# *The development of the system of organizational and environmental indicators for the development of the housing sector in Russia*

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***Abstract* — the housing sector in Russia is only determined by the direction of further development. The housing policy of the state continues to be improved. Purposes are defined, but development opportunities are most important. What can determine the potential development of the housing sector in the Russian Federation? What factors will have the most noticeable impact? In the opinion of the authors, the main factors here are not cost factors, such as payment for services of natural monopolies, the cost of housing maintenance, the reduction of the gap between the monopolistically high prices for housing and the low effective demand of the population. The most important factors in the development of the housing sector of Russia in modern conditions are organizational and environmental, such as thoughtful organization of exploitation and use of housing stock, the possibility of using local materials in housing construction, engineering isolation of territories, requirements for thermal insulation properties and frost resistance of housing. For these factors, there are no targets in the Program for the Development of Housing and Communal Services in the Russian Federation up to 2020, while the cost factors are described in some detail. The lack of targets for organizational and environmental factors in the development of the housing sector is included in this article.**

***Keywords — housing, organizational and environmental, management, development factors***

## I. INTRODUCTION

Housing and communal services of Russia occupies a significant place in the economy. The ongoing housing reform implies a complete modernization. The main directions of reformational changes are: the transfer of the communal industry to market relations, the attraction of private business, the formation of an effective owner institution. All transformations, except for obvious positive aspects, have their own problems, in the process of solving which the state, housing and communal services management subjects and homeowners should combine their efforts. Housing and communal service is a huge sector of the economy with a significant cash flow, but at the same time it is unprofitable. The housing and communal services reform envisaged allowing private business to provide these services and at the same time form a class of homeowners capable of making decisions on the operation and maintenance of common property. The purpose of the reform is to turn the "depressed" industry into a profitable one, capable of offering the consumer a wide range of quality services.

In all developed countries today the state participates in the functioning of the housing sector and provides social assistance to low-income segments of the population. In the process of reproducing the housing sphere for any type of economic system, the following problems are:

1. Quantitative provision of housing for the population.
2. Construction of housing with sanitary and hygienic standards and requirements of environmentally friendly materials.
3. The optimal correlation of new construction and reconstruction of the existing housing stock.
4. Ensuring the timely conduct of preventive maintenance of the housing stock and engineering facilities.
5. Effective housing management.
6. Ensuring the provision of housing and communal services corresponding to the quality of the mandatory requirements of standards, sanitary rules and regulations.
   and standards, sanitary rules and regulations.
7. Defining the boundaries of the social policy of the state in relation to the low-income population
8. Legal support and protection of counterparties in the process of transactions

The degree of solution of these problems is determined by the influence of various factors [1]. For example, one of the main limiting factors for the effective implementation of housing and communal services reform is the lack of experienced qualified personnel in the field of planning, which is associated with a sudden increase in the number of homeowner associations and commercial companies that manage real estate. The second limiting factor of the effective implementation of housing and communal services reform is the lack of uniform standards in the Russian Federation. It includes the methods used in calculating the amount of payment for the maintenance and repair of residential premises, in the pricing of water supply and sewerage, as well as in the preparation of proposals for submitting for discussion to the general meeting of owners, the need for overhaul, determining the start of overhaul and its frequency, scope of work, cost of materials, procedure for financing repairs, terms of reimbursement of expenses. The third factor is the lack of a unified information field uniting self-regulating companies, legal entities and individuals involved in the maintenance and management of the common property of real estate objects. The fourth factor is the low level of activity and responsibility of owners when making the above decisions, which often depends on their level of awareness. The fifth factor is the lack of a systemic solution in the field of both short-term and long-term planning of capital and current repairs of common property. All these factors affecting the change in the sphere of housing and communal services in Russia, but not they, in the opinion of the authors, are decisive.

## II. MATERIALS AND METHODS (MODEL)

It would be interesting in one article to work out KPI (Key Performance Indicators) [1] of transferring the Russian housing and communal services to "efficient" rails, but there is no mechanism to make this industry profitable for business and comfortable for users. The format of the article also does not allow to work out this problem in detail. The target indicators of the development of the housing and communal services of the Russian Federation [2], in our opinion, are not always directly related to the solution of the assigned task - to the all-out increase in the efficiency of housing and communal services for both industry workers and consumers of services. We propose to use several other factors for reforming the industry. In our opinion, it is necessary to develop methods and techniques that determine the restructuring of the housing and communal services from the organizational and environmental side.

We have identified a number of parameters which is necessary to be guided when formulating a strategy for the transition to organizing the work of housing and communal services in a new way. Further development of the territory largely depends on them. The derivatives, not absolute values are used. But the main thing, in our opinion, to determine the development strategy of the housing and utilities sector should be the indicators of payback of complex (budget and commercial) investments and profitability at the regional level. Unfortunately, the profitability of projects is very rarely incorporated into all sorts of strategies, and it is even more impossible to find data for determining the profitability of large infrastructure projects in public access on statistical sites and collections.

The choice of parameters for the level of development of a region can be influenced by both external and internal factors, which will be shown below [3].

## III. RESULTS AND DISCUSSION

### *A. The first part of the research results*

In forming the target indicators of the Housing and Utilities Development Strategy in the Russian Federation, the following were used:

TABLE I. SOME TARGET INDICATORS OF DEVELOPMENT OF HOUSING AND COMMUNAL SERVICES IN THE RUSSIAN FEDERATION TILL 2020 [2]

| Target indicator | 2019 | 2020 |
|---|---|---|
| The total area of apartment buildings, the overhaul of which was carried out in due time as part of the implementation of regional overhaul programs (thousand square meters) | 138000 | 158000 |
| The level of collection of utility fees (%) | 98 | 98 |
| The amount of resettlement of emergency housing established prior till January 1, 2012 (thousand square meters) | - | - |
| The share of the population provided with high-quality drinking water corresponding to sanitary and epidemiological standards in the total population provided with centralized water supply services (%) | 75.5 | 79.3 |
| The share of borrowed funds in the total volume of capital investments in the systems of heat supply, water supply, wastewater disposal and wastewater treatment (%) | 30 | 30 |
| The share of expenses for housing and utilities services in the total family income (%) | <11 | <12.1 |
| The transfer to private operators, in the authorized capital of which the share of participation of the Russian Federation, subjects of the Russian Federation and (or) municipal subjects is not more than 25 percent, on the basis of concession agreements of housing and communal services of all state and municipal enterprises implementing inefficient management (%) | - | - |
| The share of families who have the opportunity to purchase housing that matches the standards for living premises with their own and borrowed funds (%) | 45 | 50 |
| The number of mortgage loans issued per year (thousand pieces) | 850 | 868 |
| The share of transactions in the housing market (%) | 35 | 40 |
| The housing mortgage debt to gross domestic product ratio (%) | 11.1 | 10.7 |
| The excess of the average interest rate on mortgage housing loan (rubles) over the consumer price index | + 1.9 | +2.0 |
| The share of mortgage financed by issuing mortgage securities in total mortgage (%) | 50 | 55 |

As can be seen from table 1, a significant part of the target indicators of the development of housing and communal services is cost. The ecological indicator includes the indicator "The share of the population provided with high-quality

[1] Key performance indicators (English) - indicators of the activities of the unit (enterprise), which help the organization in achieving strategic and tactical (operational) goals. The use of key performance indicators gives the organization the opportunity to assess their condition and help assess the implementation of the strategy: https://ru.wikipedia.org/wiki (access date 02/19/2019)

drinking water corresponding to sanitary and epidemiological standards in the total population provided with centralized water supply services, %". In our opinion, such targets do not provide an opportunity to organize a change in the principles and methods of work of the utilities industry. Of the indicators proposed by the Government Order [2], the "road map" of the transition to an effective housing and communal economy is not clear. For example, the indicator "The total area of apartment buildings, the overhaul of which was carried out in due time as part of the implementation of regional overhaul programs (thousand square meters)" does not give an indication of the state of the housing stock, although it concerns the need for overhaul of significant residential areas . In addition, these targets do not allow to achieve specific results for the formation of the reform plan with time points. We want to propose such system of indicators and the possibility of their measurement, which will allow to approach the implementation of a strategy for reforming housing and communal services with the clear and planned plan and a specific economic effect.

*B. The second part of the research results*

Factors in our proposed system of indicators can be both internal and external: system of indicators of efficiency of work of housing-municipal economy. (Table II)

Any investment is determined, first of all, by the efficiency of investments. The term "disbursed funds", so popular in the Russian Federation, in fact, does not give any indication of the need and profitability of certain investments, both private and budgetary money.

*C. The third part of the research results*

The investment program should include sources of income from which the capital investments will be repaid. The most important source is consumer payments. But in the conditions of the economic crisis, growing unemployment there is an acute problem of tariff acceptability. There may be difficulties in forcing the consumer to pay the price that ensures the profitability of the project. As a result, there are concerns that non-payment volumes may become significant. At the same time, the non-payment risk premium charged to the tariff only aggravates the situation. The inability of local budgets to change the required difference will obviously also create problems with the payback of investment. The private operator will prefer to refuse the concession if there are problems before the conclusion of the contract. Thus, the accurate assessment of effective demand and the level of tariff that would be acceptable to the majority of the population, being a rather complicated matter, is extremely important at the same time for the future concessionaire, because the error can cost the very possibility of successfully implementing the concession. It seems that in the future a mechanism for fixing tariffs for utility services must work for a long period.

The accuracy of the economic justification of the program for renovating and modernizing the housing and utilities sector is significantly reduced by the uncertainty regarding current demand volumes and the current state and replacement cost of fixed production assets. It is interesting to note that these factors affect not only investment risks, but also commercial risks. The value of the accuracy of the prediction of future effective demand increases due to the high proportion of fixed costs in the total costs of firms operating in infrastructure industries. Indeed, in this case, even a relatively small decrease in sales from the expected value can lead to a significant decrease of revenues and profits. Besides the lack of meters at the border of the utility's operational responsibility and settlement system for them, another source of uncertainty of current demand volumes is the situation when some connections are not registered at all. The use of the so-called two-part tariff (different tariffs for the payment of services of the population and enterprises) reduces the risk of income fluctuations associated with demand fluctuations, but it does not completely solve the problem in the case of a large proportion of unregistered connections.

The uncertainty of the technical condition and value of fixed assets does not allow to estimate the costs which are necessary to achieve the operational indicators stipulated by the contract with acceptable accuracy. One of the reasons of this uncertainty and the impossibility of reducing it to the acceptable level is that part of the network utility infrastructure is hidden underground, as a result of which the labor and material costs for assessing their current condition and replacement cost are often quite large. In the absolute majority of cases, concessions were issued with substantial uncertainty regarding the condition and value of fixed assets (neither the state nor the applicants for the concession had any informational advantages in this regard during the bidding). And this is not only a problem of developing countries. Even in the UK, during the privatization of WSS systems, local authorities often simply did not know where and what objects belonged to them, and, moreover, did not know what conditions they were in.

Of course, if a private operator is responsible for the reliability and safety of the water supply system and for achieving certain operational indicators in accordance with the contract with the municipality, he will try to estimate the costs which are necessary to achieve these indicators. But what will we do if the state of the system turns out to be worse than the operator assumed, the additional costs incurred will not be covered by income, and the regulator will refuse to revise the tariff? In this case, either the project's profitability for the operator will be lower than planned, or the operator will not fulfill its obligations and will give rise to an early termination of the contract, which can only aggravate their losses. If the operator is allowed to include the corresponding additional costs in the tariff, then this tariff may be unacceptably high for the population, and as a result, the collection of payments may decrease. In addition, both the population and the authorities will suspect that the operator is trying to deceive them, to "wind up" costs, abusing his monopoly power. The situation with the Volgograd "communal payment" illustrates this as well as possible.

The main obstacle to the arrival of investments in the Russian regions is the lack of infrastructure (roads, housing and utilities networks, hotels, etc.) and extreme bureaucratic overregulation. But the regions, most of which have a deficit budget today, are not able to create a decent infrastructure themselves. Within the public-private partnership the state must commit itself to finance the construction of roads and

communications, the modernization of other infrastructure structures, and, the utilities sector, without which the construction of serious facilities is unthinkable.

At the same time, Russia has a lot in common with developing countries, including: problems associated with a huge deficit of long-term debt financing, which hinders the development of concession projects, problems of uncertainty in the source data (especially with regard to the condition and cost of fixed production assets), which makes it difficult transfer of responsibility for the maintenance and repair of public utilities to the private sector. But perhaps the most important negative feature of the Russian institutional environment which unites us with other developing countries, is the short planning and decision-making horizon, which still prevails in public authorities at all levels.

## IV. CONCLUSION

### *A. The first part of article conclusions*

Summing up our short research, we see that many factors, economic phenomena and processes affect the functioning and reform of the Russian housing and utilities sector. Most of these factors interfere with the work of the housing and utilities industry; practically nothing has been found that would have a positive impact on the development of the industry. Positive guidelines are contained in Government Order No. 80-p of 01/26/2016. This is the total area of apartment buildings, the overhaul of which were carried out within a specified period, the level of collection of utility bills, the amount of emergency housing settled, the share of housing and communal services expenses in the aggregate income of the family, etc. However, these targets do not provide an opportunity to organize a systematic, targeted transfer of the housing and utilities sector to the path of effective development. Of course, monitoring the implementation of the proposed indicators, their improvement - all this will contribute to the development of utilities. But for an organized, predictable move forward, we suggest focusing not on the cost factors of development (as in the Order), but on organizational and environmental ones.

### *B. The second part of article conclusions*

In the article, we developed a system of organizational and environmental indicators, which, in our opinion, can be used in the formation of a “road map” of housing and communal services reform. The initiative here should go “from above”, since there is no organized initiative “from below” that would allow the society and the country to accelerate their development, moreover, it is definitely easier to organize systematic reforms at the level of the leadership of the country and regions. A separate city, a region can be taken “on trial” where an exemplary reform of the housing and utilities system [5] will be carried out, which will become exemplary. In accordance with the developed system, the main indicator will be the profitability of infrastructure projects, funded by both private investors and the state, and the payback period of projects in the housing and utilities sector. The term “funds mastered” should leave the market, since it does not characterize the efficiency of investment, but only states their spending.

Also it is necessary to draw attention to the starting actions of the authorities in accordance with the proposed system of reform indicators. The “road map” will include the actions of administrations of any level in organizing the work of the housing and utilities sector. After the start of work on the plan, it will not be necessary as now to wait and do not wait for the self-organization of citizens. In our opinion, the requirement for owners to take all management of an apartment building or other type of housing into their unprofessional hands was not the best organizational and legislative decision. It is precisely because of the inability of citizens to organize, because of the weak professional training of the organizers of the reform of housing and public utilities - the legislative and executive authorities - that reform is so difficult.

### *C. The third part of article conclusions*

Thus, in our opinion, the reform process should be carried out according to the clear decision-making algorithm on the appropriateness of one or another form of interaction. The initial stage is the definition and formulation of purposes and objectives (strategic, tactical, operational) for the sustainable development of the territory. Next - everything on a clear algorithm. We begin with the choice of responsible ones (these are unambiguously representatives of administrative authorities, who start introducing point changes in limited time. The formed system of organizational and environmental factors (and in the following works we will try to give their numerical and statistical characteristics) will allow not to deviate from the plan for changing the functioning of housing and constantly record the passage of “checkpoints.” In addition, the clear plan of action will allow to indicate your personal responsibility for the implementation of those or other points of the “road map” of housing and communal service reform in Russia.

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TABLE II. THE SYSTEM OF INDICATORS OF THE EFFICIENCY OF HOUSING AND COMMUNAL SERVICES WORK

| Factors | Criteria | Indicators | Evaluation method | Decryption |
|---|---|---|---|---|
| Organizational | Regional significance in comparison with other, including neighboring, and approximately equal in number regions. | Gross regional product | Information from regional administrative and fiscal authorities | Assessment of the level of industrial development of the territory |
| | | Indicators of investment activity | Share of investment in GRP | It reflects the state of the investment climate in the region |
| | | | Investment per capita | It reflects the regional investment activity is not dependent on population |
| | | | The share of private business investments without state participation in infrastructure projects in the overall value of investments | It reflects commercial interest in the housing and utilities sector |
| Ecological | | | The profit per ruble of investments of private and public investors in the housing sector | |
| | | Demographic indicators | Natural increase (decrease) of population | It shows increase (decrease) of population per 1000 people. |
| | | | Migrationincrease (decrease) of population | It shows increase (decrease) of population due to migration flows |
| | Efficiency of housing and utilities companies | Activity profitability | The ratio of profit to cost | It shows the deep meaning of investments in the industry |
| | | The profitability investment for each project | The ratio of profit for a specific project to project costs | |
| | | Project payback | The time during which the investment will give a profit | It is calculated during the preparation of any project, the project should not be implemented without a payback period |
| | Entrepreneurial potential | The profitability investment for each project | The ratio of profit for a specific project to project costs | It shows the level of organization of the industry, territorial divisions and individual enterprises |
| | | Sophisticated organization of exploitation and use of the housing stock | It is calculated by a survey of satisfied consumers with the functioning of housing and communal services to dissatisfied consumers, it is studied in dynamics | |
| | | Depreciation of equipment | It is determined by the ratio of the cost of worn-out unusable equipment to the average annual cost of fixed assets | It shows the level of deterioration of the main and auxiliary equipment |
| | | Median wage in the enterprise | Information from statistical and fiscal authorities | It determines the prospects of employees of the industry and a particular enterprise, their financial situation |
| | Allowing a person to live in a comfortable environment | The possibility of using local materials in the construction of housing comfortable environment | The ratio of local materials in value terms to the total cost of material costs at the project level, as well as during operation | It defines the development prospects of the construction materials industry, including advanced and environmentally friendly; the possibility of using local energy sources (including renewable), etc. |
| | | Engineering the denouement of the territories | Accelerating the development of all other infrastructure projects | It is determined by the level of equipment engineering communications |
| | | Requirements for heat-shielding properties and frost resistance of housing | It allows to provide a comfortable stay with the use of resource-saving technologies | It is determined by the number of newly commissioned housing built according to new requirements |

Source: developed by the authors