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# Managing the Implementation of Strategic Projects in the Industrial Holding

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#### **Abstract**

Background/Objectives: The study is devoted to the influence of factors on the value of a strategic project aimed at diversification of activities and the growth of a large company is studied. Methods/Statistical analysis: The analysis of best world practices in project management, including PMBoK, PRINCE2, P2M and others has made possible the identification of the factors affecting the project costs and outcome. The economic effectiveness of two large potash projects of the Eurochem Company was evaluated on the base of discounted cash flow method. The sensitivity of the project was evaluated through the change of the key factors determining their value. Findings: The implementation of investment projects aiming at diversified growth increases the company value, which requires the calculation of common indicators and taking into account additional effects. Many factors that shape the investment project value in the mineral resources sector are divided into cost-based and value factors. The introduction of the corporate project management system allows creating a balanced portfolio of projects and programs focused on the strategic objectives of the company; monitoring the implementation of all projects and programs; controlling and coordinating the use of resources, time limits and budget of projects, creating a knowledge database of projects, increasing the efficiency of interaction between subdivisions and employees in projects and programs that should enhance the projects value and the company's market value. According to the results the possibilities for corporate growth through the investment policy of an integrated company were identified. Applications/Improvements: The authors offer a number of project value control methods. These methods are relevant for investors and implementers of high value projects.

Keywords: ID based Encryption, MANETS, Packet Delivery Proportion, Throughput, Transmission Delay

#### 1. Introduction

The development of strategic projects is a key feature of investment activity of a large integrated company, because their implementation should ensure the achievement of desired strategic goals. The need to implement strategic projects is caused by globalization of the world economy, increasing competition of vertically integrated companies, and also finding opportunities for growth and development of large companies.

According to Schlumberger Business Consulting (SBC) research, in last 10 years the number of upstream-projects with budget size from \$1 billion in the world increased fourfold.¹ Issues of prioritization and determination of success criteria become crucially important in the context of the company's development strategy. There is a need for the transition to a fundamentally new level of

corporate governance projects, involving the inextricable connection and the strategic direction of all projects implemented in the company in all directions.

The solution of these problems in modern management is provided by Corporate Project Management System (CPMS), that is a complex of methodological, administrative and informational tools allowing organizing and maintaining project management processes in the company. Implementation of the system is aimed at improving the quality of planning and, consequently, more effective implementation of projects (programs, portfolios) with the restrictions on resources, finance, etc. To introduce CPMS is expedient in companies, whose activities in project management make a significant part of the total activity, affecting it significantly. This is topical for large companies of mineral resources sector of Russia.

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Critical factors of successful implementation of corporate project management system are: initiative and active support of top management, timely establishment of CPMS institutional structures (the project office and the project committee), staff training and conscious overcoming resistance to CPMS implementation. Conducted by SBC survey of managers of the largest companies in oil and gas sector has shown that the determining factors of success in the implementation of major projects are customizing the management process, the presence of organizational capacity and necessary range of modern technologies1. CPMS helps improve business transparency, provide a clear understanding of the state of projects implementation with a high degree of circumstantiation, get an integrated assessment of the entire organization projects portfolio, minimize the risks of the project implementation, which ultimately leads to the increase in capitalization of the company and increase in its value.

The growing "gap" between the market value and balance sheet assets is associated with the influence of many factors, including an increase in the role of all types of intangible assets in the efficiency of the activity, lack of methodology for identification and evaluation of a number of objects, the impossibility of their adequate reflection in the financial statements. This results in the search for new management methods of value and effectiveness of the company's activity based on the range of influencing factors, including intangible and unobservable ones. Maximizing shareholder value is linked both to strategic management (strategy and organizational structure) and operational management (analytical methods and tools of management built on the key factors of value).

In the scientific literature in the absence of a precise definition of the strategic project<sup>2</sup>, their main characteristics are identified: focus on achieving strategic competitive advantages3, systematic approach to development and implementation, long-term nature. In most cases, these projects are large-scale; they require intensive and significant investment, which makes them rather risky.

Problems of management of strategic projects are related to the scope and complexity of technical solutions, a significant number and interconnectivity with organizational processes, high budget and long implementation term as well as with the uncertainty of the impact of factors and significant risks. Strategic projects often are portfolios or programs of projects<sup>4-6</sup>, which are implemented in an integrated company and

often focused on corporate growth. The significance for the strategic development and corporate growth, and also their high proportion in the investment budget of integrated companies defines the focus of managers' attention to the value of projects and the company. Therefore, management of strategic projects based on identification, analysis and evaluation of factors of values in project implementation determines the relevance of the study, which is carried out as exemplified by EuroChem MCC (Mineral and Chemical Company).

Mineral fertilizer market is concentrated, and actually combines three separate markets: nitrogen, phosphate, potash. The majority of the companies are working in one or two markets, having strong positions. Thus, the leader in terms of production of nitrogen fertilizers in Russia (26%) is EuroChem MCC, producing phosphate fertilizers (6%) and planning to enter the market of potash fertilizers. Being in the top ten world producers of mineral fertilizers, the company aims to grow into a global leader and to become the third largest world producer<sup>7</sup>.

The main purpose of the study is to assess the value factors of strategic projects in the integrated companies and to develop proposals for the management of the projects value, taking into account specifics of the mineral resources sector. To achieve this goal there the following tasks were set:

- Analysis of possibilities for corporate growth through the investment policy of an integrated company;
- Detection and identification of the factors of cost and value of investment projects allowing for the specifics of mineral resources sector;
- Evaluation of the current system of project management in the company;
- Quantification of the influence of factors on the value of strategic projects in the integrated company while managing them.

### Methodology

Based on the analysis of the concept of corporate growth the classification of types of growth was developed, the definition of diversified growth was formulated and the relationship of corporate growth with the company's investment activities was shown. Analysis of methods of assessing the effectiveness of investment projects showed that the factors of cost and value of projects weren't investigated in them. The authors identified and classified projects cost factors (affecting the project cost)

and value factors (affecting the outcome of the project). The paper assessed the project management system of JSC EuroChem MCC and revealed the problems with the management of the value in project implementation. A comparative analysis and reassessment of potash projects of Mineral and EuroChem Chemical Company were accomplished; the results were presented.

### Literature Review

The investment policy defines the strategy of investment activity (investment strategy) and takes into account the directions of investment disbursement, the choice of sources of financing, the conditions of their involvement as well as procedures for the implementation of investment. Therefore, the company's investment policy should flow from its strategic objectives, support financial stability, take into account inflation and risk factors. The validity of the investment policy of the company is determined by several factors. Long-term nature, purposes and directions of investment are the basis of investment planning activity. There are several areas of investment policy: improvement of production efficiency, modernization of equipment and processes, creation of new enterprises, the company's growth.

Despite the sufficient elaboration and diversity of methods of evaluating investment projects, the issues related to the influence of cost and value factors of projects are not fully covered in them.<sup>8,9</sup> There are many approaches and the best international practices in project management, including PMBoK, PRINCE2, P2M, etc. It is the methodology of project management that determines the choice of investment projects in each company. Project management methodology is presented by unified corporate rules for the selection and management of projects (project management regulations, regulations for project portfolio management; guidelines for planning and risk management, resource management, finance, quality, etc.; document templates and so on). The methodology describes project management processes, project and portfolio life cycle, major roles and differentiation of rights. Thus, the methodology includes a specific set of procedures and regulations for project management.

The accomplished analysis of the scientific literature and project management methodology4,10,11 makes it possible to identify the factors of project costs (affecting the project costs) and value factors (affecting the project outcome).

The problems of effective implementation of major investment projects were considered in the following works<sup>12–16</sup>. Over the past 15-20 years in the world a number of large-scale investment projects was implemented, for example, the construction of the Nord Stream gas pipeline between Russia and Germany with total investment of 7.4 billion euros<sup>17</sup>. A large-scale example is the Ust-Yayvinskiy potash production field development project Uralkaliy OJSC with 1.6 billion USD investment. Since 2003 the Potash Corp company has been implementing a program of expansion, designed for 8.4 billion CDN\$ until 2016. For instance, the program includes the Cory project to build a new factory for the red potassium production, completed in 2012 with the investment equaling 1.66 billion CDN\$. The analysis showed that almost all largescale projects are behind the initially approved schedules, and some are at risk of shutdown. Low efficiency of major projects realization is related to the problems of management system.

### 4. Results and Discussion

The company's growth is considered in the scientific literature in various aspects18-24. The three stages of growth are identified in a number of studies<sup>25</sup>:

- 1. Focus on a single business on one national market (specialization).
- Integration for strengthening the position in the core business.
- 3. Diversification of different types.

Most of the companies of mineral and chemical complex of Russia and the world have gone through the first two stages of growth. For example, established in 2001, the EuroChem company combined mining and processing enterprises, logistics companies and distribution network in different regions of the world for the production of nitrogen fertilizers during a few years, providing a stable position in the core business as a vertically integrated company. The Uralkaliy company has been producing potash from 1944; in 2001 it built the Baltic bulk terminal for the integration development through logistics assets; in 2011 it implemented horizontal integration by attaching Silvinit OJSC and became a leader in the potash fertilizers production.

The Mosaic company was established by way of merger of two leading companies in the mineral and chemical industry, Cargill Inc. and IMC Global Inc. in 2004. The IMC Global company specializing in the production of phosphate crop nutrients entered the potash market in 1940. Before the merger Cargill Inc. was a leader in the agricultural sector. Currently the Mosaic company is the world's leading producer of phosphate and potash crop nutrients. Founded in Norway in 1905, after decades the Yara Company started to develop business in different directions from fertilizer production to oil production and processing of metals, and a unit engaged in the production of agricultural and related products became the public limited company.

The presented examples clearly show that the stages of specialization, horizontal and vertical integration in the mineral-chemical complex have passed, other growth opportunities are exhausted. Therefore, the implementation of diversification projects becomes the only unique and timely opportunity for growth.

This confirms an accomplished competitive analysis of the fertilizer market, a system analysis of the large Vertically Integrated Companies (VIC) of the mineral and chemical complex, the strategic analysis of EuroChem MCC. For the company the strategic growth is based on increasing the volume of production in three times, involving new mineral resources in the operation and sustainable use, providing efficient logistics and distribution network development. The foundation of achieving strategic goals is presented by significant investments in projects of raw material sources development (gas, sulfur, phosphorus and potassium), which are competitive at the global level as well. The increase in production of marketable products to 12 million tons per year will enhance the sustainability of the company through diversification and development of potash segment due to the new construction of two most modern mines in the world.

The diversified growth is understood by us as the increase in the company's value at the expense of extensive

growth opportunities (an increase in production, sales through entering new markets) and intensive growth (the product quality improvement, the implementation of new business processes, the manufacture of new products from new or former materials). The effectiveness of diversification is conditioned by the addition of the company's value through new kinds of commodity products, optimization of interrelated types of activities, restructuring business processes, improving the resources allocation and other factors. Related diversification allows the company to take advantage of related industries, to collect and reuse the best solutions and practices to ameliorate conditions of attraction and to improve resource efficiency and also to reduce risk.

For an effective diversification, determining the value growth of the integrated company, the choice of investment projects should be justified by conventional performance indicators, and should also take into account the additional increase in the value of the entire company. Additional value can be associated with the occurrence of the effects of diversification, new opportunities (optional effects) as well as the specific effects of mining projects implementation.

# 4.1 The Cost and Value Factors of Investment Projects

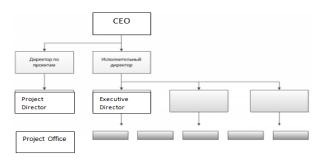
The total cost of the project is the aggregate cost estimate of all types of resources required for its implementation. Thus, price factors are cost based factors. Since the design and the investment are made during a long period of time (5-7 years for potash mines), it is necessary to discount the project cost. Cost based factors listed in Table 1 affect the cost of the project in the Mineral Resources Sector (MRS). The analysis of factors is made on the basis<sup>26</sup> and information on EuroChem MCC potash projects<sup>27</sup>.

**Table 1.** Cost based project factors in the mineral resources sector

Types of	Specificity projects in MRC	Factors cost of the project		
project costs		Deterministic	Nondeterministic	
Investments in	Costs for shaft sinking, construction of	Types and structure,	Competing suppliers. Terms of the acqui-	
fixed assets	underground and surface facilities ac-	quantity, cost, level of	sition of permanent assets from suppliers.	
	counted for 80% of the project budget for	fixed assets	Relations with sub-contractors. The level	
	the construction of the mining enterprise.		of organization of business processes.	
	A high proportion of the passive part of		-	
	fixed assets.			
Investments	The cost ratio is typically small	Types, value of intangible	State regulation. The level of scientific and	
in intangible		assets	technical progress	
assets				

	When extracting minerals, the basic materials are absent, auxiliary materials are necessary for the establishment of reserves for smooth operation	Nomenclature, the amount of material resources, the application rate, the price of materials, quality	The level of competition among suppliers. Relationships with suppliers. The level of organization of business processes.
Working hour	The high working hours input, a significant proportion of contract work	The number and category of workers, productivity, wages	The system of motivation of the project teams. Personnel qualification. The level of organization of business processes. The system of working hours.
Project management costs	Project management is carried out in accordance with the standards (standard of project management in the company is under construction)	The time-consuming management, the number and status of project managers, labor cost, cycle time management	Clarity of the Customer's purpose. Errors planning. Personnel qualification. The quality of methodological support for projects (charters, templates, procedures)
Management costs	The complex hierarchical structure of the integrated companies, the significant cost of corporate governance, corporate information system	Types of administrative expenses, integrated units of accounting, the degree (time) of resources usage	The distribution system of administrative costs for the project admitted in the organization. The level of detail of records
Compulsory payments and taxation	A high specific gravity of the tax on mineral extraction, transport tax, property tax, water, land, environmental taxes, and the cost of the license for subsoil use	Tax policy, the object of taxation, tax base, tax rate	The possibility of obtaining tax benefits and preferences. Company policy in the field of taxation.
Financing costs	Various sources of funding. For example, project financing for the Usolskiy Potash Complex Project was involved for 8 years in the amount of \$ 750 million, representing 26% of the project budget	The capital structure, the cost of financing sources	The capital structure, the cost of financing sources. Financial state of company. Investor Relations. The level of financial risk the project investment. Terms of financing. Dividend policy.
Quality assurance costs	Compliance with the requirements of all- Union State Standard, TOR for product quality, stringent requirements for the technical design and safety	Types and costs of measures	Innovative technologies of produce a product. Qualification of staff. Errors of planning and implementation. The level of customer requirements
The costs of measures to prevent risks	The cost of preventing the flood trunks aquifers for potash deposits, the error in the design of the mine facilities, the impact of mining-and-geological violations and mine technical factors	Types and costs of measures	Terms and conditions of the project. Lack of experience. Product categories. Errors of planning and implementation.
Contingency (Risk Management)	Delaying time limits of the project due to improperly selected suppliers and contractors. For example, the Shaft Sink- ers company, losses in opportunities for service	Percentage of the budget	Terms and conditions of the project. Characteristics of the project (scope, duration and complexity). Errors of plan- ning and implementation
The fund of material incentives for the project team	Material incentives contractors that did the work efficiently and in a short time (Usolskiy Potash Complex Project)	Percentage of the budget, increase and reduction factors	Motivational Policy. Technique of formation of motivational fund of the project
Arrangements costs	The costs of social services for the potash project Volga Kali make up 5.3% of the cost	Forms and costs of measures	The organizational culture of the enterprise. Motivational policy. The level of financing of activities.
Losses from inflation	The negative impact in the postponement of the implementation of the project	Rate of inflation	Political and economic conditions for the project implementation.

The Project Management Office (PMO) or the Project Committee takes decisions on the project costs, depending on the scope and direction of the costs. The Project Management Office (structural subdivision) and Project Committee (collegiate body) are intracorporate entities responsible for project management processes within the organization and accepting key decisions in the implementation of projects. As a rule, the Project Management Office reports directly to senior management (Figure 1). The objectives of the Project Management Office are: implementation and development of CPMS; analytical and methodological assistance to project managers; organization of training for staff and managers; filing archives of the project, the company's experience accumulation; administration and support for informational project management system; preparation of reports about the projects to the senior management; resource management in the projects.



**Figure 1.** Location of the project office in the organizational structure.

The Project Management Office is answerable to the senior management for the implementation of projects and makes key decisions, including financial, within its competence and project budget in the project implementation. In case of problems that are beyond the competence of the project managers and the project office, the issue is considered by collegial body – the Project Committee, which consists of members of senior management. The main functions of the Project Committee are: initiation, project closure, consideration and approval of requests for changes in the projects; resolution of resource conflicts between projects, determining priorities; control over the execution of projects; communication of projects with the strategy of the company.

The value of the project is determined on the basis of the DCF value model:

$$DCF = \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t},$$

where,  $CF_t$  is the size of the cash flow for the t period; r – the discount rate;

n – the number of periods for which cash flows are formed.

Therefore, in addition to cost based factors (price factors) of the project, the following factors influence the value (the results): the price of commercial products; the production and sales volume; the feasibility of the project realization in an integrated company; the impact of legislative regulation (taxation).

There are value factors that affect the costs and results:

- the scope of the project and debugging license area term;
- delivery speed to nameplate capacity;
- human resources (personnel qualification, level of organization of production and labor);
- logistics factor (presence of own transport terminals, fleet, optimization of transport costs);
- organizational structure, competence level of the heads of the corporate center and structural divisions of the company;
- macro-parameters (inflation, Weighted Average Costs of Capital (WACC), growth rate of tariffs for electricity and gas, railway tariffs, exchange rates, etc.);
- the level of Science and Technical Progress (STP) and innovations;
- the impact of legislative regulation (government support, government regulation).

The influence of value factors is analyzed as exemplified by the EuroChem Company (February 2014 value against 2013 value). The analysis showed that the company's value is greatly influenced by a changing forecast in prices for commodity products (reduction of the value by more than 50%), exchange rates (increase in value by 20%) and acceleration of getting effect from investment projects, i.e. terms of reaching the project capacity (increase in value by 13%).

### 4.2 Problems of Managing Strategic Projects at the Execution Phase

Effective execution of large investment projects is a hard complex problem. Most of the large-scale projects are implemented with a significant excess of the budget and slippage, thus the created value may be significantly lower than expected, or even negative. Examples of failed project execution results can include the world's leading companies with years of experience in the execution of dozens of large projects. According to the global statistics, about a third of large mining projects are implemented with a significant (more than 50%) deviation from the budget or deadlines.1 Many Russian companies implement almost all large-scale projects with significant cost overruns and delay from the target date, which is due to the lack of effective project management skills, complexity of the environment, combining projects into programs and portfolios. At the same time the failure to meet the operation timeline and the terms of the beginning of projects implementation in the mineral resources sector according to the subsoil legislation can lead to a fine of 300-500 thousand rub<sup>28</sup>.

The conducted analysis of project management system in the EuroChem MCC revealed the following problems in the execution of projects:

- 1. Extension of terms (53% of projects in 2014);
- 2. Increase in the budget (55 projects out of 381 in 2014);
- 3. Deficiencies in procurement management system (purchase of oversized equipment led to an urgent search for a specialized transport contractor company and the backlog for more than a year);
- 4. Unqualified choice of suppliers and contractors (inefficient plugging trunk technology of the Shaft Sinkers contractor brought direct losses of more than \$161 million USD, resulting in the project completion delay for 4 years);
- Ineffective risk management (the reluctance of the Thyssen-Schachtbau contractor to work delayed the VolgaKaliy project for 6 months);
- Other (not properly conducted records of increased values of seismicity when planning the Melamine Plant Construction Project increased the project budget).

## 4.3 The Analysis of the Degree of Influence of Factors on the Projects Value

The influence of value factors was studied as exemplified by such large-scale potash projects as EuroChem MCC projects VolgaKaliy project and Usolskiy Potash Complex project (Usolye). The key performance indicators of projects are presented in Table 2.

**Table 2.** Performance indicators of EuroChem MCC potash project

Indicators	VolgaKaliy	Usolskiy Potash
	project	Complex project
The object location	Gremyachinskoye	Verkhnekamskoye
	Deposit,	Deposit, Usolye
	Volgograd region	(Perm region)
Project budget	4.5	2.85
(CAPEX), USD bln		
NPV, USD bln	2.54	1.47
IRR, %	25	19
WACC, %	13.2	12.7
Project start, year	2006	2008
Term of estimated	2022	2026
capacity, year		
Additional features	-	the opportunity to
		develop additional
		sites

It is worth noting that the VolgaKaliy project has a significantly better performance, but the Usolye project has an optional feature associated with the development of an additional license area at that. The implementation of such a possibility could give an additional effect and increase the value of both the strategic project and the company.

The influence of main factors on the value of projects necessitates their periodic reassessment. Periodicity may be different, depending on the specifics of the project, its life cycle, financing options, dynamics of the environment and the purpose of strategic management. Thus, reassessment could be tied to the project closure phase, conditions it can be annual for stable, semi-annual – for a rapidly changing project. Responsibility for the reassessment of the project depends on the risk level:

- The technical risks are associated with the problems of the implementation of technical solutions within the project. The person in charge is Project Manager.
- Project risks are associated with errors in the budget, schedules, project team, changing requirements of stakeholders. Project manager or project office takes responsibility for these risks.
- Business risks are associated with the financial support of the project. Unexpected budget cuts caused by external factors, can lead not only to a reduction of the project and the tasks that it solves, but also to its complete failure in case of non-achievement of the main goal. The responsible person is the Head of the Project Committee.

To minimize risks, there is a system of risk management, which may include mechanisms for decision-making and control of the passage of the project milestones, and which creates a pool of internal experts, recruitment of external consultants, creating a system of staff rotation of "traditional" organizational structures in project or matrix structures, etc.

It should be separately noted that in order to implement large projects the company uses its considerable resources that could directly or indirectly infringe the shareholders' rights. In this regard, major projects require the shareholders' approval. There is no generally accepted criteria by which a project is defined as "large", that is why we can rely on the interpretation of a large transaction in the Federal Law "On Joint-Stock Companies"29. Large transaction is a transaction (including a loan, credit, pledge and guarantee) or several interrelated transactions involving the acquisition, disposal or possibility of alienation of property directly or indirectly by the company, the value of which is 25% or more of the company's book sheet assets, determined on the basis of the company's accounting data as at the last reporting date. The company's charter may also establish other cases in which the approval procedure for large transactions is applied to consummated transactions.

When reassessing projects the investment behavior, product prices as well as macro parameters (inflation and exchange rates) should primarily be monitored. Reassessment is actual while using project financing, as the valuation of assets and cash flows, which act as collateral, change.

The basis for reassessment are results as of February 2014, new results were obtained in June 2014. The project value is calculated by the DCF method, WACC rate is adopted as the discount rate, the following formula is used for the calculation of the value in the terminal period<sup>30</sup>:

$$CV = \frac{FCF}{WACC},$$

where, CV is the cost value in the post-forecast period, FCF – the free cash flow in the last year of the forecast period.

The main value factors are project volumes, prices, investment, exchange rate and "inflation" macroparameter.

The volume of production increases due to an earlier achieving the estimated capacity by projects. This increases the project value due to the increase in net profit to \$29.03 million and \$104 million respectively. Thus, the speed of achieving the estimated capacity affects the project value positively.

For VolgaKaliy and Usolye projects the price forecast remained unchanged from February to June 2014, which did not result in changes in the projects value under the influence of the price factor.

The increase in investments (CAPEX) for VolgaKaliy and Usolye projects led to project higher costs and its lower value. The increase in investments for VolgaKali project totaled 2.9 billion Rub, for Usolye project – 13.64 billion Rub, mainly due to the calculation of adjustments for inflation. The calculations showed that the cost of VolgaKali project decreased by \$24.17 million, Usolye project – by \$237 million.

The growth of the official exchange rate of the U.S. dollar against the Russian ruble led to an increase in the value of VolgaKaliy project to \$99.13 million, Usolye project – \$133 million.

Macroparameters include inflation (euro, dollar, ruble), growth of tariffs for gas, electricity and rail transportation. The main influence on the value of the projects had an increase in the growth rate of dollar inflation.

Reassessment of the project value under the influence of all the factors led to its increase in \$104. 57 million: from \$2559.5 million to \$2664.07 million.

The results of the simulation of VolgaKaliy project value are presented further provided that the period of the deposit development moves to 4 years. The deviation from the terms leads to a rise in the project cost and a possible lack of financial resources. This is especially important for project financing through loans.

A rise in the project cost is due to several reasons:

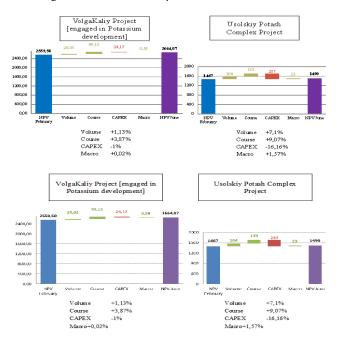
- extension of construction time causes a decrease in the efficiency of utilization of resources and labor;
- global trend towards higher prices of materials and equipment for the construction of mining enterprises;
- additional maintenance costs for loans;
- violation of the terms of the license agreements may result in penalties due to delayed commissioning of facilities.

For construction projects in the nuclear industry the average increase in costs due to wage growth and appreciation of materials is 6-8% per year<sup>31</sup> according to WorleyParsons company evaluation, which is equivalent to 26-36% for 4 years.

The payment of additional interest payments on loans and timely repayment of loans for the integrated companies may be in the case if the company carries out the flow of capital between different projects. However, if it uses project financing, the extension of deadlines can lead to changes in its environment, increasing the risk and even the closure of the project.

Thus, the total investment for VolgaKali project increased from \$4392.9 million to \$5588.59 million. Later achieving the estimated capacity has not led to a change in the revenue of the project due to a proportional increase in prices and prime production cost. The increase in dollar exchange rate positively, but negligibly influenced the value of the project. In this regard, the increase in terms of VolgaKaliy project implementation by 4 years will lower its value by 28% (\$743.63 million) up to \$1920.44 million.

For the Usolye project the calculations of changing values were made and graphs showing the influence of factors on the value of EuroChem potash projects are constructed (Figure 2). The Usolye project is more sensitive to the effects of the value factors because the value change is up to 16.16%, i.e., relative changes are significant enough. The greatest influence on this project was made by a change in investment, the dollar exchange rate and production volume. The VolgaKali project is not very sensitive to changes in value factors; the change in exchange rates affects mostly and reaches 4%.



**Figure 2.** The effect of value factors of EuroChem potash projects.

To control the project value, the following methods may be proposed:

 controlling the production volume allowing for a rational choice of estimated capacity of the enterprise,

- market conditions, competitive force;
- management of investments by selecting the most reliable suppliers to establish long-term partnerships, optimization of interaction between the subdivision of the company, monitoring deadlines;
- improving the prediction of the price of commercial products of the project through including "flexible price" terms, price formula, reservations about the price increase in long-term contracts.
- monitoring exchange rates and macro parameters.
  The following conclusions were made as the result of conducted research:
- The implementation of investment projects aiming at diversified growth increases the company value, which requires the calculation of common indicators and taking into account additional effects.
- 2. Many factors that shape the investment project value in the mineral resources sector are divided into cost-based (which affect the cost) and value factors (which affect the results).
- The main factors of changing the value of large projects are the price and volume of production, investment and time limits of projects and exchange rate as well as macro parameters.
- 4. Identifying and analyzing the project value factors allows managing the value of projects and the company due to changing the production volume, control of investments and time limits of projects.
- 5. The introduction of the corporate project management system allows creating a balanced portfolio of projects and programs focused on the strategic objectives of the company; monitoring the implementation of all projects and programs; controlling and coordinating the use of resources, time limits and budget of projects, creating a knowledge database of projects, increasing the efficiency of interaction between subdivisions and employees in projects and programs that should enhance the projects value and the company's market value.

### 5. Acknowledgement

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