

Analysis of the Influence of the Russia-Ukraine Conflict on the Global Energy Development Trend

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Abstract: The conflict between Russia and Ukraine that broke out in February 2022 directly gave birth to the energy crisis in Europe, but its impact is not limited to the European region, but also limited to the short term. It is a major change in the world in a century, and will profoundly and long-term change the global energy system and pattern. The outbreak of the conflict between Russia and Ukraine will reshape the global energy system, energy security will be promoted to an unprecedented order by all countries, accelerating the development of renewable energy is considered as an important measure to strengthen national energy security, and the global energy clean transformation will show a further accelerated development trend. Energy enterprises will face new opportunities and challenges. This paper analyzes the global energy development trend under the conflict between Russia and Ukraine, and puts forward the challenges that energy enterprises may face.

1. NEW TREND OF GLOBAL ENERGY DEVELOPMENT UNDER THE CONFLICT BETWEEN RUSSIA AND UKRAINE

1.1 Russia's position in the global energy landscape

Russia is rich in energy resources endowment, and is one of the most important energy suppliers in the world. As one of the important members of "OPEC +", Russia has a greater voice and decision-making power in the global energy market.

In terms of energy reserves, Russia's global natural gas reserves account for nearly 20%, ranking first in the world; global coal reserves account for about 15.1%, ranking second in the world; global oil reserves account for about 6.2%, ranking sixth in the world. In terms of production, Russia accounted for about 16.6% of global gas production in 2020, ranking second in the world (after the United States); oil production was about 12.6%, ranking second in the world (after Saudi Arabia); coal production accounted for about 5.2%, ranking sixth in the world.

At the same time, due to the small size of Russia's overall economy, its GDP in 2021 is similar to that of Brazil (about \$1.65 trillion), only one tenth of that of China, resulting in a large number of energy products need to be sold in the international market. At present, Russia is the world's largest natural gas exporter, the second largest oil exporter and the third largest coal exporter. In 2020, its natural gas exports accounted for 16.07% of the world, oil exports 11.08%, and coal exports 17.08%. Energy export is the pillar industry of Russia. In 2021, fuel and energy products exports accounted for 54.3% of Russia's total exports, and contributed 40% -50% of the government fiscal revenue. The energy and Resource Endowment of Russia is as follows.

In terms of the export flow of Russian energy products, Europe is the primary destination, followed by the Asia-Pacific region. In 2021, Russia exported 4.7 million barrels of crude oil and condensate per day, including about 49% to Europe, 38% to Asia Pacific; 8.9 TCF, about 74% to Europe; 262 million short tons (238 million tons), including about 53% to Asia Pacific and 32% to Europe. Energy and Resource Endowment of Russia (2020)

Table 1 Energy and Resource Endowment of Russia (2020)

Energy type	proved reserves	share	world ranking	output	share	world ranking	reserves/ production ratio
petroleum (million tons)	148	6.2%	6	5.24	12.6%	2	28
natural gas (Trillion-dollar cubic meters)	37	19.9%	1	0.64	16.6%	2	59
coal (million tons)	1622	15.1%	2	4.00	5.2%	6	406

Source: <https://mp.weixin.qq.com/s/SXkwe6-K6cpeFeq4mrfzQ>

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1.2 The EU's dependence on Russian energy

With the advantage of geographical location and energy price, Russia has become one of the important energy suppliers in Europe, and European countries generally have a high dependence on Russian energy imports. According to statistics, in 2020, the total dependence of the 27 EU member states on foreign energy is 57.5%, among which Russia is the most important energy importer.

For natural gas, the EU is dependent on Russia for more than 41%. The EU's dependence on natural gas is as high as 90%. In 2021, Russia exported more than 155 billion cubic meters of natural gas to the EU, accounting for 41.1% of the EU gas imports (Figure 4-6). Within the EU member states, Slovakia and Bulgaria rely on more than 75%, Finland and Hungary more than 95%, Czech 100%, Germany, Italy, Greece, Poland and Sweden are dependent on more than 50% (Zhang Rui, 2022).

In oil, the EU is dependent on Russia for nearly 30%. The EU relies on 97 percent of its oil imports, with 26.9 percent of its crude oil imports coming from Russia, or about 2.7 million barrels of oil from Russia a day. Within EU member states, Germany, the Netherlands and Poland are all more than 35 percent, and Germany 45 percent.

In coal, the EU is dependent on Russia for about 46%. In recent years, the EU's dependence on coal has been declining to about 70 percent, with 46.7 percent of coal imported from Russia and 70 percent from Russia being used for power generation and heating. Within EU member states, Germany, Poland, Italy and the Netherlands are the most dependent on Russia for coal, with more than 65 percent of their total coal imports from Russia.

Russia plays an important role in the operation of nuclear power plants in Europe. In 2020, about 20% of the uranium delivered to the EU will come from Russia, where Russian companies providing 24% conversion and 26% enrichment services to EU utilities.

In addition, in 2021, Russia exported 12.89 billion KWH of electricity to the EU, for example, of which 9.228 billion KWH to Finland, 1.881 billion kilowatt-hours to Lithuania and 669.9 million KWH to Latvia, accounting for 10.5%, 16% and 9.1% of the electricity consumption of the three countries in the year, respectively.

2. GLOBAL ENERGY DEVELOPMENT TREND ANALYSIS

Since the outbreak of the conflict between Russia and Ukraine, for political motives, the United States and Europe have imposed many sanctions on Russia in energy, finance, technology, trade and other fields, and started the process of energy decoupling and even economic decoupling from Russia. The global energy system and energy pattern are reshaping at a faster pace. On May 18, 2022, the European Union officially announced the latest European Joint Action Plan for

Cheap, Safe and Sustainable Energy (the "RepowerEU" energy Plan), which aims to completely escape the energy dependence on Russia (and the energy imports from Russia by 2027).

The impact of the European energy crisis under the Russia-Ukraine conflict is global, profound and epoch-making. Based on the development of this event, we predict that the global energy will show the following development trends in the future:

One is that the global energy system faces at risk of fragmentation and Russia will be "isolated". According to Rohr, director of the International Energy Agency (IEA), the conflict between Russia and Ukraine may lead to the division of the global energy system into two parallel energy systems, one is the "using Russia energy" system dominated by China and India and the "de-Russia energy" system dominated by the United States and Europe. The research group believes that the "energy to Russia" system centered on the United States and Europe is being formed at a faster pace. For example, after the outbreak of the conflict between Russia and Ukraine, the United States and Europe reached an agreement that the United States will supply LNG 500 billion cubic meters to the EU annually by 2030, up more than double from the 22 billion cubic meters in 2021. However, due to the other side of the "energy decoupling" is often accompanied by "economic decoupling", sanctions measures, other countries should also based on their own energy security, economic interests, international exchanges factors comprehensive consideration, pros and cons, polarization pattern is not necessarily a higher probability, but Russia is global "isolated" will undoubtedly be a big probability event.

Second, energy security has become the primary goal of the energy policies of all countries. This incident not only issued an important warning to the EU, but also to other countries around the world. The energy, as the lifeline of the national economy and industrial production of food, its safety has been raised to the primary target of the national energy policy. IEA Executive Director Fatih Birol even believes that in the order of climate change in the priority list is declining. At present, many countries are optimizing and adjusting energy policies, such as the European Union issued the REPower EU energy plan; our leaders proposed that "the energy bowl must be firmly in their own hands"; the UK issued an energy security strategy to accelerate the development of nuclear power and renewable energy; and the Japanese government is also considering resuming nuclear power to ease the energy supply tension.

Third, the global energy crisis will continue for a long period of time, accompanied by high prices. From the perspective of reserves, production volume and export volume, Russia is a major supplier of global energy and an important cornerstone of the global energy system. As Russia is rapidly "kicked out" of the energy system centered on the United States and Europe, neither in the demand side nor on the supply side, it can connect or fill the "gap" generated in Russia for the time being. Therefore, the global energy supply shortage is the predictable norm for a long period of time in the future.

From 1973,1979,1990 and so on. The trend of TTF natural gas futures prices in the Netherlands and German

electricity price trend as follows.

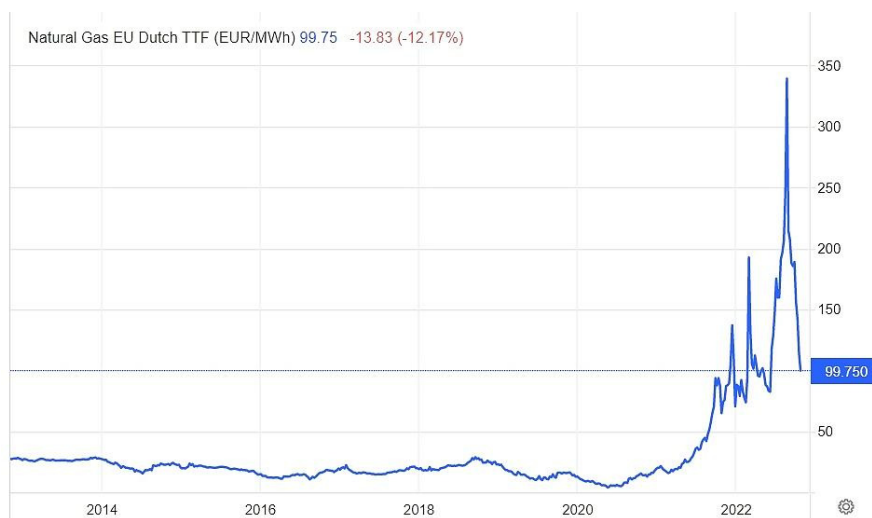


Figure 1 Trend of TTF natural gas futures prices in the Netherlands

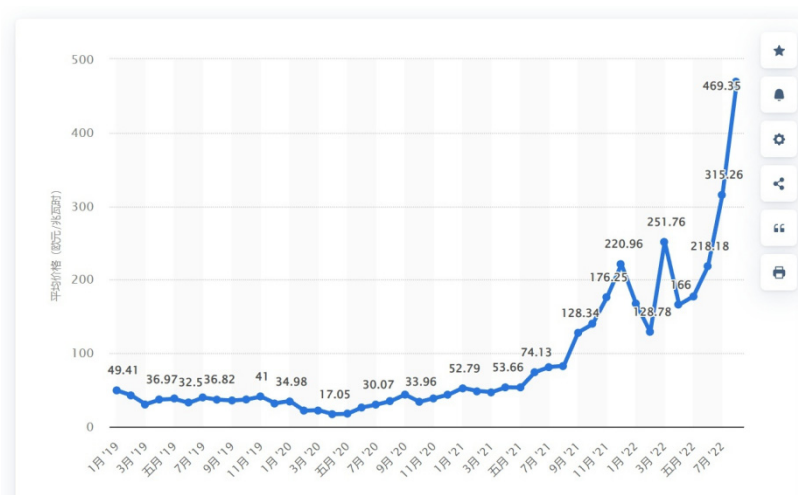


Figure 2. German electricity price trend

3. THE CHALLENGES FACED BY ENERGY ENTERPRISES UNDER THE NEW SITUATION

3.1 Under the background of prominent energy security, the policy of foreign investment review in developed countries has been further stricter

In recent years, trade protectionism has risen in developed countries, and the policy of reviewing foreign investment has been continuously strengthened. According to the UNCTD report, in 2021, 53 economies, most of which are not conducive to investment adopted by developed countries, accounting for two-thirds of the total. Under the conflict between Russia and Ukraine, the importance of countries in the world to energy security and national security has been promoted to an unprecedented point. The concept of "national security" has been continuously generalized, and power infrastructure, as a focus affecting a country's energy

security, is bound to be included in the policy of enhancing the review of foreign investment.[1]

3.2 Energy companies face greater currency risks in their international business

In the second half of 2021, a new round of inflation began to appear in the world. After the conflict between Russia and Ukraine, inflation became more and more intense, and the inflation rate of more than 70 economies in the world exceeded 5%. The conflict between Russia and Ukraine is the main cause of the new round of inflation. Referring to global energy consumption data in 2020, the conflict between Russia and Ukraine could create an 8.93% gap in global energy under oil and gas, more than the two oil crises of the last century, but will also cause worsening food supply shortages and soaring food prices. Due to the long-term impact of the Russia-Ukraine conflict, global inflation could continue for a long time in the future. [2] Due to different inflation levels and different monetary policies adopted by different countries, the risk of exchange rate fluctuation

in the international market is significantly increased, and the risk of exchange rate fluctuation faced by the company's international business operation is intensified.[3]

3.3 The short board effect of the traditional main business supervision in the international business development is becoming more and more obvious

In the process of "going out" of domestic power enterprises, the domestic approval mode of main responsibility and main business basically continues. [4] This mode has encountered challenges in practice. For example, when encountering comprehensive projects with both power generation and power grid, state-owned power generation enterprises and state-owned enterprises of power grid are often restricted by policies. In the future, with the global scenery of the rapid development of renewable energy, at the same time involving the power generation and grid project may be more and more, even project will be smaller, more quantity, which requires optimization adjustment to the principle of the main responsibility for the main business of examination and approval mode, at the same time, all projects strict implementation of examination and approval may also exist information asymmetry, examination and approval too long missed market opportunities.

3.4 In the future, Chinese overseas investment enterprises may face increasingly stringent ESG information disclosure requirements.

ESG is an investment concept and evaluation standard to measure the sustainable development ability of enterprises (including information disclosure of listed companies, evaluation of rating agencies and investor investment). In recent years, the disclosure of ESG information by enterprises has become more and more and more common and increasingly close to "coercion". According to the data, in 2021, about 92% of the S & P 500 companies released ESG reports, and the proportion of China's A-shares is about 30%. Based on the evaluation of the enterprise ESG report, it provides the basis for the investment strategy. According to statistics, more than 1/4 of the world's professional asset management institutions adopt ESG investment strategy. ESG investment in major regions of the world has exceeded us \$35.3 trillion US dollars, with an average annual growth rate of 13% from 2012 to 2020, accounting for 1/3 of the total investment. At present, ESG is still in its infancy in China. For example, in 2022, the State-owned Assets Supervision and Administration Commission began to introduce ESG policies intensively. There is no doubt that the "short board" and pressure of Chinese enterprises in ESG will be the first, and it is urgent to accelerate their efforts.

4. CONCLUSION

The conflict between Russia and Ukraine further accelerates the global trend of low-carbon energy transformation, and the development of energy enterprises is facing new opportunities and challenges. The outbreak of the conflict between Russia and Ukraine will reshape the global energy system, energy security will be promoted to an unprecedented order by all countries, accelerating the development of renewable energy is considered as an important measure to strengthen national energy security, and the global energy clean transformation will show a further accelerated development trend. Energy enterprises will face new opportunities and challenges. Major opportunities include: greater demand for global power infrastructure construction, increasing power grid assets, more cooperation opportunities in countries along the "Belt and Road", adjustment of major European power enterprises to indirectly reduce the competitive pressure of the international market; main challenges include: stricter scrutiny of foreign capital in developed countries, greater uncertainty of power grid interconnection with Russia, increased risk of international exchange rate, regulatory restriction of main business, and stricter information disclosure of ESG of overseas enterprises.

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