

# JOURNAL OF APPLIED MANAGEMENT AND INVESTMENTS

Published in 4 numbers per year

ISSN 2225-3467

www.jami.org.ua

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Journal of Applied Management and Investments is indexed and abstracted in:  
UlrichsWeb™, Index Copernicus, IDEAS, EconPapers, Cabell, CiteFactor,  
DRJI, EconBiz, ISI, Q-Sensei, Scirus, Socionet

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# ПРИКЛАДНОЙ МЕНЕДЖМЕНТ И ИНВЕСТИЦИИ

ежеквартальный научно-практический журнал

№ 1, 2015

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# ПРИКЛАДНИЙ МЕНЕДЖМЕНТ ТА ІНВЕСТИЦІЇ

щоквартальний науково-практичний журнал

№ 1, 2015



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Свидетельство о госрегистрации печатного СМИ:

КВ №18843-7643Р от 7.12.2011 г.

www.jami.org.ua телефон: (063) 247-51-70 e-mail: j-a-m-i@ukr.net

**Издатель:** ООО «Одесский брокерский дом»

## JOURNAL OF APPLIED MANAGEMENT AND INVESTMENTS

ISSN 2225-3467

Volume 4 Number 1 2015

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**Introduction**

Any project in the process of its realization passes different stages (phases) constituting its life cycle. To implement different functions at every stage of life cycle in the management of investment and construction project some actions are needed. They are aimed at improving the overall project. One of these methods is a management of investment and construction projects (ICP) on the different stages of their life cycle (Mal'cev, 2005).

The problems of projects' management are examined in fundamental works of such Russian scientists, as V. Arkhangelsky, V. Bagov, V. Voropaev, L. Goncharenko, P. Graboviy, N. Ivasjenko, S. Ylienkova, V. Kabanov, M. Kamenetskiy, N. Kardanska, N. Kosareva, N. Kostetskiy, E. Kudashov, E. Pankratov, Y. Popkov, M. Razu, V. Serov, V. Storojenko, V. Chernyak, V. Shapiro, E. Yakushevskiy et al., and also overseas scientists R. Achibald, H.-Y. Warneke, M. Imassa, M. Kasson, K. Kent, A. Link, P. W. G. Morris, C. O'hara, M. Pitere, M. Porter, R. Rotberg, R. Strike, P. Foster, R. Hizrich, E. Yanch etc.

General issues of project management are examined in these works, including studying of ICP, with definition of their main stages. However, features of ICP management and, in particular, of housing one, at all stages of life cycle have not been studied practically. This inhibits their implementation both in design and construction at the choice of viable options of projects and in evaluative practice in real estate.

So, actuality of the problem of IPC management in housing is supported not only by its complexity and insufficient processing of highly effective forms and methods of management of ICP in the national economy, but also by the fact that there are no methodological developments allowing to conduct an ICP evaluation throughout their implementation, — from the pre-investment stage to realization and operation.

*The purpose of study* is to identify the main stages of the life cycle of ICP in housing, which are financed through the funds of construction financing (FFC), and analysis of the inherent characteristics of these stages that affect the project results.

**The Results of Study**

Let's consider a life cycle of ICP in general terms using as an example the data, provided by different sources (Podshyvalenko, 2006; Malahov, 2013; Pisarjev, 2011). The cycle is presented on a Figure 1.

As seen from figure 1, an investment phase and, actually, financing begins before the stage of planning and engineering. But, according to previous researches (Rybak and Azarova, 2014a), in housing with construction financed by the funds raised from individuals, such scheme does not correspond to reality. The life cycle of such projects needs subsequent research and correction. For more detailed research of life cycle of ICP in housing we define some terms.



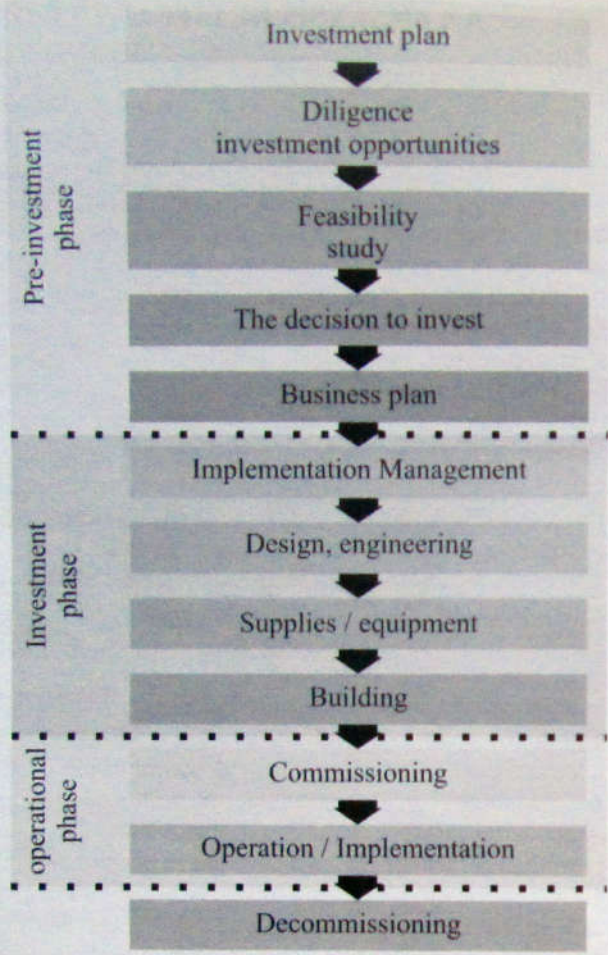


Figure 1. ICP life cycle

The ICP means any investment project, which is limited in time and aimed at creating new unique residential estate, the availability and use of which is necessary to achieve the purposes of investment (Malahov, 2008).

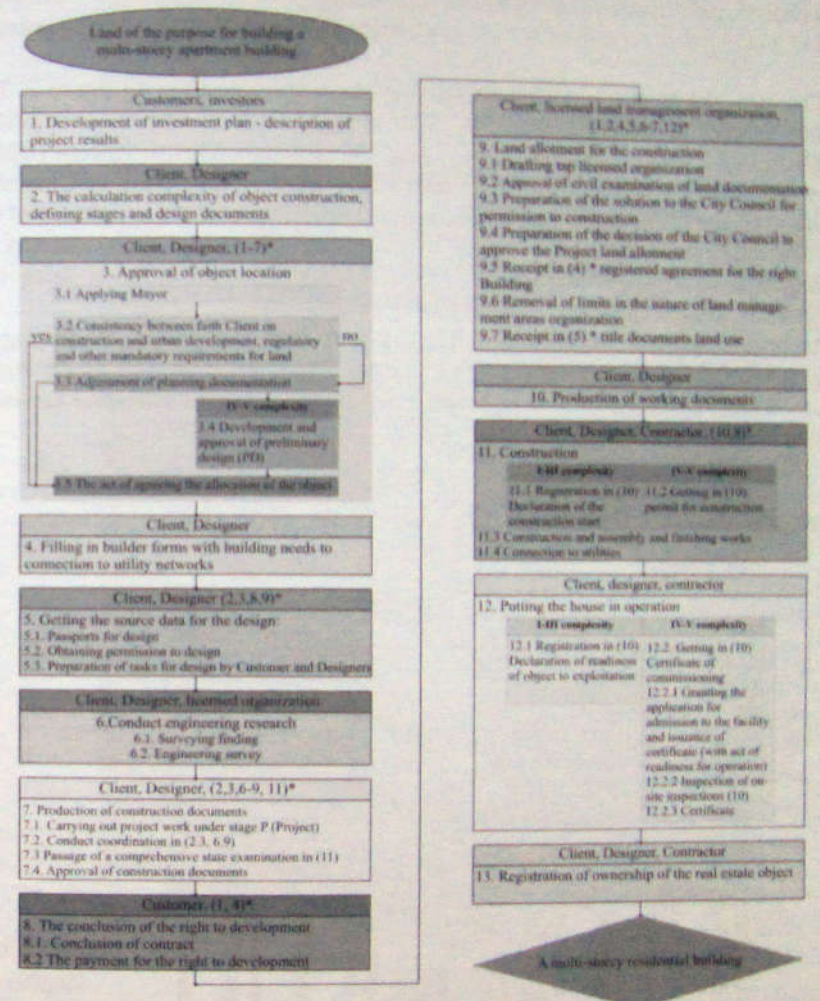
A project documentation for construction is a documentation, which consists of drawings, graphic and text materials, engineerings and budget calculations that define urban, space-planning, architectural, structural, technical and technological solutions, cost parameters of specific object architecture, and meets state standards, building codes, and meets the requirements of state standards, building regulations (VRU, 1999).

A contracting construction is an individual or legal entity which has, in his property or in the use, lot land, and filed in accordance with law application (petition) for its development for the construction or modification (including demolition) of object of urban development (DBN, 2012).

A designer is a legal entity which employs certified specialists, or certified

individuals (VRU, 2011).

Expertise of project document is an activity of certified specialists-experts, who on behalf of the customer present a report on compliance of design decisions with the legislative requirements, government regulations, standards, building regulations and are responsible for the accuracy of their reports (DBN, 2012).



\* - Public and other services, including: (1) The City Council (2) Department of Architecture and Urban Planning (UMA) (3) Management Engineering zahoytu of the city and coast (UIZTM and RU) (4) Management of the capital construction (UCB) (5) Management of land resources (land administration) (6) environmental authorities

(7) Sanitary and Epidemiological Service (8) Municipal Services operating utilities (9) Office of Traffic Police Internal Affairs of Ukraine (10) Inspection of State Architectural Control (Gask) (11) The expert organization zdykyvanyy examination of construction projects (12) State review of land management documentation

Figure 2. Scheme of project phases of high-rise residential building



Object of construction is new construction of apartment multistoried building (relative height up to 73.5 m), located in the regional city center and outside the safety zone of objects of cultural heritage. A building can be built-in or built on facilities for public use on ground floors, underground parking. This type of buildings is prevalent in modern urban housing in Ukraine, because the construction of high-rise buildings must satisfy numerous housing requirements that have been identified in previous studies (Rybak and Azarova, 2014b; Rybak and Azarova, 2014c).

Let's consider the stages of project implementation from the engineering point of view.

The main stages of the project investment phase are presented on figure 2. The simplified scheme is designed based on existing regulations in construction (VRU, 1999; DBN, 2012; VRU, 2011) and also on the Construction rules of Odessa (OMR, 2012), which do not have significant differences from those of other cities of Ukraine.

We shall consider the cash flows of the project to find out to which phases of the project life cycle including certain stages of the construction they are associated to. According to some Russian scientists (VSEON, 2012), the cost of different categories of construction is distributed as presented on Figure 3.

According to previous researches (Rybak and Azarova, 2014a), financing of housing at legislative level is set on a few charts. There are a fund of financing of construction (FFC), real estate funds (REF), collective investment (CI), and the issue of housing bonds.

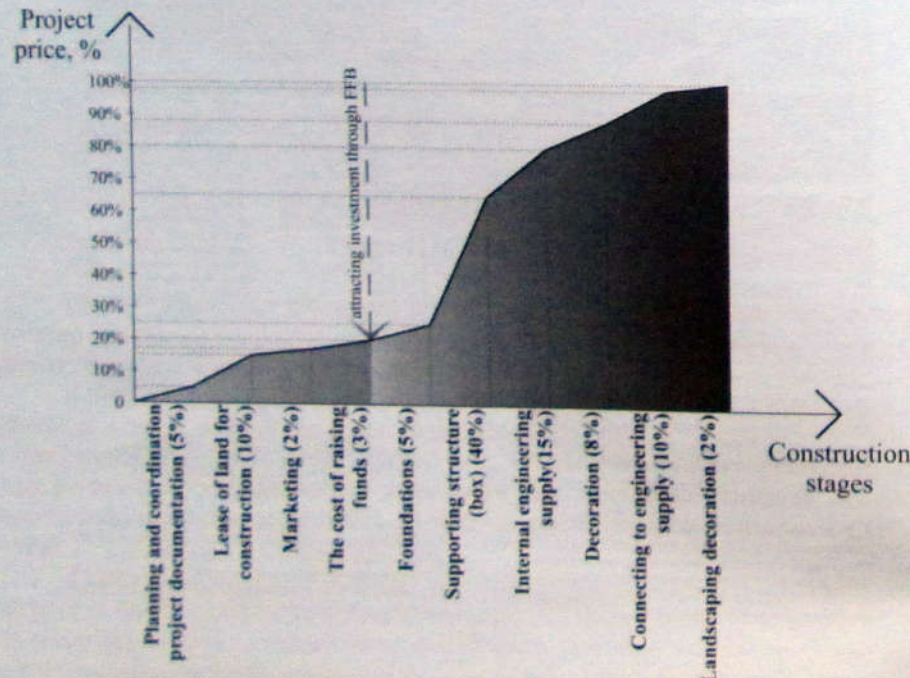


Figure 3. Scheme of cash flows by project phase

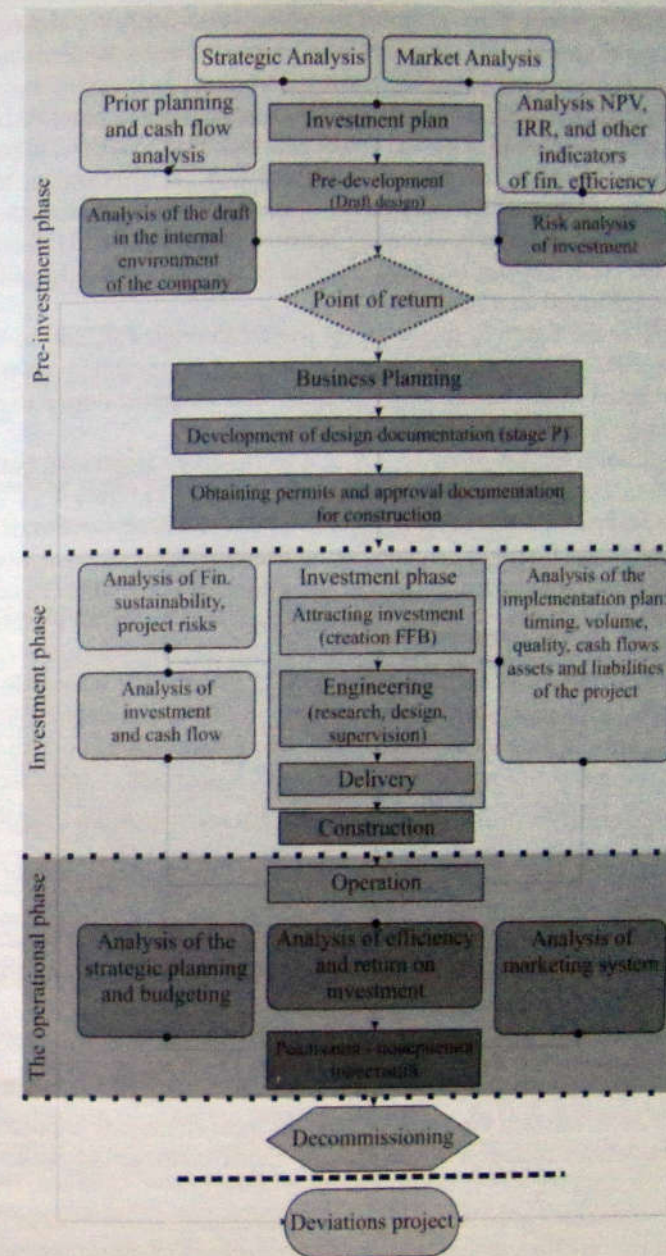


Figure 4. The life cycle of ICP of a multi-storey residential building, funded through FFC

According to the State Commission for Regulation of Financial Services Markets of Ukraine, at the end of 2009 managers to finance 7,84 billions UAH of the objects' construction, as on 31.12.2012- 8,61 billions UAH were involved, and as on 30.09.2013 10,206 billions UAH were involved (DKRRFP, 2013). Thus, alongside



with banks freezing lending of construction companies, financing through FFC is increasingly used in construction, besides such financing is less risky for investors.

If we consider the mechanisms for construction financing, then if the investment through FFC is used, raising funds from the principals under the law (VRU, 2003) is possible only after completion of design works and obtaining a positive expert opinion of state complex expertise of project documentation. A permission to perform construction or registration of the declaration of commencement of construction work are needed also. That is actually investing starts at stage 11.1 or 11.2 on figure 2, depending on the complexity of building. Scheme of financial flows depending on the project phase is presented on a figure 3.

According to the figure 3, financing the project through FFC can be carried out at a stage when 20% of the cost must be paid. Therefore, construction companies have to finance the initial stages using its own funds. The builder's desire to save owns money at this stage is fatal for the project.

In general, form the life cycle of ICP of a multi-storey residential building financed through FFC, taking into account the features, is shown in figure 4.

Previous studies (Rybak and Azarova, 2014c) found a large number of failed ICP in housing, which are frozen or stopped completely. Studies of analytical data on realized projects were conducted to analyse the causes of such failures and to define the phases of the project, where relevant mistakes had been made (NPP «Interukrai'na-soft», 2009).

According to this research there were only 22.5% of FFC where all manager's obligations were fulfilled completely and on time in 2008, and only 11% - in 2007. Some managers have in their management FFC, where buildings can not be put into an operation, and for some of them construction work suspended or even stopped. The quantity of such companies is 10 out of 82, or 12.2%, while the quantity of corresponding FFC is 32.

These problems, according to analysts (Podshyvalenko, 2006), appear due to the following reasons:

- Managers' creation of funds and involving money from principals in the absence of the developer building permits or ownership of land or documents on land use (or they expire);
- builder's lack of own funds for the construction and inability to obtain loans from credit institutions and the lack of construction financing (reduced solvency and fundraising of principals, blocked deposits);
- the conflicts between the developer and the local authorities or public (protests, rallies, block), which makes it impossible to finish construction within the time stipulated by the contract;
- the connection between manager and developer, which creates favourable conditions for the operation of scams, and makes principals unable to obtain ownership of the investee, including the cases when developer shift managers by the court, in its discretion and without principals will;
- the absence of any supervision and regulation of the developer in the existing legislation until March 12, 2009;
- the absence of prohibition to perform builder's functions for entities that do not have ownership or right of use of land does not have permission to perform

construction work and which only serve as the intermediary between the manager and the developer involved in the transfer of funds.

The analysis of these problems, occurring at different phases of the projects life cycle, has showed that complications appear in subsequent phases of the project summarized in table 1.

**Table 1. Analysis of problems in housing projects funded through the FFC**

The problems	Phase of the life cycle of the project (according to Figure 4.)	Number of distressed companies (percentage of total funds managers)
There are no building permits, right of use of land	<b>Pre-investment phase</b> Obtaining permits and approval documentation for construction	4 (4,9%)
Lack of funds for construction	<b>Pre-investment phase</b> Business Planning	2 (2,4%)
Faulty FFC creating rules (There are no contracts of mortgage insurance, assignment of property rights, or the manager obtain builder's functions)	<b>Investment phase</b> Attracting investment (creating FFC)	2 (2,4%)
Offenses in Business	<b>Pre-investment phase</b> Investment plan	2 (2,4%)

So, in 9.7% of the housing projects financed through the FFC, there are complications in the pre-investment phase, leading to their freeze or stop. In 2.4% of the projects, complications at early investment phase lead to the same consequences.

The above problems, that have led to negative effects on the market for financing housing through the FFC and the REF, have been partially resolved by government in the Law of Ukraine "On prevention of the global financial crisis influence on the construction industry and housing" (since January 14, 2009) and "On amendments to Certain legislative Acts of Ukraine concerning improvement of financial mechanisms for investment in housing" (since March 12, 2009), namely:

- state supervision over the developers' activities is set,
- developer needs to obtain all permits for construction at the beginning of fundraising management,
- mechanism of creating mixed funds (FFC – REF) is applied, which will raise money from REF Certificates holders at the stage of design work and others.

These problems lie not only in the legislative field, but also reveal significant deficiencies in managing such projects. The initial phase of the project life cycle as the most risky needs shift emphasis on project management. Practice shows that the old principle of starting construction without permits and collecting them at the end of the construction is not effective.

#### **Conclusions and Prospects for Further Research**

The study showed that in the housing industry even the least risky scheme of implementation and financing projects through the FFC in 12.2% of cases fails. Causes of failure are laying in the field of project management and falls mainly on the initial



pre-investment phase of life cycle. These results can be used for the risk assessment of such projects, and for their minimization in the project management.

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## AN ANALYSIS OF LIFE CYCLE OF PROJECTS IN HOUSING SECTOR

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### Abstract

Research of life cycle of housing building projects with financing through the funds of financing construction is conducted. The most risky phases of projects are discovered.

**Keywords:** management, investment, construction projects, life cycle of project, housing building, fund of financing construction