RIGA TECHNICAL UNIVERSITY

Andra Feldmane

INNOVATIVE SOLUTIONS OF IMPROVING THE MANAGEMENT OF PUBLIC INVESTMENT PROJECTS

Summary of Promotion Thesis

Branch: Management Science

Sub-branch: Entrepreneurships Management

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Faculty of Engineering Economics and Management

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DOCTORAL DISSERTATION

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The Doctoral dissertation has been developed at the Institute of National and Regional Economics Faculty of Engineering Economics and Management of Riga Technical University (RTU). The Promotion Thesis to qualify for the degree of Doctor of Economics of the Republic of Latvia is presented for public defense on 25 November, 10:00 a.m. at Riga Technical University, Faculty of Engineering Economics and Management, Riga, 1/7 Meža Street, Room 309.

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CONFIRMATION

I hereby confirm that I have worked out this Dissertation that has been submitted for review to Riga Technical University for the promotion to the degree of Doctor of Economics (Dr.oec.). This dissertation has not been submitted to any other university in order to receive any scientific degree.

Andra Feldmane …….

October 7, 2011

The Doctoral dissertation is written in Latvian, and consist of an introduction, three parts, conclusions and proposals, 14 tables, 35 figures, 7 annexes and the total page count is 170. The Bibliography contains 110 references.

The Doctoral dissertation and Summary are available at the Scientific Library of Riga Technical University, Ķipsalas Street 10.
References with regard to the Promotion Thesis should be sent to:
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GENERAL CHARACTERISTICS OF THE RESEARCH

Topicality of the study and its description

A steady and sustainable national (public) development is a goal, which has been defined in a number of mid- and long-term national planning documents developed recently. Despite of the fact, when the global financial and economic crisis struck, the developed planning documents did not protect the economy of Latvia in years 2008 and 2009 from a dramatic drop of the GDP. The situation in the economy of Latvia after a number of quarters spent in recession got stabilized only as late as the end of 2010, with economy returning on the positive side of growth, underpinned by economic stabilization measures coupled with internal devaluation measures, as well as a more benign situation on the external markets, thus enhancing the demand for Latvian export goods and services. As of 2008, in attempt to maintain the financial sustainability of the country, the Latvian Government introduced measures aimed at implementing a limiting fiscal policy and maintaining macroeconomic stability. The evaluation of the strengthening of fiscal discipline and maintenance of fiscal sustainability in mid-term should encompass instruments for improvement of the national development and competitiveness. An important aspect during this process would be not to resort to complete stand-by on initiation of new public investment projects. It is not just Latvia, other EU member states likewise have to make adjustments to their governmental expenditure at the moment, while one of the key provisions should be the capability of retaining expenses enhancing the economic growth, encompassing not only public infrastructure development when launching new investment projects, but also investments in the area of education and scientific research incl. innovations. A situation, when a limiting fiscal policy is being implemented and that being done under the condition that the tempo of governmental spending increase must be below the GDP mid-term growth trend, requires additional measures aimed at more efficient application of public investments and national spending. The presence of innovative financial instruments would be most desirable just in the area of public sector investments. Mobilizing the public sector investments for recovery of economy, as well as facilitating the long-term structural changes by using the financial facilities of both public as well as private sector are considered as one of the biggest challenges and opportunities also in EU member states. The

necessity for public investments in Latvia is determined by the condition of the existing infrastructure and the utilized production capacity in national and municipal enterprises. Planning and provision of national and municipal services requires initiation of well-considered public investment projects that are profitable on a longer run. In view of achieving implementation of the best practice in the areas of fiscal discipline and economic growth, the key condition in the planning and development process of public investment projects should be implementation of new innovative financial solutions and a project structure focused on providing a more efficient service. These conditions explain the necessity to produce adequate developments of public investment projects, a management and funding improvement model and a method, which comprised the innovative solutions of public investment project financing. The proposed solutions are universal, but given the fact that this problem is so acute in Latvia, the author is going to focus on their applicability in our country particularly.

The goal and the objectives of the Promotion Thesis

The goal of the Promotion Thesis is to develop innovative solutions for improved management and financing of public sector investment projects.

To reach this goal, the following **tasks** were established for the study:

- research the necessity for public investments in Latvia and provide a critical assessment of them;
- identify the role of public investments in the polycentric development of Latvia;
- identify the impact of the key impeding factors on a public investment project;
- develop a model of public investment project management and financing improvement;
- research the development prospects of the public and private partnership;
- identify the potential economy in "whole life cycle" costs of a public and private partnership investment project, including when using the securities market;
- identify the options of investment project cost reduction due to economies of scale of investment projects;
- develop a public investment project efficiency improvement model.

The object and the subject of the research

Research object is public investments.

Research subject is the improvement of public investment project management and their economic efficiency.

Research methods and constraints

Research methods. The study for this Promotion Thesis used the conventional quantitative and qualitative data analysis methods of economics, including various analytical methods to study problem elements and process components, to use them afterwards to synthesize interconnections or formulate regularities, inductive and deductive methods, mathematic modelling and statistical data processing methods.

Research constraints. This Promotion Thesis does not look at the way of attracting funding by means of leasing. Financial investments are considered herein for positioning of public investment projects in the securities market. It is assumed for purposes of this paper that no such changes have taken effect on the data since they have been received that could materially influence the conclusions made. This paper does not perform a complete calculation and evaluation of a particular investment project, analyzing implementation problems in key stages of several projects instead.

Theory basis of the study.

The theory and methodology basis of the study comprises theoretic opinions and practical findings of the foreign authors *(Alexander G. J., Ashauer D.A., Bailey J. V., Berghall I., Erenburg J.S. Keynes J. M., Nordhaus W., Sharpe W.F., Samuelson P.A., Ziacik T., Бланк И.А., Золотогоров В.Г., Вознесенская Н.)* and Latvian authors *(Guļāns P., Karnīte R., Praude V., Rutkaste U. u.c.)* in the area public investments un public investment project management.

Statements proposed for defence:

- from the point of view that economy should be refocused from stabilization process towards development, public investments that are well considered and profitable in a long-term are essential;

- the link between development planning and budgeting (including EU funds) is very weak. These areas are scattered among line ministries and the analysis of the efforts to conduct reforms after the economic crisis and restore the growth of the country reveals that a new approach is required in planning and managing the public investment projects;
- the primary source of funding at the moment in Latvia is the EU funds, and this is one of the major resources for development funding also when planning future investments. The situation in the global economy and potentially recurring fluctuations on financial markets pose a certain risk – whether the EU funds will still be available in a 5-10 year period. Which means that, in order to maintain the competitiveness of the country, the country must be capable to establish financial instruments, which would guarantee implementation of public investment projects also in a situation when no support from the EU funds is available;
- more efficient solutions of public investment project management and financing should be considered, as the conventional methods may not yield the required result in the rapidly changing external environment;
- the process of evaluation of alternative solutions has a significant role in development of investment projects, when looking at the project's full life cycle, as that enables reaching not only long-term economic goals, it also allows the attainment of social goals.

Research publications and presentations in conferences

The author has made the total of 6 publications regarding the public investment project management efficiency improvement options, aspects of synergies in investment projects, public and private partnership implementation problems in Latvia, and made oral presentations on 12 international science conferences in Latvia and abroad.

5 articles have been published in recognized reviewed scientific journals:

1. Feldmane A., Šenfelde M. Resursu nodrošināšanas iespējas celulozes rūpnīcai Latvijā// Ekonomika un uzņēmējdarbība. Tautsaimniecība: teorija un prakse. RTU Zinātniskie raksti. 3.sērija. 3.sējums.- R.: RTU izdevniecība, 2002, 34.-41.lpp. – ISSN 1407 - 7337

2. Feldmane A., Šenfelde M. Attraction of Investments for Improvement of Present Infrastructure Situation in the Context with Incorporation of Latvia into the European Union// The Problems of the Foreign Economic Relations Development and Attraction of the Foreign Investments (Regional Aspect). Proceedings of Scientific Conference, part 2.-Donetsk: National University, 2003. p.374-378. – ISSN 1991 - 3524

3. Feldmane A., Šenfelde M. Development of free economic zones in the territory of Latvia // Problems and Prospects of cooperation between the countries of South-Eastern Europe within the context of Black Sea economic cooperation and GUUAM. Proceeedings of Scientific Conference. Donetsk- Svishtov-Albena, 2003, p.117-122. – ISSN – 1990 - 9187

4. Feldmane A., Šenfelde M. Possibilities of the state and private partnership use in the state and municipality project implementation// Problems of the Foreign Economic Relations Development and Attraction of the Foreign Investments (Regional Aspect). Proceedings of Scientific Conference, part 1.-Donetsk: National University, 2005, p.82-87. – ISSN 1991 - 3524

5. Feldmane A., Šenfelde M. Valsts un privātās partnerības izmantošanas iespējas valsts un pašvaldību projektu realizācijā// Tautsaimniecības un uzņēmējdarbības attīstības problēmas. Starptautiskās zinātniskās konferences zinātniskie raksti.-Rīga: RTU Izdevniecība, 2005, 109.-120.lpp – ISBN 9984 – 32 – 957 – 7

Other scientific journals:

Feldmane A., Šenfelde M. Development of PPP Project in Latvia and PPP Pre-education Establishments Project and Financial Models// Financing Options for PPP/PFI The SMi Group London: Proceedings of Scientific Conference. London: The SMi Group website at www.smi-online.co.uk/Financing Options for PPP/PFI / PDF Documentation/ 2009

The results of the Promotion Thesis are reported on the following international scientific conferences:

1. "U.S. Business Investment and Trade Mission to the Baltic States to Explore Opportunities and Development Contacts for Cooperation" in cooperation with the Latvia Republic Ministry of Economics, LR Ministry of Foreign Affairs, Investment and Development Agency of Latvia, US Embassy Latvia, *American Chamber of*

Commerce office to the Baltic states, agency *Enterprise Estonia*, Lithuanian Development agency, on 23 May 2006 in Riga;

2. "Public Private Partnership in Baltic Sea Region"/ The 5th Annual Public Private Partnership Baltic Sea Summit, October 2006, Stockholm, Sweden;

3. "The latest progress in developing PPP in country"/ The 7th Annual Public Private Partnership European Summit, 9-10 November 2006, Athens, Greece;

4. The 2007 Annual Bank Conference on Development Economics/ World Bank and the Government of Slovenia, World Bank Group Private Sector Liaison Officer Network Retreat, 14-18 May 2007, Bled, Slovenia;

5. "Perspectives of PPP in Latvia Regional Workshop on Public-Private Partnership (PPP) in Transport"/ World Bank, Ministry of Transportation of Republic of Latvia and Investment and Development Agency of Latvia, 6-8 March 2007, Riga, Latvia;

6. "PPP problems and development in Latvia"/ conference of the Investment and Development Agency of Latvia on 20 May 2007, Riga, Latvia;

7. "PPP development and implementation options in Latvia"/ international conference of the Investment and Development Agency of Latvia on 25 September 2008, Riga, Latvia;

8. "Overview of the PPP School Project"/ international seminar of Ministry of Finance of North Rhine-Westphalia and Latvian Ministry of Regional Development and Local Government, 4-5 December 2008, Düsseldorf, Germany

9. "PPP development and implementation options in the Baltic states"/ international conference of Ministry of Economics of the Republic of Latvia, 29 January 2009, Riga, Latvia;

10. "Financing Options for PPP/PFI Conference"/ International Project Finance Association, Manchester Business School, The SMI Group conference on 18-19 February 2009, London

11. "Overview of the PPP School Project", joint seminar by the Ministry of Finance of North Rhine-Westphalia Düsseldorf and the Latvian Ministry of Regional Development and Local Government on 4-5 December 2008, Düsseldorf, Germany.

12. 4th Annual PPP in CEE and SEE Summit Fleming Europe, Boscolo Carlo IV Hotel, on 8-10 June 2011, Prague.

SCIENTIFIC NOVELTIES AND MAJOR RESULTS

The major scientific novelties and the key results of the Promotion Thesis are the following:

- identification of the major impeding factors affecting public investment projects;
- development of public investment project management and financing improvement model and a public investment project management improvement method within the framework of this model;
- on the basis of the public and private partnership attraction results, development of a public investment project implementation algorithm, facilitating more efficient application of financial instruments;
- crystallizing arguments of application of public investment project financing by making use of the opportunities provided by securities markets, in line with the conditions of Latvia;
- provision of arguments for public investment project cost reduction due to economies of scale of investment projects;
- in order to evaluate the national budget resources, developed a model for economic efficiency improvement of investments to monitor the VAT influence on the public sector, and changes in regulatory enactments and some innovative frameworks.

Applicability of the study:

1. On the basis of the research results of the author, a tender was announced and opened on 22 December 2008 to the rights to conduct construction and maintenance of four new pre-school educational establishments in Tukums city, Ogre city, Ķekava rural municipality and Mārupe rural municipality.

2. On the basis of the conclusions regarding the VAT application procedure obtained in the research of construction and maintenance of the four new pre-school educational establishments in Tukums city, Ogre city, Ķekava rural municipality and Mārupe rural municipality, a working group was established within the Ministry of Finance Tax policy department and proposals developed regarding VAT administration and collection.

3. Using the cost comparison method of the public sector expenses and its assumptions in the project “Construction of a new Ledus street in Jēkabpils city”, an instrument was developed for development of concession projects in municipalities, which was approbated in Latvijas Hipotēku un zemes banka (Mortgage and Land Bank of Latvia).

4. The developed public investment project management and financing improvement model was proposed for practical application in municipalities of Jēkabpils, Mārupe, Tukums, Ogre, Ķekava and Cēsis.

5. The research results were made available to entrepreneurs in working groups and scientists in international scientific conferences in Latvia, Great Britain, Greece, Switzerland and Italy.

Structure and volume of the study.

The Promotion Thesis consists of 3 chapters. It consists of 149 pages, excluding annexes. The thesis contains 14 tables, 35 pictures and 7 annexes, clarifying and illustrating the contents of the study. The Promotion Thesis is constructed by the following structure:

Introduction

1. Theoretical basis of public investments and their implementation critical characteristics
    1.1. Nature of public investments and their role in the national economy
    1.2. Implementation analysis of public investments in Latvia
    1.3. Public investment and strategic planning of national development
    1.4. Role of public investments in the polycentric development of Latvia
    1.5. Factors influencing public investments
    1.6. Nature of public investment projects and their economic contents
    1.7. Identification of factors impeding the efficiency of public investment project management
2. Instruments for improvement the management of public investment projects
    2.1. Public investment project management and financing improvement model
    2.2. Public investment project management improvement method
        2.2.1. Public investments projects pre-pre-feasibility study summary matrix

2.2.2. General algorithm for identification, study and evaluation of various public investment project related influences

2.2.3. Investment project planning stages model

2.2.4. Graphic and mathematical regularities of mutual relations of various factors affecting public investment projects

3. Innovative solutions of public investment project financing

3.1. Applicability of public and private partnership in funding attraction for public investment projects and improvement of their implementation

3.1.1. General model for management efficiency improvement of investment projects under the public and private partnership

3.1.2. Implementation of public investment construction projects by means of the public and private partnership

3.2. Cost and benefit management model for the whole life cycle of a public investment project

3.2.1. Positioning of public investment projects in the securities market

3.2.2. Cost reduction of public investment projects due to c of scale of investment projects

3.3. The major aspects of accounting municipalities' commitments and benefits in a public and private partnership project from implementing the concession model

3.4. Economy in the whole life cycle costs of an investment project from application of the public and private partnership

3.5. Investment economic efficiency improvement model

Conclusions and proposals

Bibliographical index

Annexes

Chapter one makes a conclusion that an essential role in maintaining sustainability has the economic growth, where one of conditions is the volume of public investments in the national economy. Therefore this chapter studies contributions of public investments in the national economy, as well as certain public investment project (hereinafter - PIP) planning and implementation deficiencies on regional and national levels. Problem issues of PIP management are addressed. The main PIP evaluation methods are identified, and some methodological aspects of investment

projects analyzed. A comparative study has been conducted of the major factors affecting the public investment project management efficiency.

Chapter two presents a new developed model for improvement of public investment project management and financing, which is related to the public investment project management and financing improvement method, the application of which includes ideas and theoretical approaches of economy of synergies. The developed PIP management improvement method divides the implementation of investment projects into several stages, identifying the major influences in each of them, and linking the management efficiency to the major influencing factors. Thus mathematical regularities of the mutual relations of the main factors affecting the public investment projects are obtained. To facilitate reaching the PIP goals, a general algorithm has been developed for identification, study, implementation and evaluation of the various aspects of public investment projects, which would create preconditions for establishment of a supervisory system in the public sector that conformed to the best international practice. To reduce the problems that have occurred within the investment project management system, the entire investment project development process is divided in stages, with specific investment project development regulating measures and functions integrated within each of them thus attaining that investments yield return and clearly indicate the added value. This arranged division of changes (quantitative, qualitative) in the investment project management is determined within the major planning stages model of an investment project.

Chapter three provides a number of developed innovative solutions of public investment project financing. When developing the funding attraction structure in public investment implementation, it is important to use financial solutions as efficient as possible, and it would be important to take into account not only the funds under the national budget planning (both basis and development parts), EU funds planning, but also other funds of foreign financial aid and funds available in the private sector. This chapter addresses application of the public and private partnership in improvement of public investment projects implementation, demonstrating the possibility to attain better quality services, more efficient use of fixed assets, better compliance with construction terms, larger number of implemented public investment projects, as well as the option to maximize the number of overall national (public) benefits. This chapter also includes the development of the investment economic

efficiency improvement model, which was carried out on the basis of analysis of several investment projects.

MAJOR RESEARCH RESULTS OF THE STUDY

The major research results were obtained on the basis of the final results of the investment projects implemented in Latvia. The author has studied the progress of implementation of investment projects and the results achieved from 2000 to 2011 and come to a conclusion that the final results for a considerable part of investment projects did not correspond to the effective requirements and regulations. Compiling a list of certain municipal infrastructure objects, like boiler houses, pre-school educational establishments, engineering networks and street construction works, as well as some reconstruction projects, the major adverse factors affecting the investment projects were identified, the consequences and significance of their effect.

Comparing studies of various enterprises to the results of the author's research, it can be concluded that they do not significantly differ and complement each other. Ranging the PIP management efficiency affecting factors by their overall effect progressively, the author found out that the major investment project impeding factors were the following:

- exceeding the investment project implementation (completion) term;
- increase in investment project construction costs;
- improper risk sharing between the municipality and the private partner;
- mistakes in PIP implementation planning;
- errors of the public sector in project development, approval procedure and performance of functions.

For management of the aforementioned impeding factors and elimination of deficiencies a model for improvement of the management and financing of investment projects was developed, as well as a project management improvement method. The model consists of two relative parts (see Figure 1). The first part of the model dwells on identification, study, considering implementation options and evaluation of the various affecting factors, as well as identification of mutual graphic and mathematical relations among the PIP affecting factors. A definite application of the pre-feasibility study summary matrix is suggested, which would allow unification of the compiled

information and enable comparability of various PIPs. Application of the planning stages model would enhance comprehension as to how by means of lesser expenses guarantee a constant or improved quality and accessibility of national and municipal services. The second part of the model contains assessment of various application options of the innovative solutions, proposals of various PIP funding sources and means and improvement measures, incl. proposal of major four economic instruments, application of which could contribute to improvement of PIPs and their efficiency.

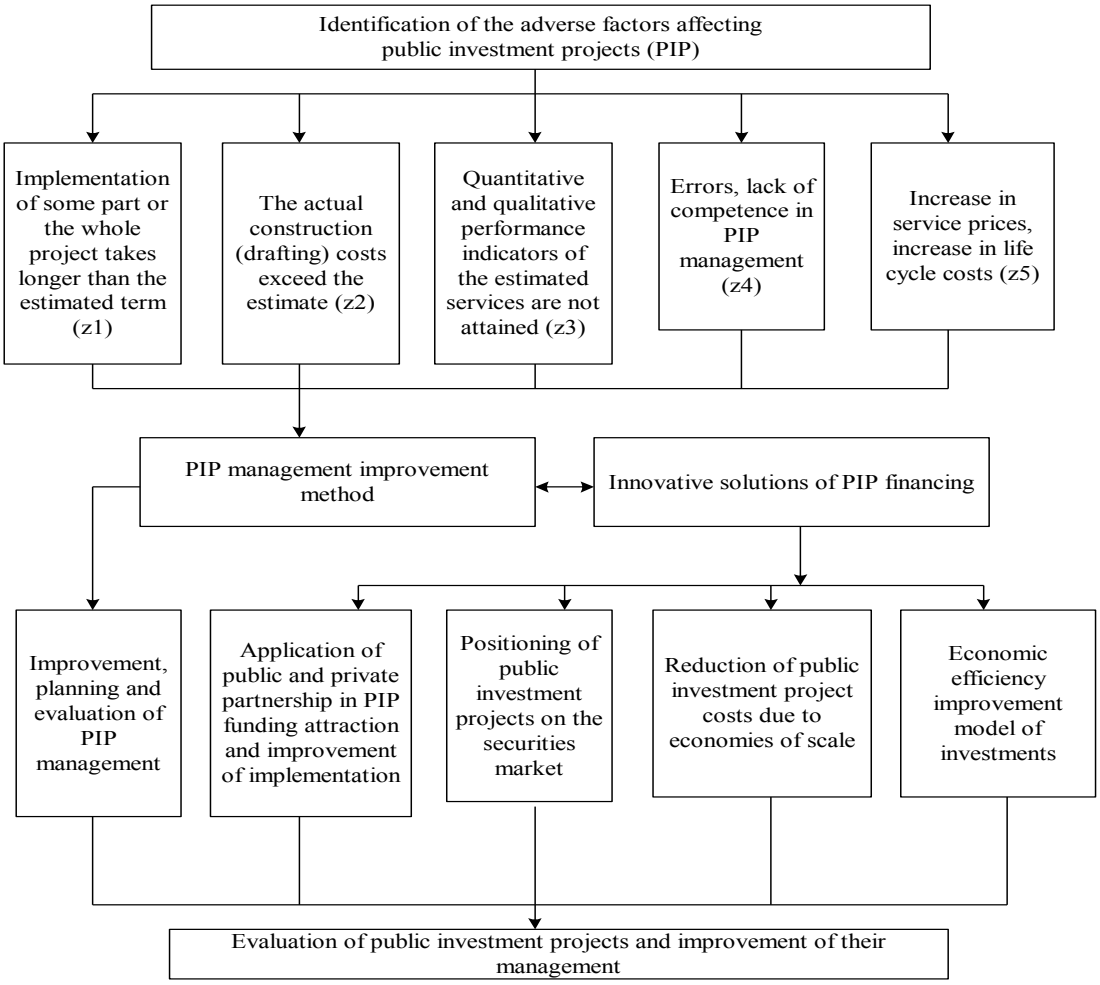


Figure 1. Public investment project management and financing improvement model.

Usually the attainment of the goal depends on solving several, in some cases even quite a lot of problems. Therefore the PIP management quality often depends on proper selection of economic instruments. They must provide a quality solution in

general as well as responding to each single problem. Thus, attainment of the PIP goal requires using the PIP management improvement method.

Implementation of a PIP means constructing a complex system, affected by various internal and external factors. As instability is inherent to investment processes, as well as certain openness and nonlinear qualities, such factors may bring the system to the point of bifurcation, when the stability and balance of the system are broken. PIP management improvement method was developed to improve the PIP management process by making use of synergies. The PIP implementation management system can relatively be divided into two subsystems: the managing and the managed.

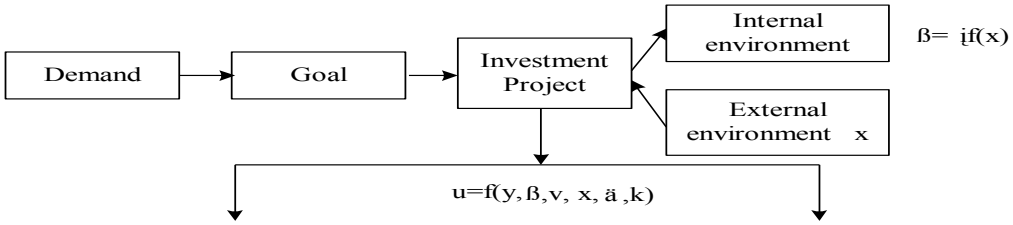
Focus on goal is present in all stages of the PIP managerial process. On the basis of the PIP goal and the pre-feasibility of identification, establishment, implementation of specific tasks and control results, the entire investment project is developed and managed. One of the primary tasks of PIP management is to eliminate the uncertainty pertaining to chance and probability, while chance and probability entail instability and fluctuations. After the bifurcation point is reached, it is necessary to identify the eventual prospective positions of the managed economic system and their management along the key PIP guidelines. One of the major tasks of PIP management is to maintain stability of its implementation, which is required for "survival of the system" in the environment of permanent contradiction of this system and its individual elements being under influence of various factors. The core of the PIP management improvement method is combining a systemic approach with nonlinear development dynamics.

The investment project management efficiency characterizes the correspondence of the actual result to the desired result or the accomplishment level of the estimated goal. Project implementation peculiarities pertain to its specifics or the industry where the PIP is being implemented. In order to see the actual PIP outcome as initially expected, the three major fundamental elements of estimated goal must be in concordance: quality, length of implementation and PIP costs. These elements are interrelated.

The systemic approach of the PIP management process means defining certain influences, their implementation and evaluation. In the environment of nonlinear development dynamics in some of the management process stages, for instance, the decision making stage it is possible that the subjective interests of a single person

(advantages to some enterprises) become contradictory to the overall interests of a particular PIP implementation. Inappropriate decisions may be made on such occasions, not facilitating development of a particular industry, and initiation of a PIP may be in jeopardy.

As may be seen in Figure 2., the PIP goal is derived according to the demand as well as the management process to reach this goal.



#	Main stages of the management process	Identification of major influences of management
1	Collecting PIP information, its processing and analysis	1 Receiving information about the internal environment of PIP 2 Accumulation, processing and analyzing the information about the external environment
2	Establishment of PIP as the managed system	1 Development of PIP management and financing instruments 2 Identification of implementation peculiarities of the managed system
3	PIP development un management	Innovative financing solutions of the managed economic system
4	PIP performance control	Evaluation of the improvement of PIP management

Figure 2. Public investment project management improvement method.

From the mutual relations between the subsystems of the synergetic management of PIP implementation can be observed that the influence of the output parameter u of the managing subsystem at any moment of time depends on the parameters characterizing its input status.

The management efficiency of the investment project system is a function of the following major factors:

$u = F(y, v, ß, x, a, k),$ (1)

where:

u – efficiency of the investment project management;

y – parameter characterizing mutual relations of the factors affecting PIP;

v – project implementation peculiarities;

ß – factors affecting the internal environment;

x – factors affecting the external environment;

δ – contingent factor;

k – other factors.

Internal environment factors characterize the political, social and economic situation of the country. Among other internal factors should be mentioned the capacity of the public and private sector to attract and implement investment projects to ensure the public sector copes with performance of services delegated to it, and increase production capacity, as well as development of the existing lending, impact of budget consolidation and other factors affecting investment risk assessments, interest rates and project confidence indicators. It should be noted that the internal environment is functionally dependant on factors of the external environment: $\beta = f(x)$. External environment factors are instruments of the global and EU implemented fiscal and monetary policies, where the global growth can still be under threat of potential shocks in the global financial system, financial sustainability and government debt maintenance fees of some countries as well as raw material prices in the world. The PIP management efficiency is influenced not only by the internal and external environments, vide, it is also influenced by the time factor, determining the starting time of a particular investment object and project life cycle. The influence of the contingency factor can cause destabilization of PIP implementation due to contingent circumstances. As instability is inherent to investment processes, as well as certain openness and nonlinear qualities, then both the external and internal factors may bring the system to the point of bifurcation, when the stability and balance of the system are broken. Therefore, when evaluating PIP development scenario, the decision should be based upon more conservative assumptions, for instance, against the backdrop of external and internal demand growth forecast, take into consideration the potential impact of both the internal and external environment factors on the project. PIP management improvement method was developed to improve the PIP management process by making use of synergies.

On the course of implementation of the developed PIP management improvement method the entire life cycle of an investment project is approximately divided in the following four stages (see Figure 2.):

first stage. In the stage of PIP information collection, processing and analysis, information is received from the internal and external environment, and the pre-feasibility study summary matrix is used as an ancillary instrument;

second stage. Implementation peculiarities, nature of changes in the management process and factors related to the particular investment project of the PIP as the managed system are identified. To start and maintain the PIP management requires using the developed algorithm for identification, study and evaluation of the PIP-related various influences, the algorithm would then bundle and channel the various IP influences and implementation options to the single estimated goal. The process of PIP development, as well as its implementation is facilitated when the developed planning stages model is used;

third stage. PIP development and management stage already requires application of some specific innovative solutions to avoid or eliminate the unwelcome effects of the external or internal environment on the PIP implementation goal. To enable selection of the most rational option of IP implementation, the study will contain suggestions and explanation of project rationalization in cost reduction due to economies of scale. A different approach is suggested to be used when locating PIP funding for projects of national interest. Application of PIP whole life cycle cost and benefit management will offer particular options how to reduce costs and increase the gains. The concession model application sample will demonstrate the opportunities of PIP management improvement. Application of the PIP economic efficiency improvement model is going to provide tax optimization options in PPP projects and extra benefit options for the state (public);

fourth stage. It encompasses evaluation of PIP implementation results and evaluation of the improvement of PIP management.

Innovative solutions for PIP management and financing improvement have been ir developed to enable improvement of managing public investment projects and the use of the PIP management improvement method. The PIP management improvement method focuses a lot on principles of synergy and imbalance, not addressed by the conventional economics. It cannot be asserted that the PIP management improvement method can solve all the problems of PIP management, though it does allow

explaining and managing some nonlinear dynamic economic processes, otherwise unattainable by means of models and methods of the conventional economics.

A closer look at the PIP management efficiency impeding factors reveals that for purposes of simplification of the PIP development, some of the factors can be combined, for instance, the increase of construction costs and the failure to meet the due construction implementation terms, as with the construction time growing, the costs grow respectively. It should be remarked here that the interrelation of construction costs and the construction time expenses is not linear, it rather is an approximation to parabola. By means of the PIP improvement method, quantifiable clusters of influences are formed, improvement of which may secure attainment of the estimated PIP goals. There are cases when a PIP implementation is delayed and the estimated goals are not reached exactly due to insufficient or altered information. The consequences of the problem can be mitigated or even avoided by using the public investment project pre-feasibility study summary matrix provided below.

INNOVATIVE SOLUTIONS

1. Pre-feasibility study summary matrix. For a successful development of PIP and make it match the strategic goals of Latvia, priorities and link policy planning documents and budget planning, as well as eliminate private interest in public sector operations, a PIP pre-feasibility study summary matrix was developed. This matrix furnishes the amount of the required information on the respective level of the project and enables objective decision making. Actually, during the pre-feasibility study or the initial evaluation of the submitted projects, the problem is identified and defined, and the potential solutions identified according the essential aspects reflected in the matrix (see Table 1).

Table 1

Pre-feasibility study summary matrix.

No.	Problem	Description
1.	Identification of the problem in the industry and labour market, adhering to the principle of long-term economic development	The project must be implemented in a manner to attain economic development in a long-term, in compliance with the priorities established in the country.

No.	Problem	Description
2.	Adhering to the principle of sustainable national debt level	Implementation of the investment project from the fiscal policy point of view that is focused on maintaining an optimal government debt level and does not place a disproportionate burden on the budget, facilitating economic development in a long-term instead.
3.	Project identification and application of best practice principles	The following best practice principles are applicable in project identification: 1) **stability principle.** Implementation of investment projects is supported, which are predictable and contribute to the economic stability; 2) **additionality principle.** With a purpose to attract additional financial funds, cooperation between the public and private sectors takes place with a goal to develop the infrastructure required by the public sector; 3) **participation principle.** Implementation of investment projects is supported, where the funding of the public sector budget is combined with the funds at the disposal of and available to the project implementer.
4.	Evaluation of management performance of the existing national and municipal enterprises or commercial enterprises under their control and development of new models	The goal is more efficient management of the equity shares of national and municipal enterprises. It is important to evaluate the further necessity of the public sector to operate as an entrepreneur.
5.	PIP identification and evaluation of its separate parts, incl.: **First stage** – project identification and development of the best technical solution; **Second stage** – evaluation of the potential projects, which encompasses development of financial and economic estimates (evaluation of the necessary investments, sources of funds, potential gains from the project); **Third stage** – development of social and economic analysis; **Fourth stage** – legal process, which means development of procurement documentation and service procurement; **Fifth stage** – signing agreement.	The goal of the PIP development process is to identify the best way of implementation of the particular project, according the principle of rational and efficient application of the public sector's financial resources and the necessity to identify the proper project structure worth of concluding an agreement for a successful implementation of the respective project of construction or service provision.

It should be remarked that each investment project is specific, thus its evaluation may require specific criteria for this project.

2. PIP management improvement methods in the second stage are replaced by development and application of the identification, study and evaluation algorithm of the various PIP influences. This algorithm serves as an innovative instrument for municipalities, so that they furnished superior institutions and financial establishments with objective information on the course of project development, thus reducing the duration of PIP development. The general algorithm for identification, study and evaluation of the various public investment project related influences characterizes the sequence how a project is formed, starting with the demand through the final outcome – drafting of project. It should be emphasized that the estimate in the initial stage is performed only on the basis of assumptions and the historic experience of implementing similar projects in the particular field. The developed algorithm may relatively be divided in the following main parts:

1. Pre-feasibility study of the project pertains to identification of the nature of the problem, its relation with the region, industry, identification of the resources market and study of the social and economic market. Each problem depends on the influence of the internal and external environments. Meeting the demand requires project identification and initiation. Determining the project implementation goals is utterly significant in order to carry out project identification. They are determined according the impact of social, economic, political, environmental and other factors. Formulation of goals usually encompasses conclusions and recommendations of the project's impact on improving the quality of life of the population within the particular region, impact on the industry and national economy in general.

2. An answer must be provided during the stage of project processing and implementation options study – whether or not the project development is necessary/feasible for attaining the estimated goals. It must be found out, whether implementation of the project is necessary and feasible after evaluating the strategic, economic, political and other aspects. It is essential to find out:

- whether the project corresponds to the established goals and strategy, whether the project's goals and the eventual outcome could not be attained in other, more efficient ways;

- whether the public sector is capable of covering the project costs, what are the potential funding sources and the maximal amount that the public sector could afford to allocate for implementation of the project;
- whether implementation of the public investment project would guarantee efficient usage of resources;
- whether the project will have a positive impact on the surrounding environment (incl. the quality of using air, water and land resources, noises);
- whether the project will have a positive impact on the safety of the circumjacent population;
- whether the public sector in the case of investment project implementation will be capable of performing its functions better, furnishing the society with necessary services, infrastructure;
- whether the overall public benefits will exceed the overall public expenses.

3. The major aspects must be evaluated in the project evaluation stage, especially focusing on analysis of the negative factors. Consideration must be given to the use of methods when implementing projects of this type before, it is also advisable to take into the account the foreign experience in implementation of similar projects. Consideration must be given to the project implementation instruments, opinions of funders and investors (sponsors) taken into account.

As project consists of separate parts, development of which usually involves various specialists, its assessment is rather complex, as it requires involvement of financial, legal, technical and other specialists, therefore, given the situation in Latvia, these functions usually are assigned to definite public authorities.

Implementation of the general algorithm for identification, study and evaluation of various public investment project related influences diminish or eliminate the potential risks in later stages of the project, assist in finding the most economical ways for reaching the estimated goals. The algorithm comprises such an important section as evaluation of the project and its parts. For investment projects to be implemented in the public sector it is essential to evaluate whether this project is advisable from the point of view of financial analysis indicators and economic development, and answer must be provided whether implementation of the project will contribute to attainment of polycentric regional policy goals and that will be a

significant aid instrument in improvement of the quality of life of the inhabitants of the country (see Figure 3.).

Investment projects should provide proof, on what conditions the project will be viable, and an answer to the question whether this project will require state aid. Although the estimated investments within the framework of the PIP would provide high economic return, in the PIP development stage it should be evaluated whether the available pool of public funds would be sufficient for financing of the estimated investment project throughout the period of its implementation, or support from the EU funds or other foreign financial funds will still be required. The evaluation of PIP is important from the investor's viewpoint when evaluating the financial sustainability of the public sector budget and its development priorities.

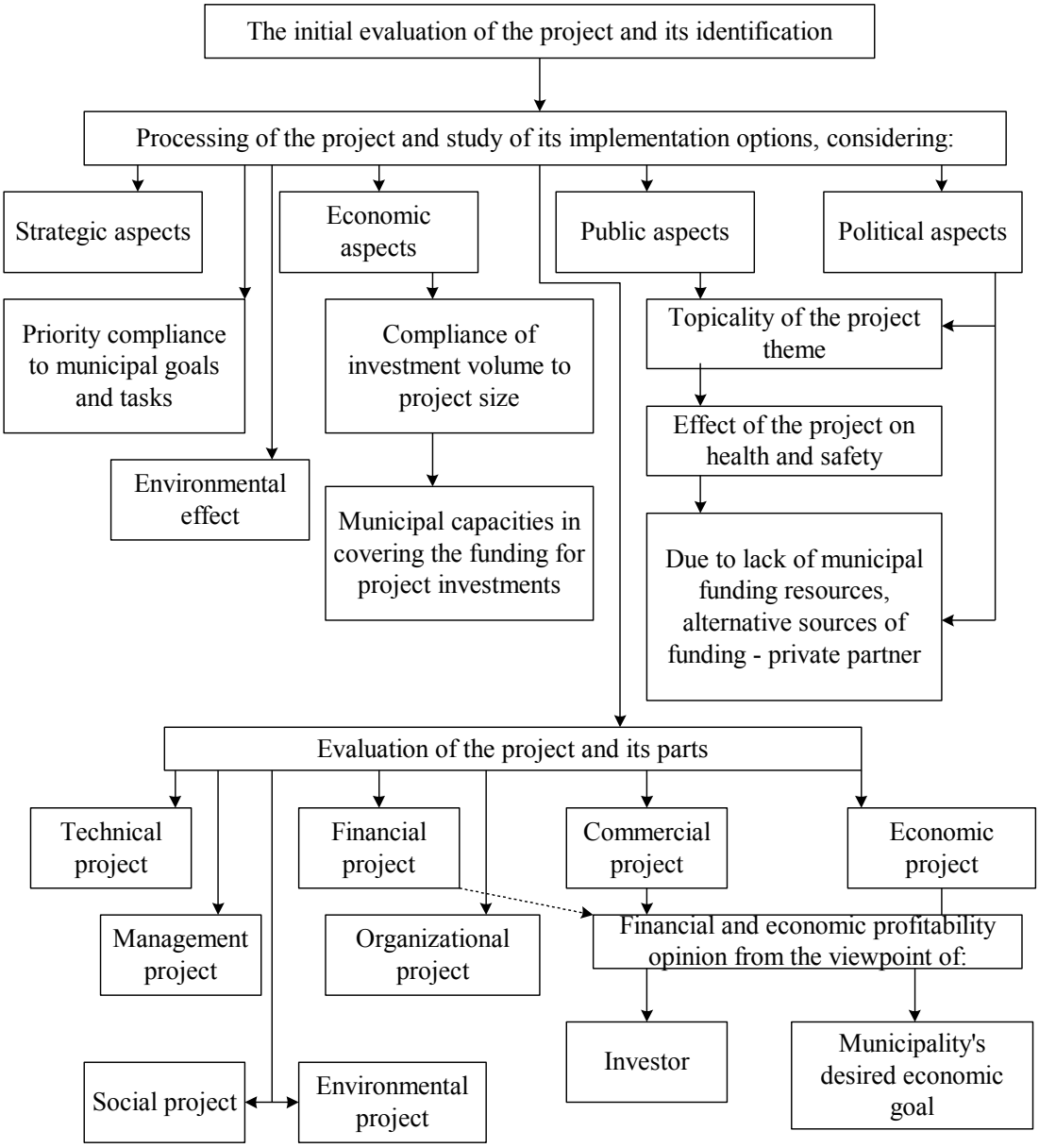


Figure 3. General algorithm for identification, study and evaluation of various public investment project related influences.

3. Identifying the graphic and mathematical relations of mutual relations among PIP impeding factors. By means of the stage of the PIP management improvement method and peculiarities of the managed system, the influence of the major factors on the PIP management process was established.

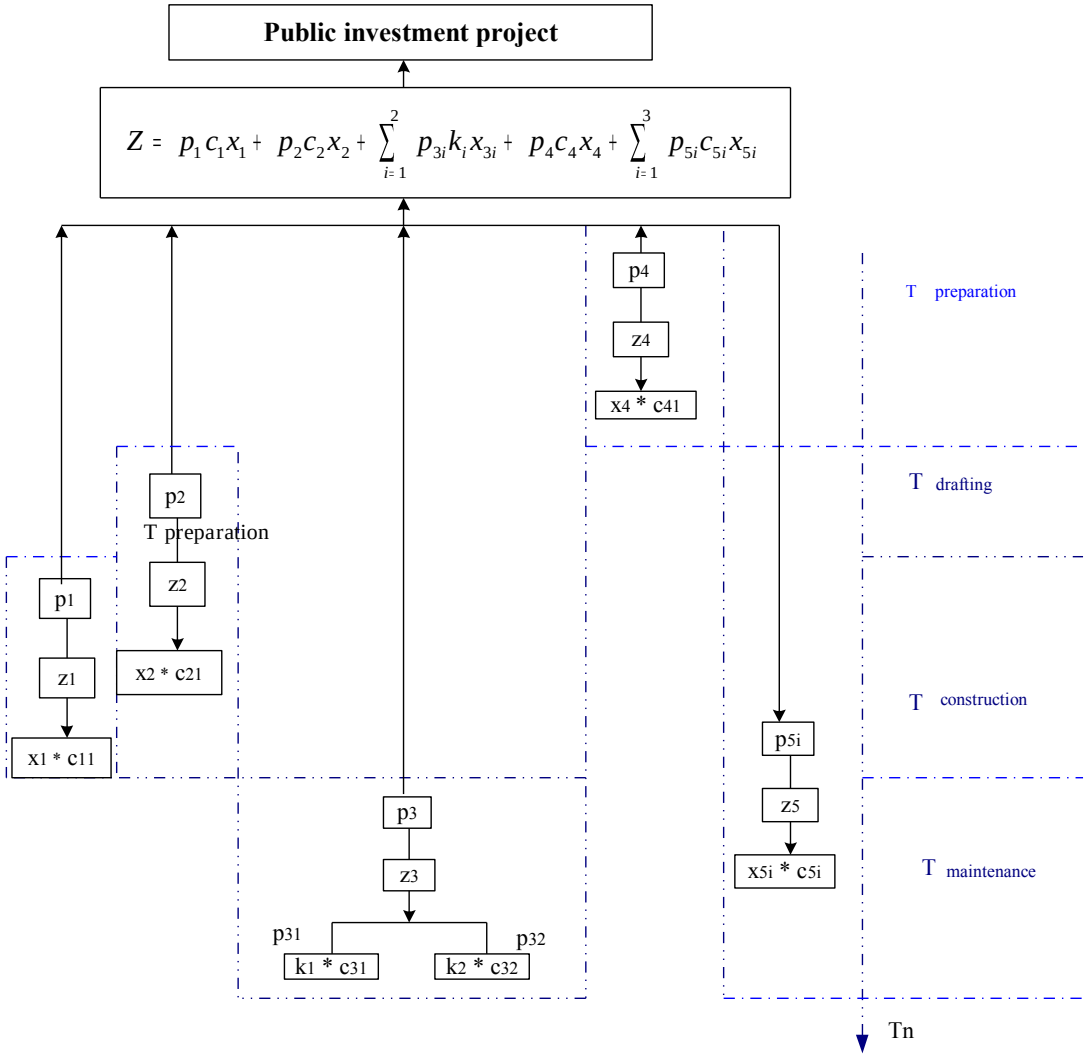


Figure 4. Impact of the major factors on the public investment project management process.

PIP costs and management efficiency are influenced by the aforementioned five major negative factors (see Figure 4.), each of which having its occurrence likelihood. p_1 marks the likelihood of occurrence of the negative factor z_1, causing increase of costs ($x_1 \cdot c_{11}$), where x_1 is the number of overdue days until completion the investment project (start of object's operation) and c_1 is the relative losses per one overdue day. p_2 marks the likelihood of increasing the amount of construction (renovation) work related to the investment project and/or costs (z_2), thus causing increase of costs ($x_2 \cdot c_{21}$). p_3 marks the likelihood z_3, related to the relative changes of costs of qualitative and/or quantitative indicators of services. Factor z_3, pertaining to the quantitative performance of the project, corresponds the likelihood p_{31}. For the qualitative indicator, two variants of likelihood are considered: P_{32} is the likelihood that the quality corresponds the agreement terms and P_{33} is the likelihood that the

quality does not correspond the agreement terms. p_4 marks the likelihood that due to errors and incompetence of specialists in charge of PIP management, the estimated development time will be exceeded, as a result making increase in costs ($x_4 \cdot c_{41}$), p_5 is the likelihood that costs of the whole project life cycle will grow ($x_5 \cdot c_{51}$).

Thus the scheme reflects the impact of the major negative factors on PIP implementation and helps in formation functions of the goal and sub-goals.

$$Z = p_1 c_1 x_1 + p_2 c_2 x_2 + \sum_{i=1}^{2} p_{3i} k_i x_{3i} + p_4 c_4 x_4 + \sum_{i=1}^{3} p_{5i} c_{5i} x_{5i} \qquad (2.3)$$

where:

Z – function of the goal, the task of which is to reduce the costs of major negative factors affecting PIP;

p_1 – likelihood of occurrence of the negative factor z_1;

x_1 - the number of overdue days until completion the investment project (or part of it);

c_1 – relative losses per one overdue day;

p_2 – likelihood of occurrence of the negative factor z_2;

x_2 – increase in construction, renovation or designing work amount;

c_2 – one unit price of the relative volume;

p_3 – likelihood of occurrence of the negative factor z_3;

p_{31} - likelihood that the number of provided services does not correspond the agreement terms;

k_1 - total number of services not provided, amount;

c_{31} - the relative price per one unit of the services not provided;

p_{32} - likelihood that the quality does not correspond the agreement terms;

k_2 - total number of poor quality services, amount;

c_{32} - the relative price per one unit of the poor quality service;

p_4 - likelihood that due to errors and incompetence of specialists in charge of PIP management, the estimated development time is exceeded, or costs increased;

x_4 – the number of overdue days until the deadline of the project preparation stage;

c_4 - the relative costs of one overdue day;

p_{51} – likelihood of increase in costs during the designing stage;

x_{51} - the number of overdue days until the deadline of the designing stage;

c_{51} - the relative costs of one overdue day;

p_{52} – likelihood of increase in costs due to delayed completion term, rise in resource prices, work amount during the construction stage;

x_{52} - the number of overdue days until the deadline of the construction stage;

c_{52} - the relative costs of one overdue day (resources or work amount);

p_{53} – likelihood of increase in costs during the operating stage;

x_{53} – the estimated amount of resources and work;

c_{53} - the relative costs of one unit of resources or work.

As an innovative instrument in application of the public and private partnership (PPP) to attract funding for public investment projects and improvement of implementation is offered the general model for investment project management efficiency improvement.

4. The general model for management efficiency improvement of public and private partnership investment projects.

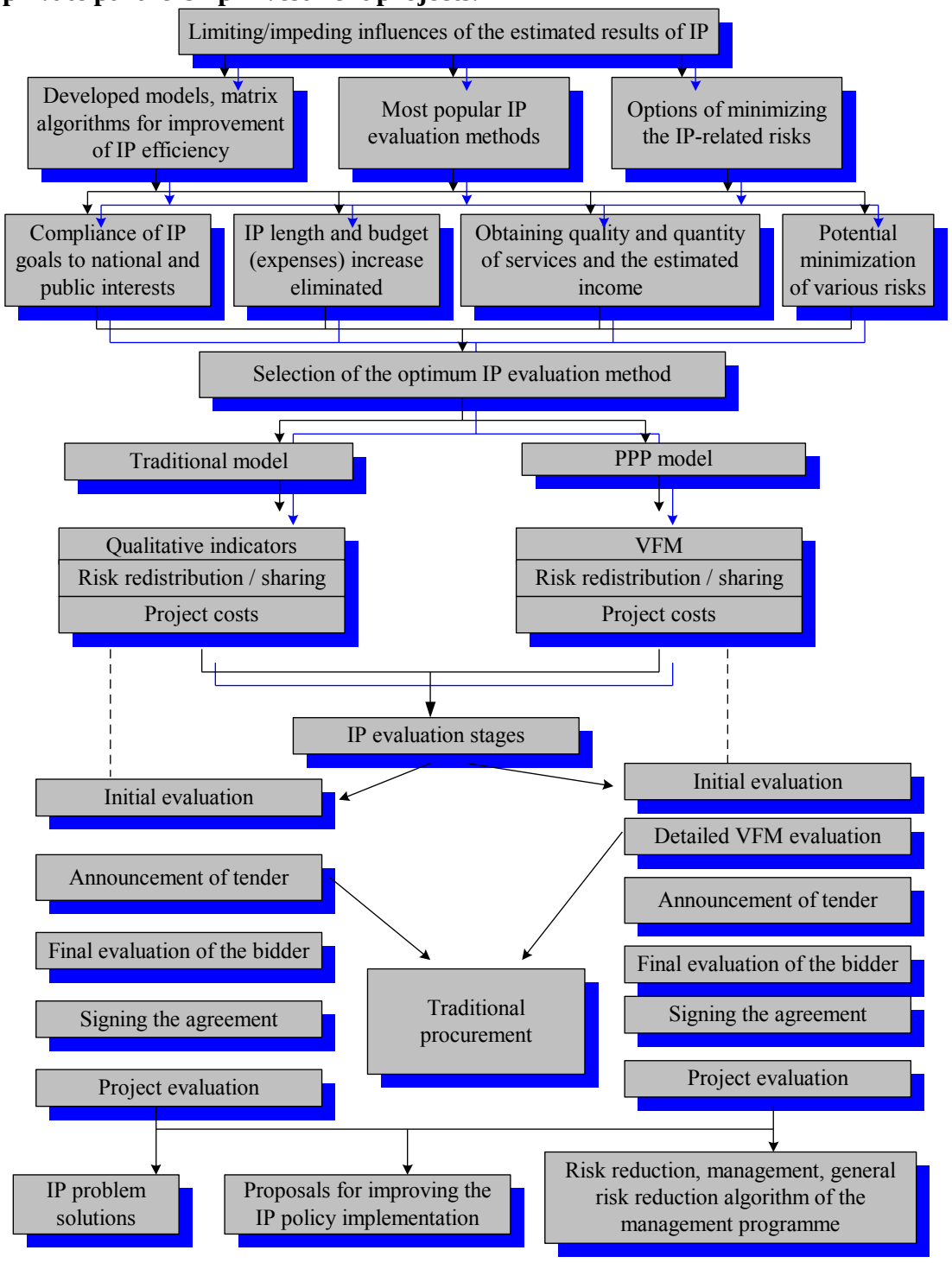


Figure 5. General model for improvement of the efficiency of PPP investment project management.

General model for improvement of the efficiency of investment project management (see Figure 5.) helps to identify the overall benefits and total expenses for the conventional model and the public and private partnership (hereinafter - PPP)

model. It should be noted that in the case of the PPP the value for money (VFM) analysis was performed, which could provide a more accurate evaluation in comparison with the conventional model. By means of the PPP model can be explained those investment projects related processes that the conventional approach ignores, for instance, evaluation project implementation alternatives and identification of project life cycle costs. This model can be used to identify – which of the project alternatives it is advisable to implement and which type of procurement – the conventional one or the PPP should be used for a better compliance with national (public) interests, as the public sector finds it necessary to evaluate and furnish the most efficient way of providing services, aligning the available financial funds to the required amount of functions and services. Depending of the IP evaluation method, solutions of the arising problems are being planned, suggestions developed for improvement of project implementation.

6. Public investment project's whole life cycle cost and benefit management model. PIP whole life cycle cost and benefit management model reflects particular ways, measures and economic instruments, the use of which could facilitate attainment of IP goals and improvement of IP management. The operating stage of this model demonstrates the innovative economic instrument of investment project financing - PIP positioning in securities market. By means of that, it is possible to attract some separate sources of financing, which is very essential for the state in cases of implementing large objects. The construction phase reflects the potential cost reduction by using the economies of scale (see sub-chapter 3.2.2.). The cost reduction of PIP life cycle applies to all three of its stages. Operating and maintenance costs refer to the operating phase, while the risk cost reduction is feasible in all three phases. What is important, costs Z of each PIP life cycle tend to Zmin (see Figure 6.).

Benefits can be increased by means of this model, by using the value added tax (VAT) administration, improving the quality of services and accounting of municipal commitments, where the additional income for the project cycle from application B of the PPP model tend to Bmax.

Analysing the costs and benefits of the whole life cycle of PIP, VAT can be observed to have a significant impact on the total funding volume of the project. According to if the EU funds regulatory framework, the VAT may be treated as eligible expenses, if the recipient of the funding is not entitled to receive a refund of the VAT overpayment. While generally, the local governments are not entitled

receive a VAT refund performing their primary functions, while providers of public services (enterprises owned by the state or municipality) are entitled to receive it. While the option to receive a VAT refund in a PPP model project depends on the type of the operating activities of the enterprise (establishment). But, if the public institution (owned by the state or municipality) performs its statutory functions, it is not regarded as a VAT payer, therefore it may not receive a VAT refund for the goods and services received. But, if the public institution is involved in business activity (like private enterprises), then for the purposes of the VAT law it is regarded as the VAT payer (included in the VAT register as a VAT payer, and is subjected to the general standards of the VAT law). In that case it is possible to receive a VAT refund for all those business activities that are not tax exempt.

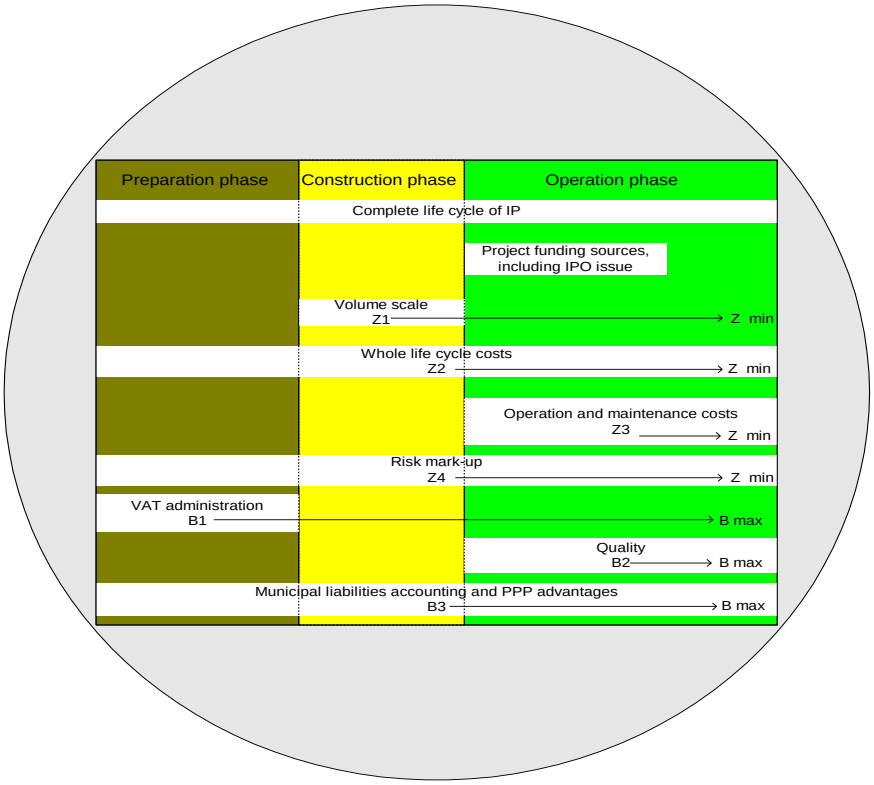


Figure 6. PIP's whole life cycle cost and benefit management model

A certain part in the IP whole life cycle cost and benefit management model is occupied by project positioning in the securities market.

7. Positioning of public investment projects in securities market. The measures that are aimed at stabilizing the national financial situation contain integrated limitations in the form of postponement of new investment projects to a later time in

Latvia. Funding under the international lending programme is available until the end of 2011 and so is the programme for stabilization of the economy of Latvia – effective until the end of 2011, which means that all the large-scale infrastructure projects, except for projects co-financed by the EU funds have been put on hold. Meanwhile the requirement to freeze all the largest investment projects would be incorrect from the economic development point of view. Therefore it should be determined – which investment projects of the public sector are significant for the development of the national economy of Latvia and options should be found to attract investments for initiation of strategic un profit generating projects. The financial means should be attracted to the project at the moment when the potential investors see the least risk. It definitely would be after completion of the construction phase of the project and putting the project into operation. But, the project requires funding as soon as the construction phase, which implies that it might be useful in this situation to speak of recovery of national funds via project bonds issue into the securities market in a certain stage of the project and accompanied by certain guarantees on the state's part. In the case of a specialized project entity bond issue, in would mean that the financial resources required for building significant infrastructure objects would be attracted not only by means of the loan component, if would be a chance used to split the loan resources portfolio into loan as well as securities component with varied seniority regarding the special project entity (SPE) assets.

An investor about to invest in project securities would like to see the project having a high assessment to the investment funds placement plan, credit rating of at least AA level, diversification of risks pertaining to the SPE's assets, opinion of seasoned and acknowledged experts and a well-functioning internal system of the project that enables structuring of the deal. As there are options to place the loan funds of the project in the senior and subordinated loan components, there is another opportunity to evaluate the investors into project securities by their profile of high or medium risk tolerance. For instance, institutional investors like pension funds or investment funds are of a low risk level, but with a granted minimal income portion in a long-term. These investor groups primarily look at the investment risk evaluation with the return of investments trailing. At the moment, the European Commission along with the European Investment Bank have developed a project securities initiative (Project Bonds) that aims at the idea that the European Investment Bank or another financial institution would perform structuring of the investment deal and

develop an offering of SPE securities, to provide the private capital a chance to obtain the securities of the project. As a result, the institutional investors are going to have a chance to invest their financial resources in safe long-term deals, and, on the other hand, the funding for investment project implementation would be found. Project funding attraction and maintenance model for investment projects of national interest is shown in Figure 7.

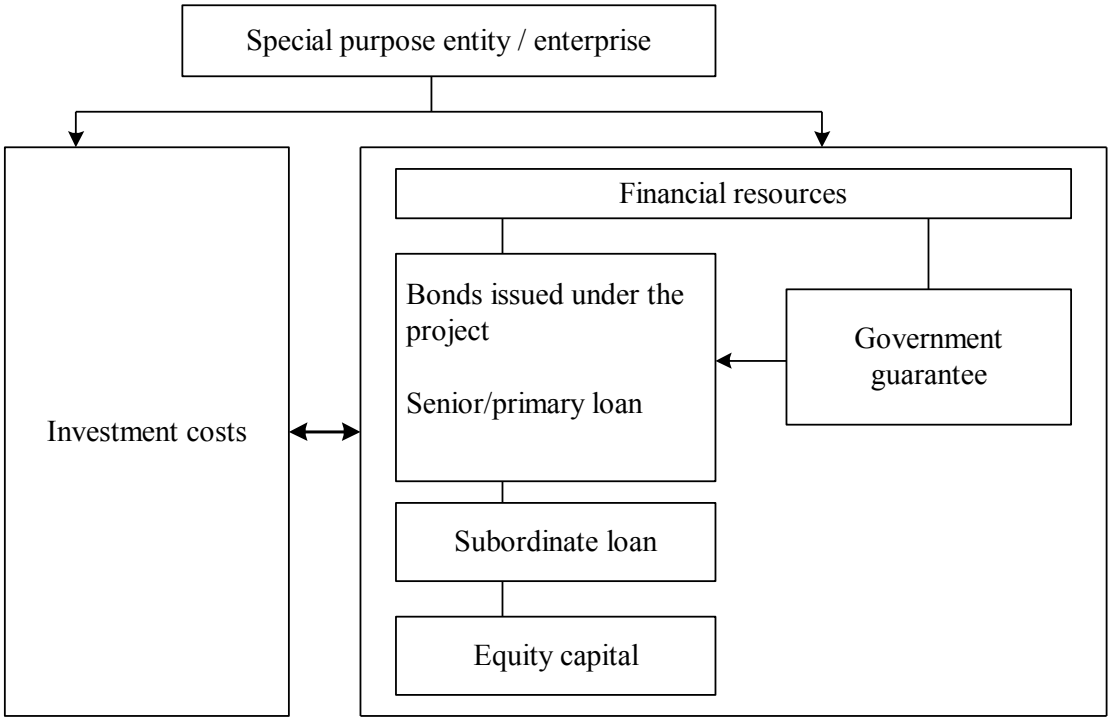


Figure 7. Project funding attraction and maintenance model
for investment projects of national interest.

10. Cost reduction of public investment projects due to economies of scale. The goal of economies of scale is to reach possibly larger and more qualitative service or production amounts with possibly investments into areas of workforce, finances and other resources. An enterprise, gradually developing, its capacity also automatically grows. With the production volumes growing, the amount of all the related investments considerably drops, as a result of which some of the structures of the enterprise discover considerable financial savings. The effect of the economies of scale in PPP projects were tested by the author by conducting a research ”Analysis of the public and private partnership model in construction and maintenance of pre-school educational establishments in four municipalities”. The project was

implemented in Mārupe and Ķekava rural municipalities and Ogre municipality and Tukums city. The project was implemented in compliance with the requirements of the Public Procurement Law, with application of BOOT as the public and private partnership type. The developed research provides a conclusion that the effects of rationalization at the expense of scale cold range from 10% to 25%.

11. Economic efficiency improvement model of investments. The developed economic efficiency improvement model of investments can be used in development and evaluation of investment projects where objects important to public (state) are concerned, where the PPP economic instrument is considered as an alternative in implementation of public investment projects (see Figure 8.).

According to the economic efficiency improvement model of investments, performance of a detailed PIP evaluation requires usage of the public sector spending (PSS) comparison method. The PSS comparison method allows to evaluate the whole life cycle costs and hypothetical applicable risk costs of a project, should the project be financed and implemented by the public sector, on the basis of the most efficient way and financial means that were at the public sector's disposal. The PSS comparison method is divided into the following four groups of basic elements: risk transferred to the private partner, neutrality of the competition, investment and project handling and maintenance costs, as well as the risk kept by the public sector. The second step in the economic efficiency improvement model of investments is evaluation of value for money (VFM), which means that various possibilities are evaluated to identify which of the project alternatives would best suit for attainment of the goals, based on cost reduction of PIP, and funding attraction options in the project, as well as the rights of the public sector to use a more efficient type of procurement, as well as risk identification and sharing.

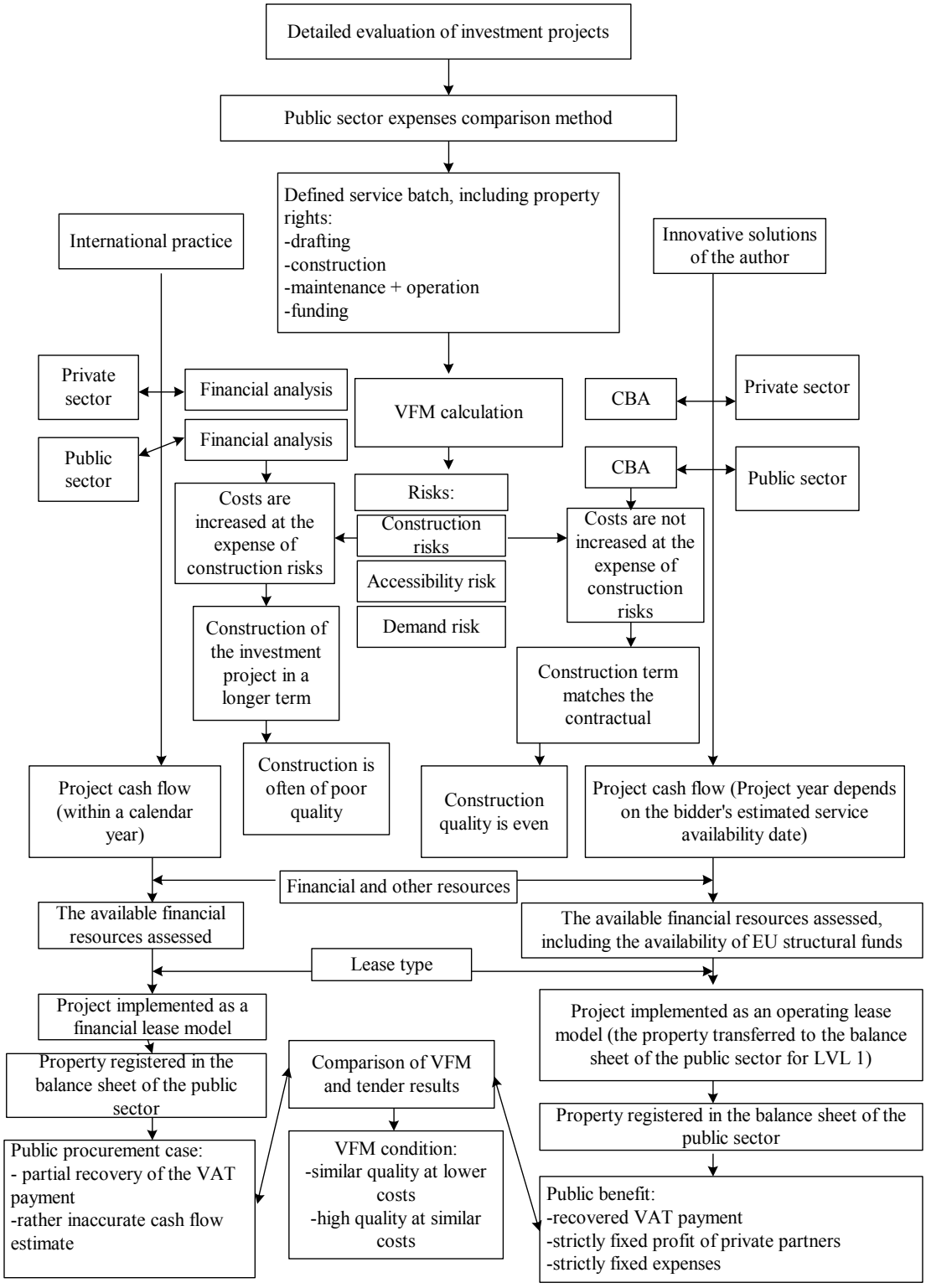


Figure 8. Economic efficiency improvement model of investments

On the right side of the graphic picture of this model shows that the cost-benefit analysis (CBA) for private sector involvement in investment projects injected by the public sector would differ from the public sector cost-benefit analysis (CBA). For the

private sector, involvement in an investment project injected by the public sector would mean entering an already existing enterprise or formation of a new special purpose entity (SPE). The enterprise shareholders, strategic investors and lenders invest their funds therein in the form of equity capital and loans, which manifests as the positive cash flow of financial operations of the enterprise. These money gains from financial operations are further transformed into expenses of investment funds, as they are invested in long-term investments. Long-term investments together with other assets of the enterprise are then used to generate a positive cash flow from core operations (income surplus above expenses). When developing CBA for private sector involvement, it should be clearly understood that the loan principals and interest payments shall be repaid to the project lenders beforehand, as well as dividends to investors, when the SPE is formed as a joint-stock enterprise. Also, the private partner will want to have a certain portion of the profit or interest on his investment in the project. Lenders, when evaluating any investment project, perform identification of liquidity, cost and benefit, as well as investment efficiency indicators in the project, which might convince them that the investment project is going to be successful.

The depreciation estimate is also of significance. Items of such intangible funds as depreciation, in the author's opinion, are not advisable to be included in the PSS comparison model, thus artificially swelling the expense side of the project.

12. Innovative solutions with VAT in the public and private partnership.

It should be kept in mind that public and municipal institutions, according to the effective regulatory enactments, primarily are considered as VAT taxable entities, while the situation actually is that for municipalities the VAT taxable deals are a rather tiny portion of their entire range of services. It does not apply to commercial municipal organizations, which, depending on their type of occupation, may be taxable entities. A good sample is the local authority limited company, which as the matter of fact is service providers on behalf of the municipality, but as entrepreneurs they are VAT taxable entities. But, for purposes of this discourse, as municipalities and institutions formed by them will be considered institutions, which can not be regarded as commercial organizations.

Working on two research projects with the PPP model, the author came to a conclusion that one of the cornerstones in cash flow planning and tax administration is application of the value added tax (VAT) in PPP projects, which, in its essence, is a

consumption tax. In a conventional procurement, the public sector is not a VAT payer, while the private partner in PPP projects will be a VAT subject, conducting business operations from the viewpoint of the VAT law, as well it will be a payer of the corporate income tax (CIT). We arrive to a situation, where the private partner is eligible to deduct the pretax for construction, while from the viewpoint of the VAT law all the other costs included by the service will be taxed by the VAT in full, to include the loan granted by banks and any interest payments on this project.

The acquisition of VFM is mandatory in PPP projects. That means that the municipality, when making estimates that support the efficiency of a PPP project, have to find a financial solution where the public sector can obtain the same quality service at a lower price, or a higher quality service at the same price. A crucial issue is the accessibility payment calculation structure (in case of partnership procurement), as the private partner usually receives compensation for PPP projects in the form of balanced accessibility payments over a lengthy period of time, usually it means up to 30 years**.** According to the currently effective regulatory enactments, regulating the application of the VAT, including the law on the VAT, in the case of national, municipal and accredited institutions, exceptions and exemptions of Chapter II of the VAT law applies, which means that the functions of the public sector are defined, which are VAT exempt transactions. In the case of a PPP project, implemented by means of partnership, regardless of the fact that accessibility payments include several elements like: building construction services, maintenance and management expenses, as well as funding costs, the private partner is going to receive from the public partner a unified, regular and fixed accessibility payment. The conclusion is that all these elements are interrelated and the services of the private partner are otherwise unattainable. Regarding the fact that construction, maintenance and management costs only together constitute a service, being the fundament of the business of the private partner, the author concludes that that listed elements of the PPP project should be regarded as a single service. In order to optimize costs and to spare the private partner financing an extra cash flow due to the VAT payment for construction during the construction, which would inflate the amount of the public payment, it would be essential to retain for the private partner, in the case of municipal PPPs, the options to retrieve the VAT reserved by the VAT law. It may be conclude from the VAT application to the public sector that in the case of line ministries and municipalities, they are not eligible to get a refund of the pretax for the accessibility payment made to

the private partner under the PPP deal, unless the project is established as generating profit. At the same time, the VAT issue is one of the most significant in the VFM analysis just in the case with municipalities, as each municipal budget is limited and is calculated from what is affordable to them. According to Section 1 of the law “On Value Added Tax" of the Republic of Latvia, application of the VAT to the private partner is defined in the section regarding construction services, supply of goods as a transaction where property rights on objects pass over to another person, so that it could operate the object (property). Therefore the author concludes that the property rights are significant for defining supply of goods. For the purposes of the VAT, procurement of PPP buildings (to include construction and land) is regarded as supply of goods. It is crucial to evaluate whether the approval of the accessibility payment can be classified as a supply of goods or provision of service. The law “On Value Added Tax" defines that provision of services, including turning over the real estate to its owner after completion of the construction works, where the private partner, in the PPP case, in a way own the land where the PPP building is constructed, as well as the building itself. According to the Civil Law of Latvia, the PPP building and the land where the PPP building is constructed, can participate in civilian operations as a single, indivisible asset, thus, when municipalities do not own the land with the PPP building on it, they may not take these objects in their possession for VAT purposes. Also, although the PPP building may be classified as a construction (real estate), the private partner in the PPP transaction will not perform transfer of the real estate for the purposes of the VAT, and the private partner is going to be the owner of the PPP building and the adjacent infrastructure. The author concludes that the private partner does not provide the public partner with construction services that would be taxed by the Latvian VAT of 22%, providing accessibility of the asset to the public partner instead.

This investments’ economic efficiency improvement model also reflects the main benefits of the state (public): VAT payments are recovered in full, the profit of the private partner is more accurately defined, and whole life cycle costs of the PIP are likewise defined more accurately, if compared to the conventional approach. The loan to value condition in investment is achieved, when a similar quality is obtained at lower expenses or a higher quality at similar expenses.

CONCLUSIONS AND PROPOSALS

On the course of development of this PhD thesis theoretical and practical aspects of public investment project management have been studied. Their significant role in the contemporary economic situation of Latvia was proved. They are crucial for the polycentric development of the state, which is set as a priority. The PhD thesis demonstrated the major factors that adversely influence the implementation of public investment projects and definite instruments offered for improving the management of public investment projects, which have already been applied in practice and approbated in several municipalities of Latvia.

The following major conclusions can be made from this research:

1. Public investment projects should be considered as a complex economic system, affected by various internal and external factors. A certain instability and nonlinearity is inherent to them. PIP is implemented with a definite purpose and goal, and, in view of that, the whole investing process is developed and managed.

2. Upon analysis of a range of investment project implementation processes in Latvia, it may be conclude that their progress is impeded by the following major factors: exceeding the investment project implementation term, increase of investment project construction costs, inaccurate risk sharing between the municipality and the private partner, errors in the planning of implementation of public and private partnership, errors of municipalities in project development, approval and function execution.

3. In order to maintain a coordinated and sequential national investment planning, each line ministry should have a ready mid-term industry investment programme. The development planning requires improved coordination with the budget planning, which might be facilitated by strengthening the strategic planning system.

4. Given the present economic situation, when starting implementation of an investment project, it would be necessary to be aware of – how much of the project investment costs are going to remain in the national economy of Latvia, and a situation should be avoided when the Latvia assumes credit commitments while the implementation of project provides extra income and supports economies of other states.

5. The majority of investment projects are multifunctional, which requires specialists of various professions to be involved for evaluation of their criteria. The lack of upper class financial experts and consultants extends the duration of PIP consideration.

6. National and municipal commissioners of implementation of public investments should use economic instruments of the maximum possible efficiency, both when developing the funding attraction structure, as well as performing the public procurement. One of the innovative solutions in PIP financing and implementation is the public and private partnership application instrument.

7. Many Latvian enterprises in PPP project implementation lack the specific knowledge and experience, to compare with enterprises and banks in the large EU member states, specializing in PPP implementation. Foreign enterprises may fill the gap in this area, thus barring Latvian entrepreneurs from participation in PPP investment project implementation.

8. Latvia at the moment lacks valid and effective accounting guidelines with respect to long-term agreements between public authorities and non-governmental partners. Thus, a specific regulatory framework that defined accounting of liabilities under PPP project transactions does not exist, unless the SFPS principles are applied for this purpose. When using the SFPS, nevertheless, it would be good if the public sector used accounting compatible to that with the private partner's. The accounting of the private partner is determined by IFRIC 12, which concerns interpretations and is derived from the decisions of the International Financial Reporting Interpretation Committee. A successful progress of PPP projects requires development of a Latvian accounting framework for registration of a long-term deal for public administration.

9. When evaluating a public investment project in a long-term, its "whole life cycle expenses" principle should be considered, minimizing the project's operating and maintenance costs and identifying the option for the private partner to get extra income.

10. The financing of public investment projects by means of issuing securities has not been adequately made use of in Latvia, therefore broader

usage of securities market products could increase the attraction of financial funds in PIP implementation.

11. The electric energy levels produced together in the Baltic states becomes critical with the closing of Ignalina nuclear power station in Lithuania. But, Latvia has also its options to implement a project in the energy sector, by means of the financing instruments offered in the PhD thesis.

The following key proposals are derived from the aforementioned conclusions:

1. For improvement of the management of public investment projects (PIP), this PhD thesis offers a graphic public investment project management and financing improvement model. Its practical implementation requires using the developed PIP management improvement method and the innovative solutions for PIP financing. As a result, the public investment project synergy aspects can be reduced and improved PIP evaluation and management.

2. The PIP pre-feasibility study matrix developed within the framework of the public investment project management improvement method may furnish the required information amount, facilitating the compilation of information and simplifying the project development.

3. The offered model of the investment project major planning stages provides opportunities to specialists of municipalities and other institutions to reduce the characteristic mistakes in the investment project development process itself.

4. Graphic and mathematical relations of major PIP-affecting factors within the framework of PIP management improvement method, by means of the role of the goal function and mutual relations of sub-goal functions. Their development allows reducing certain negative influences on PIP and reduce their costs.

5. The public and private partnership model is proposed to be used for public investment project financing, thus maintaining informative and consulting support to public and private sector officials, as well as enhancing the comprehension of funding accessibility in various investment project development stages.

6. A joint PPP competence centre should be established in the country to implement the best suiting investment project financing and implementation model to the situation of Latvia.

7. Development of a taxing policy is required that would facilitate PPP and entrepreneurial activity in general would be necessary, reviewing the issues related to application of the value added tax, as well as issues regarding the corporate income tax. This proposal has been already suggested for the new PPP draft law by the author.

8. PPP projects in Latvia should be implemented following the operating leasing model instead of the financial leasing model.

9. A minimum amount should be established for a project to be included in PPP. That would allow avoiding fragmentation of funds for a single project for a duration of several years, as well as reduce inclusion of the running repairs or maintenance expenses into these projects. Implementation of projects by using the economies of scale in four municipalities has proven the fact that the rationalization economy in project implementation ranges from 10% to 25%.

10. The offered cost and benefit management model of the whole life cycle of public investment projects reflects certain ways, measures and economic instruments, application of which might enhance the attainment of their goals and management improvement.

11. Using an efficient financing instrument development samples from other countries, it is necessary to form enterprises established by the public sector and financers by means of project funding, thus offering the institutional investors, pension or capital investment funds the PIP financing as an option to draw diversified and relatively large income compared to the amount of the assumed risks.