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Development of cooperation of Kazakhstan and the European Union in the field of renewable energy†

The article examines the history of cooperation between Kazakhstan and the European Union in the field of renewable energy sources. Alternative energy issues have been widely discussed in recent decades and have become a topic of scientific and political discussion. However, depending on the relative novelty of this energy sector and the extent of use of alternative sources in General, this problem should not yet be considered sufficient. In addition, the experience of European countries in the use of alternative energy sources and the transition of the energy sector to renewable energy sources is a valuable source of knowledge for countries such as Kazakhstan, which have just started to introduce renewable energy sources in the future, or are intending to increase the percentage of their participation in the energy sector.

Keywords: renewable energy, the European Union, Kazakhstan, energy resources, international agreement, international cooperation, renewable energy potential of Kazakhstan.

Introduction

Renewable energy sources are now recognized globally as major energy sources. Rapid growth, particularly in the energy sector, is driven by numerous factors, including increased cost-effectiveness of renewable technologies, targeted policy initiatives, greater access to finance, energy security and environmental concerns, growing energy demand in developing and emerging economies, and the importance of access to modern energy sources. In this regard, new markets for both centralized and fragmented renewable energy are developing in all regions. One of the most notable features of renewable forms of energy is the diversity of technologies and resources. There is no doubt that the final volume of renewable energy sources is large and potentially can make a very significant contribution to the world energy needs - easily exceeding the current world electricity supply.

Recent years have been particularly important for renewable energy development around the world, and to date there has been the greatest increase in global capacity, although challenges persist, especially outside the energy sector. Over the past few years, there have been a number of changes that are relevant to renewable energy, including a sharp decline in world fossil fuel prices; a number of statements concerning the lowest ever prices of long-term renewable energy contracts; significant increase in attention to energy conservation and the historic Paris Climate Agreement, which brought the world community together.

The case of European countries in the context of alternative energy can be considered very indicative, because the members of the European Union, having strong economies and progressive social-oriented views, are clearly aware of the need to transform the energy sphere and, as a result, will carry out the continuous necessary work in this direction. The active introduction of renewable energy sources in Europe also shows a good example for countries such as Kazakhstan, because it proves, firstly, the effectiveness of alternative technologies, and secondly, contributes to the borrowing of positive experience, but already without the need to make mistakes in this industry.

Methods

The methodological part of the research consists of a number of theoretical and empirical methods. When working on reliable documentary sources for this work, we used the content analysis method, examining such documents as the" Memorandum of understanding on energy cooperation"; the Extended partner-

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ship and cooperation agreement between the European Union and the Republic of Kazakhstan “and” the Concept of a sustainable energy strategy for Kazakhstan until 2050", mentioned in the main part of this work. Then, in this work, we used case studies and event analysis to review the results of official meetings and agreements reached between Kazakhstan and European countries such as Germany and France in the field of renewable energy. The method of system analysis was of great importance in studying the forms of interaction between the EU and Kazakhstan-official meetings, joint events on alternative energy sources, joint projects and joint research in this area.

The following methods were also used for the study: classification of agreements and complex measures aimed at introducing new energy sources; generalization of the results of each agreement and a view from the point of view of their effectiveness. Renewable energy sources are now recognized worldwide as the main sources of energy. Rapid growth, especially in the energy sector, is driven by numerous factors, including improved economic efficiency of renewable technologies, targeted policy initiatives, Increased access to Finance, energy security and environmental concerns, growing demand for energy in developing and emerging economies, and the importance of access to modern energy sources. In this regard, new markets for both centralized and fragmented renewable energy are developing in all regions, and therefore this issue is absolutely worth studying and analyzing.

Results and discussion

The Republic of Kazakhstan is one of the world leaders in the diversity and quantity of minerals. Since oil and gas, coal and other minerals are the most significant for the country economy, so the legislative framework in these sectors of the economy is so developed, historically the government has been less focused on the development of alternative energy sources. For example, most power plants in Kazakhstan currently operate on natural gas, coal or petroleum products.

However, the recent crisis in the world economy and awareness of the need to reduce the energy intensity of the economy and the impact on the environment have led to focus actively on creating an enabling environment for renewable energy. Today, the use of this kind of energy has become an important and mandatory direction of future energy development. Kazakhstan has all the necessary resources in this regard. The state sets ambitious goals to increase the share of renewable energy sources in the energy system of the country.

One of the priorities for the development of "green" energy in Kazakhstan is the development of renewable energy sources. According to the concept, in the next few years the country should achieve a 3% share of renewable energy sources in the total volume of electricity, which is an ambitious task, taking into account that the current share of renewable energy sources use in Kazakhstan is less than 1% of the energy balance of the republic. Therefore, a number of regulations regulating the renewable energy market have been adopted to implement these ambitious plans, such as Order of the Minister of Energy of the Republic of Kazakhstan No. 730 of 18 December 2015 "On Approval of the Rules for Monitoring the Use of Renewable Energy"; Law of the Republic of Kazakhstan No. 541 as of 28.12.2016 on energy saving and energy efficiency improvement, etc.

Kazakhstan has a huge potential for renewable energy sources, in particular for solar energy development due to the presence of vast territories and favorable climatic conditions in some regions. In this regard, the European Union and Kazakhstan have been partners since the independence of the Republic and are engaged in an ever-expanding joint dialogue. In the early years of cooperation, the dialogue focused mainly on trade and investment, but since 2002, it has started to cover other important areas such as transport and energy. Despite the fact that cooperation between the EU and Kazakhstan concerns many different areas, the sphere of energy resources remains one of the most important in their relations.

Kazakhstan has huge potential also for wind and small hydropower plants. The Republic of Kazakhstan is able to generate 10 times more energy than it currently needs only through wind energy. However, renewable energy accounts for just 0.6% of all power plants. Of these, 95% are small hydropower projects. The main barriers to investment in renewable energy sources are relatively high financial costs and the lack of uniform tariffs for the supply of electricity from renewable sources. The volume and duration of renewable energy tariffs are estimated separately for each project based on feasibility studies and project-specific costs.

Considering the lack of electricity in the country, especially in the southern regions, the wider use of alternative sources is of particular importance. The inefficiency of centralizing the energy supply on the territory of 2.7 million square kilometers Kazakhstan with low population density results in significant losses of energy during its transportation. Therefore, the use of renewable energy will reduce the costs of electricity

supply to remote locations and significantly save on the construction of new power transmission lines. In such conditions, there was a great need of finding reliable and powerful partner in this sphere.

Environmental pollution and catastrophic climate change - fossil energy has become one of the main causes of the most pressing problems of our time. Already today all over the world politicians, ecologists, energy specialists understand that the planet urgently needs to switch to renewable energy sources. Climate anomalies are no longer hard to overlook, and if the energy model stays the same, a global disaster will come to every country. Climate change can seriously harm the country – agriculture will be destroyed, and many regions will be left without water. In addition, scientists estimate that oil consumption will peak within the next 10-15 years, after which demand for "black gold" will fall. It is already clear today that the economy needs to diversify to avoid environmental, climate and economic problems. Meanwhile, market participants note that green energy in Kazakhstan is developing quite slowly today. Specialists have developed a Charter - an appeal to the Government of Kazakhstan, which lists proposals and recommendations for more intensive development of renewable energy.

It is significant to mention that the economy of Kazakhstan relies mainly on the oil sector, as well as on the extraction of coal and uranium and other important raw materials. Over the past two decades, Kazakhstan and the EU have developed strong and mutually beneficial relations in the field of energy. Major European energy companies have invested heavily in Kazakhstani oil and gas industry. At present, about 70% of the total volume of Kazakhstan oil exported is in the European Union, which corresponds to about 6% of the total volume of EU oil imports [1].

Moreover, Kazakhstan has large uranium reserves and ranks first in the world in the production and export of uranium raw materials, being the largest supplier for the EU nuclear industry. Thanks to increased production and exports to Europe, Kazakhstan contributes to the diversification of energy sources for the EU, thus strengthening the energy security of the European Union [2].

However, over the past decade, the EU-Kazakhstan relationship has also taken over the sphere of renewable energy. The development of “green” energy in the Republic of Kazakhstan is beginning to gain momentum, opening up new opportunities for cooperation with world giants in this field, such as the European Union. The most promising area for the development of interaction is cooperation in the area of improvement of energy efficiency. The European Union, being the one promoting the Goals of the United Nations Sustainable Development, introducing a green agenda on the international level, is extremely interested in the transition of the Central Asian countries to a “green” model of the economy.

The energy diplomacy of the European Union in Kazakhstan began to develop with the signing of the Memorandum, recognizing Kazakhstan as one of the main producers of energy resources in the Caspian region. More practical aspects of EU-Kazakhstan energy relations are discussed in this Memorandum of Understanding on Co-operation in the field of energy signed in Brussels in 2006. This Memorandum covers issues such as energy security and investment; increased security of supply, predictability of demand; construction or modernization of transport infrastructure of mutual interest, promotion of industrial cooperation (exploration and production, processing and sale); and, of course, alternative sources of energy [3].

Such agreements clearly demonstrate the considerable interest of the EU Member States in the dynamic development of cooperation with our country, as well as the fact that Kazakhstan and the European Union share the desire to create a qualitatively new solid legal basis for deepening cooperation in the conditions of global competition taking into account economic and geopolitical interests.

In 2007, since the EU Council signed the document "European Union and Central Asia: Strategy for a New Partnership," economic, energy and transport initiatives have been placed at the forefront of priorities, and political, humanitarian and democratic policies have taken an integral position to support economic objectives. In addition, Kazakhstan, as a beneficiary of INOGATE technical assistance programme, uses investment programmes, such as the Sustainable Energy Financing Fund, which was financed in 2008 for 300 thousand euros. In addition to this fund, Kazakhstan receives considerable support from the European Union with various regional programs for the development of the energy sector. The European Union needs these financing for the energy integration of the countries of Central Asia and the Caspian region [4].

Close cooperation between Kazakhstan and the European Union, in particular with France, is observed in the sphere of solar energy. This cooperation covers both the production of materials for solar panels, in this case pure "solar" silicon, but also the operation of already finished solar plants.

In October 2010, Nursultan Nazarbayev visited France in order to sign an agreement on the KAZPV project - on the creation and development of silicon solar energy in Kazakhstan. The basis for its implemen-

tation is the presence of huge reserves of high-purity quartz in the subsoil of Kazakhstan, which is the basis for the creation of plants for solar power plants [5].

In the same year, an agreement was reached between "NJSC Kazatomprom", LLP "Kaz Silicon" and French company "CEIS" on the development of solar energy technologies in Kazakhstan and the creation of a fully integrated industrial line for the production of photovoltaic panels for solar energy. Here there is not only a possible economic effect, but also transfer and development of high technologies. In addition, "NJSC Kazatomprom" and "CEIS" intend to continue cooperation in the scientific and research sphere and to create a joint scientific and research laboratory for the development of technologies related to renewable and alternative energy.

Later, during numerous high-level meetings held with European representatives on a regular basis, Kazakhstan is considered as a key resource partner of Europe in Central Asia. For that reason, there are many cooperative projects in the sphere of "green" energy are realized and planned for the future. For example, in 2010 the President of the European Strategic Research Company "CEIS" Mr. Olivier Darrason visited JSC "Center for Engineering and Technology Transfer". As part of the visit, the contract with CEIS was signed as the first joint project of the Kazakh-French Center for Technology Transfer for research in the field of solar energy. The National Solar Energy Institute was involved in this examination.

Then, in April 2011, Chairman of the Board of NJSC "Kazatomprom" Vladimir Shkolnik and General Manager of the Commissariat for Atomic Energy of France – CEA, Bernard Bigot signed a Memorandum of Intent on carrying out joint R&D programs in the field of new materials for various types of renewable energy sources. At the same time, an agreement was reached on the transfer of CEA technologies, which will allow Kazakhstan to maximize its potential for creating new sources of energy. They also discussed the issues of launching a plant for cleaning metallurgical silicon produced in Kazakhstan at "Kaz Silicon" LLP to silicon of solar quality in Ust-Kamenogorsk and a plant for the production of solar panels in Nur-Sultan.

On December 10, 2011 near the city of Astana (now Nur-Sultan) started the construction of a plant for the production of solar panels based on silicon produced in Kazakhstan. In addition, on March 11, 2011, the head of the national nuclear company "Kazatomprom" announced the start of construction of a plant for the production of solar panels. The construction of the plant is part of a large-scale project carried out by NJSC "Kazatomprom" with the assistance of the French consortium headed by the Commissariat for Atomic Energy and Alternative Energy Sources of France. [6]

Further, in 2013, the Concept of the Strategy for Sustainable Energy of the Future of Kazakhstan until 2050 was developed within the framework of the VI Astana Economic Forum, which considered the transition of the country to a green economy. The developers of this strategy held a number of meetings with the staff of the UN General Secretariat, because of which they were approved by the United Nations. The concept consists of 154 pages: in 7 sections on energy of the Republic of Kazakhstan and on world energy, on national issues in the field of energy, goals and objectives of the strategy, analysis on reserves of resources, on implementation of the strategy, on parameters and stages of implementation, action plan. The document provides for the implementation of the national initiative "Green Bridge", Green Growth, which takes into account the decisions of the UN on sustainable development.

The first section of the Concept highlights a paragraph on EU, Russian and Belarusian energy initiatives. On the initiatives of the EU, it was stressed that 3 provisions of the European Strategy for Sustainable, Competitive and Safe Energy should be considered in the development of the Kazakhstan strategy: recommendations on the full analysis of EU energy are given; recommendation to consider the use of coal and lignite and consideration of legislative structures on efficient use of energy [7].

Other questions on renewable energy interaction are outlined in the document "The Enhanced Partnership and Cooperation Agreement between the EU and Kazakhstan". This Agreement has been accepted in 2015 and still regulates the relations between the European Union and Kazakhstan both in the sphere of traditional energy resources and renewable energy. The Enhanced Partnership and Cooperation Agreement between the European Union and the Republic of Kazakhstan recognizes the need for enhanced, sustainable and effective cooperation in the field of energy to ensure energy security based on the principles of mutual interest, reciprocity, transparency and predictability. The Agreement contains provisions on mutual investment, scientific and technical cooperation and exchange of information on energy-efficient and environmentally sustainable technologies, joint educational programs in the energy sector, etc.

According to the Agreement both partners shall refrain from maintaining or adopting measures requiring the formation of partnerships with local companies, unless such partnerships are deemed necessary for technical reasons and the Party maintaining or adopting such measures can demonstrate such technical rea-

sons upon request by the other Party; ensure that any rules concerning authorisation, certification and licensing procedures, if applicable, in particular with regard to equipment, plants and associated transmission network infrastructures, are objective, transparent and non-arbitrary and do not discriminate against applicants from the other Party; ensure that administrative charges in renewable energy sector, such as those paid by consumers, planners, architects, builders, equipment installers and suppliers, are transparent and limited in amount to the approximate cost of services rendered, etc [8].

Kazakhstan became the first country in the CIS territory to sign a document of such format with the European Union. The process of ratification of the Enhanced Partnership and Cooperation Agreement between the European Union and the Republic of Kazakhstan is proceeding very rapidly - 18 of the 28 EU Member States have ratified the Document within two years since its signing.

Another form of interaction between Kazakhstan and the European Union is through the European Bank for Reconstruction and Development – EBRD. Cooperation with the largest EU financial representative in the region, the European Bank for Reconstruction and Development, continues to grow and expand, as evidenced by the agreement on 17 alternative energy projects worth more than half a billion dollars, which were signed in recent years.

The European side notes that in Kazakhstan the EBRD portfolio is growing much faster than in other countries of the region. "The issue of renewable energy, or more precisely the topic of green investments, is very acute, as Kazakhstan remains one of the least energy-efficient countries not only in the region, but all over the world. Although I see this as a great potential not only for investments, but also for improving competitiveness through investments in energy efficiency", EBRD Director for Kazakhstan Agris Preimanis said. According to him, the development of renewable energy in the country is taking place, in particular, thanks to the close cooperation of the Ministry of Energy of Kazakhstan, the EBRD and other organizations on various issues, including the improvement of the regulatory base. In its activities in Kazakhstan, EBRD also supports commercial projects [9].

In addition, the International Exhibition "Expo-2017" on the topic "Energy of the Future" confirmed the commitment of Kazakhstan to the goals of sustainable development and confirmed the desire of the state to develop in the field of renewable energy. The plans of Kazakhstan to create an investment and innovation center of Eurasia on the basis of Expo coincide with the regional interests of the EU.

The use of advanced energy technologies will allow the state not only to increase the competitiveness of the economy, but also to ensure the rapid movement of goods and services throughout the territory, which is of particular interest to the EU due to our geographical location between Europe and Asia. Significantly, Kazakhstan has strengthened its image as a dynamically developing state in the Eurasian region [10].

The Expo once again showed the commitment of our country to the idea of developing green technologies and clean energy. For scientists and experts of science it was important to hold various scientific events within the Expo exhibition, where we were able not only to demonstrate their research works, but also to interact with leading scientists of the world, Nobel Prize winners, well-known experts, heads of large energy companies of the world. Kazakh scientists managed to see and learn about the main priorities of world development in the field of green energy, on which foresight and critical technologies today research is carried out in different countries.

The conclusion of the international exhibition "Expo-2017" raises the question of the prospects for the implementation in Kazakhstan of the principles and ideas discussed at the Expo: the ideas of sustainable and harmonious development within the framework of the green economy, green technologies, green energy [11].

Kazakhstan, which has proposed a number of international initiatives in this field and formulated an agenda Expo-2017 (Energy of the Future) aimed at their implementation through the development of energy of the future, has an opportunity to demonstrate the success of the green economic growth strategy. Over the years, Kazakhstan has consistently pursued the development of a green economy at both the national and international levels. Kazakhstan efforts to introduce clean energy are based not only on the desire to develop appropriate technologies, but also on the existence of a significant resource potential for future energy, in particular the vast potential for generating electricity from renewable sources of energy. Renewable energy in international practice is understood to mean solar, wind, hydropower (in the context of a green economy - small hydroelectric power plants), biofuel, geothermal and some others. For Expo-2017: modernization breakthrough of Kazakhstan, due to natural and climatic specifics, not all types of renewable energy are relevant, the most promising are hydropower, as well as solar and wind.

Another program for the renewable energy is being realized in the area of wind energy. Ministry of Energy and Mineral Resources of Kazakhstan and the United Nations Development Program “Kazakhstan - Initiative for Wind Energy Market Development” a draft of the National Wind Energy Development Program was developed up to 2024.

The National Wind Energy Development Program aims at involving significant wind energy resources in the energy balance of the country and thus supporting plans to reduce the energy intensity of the economy and increase the share of alternative energy sources in the overall energy balance of the country. Up to 5% by 2024 and stabilization of greenhouse gas emissions at the level of 1990. The aim of the Program is to use the wind power potential of Kazakhstan to generate electricity in the amount of 5 billion kW by 2024 [12].

The German Concern Vestas is considering the possibility to invest about 200 million euros in the construction of wind farms in Kazakhstan. Currently, the Concern has developed a business plan for the installation of wind farms near Nur-Sultan, in Ereimentau and Shelek. Potential power is expected to be up to 500 mW. Possible partners for the Concern Vestas are KEGOC and Samruk-Energo, which will possibly act as ones implementing the cooperative projects on-site [13].

There are many documents regulating the relationship between Kazakhstan and the EU in the field of energy. In spite of the fact that in most cases these documents and the adopted agreements deal directly with classical types of energy resources, such as oil and gas, as well as with issues of nuclear energy, there are points concerning alternative “green” energy sources, which supports the opinion about the process of expansion of interaction in the sphere of renewable energy between the EU and the Republic of Kazakhstan.

Another high-level policy dialogue on renewable energy investment projects was held in Astana on April 26-27, 2018, organized by the Ministry of Energy of Kazakhstan with the support of UNECE, the European Commission and the United States Agency for International Development. The meeting was attended by numerous stakeholders, including politicians, representatives of governments, financial institutions, civil society, businesspersons, investors and experts, who gathered in Astana to discuss opportunities and problems of investments in renewable energy sources in Kazakhstan.

The meeting noted many advantages of renewable energy in terms of energy security, economic development and environmental protection. In addition, they identified several barriers that investors still experience, as well as strategies and tools of best practice to overcome them.

The country currently has a system of State support under the Renewable Energy Support Act. Since 2017, the Ministry of Energy of Kazakhstan has given the right to support renewable energy on the basis of competitive selection, while until 2017 the country had fixed tariffs, which the investor received for 15 years.

Green energy attracts more and more supporters in Kazakhstan. The International Business Festival "Solar Fest Qazaqstan 2019" held in July showed great business interest in new technologies and renewable energy. More than 300 specialists from all over the world took part in this event. The forum discussed issues that impede the development of renewable energy in Kazakhstan, developed possible ways to solve these problems, and prepared a Charter - an appeal to the Government of Kazakhstan.

On 25 September 2019, Nur-Sultan hosted the III Renewable Energy Summit, an international industrial platform attended by more than 300 delegates from 20 countries, including EU partners. The theme of the Summit was "Development of alternative energy potential - a condition for the implementation of the initiative on the construction of the "Economy of the Future". The project also solves the strategic task of attracting to Kazakhstan international developers, investors and suppliers of technologies in the field of renewable energy sources, as well as leading specialists from all over the world for communication and exchange of experience.

With the deterioration of the global environmental situation, climate change and the reduction of fuel and energy resources, green growth, renewable energy development and environmental safety are of particular importance and the integration of energy markets and harmonized energy policies of states contribute to the promotion and development of renewable energy support mechanisms. Despite the difficulties associated with the introduction of green technologies into the energy sector of the Republic of Kazakhstan, it is necessary to say that renewable energy sources will be able to become a full participant in the energy market if Kazakhstan maintains its strategy in this sphere. Partnership with European Union countries, concluded agreements in this sphere, programs implemented jointly on the territory of Kazakhstan, as well as exchange of experience with more "progressive Europe" will create a strong basis for the development of renewable energy in Kazakhstan. "Kazakhstan is consistently engaged in the development of renewable energy sources, for which all necessary conditions are created in the country: a legal framework has been created, fixed tariffs have been approved, research on the potential of different sources of renewable energy has been carried

out, the potential and readiness of the network infrastructure for the integration of renewable energy into the network has been assessed", the Vice Minister of Energy noted.

Alternative energy in the future can become one of the strongest vector of development of states, and Kazakhstan needs to prepare to introduce renewable sources into economics completely, as well as to develop and expand cooperation with more confident partners in this sphere on the world stage. Our country is recognized by the European Union as a mature and cooperative state, ensuring a high standard of living for the population and pursuing an active and balanced foreign policy.

In general, world recognition of Kazakhstan activity in the international arena, stable economic growth and improvement of the investment climate - all this will continue to contribute to increasing political and economic interest of the EU countries and deepening multifaceted and constructive cooperation.

It turned out that in the second decade after the independence of Kazakhstan relations with the European Union became sharply different. While in the 1990s there were large Western TNCs in Kazakhstan oil and gas fields, by 2007 and after there was a medium and long-term legislative framework, and infrastructure for transportation of energy resources to Europe. The European Union Green Policy (on reducing oil and gas imports until 2040 and developing a new energy policy in the EU since 2014) also suspends the development of EU-Kazakhstan energy relations. Despite a step back from the EU, Kazakhstan is going to a meeting offering its Concept of Sustainable Energy Strategy of Kazakhstan future until 2050 in 2013, which is based on green growth of economic and energy development.

Clean energy development is vital to combating climate change and limiting its most devastating effects. 2014 was the warmest year in history. The temperature of the Earth has risen by an average of 0.85° C since the late 19th century. As a result, renewable energy has received important support from the international community within the framework of the Paris Agreement signed at the World Climate Summit held in the French capital in December 2015.

However, there are there are major uncertainties which will influence the technical and economic and in particular the implementation potential of renewable energy technologies. The uncertainties include carbon and fuel price fluctuations. For example, there has been social opposition to energy infrastructure (whatever it is electricity grids, renewables, nuclear or shale gas) in some European Union countries, Japan, South Korea and United States. Therefore, social factor should be considered more fully for the development of future energy scenarios. In addition, there are technological uncertainties. The price of PV panels drops significantly over the last 20 years and this will continue into the future but how it will impact on the development of the whole power sector and well-established oil and gas sectors. The most challenging things is policy uncertainties. When the government is changed, their energy policy is also subject of change. The reducing policy uncertainty is a crucial component of effective renewable energy development [14].

Renewable energy sources are sources of clean, inexhaustible and increasingly competitive energy. They differ from fossil fuels mainly in their diversity, abundance and potential for use anywhere on the planet, but above all because they produce the greenhouse gases that cause climate neither change nor polluting emissions. Their costs are also declining at a steady pace, while the overall trend in fossil fuel costs is in the opposite direction, despite their current volatility.

Over the past two decades, Kazakhstan and the EU have developed strong and mutually beneficial relations in the field of energy. Kazakhstan had great potential for alternative or renewable sources of energy, which should replace natural resources in the long term, as well as reduce energy and transport costs and lead to overall environmental improvements. The transition of the country to the green path of development is a strategic goal and is proclaimed within the framework of the principles Kazakhstan Strategy 2050: a new policy of the state.

Conclusions

Renewable energy can become one of the strongest vectors of alternative energy development in the future, and Kazakhstan needs to prepare for the full introduction of renewable sources into the economy, as well as to develop and expand cooperation with more confident partners in this sphere on the world stage. Our country is recognized by the European Union as a mature and cooperative State, ensuring a high standard of living for the population and pursuing an active and balanced foreign policy.

Since the Republic of Kazakhstan has a certain potential for RES development, it should be noted the development of renewable energy sources (RES) and their integration into the power system of the Republic of Kazakhstan, and measures aimed at reducing emissions of greenhouse gases in the atmosphere, the transition to a "green economy", energy efficiency and energy saving.

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Қазақстан мен Еуропалық одақтың жаңартылған энергия көздері саласындағы ынтымақтастығын дамыту

Мақалада Қазақстан мен Еуропалық одақтың жаңартылатын энергия көздері саласындағы ынтымақтастық тарихы қарастырылды. Баламалы энергетика мәселесі соңғы онжылдықтарда кеңінен таралды, ғылыми және саяси пікірталастардың тақырыбына айналды. Алайда, осы энергетикалық сектордың салыстырмалы жаңалығына және тұтастай алғанда балама көздерді пайдалану ауқымына байланысты бұл проблеманы әлі де жеткілікті деп санауға болмайды. Бұдан басқа, баламалы энергия көздерін қолданудағы және энергетикалық сектордың жаңартылатын энергия көздеріне көшудегі Еуропа елдерінің тәжірибесі болашақта жаңартылатын энергия көздерін енді ғана енгізе бастаған немесе энергетикаға өзінің қатысу пайызын ұлғайтуға ниет білдірген Қазақстан сияқты елдер үшін құнды білім көзі болып табылады.

Кілт сөздер: жаңартылатын энергия көздері, Еуропалық одақ, Қазақстан, энергетикалық ресурстар, халықаралық келісім, халықаралық ынтымақтастық, Қазақстанның жаңартылатын энергия әлеуеті.

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Развитие сотрудничества Казахстана и Европейского союза в области возобновляемых источников энергии

В статье рассмотрена история сотрудничества Казахстана и Европейского союза в сфере возобновляемых источников энергии. Проблема альтернативной энергетики получила широкое распространение в последние десятилетия и стала предметом научных и политических дискуссий. Однако эту проблему до сих пор нельзя считать достаточной из-за относительной новизны этого энергетического сектора и масштабов использования альтернативных источников в целом. Более того, опыт европейских стран в применении альтернативных источников энергии и переходе энергетического сектора на возобновляемые источники энергии в будущем является источником ценных знаний для таких стран,

как Казахстан, которые либо только начинают внедрять возобновляемые источники энергии, либо намерены увеличить процент своего участия в энергетике.

Ключевые слова: возобновляемые источники энергии, Европейский союз, Казахстан, энергетические ресурсы, международное соглашение, международное сотрудничество, возобновляемый энергетический потенциал Казахстана.

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