ISSN:2790-1661 DOI: 10.56028/aemr.1.1.41

Energy Security Strategies of Countries along the "Belt and Road" in the Post COVID-19 Era

Shigang Yan[1,*], Peng Yu [2], Yanan Lei [3]

[1,3] School of International Economics, China Foreign Affairs University, Beijing, China

[2] Institute of International Relations, China Foreign Affairs University, Beijing, China

*Corresponding author's e-mail: yanshigang@cfau.edu.cn

Abstract. The energy security issues of countries along the "Belt and Road" become increasingly important due to the strategic nature of energy resources and prominent ecological damage. The paper analyzed the new development of energy security in the post COVID-19 era, and stated the new challenges in terms of the geopolitical risks, increasing energy market volatility, and energy security governance for the countries along the "Belt and Road". Finally, the paper put forward countermeasures and suggestions to improve the energy security level of the countries along the "Belt and Road".

Keywords: Energy Security, Strategy, Belt and Road, COVID-19

1. Introduction

Energy security is an overall importance and strategic key element of national security in the 21st century (Florini and Sovacool, 2009; Colgan et al., 2012; Bazilian et al., 2014; Escribano, 2015; Yan and Li, 2021). The Belt and Road initiative involves 65 countries and regions, including Middle East countries like Saudi Arabia, Iran and Kuwait, five Central Asian countries like Kazakhstan and Turkmenistan, and the CIS countries like Russia (Yan, 2019). There are a large number of countries along the "Belt and Road", which are rich in energy resources. Their energy production, consumption and trade activities are huge with prosperous energy economy. Due to the strategic nature of energy resources, numerous participating countries, prominent ecological damage and geopolitical reasons, the energy security issues of countries along the "Belt and Road" also exist and become increasingly important.

As the COVID-19 spreading globally at the beginning of 2020, the global economic recession resulted in a sharp decline in crude oil demand and low prices (Apostolos et ao.,2021). The price of US light crude oil futures expiring in May plummeted to close at -37.63 US dollars per barrel On April 20, 2020. The large fluctuations in oil price have reduced the fiscal revenues of countries such as OPEC+. Fragile states and regions such as the Middle East and Eurasia along the "Belt and Road" are facing the risk of political and social unrest (Jiang et al. 2021). Entering September 2021, the prices of natural gas, steam coal and other energy sources in Europe and the United States have risen to record highs, while large-scale sudden limited electricity has occurred in China, and electrical coal crisis has appeared in India. This paper aimed to discuss the energy safety issues of countries along the "Belt and Road" in the post COVID-19 Era. The paper analyzed the new development of energy security and stated the new challenges in the energy security in the countries along the "Belt and Road". Following that, the paper would put forward countermeasures and suggestions to improve the energy security level of the countries along the "Belt and Road", and provide support for promoting the energy security of the "Belt and Road" regions.

ISSN:2790-1661 DOI: 10.56028/aemr.1.1.41

2. Current Situation of Energy Security of Countries along the "Belt and Road"

2.1 The Energy Production and Consumption Structure

The countries along the "Belt and Road" have abundant reserves of oil, natural gas and coal resources. The major countries along the "Belt and Road" had proven oil reserves of 138.9 billion tons in 2020, accounting for 59.2% of the world's oil reserves. The natural gas reserves reached 147.9 trillion cubic meters, accounting for 78.6% of the world's natural gas reserves. The coal reserves were 580.2 billion tons, accounting for 54.0% of the world's coal reserves (BP, 2021).

In 2020, the oil production of countries along the "Belt and Road" was 2.17 billion tons, accounting for 54.9% of total global oil production. The natural gas output of countries along the "Belt and Road" was 2,030.2 billion cubic meters, accounting for 55.9% of the world's total natural gas output. The coal output of countries along the "Belt and Road" was 124.8 EJ. The energy consumption of the regions along the "Belt and Road" played an important role in the global energy consumption market. In 2020, the oil consumption of countries along the "Belt and Road" reached 82.19 EJ accounting for 47.3% of the global oil consumption. Natural gas consumption was 67.51 EJ accounting for 49.0% in the global natural gas consumption. The coal consumption accounted for 80.1% of the global coal consumption and reached 121.22 EJ.

The primary energy demand in the regions along the "Belt and Road" increased significantly from 2010 to 2019, with an average annual increase rate of 3.80%. However, in 2020, the COVID-19 severely impacted the global economy, leading to a sharp decline in demand for crude oil, natural gas and other energy sources. The primary energy demand in 2020 was 4.5% lower than that in 2019, reaching 556.63 EJ. From the perspective of total energy consumption, China is the main driving factor for the growth of energy demand in the regions along the "Belt and Road". From 2005 to 2019, the average annual increase in energy consumption in China accounted for 56.23% of total regional consumption. Even when the global economy downturn in 2020, China's total energy consumption was also increased and reached 145.46 EJ.

2.2 Developing Energy Security Strategies

In response to changes in the international energy security and the increasing domestic energy demand, countries along the "Belt and Road" have established their own energy security strategies to prevent various energy security risks. The energy security strategies of the countries along the "Belt and Road" focus on adjusting and optimizing the energy consumption structure and improving energy efficiency, as well as paying attention to international cooperation and diversification of energy relations with foreign countries (Li, 2021).

The energy security strategies of the CIS and Central Asian countries focus on the diversification of external energy relations. Central Asian countries actively promote economic diversification based on their energy endowments, including vigorously building diversified export pipelines, and encouraging international oil and gas companies to participate in domestic oil and gas development. As a major oil and gas producer in the world, Russia is focusing on the development of oil and gas pipelines to transport energy to the Europe and Asia In June 2020, Russia issued the "Russian Energy Strategy up to 2035". According to this strategy, the proportion of energy delivered to Asia will reach 50%, and the strategic intention of Eurasian balance has become more prominent. ASEAN and South Asian countries face increasing demand for energy in the socio-economic development, and have made strategic arrangements for the development of new energy, environmental protection, and diversified supply. As a major energy consumption country, India is actively deploying overseas energy suppliers, l and strengthening energy trading cooperation with ASEAN, West Asia, and Australia.

The energy security strategies of Central and Eastern European countries focus on new energy development and power development. For example, Romania has established strategic goals such as giving priority to the development of nuclear and renewable energy, deepening the reform of the

ISSN:2790-1661 DOI: 10.56028/aemr.1.1.41
electricity market, and encouraging energy-saving scientific research and technological development. Central and Eastern European countries, Greece, Cyprus and other countries established the European Network of Transmission System Operators (ENTSO-E). Faced with the issue of energy security, China has proposed an energy security strategy of "Four Revolutions, One Cooperation". The "Four Revolutions" are to promote the energy consumption revolution and inhibit unreasonable energy consumption; promote the energy supply revolution and establish a diversified supply system; promote the energy technology revolution and drive industrial upgrading; promote the energy system revolution and open up the fast lane of energy development; "One cooperation" is to strengthen international cooperation in an all-round way to realize energy security under open conditions.

3. Energy Security Challenges Faced by the Countries along the "Belt and Road"

3.1 Challenges from Geopolitical Risks

The "Belt and Road" initiative involves complex and changeable relations between countries and geopolitical economy. The traditional hot issues left over from the Middle East, South Asia and Southeast Asia along the "Belt and Road", and the contradictions surrounding territorial disputes in important countries, have brought great uncertainty and complexity to the stable energy supply.

The Middle East is located in an important geographical and energy location, and has always been a key area for the world's major powers. In 2015, the situation in the Middle East underwent historic changes. Islamic extremist forces represented by the extremist organization "Islamic State" (IS) emerged in the Middle East. Iraq and Syria were actually fragmented, and the Arab League led by Saudi Arabia actively intervened after the civil war broke out in Yemen, making the situation in the Middle East even more complicated. Since 2018, the Trump administration has unilaterally withdrawn from the Iran nuclear agreement and restarted sanctions on Iran. This has made the complicated and difficult-to-pacify Middle East situation even tenser. Intensified turmoil in the Middle East will continue to affect the energy supply pattern of countries along the route. Taking into account the alliance relationship and security interests between the United States, Japan, and South Korea, China is not in a very advantageous position in this competition. In Southeast Asia, the South China Sea is rich in oil and gas resources. It is a very complex challenge to develop and utilize the South China Sea oil and gas resources that Southeast Asian countries also claim to have sovereignty.

3.2 Challenges from Increasing Energy Market Volatility

At the beginning of 2020, the COVID-19 spread globally, the economy came to a standstill, and the growth rate dropped sharply, resulting in a sharp decline in crude oil demand and low prices. The price of US light crude oil futures expiring in May plummeted to close at -37.63 US dollars per barrel on April 20, 2020.The large fluctuations in oil prices have reduced the fiscal revenues of countries such as OPEC+. According to the analysis of the IEA, the revenues of countries that rely heavily on fossil energy revenues reduced by 50%-85% in 2020, and the fiscal deficit of the GCC countries was as high as 10-12% of GDP. Due to the lack of effective coordination between existing energy cooperation mechanisms, the COVID-19 has intensified market turbulence of global energy transformation and energy transition.

In September 2021, the world is plunged into an energy crisis that has never been seen since the 1970s. Oil prices have risen to a three-year high, and natural gas prices in Asia and Europe are at the highest levels in history. Due to energy shortages in countries such as India and Germany, coal prices are also soaring. IPE natural gas and steam coal prices have risen to historical highs of 213 pence/therm and 230 US dollars/ton respectively On October 8 2021,, which are as high as 445% and 299% respectively over the same period in 2020. The prices of Brent and WTI crude oil both

ISSN:2790-1661 DOI: 10.56028/aemr.1.1.41
rose rapidly to historical highs of 82.4 dollars/barrel and 79.4 dollars/barrel, and increased 92.6% and 90.1% respectively compared to a year ago. With the high integration of the global industrial chain, the European and American energy crisis has also accelerated its spread to the world through channels such as rising energy prices. For example, since September, emerging economies such as Brazil and India have also been involved in the "vortex" of the energy crisis in Europe and the United States.

With the continuous economic growth of China and neighboring countries, the demand for oil and gas resources has gradually increased, and the energy premium of oil and gas resources will undoubtedly seriously damage the competitiveness of the economy. China and neighboring countries share common interests in the energy sector. They hope to reduce energy transaction costs, achieve optimal allocation of energy resources, enhance energy supply anti-risk capability, and form an open and stable surrounding energy market, which constitute the long-term basis for cooperation. The main energy importing countries along the "Belt and Road", including Japan, India and South Korea, are highly dependent on Middle East crude oil. In 2016, the Middle East exported 683 million tons of crude oil to China and neighboring countries, accounting for 69.5% of the total Middle East exports. However, because there is no crude oil futures market that represents common interests like the New York Mercantile Exchange and the London International Petroleum Exchange, for a long time it has to pay higher prices than European and American countries to import crude oil from the Middle East, creating a premium in the energy market. China and neighboring countries urgently need to unite, strengthen cooperation in the energy field, and establish a common energy market to ensure common interests.

3.3 Challenges of Regional Energy Security Governance

There are a large number of countries along the "Belt and Road", including energy consuming countries and energy producing countries, as well as energy transit countries. At the same time, the energy issues facing the "Belt and Road" regions are becoming more and more complex. In addition to energy supply and demand, they also face economic development models with high energy consumption and low efficiency, outdated energy infrastructure, climate change and sustainable development, and the challenges such as the COVID-19 pandemic. Through the establishment of "Belt and Road" energy cooperation rules, norms, mechanisms and other institutional constraints, clarifying and strengthening of norms, and achieving effective management and control of "Belt and Road" energy cooperation affairs and actions of actors have become a top priority.

Energy cooperation under the "Belt and Road" framework has been deepened. The "Belt and Road" energy partnership has been established. The China-Arab States Cooperation Forum, the Shanghai Cooperation Organization Summit and the East Asia Summit Energy Ministers' Meeting Mechanism are actively linking up with the "Belt and Road" initiative, however, the coordination mechanism of energy security needs to be improved. In the "Belt and Road" regional energy cooperation process, the direction of the oil and natural gas pipelines of the countries along the "Belt and Road" is involved. Both oil and gas exporting and importing countries are pursuing the maximization of their own interests. Regarding the direction of oil and gas pipelines, there are a lot of games between importing and exporting partners, importing and exporting countries, which will not only delay the construction process of the project, but even increase geopolitical risks. For example, Russia and Iran have always opposed the construction of gas pipelines east of the Caspian Sea to prevent Turkmenistan from exporting energy to Europe on the grounds of environmental protection; the "7.3 Malaysian Oil and Gas Pipeline Project Suspension Incident" occurred in China and Malaysia put China's tens of billions of investment at huge risks. For the interconnection and construction of energy facilities of the "Belt and Road", because the domestic laws of some resource countries are not in line with international rules, and there are more restrictions on trade and investment in the energy field, resulting in the existing energy cooperation mostly based on special project arrangements, but not based on sound international and domestic law guarantees.

ISSN:2790-1661 DOI: 10.56028/aemr.1.1.41

Climate issues have received widespread attention in the world. The massive consumption of fossil energy has made carbon emissions along the "Belt and Road" high. Only China, India, Russia, Iran, and Indonesia have emissions of up to 15.14 billion tons of carbon dioxide, accounting for 44.3% of the world's total carbon dioxide emissions; emissions of countries along the "Belt and Road" account for more than 63% of the world's total carbon dioxide emissions. However, due to the different levels of economic development and climate challenges faced by countries along the "Belt and Road", there are still differences in financial support, technical requirements, and policy inclination. China and India are actively taking measures to control greenhouse gas emissions, but the low- and middle-income developing countries represented by Myanmar, Pakistan and Bangladesh, these developing countries are seriously lacking funds and technology to tackle climate change, so they hope to get more assistance. Therefore, in addition to the deep integration of the "Belt and Road" construction and climate governance under the existing institutional framework, efforts must be made to explore and build a new institutional framework to provide a stable institutional guarantee for the "Belt and Road" climate change cooperation.

4. Strategies to Improve Energy Security Level of Countries along the "Belt and Road"

4.1 Guaranteeing Diversified Supply and Maintaining Price Stability

Effectively guaranteeing the diversification of energy supply requires not only diversification of energy production, but also diversification of energy import and export. Regardless of whether the fossil fuel resources of the countries along the "Belt and Road" are rich or not, the diversification of energy production not only requires greater exploration and development of traditional energy resources, but also requires vigorous development and utilization of new energy sources such as nuclear power and renewable energy, as well as increasing installed capacity of hydropower, wind power, and solar power. Regardless of whether the countries along the "Belt and Road" are energy net exporters or net importers, the diversification of energy production requires more expansion of overseas market channels and lower market concentration. More importantly, when energy supply presents a diversified pattern, various energy varieties can complement each other through relative advantages, hedge the relative disadvantages of other energy varieties, and form an overall advantage in energy supply and a space for technological innovation, which is conducive to creating a clean low carbon, safe and efficient energy supply system.

It is necessary to stabilize energy prices, give full play to the role of the market mechanism, and promote the formation of an energy price mechanism in the Asian market. Asian oil-consuming countries have suffered unfair treatment from the "Asian premium" and their trade competitiveness has been damaged. Therefore, Asian energy consuming countries should strengthen exchanges and cooperation, adopt measures such as joint adjustment of crude oil reserves, actively participate in the price setting of Asian energy markets, and jointly resist the risks of international energy price fluctuations.

4.2 Optimizing the Energy Consumption Structure

Countries along the "Belt and Road" should control traditional energy consumption and improve energy use efficiency. On the other hand, they should promote clean energy use and increase the proportion of new energy consumption. First of all, countries along the "Belt and Road" should control traditional energy consumption, improve the efficiency of traditional energy use, and achieve energy conservation and emission reduction. Countries can take measures to upgrade their industrial structure, encourage enterprises to develop energy-saving and consumption-reducing technologies through subsidies and other preferential policies.

ISSN:2790-1661 DOI: 10.56028/aemr.1.1.41

Moreover, it could change consumers' perceptions and behaviors to improve the overall energy efficiency of social and economic development. However, the low-carbon transformation of the energy system is a long-term task, and energy conservation and emission reduction tasks should also be based on the concept of "priority development".

Secondly, Countries should improve the capacity of new energy consumption and storage to ensure the safe and stable operation of the power system. In the term of system design, countries can establish and improve renewable energy power consumption guarantee mechanisms. countries can also improve the pricing mechanism and compensation policies for nuclear power and hydropower and other renewable energy tariffs to encourage the development of new energy. At the specific operational level, countries can first promote the distributed renewable energy power generation model, which can be connected to the grid and be consumed nearby; second, promote the integration of renewable energy, coal chemical industry and petrochemical industry, and promote the clean use of various energy varieties.

4.3 Carrying out Energy Cooperation and Establishing a Multilateral Mechanism

At present, the "Belt and Road" regions have not yet formed a regional multilateral energy dialog and cooperation mechanism. There are only some bilateral or sub-regional cooperation and exchange mechanisms and exchange platforms on a specific energy theme. To improve the security level of energy supply and use, countries along the "Belt and Road" should actively carry out energy security-related international cooperation, establish a multilateral energy security dialog and cooperation mechanism as soon as possible.

First, countries along the "Belt and Road" can carry out exchanges and cooperation in energy security-related fields. At present, energy has become an important investment industry in the "Belt and Road" initiative, of which the interconnection of energy infrastructure is a priority development area of the "Belt and Road" initiative. Countries should form a strategic coordination mechanism for surrounding energy security, continue to increase cooperation in traditional energy exploration and development, promote the construction of cross-border oil and gas pipeline networks and transmission and distribution channels, and form an integrated development of energy upstream and downstream industrial chains in all countries.

Secondly, and more importantly, countries along the "Belt and Road" urgently need to build a "Belt and Road" regional energy supply and demand sharing platform, carry out technical exchanges, link up technical standards, trading rules and operating modes, establish an effective mechanism for coordination and supervision and management, and stabilize the Middle East Regional energy security situation, jointly resist energy security risks, and form a community with a shared future for energy security. The "Belt and Road" regions have already begun to take the embryonic form of a path to de-dollarization of oil transactions. Large oil and gas consuming countries such as Iran, Russia, the European Union, and East Asia have successively introduced foreign trade settlement methods that replace the U.S. dollar with RMB and Euro. In the future, we should continue to deepen institutional cooperation, improve the transparency and mutual trust of information and policies of all countries, and accelerate the reform of a new round of international oil and gas trading mechanisms, which will help enhance the speaking right of the "Belt and Road" regions in global energy security governance.

5. Conclusions

Energy in the modern economy plays an important role to promote the social and economic development for the Countries along the "Belt and Road". The energy price volatility resulted from the COVID-19 pandemic have led policy-makers to seek for effective solutions. The paper analyzed the new development of energy security in the post COVID-19 era, and stated the new challenges for the countries along the "Belt and Road". In the end, the paper this paper put forward countermeasures and suggestions, which include to Guaranteeing diversified supply and maintain

ISSN:2790-1661 DOI: 10.56028/aemr.1.1.41
price stability, optimize the energy consumption structure, and carry out energy cooperation mechanism to improve the energy security level of the countries along the “Belt and Road”.The conclusions of this study can be used as a guide for future decisions of managers, and policy-makers regarding the strategies to improve energy safety level.

Acknowledgment

The research is supported by Fundamental Research Funds for the Central Universities (No. 3162019ZYKB01), and the general project of the national social science foundation of China, (No. 20BGJ033).

References

[1] G. C.Apostolos, K.Petros, K. Ioannis, G. Konstantinos, COVID-19 and the energy price volatility, Energies, MDPI, 20(2021) 1-15.

[2] M. Bazilian, S.Nakhooda, T. Van de Graaf, Energy governance and poverty. Energy Research & Social Science, 1 (2014) 217–225.

[3] BP. BP Statistical Review of World Energy,https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/statistical-review/bp-stats-review-2021-full-report.pdf, 2021.

[4] J.D. Colgan, R.O.Keohane, T.Van de Graaf, Punctuated equilibrium in the energy regime complex. The Review of International Organizations, 2(2012) 117–143.

[5] G.Escribano, Fragmented energy governance and the provision of global public goods. Global Policy; 2(2015) 97–106.

[6] A. Florini, B.K.Sovacool, Who governs energy? The challenges facing global energy governance. Energy Policy; 12 (2009) 5239–5248.

[7] P. Jiang, Y. Fan, J. Klemeš, Impacts of COVID-19 on energy demand and consumption: Challenges, lessons and emerging opportunities. Appl. Energy, 285(2021) 116441.

[8] L.Li, Energy safety analysis and energy strategy of Countries along the “Belt and Road”, CFAU Master Dissertation, 2021.

[9] S. Yan, China’s international energy cooperation strategy from the perspective of “the Belt and Road Initiative”. In: The 5th Annual International conference on Management, Economics and Social Development, Changsha, (2019) 455-459.

[10] S.Yan, L. Li, An Empirical Analysis of China's Energy Security Based on TOPSIS Model, IOP Conference Series: Earth and Environmental Science, 826(2021) 012045.