

Russian Business Strategy and Tactics on the World Market of NPP Construction (As Economic Systems)

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Abstract. Research encompasses up to date references and expertise on the world market of new NPP construction. An insufficient level of comprehensive scientific analysis of organizational aspects was noted considering the project life cycle of nuclear power plants (NPP) as economic systems and customer needs at the micro, meso and macro levels. It makes the analysis relevant for the nuclear industry and the development of sales methodology for high-tech infrastructure projects, as well as implementation of the pre-investment stage of such a project. The theoretical basis of the study provides a definition of sustainable development, which is the key to the analysis. The main part of the research contains a description of the methodology and research procedure: a systematic approach and a marketing analysis algorithm with elements of M. Porter's "competitive diamond" methodology are used. In the description of the study based on the forecast of development up to 2040, the capacity of the target market for Russia is estimated. The market segmentation has been carried out. Most of the NPP projects are implemented in developing countries and "newcomers," which seek to gain several benefits from the launch of the nuclear program. An analysis of competition led to the conclusion that there is a formed "buyer's market," competition has increased due to the new exporting countries of nuclear power plants. It is revealed that competitiveness is estimated at three levels: micro (NPP project), meso (financial and organizational model of the project) and macro (project effects on the economy, ecology, society). Local "optima" are not achievable; the success of the transaction on nuclear power plants (as an economic system) is determined by the integral assessment. The evolution of Russia's positioning in the world market is analyzed, elements of Russian strategy and tactics are systematized: the strategy of integrated sales and phased penetration, which is designed to ensure the competitiveness of micro, meso and macro levels. Integrated sales, including the supply of nuclear power plants, fuel, service, training, etc., are a "derivative" of the needs of the recipient country of the nuclear power plant. The central place in developing a strategy is to define goals and values for stakeholders of a nuclear power plant project at the micro, meso and macro levels, which constitutes a multi-focus sales strategy. The requirements of the electricity sales market, financial and technological partners, determine the specific transaction features. The combination of a competitive strategy and a strategy for long-term cooperation makes up the hybrid nature of the sales strategy. Existing and prospective tactics include account management, customer analysis using the method of strategic networks, modeling of electricity sales markets, and a requirements management system. The presented business model of the sales strategy allows us to form a list of factors, methods, mechanisms, resources and corporate

advantages that have a major impact on the success of the implementation of international projects for the construction of nuclear power plants by Russian general contractors. An analysis of each element of integrated sales, both separately and in conjunction with other aspects of the strategy, as well as a factor analysis of the competitiveness of these elements throughout the life cycle of the NPP project, is indicated as a promising direction for further research.

1. Introduction

In the new millennium, the market for NPP construction has emerged as global. It develops in spite of economic and technological shocks. Russian and foreign researchers of the energy and nuclear industries unanimously share the point of view on the preservation of the “Role of atomic energy in solving the problems of the 21st century” and in the “World energy balance” [6, 9, 10].

The construction of NPP is facing new challenges in the market. The liberalization of electricity markets makes it difficult to guarantee a return on investment. The analysis of the relationship of “deregulated electricity sales markets and costs (at NPP)” is relevant, which has been studied in detail [4].

The supply of nuclear power plants on the world market exceeds the demand, the formed “customer market” constantly increases the requirements for comprehensiveness of cooperation, and competition on the supply side has grown due to the emergence of new NPP exporters (France, USA, Japan and Russia have added South Korea and China).

For Russia the export of NPP is promising for development, taking into account the global situation, national competitiveness and achieved market positions. The task of “increasing the export potential” of the nuclear power industry is fixed in the documents of the Ministry of Economic Development and Trade and in the Energy Strategy of Russia, both current until 2030, and in the project under development until 2035

The need to expand positions in the global market makes the systematization and development of the Russian strategy and tactics based on the analysis of opportunities relevant. The Russian State Atomic Energy Corporation ROSATOM is developing an integrated sales strategy, the scientific understanding and further formation of which is an urgent task.

A pressing issue is the analysis and identification of the main factors, competencies and corporate advantages that enable general contracting and engineering companies (and their associations) to successfully sell their services in the framework of large-scale international projects for the construction of NPP. It is the design nature of the international investment and construction business that is decisive in making decisions about entering the foreign market and in choosing organizational and technological models of participation in a project.

2. Knowledge of the issue

Elements of Russia's strategy on the world NPP market are analyzed by Russian scientists, primarily from the point of view of technical and organizational competitiveness in terms of "the main economic indicator - the cost of electricity production" [2].

In this article, the assessment of the competitiveness of nuclear power supply suppliers is carried out at three levels: micro (NPP project), meso (financial and organizational model of the project) and macro (project effects on the economy, ecology, society). The concept of such an approach to the analysis of phenomena in economics has been studied [1], however it has not yet been applied systematically for competitive strategies in the nuclear power industry. It is possible to highlight the research of the IAEA and the Institute for Economic Forecasting of the Russian Academy of Sciences on the influence of the nuclear industry at the macro level, highlighting the “macroeconomic” and “technological” multipliers, as well as the “multiplier employment” in the nuclear industry.

An important role is played by achievements in the field of interdisciplinary research on marketing and business models of sales of infrastructure projects in the B2B market (business-to-business), in which it is noted that sales are becoming focused on creating “long-term relationships with customers”

and focus on “improving efficiency for the client”, there is “an integration of the sales function with marketing, financing and production activities” [7]. These approaches are promising to apply in the formation of strategies and tactics on the world market for nuclear power plants.

The insufficient level of comprehensive scientific research of sales strategies and tactics on the world market for nuclear power plants at three levels (micro, meso and macro) makes this work demanded not only from the point of view of use in the nuclear industry, but also for the development of sales methodology in megaproject markets and high-tech infrastructure projects with long investment and technology cycles.

3. Theoretical basis

The study was conducted using the information resources of the International Energy Agency (IEA), the International Atomic Energy Agency (IAEA), the World Atomic Association, the OECD Atomic Energy Agency, and also taking into account the UN concept of sustainable development, i.e. development without depleting economic, environmental and social resources and without shifting the disproportionately heavy burden to future generations.

When systematizing knowledge of strategy and tactics in the world NPP market, methodological developments in the field of strategic management, B2B marketing, and competitiveness analysis were used.

4. Study: the main part

Research Methodology. The study used a systematic approach and general scientific methods of cognition: analytical, causal, and others.

The study procedure. The study was carried out using the marketing analysis algorithm taking into account the peculiarities of the world market for NPP construction, as well as with elements of M. Porter’s “diamond competitiveness” methodology:

- 1) Evaluation of supply and demand:
 - a) capacity assessment and market growth forecast;
 - b) market segmentation by country, allocation of target segments for Russia;
 - c) competitive analysis.
- 2) Research of the factors influencing strategy and tactics:
 - a) identifying the role of international organizations;
 - b) systematization of methodological approaches to the evaluation of competing proposals at three levels (micro, meso and macro).
- 3) Analysis of the activities of Russia in the global market:
 - a) Analysis of the evolution of Russia's position;
 - b) Systematization of elements of strategy and tactics.

Description of the study

Forecast of development of the world market for NPP construction

Atomic energy is a technologically and commercially stable source of electricity on an industrial scale that can satisfy a substantial part of the growth in global energy demand. Environmental benefits - the absence of greenhouse gas emissions - make it an important component of the “fuel basket” (i.e., a set of energy sources), ensuring sustainable energy development. These are fundamental prerequisites for predicting a positive trend in the development of the world market for NPP construction.

As of 2016, there are 449 NPP units operating in 31 countries with a total installed capacity of 391 GW, which provides 11.5% of the world's electricity needs. According to the IEA forecast, by 2040 the share of nuclear power in global energy generation will be about 12%, which will require an increase in nuclear power capacity in the world to 624 GW (by 60% as a result of commissioning 380 GW and decommissioning of 148 GW of NPP). Given the inaccessibility of a number of markets (China, France, South Korea, USA) the volume of the available market for countries - exporters of nuclear power plants is about 70 GW (about 50 nuclear power units), which may require more than \$

400 billion of investment (the author's calculations). Today 60 NPP units are being built in 15 countries.

Market segmentation

The global market for nuclear power plants is developing due to the evolutionary expansion of the use of nuclear power generation in countries that have experience in operating nuclear power plants and attracting new countries to the atomic energy club. About 50 countries are considering the possibility of commissioning the first nuclear power plant. About 160 new NPP units are at different stages of planning in the world.

To highlight the target segments for Russia and identify common needs of potential customers, we consider several groups of countries:

1) Countries with nuclear generation (or having experience in operating nuclear power plants in the past):

1.1) with national suppliers of NPP (Russia, USA, France, Canada and the "youngest" members of the club of nuclear power suppliers - China and South Korea);

1.2) countries without national suppliers of NPP, plan to import nuclear power plants.

2) Newcomer countries:

2.1) "first wave" novice countries constructing nuclear power plants (Belarus, United Arab Emirates, Turkey);

2.2) novice countries of the "second wave" who signed agreements and / or contracts for the construction of NPP, developing legislative infrastructure and conducting feasibility studies for the first NPP project (Bangladesh, Egypt, Jordan);

2.3) new countries of the "third wave", considering for themselves the possibility of building a NPP in the medium and long term.

The first group of countries (p. 1.1) can be described as closed markets for entry of non-national nuclear power plant suppliers (captive). The exception is China - this country is focused on attracting new NPP technologies with the condition of technology transfer (transfer). The remaining groups of countries can be considered as a potential market for Russian NPPs.

The novice countries of the first and second waves have already decided on key partner countries for the development of national nuclear energy programs.

The global NPP construction market is distinguished by the long-term nature of the marketing efforts of sellers to promote NPP projects: a 10–20-year interaction of a potential seller and buyer may be required to prepare an NPP transaction.

Despite the heterogeneity, the majority of potential customers of nuclear power plants are developing countries, which are faced with the urgent tasks of sustainable economic, energy, environmental and scientific and technological development. For these countries, the launch of the first NPP projects is attractive because of the opportunity to get "in one package" several advantages from the development of nuclear energy.

Competition on the world market for NPP construction

Competitive pressure on the world market for nuclear power plant construction is strong for several reasons. Firstly, the supply is increasing: traditional sellers - corporations from Russia, France, the USA and Japan - are striving to achieve the effect of increasing the scale of production. There are new "players" from South Korea and China, ready to make significant concessions to the customer to get an "entrance ticket" to the market.

Secondly, in spite of the fact that demand growth is coming from the novice countries, the demands of the latter are high. This is facilitated by the traditional information openness of the nuclear industry, thanks to which potential NPP customers have a good level of awareness of the achievements of the nuclear industry. Over the past 10 years, the process of selecting an NPP supplier has become more complicated and longer. Tightening customer requirements increases the degree of competition.

All countries - potential recipients of nuclear power plants - have established economic, technological, cultural and historical links to one or another exporting country of nuclear power plants, but nuclear power plant projects are so large and the competition is so active that the decision on

cooperation on a new nuclear power plant does not occur “automatically” within the framework of the intercountry cooperation routine. The competition takes place between nuclear power plant technologies, NPP suppliers and the governments of the supplier countries.

In terms of strategic resource and corporate advantages of companies in countries participating in large-scale international projects, the following criteria for successful competitiveness can be identified:

- experience in similar international projects, expertise in a particular area of work, know-how;
- technical expertise (integration of modern high-tech construction; finding solutions to rare local problems; strategic and innovative use of information technology and communications);
- management expertise (logistics and logistics; scheduling and control of work performance; management of material, technical and human resources in conditions of remote geographical location);
- financial resources and expertise (large project size implies the need to allocate a significant amount of financial resources to the company);
- risk management (risk forecasting and risk management experience, affordable liability insurance);
- regulation of intercultural issues (experience of interacting with people and companies from different countries).

The role of international organizations

An important role in shaping the world market for nuclear power plant construction as a global one is played by international organizations: IAEA, World Association of Nuclear Operators implementation of NPP projects, ranging from the tender selection of the supplier and ending with the project management models.

Russia represented by organizations of the nuclear industry takes part in all the initiatives presented.

International organizations are global centers for developing “rules” for the functioning of the world market. These centers record the most complex system of technical and economic conditions to which new NPP projects must comply. For novice countries, these conditions become the “gold standard”, which is adopted a priori in the development of national nuclear energy.

The peculiarity of the international “institutions” is their priority attention to technical and organizational issues, as well as to the development of competencies and knowledge dissemination. The issues of commercial efficiency, attraction of financing, legal support of activities in the world market are affected sporadically and superficially. Unification of approaches in these areas is absent.

In connection with the expansion of interest in the nuclear power industry of the novice countries, IAEA experts have developed a fundamental methodological system for preparing the novice country to work with nuclear power plant technologies. The complexity of the construction of the first nuclear power plant requires a developed nuclear infrastructure (NI) and a national nuclear energy program (NEP). Each country has its own “national formula” of nuclear radiation because of the specifics of the socio-economic, institutional, industrial, scientific and technological development of the recipient country of the nuclear power plant. When implementing an NPP project, a set of NPP customer requirements for a supplier may include elements from each NI area, which must be taken into account in the NPP sale strategy.

Evaluation of competitiveness and negotiation on the world market at three levels: micro, meso and macro

The customer compares competing offers from different suppliers of nuclear power plants on a wide range of criteria. We distinguish three levels at which the evaluation of the competitiveness of the offer takes place: micro, meso and macro.

The focus at the micro level is on nuclear power plant technologies, which must meet modern requirements for reference, safety and economy (commercial attractiveness). This is the first cut-off point - if there is not enough NPP operating experience on this project, if the NPP does not meet all modern safety requirements and standards or the electricity it produces is too expensive

(uncompetitive compared to other energy sources), then it is unlikely that the customer will want to buy such NPP.

At the meso level, the competitiveness of the organizational and financial model of the NPP project is evaluated, i.e. competitiveness of all key NPP project participants and the effectiveness of their interaction model (distribution of responsibility and risks). The key role at the meso level is played by technological and financial partnerships for NPP projects, which ultimately have an impact on the competitiveness of the cost of electricity from NPPs.

At the macro level, the long-term multidimensional impact of the NPP project on the economy, ecology, society (social environment) of the recipient country of the NPP is assessed. NPP projects are large-scale, covering hundreds of national and international organizations and taking up to one hundred years. The cost of a multi-unit NPP can be up to \$ 30 billion, which is a large value when compared with the GDP of many developing countries. NPP projects are major infrastructure projects, and on a regional scale, they are also backbone projects from the point of view of creating energy-industrial clusters and spatial development (with economical use of the alienated territory). Macroeconomic effects of NPP projects for the buyer's country include the following: GDP growth, budgetary effects, balance of payments effects, employment growth, innovation development, etc.

When implementing international NPP construction projects, the construction site is significantly geographically distant from the headquarters of the general contractor and is located in another country with a different cultural, social, economic and physical environment. These factors have a significant impact on the principles and processes of management of the investment and construction project and implies a special set of unique corporate experience, knowledge, technology and know-how derived from the historical development of the company. The presence of a unique system and traditions of project management, which allows a comprehensive assessment of opportunities, risk management and organize and plan resources, is also an important competitive advantage of Russian general contractors and engineering companies in the international arena.

At three levels, participants in the negotiations on the nuclear power plant and stakeholders (people or organizations that influence decision-making) are distinguished. The negotiation process for the sale of nuclear power plants can be organized at all three levels, while problematic issues (dead ends in which the parties cannot reach an agreement) can be taken to higher levels (escalated). At each level, "exchanges" can be conducted on a range of issues, and the balance of interests can only be achieved at higher levels, and local "optima" may not be achievable. An integrated assessment of the benefits for the parties to the transaction on nuclear power plants is made taking into account the distribution of the balance of interests of key stakeholders at the micro, meso and macro levels.

When preparing for negotiations on nuclear power plants, it is important to systematize all the needs of the buyer's side and distribute them into three levels of stakeholders, for example:

- at the micro level of the energy company-owner and the operating organization of the NPP, the technical and commercial parameters of the NPP are important;
- at the meso level of the national industry, it is important to receive orders in the project (not being a direct party to the negotiations, representatives of the local industry may have lobbying opportunities);
- at the macro level, the president of the buyer's country of the NPP may be important to achieve some key events on the NPP project (sign an intergovernmental agreement or put the NPP into operation) before the end of his presidential term, and it may be important for the government of the country to achieve advantages in other areas of interstate cooperation (reducing customs barriers, expanding exports of national products, etc.).

The objectives of the parties to the negotiations at different levels may conflict with each other (for example, involving the local industry can lead to an increase in the cost of the NPP project for the customer). The achievement of a complex system of compromises and agreements at all levels is the result of the efforts and talent of the participants in the negotiations on the NPP project and will ensure its successful implementation.

The evolution of the position of Russia in the world market for NPP

The USSR has always conducted active foreign economic activity in the field of nuclear energy. Russia has inherited from the USSR a good start in terms of references and positions on the world market for nuclear power plants: 10 countries have experience in operating nuclear power plants using Soviet technology.

Export projects of nuclear power plants of the modern era (in Iran, China, India) are the result of Russia's strategy on the world nuclear power plant market, which was implemented within the framework of a broad agenda of interstate relations.

Having survived the period of organizational transformation until 2007, the nuclear industry of Russia entered a new era: the Rosatom State Corporation is being created, and long-term development programs are being approved. The development of nuclear power plant exports has become a key task for increasing the commercial performance of Russian enterprises.

Rosatom represents Russia in the world market, which unites 400 enterprises. By operating the fourth largest nuclear power plant in the world, Rosatom is able to meet all the needs of a nuclear power plant for a life cycle. Rosatom's foreign orders portfolio includes 34 NPP units in 13 countries. The competitiveness of the atomic complex of Russia is conditioned by the developed scientific, technical and industrial base, references and experience in the implementation of NPP projects.

Russian strategy in the world market for nuclear power plant construction

Studying the needs of the recipient country of NPP, Rosatom is interested in offering the optimal solution for each level of competitiveness assessment (micro, meso and macro). "The ways and logic of creating value for the consumer, providing a stable profit for the company, form the company's business model" [10]. The development stages and elements of the business model at the micro level for Rosatom are presented in Table 1.

Table 1 Development of Business Model of Sales of ROSATOM on the World Market of NPP Construction

N	Business model development stage	Elements of the Rosatom business model (at the micro level)
1.	Selection of a key technology, based NPP - "product-core" on which the company provides products to the customer, having value for it	
2.	Identification of the target market segment	Developing and developed countries experiencing an acute need for the development of the electric power industry, the economy, industry, science, reducing the anthropogenic load on the environment, increasing energy independence; it is imperative that nuclear energy be included in the national development program as an indicator of the long-term commitment of the government of the contracting country
3.	Determination of the benefits that the customer wants to receive as a result of the purchase of the company's products	Electric power generation on an industrial scale without greenhouse gases, regardless of oil and gas imports and weather; the cost of electricity is stable
4.	Confirmation of the availability of business income	Assessment of the possibility of returning investments to the NPP project through the sale of electricity on the market, which requires meeting the conditions: the cost of nuclear generation is competitive in the local electricity sales market, the owner of the NPP is guaranteed redemption of the entire amount of electricity at a cost not lower than the cost of electricity production
5.	Developing a strategy for communicating value to the client and making a profit for the company	Integrated sales strategy

The characteristics of the target segments of the global market have led to the need to develop an integrated sales strategy for nuclear power plants, which are a central element of the Rosatom sales business model at the micro level (Table 1). The package of integrated sales of NPPs individually adapts to a specific customer and may include the following elements to accompany the NPP life cycle:

- supply of NPP “turnkey”;
- localization and technology transfer (local industry involvement);
- supply of products and services in the field of the nuclear fuel cycle (NFC);
- maintenance services (maintenance and repair), maintenance services; removal from service;
- national NI development services;
- educational services and training;
- creation of a research infrastructure based on research nuclear facilities;
- financing support.

Integrated sales are “derived” from the needs of the recipient country of the nuclear power plant. The advantage of the Russian approach is the “single window”: the customer receives a list of services related to the NPP project throughout the life cycle.

The proposed strategy is fundamental in the formation of the business model for Russian companies entering the general contracting and engineering companies to the overseas nuclear plant construction market.

At the meso and macro levels, it is advisable to use a similar algorithm (Table 1), but for other “clients” - stakeholders and stakeholders, identifying their goals and the value for them from the project. Thus, a multifocal sales strategy is being formed, which is designed to create global competitive advantages by taking into account the market conditions and the environment of the NPP project implementation and the use of mechanisms for communicating value to customers at the micro, meso and macro levels.

The characteristic of the strategy is its hybrid character, i.e. sales strategy combines a “competitive strategy and a strategy of cooperation” [5]. The NPP project is the result of the technological and organizational configuration of all participants. The sources of project financing (own financing, attraction of financing) are of key importance. The partnership strategy of an NPP supplier is based on a combination of options: attracting Russian enterprises, local industry (localization program depends on the strategy of the customer country), cooperation with companies from third countries (with associated financing).

Tactics of Rosatom on the world market for the construction of nuclear power plants

The existing and promising components of Rosatom tactics (as a combination of tools and techniques for achieving goals) include the following:

Managing relations with key customers (account management) through local representative offices in foreign markets and the development of the Industry Automated Protected Information System of Rosatom International Marketing and Sales (OASIS);

Identification of stakeholders and stakeholders of the NPP project, analysis of their needs, goals and values from the project on a wide range of areas at the micro, meso and macro levels (in preparation for the negotiations); using the method of strategic networks;

Prediction of the local electricity market of the recipient of nuclear power plants to determine the target technical and commercial indicators of the project;

Automated requirements management systems.

The method of strategic networks based on graph theory “allows modeling the behavior of players in a particular industry or cluster interacting in a common network” [10, 11]. The peculiarity of the method of strategic networks is the ability to qualitatively and quantitatively reflect the interconnection (gain and loss) of all players from each other.

The steps to determine the technical and commercial proposals for nuclear power plants are classic: the costs and revenues are compared for the entire project life cycle. The main cost components are capital, operational and financial (Fig. 1).

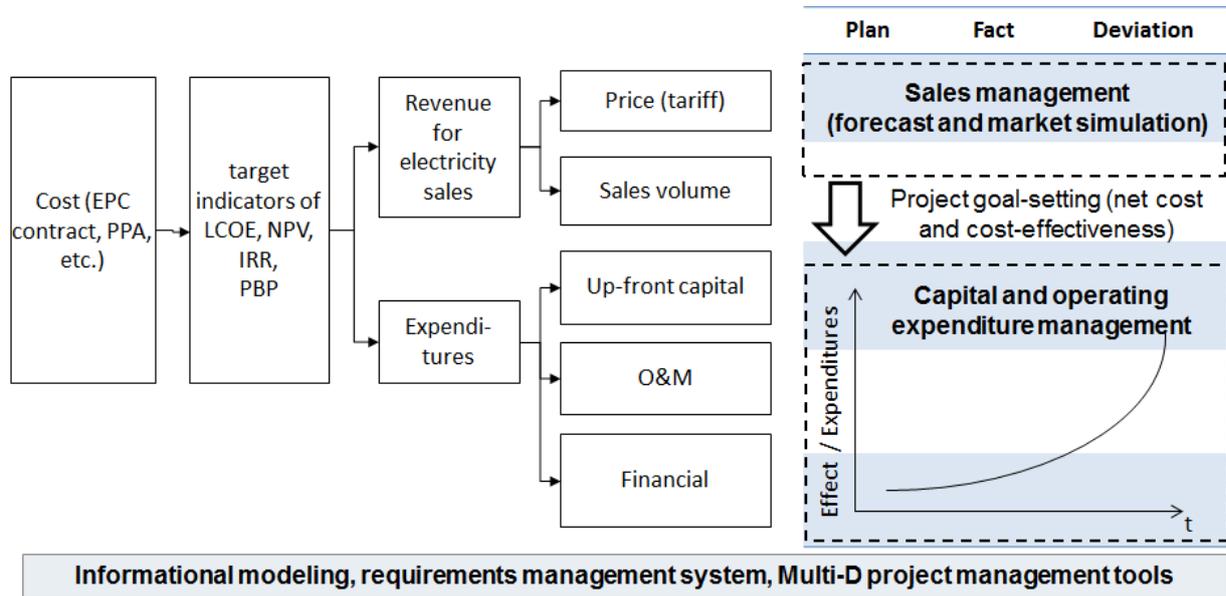


Figure 1. Interrelation of modeling of electricity sales markets and NPP project indicators.

Revenue depends on sales and tariff. Various project performance indicators are used, first of all, net present value (NPV), internal rate of return (IRR), rated electricity cost (LCOE) and payback period. The Rosatom requirements management system allows you to efficiently organize work with the customer to review more than 13,000 requirements for NPPs.

5. Results

The world market for nuclear power plant construction was investigated by quantitative and qualitative criteria and by forecast indicators; a competitive analysis was carried out, the role of international organizations was defined. On the basis of the revealed features of the world market, methodological approaches to evaluating competing offers on the market at the macro, meso and micro levels are systematized, which are used to study the strategy and tactics of Russia. The components of integrated sales strategies and related elements of Rosatom tactics are systematized in the implementation of large-scale international investment and construction projects for the construction of nuclear power plants.

The strategy or model for entering a Russian general contractor or engineering company to the foreign market for NPP construction includes a set of organizational and technological measures that makes it possible to provide construction and installation services, supply technologies, management skills or other company resources abroad. The choice of the organizational and technological model of the project is an important element of decision-making with the participation of Russian companies in international investment and construction projects.

6. Discussion

The world market for nuclear power plants is characterized by a high level of development of international trade, international cooperation and standardization in the field of safety. Most of the NPP projects are implemented in developing countries, which are faced with acute tasks of sustainable economic, energy, environmental and scientific and technological development. The capacity of the target market for Russia is about 70 GW (about 50 NPP units or \$ 400 billion). For the market of these countries is a tough competition. International organizations that develop the “rules of the game” on

the world market for the construction of nuclear power plants, especially relevant for new countries - the most promising market segment, have a special role.

The evaluation of the competitiveness of proposals from different NPP suppliers is carried out at three levels: micro (NPP project), meso (financial and organizational model of the project) and macro (project effects on the economy, ecology, society). Determining the balance of interests of the parties to the negotiations at each level and finding a compromise between the goals of all participants and stakeholders of the transaction on nuclear power plants is crucial for success.

Taking into account the characteristics of the target market segments, Rosatom uses an integrated sales strategy and phased market penetration. The central place in developing a strategy is to define goals and values for stakeholders of a nuclear power plant project at the micro, meso and macro levels as part of a multi-focus sales strategy. The requirements of the electricity sales market, financial and technological partners in the aggregate determine the adapted integrated sale of nuclear power plants and affect the formation of organizational and technological models for the implementation of large-scale international investment and construction projects. The combination of a competitive strategy and a strategy for long-term cooperation makes up the hybrid nature of the sales strategy. Existing and promising tactics include account management, analysis of “customers” using the method of strategic networks, modeling of electricity sales markets and a requirements management system.

7. Conclusion

Based on the analysis of the situation and forecast of the development of the world market for NPP construction, the strategy of integrated sales of Rosatom NPP has been systematized, which, according to the “deep separation” principle, is designed to ensure the competitiveness of the Russian proposal at three assessment levels: micro, meso and macro. It is promising to further study the elements of the integrated sales strategy both separately and in conjunction with each other, as well as factor analysis of the competitiveness of elements throughout the life cycle of large-scale international investment and construction projects for nuclear power plant construction. These factors largely determine:

- a) selection of a model for the entry of Russian general contracting and engineering companies to the foreign market for the construction of nuclear power plants;
- b) organizational and technological models for the implementation of international investment and construction projects for NPP construction.

When developing an integrated sale of NPPs, it is important not to forget the “incident of the driver, horse and cart” - the interrelation of politics, economics and technology in the economic system of the NPP project. Commercial transactions play an important role in NPP transactions. The adoption of political decisions in the field of energy policy without economic feasibility in the long term does not ensure the implementation of large-scale NPP projects. Estimation of purely economic parameters does not allow a reliable assessment and forecasting of development in the energy sector: environmental, institutional, innovation and other aspects that determine the sustainable energy development of countries and regions are beginning to play a greater role. An integrated approach is needed, which is ensured through the system development of a multifocal hybrid strategy of integrated sales of NPP, taking into account a multi-faceted environment.

References

- [1] Abalkin L I, Bogomolov O T, Granberg A G, Makarov V L, Minakir P A, Nekipelov AD, Klejner G B 2010 Meso-economy of development *M. Nauka* p. 994/
- [2] Alekseev P N, Alekseev S V, Andriyanova E A, Asmolov V G, Dekusar V M, Zrodnikov A V, Ponomarev-Stepnoy N N 2016 Two-component nuclear power system with thermal and fast reactors with closed nuclear fuel cycle *M. Tehnosfera* p. 160
- [3] Makarov A A, Mitrova T A, Grigor'ev L M 2016 Forecast of Russian and world energy sector development till 2040. *INJeI RAN, Analiticheskij centr pri Pravitel'stve Rossijskoj Federacii* p. 195.
- [4] Nuclear New Build: Insights into Financing and Project Management 2015 OECD. p. 243.

- [5] Pivovarov I S 2009 Hybrid strategies of international companies *Jekonomicheskie nauki. MJe i MJeO* **6(55)** pp. 358-361.
- [6] Rogner H-H 2013 World outlook for nuclear power *Energy Strategy Reviews* **1** pp. 291-295.
- [7] Storbacka K, Ryals L, Davies I A, Nenonen S 2009 The changing role of sales: viewing sales as a strategic, cross-functional process *European Journal of Marketing* **43** (7/8) pp. 890-906.
- [8] Teece D J 2010 Business Models, Business Strategy and Innovation *Long Range Planning* **43** pp. 172-194.
- [9] Velihov E P 2011 Power sector in world economy of XXI century *Trudy MFTI* **4(12)** pp. 6-15.
- [10] Tishchenko S A 2016 Modern mathematical methods for forecasting innovation processes in the economy *Economics and the development of university scientific schools (On the 75th anniversary of the Faculty of Economics of Lomonosov Moscow State University)* *MSU* pp. 827–834.
- [11] Solovev D B 2019 Features of a Power Consumption of the Main Electro receivers of Coal Mine in the Conditions of the South of the Far East of the Russian Federation *IOP Conference Series: Earth and Environmental Science* **272** paper № 022001. [Online]. Available: <https://doi.org/10.1088/1755-1315/272/2/022001>