

Saimaa University of Applied Sciences
Business Administration Lappeenranta
Degree Programme in International Business
Specialisation in International Marketing

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Wind power potential in Russia: barriers and opportunities

Thesis 2019

Abstract

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The objective of the study was to determine the current state of the country's wind energy sector and to identify future trends regarding this industry. In this paper was considered a relatively new way of generating electricity for the selected target market in Russia - wind energy. Today's Russia makes it possible to exchange technologies and apply innovations in various spheres of society. For foreign manufacturers producing components of wind turbines, it is necessary to clearly understand the advantages and disadvantages of the Russian macroeconomic environment when deciding to enter the market.

The structure of the theoretical part of the study consists of an analysis of the Russian energy sector in general perspective along with the PESTEL Analysis. The first part considers factors such as the share of renewable energy in the country as well as the main operating organizations in wind energy and their development strategies while the second part provides a comprehensive overview of the business environment with a focus on the most influential aspects. The information base of the theoretical part was selected from various literary sources, articles together with leading news portals of Russia. The composition of the empirical part includes the results of an interview with a representative of a foreign company manufacturer of wind turbine components in Russia together with an email interview of the Russian Association of Wind Energy member.

The results of the study show clear political constraints in terms of renewable energy. The vague policy at this stage does not allow to reveal the full wind turbine potential in Russia. In terms of opportunities, the high potential regarding the installed capacity as well as support from the Russian Association of Wind Energy. In general, Russia represents a good direction for large manufacturers of wind turbines, since they can take possible risks and successfully put forward production facilities in the country.

Key words: Renewable energy, Wind Power industry, PESTEL analysis, Market entry strategies.

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1 Introduction

1.1 Background

The purpose of this thesis is to conduct research in the field of wind generators in the Russian Federation. Today in the country there are various problems, whether it be a political, social, economic or other sphere. However, the environmental problem is especially acute since Russia is one of the most polluted countries in the world (Ecoportal 2016). It is extremely important to understand that everything on the planet is interconnected, thus the interest in solving such problems has an international character. In 2019, overwhelming majority of Russians are highly concerned about the current state of the environment, which in turn indicates a high awareness of existing problems and the need to resolve them (The Moscow Times 2019a). The vision of developed countries in the world is aimed at a gradual transition from non-renewable energy sources (fossil fuels) to renewable (solar energy, hydropower, wind energy and others) (Green Tumble 2017).

Another important aspect that raises attention to renewable energy is the equalization of cost compared to fossil fuels (Forbes 2019). The number of people is growing, which leads to a high demand for electricity, while non-renewable resources are cut short. Therefore, the above-mentioned facts lead to attractiveness in the choice of alternative energy sources, which have many advantages. The course of events will ultimately lead to favorable conditions for renewable energy, that is why the sphere of wind energy is of relevance in the modern world. Having high efficiency and meeting modern environmental trends, wind energy has a strong chance to be adopted as one of the fundamental means of generating electricity. (Wind Europe 2018.)

The device that will be discussed in this paper is called wind generator. This generator type represents a complex mechanism that converts wind energy into mechanical energy and then into electricity through a transmission system (Wind Energy Development 2019). In other words, this invention can use the element of nature (i.e. wind) to generate another element which is more useful to humans - electricity.

Despite the comprehensive advantages of the transition from one type of energy source to another, not all countries are ready for drastic changes. Obstacles faced by manufacturers in the industry on the path to the full-size use of wind energy are present. They vary from one country to another and require careful analysis for future regulation and favorable conditions in energy sector (RusBase 2016). It is obvious that Russia is a backward country in the field of modern renewable energy compared to European countries such as Spain or Germany (Delovoy Peterburg 2019), and the question of the development of this type is relevant and has a weight. The country's energy industry is constantly discussed at international economic forums with a special emphasis on the growing trend in changing the energy structure of the Russian Federation (Rus Energy Week 2018).

In addition to the above-mentioned facts, the renewable energy generation method using wind according to the latest data has become the most promising and fastest growing to date. Great interest in the production of wind energy is shown by investors, banks and the governments. In 2018 wind energy represented the highest investment prospects, about more than half of all investments in the European energy sector. (Wind Europe 2018.)

1.2 Objective of the study

The main objective of this study is to evaluate the feasibility for wind turbine manufacturers entering Russian energy market. In other words, the goal is to identify the pros and cons of which foreign manufacturers and investors can weigh the possibility of developing their activities in Russia.

According to Wind Europe Association report for 2018, wind energy already exists in the Russian Federation to a small degree relative to the vast majority European countries (Wind Europe 2018). Therefore, the goal is to determine and show clear reasons for current situation on the territory of Russia. It is necessary to create an overview of the main obstacles on the development of wind energy, as well as what advantages the country has for attracting foreign investors and manufacturers of wind generators.

Primarily, the aim is to scrutinize the business environment conditions of Russia since this will be the basis for further research. The in-depth analysis in various fields (social, technological, political, etc.) will make it possible to create a clear list of reasons why the Russian energy industry is predisposed to new types of energy generation or rejects them.

1.3 Research questions

The main research question of this thesis is:

- What barriers and opportunities Russia has for the development of wind energy on its territory?

This question is a crucial one, and in the course of the study it accompanies answers to other sub-questions.

In turn, the sub-questions are:

- What factor or factors have the most powerful influence on inhibition of the wind energy sector development of the Russian Federation?
- What market entry strategies should wind turbine manufacturers use in order to succeed in Russia?
- What supporting mechanisms in financial and political structures can accelerate the growth of the appearance of wind farms in the country?

1.4 Delimitations of the study

This study is multifaceted, including the need to consider the product itself from an engineering point of view. Firstly, it is necessary for general familiarization with the product being the object of study. Secondly, a wind turbine is a complex device with many parts that are produced separately by different manufacturers. In the process of research, it may turn out that the various components have an unequal degree of demand on the Russian market. Consequently, an understanding of a wind turbine concept is important.

The thesis will cover the basic concepts of wind generators, their types of installations and the main differences in capacities. However, the main emphasis

will still be placed on the marketing component, since the purpose of the study is precisely to analyze the characteristics of the energy industry market. In addition, the work will include an analysis of the business environment, studying in detail every aspect of the external structure of the market (macroeconomic factors).

As for delimitations, this work will not include in-depth cultural features of doing business in this country, since at this stage the primary cause of the research is only considering the Russian market as a potential direction of development. Another factor that should be mentioned is the limitations in the types of wind generators according to their principles of installation. There are two main types of vertical wind turbines: onshore and offshore. The difference in them is that some are installed on the solid surface of the mainland, while others are fixed on the seabed and are at certain distance from the mainland (Wind Europe Association 2019.). In the thesis it was decided to take as a basis only onshore type of wind installations due to the territorial features of the Russian Federation.

1.5 Theoretical framework

In determining the theoretical framework, the decision is settled on three concepts: wind turbine specifications, business environment analysis and market entry strategies concept. These theories allow me to build the most suitable foundation for subsequent empirical research. First, the author uses the literature to create a basic understanding of the wind generator concept. This theory is important for reference and will help in the perception of the remaining parts of the thesis. However, as mentioned earlier, in the thesis will be indicated only the most necessary, according to delimitations of the study.

1.5.1 PESTEL Analysis Method

The second part of the research will support the business environment component. In this case, the PESTEL analysis is the most suitable tool for reviewing the Russian market condition. The model name is an acronym that is revealed as Political, Environmental, Socio-Cultural, Technological, Environmental and Legal aspects of a target market. One of the fundamental tasks of the PESTEL analysis is to collect the necessary information for each

variable to form an idea of the business environment of the selected market for the subsequent assessment of the market potential. (Perrera 2017.)

Primarily, the choice of this model is associated with a general approach to all market participants, and not to a single organization. A comprehensive analysis of macroeconomic aspects will give an overall picture from which wind turbine manufacturers can identify features applicable to their particular company. Through PESTEL model, it will be possible to analyse factors affecting the activities of organizations in the selected business environment (Pestle Analysis 2019.). The analysis will include technological and environmental parameters, political, economic, social and legal aspects with regards to wind energy in the national sense of the word (Professional Academy 2019). In this section, the main goal is to disclose general trends in market behaviour in recent years and what factors influenced their formation.

The first parameter is political and observes the degree of government influence on the activities of businesses. This can be attributed, for example, to existing policies that impede or, on the contrary, favor development in the industry. It is an inalienable fact that it is political factors have the greatest influence on the activities of organizations in any country, since the interests of the government have the highest power. Therefore, this section requires the most careful and versatile analysis.

The second economic parameter of the PESTEL model is the second important which considers the aspects related to the monetary component in the country, for example, features related to currency and its stability, inflation, purchasing power, level of competitiveness etc. In other words, the purpose is to analyze the general macroeconomic background of the country. (Perrera 2017.)

The parameter of social factors includes various characteristics of society, cultural values, the degree of religiosity of the population etc. This topic also covers the structure of the population, social stratification and some features of people's attitudes to various technologies, goods and services. (Perrera 2017.)

The technological factors' parameter is focused on a variety of innovations in the country's business environment. Here, the emphasis is on the innovativeness of certain industries, the degree of technological development, and how this affects the market from a general point of view. An analysis in this direction will help to understand what relation the country has to the application of modern technologies to its products. (Perrera 2017.)

Environmental factors are based on an analysis of the country's problems related to nature. Particularly it considers various kinds of environmental pollution, as well as the degree of responsibility within organizations (the use of international quality standards, sustainable development, corporate social responsibility etc.). (Perrera 2017.)

Last but not least, legal variable of PESTEL analysis corresponds to a set of rights and obligations of organizations in the market. In addition, this parameter considers the impact of the legislative system on activities in various industries, equality in the application of this system for everyone etc. (Perrera 2017.)

1.5.2 Market entry strategies

The market entry strategy is an extremely important element in this study, which will give a possibility to understand certain methods that companies should use to achieve the greatest success with the least risk. This aspect has a two-sided nature, since it considers not only the motives of organizations willing to expand internationally, but also the features of doing business in that country where they are going to expand. Determining the list of the most successful strategies will be possible after conducting the PESTEL analysis, since some of the aspects will be directly applicable to the parameters of the marketing entry strategies concept (e.g. political risks or social factors).

The theoretical framework includes the most common market entry strategies. All strategies can be divided into three categories: contracting, partnership and full ownership of a new subsidiary. (Glowik M. 2009.)

Contracting involves various mechanisms for the sale of goods with a certain degree of control and risks, depending on the chosen method. The strategies

included are direct and indirect export, licensing, contract manufacturing and others. (Glowik 2009.)

Another general category is partnership and its main market entry strategy is the joint venture. The main idea of joint venture strategy is the creation of a third brand new company by two business partners who want to join forces for the sake of something new and more worthwhile. (Glowik 2009.)

The third category for entry strategies is called “Wholly owned subsidiary” and implies the opening of a fully controlled company department in another country. The representative of this category is the Greenfield Investment strategy, which is characterized as the most risky and expensive, but giving full control over the activities of the subsidiary. (Glowik M. 2009.)

Companies choose certain strategies based on the numerous features of the target market, as well as their own motives and goals for the future. It is also reasonable to highlight the desire in the degree of control, risks from a financial point of view, and so on. Below is a summarizing table on the ratio of the required parameters of companies and the desired choice of strategy. (Glowik M. 2009.)

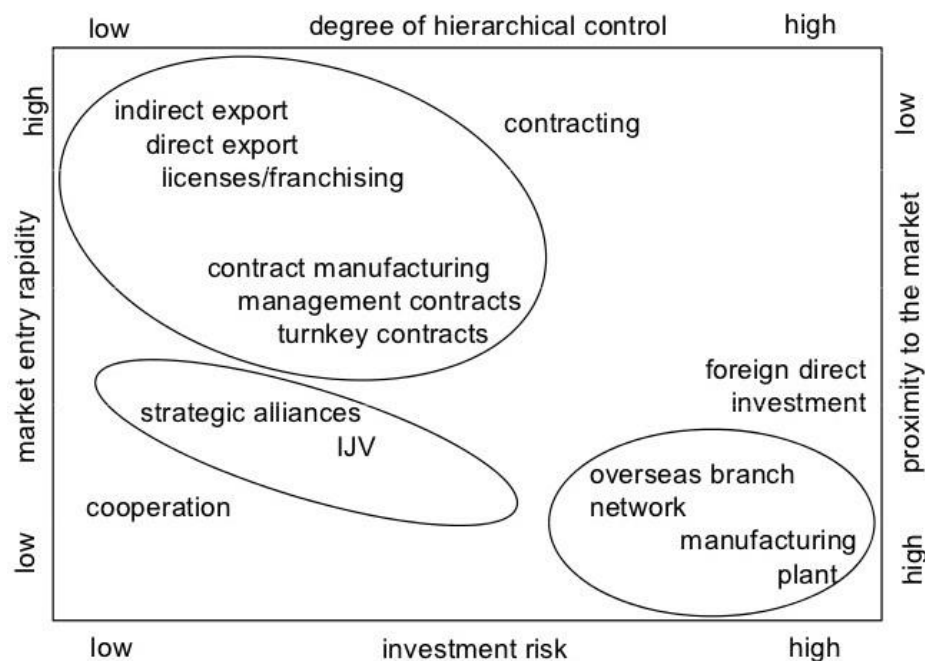


Figure 1 Market entry mode grouping based on four decision determinants (Glowik 2009)

It is useful to note that the individual reasons of organizations for certain factors undoubtedly determine the final strategy for entering the market, however, the characteristics of the market must be carefully analyzed for subsequent weighing of decisions. When choosing the necessary strategy for entering the market, the related analyzes of the business environment, such as the PESTEL analysis mentioned above, simplify the task and make the results easier to interpret.

1.6 Research method

The main body of the thesis consists of theoretical and empirical parts. The literature review includes various publications of American, Russian and European origin. Internet portals of wind energy associations, in particular, the Russian Association of Wind Energy and “Wind Europe” play a crucial role in building the PESTEL model and an informational basis for current market situation.

The empirical part of the thesis is built on conducting an interview with a representative of the company operating in Russian wind industry market in conjunction with the results of an email interview with a member of the Russian Association of Wind Energy. The interview questions mainly relate to the general research question and sub-questions of the study, although during a conversation several new details appeared for mentioning in the thesis. Interview with a representative of a foreign company which already operates in Russian wind industry had a clear understanding of the market and what approaches companies should use for entry. The method for collecting data has a qualitative character of research answering the main question of the thesis. At this stage, it was decided to use a semi-structured interview with open-ended questions, since such a method would be most suitable for gathering necessary information (William 2015).

1.7 Structure of the study

The introduction to the thesis is an overview of the general information about Russian Federation. Besides, the concept of a wind turbine and its features is also disclosed in this chapter. This material is supported by a general analysis of

the current state of the energy sector in Russia for collocation with the object of the study. Thereby, it brings possibility to assess the current situation of the wind industry relative to the whole energy sector.

The structure of the main body of the thesis is divided into four different parts. The first two of them are theoretical and represent the basis for supporting empirical research. The first theoretical part describes the current state of the Russian business environment in various fields by conducting PESTEL analysis. In addition to the theoretical data of articles and literature, this part is supported by empirical material obtained during an interview with a member of the Russian Association of Wind Energy.

The second part is aimed at studying specific strategic models for foreign companies entering the market. To achieve the best research result in this section a combination of reliable theoretical data with empirical research was used. Conducting the interview with a representative of a manufacturing company operating in the Russian wind industry market brought the objective look when choosing strategies for market entry.

2 Russia – general information

Foremost, for potential manufacturers wishing to enter the Russian wind turbine market it is necessary to create a general understanding of the target market. Russia is an ambiguous country with many features, like any other. Therefore, in the framework of this study, it is reasonable first to provide the necessary information base that affects the business environment, especially regarding wind energy.

Russia ranks first in the world in its territory of more than 17 million square kilometers. The main territory of the Russian Federation borders on land with 15 countries, while it also recognizes the maritime border with Japan and the United States. In 2019, the population is about 142 million people with the vast majority of the Russian ethnic group at 77 percent. Most of Russia's population is concentrated in the western part of the country along the border with the European Union. Russia is a democratic federal legal state with a republican form

of government. The main feature of this form is the conduct of elections and rotation in power. (Central Intelligence Agency 2019.)

As for the economy, it is very different in comparison with other countries. Russia's natural resources are one of the most important elements in the country's economy (Neftegaz Expo 2019). The Russian Federation has a huge number of deposits of such resources as oil, coal, natural gas, etc. (World Population Review 2019.). Russia receives significant income from the use of fossil fuels (RBC News 2019a). Oil and natural gas production accounts for 10.2% of GDP and, according to the Ministry of Finance, represented half of budget revenues for 2018 (Ministry of Finance of Russia 2018). This course of events creates a strong oil and gas dependence (the so-called "oil needle") of the country and adversely affects the development of other branches of the economy, especially in the energy sector.

Another important fact is that Russia is highly dependent on foreign economic conditions (The World Bank 2019). In October 2008, the Government of the Russian Federation approved the country's foreign economic strategy until 2020, prepared by the Ministry of Economic Development of the Russian Federation. For the first time in recent years, the strategy identified sectoral priorities of Russia's foreign economic policy together with the long-term goals of domestic policy. External factors are manifested in the strengthening of the trade and political influence of foreign countries on the sphere of international trade, which requires the use of a number of foreign economic instruments in Russia, such as counter-sanctions, modification of licensing systems for foreign trade operations, etc. In turn, internal causes are associated with the need to transition the country to an innovative model of socio-economic development. (Economy Gov 2019.)

The following important feature to mention is the environmental component. Global environmental problems have always been relevant for Russia. This is due to the long-term aggressive influence of man on nature together with untimely environmental protection measures. It should be recognized that the country is one of the most polluted in the world and the situation is gradually deteriorating. The most serious problems include air, water and soil pollution, radioactive pollution as well as Arctic problems. The former and the latter are the most

significant from a global point of view since global warming leads to the melting of glaciers. This in turn creates irreparable damage to the ecosystem as well as the threat of flooding of the continent. (Green Party 2019.)

Based on the above data, it can be concluded that Russia obviously has a need and an extremely good opportunity for partial switching to renewable energy sources and is also opened to cooperation with foreign manufacturers. However, on this difficult path, there are certain established obstacles that must be overcome by joint efforts. The interests of government officials and state-owned corporations producing fossil fuels has built a policy in their own favor, while avoiding the possibility of developing other potentially important innovative methods of generating electricity.

2.1 Russian energy sector

On the territory of the Russian Federation, energy is the most significant industry in the country in the economy. In the days of the Soviet Union, the country had a strong impetus in the construction of thermal and hydroelectric power plants, which became the basis of today's energy industry in Russia. In addition to providing the country with electricity, Russia also exports it to other countries. As mentioned earlier, the country is rich in natural resources and technologies in nuclear energy, which form the basis of the country's energy supply (Ministry of Energy of the Russian Federation 2019.).

The country is divided into seven united energy systems that provide electric energy to 70 regional energy systems. The boundaries of the integrated power systems are presented below:



Figure 2 Energy networks of Russia (My Energy Project 2019)

From this map it is necessary to take out several main highlights that are relevant for the study. First, the obvious but important is the concentration of most power systems in the west and southwest of the country due to the highest population density in these regions. Despite the available energy supply, most of the existing projects for installing wind farms are based there, possibly due to territorially convenient conditions and suitable climatic conditions. Secondly, in the Far East, autonomous energy networks dominate, which are also interested in alternative energy sources. Separated areas often need less electricity; thus, wind generation may be one of the most attractive solutions. Currently there are few wind turbine installations on the Pacific coast of Russia, which laid the foundation for future wind farm projects. (My Energy Project 2019.)

The next step, in addition to the distribution of energy networks throughout the country, should be identification of the main Russian energy sources based on total capacity installed in order to determine the current state and trends of the Russian energy sector. Features of electricity distribution methods on the market are due to many factors, the most decisive of which are the interests of the state. Since the largest energy companies such as Rosatom and Gazprom are partly or fully state-owned, there is a consistent pattern of preferred energy generation methods in the energy sector of Russia (Gerasimchuk 2012, p.66.). The graph below shows the percentage distribution of the main methods of generating

electricity for 2017. The total installed capacity in Russia is 240 GW, but how they are distributed has more value for the research.

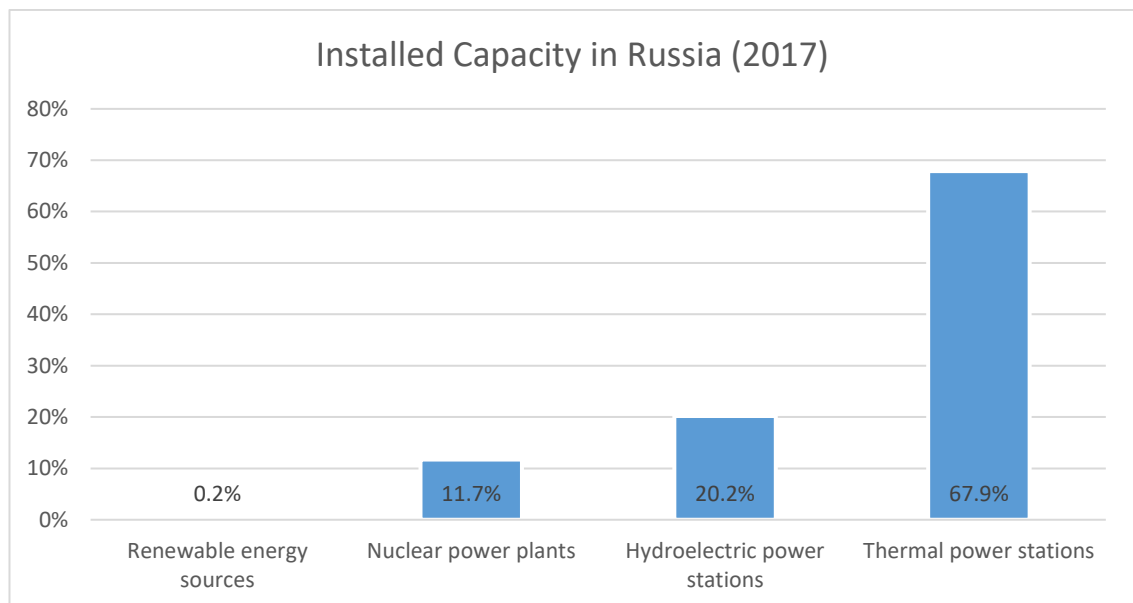


Figure 3 Installed energy capacity in Russia (Ministry of Energy of the Russian Federation 2017)

There is a clear distinction that can be traced in the preferred methods of generating electricity. Most of the energy (almost 90%) is produced through the operation of thermal and hydroelectric power plants. Both methods are among the least preferred in the modern world, since the principle of thermal power plants is based on the combustion of fuel, while hydroelectric power plants cause irreparable harm to the aquatic ecosystem. Renewable energy accounts for less than one percent of the country's total energy capacity. Moreover, the column "renewable energy" also includes other sources of energy besides wind farms, in particular it is also solar energy and geothermal installations in Western Siberia (Energy & Industry Russia 2005).

Thus, it can be concluded that at this stage, wind energy has a low share in the country's total electricity supply with relatively high potential to a certain degree. An analysis of the Russian business environment will help highlight the influence factors in the energy sector of Russia. In addition, it will provide understanding for the prevailing distribution of capacities and why renewable energy has such a low share.

2.2 Key players in Russian wind industry market

This chapter reflects the three main participants in wind power of Russia today. The choice of these companies and associations was determined on the basis of empirical data obtained during the interview. Primarily, the Russian Association of Wind Energy stands for the connecting link of all companies in membership, which in turn distinguishes the most prominent participants in the energy sector, the scope of their market activity and future plans in increasing energy capacity.

2.2.1 Russian Association of Wind Industry

Despite the current situation with low use of renewable energy sources in Russia, there are also organizations that counteract this “trend” and aim for positive change. Fifteen years ago, one the most key players in Russian wind industry was founded. The Russian Association of Wind Industry (RAWI) is an independent non-profit organization that is engaged in the assistance and support of market participants on various issues. RAWI is highly competent in the market and lobbies for the interests of Association members, contributing to the development of the Russian wind energy. The association today includes 194 members, including leading global manufacturers of wind generators, engineering companies etc. From the total number of partners, one can distinguish such large companies as Siemens, Vestas, ABB and others (Russian Association of Wind Power Industry 2019).

2.2.2 Fortum

Fortum is a world leading energy company with headquarters in Helsinki, Finland. The company offers high-tech solutions for heating, cooling, as well as in the field of electrical supply. Fortum entered the Russian market over 10 years ago and today is actively promoting its activities in the field of renewable energy. Currently, Fortum takes first place among main competitors in the Russian market in terms of the capacity of existing wind farms, as well as distinguished itself by winning a large share of competitive projects for the construction of future wind parks for the next 5 years. The Finnish energy company has a portfolio of selected projects of about 2 GW of capacity for future wind turbine installations (Russian Association of Wind Power Industry 2018).

Since January 2018, the Fortum wind farm in Ulyanovsk has been included in the country's capacity register. A wind farm with an installed capacity of 35 MW was the first generating facility that operates based on the use of wind energy in the wholesale electricity market in Russia. The Ulyanovsk wind farm will receive guaranteed monthly payments for capacity under a Power Purchase Agreement for 15 years. This project laid the foundation for a wider use of wind energy for Russia, since most of the past projects were local and were not designed to supply electricity to the common network (Fortum Russia 2019b).

2.2.3 Rosatom Group

Another important and influential player in the Russian energy market as a whole is a state corporation called Rosatom. The main field of activities in this corporation is nuclear energy, in which it is one of the world leaders (Ros Atom Group 2019). However, 3 years ago, the company opened another direction of development under the NovaVind subsidiary - wind energy. Rosatom entered the wind energy market in 2016 with extremely ambitious plans. Those include the production of their own wind turbines in Russia with a high level of localization and an increase in capacity through the generation of wind. This is a very controversial move for this kind of organization, however, general director of NovaVind subsidiary says that *“Our strategy in wind energy is not just to acquire competencies in the construction and operation of wind farms, but also to create a product that will allow us to enter a new international wind turbine market for us”*. (Atominfo 2018).

The result shows that the situation with wind energy in the country is extremely ambiguous. On the one hand, today the country is not very interested in the development of renewable energy sources. On the other hand, state-owned corporations are investing billions of rubles in the development of their own wind turbines, refusing the help of foreign manufacturers. A subsequent analysis of the country's business environment will help to identify the reasons for such a discrepancy and to understand why exactly this type of energy still does not manage to enter the Russian energy sector in full or at least gain some share of the total installed capacity. Another important issue is still the reasons for the low activity of foreign manufacturers of wind turbines in Russia.

3 Basic concept of a wind turbine

In order to understand not only the Russian wind energy market, but the product itself, this section was introduced. The chapter may turn out to be of secondary importance for participants in the wind energy industry, however, for newcomers, it takes place to familiarize with the basic principle of the wind turbine and the elements inside it. It is worth mentioning that understanding the structure of the turbine is no less important, since almost no company produces a complete wind turbine, but assembles it in components, the same as when assembling a car or other complex device.

This chapter will discuss and explain the common type of wind turbine, which is the most optimal today from different points of view. One of the most compelling reasons for this form of wind turbine is its omnidirectionality, which in other words means the ability to adapt to any wind direction. In recent years, a lot of research has been done in improving the performance of wind turbines with a corresponding reduction in the cost of production and many other features. Today, a wind turbine is a three-blade vertical axis installation, which has many variations in power, size, manufacturability, etc.

The following is an example of how a standard wind turbine works and what it consists of:

Wind turbine

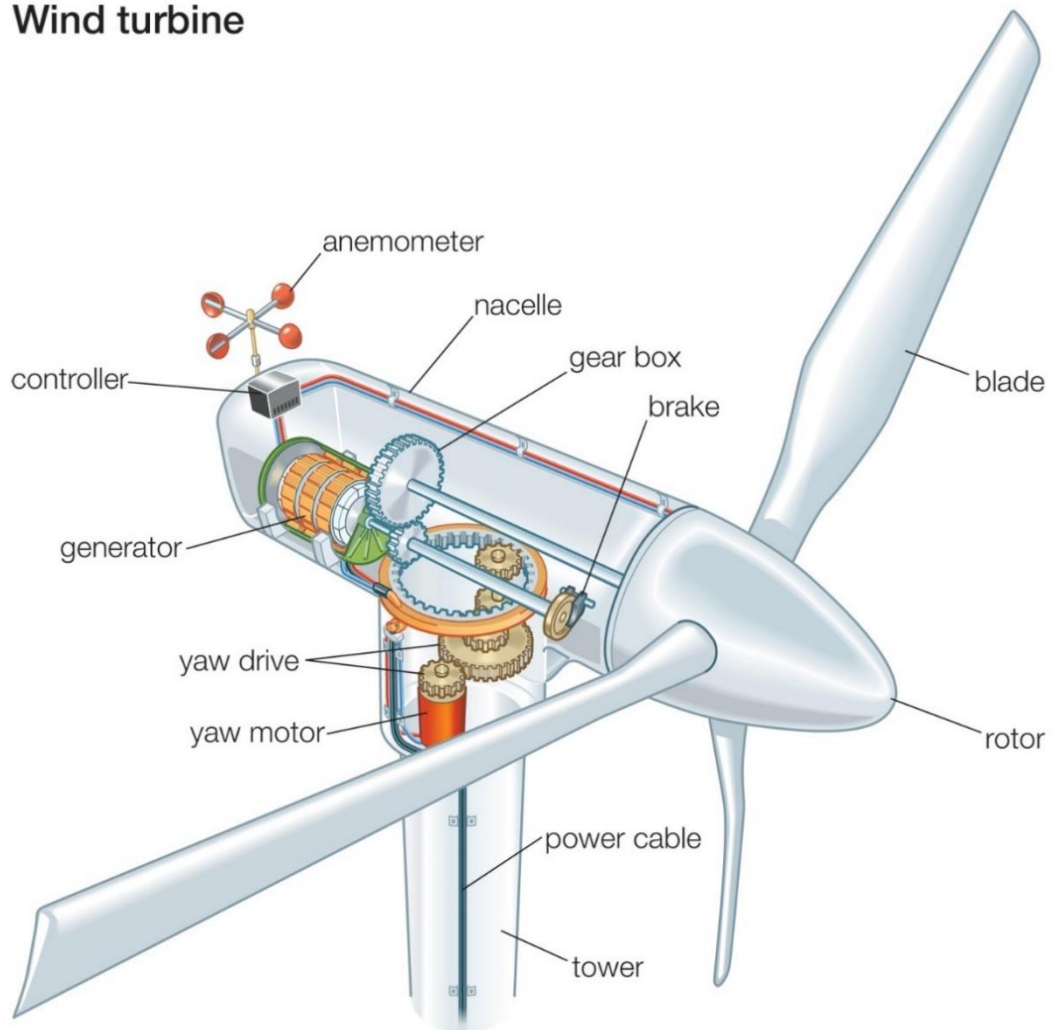


Figure 4 Components of a wind turbine (Encyclopedia Britannica 2011)

In a conventional representation, the force of the wind drives the blades that cause the rotation of the rotor. Thanks to the presence of a generator, mechanical energy is converted into electric current. The aerodynamic features of the screws are designed in such a way that they allow to quickly turn the generator turbine with minimal loss. Subsequent converted current flows through the power cable to the batteries in which electricity is stored. In addition, the design of the wind turbine provides a brake for emergency stop of the rotor in case of unstable weather conditions, as well as an anemometer that collects information about the direction and speed of the wind. (European Wind Energy Association 2009.)

3.1 Installation features of wind turbine

The wind industry took several decades before it gained worldwide recognition and relevance of use. Generation of electricity by wind has many positive characteristics, such as inexhaustibility, reliability, affordability, etc. One of the most attractive features of this generation method is environmental friendliness. Wind energy has no emission of processed gases, in particular carbon dioxide, which is one of the main causes of global warming. In addition to this, most countries, especially in Europe are gradually approving renewable energy policies, which also gives “green light” to industry development. (European Renewable Energy Council 2010.)

The level of technological development in wind turbine manufacturing allows energy to be generated in almost any climatic conditions as well as under various wind conditions. The parameters of wind speed and temperature are in this situation a very important point, since when studying Russia as a potential market, it is necessary to consider territorial and climatic features. The average temperature variation is from -20 to +50 degrees Celsius, while the wind speed can be from 3 to 28 m / s. These data are approximate, and the decisive factor is played by the specific climate zone, type and size of the turbine, etc. It is also worth noting that despite the wide possibilities of operation of wind turbines, at extreme values of wind or temperature, the efficiency of electricity generation changes accordingly. With a high share of wind energy on the market, small changes in wind speeds of a couple percent carry a large difference both in terms of productivity and finance. (European Renewable Energy Council 2010.)

Thereby, at this stage it is reasonable to distinguish several major trends in the development of wind generators over the past few years. Over the past decade, there has been a shift to larger wind turbines for wider and more efficient power generation. Turbines grow in height as well as the length of their blades. This is not always advisable, since large-sized turbines require specific characteristics of the area for installing wind farms, for instance higher wind speed or certain soil composition. Second important trend arising from the first is that an overall efficiency improved accordingly due to more careful selection of territories for installation of wind farms and software progress. Third no less important tendency

is based on a gradual decrease in the price of electricity generated by wind turbines. Undoubtedly, this trend is primarily observed in countries with a high share of wind energy relative to the total capacity. On the other hand, this is an excellent indicator of price alignment in the long run with gradual growth, which sooner or later makes wind energy the primary competitor for more traditional methods of generating electricity. (European Renewable Energy Council 2010.)

Despite the comprehensive benefit of wind energy use, like any other industry, there is a certain list of deficiencies and operational features that should be given special attention when planning the installation of a wind farm. Among the most common include noise from the rotation of the blades, visual perception (shadow and light flickering), the need for a large area for wind farm installations and inconvenience for some types of migratory birds. Identification of disadvantages on the part of wind turbines came along with mistakes of the past, therefore, today when designing locations for wind farms, these obstacles are most often foreseen in the early stages and their reappearance is minimized. (European Wind Energy Association 2009.)

Connection to a common power supply system (grid integration) is another important aspect of high importance at the stage of development of a new wind farm. Wind farms can be connected to a common power supply network or produce energy for local production enterprises. In Russia, the most common is the second option. This topic is required to be mentioned in the work but carries a very high load in terms of technical knowledge and is not intended for a full analysis. However, it should be noted that the ability to effectively integrate wind energy into a common network takes place in the list of key tasks at the development stage. Thus, one of the most important aspects of the success of the wind farm is the proper location to maximize productivity and minimize negative effects. (European Wind Energy Association 2009.)

4 Findings from interviews

As a part of the research process, an interview was conducted with a representative of a Finnish construction company with a branch in Russia. The

position of the interviewee is the head of the division producing foundations for wind turbines. In addition, an email interview was conducted with the member of the Russian Association of Wind Energy in a more structured format using the same questions. The following in this chapter presents the results of the interview in accordance with the research questions of this study. In addition to the answers opinions to the main questions, this section includes other secondary opinions regarding the provisions on wind energy in Russia.

4.1 What barriers and opportunities Russia has for the development of wind energy on its territory?

Currently, the potential that has been "played out" between the companies after the competitive selection is approximately 3 GW (more than 1000 units) with government participation in the selection process. The phrase "played out" means the principle of Power Purchase Agreement (PPA) which are conducted in the format of competitive selection among the most attractive projects proposed. This form of contracts for the purchase of electricity takes place in most European countries on wind energy markets, having successfully settled in the territory of the Russian Federation. Officially the PPA principle was adopted by the state policy regarding wind energy. (Ministry of Energy of the Russian Federation 2019.).

According to the interviewee, the estimated volumes of future projects will not cover even 5% of the total Russian electricity demand. Therefore, the question is not about the fact whether it is planned as many wind farms as there are, for instance, in Denmark (Denmark's record energy production by wind farms reached 43% of total electricity generated in 2018) (Wind Europe Association 2018). Partly the need for a limited number of wind farms in Russia is due to the presence of a serious energy complex in the country. However, there is a need for alternative energy sources in some regions of Russia from the point of view of a local shortage of electricity, where it is either complex or limited access to a common network. It was also noted that, at the moment, wind power projects are still dominated by the ones of a larger scale near large settlements than localized installations.

Besides, in the list of the most important points it was noted during the interview is that the country's potential is one side, while development plans are completely different. Such concepts do not always correlate with each other and the possibility of development does not necessarily mean the need for a country to focus in this direction. On the other hand, according to RAWI, Russia has enormous potential, and this is what allows us to hope for a leading position in the technological component of wind energy, which may even allow us to become a leading exporter.

Another important discovery for the study is to explain the situation in terms of the difficulties of foreign component manufacturers entering the Russian wind energy market. Interviewee explained it so that a company that intends to localize production must meet general requirements. If the company meets these requirements, as well as the conditions of delivery, cost, etc., the developer company is selected, then the manufacturer will be selected as a supplier of components, because it is also profitable in terms of localization requirements. Accordingly, companies are interested in local suppliers who already have the ability to produce and deliver equipment to the territory of the Russian Federation.

4.2 What factor or factors have the most powerful influence on inhibition of the wind energy sector development of the Russian Federation?

To the question about the most serious obstacles to the development of wind energy in the country, the interviewee's clear answer was that the political will influences the most, therefore, industry would not go far on exceptional enthusiasm of companies operating in wind energy. This is not to say that the state vision somehow limits development, it is rather that this direction is not in the main interests and, accordingly, does not have a large share from the general point of view. Primarily, the most important role is played by Power Purchase Agreements since this is the only true way to obtain a satisfactory solution for the implementation of wind farm projects. Thus, the political situation in the country has the strongest influence, together with the lack of a technological base, which leads to a high level of imports in the early stages of the development of wind farms.

4.3 What market entry strategies should wind turbine manufacturers use in order to succeed in Russia?

With regards to the conditions for new companies entering the market wishing to expand their activities, the situation is represented by a rather small sequence of actions. Based on the interviewee's experience, a company needs to register the legal entity in Russian Federation, and then there are several options for the development of events. For example, it is not necessary for the manufacturing company to independently produce components, but on the contrary, it is possible to attract a company that will do this, and the main company will be a defendant. This strategy is a form of intermediation, but in this case with a high degree of control from the headquarters. As such, there are no particular barriers to targeted entry to the market, most importantly if there is a tax residence of a legal entity. In this process, the Russian Wind Energy Association helps to a large extent, which through its participation creates a community, helps to establish links between component manufacturers and direct developers of wind farms, etc.

4.4 What policy barriers does the development of the wind industry in Russia have?

In relation to this sub-question of the thesis, the most significant feature of the Russian market mentioned during the interview is the set of requirements promoted by the state import substitution program. The localization plan is very important when nominating a project for competitive selection. In the early stages, components of wind turbines were usually shipped from overseas. Today there is a necessary localization process when a certain minimum percentage of component equipment should be produced in Russia. In the first projects, most are imported from abroad, however, in the future construction of wind farms they must be assembled using domestic components. Accordingly, many companies are expanding their production in the Russian Federation, for example, today the biggest wind turbine manufacturers produce blades, gondolas, towers and other main components of a wind turbine. Companies such as Vestas, Siemens and ABB have opened their own local factories in Russia and directly contribute to the requirements of state policy regarding localization. On the other hand, there

is another example of Rosatom, which went the other way, having bought technology and produced under its own name components for its own wind turbines, thereby maximizing the degree of local production in the country's territory.

4.5 What supporting mechanisms in financial or political structures can accelerate the growth of the appearance of wind farms in the country?

According to the results of the interview, the largest role in various support mechanisms is played by the Association of Russian Wind Energy. The company whose representative was interviewed, is an active member of this association which brings significant advantages in the opinion of the interviewee. RAWI organizes regular events in which all members of the association, which are acquaintances, dialogues and networking, take part. Referring to the interviewee's opinion, *"It is difficult to overestimate the contribution of the association, since they do a lot for participants in the industry and the industry itself."*

The Association represents the interests of manufacturers in the political arena, in every possible way promoting the interests in the development of the wind energy sector, which is often seen in progress regarding amendments to the Russian legislation system. In the process of email interviews, the most significant over the past few years were noted amendments aimed at attracting additional investment in projects for the construction of generating facilities based on renewable energy sources. For this, changes were foreseen to the requirements for the construction and operation of wind farms.

5 PESTEL analysis of Russian business environment

As previously mentioned in chapter 2 on basic information regarding Russia, the business environment and doing business in that country is fundamentally different from most developed Western countries (Forbes 2017). Today, there are many reasons why the development of foreign companies is somehow hindered by the situation in the country, but this does not underestimate the interest in

international relations. According to international ranking, in terms of ease of doing business, Russia is in the 31st place out of 190 (Doing Business Ranking 2019). This indicator has improved significantly over the past decade, which shows a positive development of the economy and brings better opportunities for foreign companies.

In order to determine certain reasons affecting the businesses' performance in terms of wind industry, the PESTEL analysis was chosen as the most suitable model according to theoretical framework of the thesis. This tool is truly effective in determining which external factors affect the activities of organizations and how. Since influence factors manifest themselves in different areas, it is necessary to conduct a comprehensive analysis of the macroeconomic environment. This will be the basis in creating a holistic picture of the reasons that are impeding the development of the industry or vice versa. (Research Methodology 2019).

5.1 Political

Political variable tends to be the most important in the whole model in terms of analysis. In many cases, political characteristics are decisive for industries. There is no doubt that foreign investment brings favorable condition for economic development, technological progress, as well as comprehensive improvement of the country's image. In terms of history, the prolonged isolation of the Soviet Union led to the local development of the industrial sector, the production of goods and most social benefits. After transforming the country into an open democratic state, some power plants were shut down, while others are still operating and have changed little over time retaining its localization and lack of need to globalize. Russia goes through difficult times in terms of the political situation in the country. The collapse of the Soviet Union in 1991 opened the borders for foreign relations and hope for a bright future in the development of technology and the economy, however, the situation after almost 30 years is far from ideal. In modern Russia, plenty of obstacles are present affecting normal internationalization and work with foreign companies. (Investopedia 2019.)

First of all, the most fundamental and continuous problem of Russia, which is relevant today and ubiquitously affects the country's business activities, is corruption. Undoubtedly, this phenomenon has a negative impact on the internationalization of the country and the acquisition of partnerships with foreign companies. Nonetheless, this is a well-known fact that corruption is growing in modern Russia like a social disease and at this stage it is difficult to imagine the complete eradication of such a practice (Open Russia 2014). In the past of Tsarist Russia, corruption (tribute) was in the order of things and a natural process of maintaining the activities of society. In the Soviet government, the legislation dealt with bribery by radical measures up to the execution, but nevertheless, corruption was successfully transformed into Soviet society to some extent. The most frequent bribe-taking is manifested at lower levels of society as a necessary measure against poverty, however, high-profile cases are not uncommon, good example of which is the \$ 2 million bribe case of ex-Minister of Economic Development Alexey Ulyukaev (Rosbalt 2017).

Despite the fact that the President of the Russian Federation, Vladimir Putin, has repeatedly approved national anti-corruption plans, the corruption index continues to lower Russia in the list of countries with high bribery and takes 138th place out of 180 possible (Transparency International 2018). It is worth assuming that this problem is significant at a high social level in terms of impact on the economy, since it accompanies lobbying in certain industries, for example, making the oil and gas industry an extreme degree of oligopoly on the market. Also, in Russia there is a pattern of government involvement in the activities of the largest corporations. Fairly often, a fast-growing business as it develops is faced with increasingly serious problems and obstacles for continued existence. From the point of view of international companies wishing to expand their potential on the Russian market, corruption can turn out to be a great difficulty and surprise. Unfortunately, anyway, any company will have to face this kind of activity, another question is how exactly the company will perceive this issue.

Despite the great past and ubiquity of corruption, modern technologies can reduce such activities through the introduction of electronic payment methods. Many governmental and business payment services (for example, payment of

state services) have switched to electronic format, which significantly reduces the personal interaction of individuals and the risk of bribery (World Bank 2016).

The second significant issue from a political point of view is freedom of the press. For 2019, Russia ranks 149 out of 180, which means a significant restriction on media in terms of published materials (Reporters Without Borders 2019). In Russia, propaganda successfully prevails in the media on television, in newspapers and on the Internet, since the media themselves are sub-state. There is a tendency for the controlled press of the past, but today the situation is changing a little. Thanks to the Internet, new, independent media appear, which are in every way suppressed by the authorities. With modern developments in the Internet sphere, in particular, the Russian secure messenger Telegram with message encryption technology forced Kremlin to issue a bill on "sovereign Internet". The essence of the project is the enhanced control of Internet traffic by the authorities, which supposedly *"will increase the security and stability of the national segment of the Internet in the event of any external negative impact"* (Euro News 2019). Such an action on the part of the State Duma once again caused a lot of criticism from the population of people who understand that such a law does not comply with the clause of the Constitution "on the secrecy of personal correspondence" (BBC News Russia 2018).

A particularly significant event for raising the president's popularity rating, but which entailed criticism and condemnation from the world, is the accession of Crimea to the Russian Federation. By joining Crimea to the territory of the Russian Federation, the country received a flurry of conviction for the illegality and crime of this action on the part of the Russian authorities. In particular, the European Union still does not recognize the annexation of the Crimean Peninsula. *"Five years after the illegal annexation of the Autonomous Republic of Crimea and the city of Sevastopol, the European Union Federated Federation remains firm in its commitment to the sovereignty and territorial integrity of Ukraine. The European Union reiterates that it does not recognize and continues to condemn this violation of international rights."* - EU representative for foreign and security policy Federica Mogherini said (Interfax 2019).

Recently, the reverse case entailed the strongest blows to the economy and the attitude of society to power was pension reform in June 16, 2018. The essence of the bill is to gradually increase the retirement age of men, from 60 to 65 years and from 55 to 60 years for women, respectively. The main reason for the adoption of the reform was the supposedly unstable demographic situation in the country, when the number of elderlies outweigh the young working population. However, this situation is normal for other developed countries, but solutions are being found in more humane ways. Moreover, this reform does not provide a solution to the demographic problem itself, that is, raising the retirement age will only help balance the budget on a short-term basis. This event received a huge wave of criticism and discontent from the residents of Russian federation with subsequent protests. The concern of the people has shaken the stability in the country and confidence in the future as well as satisfaction with the authorities (Svoboda 2018).

The facts presented in this chapter indicate a relatively unstable situation in the country as well as the presence of various problems that can significantly affect the ability of a business to develop. For international companies, this may be the first call to casting doubt on entering the Russian market as a potential destination.

For the wind industry, such events may only have an indirect effect, since it is rather difficult to determine the direct connection of the influence of political unrest on some industries. On the other hand, an unstable policy calls into question the feasibility of entering new markets for foreign wind turbine manufacturers, since it is much safer to establish existing relations in more sustainable Western countries. In the case of Russia, it is often necessary to weigh the degree of risk with the degree of development potential in order to make an adequate decision. On the whole, a positive alignment of events was provided for the wind industry, which will gradually introduce new wind farm capacities to the Russian market.

5.2 Economic

This variable is very important for any organization wishing to enter the market in a new country because the economic conditions to a large extent determine the financial success as well as the possibility of further growth.

The first decisive influence aspect is the country's currency; therefore, it is first necessary to pay attention to the features of the Russian Ruble. In general, the currency is relatively stable, if not to compare it with the developed countries of the West, however, there is a strong dependence on some industries, for example, oil and gas (since oil and gas exports account for more than half of the country's total exports) (RBC News 2019b). For this parameter, several fundamental factors should be distinguished and preferably be taken into account by manufacturers evaluating the Russian market.

As mentioned above, the price of oil is the most sensitive factor for the Russian Ruble. Since the beginning of modern Russia, petroleum prices have been key to the country's economy. High global demand for oil materials has a very positive effect on strengthening the national currency and the economy as a whole and vice versa. However, over the past few years there has been a tendency that despite the increase in oil demand, the ruble growth is far from proportional, due to the activities of the central bank of Russia. (Gorod Finansov 2018.)

The next list of importance is the unemployment rate in the country, which has a direct impact on the economy of the country and leads to currency fluctuations. The growth of unemployment is often unfavorable for the national currency rate and brings the danger of economic crisis (Pogosov I. 2015). In 2018, the unemployment rate in Russia amounted to about 4.8 percent, which is half a percent lower than in 2017 (Macrotrends 2019.). The general dynamics show that over the past 20 years, the level has fallen by more than two times primarily due to a significant decrease in the working-age population, despite an increase in the retirement age (Vedomosti 2015.).

It is worth mentioning that in Russia there is a slightly different decision-making mechanism during economic crises in the country. The labor market model does

not imply dismissing workers during a period of economic stress, but, for example, lowering wages or sending them on unpaid leave. Formally, people remain in positions, but the pace of production is declining, and the unemployment rate is in the normal range. (Budget RU 2018.)

The third factor affecting the stability of the Russian currency is the phenomenon of sanctions. Over the past 10 years, there has been a tendency to declare large-scale sanctions bans on trade relations with Russia and on individual government officials. They are mainly connected with the non-acceptance of Russia's foreign policy actions, such as the annexation of Crimea, interference with the US elections, etc. Such bans adversely affect trading activities, increasing the risks of a fall in the national currency and the country's performance indicators. Over the past 6 years, prices for petroleum as a whole have fallen by about 40%, while the value of the euro and the US dollar have doubled in relation to the Russian ruble. (RBC News 2019c.)

The fourth feature that has influence in many areas of the business environment of Russia, including the economic sphere is the information field. Media today have a significant influence and power in society. Given the high level of sub-statehood of the media in Russia, a statement in a newspaper by senior officials from ministries can make people move their assets to other currencies, thereby significantly affecting the exchange rate of the national currency. (Gorod Finansov 2018.)

The final but no less important factor affecting the currency is the public confidence in national currency. The degree of certainty in the national currency is directly affects the value of the ruble in the foreign exchange market. For example, the more people are confident in the stability of the currency in nearest future, the more their assets are stored in it and the stronger the exchange rate gets stronger, respectively (Gorod Finansov 2018). The media play a large role in this factor, since confidence in the national currency is sensitive to significant events at the global level, especially in key industries of Russia (Izvestiya 2018).

The factors listed above in aggregate affect the Russian economy, periodically increasing the percentage of economic growth, then lowering it. It is extremely

rare that several negative factors simultaneously hit the country's economy. (World Bank 2018.)

Despite the relatively fluctuating situation of the country's economy in monetary terms, the wind industry in Russia provides the opposite positive impetus to the development of both wind energy itself and another growth factor for Russian economy. For 2018, a program is underway to train qualified specialists in working with wind power stations. There was no such curriculum earlier, but thanks to the joint efforts of the Russian Association of Wind Energy in 8 universities of the country, since last year there is a special training of engineers specifically in the direction of "wind energy". (Russian Association of Wind Power Industry 2018.)

5.3 Socio-cultural

As was repeatedly mentioned earlier, most of the features of modern Russia are incredibly closely linked to the influence of rich history that is carefully passed down from generation to generation. Social patterns of behavior, ways of doing business and human problems can be clearly traced based on the life of people of past centuries, which can be traced in one way or another in modern society in Russia.

The atmosphere in the country is ambiguous, namely, dissatisfaction on the part of the younger generation and the practical irremovability of power despite the democratic system of the state. The older generation, over the age of 40, are mostly supporters of the current situation in terms of stability, because "everything could be worse." However, worse comes gradually and people practically do not notice changes in the standard of living.

5.3.1 Geert Hofstede 6D Model

To obtain the most specific form of cultural characteristics of Russians and how this affects the business environment, it was decided to use the model of the Dutch anthropologist Geert Hofstede. Generally, it is used to compare two or more countries with each other in order to find common ground or differences between cultures in business-related activities. The model consists of several

basic parameters that have a rating of 1 to 100, the extreme values of which mean opposite characteristics. The parameters of the Hofstede 6D model are: Power Distance Index (high versus low), Individualism vs. Collectivism, Masculinity vs. Femininity, Uncertainty Avoidance Index (high versus low), Long- vs. Short-Term Orientation, Indulgence vs. Restraint. (Hofstede Insights 2019.)

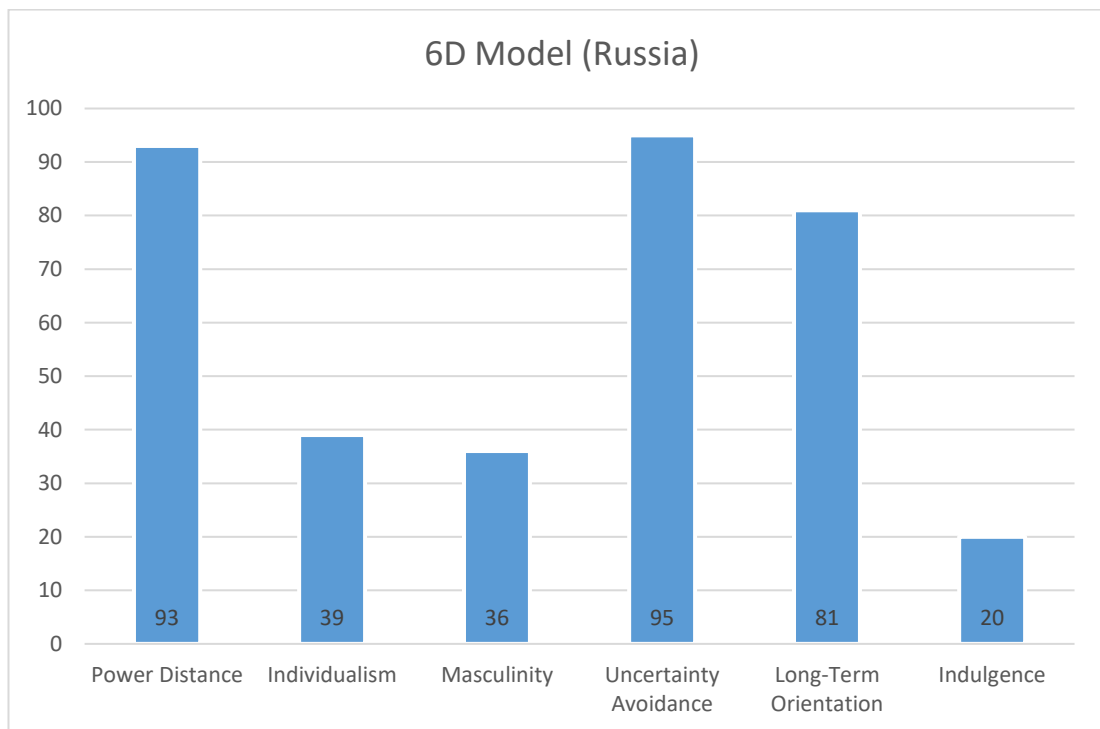


Figure 5 Hofstede 6D Model (Russia) (Hofstede Insights 2019)

From a general point of view, it is worth highlighting that the graph has the character of extremes in certain dimensions. It is necessary to provide a brief analysis of the data to highlight the characteristics of the business culture in Russia.

First, there is a Power Distance Index (PDI), for the Russian Federation the value of which is 93 out of 100 possible. This indicates a high degree of stratification of the population and the need for a vertical form of government. Power has always been at a great distance from society, and to this day it is perceived as an absolute norm. In most Russian organizations, there is indeed a tendency towards a more traditional approach to the distribution of employee responsibilities, therefore, many Western companies with a flat hierarchical structure need to take this moment into special attention. This type also has clear

job responsibilities for each position so that each employee represents their specific position in the organization. (Hofstede Insights 2019.)

The second parameter is individualism versus collectivism, where absolute individualistic country is at 100 points. In this dimension, the degree of society's commitment to working together or to exist on the principle of "each man for himself" is calculated. Russia scores 39 points, which implies predisposition to a more collectivist model of society in the country. In the first place, Russians have a family and values of relationships with people. Good relationships are key to successful partnerships and business promotion, regardless of industry. Sometimes this can also have a flip side, when managers make important organizational decisions based precisely on relationships with people without taking into account more rational factors. (Hofstede Insights 2019.)

For new organizations operating in wind industry and wishing to enter the Russian market, first of all, it is necessary to establish close partnership with the representative members of the associations in order to create a circle of acquaintances and get the necessary support in the early stages. Another equally important step would be hiring Russian personnel to smooth out possible differences in doing business between the manufacturing country and Russia.

The third dimension is called "Masculinity versus Femininity" and consists in the degree of competition within society. In other words, higher level of masculinity means a strong degree of desire for success despite other life aspects. In this direction, Russian society is rated at 36 points, which indicates a greater degree of Feminine society, which adheres to more life values than comprehensive success. Russians tend to do more what they like than what will necessarily lead them to success. However, this is not always true, because the result for this dimension is quite averaged. Such figures are true in view of the low percentage of the country's wealthy population and the incredible complexity in material growth. (Russian Search Marketing 2017.)

The fourth and most critical index is called uncertainty avoidance and makes up 95 points out of 100. This dimension "*deals with a society's tolerance for uncertainty and ambiguity*" (Hofstede 2019.). Different societies are more or less

unsure of tomorrow due to various reasons, whether it is an unstable political situation, the standard of living in the country or something else. In Russia, an incredibly high index of uncertainty, since the life situation of the vast majority of Russians does not give any guarantees for tomorrow's confidence. This condition directly affects the business environment of Russian organizations; Russian employees tend to have an emotional and stressful background at the workplace, which often affects the various stages of planning and the possibility of making decisions with unjustified risks (Hofstede Insights 2019). The high level of uncertainty avoidance in the Russian Federation is largely offset by a variety in rules and regulations that prescribe the activities of company employees, including in non-standard situations. In this case, high value in the Power Distance Index is also of great importance, since the set of rules and responsibilities is determined by the top management level of organizations.

In the fifth dimension, Russian business culture has a high tendency to long-term orientation with a score of 81 points. This parameter measures the degree of foresight of people in society, then how far they plan their activities and life. In Russia, there is a tendency to conservative methods of doing business with few exceptions, in other words, organizations somehow refer to traditional approaches and experience of the past. Along with short-term oriented countries that need immediate results and constant modification of bstrategies, Russian business prefers continuous relationship building as a foundation for long-term planning and the gradual achievement of goals. (Hofstede Insights 2019.)

The last of the six dimensions is called the "indulgence versus restraint" has a direct relationship with the previous ones, assessing the degree of restraint and emotional control of the society in its desires and impulses. The Russian score in this dimension is 20 points, which indicates an extreme commitment to restraint both in everyday life and in the workplace. Society in Russia prefers work overtime instead of leisure time activities because it is generally believed that hard work is the only path to success and happiness rather than the little charms of life. It is also common for such views to act in accordance with strict social norms, suppress emotions and have a different idea of satisfying their needs. (Hofstede Insights 2019.)

According to the result, it is worth making a conclusion in the form of following important cultural features of the Russian society, which should be carefully looked at and taken into account by foreign manufacturers when building business relations:

1. preference in vertical management structure
2. relationship building and trust go first
3. business Success is above all
4. a clear set of rules and responsibilities for each organizational level
5. building visionary planning is necessary
6. the importance of employee incentive system (Hofstede Insights 2019.)

5.4 Technological

The country has always been interested in comprehensive technological progress, both in Soviet times and in modern Russia. There is no doubt that there are some obstacles of a different nature, for example, cultural, economic and some others. Most of the factors of the macroeconomic environment are somehow interconnected and the technological sphere is no exception. There are several main obstacles in terms of the innovativeness of Russian enterprises. Those include lack of legislative framework for innovation, inadequate level of financing for Russian enterprises in terms of introducing innovation, strong differences between organizational structures of innovative companies of the West and Russian enterprises and certain features of the Russian mentality (A good example is a widespread fear of transition to something new, change in the usual way of things). (Sayfullina 2010.)

Despite the above-mentioned characteristic features, Russia is gradually improving its indicators of innovation in the global market, although it is still far from a leading position. Current Russia's strategy looks like an innovation buyer for various fields, in particular, this is happening with green energy. The country is successfully enriched through the export of raw materials, and at the same time invests in renewable energy technologies using the example of the state

corporation Rosatom. In general, Russian domestic companies can be characterized as open to technological changes, however, due to some factors, the process of transition from the old to the new needs to be consistent with focusing on low risk.

In the field of wind power industry, several changes have occurred from a technological point of view, which have positively affected the current state of renewable energy. The most important of the latter was the use of American development in the analysis of territories for the installation of wind farms. (Russian Association of Wind Power Industry 2019.)

5.5 Environmental

As noted earlier, in Russia there are relatively significant environmental deficiencies affecting the global problems of our time. Since the peculiarities of the culture of a Russian person imply a focus on results with all possible means, enterprises often turn a blind eye to harming the earth's spheres on the territory of their country. The most tangible problems of large settlements are air and water pollution. Once again, referring to the wealth of the Russian Federation with fuel and natural gas, there is widespread use of combustible fuel with the subsequent release of pollutants into the atmosphere. This, in turn, makes Russia the fastest growing global warming situation along with the rest of the world. (The Moscow Times 2019b.)

A positive attitude regarding environmental responsibility is introduced by foreign companies entering the Russian market. Most European organizations have long had models of corporate social responsibility applying environmental standards, which are also applied on behalf of headquarters to branches in Russia. This is a rather non-standard process, since it would be more logical for the state to demand such internationally accepted standards. Since 2001, the country has a law "on the protection of the environment", which contains various requirements on the limited use of natural resources and the right of citizens to protect environmental rights (Pravo Gov 2019.). However, in practice it is obvious that environmental management system makes environmental policymaking and planning work much more efficiently.

5.6 Legal

The process of installing wind farms from planning to maintenance stage of finished stations is quite complex and includes many different actors of the energy market. State policy has taken a big step towards the development of wind energy in Russia, setting a goal to gradually increase the capacity of energy generated by the wind. Approval of projects takes place in the format of competitive selection of projects for the wholesale electricity market among plenty of companies. the so-called "Power Purchase Agreements". Based on the selection results, the most attractive projects receive contracts for the supply of power under certain conditions from the side of government policy on electricity. Further, the energy companies independently work with raising funds (investments), design, construction, commissioning, etc. (Russian Association of Wind Power Industry 2019).

Regarding the state side, there is a key commitment and requirement for continued cooperation with owners of PPAs that needs to be disclosed. First of all, for wind farms providing the wholesale market with electricity production, the state undertakes a reimbursement of economically justified costs for the construction of generating facilities, namely, a monthly fixed fee for renewable energy facilities for installed capacity for 15 years (Energy & Industry Russia 2019.).

In addition to obligations from the state, it is also worth mentioning the basic requirements for companies that have the opportunity to implement their wind farm projects in Russia. Today, the state policy of the Russian Federation implies a high level of localization of production and import substitution with its own equipment and technologies of the country. At the moment, the percentage of required localization of production is at the point of 55%, and in the future, the proposed degree should grow to 65% in the period from 2019 to 2024 (Russian Association of Wind Power Industry 2018.). In fact, the Power Purchase Agreement contains stringent requirements for the local production of equipment used for renewable energy projects in Russia; serious penalties are provided if the required percentage of localization is not fulfilled. These requirements and

sanctions are an effective tool for the development of equipment production for renewable energy projects in Russia. (Energy & Industry Russia 2019.)

In general, such a model is most suitable for both parties and is successfully applied in most countries when adopting wind farm projects. Despite the requirement for the degree of localization, market conditions are quite positive for foreign manufacturers of wind turbine components, since even with the development of local production in Russia the degree of risk is relatively low from the financial point of view.

6 Market entry strategies

To enter a new market in another country, first, the company must have reasons why such a decision was made. There are plenty of such motives which are occasionally individual to a separately taken industry. Examples of such reasons include the attractiveness of the new market in terms of high product demand, favorable political or monetary conditions, territorial proximity, etc. However, in addition to determining the feasibility of expanding the company abroad, the main aspect in this decision is the strategy of entering this market. (Glowik 2016.)

It is worth assuming that for manufacturers of wind turbine components, first of all, there will be market demand in terms of technological advantage, since in the early stages of industry development wind turbines have been supplied to Russia through import (InfoMine 2017). In addition, the situation with the production of components is in a state of transition from procurement abroad to establishing own local production in order to comply with government policy (Russian Association of Wind Power Industry 2019.). Taking this aspect into account, manufacturers need to understand that in order to successfully operate on the territory of the Russian Federation, it is necessary one way or another to establish a separate production line within the country.

The strategy models vary greatly from the least to most risky from the producing organization's point of view. There is also an inversely proportional difference between strategies in terms of control from the headquarters of the company. The higher the risk, the lower the control over the chosen type of market entry and

vice versa. Therefore, there are many reasons why one or another strategy may be more suitable, however, the final answer is most often found precisely within a particular organization according to its unique products and motives for international expansion. (Glowik 2016.)

To determine the most suitable strategy for manufacturers of wind turbines, the information from PESTEL analysis collected was used together with insights from the interview. In the aggregate of factors, two of the most attractive and appropriate strategies can be distinguished if company wishes to enter the Russian wind energy market - this would be a joint venture and intermediation (contract manufacturing).

The joint venture is suitable for new players in the wind turbine market for a few reasons. Firstly, finding a Russian partner manufacturer of components can simplify the most difficult stage of adapting a new company by creating a more powerful production company for certain components. A good example is the existing collaboration of Vestas and Liebherr, who have made joint efforts for the local production of wind turbine gondolas in Russia. Contract manufacturing is another common form for existing market participants producing various components of wind turbines on the Russian market. Since this practice has proven itself, new manufacturers may take it into account as the most potential among the rest. (Russian Association of Wind Power Industry 2018.)

7 Summary

The purpose of this study was to identify the current state of the Russian wind energy market with subsequent inferences based on the data collected. The most powerful discrepancy in the research problem turned out to be great opportunities in the development of wind energy for the near future with inconsistency of the real situation in the country. The general task was to delve deeply into the essence of the problem, looking at the energy sector of Russia from different angles and derive the most significant influence factors both in relation to wind energy and renewable energy in general.

In the process of collecting theoretical and empirical material, various data were collected to a different degree of importance, but overall, they add up a picture of what is happening in the Russian wind energy sector. The results of the PESTEL analysis in combination with the interviews made it possible to draw certain parallels between the figures in the wind industry of Russia and the reasons why this state of things takes place.

Answering the main research question regarding barriers in the development of wind energy, it is worth to note that first of all the general participation of the political system in this issue takes place. It cannot be said unequivocally that the state does not give the green light to the construction of wind farms in Russia, but it also does not promote renewable energy in the proper amount. Such an ambiguous situation was revealed during the interview, namely that the potential does not have to be fully revealed, if there is one in Russia. As for the main opportunity of the Russian wind energy market about the huge potential in the construction of wind farms, this is a weighty argument on the part of the Russian Association of Wind Energy, hoping in the future that the gradual approval of renewable sources will one way or another make it possible to use a large share of this potential.

As for the research sub-questions, the most influential features of the current entry of wind generators into the market is the policy regarding the localization of production. Such practice may affect the interest of some manufacturers, aimed only at exporting turbine components to the Russian market.

With respect to the general climate with wind energy in Russia, there is still a lot to go through and change with respect to the established way of life. Undoubtedly, the country is an interesting direction for development, but it is worth taking into account cultural and economic features, as knowledge of doing business and building relationships in Russia leads to a successful existence in the market, regardless of industry.

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Appendix

Appendix Interview questions

1. Please, tell about your company's activities in wind energy.
2. What is the overall assessment of the situation with wind energy in Russia at the moment?
3. Does Russia currently have support mechanisms for wind farms? If so, which of them are the most promising?
4. What factors of the macroeconomic environment have the most significant influence on wind energy? (Political, economic, legal, etc.)
5. What policy barriers does the development of the wind industry in Russia have?
6. What is your opinion about the Russian Association of Wind Energy?
7. Does it bring your company any benefits of being a member of the Russian Association of Wind Energy?
8. What is the most successful entry strategy for wind turbine manufacturers for Russian market?