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The Impact of the Energy Supply Retrench Caused by the Russia-Ukraine Conflict on EU Countries and Developments

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Abstract: Energy is the primary basis and driving force for the development of the economy of modern countries, and it is a matter of national and geopolitical patterns. Due to the conflict between Russia and Ukraine, Western governments have strengthened political and economic sanctions against Russia, and several EU countries have been unable to decouple Russia's short-term energy resources, which has led to a significant increase in the energy resources of EU countries. This change in the energy landscape of the EU will have a bearing on the long-term economic development of the EU and the geopolitical changes in the world. Under the background of the conflict between Russia and Ukraine, this paper analyzes the important influence of new energy development on the energy pattern of the European Union. It is found that the energy supply of Russia and Ukraine to Europe will become a bigger problem, especially the further contraction of energy under the war and conflict, which will seriously affect the primary energy supply of the EU and make the EU form a more tense energy pattern under the existing energy pattern. In addition, the surge in energy prices in Europe will have a substantial negative impact on Europe's future energy landscape.

Keywords: Russia-Ukraine Conflict; Energy Crunch; European Countries

1. Introduction

1.1. Research Background

Ukraine is rich in energy and mineral resources due to its rich geological resources and obvious geographical advantages in terms of oil reserves and natural gas resources. The Russian-Ukrainian conflict has intensified this specific energy crunch and created further European energy security problems. The specific manifestations can be divided into difficulties in the transportation of oil, gas, and coal. In the context of the Russian-Ukrainian conflict, the issue of new energy development in the context of new turbulent factors will become an essential factor affecting the energy landscape of the European Union. In the context of the Russian-Ukrainian conflict, the energy supply from Russia and Ukraine to Europe will become a bigger problem. In particular, the further contraction of energy under the war conflict will significantly impact the primary energy supply of the EU, making the EU form a more nervous energy pattern under the present energy pattern. Furthermore, in the context of the war, the conflict between Russia and Ukraine, as the prominent participants in the war, will directly affect the main variables in the price of energy, which will continue to be high during the

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period of the Russian-Ukrainian conflict. As a result, energy prices in European countries continue to rise, causing an energy shortage in Europe.

1.2. Literature Review

According to the articles, author have read, part of the literature focuses on the discussion and analysis of the significant impact of the Russian-Ukrainian conflict on the world energy retrench.

Geopolitically, EU energy has been dependent on Russia's energy exports for a long time, so when the Russia-Ukraine conflict occurred, a series of severe sanctions by EU countries against Russia caused a massive blow to the economic-energy ties between the two sides. Ni, Feng investigated that the long-term competitiveness of the European economy also declined significantly with the increase in the cost of energy in Europe, which led to the strategic goal of greening European energy development [1]. The cost of commodity production in Europe will significantly increase for a long time. While the production costs of European countries are rising, the world energy crunch for the future energy development of European countries will become a long-term energy strategy vulnerability for the EU. The EU countries plan to eliminate energy dependence on Russia as soon as possible, including the number of energy imports from the Middle East and the United States, the adjustment of their energy needs and energy dependence shifts. The author also mentions the situation of high energy prices in the EU, which is increasing the pressure on the production of chemical enterprises.

The impact of the Russian-Ukrainian conflict on the international energy market and the resulting world energy crisis as shown in the previous article. Liu, Zehong presents a graphical comparison and analysis of the direction of crude oil, natural gas and electricity markets in Brent, the Netherlands and Germany. In addition, the authors analyse the world energy completely as well as the new global energy landscape, and the paper explores the impact of energy decoupling between the EU and Russia on the structure of the EU gas import industry [2]. The author identifies certain changes in the international landscape that may occur because of rising energy prices, such as the increase in unilateralist tendencies, the rise of resource protectionism, and the increase in unemployed people and factors of social unrest. This article also makes predictions about the development of the Russian-Ukrainian conflict and the world energy landscape, drawing key conclusions about accelerating the upgrading of energy systems from resource security to a green and low-carbon energy transition among others.

In summary, both articles make conjectures and inferences about the world energy crunch and its future development, which proves that although the author's analysis and summary of the world energy section are of great significance for exploring the impact of the Russia-Ukraine conflict on the world energy crisis today. The author's analysis of the impact of world patterns is limited in its breadth, in addition to the impact of the European energy industry and the geopolitics of Europe. However, the author's analysis of the impact of the world landscape is limited in breadth, and the geopolitics of Europe, in addition to the impact of the European energy industry and the energy cooperation between Europe and the United States, is limited in depth. The increased cooperation between Russian and European energy sources has increased the threat to the energy supply of both sides. It has increased the sense of a world energy supply crisis.

Secondly, the changes in the world energy landscape caused by the conflict between Russia and Ukraine have also become the key to the research of the paper at hand. According to Wu, Dekui, the main explanation is given for the fact that sanctions in the energy sector in Europe and other countries will affect the development of the Russian energy industry [3]. The energy sanctions imposed on Russian energy by the U.S., Europe, and other regions in the world landscape of the Russia-Ukraine conflict have caused energy prices to skyrocket in the U.S., and other sanctioned regions are described in detail. The authors use the increase in the price of electricity in the Netherlands and Spain as an

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essential argument for the paper's analysis. Energy prices have increased by more than 300 per cent, causing companies and individuals in European countries to suffer deficits of varying degrees. Compared to Chen Weidong main research theories, the former is more closely related to the current changes in the world energy landscape and energy security, while the latter focuses on European energy imports and exports and analyses the EU countries' oil dependence on Russia. Secondly, the latter mainly compares the energy situation in the Baltic Sea, the Black Sea, and the Far East [4]. In contrast, the former is closer to the current situation and development of the world energy pattern. At the same time, the latter is mainly gathered in the Mediterranean Sea, the Black Sea region, and European countries such as Bulgaria and Romania.

Furthermore, the impact of the Russian-Ukrainian conflict on the global energy landscape on the changing geopolitical landscape has also become a primary research direction for some scholars. The rising energy prices mentioned by Nie Xinwei are mentioned in several articles; for example, the oversupply caused by the Russian-Ukrainian conflict as the main factor in rising world energy prices [5]. As a result, the global energy landscape and new energy sources will open a new horizon. Therefore, the Russian-Ukrainian conflict directly leads to a considerable shift in the trend of world energy relations. In Bi Hongye's view, the main issues in the EU sanctions against Russia and the fight over Ukraine are Ukraine's membership in NATO and the US Strategic Action Plan [6].

Due to the energy crisis in many countries of the European Union, many countries have chosen to respond to the energy crisis by strengthening national cooperation. In the following two articles, the author Li Li-min presents the responses of the Netherlands, Germany, and Denmark to the energy crisis. In Li-Min, she discusses the multinational cooperation on energy to face the energy crunch in Europe. In contrast to the uniform style of the previous articles, the latest EU plan, "REPowerEU", allows the EU to leave its energy dependence on the Russian side as soon as possible [7]. The perspective of this argument is new because the mention of the EU's new energy plan can alleviate Europe's energy crunch to the greatest extent possible and reduce the energy deficit as soon as possible.

In contrast to the EU nuclear energy development strategy under the Russian-Ukrainian conflict, Sun, Xiaokai proposes that the energy development of European countries and the change in the EU's attitude toward nuclear energy will change the mainstream energy pattern in future Europe [8]. The perspective proposed by the authors lies in the fact that the emergence of the Russian-Ukrainian conflict will enhance the dependence of EU countries on nuclear energy. This is in line with Zhang, Rui, who analyses the alternative energy imports available to EU countries. The article analyses the transformation of European energy importers in the energy situation in Europe. The author likewise elaborates on the invocation and development of nuclear energy in Europe and other countries [9]. Among other things, the relative increase in the cost of energy imports of EU countries due to market competition while searching for alternative energy countries after leaving the Russian side of energy imports.

The interlocking nature of the EU and Russia is evident in energy issues. The relationship between the EU and energy-supplying countries is one of interdependent cooperation. In energy relations, EU countries must compromise for the EU's energy-linked economy with Russia's export orientation as the primary source. Russia is also facing a decline in energy revenues in the medium and long term due to the EU's energy decoupling bill. The impact of global climate change on the EU energy landscape was also mentioned in the EU energy proposal in mid-2008. The EU will choose to trade in more environmentally friendly energy sources and the need for new energy infrastructure resistant to climate change.

The negative impact of the EU dependence on Russian energy imports by several EU countries is mentioned. The gas crunch between Ukraine and Russia in 2009 reflects the EU's dependence on Ukraine for transporting energy. The EU's dependence on Ukraine for energy transportation can

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account for up to 50% of all European energy. This reflects the fact that the EU's strong energy dependence on Ukraine directly leads to the passive position of the EU's international relations on energy issues and the need to rely to some extent on the strategic buffer zone of Russian-Ukrainian relations [10]. Within the EU, Ferrero-Waldner, B states that there is a consensus among EU members that the CEE regional association would be the preferred region to increase the geographic gas market as the primary energy supply area within the EU, as the CEE has a better-compromised energy supply [11]. In addition, energy issues are also linked to political riskiness, which can be linked to the stability of producers. In energy-supplying countries, the political stability of the energy supplier needs to be considered, and the political stability will directly determine the geographical energy supply. European Commission states that nuclear energy can play a role in ensuring France's energy security and achieving international targets for carbon neutrality [12].

However, scholars tend to be unified in their perspectives and conclude primarily by comparing the increase in energy prices before and after the Russian-Ukrainian conflict. The limitations of their articles are evident in the limited analysis of the changes in the world energy landscape from the perspective of energy studies, which are rarely mentioned in the above articles.

1.3. Research Contents and Significance

This article takes the EU energy crunch under the Russia-Ukraine conflict as a background to study the future EU energy landscape. The article is divided into three main parts. First, the article will analyse the impact of the Russia-Ukraine conflict on the energy pattern of EU countries and summarise the changes in the EU energy pattern before and after the Russia-Ukraine conflict. Secondly, the article will analyse and summarise the energy security issues of EU countries, including the energy dependence of EU countries on Russia, the factors of energy rise in EU countries and the changes in energy patterns and emergency plans of the EU, including oil substitution and clean energy substitution. Finally, the paper explains the changes in the political landscape of energy in the EU countries, how the EU countries can decouple from Russia's energy dependence and strengthen cooperation with other energy countries as soon as possible and provides relevant references for the study of energy transition in the EU countries.

The author chose constructivism as the primary theoretical practice in writing this paper because the sociological research background and social differences in constructivism positively impact this paper. In constructivism, starting from the tensions between Russia and the EU regarding state relations, the author summarizes the possible future direction of the energy crunch between Russia and the EU regarding relevant events in the world. For example, the strengthening of international energy cooperation with the United States and the Middle East in the EU and the promotion of new energy sources. This change will add precision to the study of the Russian-Ukrainian geopolitical and European state relations level based on constructivism.

The specific theoretical value of this paper can be defined as the author's textual analysis of the available material concerning the different perspectives of Chinese and foreign scholars. Among international constructivism, the different academic perceptions about constructivism exhibited in different countries and regions are the key to constructivism, and the studies about international energy context in different geographical contexts are diversified. Thus, in discussing the studies of scholars from different countries, scholars from different geographical areas show different energy perceptions of the European energy landscape. For example, most scholars in continental papers such as "The trend of Russian-European politics and energy relations under the Ukrainian crisis" usually focus on the energy political context behind the global energy pattern and analyse the impact of the new energy pattern on international politics in the future of European energy. However, in the perspective of international scholars, the rise in energy prices caused by the energy shortage in Europe due to the Russian-Ukrainian conflict and the social problems caused by the rise in European energy

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prices are analysed in detail, such as most EU companies are facing substantial corporate losses, the rise in unemployment and the decline in the collective gross product of European countries.

Therefore, in this thesis, the author will balance the perceptions of the energy landscape from the perspectives of Chinese and foreign scholars, weighing the perspectives of both Chinese and foreign scholars, and make a more detailed study of the energy landscape in Europe under the Russian-Ukrainian conflict.

2. The Energy Landscape of EU Countries after the Russia-Ukraine Conflict

The year 2014, as a turning point in energy capacity for both Russia and Ukraine, is highly relevant in terms of energy production in the eastern part of the country and the geopolitics of the Ukrainian region, and as a result, there are supply chain shortages due to the negative impact of the military operations that have occurred in eastern Ukraine on local gas supplies, coal and electricity supplies. Therefore, local energy demand and energy policy in Ukraine urgently need to change and shift.

The reduction in total local coal production in the Donbas region has led to a contraction in coal mining and related energy-linked industries. Many coal kilns have been flooded due to the local conflict, and the energy environment has been affected by the destruction of transportation infrastructure and energy supplies.

After 2014, the Russian-Ukrainian conflict resulted in a historic low of 60 billion cubic meters of Russian gas delivered to the European market, up from 82 to 93 billion cubic meters in previous years [10]. Today, the Nord Stream pipeline in the Baltic Sea delivers some gas to Germany, France, and Belgium. In addition, Gazprom acquired 100% of Gazprom-transgaz (Belarusian gas transmission company) at the end of 2011, providing Russian suppliers with even more impetus because of lower transportation costs. Thus, it is known that the EU countries are relieving the energy pressure on the EU countries by changing the transit countries for energy transportation from the original Ukrainian route to the Belarusian energy transportation route, mainly from the Baltic countries, which will reduce energy transportation costs and at the same time will stabilize further fluctuations in energy prices. Enables Ukraine to handle lower gas transportation volumes and continue supplying gas to all regions of the country efficiently. The current Gazprom-Naftogaz gas transportation contract will terminate on December 31, 2024. In other words, it will be a new challenge whether new energy approaches and policies will meet the energy needs of the EU countries after the end of the contract period [10].

The new EU member states will be the main factor influencing the future energy landscape of the EU. First, the accession of some Eastern European and Baltic countries to the EU will be an essential factor for new energy sources for the EU countries. Secondly, in the Euratom Forum, the EU is also seeking new energy sources to solve Europe's current energy crisis. In the wake of the Russia-Ukraine conflict, the EU's demand for clean energy has increased since the transition. Nuclear power is an important part of the European energy supply, and how to convert nuclear energy into renewable energy resources is the key to stability. As a crucial part of the clean energy transition in Europe, France's need for new nuclear power is quite apparent. Between 2035 and 2037, new nuclear power plants will be put into operation. In France's investment plan for 2030, it is essential to restart the construction of new nuclear reactors in France to deal with the energy shortage in France caused by the conflict between Russia and Ukraine.

3. Energy Security in EU Countries

3.1. EU Countries' Energy Dependence on Russia

In 2008, Europe's demand for imported energy gradually increased, and some European Commission members believed that the EU would rely on imports for 64% of its energy by 2030. However, the

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European Commission believes that by 2030, the EU will rely on external sources for 65% of its energy. The European Commission believes that the EU will be 65% dependent on external sources for energy by 2030, with dependence on natural gas rising from 57% today to 84% and on oil from 82%. Moreover, the EU's dependence on oil has risen from 82% to 93% [11].

First, in terms of the U.S.-EU natural gas trade, its size has been on the rise in recent years, and there is a tendency to expand in terms of U.S.-EU energy cooperation. In 2021, EU imports of U.S. LNG will reach a new record high, totalling 22 billion cubic meters of U.S. LNG imports and accounting for 6 per cent of total EU imports of U.S. energy.

Since the Russia-Ukraine conflict, the U.S. and the EU have agreed to cooperate and committed to delivering 50 billion cubic meters of LNG annually to the EU throughout 2030. The shrinking of Russian supplies to EU countries following the Russia-Ukraine conflict has led EU countries to shift their energy importers by gradually replacing Russia's energy supply position with that of the U.S. In addition, Russia is trying to expand its global supply base as much as possible.

In addition, Russia is expanding the world oil and gas market as much as possible. Russia is very active in expanding the world energy market and consolidating its position in the world of energy security as soon as possible. It is Arctic 2, and other energy projects aim to increase Russia's market share of liquid natural gas in the Far East and the Asia-Pacific region. Russia is now the fourth largest oil supplier to the Far East of Asia, including India, and has increased its market share to six per cent of Asia's oil supply [11].

The interdependence of Russia and the EU on energy issues is reflected in their mutual energy imports and exports. Russia will be an essential strategic partner for the EU regarding energy demand. In addition, Russia depends on the EU for energy imports as an energy exporter, and two-thirds of its gas export revenues come from EU energy purchases [12].

3.2. The Impact of EU Energy Sanctions on Russia on the Prices of Energy in EU Countries

First, the economic sanctions imposed on Russia by EU countries have led to a supply-tightening trend in Russia's energy exports to the EU. In the first half of 2022, the turmoil in international energy markets due to economic sanctions caused international oil prices to climb sharply, with crude oil prices in Europe's Brent region topping $130 per barrel. In the European region, European gas prices climbed to 2,200 euros per 1,000 cubic meters [3]. Due to the current Russian-Ukrainian conflict and economic sanctions in Russia generating further pressure on the energy transportation side, the refusal of several transport companies to transport energy and the termination of cooperation has had a decisive impact on the increase in energy costs. As a result of economic interests, industry leaders such as Statoil, Shell and BP are gradually withdrawing from energy deals with Russia, further tightening Russia's international energy trading space.

As a result, the multiple challenges EU countries face have led to further increases in production and living costs in EU member countries. For example, the price of electricity in the Netherlands and Spain has increased to 300 euros per megawatt hour, an average annual increase of more than 300%. The large fluctuations in energy sources within the European countries are evidence of the tightness of the Russian energy supply, which has led to the threat of fiscal deficits in both the corporate and individual energy markets. The EU plans to provide business loans and subsidies to companies among the EU members to help them overcome the difficulties [3].

3.3. Changing Energy Structure and Emergency Preparations in the EU

The EU will further accelerate its move away from energy dependence on Russia, thus solving the European energy crisis currently facing the country. The EU is resolute about finding solutions for reducing Russian energy dependence. EU countries are further reducing their dependence on Russian

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energy, especially in Ukraine and the EU, in negotiating and signing the part involving energy security and the economy of both countries [4].

The latest energy policy of the non-EU country, the U.K., shows that the U.K. will import as much U.S. shale gas as possible to reverse the unfavourable energy security situation in the U.K... Therefore, it is crucial to join the agreement of the Transatlantic Trade and Investment Partnership, intending to get rid of energy dependence on Russia as soon as possible within twenty-five years. Under these conditions, the energy trade between Russia and the U.K. is volatile; in the trend of the Russian-Ukrainian conflict, the Russian-Ukrainian conflict has created several instabilities for the region, making the energy supply unstable in the aftermath of the conflict and a significant energy security threat to European countries. Secondly, in terms of changes in energy pattern security, E.U. countries have likewise signed the "Ten Plans on Reducing the E.U.'s Dependence on Russian Gas" [5].

In particular, the E.U. said it would not enter new gas supply contracts with Russia, which would include "using expiring long-term contracts with Russia to reduce minimum contractual acceptance or delivery levels for Russian imports and to achieve greater supply diversification. In terms of further decoupling Russian energy supplies, the E.U. will adopt alternative gas sources to outlaw Russia's energy supply position. Based on the previous point, which was added to the ten-point plan to reduce Russian gas dependence, IEA analysis indicates that intra-EU production and non-Russian pipeline imports will increase to 10 billion cubic meters in 2021. The E.U. is also considering using low-carbon hydrogen energy to reduce carbon emissions within the E.U. as part of the need to increase the production of low-carbon gases to meet the E.U.'s 2030 emissions reduction targets. As the E.U. is planning to restore market flexibility by implementing minimum gas reserves as soon as possible, similar events will lead to rapid spikes in energy prices in E.U. countries due to seasonal demand fluctuations and supply shortages. At a time of energy constraints and geopolitical tensions, the E.U.'s energy strategy will place energy reserves at the forefront of its deployment. Second, the E.U. will consider deploying existing low-emission energy sources, such as nuclear power generation, into the E.U.'s energy supply deployment [10]. Nuclear power generation is an important part of the E.U.'s electricity generation mix, with nuclear power accounting for up to 25 per cent of the E.U.'s electricity mix. Returning these reactors to safe operation in 2022, such as the commercialization of the completed reactors in Finland, could increase the E.U.'s nuclear power generation capacity by 20 TWh in 2022. In addition, the French government also plans to deliver new nuclear power plant supplies around 2023 to meet France's domestic energy needs. Previously, under the proposal of French President Macron, the French government put forward the "France 2030" energy plan, in which it was announced that nuclear power would be reinvented in France and the E.U.'s energy strategy goal of energy saving and emission reduction by 2030 would be achieved as soon as possible. This article shows that the E.U.'s reliance on nuclear energy will gradually increase. In the late stage of the Russia-Ukraine conflict, Europe will shift its primary energy source to nuclear energy to cope with the heat demand in winter [9].

Due to the significant energy transformation factors brought about by the Russian-Ukrainian conflict. The energy security landscape of the E.U. countries has achieved significant changes; therefore, in response to the new energy landscape changes, the energy security strategy can be distinguished as a short-term or long-term energy plan. Short-term plans can be understood as the tightening of energy supplies faced by European countries at the onset of winter. The medium- and long-term measures include diversifying energy supplies and improving the European infrastructure. Among the ten plans to reduce the E.U.'s dependence on Russian gas, the plan repeatedly mentions the reduction of the E.U.'s energy dependence on Russia. It emphas. Furthermore, it is the coordination and harmonization of energy policies among member states that should be strengthened as much as possible to ensure the long-term energy security and supply of the E.U. countries. At the same time, to alleviate the E.U. countries' deep energy crisis, the E.U.'s newly released REPower E.U.

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energy plan will plan and transform the E.U. energy market around 2025 in advance. Its strategic transformation will significantly impact the energy landscape of E.U. countries, especially in the process of E.U. countries' energy restructuring, influenced by the REPower E.U. plan. The E.U. will seek new energy cooperation countries in North America, the Middle East, Africa, and other places and will complete its development of light by 2025.

4. Conclusion

4.1. Key Findings

This paper mainly adopts a documentary analysis of relevant primary and secondary materials. The aim is to make a prognosis of the European energy landscape and energy direction from multiple perspectives and to significantly contribute to the third part of the paper (the changing energy geopolitical landscape in the EU countries). The feasibility of this method is high in the process of using the literature analysis. Since most of the scholars in the article's research content have studied the energy phenomenon to varying degrees, the difficulty of searching for secondary materials is manageable. Therefore, this method can be judged to be the optimal choice at the current stage. Secondly, the limitations of using this method are obvious, and the credibility of the secondary materials and their accuracy cannot be identified in time, making the paper research results can produce substantial deviations. Therefore, the author will search for official information and primary materials as the main search target in searching materials.

In the research results under different perspectives, the author will compare the research results in different geographical areas, compare domestic and international thesis reports, and make some degree of research contribution to the writing of this paper. The significant limitation can be that the research context and the author's political inclination in the different regions will directly lead to a bias in the direction of the paper's research results. The above variables will directly change the research results and the paper's significance. Therefore, the author will do his best to avoid research papers with high political leanings and to search for official information and one-week materials to make the paper more reliable.

This paper presents an academic study of the energy shortage in Europe in the context of the Russian-Ukrainian conflict. The paper analyzes and reflects on the corresponding contemporary literature as first-hand material, examining the current energy situation in Europe in the context of the Russian-Ukrainian conflict and the current energy transition in European countries. The main finding of this paper is the impact of the Russian-Ukrainian conflict on the European energy landscape, energy security and the geopolitical energy landscape due to the tightening of European energy imports.

The confusion in the world landscape under the Russia-Ukraine conflict has led to an energy crisis in the EU that will directly affect the future long-term economic and energy development of European countries. This action will change the existing energy pattern in Europe in the coming time and affect Europe's medium and long-term economic development in the future European economic pattern. In addition to the far-reaching economic impact, the geopolitical impact on Europe will also be huge; Europe will change energy importers and strengthen energy cooperation with the Middle East and its allies in the short term.

4.2. Future Studies

In the study, the author makes predictions about the impact that the continuation of the Russian-Ukrainian conflict will have on the energy landscape of the European Union, comparing the existing energy landscape with the current energy challenges faced by the EU countries' relevant findings. Again, in new European cooperation under constructivism, the author will also make constructivist

connections to the new situation of European countries seeking cooperation, codifying the paper. The arguments and results of European governmental institutions and organizations on the possibility of seeking alternative energy sources, including the search for new energy sources in European countries such as Germany, France, and Italy.

In terms of the outlook of this paper, the author hopes to complete the compilation of the paper by searching for more primary materials. In addition, the author wants to fill in the missing parts of the energy pattern in the paper, to improve the paper and make the author's analysis and summary of the paper more standardized, comprehensive, and accurate.

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