Regional integration in Central Asia in the energy sector

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Abstract
The article researches energy projects in the electricity and gas sectors with the participation of the Central Asian countries (in particular, the project CASA-1000, TUTAP, TAP, construction of TAPI and "Peace" gas pipelines). Special attention is paid to the reasons that cause interest in interregional projects both for Central Asian countries and for consumers such as China, India, Pakistan and Afghanistan. The author analyses the benefits of implementing such projects for the participating countries, as well as the obstacles that arise during their implementation. The methodological basis of the research includes such methods as analysis and synthesis, comparison, the system approach, the historical method. The author comes to the conclusion that the projects considered contribute to strengthening regional energy security in general and the energy security of the participating countries in particular, as well as regional stability. The competition between the projects is due to the geopolitical ambitions of China and the United States. Among the main obstacles to the implementation of projects there are the lack of financing, technical difficulties and instability in Afghanistan and Pakistan. Russian companies can participate in energy projects of Central Asian countries as investors, suppliers of equipment or technologies. Russia can also contribute to strengthening security in the region.

For citation

Keywords
Regional cooperation, Central Asia, South Asia, TAP, TUTAP, TAPI, CASA-1000, Peace gas pipeline, Central Asia-China gas pipeline, energy.
Introduction

Energy is the most important area of cooperation among the countries of Central Asia, which are endowed with large reserves of resources. The uneven distribution of energy resources in the region and the limited infrastructure for energy transportation are the factors associated with the development of cooperation in this area.

Turkmenistan has significant reserves of natural gas – 17.5 trillion cubic meters (9.4% of world reserves) [BP Statistical Review of World Energy 2016, www]. Oil reserves in Kazakhstan amount to 3.9 billion tons (1.8% of world reserves), natural gas – 0.9 trillion cubic meters (0.5% of world reserves) [BP Statistical Review of World Energy 2016, www; Progress report…, 2016, www]. The volume of natural gas reserves in Uzbekistan is 1.1 trillion cubic meters (0.6% of world reserves) [Ibidem]. Ensuring national energy security requires from the countries of the region to attract investment in the energy industry and diversify export routes for energy resources.

Water resources, which are also used for electricity generation, play a special role for the energy security of the region. In Central Asia, there are 65 hydropower plants with a total capacity of 34.5 GW, the largest of them are the Nurek HPP (Tajikistan) with a capacity of 2,700 MW and the Toktogul HPP (Kyrgyzstan) with a capacity of 1,200 MW [Klapcov, 2012; Progress report…, 2016, www].

The hydropower consumption is 27.3% of the total electricity consumption in the region, while in Tajikistan and Kyrgyzstan this figure is 96% and 82% respectively [Klapcov, 2012; Progress report…, 2016, www]. Tajikistan has the largest hydropower potential in the region – 69% (8th in the world), Kyrgyzstan accounts for 22% [Ajupov, 2016]. However, due to the irrational use of water resources, these countries produce excess electricity in the summer period and experience an energy shortage in the winter period and are forced to import electricity. There are also problems associated with the lack of a regional policy on the sharing and exchange of water and energy resources, since the interests of Tajikistan and Kyrgyzstan are in conflict with the interests of Kazakhstan, Turkmenistan and Uzbekistan, which use water resources for irrigation.

Geographical proximity to China (a large natural gas consumer – 197 billion cubic meters in 2015, 5.7% of global consumption, with a production level of 138 billion cubic meters [BP Statistical Review of World Energy 2016, www]) causes a mutual interest in cooperation. China has become an active player in the oil and gas sector of the Central Asian countries, which is reflected not only in the import of Kazakh oil and Turkmen gas, but also in attracting Chinese investment in the oil and gas industries of the countries, as well as in the participation of Chinese companies in oil and gas production projects in the region. In recent years, there has been an increase in the import of Turkmen gas to China – 24.4 billion cubic meters in 2013 and 27.7 billion cubic meters in 2015 [BP Statistical Review of World Energy 2014, www; BP Statistical Review of World Energy 2016, www].

An interest in Central Asian energy resources was also shown by India, whose internal gas consumption is at the level of 50 billion cubic meters in recent years, while its own production is declining (38.8 billion cubic meters in 2012 compared to 29.2 billion cubic meters in 2015 [BP Statistical Review of World Energy 2016, www]). However, the absence of a common border with the countries of the region requires the inclusion of unstable Afghanistan and Pakistan in the project. In addition, Iran, which has large natural gas reserves, is a serious competitor to the Central Asian countries.

Energy-deficient Afghanistan and Pakistan are also interested in energy cooperation with the countries of Central Asia. Thanks to this cooperation, Central Asian suppliers receive new markets and access to the energy markets of South Asia. Afghanistan and Pakistan, in turn, strengthen their own
energy security and receive the status of transit states. However, the instability in these countries is an obstacle to cooperation. Support for projects involving Afghanistan and Pakistan is provided by the United States.

**Research methodology**

This article is based on the descriptive-analytic approach. The methodological basis also includes such methods as analysis and synthesis, comparison, the system approach, the historical method. Data gathering procedure is based on library findings.

**Discussion**

1) Projects in the electric power industry

**CASA-1000**

The CASA-1000 project envisages the creation of a power transmission system from Kyrgyzstan and Tajikistan that have excess electricity in the summer, to energy-deficient Afghanistan and Pakistan. The project name implies that it unites two regions: Central Asia and South Asia, "1000" refers to the originally declared volume of electric power export with transmission capacity of 1,000 MW. It is planned that the power system of Pakistan will be supplied with up to 1,000 MW (with Pakistan expressing interest in increasing imports in the long term), and that of Afghanistan – with up to 300 MW.

The implementation of this project should contribute not only to the efficient use of water resources of the Central Asian countries, but also enhance interregional cooperation and the establishing of the Central Asia – South Asia Regional Electricity Market (CASAREM).

The CASA-1000 project is implemented within the framework of the New Silk Road concept, announced by the USA in 2011 and related to the ideas of F. Starr (head of the Central Asia-Caucasus Institute, the analytical center at Johns Hopkins University) about the creation of a "Greater Central Asia". The project "Greater Central Asia" is aimed at geopolitical unification of the post-Soviet countries of Central Asia and Afghanistan. In turn, the New Silk Road concept involves the modernization of the existing and the creation of new infrastructure, including transport and energy, which will, in particular, strengthen and stabilize Afghanistan and strengthen it as a transit state.

Control over the design, preparation and implementation of the project is carried out by the Intergovernmental Council and its Secretariat established on the basis of the intergovernmental agreement of 2008. The resolution of specific issues and discussion of further actions falls within the competence of the Joint Working Group consisting of ad hoc groups established in each country.

Negotiations on the creation of a regional energy market began in 2006. In October 2006, a memorandum of understanding was signed, which recorded the obligation of the participating countries to create the necessary infrastructure for electricity trade between Central and South Asia with transmission capacity up to 1,300 MW. The final agreement on the project was signed in November 2015 by the energy ministers of Kyrgyzstan, Tajikistan, Afghanistan and Pakistan [Final agreement…, 2016, www].

The cost of the project is estimated at more than $1 billion. The main investors are the World Bank (International Development Association), the European Investment Bank, the Islamic Development Bank, the European Bank for Reconstruction and Development, the Afghanistan Reconstruction Trust Fund, as well as the US State Department and the UK Department for International Development. The Asian Development Bank, which financed the preparation of the feasibility study for the project,
refused to participate further, probably because of high risks.

The project implementation does not imply the creation of generating capacities, since the necessary infrastructure for generating electricity already exists. It is planned to construct 477 km of power lines from the Datka substation (Kyrgyzstan) to the Sughd substation (Tajikistan), two converter substations with a capacity of 1300 MW in Sangtud (Tajikistan) and Nowshera (Pakistan)\(^1\), 750 km of high-voltage power lines, including about 117 km in Tajikistan, 562 km in Afghanistan, 71 km in Pakistan. Construction of infrastructure for the CASA-1000 project began in May 2016 in Tursunzade (Tajikistan). The completion of work is planned for 2020 [Progress report..., 2016, www].

It is provided that the created infrastructure capable of flowing in both directions will be open to other countries of Central Asia and Russia, which will allow them to sell electricity and transfer it using this infrastructure. At the same time, the access will be possible from October 1 to April 30, that is, after the electricity delivery period within CASA-1000 (from May 1 to September 30).

The project has certain benefits for all the participants. For Tajikistan and Kyrgyzstan, these are the revenues from the sale of surplus electricity, the opportunity to use part of the export earnings to cover energy shortages in winter, and to import electricity in winter through the infrastructure created. Afghanistan and Pakistan, in turn, get access to electricity, which will strengthen their own energy security and will become an impetus for socio-economic development.

Nevertheless, the project has a serious drawback – it requires large investments, which are provided to the member countries on a return basis. Debt obligations can negatively affect the economies of countries and exacerbate the existing problems.

In addition, when implementing CASA-1000, there are obstacles of an economic, technical and political nature. In particular, construction of a power line in a mountainous region presents technical difficulties; instability in Afghanistan and Pakistan can affect the timing of certain works and adversely affect the implementation of the project as a whole. It should also be noted that Kyrgyzstan has recently claimed that there is no surplus electricity to be sold within CASA-1000, which is caused by the growth of domestic consumption and a decrease in water availability in reservoirs during the summer period [Lowest water level..., 2016, www]. Maintaining such a situation calls into question the possibility of transferring electric power under the project in the agreed volume. Some experts believe that the effectiveness of the project depends on the construction of the Rogun HPP in Tajikistan and the Kambarata HPP in Kyrgyzstan. However, Uzbekistan has repeatedly opposed the creation of new hydropower plants, as it fears a reduction in the flow of rivers traditionally used for irrigation purposes. Perhaps, changes in the top leadership of Uzbekistan would entail a revision of the position on this issue.

**TUTAP**

TUTAP energy project (by names of the participating countries: Turkmenistan – Uzbekistan – Tajikistan – Afghanistan – Pakistan) is considered to complement the CASA-1000 project. TUTAP is designed to promote electricity trade between Central Asian and South Asian countries, so it can also be seen as a step towards establishing a regional energy market. At the same time, the project should contribute to the reconstruction of Afghanistan, and is aimed in general at addressing the needs for electricity of the northern, eastern and southern regions of Afghanistan.

Within the TUTAP framework, it is planned to link the energy systems of the project countries to the year-round (in contrast to CASA-1000) electricity exports generated both at thermal power plants

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1 Initially it was planned to build another converter station in Kabul (Afghanistan), but due to the high cost of the project and the insufficient technical capacity of Afghanistan, it was decided to retain two converter stations for power lines.

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(Turkmenistan, Uzbekistan) and hydroelectric power plants (Tajikistan), to Afghanistan, which will be able to re-export it to Pakistan.

The project is implemented within the CAREC program (Central Asian Regional Economic Cooperation) with the financing of the Asian Development Bank.

Currently, 220-kilovolt power lines connecting Uzbekistan's (2009) and Tajikistan's energy systems (2011) with the energy system of Afghanistan have been put into operation. The volume of electricity exports is 1500 GWh and 650 GWh, respectively. Construction of a 500-kilovolt power line and substations in Afghanistan between Puli-Khumri and Kabul began. Completion of work is planned for the end of 2018 [Report on the outcome…, 2016, www], and the work on the Turkmen section has already been completed. This line will have a capacity of 1000 MW. At the same time, it is expected that by 2019 Turkmenistan will export electricity to Afghanistan in the amount of 900 GWh, and by 2025 – 1600 GWh [Progress report…, 2015, www].

In general, TUTAP is beneficial to Afghanistan, which not only solves the problem of energy supply, but is also strengthened as a transit country, which contributes to socio-economic growth. Central Asian republics, in turn, benefit from the sale of electricity.

Implementation of the project is complicated by the unstable situation in Afghanistan. In particular, in 2016 the government of Afghanistan changed the route of laying power lines across the country. Initially, the power line passed through the province of Bamyan in the central part of Afghanistan, populated mainly by the Hazaras. The new route for laying the power line was through the Salang Pass. This change was beneficial in terms of reducing costs. However, in May 2016 mass protests began in Afghanistan, which continued despite the decision of the Afghan leadership to build a side branch with a voltage of 220 kV, which allows supplying up to 300 MW of electric power to Bamyan and other central regions of the country. In July 2016, a triple terrorist attack took place in Kabul, killing 80 and injuring more than 230 protesters against the transfer of the power transmission route from the Bamyan province [Islamic State…, 2016, www].

In 2016, at a meeting of high-level CAREC officials, the possibility of connecting CASA-1000 and TUTAP projects was discussed. Currently, the working group is exploring options for a phased integration.

**TAP**

The TAP project (Turkmenistan – Afghanistan – Pakistan) provides for the unification of the energy systems of Turkmenistan, Afghanistan and Pakistan and the export of Turkmen electricity to Pakistan along the southern Afghan route. In December 2015, the heads of state signed a Memorandum of Understanding in which the parties agreed to promote the export of electricity produced by Turkmenistan and its transit through Afghanistan to Pakistan.

Within TAP framework, power lines will be built on the border of Turkmenistan and Afghanistan (commissioning is scheduled for 2018), a 500-kilovolt power line across Afghanistan from the border with Turkmenistan to the border with Pakistan, substations in Herat and Kandahar, and distribution plants in Pakistan. Currently, various options for intersystem connection are considered, including the infrastructure of CASA-1000 and TUTAP.

Preparation of feasibility studies is planned for 2017, and the implementation of the project – for 2018-2020. The project is financed and coordinated by the Asian Development Bank [Proposed Turkmenistan-Afghanistan-Pakistan…, 2016, www].

2) Projects in the gas sector

**Central Asia-China gas pipeline**

The implemented project of constructing a gas pipeline from Turkmenistan to China through Uzbekistan and Kazakhstan is significant for the energy sector of the Central Asian countries.
The gas pipeline was put into operation in December 2009. Its length is about 7,000 km, including more than 1,900 km across Turkmenistan, Uzbekistan and Kazakhstan and 4,500 km across China. The gas pipeline consists of three pipe strings, the capacity of which reaches 55 billion cubic meters of gas per year. Over the entire operation period of the gas pipeline, more than 150 billion cubic meters were delivered to China, 100.5 billion cubic meters of which were delivered by "Turkmengaz" [Turkmenistan and China…, 2017, www].

In 2011, an agreement was signed to build the fourth string of the gas pipeline along a new route: Turkmenistan – Uzbekistan – Tajikistan – Kyrgyzstan – China. After commissioning the fourth string, the capacity of the gas pipeline will increase to 85 billion cubic meters per year. Turkmenistan intends to increase gas supplies to China to 65 billion cubic meters per year. However, in 2017, Uzbekistan and China postponed the construction of the Uzbek section of the pipeline for an indefinite period, which will affect the completion of the construction of the entire fourth string [Uzbekistan and China…, 2017, www].

**TAPI**

Construction of the TAPI gas pipeline (Turkmenistan – Afghanistan – Pakistan – India) has been under discussion for more than 20 years. The project was brought back to life in the current format in 2010 with the signing of the Ashgabat interstate agreement, largely thanks to India’s interest. The format of Turkmenistan-Afghanistan-Pakistan, negotiated since 1995, was not implemented due to the aggravation of the situation in Afghanistan and the US military operation.

The project provides for the construction of a gas pipeline with a length of about 1,800 km from the border between Turkmenistan and Afghanistan to the border between Pakistan and India, with a capacity of 33 billion cubic meters of gas per year (approximately 14 billion of which – for India and Pakistan, 5 – for Afghanistan). The cost of the TAPI project is estimated at more than $10 billion [Progress report…, 2016, www].

To implement the project, the member countries created a consortium – TAPI Pipeline Company Ltd; Turkmengaz was approved as its leader, which is also the main investor to the project. It is also possible that the Asian Development Bank, which is a project consultant, and previously financed a preliminary feasibility study of the project, risk analysis, etc., will also finance the construction.

In 2015, construction of the Turkmen section of the gas pipeline began. In 2016, the allocation of $45 million to finance the initial construction phase of the Afghanistan-Pakistan site was approved. In January 2017, an agreement was concluded for the development of pre-project documentation and services for project management and technical supervision of the Afghan-Pakistani sector. Commissioning of the gas pipeline and supplementary ground infrastructure is scheduled for the end of 2019 [Turkmenistan to allocate…, 2016, www].

TAPI is of particular interest to Turkmenistan, which seeks to diversify export routes. Since supplies of Turkmen gas to Russia (due to the refusal of the Russian side) and Iran (due to the disagreements over payment for the supplied gas) were terminated, Ashgabat has the only export route – China. That is, there is a risk of increasing China’s pressure on the issue of determining gas prices. Construction of the Trans-Caspian gas pipeline, which will allow Turkmen gas to access European markets through Azerbaijan, has also been postponed due to the disagreements between Russia and Iran on laying the gas pipeline along the bottom of the Caspian Sea; nevertheless, in 2015 Turkmenistan commissioned the East-West gas pipeline, which will deliver gas from the eastern deposits to the Caspian region of the country.

However, the prospects for implementing the TAPI project are rather vague, due to the risks of both geopolitical and economic nature.

The route of the pipeline must pass through the territory of Afghanistan, that is, ensuring security of both the construction process and the created infrastructure will require significant expenditure. Most
of the Turkmen gas transported through the pipeline is destined for India and Pakistan, and tensions in the Indo-Pakistani and Afghan-Pakistani relations can affect the stability of supplies. In addition, the payment capacity of gas consumers is questionable. At the same time, the financing the project is not clear, since it is unlikely that Turkmenistan will have enough resources.

The impact on the implementation of the project by non-participating countries is also not excluded. For example, Qatar, the main exporter to the gas markets in Pakistan, India and South-East Asia, is opposed to the appearance of competitors. China, which is interested in obtaining more gas, is opposed to the increasing influence of non-regional players, and the construction of the gas pipeline will mean strengthening US positions and their influence on Afghanistan and Pakistan, since both CASA-1000 and TAPI are supported by the United States within the concept of the New Silk Road and Greater Central Asia. Projects such as Iran-Pakistan, Iran-India gas pipelines could present competition for TAPI.

Iran – Pakistan ("Peace" gas pipeline)

The Iran-Pakistan gas pipeline project has been under discussion for more than 20 years. Initially, the project involved India, which later abandoned the deal.

The gas pipeline will connect the South Pars gas field with the southern provinces of Pakistan. The length of the pipeline should be about 1,800 km, the cost of construction is estimated at $2.5 billion [Media…, 2016, www].

In 2010, Iran and Pakistan signed an agreement, according to which Iran was to supply 22 million cubic meters of gas per day, and the deliveries were to begin in 2015. However, Pakistan has not yet built its gas pipeline section, which was caused by the pressure from the US and the lack of funds.

In 2015, China announced its readiness to build the Pakistani section of the gas pipeline and to provide a loan of 85% of the project cost (about $2 billion). Nevertheless, the timing of the commissioning of the gas pipeline was constantly changing. It is expected that the work will be completed by the end of 2017. Also within the framework of the project it is planned to build a plant for the production of LNG and refineries in the Pakistani port of Gwadar [China to build…, 2015, www].

The USA is against the project, since the Peace gas pipeline is competing with the TAPI and CASA-1000 projects. If Pakistan gets Iranian gas, it will be able to solve the problem of energy shortages in general and the problem of electricity shortages in particular: the supplied gas will be enough to generate 4.5 TW capacity. However, the support of this project by China to some extent protects Pakistan from US pressure. The benefits of the Pakistan project also include income from the transit of gas. At the same time, instability in Balochistan could have a negative impact on the construction process and on the gas supply itself.

If the project is implemented, Iran will receive a new export route, access to the South Asian markets, as well as investment in the oil and gas industry. In addition, new prospects for cooperation with China will open up for Tehran.

It should be noted that Iran and India resumed cooperation on gas supply issues. Construction of an underwater gas pipeline from the Iranian port of Chabahar to the Porbandar port in the south-west of India is planned, that is, bypassing the territory of Pakistan. China supported this project. Implementation of the project will have a negative impact on the TAPI project, since it is likely that India will not be interested in acquiring Turkmen gas or will reduce the supply.

Conclusion

The analysis of the energy-related interregional cooperation projects of Central Asia shows that they are aimed at reducing the influence and dependence from Russia in this area. The projects reviewed are
aimed at ensuring energy security for both suppliers and transit countries, as well as energy consumers, the key ones being China and India. Also, these projects contribute to regional stability and regional energy security. There is a certain competition between the projects, which is connected with the implementation of the USA and China's geopolitical ambitions. The main obstacles to the implementation of the projects are the lack of funding, technical difficulties and instability in Afghanistan and Pakistan.

At various times, Russia announced its intention to participate in the reviewed projects, nevertheless, their implementation is carried out without the participation of Russian companies.

The Russian energy strategy for the period up to 2030 provides that the achievement of the strategic objectives of the foreign energy policy requires the development of cooperation in the field of energy with the countries of the Commonwealth of Independent States, the Eurasian Economic Community, North-East Asia, the Shanghai Cooperation Organization, the European Union, other international organizations and states; Promoting the development and export of Russian technologies as well as the services of Russian companies in the field of fuel and energy; Development of new forms of international (including technological) cooperation in the energy sector.

Given the information stated above, and the fact that the Central Asian region has traditionally been included in the sphere of Russia's strategic interests, Russian companies should take a more active part in the energy projects of the Central Asian countries, in particular as investors, equipment suppliers or technology providers. In addition, Russia can contribute to strengthening security in the region, including within the framework of international organizations, such as the SCO.

References

Региональная интеграция в Центральной Азии в энергетическом секторе

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Аннотация
В статье рассматриваются энергетические проекты с участием стран Центральной Азии, в частности проекты CASA-1000, TUTAR, TAP, строительство газопроводов TAPI и «Мир». Особое внимание уделено причинам, вызывающим интерес к межрегиональным проектам как у стран Центральной Азии, так и у таких потребителей, как Китай, Индия, Пакистан и Афганистан. Автор анализирует преимущества реализации таких проектов для участвующих стран, а также препятствия, которые возникают в ходе их реализации. Методология исследования включает такие методы, как анализ и синтез, сравнение, системный подход, исторический метод. Автор приходит к выводу о том, что предлагаемые проекты способствуют региональной энергетической безопасности в целом и энергетической безопасности стран-участниц в частности, а также и региональной стабильности. Конкуренция между проектами обусловлена геополитическими амбициями Китая и США. К числу основных препятствий на пути реализации проектов относятся отсутствие финансирования, технические трудности и нестабильность в Афганистане и Пакистане. Российские компании могут участвовать в энергетических проектах стран Центральной Азии в качестве инвесторов, поставщиков оборудования или технологий. Россия также может способствовать укреплению безопасности региона.

Для цитирования в научных исследованиях

Regional integration in Central Asia in the energy sector
Ключевые слова
Региональное сотрудничество, Центральная Азия, Южная Азия, TAP, TUTAP, TAPI, CASA-1000, газопровод «МИР», газопровод в Центральной Азии и Китае, энергетика.

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