The16 th International Scientific Conference
"DEFENSE RESOURCES MANAGEMENT IN THE 21st CENTURY"
Braşov, October 28th-29th 2021

HOW ENERGY POLICIES IMPACT DEFENSE RESOURCES MANAGEMENT

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Abstract
The energy field is one of the factors most subject to technological evolution and rapid transformations in the current global spectrum. Energy policies will therefore also impact the field of defense resources. The aim of this paper is to pursue two types of energy policies and their impact on security and defense at European level. A first challenge is represented by green energy and its development. Green energy is a paradigm shift for production factors and will therefore influence at macroeconomic level, defense industries and the way these industries manage new technologies that require new types of energy in order to function. A second challenge that this paper wants to study is related to how the recent energy crisis at European level, which is due to a series of policies and decisions like implementing Nord Stream, may have an impact on defense resources and their allocation, especially for the states of the East Flank to NATO. With such challenges in mind, we aim to study the impact that all of these factors have on defense and security policies at a transatlantic level, including USA and European States.

Key words: nergy policies; defense expenditures; defense industries; security

1. Introduction

The global context of the past decade has brought a massive change in security and defense risk and threats. If cyber threats have increased in a technologically dependent environment, starting with 2020, the Covid-19 pandemic has demonstrated the shortfalls in security that healthcare challenges can bring to the table. The energy field with its ongoing evolution is starting to represent a new challenge for organizations like NATO and the European Union, as well as for other emerging countries.

Two have been the factors that have generated attention on the energy field and how its evolution can impact many economic sectors, as well as defense outputs.

The first factor is that of green energy, which has meant a change in paradigm on how countries like the US, Germany, France, etc., understand and manage their energy resources. Policies that would include moving from coal and nuclear energy, implementing new and innovative energetic solutions have meant an evolution of energetic management that has influenced the political, economic and defense fields **[1].**

The second factor represents the energy price increase of 2021 that followed the completion of Nord-Stream 2. The fall of 2021 has brought a price crisis all over the European Union. Energy policies mentioned above as well as the development of Nord Stream by Russia represents a change in terms of energetic solutions for EU member states. On short term, this

shift in energy distributers has generated a crises with effects that cannot be fully understood at that moment.

The aim of this paper is to analyze how these energetic factors influence defense policies and planning as newer risks and threats emerge under the changing environment. We can therefore speak about a new field that of energetic security and how it evolves under current global challenges.

2. Green Energy and its impact on Defense

Following the Trump administration, the Biden administration has once again positioned USA as a global fighter against climate change. With many actions taking to mitigate this threat one has to wonder how it will affect the US Department of Defense, which is considered the largest institutional consumer of energy in the world. If we were to consider the four life cycles of major equipment from R&D, Acquisition, Operations and Support and Disposal, we would see that when it comes to operating equipment, there many activities that make energy essential, from fueling ships and aircraft, to powering military bases. With a global changing environment, with resilience as a key objective, the US DoD has to also take climate change into consideration when planning its future long term objectives.

The US military's dependency on fuel has been visible ever since the wars in Afghanistan and Iraq started **[6]**. Using clean energy technologies could enable US troops to reduce that need for fuel, extend readiness in terms of range and duration while helping mitigate risks. Solar backpacks and blankets are already used by the army and marine core in order to charge ther communication equipment. The army also wants to take things one step further and electrify its vehicles and weapons systems. In its own attempt to mitigate its dependency on fuel, the US Navy has started to deploy hybrid drive ships that gain with this technology extended autonomy and time at sea.

A proposal for developing a DoD Office for Energy Innovation has been made with the intent of coordinating R&D policies for green energy and implementing it all across the US armed forces. The goal is to ultimately develop electrically powered tactical vehicles, remotely piloted aircraft as well as unmanned underwater and surface watercraft. Subsequently these steps will be then transferred and implemented at NATO level for member states that are trying to replace their fossil fuel dependent equipment as well.

The same initiatives exist at the level of the European Union, where the concept of Military Green has been implemented under EU directives. Basically the concept implies that all EU military operations be conducted under Environmental Protection. The European Defense Agency has overseen this process in an attempt to developed more effective capabilities for the future when it comes to energy consumption. EDA's desires include better water and waste management, energy efficiency and more econ-friendly materials and munition. In order for this process to be developed, EDA has tried to increase awareness among stakeholders on climate, ecology and environmental issues, as well as present steps forward for strategies regarding green policies. As each mission is driven by a course of action, by a protocol, using material and energy will also be monitored in every step of developing different missions. Like in the US example, the lifecycle cost of introducing new equipment will also be managed with green energy in mind, by trying to analyze what environmental footprint each phase of the LCC draws.

One element that should be mentioned is that of nuclear energy. While both US and the EU seek to develop green energy, the United States still follows its path on introducing new technologies when it comes to developing nuclear energy. The use of nuclear energy in Europe however is fragmented, with many countries either having, not having or planning to stop the use of nuclear energy on their territories.

In **Figure 1** we can observe the proportion of EU member states that operate nuclear energy, those that don't, as well as neighbor countries to the EU that either use or not this resources. It should be mentioned that while Germany is in the group of states that those have nuclear energy available, its intentions are to give up on this type of power as well as persuade other EU member states to do the same.

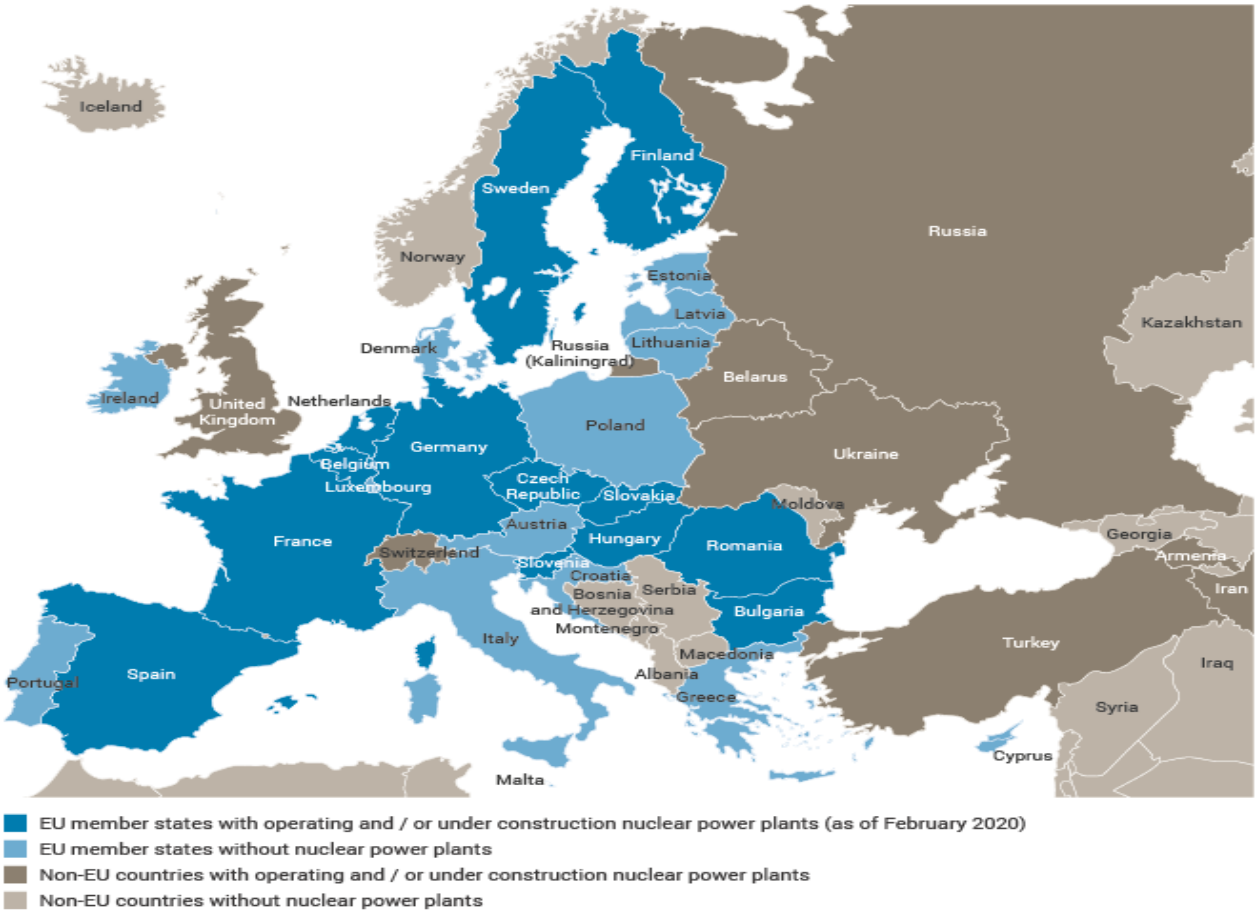

Fig. 1 Nuclear Power Plants in the European Union[1]

The interesting aspect here is the US policy of creating partnerships with Eastern Flank member states like Romania, Poland, Bulgaria and Ukraine (not a member of EU or NATO) in developing innovative nuclear reactors. As a response to the EU's increased dependency on Russian gas through North-Stream 2, this becomes a security strategy as member states of the Eastern Flank are most vulnerable to Russian threats and therefore need backup energetic

[1] https://world-nuclear.org/information-library/country-profiles/others/european-union.aspx

solutions. How the EU has become dependent on Russian gas, the issues and challenges it encounters and what are some alternatives to mitigate these scenarios will be addressed in the following chapter.

3. Energy challenges inside the EU and their effects on defense and security policies

Energy in Europe must be discussed in the context of the importance of dependency on Russian energy **[3]**. For the last two decades Russia's intent has been the development of Nord Stream 1 and 2. Following the Covid-19 pandemic, Europe finds itself in a situation where gas prices have reached unprecedented highs with up to 600% increases in some cases compared to the previous 12 months.

There are many reasons for why these scenario has taken place **[2]**. The reduction of traditional coal energy supplies as well nuclear energy because of the green energy policies presented in the previous chapter as well as Russia's actions in terms of gas distribution leave Europe in a situation similar to that of the USA gas crisis in the 70's. To better understand Russia's vision for gas distribution in the future we can have an outlook on Nord Stream as it is presented in **Figure 2**:

Fig. 2 Nord Stream[2]

One of the major reasons for which gas prices have increased at European level is due to the fact that Gazprom has stopped supplying its European clients, energy through its export pipelines but has chosen instead to sell gas from its stock reserves from Germany and Austria.

[2] Samuel Bailey (sam.bailus@gmail.com) - Own work

This event needs to be put in connection with the Covid-19 pandemic that stopped European economies last year, economies that are now restarting and in direct proportion consumption increases as well. Because of this reason there is a high demand for energy, a demand that suppliers were not able to keep track with, which has also triggered many European countries to use reserve stocks of energy instead.

All of these events show the risk of dependency on Russian gas. There is also a fear that Gazprom doesn't operate on itself, but rather as a political partner to the Russian government it takes its decision in the interest of higher Russian politics. These was the case with the Republic of Moldova, that after electing a European oriented president found itself with high increased gas prices from Gazprom. Moldova which is a country of approximately 2.6 million citizens, situated between Romania and Ukraine is 100% dependent on Russian gas transported through pipelines from Ukraine and from the pro-Russian province of Transnistria.

As the contract with Gazprom was coming to a close, monthly renewals of the contract happened at an overwhelming increased prices that put the Rep of Moldova, one of Europe's poorest countries in a very difficult situation. To answer this risk and threat, for the first time from declaring independence from 1991, Moldova declared a state of emergency and bought gas from Poland in order to reduce the pressure that Gazprom was putting on the country.

Through the energy and gas crisis happening in Europe **[4**], Russia wants to demonstrate to its European partners how important Nord Stream 2 could be, as gas could be pumped twice as much through the north of the continent by using the pipeline built below the Baltic Sea. Following the change in USA, from the Trump to the Biden administration, Germany has received a green light to go forward with Russia with this project. Given the Republic of Moldova example, as well as the shortage of gas from 2021, experts question the increased dependency on Russian gas that Nord Stream 2 will not solve but rather prolong. In terms of security and defense there is also a issue of weaponing the pipeline from the Russian side, especially in terms of different technology used for intelligence and data collection. All of the challenges mentioned above remain crucial on long term if Europe choses to obtain autonomous security and become a major player on a global scale in terms of politics, economy and defense.

4. Conclusions

As it has been addressed during this paper, the EU has increased its policies and measures of moving on from fossil fuel, to green energy, which has become the main source in the European Union starting with 2020. However transition is slow and uneven, as different member states have different views on what the impact of this shift would mean for their economies. The recent gas crises have also triggered member states to try and maintain a status quo in their energetic systems in order to not be caught off guard by different scenarios, like those that Gazprom could undertake.

In 2021m 35% of total electrical energy in the EU is still provided through gas and coal means, gas being 5% of that percentage. The energetic mix remains very different from state tot state, because of economic, political and even cultural reasons. If countries from Scandinavia use fossil fuel marginally, France uses nuclear energy, while countries like Holland, Germany, Romania and Poland still use more than 60% of their energy from gas and coal resources **[5]**. The tendency to reduce coal due to pollution is clear, but the path to green energy is not straight forward, as some countries are willing to take an extra step and first replace their coal industry

with a gas one. Such many member states use gas as a transition energetic solution before moving to windmills, solar panels and other newer solutions.

During the Glasgow Climate Change Conference, the EU has assumed a leading role in developing modern, innovative and green energy objectives. The Glasgow Confernce established that developed countries should contribute to a 100 billion USD fund that would finance climate change. UE has also taken a step following the summit to increase it pollution norms, thus all energetic suppliers are to reduce their emissions in order to be accepted on the European Market.

All of these measures must be taken into consideration in a larger pictures, as they tend to influence the political field, the economic field and the defense field as well. While Germany is pushing forward for greener energy, France is relocating part of its GDP in order to build more nuclear factories. USA is bringing innovative nuclear technology in the Eastern Flank.

It is for this reason that we can conclude that energetic security is far from reached at European level. As long as different states have different agendas, cohesion in decision making is still a long term plan when it comes to the energy field, and recent events, like developing Nord Stream, pushing for green energy in countries that have gaps in securing their internal consumption will only create a difference in opinions on the matter, instead of delivering a unitary positive response.

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