of a friendly and livable city [10–12].

3. RESULTS

Evaluation of an IT application supporting urban management in Thai Nguyen city

An IT application supporting urban management in Thai Nguyen city has not been implemented yet [11]. According to the results of sociological surveys, the general public believes that information technologies are insufficiently used by the urban administration in the process of urban management; urban residents hope IT will enable them to solve tasks properly. According to the general public, their involvement in and supervision over urban management have been rather limited.

Such limitations have been scientifically confirmed by the sociological surveys, examinations of reliability, Exploratory Factor Analysis (EFA), and the validation of the multi-variable regression performed to determine the extent of influence of each factor [13–16].

This study shows that an integrated GIS database can facilitate effective collection, tracking and management of property data by urban managers in Thai Nguyen city. Questionnaires were developed to collect data on the items of real estate and their owners in the study area. The database was compiled in VB.net and integrated into the GIS database. The results have proven that of three hundred questionnaires used for this study, 250 owners fulfilled their property-related obligations. The study has clearly shown that an integrated GIS database ensures a more efficient tracking and management of planning and construction works in line with urban development plans. It is recommended to use the proposed GIS database to track violations in the study area. Also, stringent measures, representing a combination of awareness generation and law enforcement, should be taken to make local residents honour their obligations.

The co-authors have verified the EFA to attain the following excellent results:

Dependent variable Y, that affects urban planning and construction management in line with the approved urban plans of Thai Nguyen city (MPC-Management Planning and Construction according to urban plans), is shown in the multiple linear regression equation:

$$Y\,(MPC) = 2.168 + 0.221\,X1 + 0.513\,X2 + 0.355\,X3 + 0.325\,X4. \quad (1)$$

Dependent variable Y(MPC) depends on 4 independent variables, including X1 — Condition, X2 — Government, X3 — Participation and Partnership, X4 — Information technologies and other independent factors shown in coefficient $\beta 0 = 2.168$.

X1: A group of Condition (CO) factors, including Sustainable economic development & Stable political system, Education level, Urban lifestyle.

X2: A group of Government (GO) factors, including Legal Framework; Accountability; Transparency & Supervision.

+ X3: A group of Participation and Partnership (PP) factors, including Compliance with Law, Propagation and Dissemination of the Legal system, Public, Sharing, and Advocacy.

+ X4: A group of Information Technology (IT) factors, including Decision-making Process Improvement, Time and Cost Saving, Communication [17].

All standardized regression coefficients β are greater than 0; in addition, $\beta 2 = 0.513 > \beta 3 = 0.355 > \beta 4 = 0.325 > \beta 1 = 0.221$; thus, these coefficients marked as X1, X2, X3, X4 have a positive impact on planning and construction management within the framework of urban planning. Survey results, indicated as the Government, are the most valuable factors that influence effective planning and

construction management pursuant to the approved Thai Nguyen urban development plan. The current deterrence strategy can hardly reduce violations since it is only used as a preventive solution. When people believe they will be caught and punished, they are less likely to instigate violators. An appropriate level of sanctions coupled with a high risk of being caught is likely to prevent some potential crimes. So, it is recommended that legislators can carefully consider the likelihood and severity of punishment as an effective warning to violators.

4. DISCUSSION

A GIS application in support of urban management in Thai Nguyen city

Thai Nguyen, being a development centre located north of Hanoi, takes advantage of inter-connected regional infrastructures. Thai Nguyen City, an industrial city currently focused on iron and steel products, is to be transformed into a city of commerce, services, clean industries and high technologies. The goal of Thai Nguyen is to become a sustainable, modern city by 2035, an ideal centre of politics, economy, culture, education, healthcare, tourism and services in the Thai Nguyen province, northern midlands and mountainous regions of Vietnam[1]. Thai Nguyen City develops as a service provision centre of green growth, ensuring harmony between the economy, natural ecosystems, and social balance[2]. This focus enables the city to apply technological advancements in urban management. Recently, the development of the Internet and GIS technologies has allowed web-based data sharing by means of integrating GIS and Web (referred to as Web-GIS) [18]. The co-authors employed the Web GIS and a Web GIS application [19] to establish a data system towards more effective management and information sharing relevant to construction management in line with the approved urban plans (i.e. building permits and construction work management). More importantly, the use of Web GIS could bring about tremendous benefits to the urban authorities of Thai Nguyen city in terms of construction permits and construction work management [5, 6, 20].

A real-data application integrates all sectors of a smart city's architectural framework [21], including its smart environment, smart transportation, and smart residential buildings. A satellite network is used with smartphones, GPS devices, while PCs and other navigation devices use the Internet to collect data with the aid of semantic Web technologies. Citizens and managers will obtain information using Web GIS technologies which have integrated cross-sectional platforms to assemble, manage, gather, analyze, and visualize spatiotemporal data for the benefit of sustainable urban planning, development, and management. The results are often displayed on the map that highlights areas featuring high to low suitability [22].

The co-authors have developed a software system by integrating SQL and VB.NET [11, 25] into GIS to allow users to access and search for information, statistical data, and reports that they need. In particular, the co-authors have developed and benchmarked spatial data and attributes of an urban planning project; land and housing information in Thai Nguyen city (the case of Residential Compound 6 of Tuc Duyen) to establish a uniform framework for the software systems to be shared by the concerned departments and agencies; it has spatial and attribute data related to individual land plots in support of the issuance of construction permits and construction work management.

All data are provided in standard forms and updated to ensure publicity and transparency. The system is operated by the database, that establishes a relationship between the government and citizens in terms of law-making and enforcement in relation to planning and planning management, state funding and protecting the benefits of the urban population.

The software interfaces are presented on Fig. 1–3.

1 Thủ tướng Chính Phủ. Quyết định số 1536/QĐ-TTg về việc phê duyệt Nhiệm vụ điều chỉnh quy hoạch chung thành phố Thái Nguyên, tỉnh Thái Nguyên đến năm 2035. 2014. (Government, Decision No.1536/QD-TTg approving the task of adjustment general planning of Thai Nguyen city to 2035. 2014: Government Prime.)

2 Ủy ban nhân dân thành phố Thái Nguyên, Thuyết minh tổng hợp điều chỉnh Quy hoạch chung thành phố Thái Nguyên đến năm 2035. 2014, thành phố Thái Nguyên (Thai Nguyen city People's Committe, General explanation of adjustment general planning for Master plan of Thai Nguyen City to 2035. 2014, Thai Nguyen city People's Committe.)

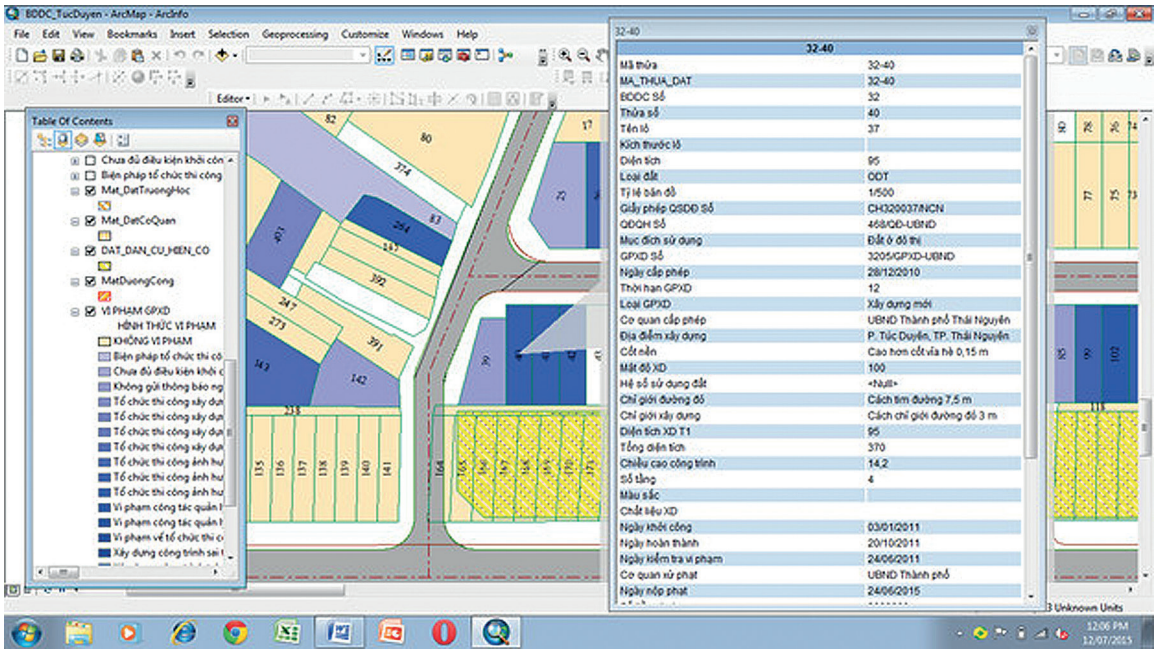


Fig. 1. The interface of integrated GIS and VB.net (General land information)

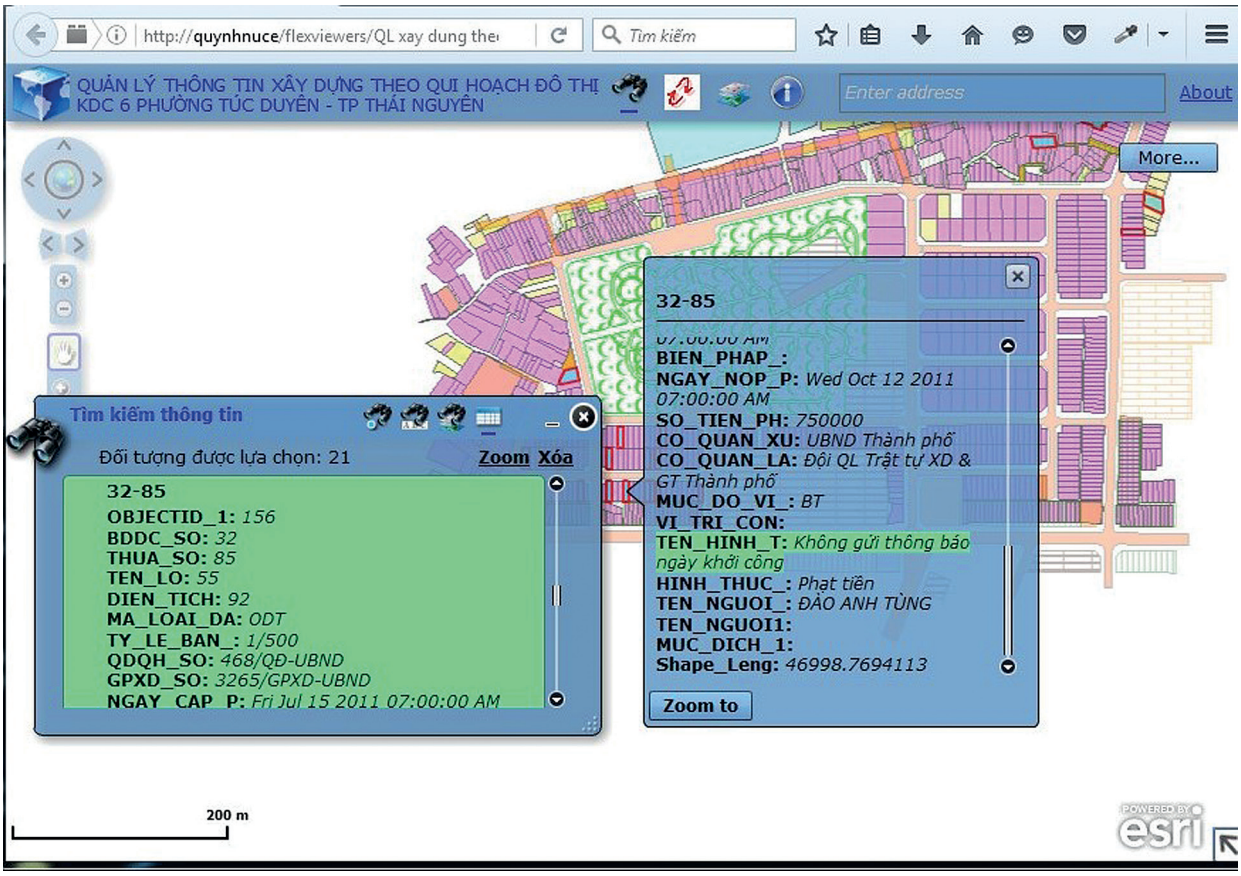


Fig. 2. The interface of integrated GIS and VB.net (construction permit and construction work management information)

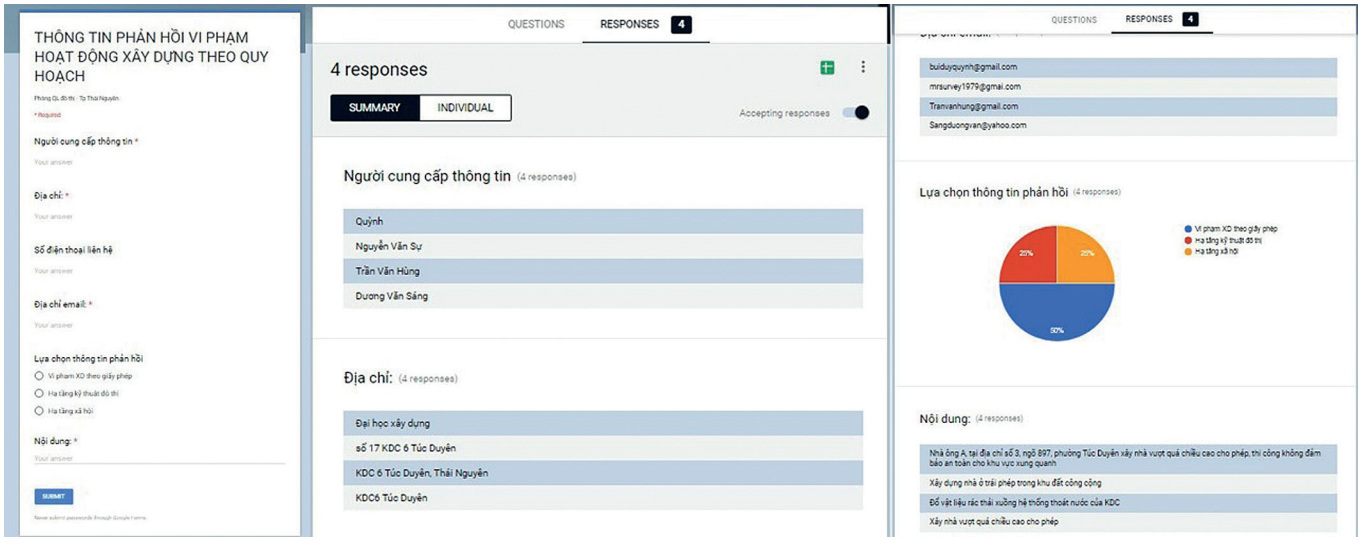


Fig. 3. The interface of the Web-GIS technology application

5. CONCLUSIONS AND RECOMMENDATIONS

GIS applications are widely used in Thai Nguyen in support of urban management aimed at the smart city development. Management software can be used by local authorities when the database system is fully operable. Not only the government and citizens of Thai Nguyen city will benefit from the use of the software, it may also be applied by similar localities.

The research on "A GIS application in support of urban management towards the attainment of smart city development goals in Thai Nguyen" is meaningful and essential to Thai Nguyen in promoting their specific regional strengths. The paper addresses new contributions to the theory and practice of urban management.

IT applications are used to implement urban management solutions; they enable users to access information, statistics, and

reports. The co-authors have developed a software system that integrated SQL and VB.NET into GIS to enable users to access and search for information, statistics, and reports.

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ГИС-приложение для поддержки городского управления в достижении целей развития умного города в Тай Нгуен

Быстрая урбанизация и развитие городов должны соответствовать требованиям разумного, «зеленого» роста и принципам устойчивого развития Вьетнама, которые были и остаются важными задачами для менеджеров. Это требует, чтобы городская база данных была точной, актуальной и прозрачной для управления. В то же время люди должны легко находить нужную информацию. Один из умных и довольно эффективных инструментов — комбинация атрибутов данных и пространственных данных. Комбинация между реальными данными и Интернетом вещей (IoT — Internet of Things) создает прорыв в управлении городским развитием, облегчая менеджерам и гражданам доступ к данным в реальном времени, а городскому управлению — принятие эффективных решений. В этом исследовании была собрана и создана база геоданных для поддержки эффективного управления городским хозяйством и обеспечения ее доступности для жителей города Тай Нгуен. На основе собранной информации руководители будут принимать решения. База данных была создана в VB.net, а затем интегрирована в географическую информационную систему (ГИС), чтобы предоставить пользователям возможность доступа и поиска, анализа, обработки и управления информацией. Выводы исследования о факторах, влияющих на городское управление, показывают, что местное управление, действительно, играет роль в ограничении нарушений городского строительства. В этой модели рассмотрены основные факторы, влияющие на управление городским хозяйством, которые выявили исследования (участие сообщества, информационные технологии, право и связь), улучшены управленческие возможности правительства города.

Ключевые слова: *ГИС, городская база данных, градостроительство, управление городским хозяйством, умный город*

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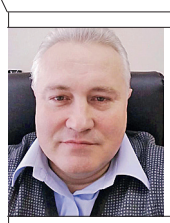
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A review of changes in the Russian legislation in the field of construction and real estate management in the first half of 2021

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The review encompasses changes in Russian legislation in the field of construction, real estate, housing and utilities management.

The review addresses the legal and regulatory framework of the shared equity construction legislation and guaranteed rights and legitimate interests of citizens participating in the shared equity construction; reusable project documentation, standard project documentation, the availability of technical specifications needed for the architectural and construction design, connections to engineering networks; the calculation of amounts payable by citizens and organizations for the maintenance of residential premises in apartment buildings in Moscow, the city of federal significance; the protection of rights and legitimate interests of owners of residential buildings in respect of the calculated amounts of utility payments, as well as the improvement of relations in respect of the operation and modernization of the state information system of housing and utility services, protection of state information resources; a decision making procedure as part of the legal framework for the remote participation in meetings of members of civil communities, etc.

Keywords: *amendments, legislation, regulatory legal acts, construction, urban planning, apartment building, housing and utility services*

Note: The information from the following open access sources, including the website of the State Duma of the Federal Assembly of Russian Federation[1]; the Internet portal of legal information[2]; Internet portal "Rossiyskaya Gazeta"[3]; legal reference system "ConsultantPlus"[4]; information and legal portal "Garant.ru"[5]; information portal "RBC Real Estate"[6], was used to make this review.

REGULATORY ACTS

Federal Law No. 273-FZ of July 1, 2021 "On Amendments to Federal Law "On participation in the shared equity construction of apartment buildings and other real estate facilities and amendments to certain legislative acts of the Russian Federation" and particular legislative acts of the Russian Federation" [1]

Regular amendments have been made to the law on the shared equity construction and other legal acts regulating the improvement of the legislation on the shared equity construction and the guarantees of rights and legitimate interests of citizens involved in the shared equity construction.

The Law is effective as of the day of its publication, that is July 01, 2021. The amendments address obligations to the parties involved in the shared equity construction, bankruptcy of developers, and the transfer of a shared equity construction facility.

Towards this end, public non-profit company "Fund for the Protection of the Rights of Citizens involved in the shared equity construction" (hereinafter referred to as the "Fund") is granted the right to complete and initiate the construction of apartment buildings and real estate facilities at the expense of the contributions made by the parties involved in the shared equity construction. These contributions are to be credited to the Fund's current account established with a bank authorized to be involved in the housing construction.

The Fund is authorized to hold the land plots that are owned by the state or municipalities for the purpose of construction of apartment buildings and other real estate facilities if their construction cannot be completed due to the restrictions established by the land and other legislation of the Russian Federation.

It is also stipulated that the preparation of the project documentation and the execution of engineering surveys required for the construction of apartment buildings or other real estate facilities, as well as the examination of project documentation and the results of engineering surveys shall be carried out at the expense of the Fund, including the proceeds obtained as an in-kind contribution of the Russian Federation.

The Fund's making a decision to finance the completion of an unfinished construction facility, the construction of apartment buildings and other properties is possible if the amount of such

1 State Duma of the Federal Assembly of Russian Federation. URL: http//duma.gov.ru
2 Internet portal of legal information. URL: http//www.pravo.gov.ru
3 Internet portal "Rossiyskaya Gazeta". URL: http//rg.ru
4 Legal reference system "ConsultantPlus". URL: http//www.consultant.ru
5 Information and legal portal "Garant.ru". URL: http://www.garant.ru
6 Information portal "RBC Real Estate". URL: http://realty.rbc.ru

financing, as determined by the Government of the Russian Federation, does not exceed the maximum compensation amount payable to citizens involved in construction and request the transfer of residential premises, parking and office spaces. The Fund or a legal entity, established by the Fund for these purposes, is assigned the functions of a technical customer with the right to conduct construction control in respect of apartment buildings, whose completion is carried out by the funds of the subjects of the Russian Federation. In respect of these facilities, the Government of the Russian Federation may also decide to conduct construction control to be performed by the federal executive authority responsible for developing and implementing the government policy in the field of construction, architecture, and urban development, or by a state (budget-funded or autonomous) institution subordinate to the specified authority. The Fund is required to carry out the quarterly monitoring of the implementation by the subjects of the Russian Federation of measures to restore the rights of citizens whose funds were contributed to the construction of apartment buildings or other real estate facilities, included in the unified register of problematic facilities located in the subjects of the Russian Federation.

In order to develop the legal and institutional framework, needed to provide citizens, public authorities, local government bodies and organizations with housing construction information, a unified housing development institution establishes, maintains and modernizes a unified information system on housing construction, this institution has the right to collect, process, store, deliver, place, and distribute this information, and provide access to it.

The list of subjects of the unified housing construction information system that are required to upload the information about housing construction to this system (subjects of the Russian Federation, funds of a subject of the Russian Federation and bankruptcy managers) is expanded, and the same about the list of information to be available in the personal accounts of all subjects of the unified housing construction information system (in particular, all information about housing construction facilities, including their location, degree of completion, construction schedule, as well as reports on the achievement of performance indicators in respect of construction of problematic real estate facilities). The procedure, methods, terms and frequency of uploading information to the unified information system of housing construction, as well as the composition of the information to be uploaded, types and titles of documents to be uploaded as electronic copies will be identified by the Government of the Russian Federation. Information and documents, that are subject to uploading to the unified information system of housing construction, are provided free of charge.

Any interaction initiated through the unified housing construction information system is performed using the Federal State Information System "Unified Portal of State and Municipal Services (functions)" in accordance with the procedure established by the Government of the Russian Federation. The federal law extends the list of grounds for the withdrawal of problematic facilities from a single registry of problematic construction facilities.

Some of the amendments address the bankruptcy of developers and the activities of arbitration managers, as well as the activities of the Fund. It is established that the Fund is granted the right to familiarize itself with the register of claims of construction participants and the grounds for their introduction into such a register, and also has the right to file objections to the arbitration court considering the bankruptcy case of the developer based on the results of the review of the register of claims of construction participants.

The law establishes that judicial acts and acts of the authorized body on the seizure of property or a ban of certain actions with the immovable property of an apartment building in which an object of shared construction is located are no grounds for suspending the state cadastral registration of an apartment building, state registration of the ownership right to an object of shared construction, the state registration of the transfer of ownership rights to such an object. At the same time, the record of the seizure, the prohibition to perform certain actions must be repaid simultaneously with the state registration of the ownership right to the last shared-equity construction object in such an apartment building.

It is planned to provide a comprehensive service for the management of solid municipal waste (hereinafter referred to as MSW) on the territory of Moscow, St. Petersburg and Sevastopol. For regional operators operating in the territory of the subjects of the Russian Federation — the cities of federal significance of Moscow, St. Petersburg and Sevastopol, the ability to attract operators for the treatment of MSW to provide comprehensive services for the treatment of MSW based on the results of auctions in accordance with the procedure established by Federal Law No. 228-FZ of July 18, 2011 "On procurement of goods, works, services by certain types of legal entities". The conditions for conducting such auctions and the procedure for the activities of operators for the treatment of MSW that own objects of processing, neutralization, burial of MSW are being clarified.

Corresponding amendments are being made to the Land Code of the Russian Federation and Federal Laws No. 218-FZ of July 13, 2015 "On State Registration of Real Estate" and No. 225-FZ of July 13, 2015 "On Assistance to the development and improvement of management efficiency in the housing sector and on Amendments to Certain Legislative Acts of the Russian Federation".

Federal Law No. 73-FZ of May 31, 2001 "On State Forensic Expert Activity in the Russian Federation" introduced amendments providing for the possibility of the Government of the Russian Federation to establish a list of types of forensic examinations conducted exclusively by state forensic expert organizations.

Federal Law No. 178-FZ of December 21, 2001 "On the Privatization of State and Municipal Property" is amended to prohibit challenging the price of state or municipal property established by the results of an auction or tender, separately from the results of an auction or tender.

Federal Law No. 275-FZ of July 1, 2021 "On Amendments to the Urban Planning Code of the Russian Federation and Certain Legislative Acts of the Russian Federation" [2]

Changes were made to Urban Planning Code of the Russian Federation and other acts on re-use project documentation, standard project documentation.

The Federal Law will enter into force on September 1, 2021, with the exception of certain provisions that have different effective dates. The legislator unified the activities (stages) carried out during the implementation of projects for the construction of capital construction objects, reconstruction of a capital construction object, commissioning of such an object, as well as state registration of rights to it.

The implementation of a project for the construction of a capital construction facility may consist of the following stages:

The first stage — the acquisition of rights to a land plot, including those provided from lands that are in state or municipal ownership, involves: the provision of a land plot that is in state or municipal

ownership, for rent or ownership at auction in accordance with land legislation; the provision of a land plot that is in state or municipal ownership, without bidding in accordance with land legislation; making a decision on the establishment of a public easement, concluding an agreement on the establishment of a public easement, an easement in accordance with civil legislation, land legislation, making amendments to such an agreement; issuing, in accordance with land legislation, a permit for the use of land or land plots that are in state or municipal ownership, without providing land plots and establishing an easement, a public easement.

The second stage — approval or issuance of information, documents, materials necessary for performing engineering surveys, architectural and construction design, construction, reconstruction of a capital construction object includes: preparation and approval of documentation on territory planning, which include: making a decision on the preparation of a territory planning project, a territory surveying project; public discussions or public hearings on territory planning projects, territory surveying projects; approval of territory planning documentation; granting a permit for a conditionally permitted type of use of a land plot, including holding public discussions or public hearings on a draft decision on granting such a permit; granting permission to deviate from the maximum parameters of permitted construction, reconstruction of a capital construction object, including holding public discussions or public hearings on a draft decision on granting such a permit; issuing a town-planning plan for a land plot; obtaining technical requirements and conditions that are subject to mandatory execution during architectural and construction design for the purpose of reconstruction, capital repairs of existing linear objects, including engineering and technical support networks; concluding a contract with the copyright holders of existing linear objects, including engineering and technical support networks, for the purpose of their reconstruction, capital repairs; obtaining technical conditions for connecting (technological connection) of capital construction objects to engineering and technical support networks; conclusion of contracts on connection (technological connection) of capital construction objects to the networks of engineering and technical support; adoption, in accordance with the land legislation, of a decision on the establishment, modification, or termination of the existence of zones with special conditions for the use of the territory in connection with the construction, reconstruction of the capital construction object.

The third stage — the performance of engineering surveys and the implementation of architectural and construction design includes: conducting an expert examination of the project documentation of capital construction objects and (or) the results of engineering surveys; conducting a state historical and cultural expert examination of the project documentation for the preservation of cultural heritage objects, if necessary; conducting a state environmental expert examination of the project documentation, if necessary.

The fourth stage — construction, reconstruction of a capital construction object, commissioning of a capital construction object provides for: issuing a construction permit (except in cases where the construction of a capital construction object does not require the issuance of a construction permit), making changes to the construction permit, assigning an address to the object of addressing; sending a notification on the compliance of the parameters of an individual housing construction object or a garden house specified in the notification on the planned construction with the established parameters and the permissibility of placing an individual housing construction object or a garden house on a land plot; sending notifications to the federal executive authority authorized to carry out state construction supervision, the executive authority of the subject of the Russian Federation or the State Atomic Energy Corporation Rosatom; signing of acts on connection (technological connection) of the capital construction object to the engineering and technical support networks; granting by the federal state energy supervision body of a temporary permit, a permit for the admission to operation of electric energy production facilities, electric grid facilities, power receiving installations, heat supply facilities and heat-consuming installations; conclusion of energy supply contracts (purchase and sale (supply) of electric energy), hot water supply contracts, cold water supply contracts, heat supply contracts, water disposal contracts, including in relation to an object under construction, being reconstructed for the period of its construction, reconstruction, as well as conclusion of gas supply contracts; issuance of an opinion on the compliance of the constructed, reconstructed capital construction object with the requirements of project documentation (if state construction supervision is provided for; preparation of a technical plan of a building or structure in accordance with Federal Law No. 218-FZ of July 13, 2015 “On State Registration of Real Estate”; issuance of a permit for putting a capital construction object into operation; sending a notification about the compliance of the constructed, reconstructed object of individual housing construction or garden house with the requirements of the legislation on urban planning activities or the non-compliance of the constructed, reconstructed object of individual housing construction or garden house with the requirements of the legislation on urban planning activities.

The fifth stage — state cadastral registration and (or) state registration of rights to a built, reconstructed capital construction object (premises, parking space) are carried out in accordance with Federal Law No. 218-FZ of July 13, 2015 “On State Registration of Real Estate”.

At the same time, the legislator establishes that the Government of the Russian Federation approves an exhaustive list of documents, information, materials, approvals provided for by regulatory legal acts of the Russian Federation and necessary for the implementation of measures during the implementation of a project for the construction of a capital construction facility. The submission of requirements for obtaining permits, conclusions, documents, information, materials, approvals issued by federal executive authorities, executive bodies of state power of the subjects of the Russian Federation, local self-government bodies, organizations subordinate to them, and other organizations, not provided for by the Urban Planning Code of the Russian Federation, is not allowed for the implementation of a project for the construction of a capital construction object.

The Law also excludes the institution of recognition of project documentation as cost-effective re-use project documentation, and instead introduces the institution of recognition of project documentation as standard project documentation (for the purpose of its subsequent repeated application to other similar designed capital construction objects). Standard project documentation can be recognized as project documentation that has received a positive conclusion of the state expert examination of the project documentation and was used in the construction or reconstruction of a capital construction object, in respect of which a permit for commissioning has been obtained. Information on standard design documentation should be included in the unified state register of

expert opinions on design documentation for capital construction projects. The procedure for recognizing project documentation as standard project documentation will be determined by the Government of the Russian Federation. The criteria to be met by standard project documentation, the term of application of standard project documentation, the procedure for making a decision on recognizing project documentation as standard project documentation, the procedure for using standard project documentation, including the procedure for making changes to it, as well as the grounds for excluding standard project documentation from the unified state register of expert opinions on design documentation of capital construction objects will be established by the Government of the Russian Federation.

The Government of the Russian Federation may establish cases of mandatory use of standard project documentation. Federal, regional and municipal authorities, legal entities established by the Russian Federation, subjects of the Russian Federation, municipal, education, and legal entity in the authorized (share) capital in which the share of the Russian Federation, constituent entities of the Russian Federation, municipalities is more than 50 percent receive free of charge the right to use a standard design documentation, the exclusive right to which owned by the Russian Federation, the subject of the Russian Federation or a municipality.

It provides for the right of the Government of the Russian Federation to establish the procedure for conducting expert examinations of project documentation on the principle of "one window", which provides for conducting expert examinations based on a single request from the applicant, while interaction between the bodies and organizations authorized to conduct these examinations is carried out without the participation of the applicant.

The Urban Planning Code establishes the concept of working documentation developed on the basis of project documentation. Construction and reconstruction of capital construction objects must be carried out in accordance with the project documentation and working documentation. The composition and content of project documentation will be determined by the Government of the Russian Federation, which may also set separate requirements for the composition and content of working documentation.

The Law establishes additional methods and procedures for submitting, receiving and issuing: notifications of planned construction, applications for construction permits, construction permits, notifications of completion of construction, notifications of planned demolition or completion of demolition of capital construction objects; applications for the issuance of an urban development plan for a land plot. It clarifies the specifics of urban development activities in the constituent entities of the Russian Federation — federal cities of Moscow, St. Petersburg and Sevastopol in the field of implementation of construction projects and preparation of amendments to the general plans and rules of land use and development.

In order to implement projects for the construction, reconstruction, and modernization of infrastructure facilities, Federal Law No. 185-FZ of July 21, 2007 "On the Fund for Assistance to Housing and Utility Services Reform" is amended, giving the Fund for Assistance to Housing and Utility Services Reform the functions of attracting funds from the National Welfare Fund, providing loans to legal entities at the expense of attracted funds and acquiring bonds of legal entities during their initial placement. At the same time, the Housing and Utility Services Reform Assistance Fund will have the right to act as a member of a syndicate of creditors in accordance with Federal Law No. 486-FZ of December 31, 2007 "On Syndicated Credit (Loan) and Amendments to Certain Legislative Acts of the Russian Federation".

The Federal law establishes that the procedures included before January 1, 2021 in the exhaustive lists of procedures in the fields of construction can be carried out until September 1, 2022.

It is envisaged that cost-effective project documentation for reuse, information about which, as of October 1, 2021, is included in the unified state register of expert opinions on project documentation for capital construction projects, is recognized as standard project documentation. Corresponding amendments are being made to the Law of the Russian Federation No. 4802-1 of April 15, 1993 "On the Status of the Capital of the Russian Federation", federal Laws No. 135-F3 of July 26, 2006 "On Protection of Competition" and No. 218-FZ of July 13, 2015 "On State Registration of Real Estate".

Federal Law No. 276-FZ of July 1, 2021 "On Amendments to the Urban Planning Code of the Russian Federation and Certain Legislative Acts of the Russian Federation" [3]

The law establishes the procedure for providing technical conditions necessary for architectural and construction design, connection to engineering networks.

The Federal Law comes into force on September 1, 2021. Technical conditions for connection (technological connection) of capital construction objects to engineering and technical support networks used for architectural and construction design (hereinafter referred to as technical conditions) are determined in accordance with the rules for connection (technological connection) to engineering and technical support networks of the corresponding type, and are mandatory appendices to contracts for connection (technological connection) of capital construction objects to engineering and technical support networks of the corresponding type (hereinafter referred to as — connection agreements (technological connection). Contracts are concluded between the right holder of the engineering and technical support network, on the one hand, and the right holders of the land plot and (or) the capital construction object; persons who, in the cases provided for by land legislation, have been granted a permit to use land or a land plot that is in state or municipal ownership, without providing a land plot and establishing an easement, a public easement, as well as persons who are the owner of an easement or a public easement that are established in accordance with civil legislation, land legislation or persons with whom an agreement on integrated development of the territory has been concluded, on the other hand.

Technical specifications are issued for the purpose of concluding a connection agreement (technological connection) without charging a fee within seven working days at the request of the specified persons, except for cases of technological connection to electric networks.

The term of validity of the technical specifications is set by the right holder of the engineering support network for at least three years or for at least five years in the case of integrated development of the territory, unless otherwise provided for by the legislation of the Russian Federation.

In certain cases, for the construction of objects of federal, regional, or local significance, a connection (technological connection) agreement may be concluded in the absence of title documents for a land plot with a federal executive authority, an executive authority of a subject of the Russian Federation, a local self-government body, a legal entity established by the Russian Federation, a subject of the

Russian Federation, or a municipal entity, as well as with other legal entities if there is a decision on preliminary approval of the provision of a land plot to them for these purposes. Such a contract is concluded in the presence of an approved land surveying project and (or) an issued urban development plan for the land plot and a scheme for the location of the land plot or land plots on the cadastral plan of the territory approved in accordance with the land legislation. The cases of concluding such an agreement are determined by the Government of the Russian Federation.

The subject with which the contract on connection (technological connection) is concluded, in agreement with the right holder of the engineering and technical support network, has the right to provide architectural and construction design, construction, reconstruction of the engineering and technical support network located outside the boundaries of the land plot belonging to it, in order to connect (technological connection) the constructed, reconstructed capital construction object to the engineering and technical support networks.

The law establishes that the term of validity of technical conditions for connecting (technological connection) capital construction objects to engineering and technical support networks is determined by the right holder of engineering and technical support networks for at least three years or for complex development of the territory for at least five years, unless otherwise provided for by the legislation of the Russian Federation.

For the construction of objects of federal, regional, or local significance, connection agreements (technological connection) may be concluded in the absence of title documents for the land plot and in the presence of prior approval of the provision of land for these purposes. The cases of concluding such agreements will be determined by the Government of the Russian Federation.

The law shall establish the procedure and terms of payment for connection (technological connection) of capital construction objects to the networks of engineering and technical support, the possibility of a phased payment in the case of construction, reconstruction of capital construction of residential, public and commercial buildings and needed for the functioning of the utilities, transport and social infrastructures, in accordance with the approved draft plan for the area. In cases of construction or reconstruction of capital construction objects within the boundaries of elements of the planning structure or their parts, it is possible to approve complex schemes for engineering support of the territory, providing for the connection of new capital construction objects to existing engineering and technical support networks.

The right holders of capital construction objects connected to engineering and technical support networks are granted the right to reduce the volume of connected (technologically connected) capacity (load) in relation to such capital construction objects, while simultaneously redistributing (assigning the right to use) the released capacity or (load) to other persons interested in connecting (technologically connected).

The Law regulates legal relations that arise during the reconstruction or major repairs of existing linear facilities, engineering and technical support networks in connection with the planned construction, reconstruction, major repairs of capital construction objects (federal, regional, local transport infrastructure objects, multi-apartment residential buildings, residential buildings of blocked development, municipal and social infrastructure objects).

Reconstruction, overhaul of an existing linear object, as well as, if necessary, architectural and construction design for the purpose of such reconstruction, overhaul is carried out in accordance with the contract concluded by the right holder of the existing linear object with the developer or technical customer, taking into account the requirements of this article (hereinafter, for the purposes of this article, the contract).

The contract is concluded with the right holder of an existing linear item without fail in accordance with civil law. The developer or technical customer has the right to apply to the right holder of an existing linear object or engineering support network in order to conclude a contract during the validity period of the technical requirements and conditions.

The legislator has determined the essential terms of the specified agreement. In particular, the contract should include: information about the location of capital construction objects, information about existing linear objects (name, location, cadastral number (if available), reconstruction, major repairs of which are planned to be carried out; the obligation of the parties, if necessary, to ensure the preparation of documentation on the layout of the territory or making changes to it, architectural and construction design for the purpose of reconstruction, capital repairs of existing linear objects in accordance with technical requirements and conditions; the obligation of the parties to perform works, the deadline for performing such works; the obligation of the developer, the technical customer to reimburse the rights holders of existing linear objects for the costs associated with their reconstruction, capital repairs; the form and terms of reimbursement by the developer, the technical customer of the costs incurred in connection with such reconstruction, major repairs of existing linear objects, to their right holders; obligations of the parties to settle relations with the owners of objects connected (technologically connected) in accordance with the established procedure to existing linear objects, reconstruction, major repairs of which are planned to be carried out, due to the impossibility of operation of such existing linear objects during their reconstruction, major repairs; obligations of the parties to ensure the registration of title documents for land plots for the purpose of reconstruction, capital repairs of existing linear objects, as well as for these linear objects after the completion of their reconstruction, capital repairs (if necessary); obligations of the parties to establish, change, terminate zones with special conditions of territories in accordance with land legislation (if necessary); liability of the parties for non-performance or improper performance of the contract.

Compensation is carried out in cash and (or) in kind. The procedure for determining the form of compensation is established by the Government of the Russian Federation. In the case of monetary compensation, the performance of reconstruction and major repairs of existing linear objects is provided by the copyright holders of such objects. In the case of compensation in kind, the performance of these works is provided by developers, technical customers.

In order to prepare a town-planning plan for a land plot, the subjects of town-planning activity should be provided with information on the possibility of connecting (technological connection) capital construction objects to engineering and technical support networks.

Corresponding amendments are being made to the Land Code of the Russian Federation and Federal Laws No. 190-FZ "On Heat Supply" dated July 27, 2010 and No. 416-FZ "On Water Supply and Sanitation" dated December 7, 2011.

Federal Law No. 229-FZ of July 28, 2021 "On Amendments to Certain Legislative Acts of the Russian Federation" [4]

Amendments have been made to the Housing Code of the Russian Federation on the procedure for calculating

the amount of expenses of citizens and organizations as part of the payment for the maintenance of residential premises in an apartment building — the city of federal significance Moscow.

The law comes into force from the date of its official publication — June 28, 2021. The law supplements articles 154 and 156 of the Housing Code of the Russian Federation with provisions according to which in the subject of the Russian Federation — the city of federal significance of Moscow, the specifics of the procedure for calculating the amount of expenses of citizens and organizations as part of the payment for the maintenance of residential premises in an apartment building are established, taking into account that the costs of paying for utility resources consumed during the use and maintenance of common property in an apartment building will not be allocated as part of such a payment. Also, the Federal Law in Article 4 of the Law of the Russian Federation No. 4802-1 of April 15, 1993 "On the status of the capital of the Russian Federation" authorizes the state authorities of the city of Moscow, in accordance with the Housing Code of the Russian Federation, to include in the payment for the maintenance of residential premises the costs of paying for cold water, hot water, electric energy consumed during the use and maintenance of common property in an apartment building, waste water disposal for the maintenance of common property in an apartment building, as well as the procedure for calculating these costs: such expenses for the payment of utility resources consumed during the use and maintenance of common property in an apartment building will not be allocated as part of the payment for the maintenance of residential premises.

The utility resources consumed during the use and maintenance of common property in an apartment building will be paid by the management organization or the homeowners' association or the housing cooperative when calculating with organizations that provide these services from the funds paid as a fee for the maintenance and maintenance of common property in an apartment building.

The law establishes a new deadline for the entry into force — until January 1, 2022 of certain provisions of Federal Law No. 442-FZ of November 28, 2018 "On Amendments to Articles 159 and 160 of the Housing Code of the Russian Federation", which provide for cases in which subsidies are not provided to citizens, as well as compensation for the costs of paying for residential premises and utilities.

Federal law of June 11, 2021 No. 214-FZ "On amendments to article 157 of the Housing code of the Russian Federation and the Federal law "On the state information system of housing and utility services" [5]

The law is aimed at protecting the rights and legitimate interests of owners of houses in the calculation of fees for utilities, and improving relations on the operation, modernization and operation of the state information system of housing and utility services, the protection of state information resources.

The law came into force on June 22, 2021. The Law introduces amendments to Article 157 of the Housing Code of the Russian Federation aimed at establishing the liability of a utility service provider for violating the procedure for calculating utility fees not only to the owners of residential and non-residential premises in an apartment building, but also to the owner of a residential building.

The Law also amended Federal Law No. 209-FZ of July 21, 2014 "On the State Information System of Housing and Utility Services". Establishing that the system operator is obliged to ensure that the system complies with the requirements of the legislation of the Russian Federation, the smooth functioning of the system, the possibility of integration and interaction of other information systems with the system, and bears administrative responsibility in accordance with the legislation of the Russian Federation on administrative offenses for non-compliance of the system with these requirements.

The law clarifies the rights and obligations of participants in information interaction, including the conclusion by the system operator with the federal executive authority responsible for the development and implementation of state policy and regulatory regulation in the field of housing and utility services, an agreement on the specifics of interaction during the operation and modernization of the system and defines its essential conditions. The norms regulating the legal regime of information placed in the system and programs for electronic computers of the system are supplemented, including it is determined that the exclusive and other intellectual rights to programs for electronic computers created by the system operator at their own expense and other results of intellectual activity, as well as equated means of individualization associated with the creation and modernization of the system, belong to the system operator, who has the right to dispose of the intellectual rights belonging to him, taking into account the established restrictions.

The rules of interaction between the system and other information systems are supplemented: it can be implemented, including using the infrastructure that provides information and technological interaction of information systems used to provide state and municipal services and perform state and municipal functions in electronic form. The Government of the Russian Federation establishes cases and procedures for interaction of the system with citizens when providing state and municipal services and performing state and municipal functions, as well as when providing other services through the unified portal of state and municipal services.

Federal Law No. 225-FZ of June 28, 2021 "On Amendments to Part One of the Civil Code of the Russian Federation" [6]

The Law supplements the provisions of Part one of the Civil Code of the Russian Federation regulating the procedure for making decisions of the assembly in order to create a legal mechanism for remote participation of members of civil law communities in meetings.

The law comes into force on July 1, 2021. The Law defines the difference between a meeting held by participating in a meeting, including remotely using electronic or other technical means, and a meeting without holding a meeting, the decision of which is taken by absentee voting. Remote participation is possible if any methods are used to reliably identify the person taking part in the meeting and allow him to participate in the discussion of issues on the agenda and vote. Absentee voting is carried out by sending at least fifty percent of the total number of participants of the civil law community documents containing information about their voting, including by electronic or other technical means.

It is allowed to combine voting at a meeting and absentee voting, if this is provided for by Law, by a unanimous decision of the participants of the civil law community or by the charter of a legal entity. The meeting of the participants of the civil law community and the results of voting at the meeting, as well as the results of absentee voting, are confirmed by the protocol, while another method of confirmation may be provided by law, by a unanimous decision of the participants of

the civil law community or by the charter of a legal entity, provided that the relevant information is stored and provided unchanged.

The minutes must indicate: the date and time of the meeting, the venue of the meeting and (or) the method of remote participation of members of the civil law community in the meeting, and in cases of absentee voting — the date before which documents containing information about the voting of members of the civil law community were accepted and the method of sending these documents; information about the persons who took part in the meeting and (or) about the persons who sent documents containing information about the voting; the results of voting on each item on the agenda; information about the persons who conducted the counting of votes, if the counting of votes was entrusted to certain persons; information about the persons who voted against the decision of the meeting and demanded to make an entry about it in the minutes; information about the course of the meeting or about the voting process, if a member of the civil law community requires them to be included in the minutes; information about the persons who signed the minutes.

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22. *On Amendments to Part One of the Civil Code of the Russian Federation : Federal Law No. 225-FZ of June 28, 2021.*

Обзор изменений российского законодательства в сфере строительства и управления недвижимостью в первом полугодии 2021 года (второй выпуск)

В обзоре представлены изменения российского законодательства в сфере строительства, управления недвижимостью, управления жилищно-коммунальным комплексом.

В обзоре отражено нормативное правовое регулирование общественных отношений по вопросам совершенствования законодательства о долевом строительстве, а также повышения гарантий прав и законных интересов граждан — участников долевого строительства; проектной документации повторного использования, типовой проектной документации, порядка предоставления технических условий, необходимых для осуществления архитектурно-строительного проектирования, присоединения к инженерным сетям; порядка расчета размера расходов граждан и организаций в составе платы за содержание жилого помещения в многоквартирном доме — городе федерального значения Москве; обеспечения защиты прав и законных интересов собственников жилых домов при расчете платы за коммунальную услугу, а также совершенствования отношений по функционированию, модернизации и эксплуатации государственной информационной системы жилищно-коммунального хозяйства, защите государственных информационных ресурсов; порядка принятия решения собрания в целях создания правового механизма дистанционного участия членов гражданско-правовых сообществ в заседаниях и т.п.

Ключевые слова: *изменения, дополнения, законодательство, нормативно-правовые акты, строительство, градостроительство, многоквартирный дом, ЖКХ*

Примечание: при формировании обзора использовалась информация открытых источников: сайт ГД СФ РФ; Интернет-портал правовой информации; Интернет-портал «Российская газета»; Справочная правовая система «КонсультантПлюс»; Информационно-правовой портал «Гарант.ру», Информационный портал «РБК Недвижимость».

ЛИТЕРАТУРА

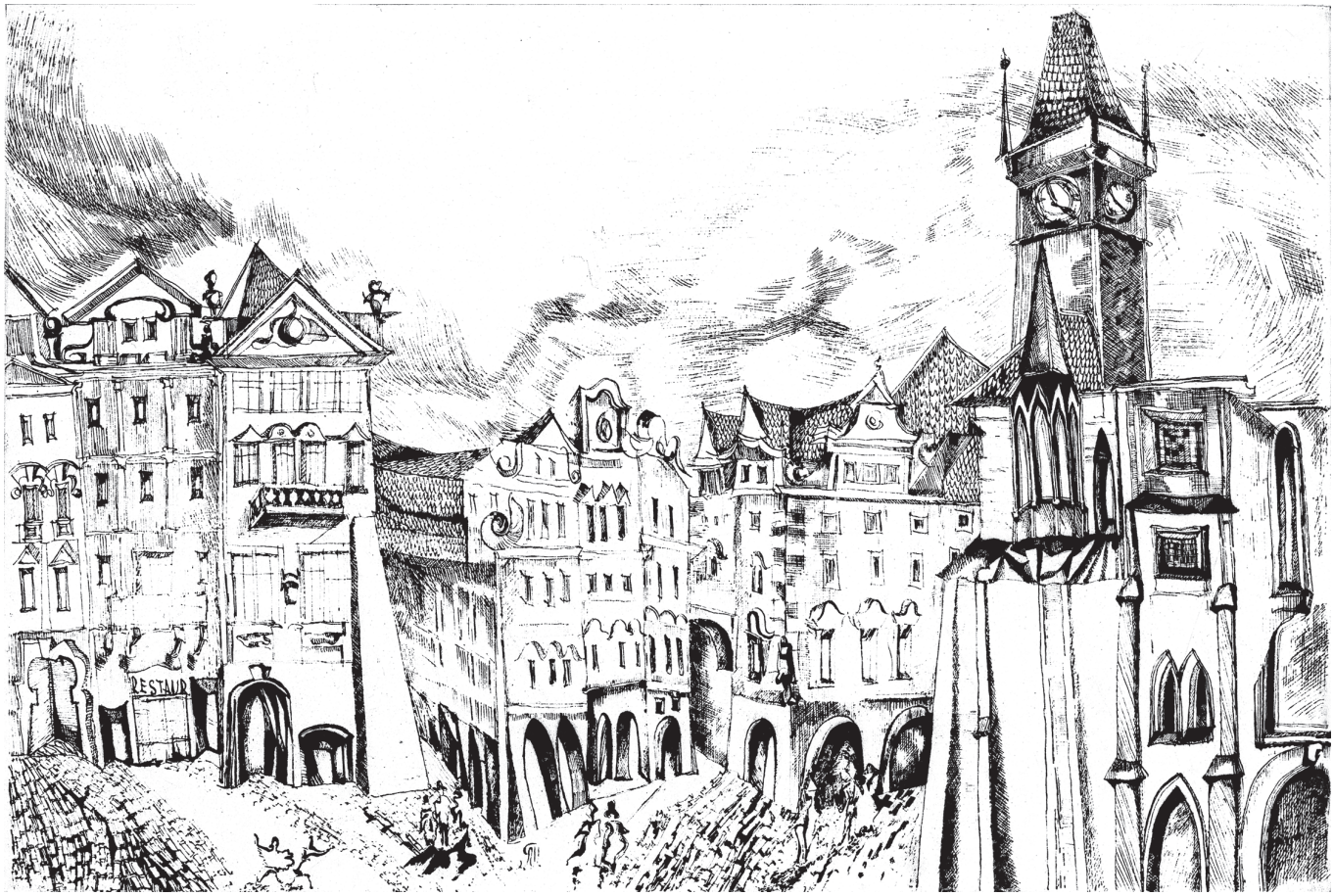
1. *Гражданский кодекс Российской Федерации.*
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3. *Жилищный кодекс Российской Федерации.*
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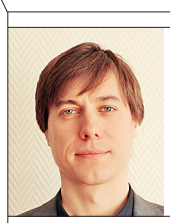
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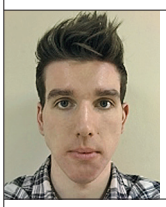
Development of a methodology for increasing the economic efficiency of a commercial real estate facility within the framework of a reconceptualization project in the context of current market trends

Each commercial real estate facility, whose functional concept remains unchanged for a long time, can be exposed to the influence of external and internal factors, that may reduce its economic efficiency and purchasing power that need to be restored by landlords who will take urgent measures. Reconceptualization is a method used to improve the economic efficiency of commercial and leisure property. The co-authors propose a methodological framework of selection, assessment and substantiation of project solutions, make a list of works and determine the general strategy of a reconceptualization project to increase the economic efficiency of a commercial real estate facility in the current market environment. It should also be noted that an economic crisis magnifies weaknesses of entertainment retail centres, and any reconceptualization strategy must take account of this phenomenon. Firstly, it is necessary to analyze the reasons for profit reduction, assess the resources and the potential of a facility, its market environment, and the prospects for its further operation. Under these conditions, reconceptualization may be regarded as an anti-crisis development strategy.

Keywords: *development of retail real estate, reconceptualization of retail real estate facilities, economic efficiency increase, consequences of the pandemic*



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A permanently changing market environment, macro- and microeconomic trends are forcing developers to look for opportunities to maintain the profitability of and demand for shopping centres [1]. Landlords can use various methods to restore the economic efficiency of their property and increase the customer traffic. These methods may include complete modernization, renovation and redevelopment. However, reconceptualization is one of the most cost effective methods. Reconceptualization is a set of works, aimed at changing or rethinking the general idea and the market position of an item of retail property by modifying its characteristics with regard for the current market trends [2]. Reconceptualization of a shopping centre has four constituents: a commercial and spatial concept; a positioning in respect of the target audience; visual a component, and technological modernization [3, 4]. Identification of the most rational and appropriate method of reconceptualization for a particular property can be a daunting task for a developer. The development of a reconceptualization strategy and identification of its extent need a comprehensive preliminary study of a specific property that must encompass a market research, main trends, competitive analysis, audience research and many other factors [4]. A reconceptualization project encompasses an in-depth analysis of possible limiting factors that can seriously affect the efficiency of any proposed solutions, reduce the potential of a facility or make the reconceptualization project impractical [5]. In order to form a system of methods for assessing the economic efficiency of shopping and entertainment centres in the present-day economic environment, researchers should formulate the fundamental factors that may influence modern shopping and entertainment centres [6]:

1) an integrated concept of a shopping centre. The concept of a shopping centre should be developed at the design stage and incorporated into the business plan as the project backbone;

2) unique architectural, technical and technological features of a shopping centre, which meet the needs of particular potential tenants; convenient access to the shopping centre and its parking lot; the ability to manage the customer flow inside the shopping centre building;

3) an intelligent shopping centre management system. It entails the regular monitoring and analysis of the market environment and the position of the shopping centre;

4) the multifunctionality of a shopping centre or its ability to meet a wide range of needs of its customers in one place at a convenient time;

5) flexible space. The changeability of the layout of a retail space in order to meet the needs of various tenants, comply with versatile regulations, and improve the efficiency.

Numerous performance indicators are used to evaluate the effectiveness of the shopping center management, the principal ones include [7, 8]:

1) shopping center attendance. At present, experts perform both quantitative and qualitative analyses of the customer traffic;

2) sales. The sales index shows the number of products sold and the amount of revenue received by a specific tenant and allows the management company to determine the traffic quality and performance of the entire shopping centre;

3) the average amount of time customers spend in the area occupied by each tenant. This indicator demonstrates the level of customer interest in specific tenants and the attractiveness of their product mix;

4) the product mix plays an essential role in assessing the attractiveness of a shopping centre as it determines the level of interest of visitors in its goods and services;

5) the commodity turnover per unit area is one of resulting aspects showing the overall economic efficiency of a shopping centre;

6) the average customer spend indicates the target audience and satisfaction of customers with the product mix;

7) technical requirements, formulated by tenants, mainly, the "anchor" ones, in respect of the shopping centre building.

However, not every shopping centre has the whole set of levers available. It is necessary to assess the potential of a shopping centre with regard for the limiting conditions to devise a competent strategy for the development of an item of retail and leisure property and determine the trajectory of its reconceptualization [9]. The assessment of the property potential will demonstrate the ways to increase its economic efficiency, determine the return on investments and verify the feasibility of a particular strategy [10]. Also, it is necessary to conduct a feasibility study, which will allow to assess the economic feasibility of the proposed project on the reconceptualization of an existing shopping centre, which must meet the following requirements to ensure its most effective operation [11]:

1) the physical capacity determines the correspondence between the development concept and potential resources of a facility, that encompass its design, architectural and planning features, as well as engineering systems and communications that cannot be changed;

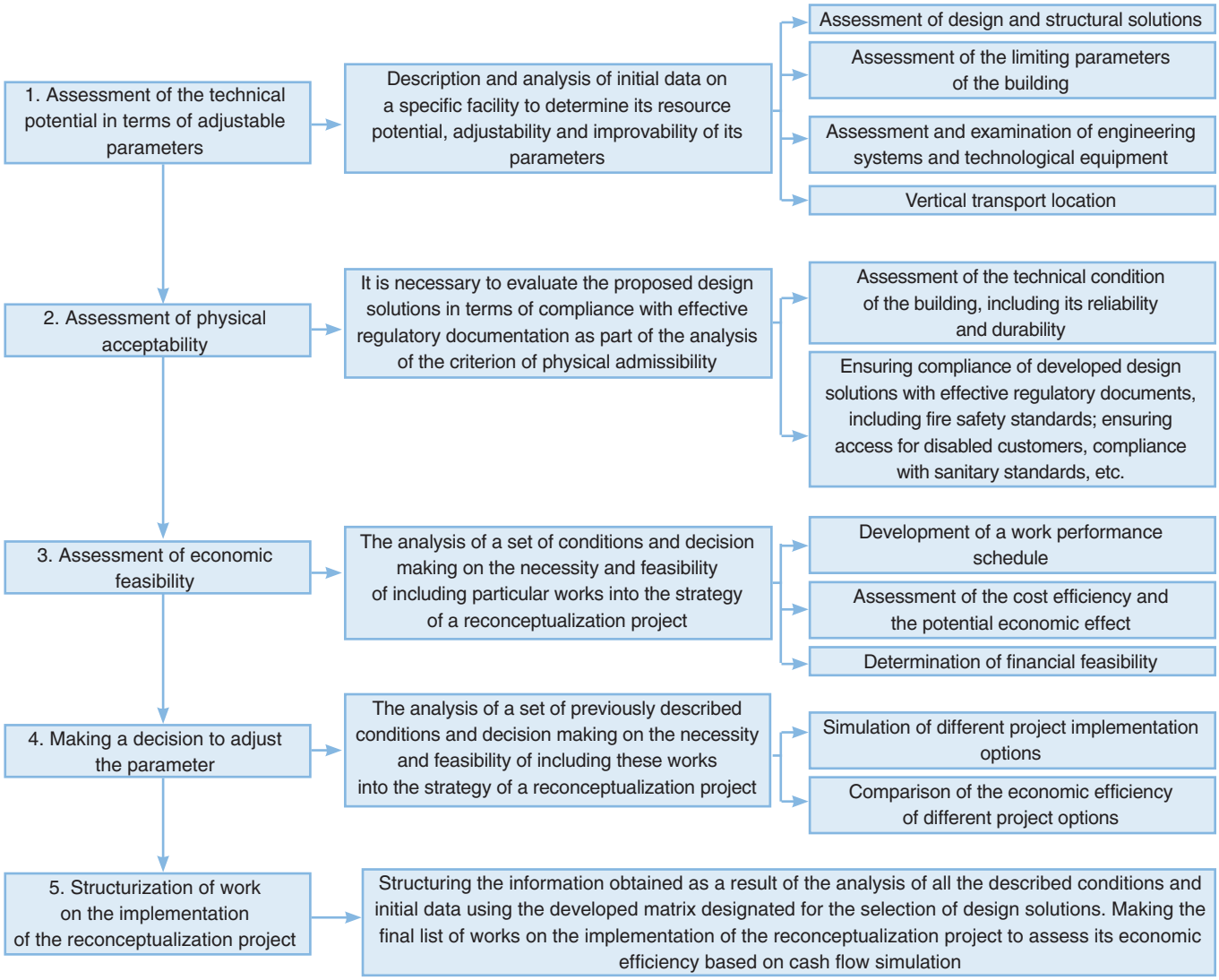
2) the legislative admissibility determines possible legal restrictions. The reconceptualization project must not be subject to any restrictions of this type, either existing or potential;

3) the financial feasibility assessment. The proposed concept is analyzed in terms of its ability to generate the amount of income equal to or greater than the amount of operating expenses, liabilities and capital expenditures;

4) the final phase should result in the substantiation and selection of a project which is physically and economically feasible.

The development of a reconceptualization project is impossible without a feasibility assessment and a feasibility study. This method of the multi-stage assessment of proposed project concepts is employed to ensure informed decision-making on a particular strategy. The choice of a strategy should be made based on the adoption and implementation of the project that will generate maximal net income [12].

In order to verify the feasibility of a strategy, the co-authors suggest an algorithm for evaluating and justifying the choice of design



Choosing a real estate facility for a reconceptualization project

options, based on the parameters that can take account of adjustment and constraints [13, 14]. The algorithm represents a set of iterations, that will help to consistently assess and evaluate the feasibility of a reconceptualization strategy consisting of various adjustments to parameters. These iterations include:

1) evaluation and justification of the choice of design options, that begins with a description of the main adjustable parameters and their potential to perform a preliminary assessment of the degree of influence of each parameter on the overall economic efficiency of a particular project;

2) the next step is the evaluation of physical acceptability. This step implies an in-depth assessment of the technical condition of a facility, its structural, architectural and planning features, which can prevent the performance of certain work aimed at correcting particular parameters;

3) after assessing the physical acceptability and if the proposed adjustment of parameters can be carried out, an assessment of the economic feasibility of the project should be carried out, which, in the first approximation, will be able to demonstrate the rationality of investments, their approximate amount, as well as evaluate the direct and indirect economic efficiency;

4) as a fourth step, a comprehensive conclusion about the physical admissibility and economic feasibility can be made and a list of works can be compiled to ensure the optimal and rational adjustment of this parameter, that is available in the solution selection matrix;

5) the result of selection of adjustable parameters and compilation of a set of works represents the final stage of the reconceptualization strategy development, which allows to tailor the facility to current market trends, meet the demand and needs of its customers, and increase the profitability and economic efficiency of a shopping centre.

The algorithm is represented as a block diagram developed by the co-authors. The block diagram features the main stages of the process of choosing a real estate facility for reconceptualization (Fig.) [7, 15].

The final choice of a reconceptualization strategy is determined using the developed algorithm, that is also employed to develop a project implementation strategy and financial plan to assess the cost effectiveness of various options of a reconceptualization project [7, 12]. The algorithm allows to assess the potential of each improved parameter, its physical acceptability and economic feasibility. Therefore, the reconceptualization project does not necessarily mean a radical change in the format of a shopping centre, since a small number of new tenants, minor repairs and alterations of interior solutions are sufficient to keep the shopping area attractive and profitable.

A reconceptualization project needs attention to detail and multistaged research, including the marketing analysis, the purchasing power, the analysis of major market trends , the competitive analysis, the analysis of potential technical restrictions that may affect the maximal possible potential of adjustable parameters, the assessment of the physical condition and economic feasibility of its operation. These data will be used to develop a specific set of activities focused on the implementation of a reconceptualization project.

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Разработка методологии повышения экономической эффективности объекта коммерческой недвижимости в рамках проекта реконцепции с учетом текущих рыночных тенденций

Каждый объект торговой недвижимости, длительно сохраняющий свою базовую концепцию, может подвергнуться влиянию внешних и внутренних факторов, понижающих его экономическую эффективность, приводящих к падению покупательской способности, что, в свою очередь, требует от арендодателей принятия скорейших мер для ее восстановления. Адаптация концепции торгово-развлекательной недвижимости к современным быстро изменяющимся условиям рынка необходима для привлечения посетителей, сохранения высокого покупательского потока и высокого спроса на представленные товары, которые должны отвечать последним трендам, что поможет избежать падения доходов как арендаторов

площади в торгово-развлекательных центрах, так и арендодателей — владельцев данных объектов. Одним из методов повышения экономической эффективности торгово-развлекательной недвижимости является проведение реконцепции. В рамках представленной статьи предлагается рассмотреть базовые методические положения выбора, оценки и обоснования проектных решений для формирования комплекса работ в рамках определения общей стратегии проекта реконцепции с целью увеличения экономической эффективности объекта коммерческой недвижимости в актуальных условиях рынка. Также необходимо отметить, что кризисные явления в экономике Российской Федерации еще больше усугубляют имеющиеся недостатки объектов торгово-развлекательной недвижимости, что необходимо учитывать в формировании стратегии реконцепции. Однако, прежде чем приступить к каким-либо действиям, необходимо проанализировать причину понижения доходности проекта, оценить имеющиеся ресурсы, потенциал объекта, реалии рынка и перспективу дальнейшего функционирования объекта. Если в результате оценки совокупности условий объект будет признан пригодным для реконцепции, то данная стратегия вполне может рассматриваться как антикризисная стратегия развития торгово-развлекательной недвижимости.

Ключевые слова: *девелопмент торговой недвижимости, реконцепция объектов торговой недвижимости, повышение экономической эффективности, последствия пандемии*

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