Features of the planning system for repair and construction production as a part of the urban programs’ implementation

I Yu Zilberova, K S Petrov, Al Fatla Abdullah Neama Mohsen
Don State Technical University, 1 Gagarin square, Rostov-on-Don, 344002, Russia

E-mail: zilberova2011@yandex.ru

Abstract. The paper presents the results of the study, which formed the methodological foundations for constructing a system of the urban programs’ rational planning in the field of housing and communal services and the urban environment, which provide intellectual support for decision-making. The use of the considered problems and proposed methods for their solutions is advisable to put into practice in informatization and computerization of the urban processes.

Introduction
Today, the market for repair and construction works (hereinafter RCW) is stable in the long term, this is due to the project approach to solving problems and significant financial support from the state. The increase in RCW volumes is also due to the priority national project “Housing and Urban Environment” implementation. The Ministry of Construction of the Russian Federation approved the passport of the federal project “Formation of a Comfortable Urban Environment” in order to improve the quality and comfort of the urban environment on the territory of municipalities. The addition of the RF Housing Code with a chapter on the organization of a capital repair system (hereinafter referred to as the CR) of common property in multi apartment buildings (hereinafter referred to as MAB) has become another factor in the growth of RCW volumes. Overhaul, today, we observe the most ambitious housing renovation project in the history of the country.

At the same time, there are no clear-cut requirements for planning modern repair and construction production in the housing and utilities sector and the urban environment, including those involving in this process not only the participants in the production process, but also the owners, as well as the methods currently applied in Russia. The existing city programs in the field of housing and communal services and the urban environment are unsystematic in nature, do not have criteria for evaluating the effectiveness and even the minimum parameters of the necessary work [1].

Materials and research methods
The urban programs’ planning in the field of housing and communal services and the urban environment covers a wide range of tasks to be solved for different time periods, complexes and hierarchical units from different industries. The system of rational planning of urban programs in the field of housing and communal services and the urban environment should be built from directly interrelated models of long-term, medium-term and current planning in accordance with the hierarchy of urban management and its
The presence of an organic relationship in the sphere of housing and communal services and the urban environment with other industries necessitates the establishment of the basic indicators of its development (volumes, structure, resource capabilities) at the federal and regional levels, taking into account the technical and economic capabilities of the region and intersectoral relations. Based on such indicators, at the subsequent planning levels, the corresponding tasks of the urban programs’ long-term, medium-term and current planning in the field of housing and communal services and the urban environment are solved.

The process of the urban programs’ developing in the field of housing and communal services and the urban environment is multi-stage. Between different levels of government and different departments, information is exchanged many times. In the interactive process, balancing and coordination of plans for the region, which are considered to be the part of federal projects, is carried out [2].

As a result of the study, it was found that in general the urban programs’ planning process in the field of housing and communal services and the urban environment at the regional level should consist of the following stages:

1. development of proposals on the main directions of production development in the housing and utilities sector and the urban environment and submission to the higher management bodies of materials and proposals on production volumes, necessary resources, economic indicators of production, etc.;
2. formation of control numbers and bringing them to the municipal authorities;
3. development and submission to the draft plans’ higher authorities;
4. approval of the plan and the consistent delivery of “the planned tasks” to the performers.

The first and second stages at each level represent the preliminary phase of the urban programs’ planning process in the field of housing and communal services and the urban environment; the third and fourth – represent the main phase, that is, the draft plans’ direct development.

The decisions made at the federal, regional and municipal levels are mutually adjusted and are gradually approaching a balanced plan drawn up taking into account the existing conditions and restrictions [3]. Such a process of planning urban programs in the field of housing and communal services and the urban environment is due to a multi-stage iterative approach, which can significantly reduce the scope of the tasks of the urban programs’ integrated planning in the field of housing and public utilities and the urban environment, making the most of the IT technologies possibilities while maintaining the decisive role of the specialists in evaluating the source information and prepared solutions.

An integrated system of models for the urban programs’ rational planning in the field of housing and communal services and the urban environment should correspond to a multi-stage process of balancing and coordinating decisions. It should provide a choice of decisions made at all levels of industry management at each planning stage.

During the initial iterations of planning, there is usually no information about the complexity, resource intensity and cost of work. Thus, as an information basis for the plans’ development of the initial versions in the field of housing and communal services and the urban environment, forecasting results that represent probabilistic estimates of possible development, are presented.

In the planning system, the plans and forecasts are in close interaction. The forecasts define what can happen and under what conditions, and the plan outlines what should happen and what needs to be done. The interconnection of the forecasts and plans in the field of housing and communal services and the urban environment can have various specific forms and contents. It is necessary to take into account that the reviewed projects are of a long-term nature, for example, overhaul programs are designed for 35 years (2014-2049), and “Formation of a comfortable urban environment” for 6 years (2018-2024).

Based on this, it should be taken into consideration, that forecasting plays a limitedly supporting role in the preparation of annual plans. Outside of the annual planning period, the role of forecasts increases significantly and consists in realistically assessing the possible conditions.

In this case, there is such an interaction of the plan and the forecast, in which the forecast provides the additional material for the planned decisions’ development. In relation to the housing and utilities
sector and urban environment, forecasts should contain the data:
- possible volumes of construction and installation works;
- technical and economic indicators of construction production, taking into account the scientific and technological progress;
- specific resource consumption taking into account the changes in the work structure.

Consequently, a component of a comprehensive system of rational planning models in the housing and utilities sector and urban environment should be a system of forecasting models that provides the initial data for the first levels models of the plans optimization.

On the way to creating a really functioning integrated system of rational planning of urban programs in the field of housing and communal services and the urban environment, as well as creating the automated control systems, it is necessary to develop the unified methodological principles for information support of all hierarchical levels of management, all stages and horizons of planning, prepare the data storage systems, automation of compilation and updating of standards. To this end, it is necessary to develop the systems that should ensure the collection and accumulation of information at all levels of the urban programs’ implementation in the field of housing and communal services and the urban environment. Of great importance in this is the creation of a data bank that provides for the accumulation and information storage [4]. As a result of the systematic accumulation of the data and updates over time, the possibilities of information support for modeling tasks used in planning urban programs in the field of housing and communal services and the urban environment will significantly expand, and with this, the degree of information certainty at all stages and levels of the planning decisions’ modeling will increase [5].

The primary reporting data on the construction enterprises, facilities and types of work should be accumulated. The following data should be accumulated for preparation, updating, and forecasting:
1. by type of the construction and installation work on the construction objects - the volume of work performed by the contractors (accumulative statements), labor costs for the implementation of the monthly volumes work;
2. quarterly for the construction projects - the volume of work performed, the consumption of material and technical resources, the cost of the work, the amount of wages and labor costs of the work;
3. for construction objects as a whole - the volume of the work performed, the consumption of material and technical resources, the cost of the work, the amount of wages and labor costs of the work, the estimated cost of the object, the total amount of construction and installation work at the object;
4. annual indicators for the construction enterprises: labor productivity, capital productivity per employee, the share of the wage fund in the volume of construction and installation works, the cost of construction and installation works, profit, the number of employees by occupation, the volume of the fixed assets, the number of construction vehicles and mechanisms spent material resources, energy level, average age of the active part of fixed assets, average qualifications of employees.

The accumulated information can also be used for verification, reliability assessment and adjustment of local standards. To implement a comprehensive multi-stage system for planning the urban programs in the field of housing and communal services and the urban environment, the solutions are being prepared for similar facilities [6].

The basis for the calculation is the resource-technological model (hereinafter - RTM). RTM is a maximally unified and aggregated set of labor, technical and material resources necessary to carry out a complex of works in the field of housing and communal services and the urban environment, according to the adopted technology for the production of works reduced to one unit of measurement.

As analog objects, the objects are most accurately reflecting the technological specifics of the urban programs in the housing and public utilities sector and urban environment, selected from among the similar objects according to the principle of the most complete compliance with technical specifications and the conditions of its territorial location [7].

To determine the indicators “duration of work (specialized flows)” and “dates of beginning and completion of work (specialized flows)” for analogous objects, based on the projects’ analysis for the organization of the construction objects, work projects, network models and organizational and
technological schemes of objects, weighted average indicators [8]. The latter serve to prepare the organizational and technological models for the similar objects. The duration indicators of the work (specialized flows), as well as the specific gravities of the types of work (specialized flows), are calculated in parts of a whole.

Summary
In the future, when the urban programs’ planning in the field of housing and communal services and the urban environment, the given method makes it possible to apply, regardless of the changing planned duration of the work, the work combination duration.

The study results presentation formed the methodological basis for constructing a system of the urban programs’ rational planning in the field of housing and communal services and the urban environment, which will provide intellectual support for decision-making during planning, the use of which is advisable in solving the practical problems of informatization and computerization.

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