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BACKGROUND REPORT

Energy Security

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Contents

1 Preface

This background report (BGR) is supposed to briefly introduce the reader to Energy security for the simulation of NATO. Readers are highly recommended to conduct further research, especially for the purposes of writing a high-quality position paper. Chapters 7-9 of this BGR are designed to help the reader grasp the fundamentals and show what to focus on. In case of any queries or remarks concerning this document, please contact the author at petr.novak@amo.cz

2 Introduction

Throughout history, resources played a vital role in warfares and thus were often targeted in order to paralyse the adversary. It is necessary to sufficiently equip and supply the military if we expect it to fulfill its combat duties. Supplies and equipment evolved over the centuries, and one of the recent additions to the list of military needs is adequate energy supply, which has proven to be a crucial factor in modern warfare.

Depriving the enemy of supplies has impactful advantages, providing opportunities to break said enemy without fighting, overcoming various disparities between the forces etc. History provides us with a vast amount of examples in which even the most formidable armies were defeated as a result of this. It might have been achieved through scorched earth strategy, naval blockades, or strategic bombing campaigns. All of these strategies are categorized as means of conventional warfare, but in recent century irregular warfare dramatically gained importance, making its mark on the world and thus on current security policy.

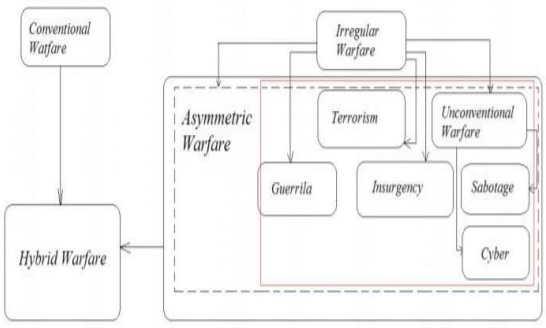
In the modern world, we are dependent on our energy facilities, such as refineries, power plants, or pipelines. Those vital to the functioning of the state are part of the so-called Critical Energy Infrastructure (CEI). CEI is defined as an energy infrastructure whose failure or destruction would have a far-reaching negative effect on economic and social security as well as the defensive capabilities of the state. Almost each of CEI's components relies on modern technology, which also opens it up to cyber-attacks. Furthermore, some strategic commodities like oil are extracted mainly in several specific areas, and they are transported through numerous chokepoints, which creates a potential for unprecedented paralysis of the adversary. Due to its importance, size, and vulnerabilities, CEI presents an attractive target for hostile actors.

„Energy security is the uninterrupted availability of energy sources at an affordable price. In the long-term horizon, it means issues concerning energy supply, economic development, and environment, while in the short-term, it deals with the ability to react to changes in supply or demand.“

3 Threats

It is necessary to define the types of threats that need to be addressed, explain their basis and implications. The consequences of any attack against CEI would be grave, yet if such an attack was performed against any nuclear facility, its potential consequences would be far more alarming. It is important to note that this section will not address the threats and strategies of conventional warfare since these are addressed by NATO's Military Committee rather than the North Atlantic Council.

„ Irregular warfare (IW) is defined by the U.S. as a violent struggle among state and non-state actors for legitimacy and influence over the relevant populations. IW favors indirect and asymmetric approaches, though it may employ the full range of military and other capabilities in order to erode an adversary's power, influence, and will. “



1 Figure 1 - Warfare classification chart

3. 1 Terrorism

There are several reasons why CEI provides a perfect target for terrorist groups and other entities conducting acts of terror. If successful, the attack has the potential to affect a significant portion of a state's territory and population whilst inflicting considerable damage to the economy. This kind of attack would

It was the largest blackout in the history of Pakistan and a perfect showcase of the power grid's vulnerability.

inevitably result in the spread of fear and panic, fulfilling the sole purpose of a terrorist attack. Whatsmore, the energy infrastructure is a relatively vulnerable target.

FARC, Taliban, Al-Qaeda, and ISIS are among the terrorist organisations conducting attacks of this type on a regular basis. Additionally, there are local radical and terrorist groups in Europe which carried out or attempted such acts in the past, although NATO's analysis suggests that targeting CEI is of relatively low importance for groups of this character.[3]

3. 2 Insurgency

It is not always possible to differentiate between terrorists and insurgents, nevertheless, these two categories of threats to CEI are not the same. According to NATO, around 500 attacks against energy-related infrastructure are conducted yearly by insurgent and terrorist groups. Today, insurgent attacks are mostly concentrated in the region of West Africa.

For insurgent forces, the destruction or seizure of energy infrastructure not only provides a tactical and strategic advantage but also undermines both the domestic and international position of the government, especially if the state concerned has, for example, large oil fields. In such a case, the government would be under significantly higher pressure than if the aforementioned infrastructure had not been a part of the equation. Moreover, the loss of similar facilities deprives the government of a valuable source of income that the occupants may use to their own benefit.

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3. 3 Sabotage

Sabotage of critical energy infrastructure boomed during the Cold War when the U.S. and USSR aimed to disrupt social stability and destabilize the economy of one another. Naturally, they are still common today, while the sabotage techniques are still evolving, creating an overlap with cyber attacks. These actions are usually performed by state actors and sometimes even by private companies in order to dislodge a rival enterprise. Standard targets for sabotage include pipelines, power plants, oil-processing facilities, storages, and depots.[i]

3. 4 Cyber attacks

Modern CEI is dependent on information and communication technology, which can therefore be also used to conduct attacks against it since systems used by different facilities naturally differ in various specifics. Those various specifics are their level of vulnerability or security. Cyber attacks are executed from a distance and potentially through third parties, who are usually unaware of executing such an attack, providing cover for the attacker.

Perpetrators of cyber attacks usually are state actors, hacker activists, or criminals seeking ransom. States currently viewed by the Five Eyes (USA, UK, Australia, New Zealand, and Canada) members and their allies as cyber threats are Russia, China, Iran, and North Korea. It can be assumed that the importance and number of cyber attacks against CEI will be rising in the foreseeable future.

4 Notable incidents

This section will explore some of the past incidents concerning energy security, focusing mainly on those that are NATO related, although not exclusively. They should provide examples of threats covered in the previous section and further clarify the subject.

4. 1 Baiji 2014

Throughout its existence, ISIS captured many sites belonging to Iraqi or Syrian CEI, among others the Mosul dam and most notably the oil refinery in Baiji. The area of Baiji is an essential industrial center in Iraq, providing a third of its needed domestic energy production (electricity, heating oil etc.).

The concerned oil refinery is the largest one in Iraq, responsible for approximately half of the country's production, thus being one of its most important economic assets. It was captured by Islamists in June 2014 and occupied for more than a year before being regained by the Iraqi government and its allies. It had suffered immensely during the intense combat taking place there yet provided occupants with a significant income before becoming inoperable.[ii]

The concerned oil refinery is the largest one in Iraq, responsible for approximately half of the country's production, thus being one of its most important economic assets.

4. 2 Balochistan 2015

Large Chinese development projects in the port of Gwadar and the construction of the Iran-Pakistan-India pipeline are only two of the causes for the insurgency in Balochistan. Pakistani CEI is a common, if not preferred, target for the insurgents who conducted convoy raids, assaults on oil tankers, attacks on pipelines, power plants, and energy grid.

In January 2015, they managed to blow up two transmission towers, leaving just 600 MW from the 9000 MW generated at the time available and cutting off 80% of the country.[iii] It was the largest blackout in the history of Pakistan and a perfect showcase of the power grid's vulnerability. Due to the efforts of insurgents and other reasons, India considered a diversion of the pipeline, which would go undersea outside Pakistani waters.[iv]

4. 3 Baku-Tbilisi-Ceyhan 2008

On 5th August 2008, an explosion occurred on a Georgian section of the pipeline from Baku to the Turkish port of Ceyhan, which was finished two years earlier. Russia openly disapproved of the construction

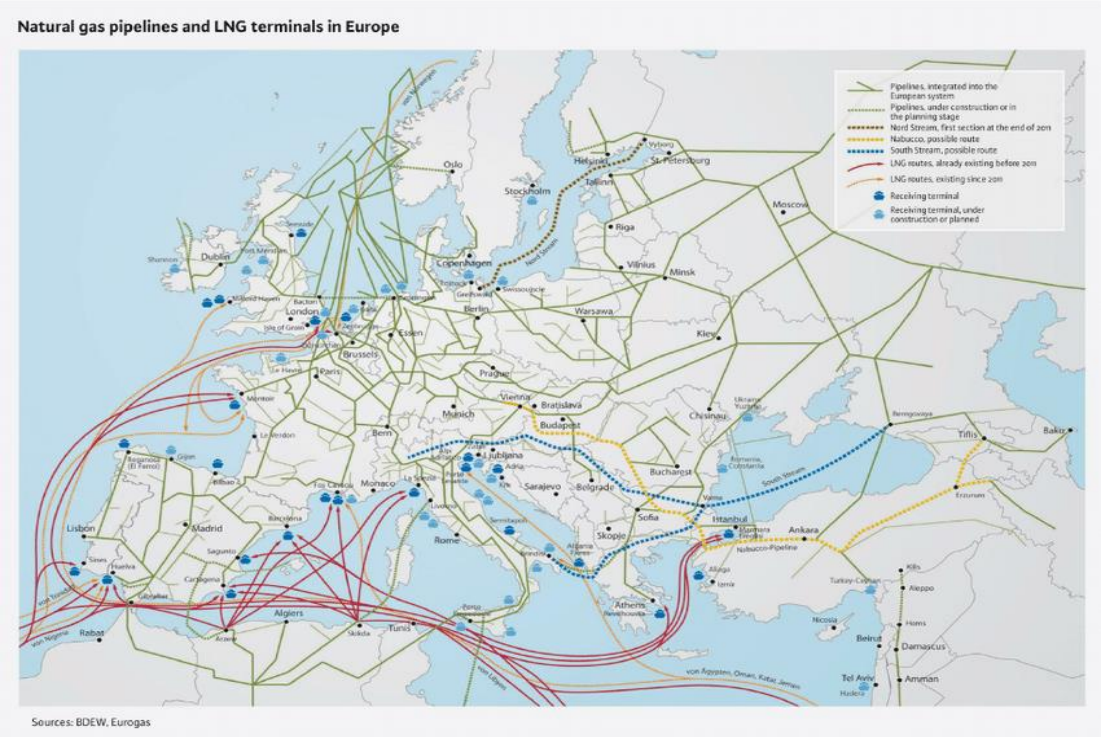
previously. Furthermore, actions and reactions of some officials raised suspicion, but the PKK (Kurdish Workers Party) claimed responsibility for the attacks, and the Turkish authorities stated the cause of the explosion was a malfunction.

> In 2009 and 2010 Iranian uranium enrichment facility in Natanz was attacked multiple times by US-Israeli malware called Stuxnet.

However, in 2014 the U.S. Intelligence claimed that the cause was a Russian cyber attack disabling alarm and communication systems prior to causing an explosion by an immense increase of oil pressure.[v] This claim was disputed by some organizations, for example, the SANS Institute. Nevertheless, it is a version NATO is currently working with.[vi]

4. 4 Natanz 2009-2010 & beyond

In 2009 and 2010 Iranian uranium enrichment facility in Natanz was attacked multiple times by US-Israeli malware called Stuxnet.[vii]. Several centrifuges used for the enrichment were destroyed, a significant setback for the Iranian nuclear program. It was also an impulse for Iran to start building its own cyber warfare capabilities. Nevertheless, Israeli cyber attacks and sabotages targeting this same facility continue up until today. For instance, there was one in April 2021 utilizing malware again.[viii]



2 Figure 2 - Natural gas infrastructure in Europe

5 NATO & Energy Security

NATO's role in energy security was defined in the 2008 Bucharest declaration, and it has been evolving since then.[ix] In 2010 NATO set up an Energy Security section, and two years later, NATO Energy Security Centre of Excellence became active. In the 2018 Brussel declaration, NATO members agreed on the essentiality of ensuring that members of the alliance are not vulnerable to political or economic pressure via threats to energy security.[x] In 2019 a set of recommendations for consolidation of NATO's role in energy security with emphasis on a viable supply of alliance forces.[xi] Lastly, in 2021 NATO Climate Change and Security Agenda

alongside the corresponding Action Plan were devised and agreed upon, focusing on the increase of the military's energy efficiency and energy supply diversification.[xii]

Despite the importance of electricity in regard to energy security, oil and gas are usually the main subjects of discussions regarding it. Therefore, the next section will focus on these two commodities, which play a crucial role in geopolitics. Import routes are essential, possibly even defining, when it comes to energy security, influence, and diplomacy. Since non-European members of NATO are large exporters of these commodities, the import routes to the European part of NATO are of much greater interest. There are four main regions from where European members import oil and gas via pipelines: North Sea (Norway and UK), Eastern Europe/Russia, Caucasus, and MENA region. The North Sea region is the most secure one of these since both major players are NATO members, and therefore it does not receive as much attention.

5. 1 Eastern Europe

Gas imports caused tensions between NATO and Russia on multiple occasions since the Russians did not hesitate to pressure members from East and Central Europe dependent on them. A perfect example is the 2014 Ukrainian gas crisis when the Russian government cut off the gas supplies for several months under the pretence of Ukraine not paying adequately for the imports in late 2013.[xiii] It was not the first time Russia interrupted the gas flow to Europe or threatened to do so, as something similar happened in early 2009.[xiv]

Naturally, NATO is concerned about such manipulations with the gas supply since cutting off Ukraine means limiting the supply in other countries. Therefore, certain eastern members of the alliance are reducing their dependence on Russian gas, among them Lithuania, which finished its LNG terminal in the port of Klaipeda, called FSRU Independence. It stores liquid natural gas, which it regasifies prior to distribution. This facility should possess the capacity to supply the whole Baltic region at 80% performance. However, not even 50% of its potential was used in 2019 and 2020, according to estimates. [xv]

Another large-scale project concerning gas imports is the Nord Stream 2 pipeline from Russia to Germany.

The incorporation of green technology and renewable energy is of high priority on NATO's agenda regarding energy security. The alliance aims to promote cooperation with other international organisations and the academic sphere in this regard.

„ MENA stands for the Middle East & North Africa region, which is a strip of countries from Morocco to Iran. “

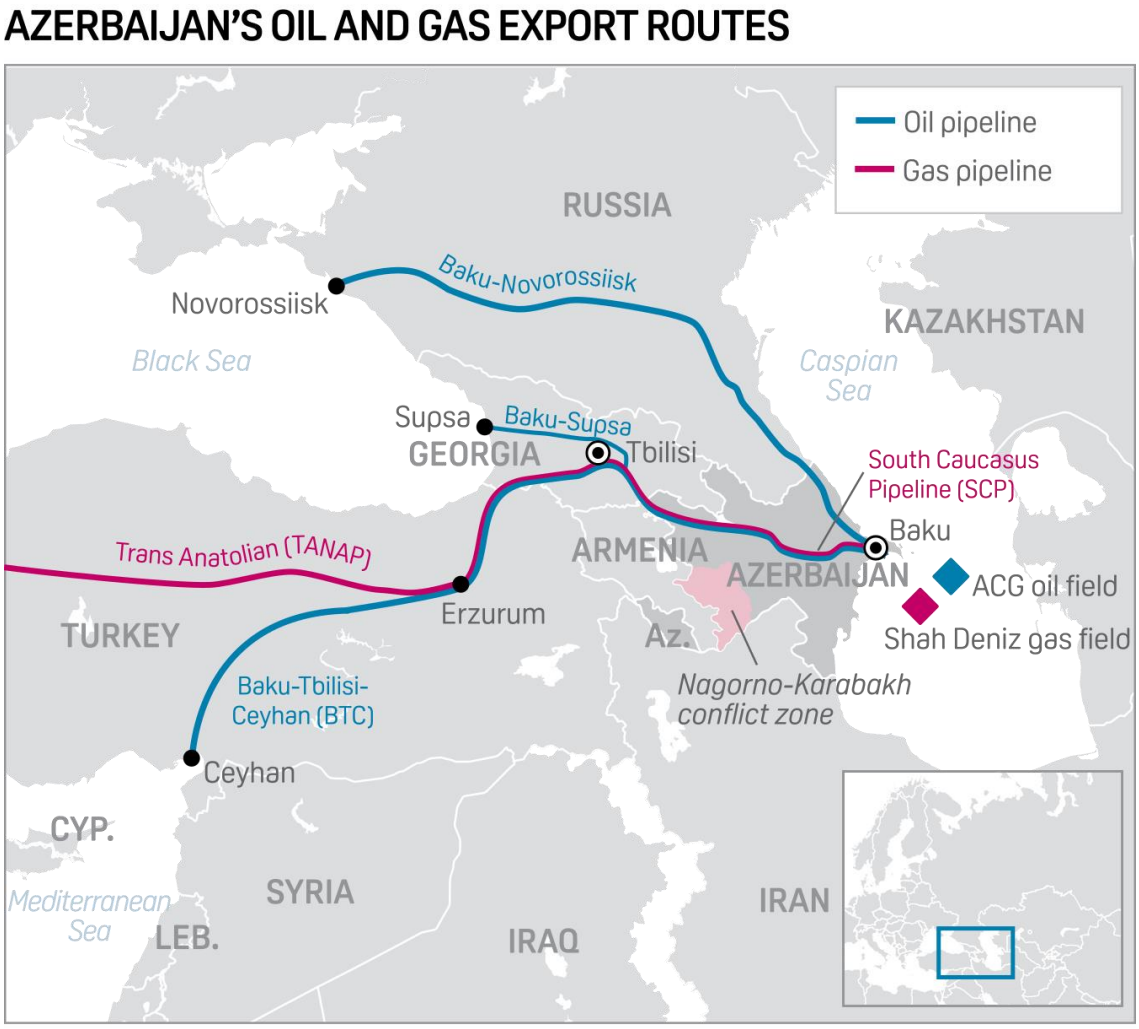
It is quite controversial for some members, as it bolsters German dependence on Russian gas imports. Since it should be finished and become operational this year, further analysis of the situation would be of little benefit. Therefore the author of this document recommends the delegates to conduct further research on this subject.[xvi]

5. 2 Caucasus

Oil and gas from Azerbaijan have specific benefits for European importers. It does not make them entirely reliant on Russia, and the resources have improved quality. Crude oil from Baku is transported to the ports of Novorossiysk, Supsa, and Ceyhan through pipelines as the Baku-Tbilisi-Ceyhan (BTC) and TANAP. For illustration, the BTC pipeline provides Israel with 40-45% of its whole demand.[xvii]

The main problem in the area with implications to energy security is tension between Armenia and Azerbaijan. Any conflict may disrupt the supply since the BTC is not far from Armenian borders. Furthermore, Armenia is not too keen on regional integration projects in the area, especially those benefiting Azerbaijan.

Another source of worry is the Russian Federation since its government views the Caucasus as a region of strategic importance. Russia also wants to protect its influence on Europe from energy exports. As was mentioned earlier, Russia was already suspected of BTC pipeline sabotage, and NATO still considers it to be the culprit. The Kurdistan Workers Party (PKK), which



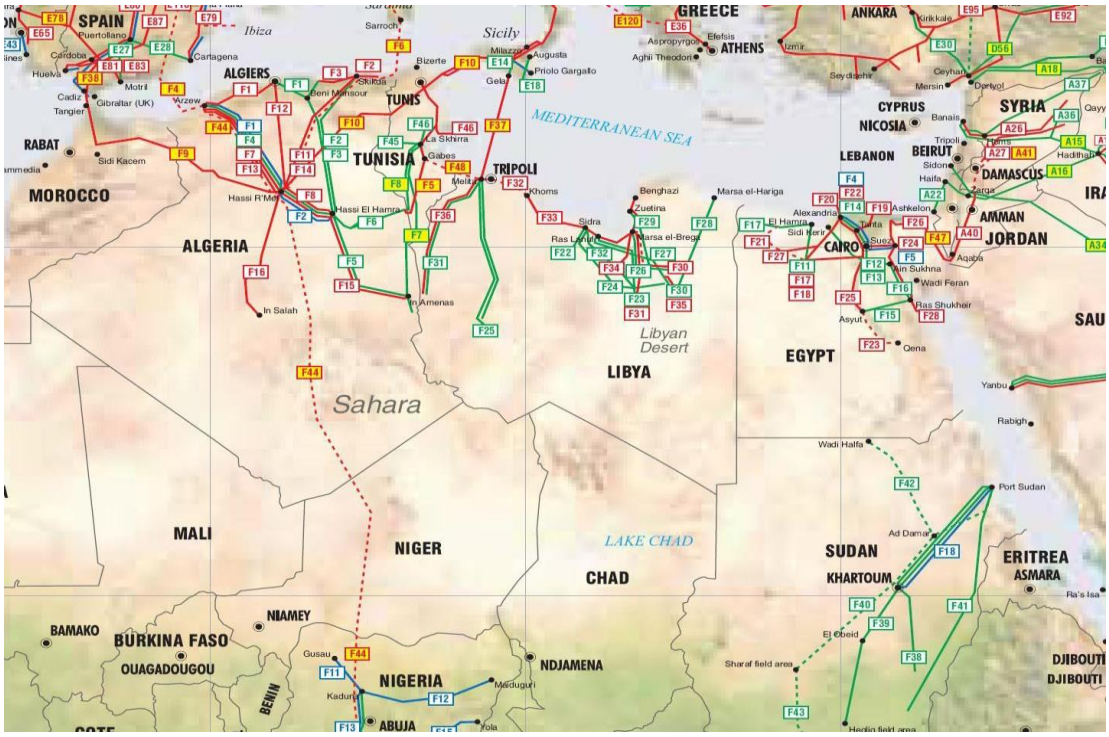
3 Figure 3 - Main pipelines in Caucasus region

claimed responsibility for the sabotage, might be another disruptive actor that has to be taken into account.[xviii]

The MENA region presents a vital supplier for southern members like France, Italy, or Spain. Algeria is the second-largest gas exporter to Europe, Egypt is the second-biggest gas producer in Africa, while Libya has the greatest natural oil reserves in Africa.[xix] . The Middle East is then the world's largest oil production center. However, the MENA region is also a critical logistical crossroad since it connects Europe to the exporters south of the Sahara.

5. 3 MENA

The MENA region is the least stable of the examined ones since it is home to multiple terrorist groups and insurgencies, while civil wars are also not unheard of. As the importance of green energy will rise, it will become necessary for these countries to adapt. The adaptation might become equally important as the region's stability, and NATO is able to provide support with both.



4 Figure 4 - Map of pipelines in North Africa and part of the Middle East

6 Central European Pipeline System

Energy usage by the military is extraordinary, as are the demands on the reliability of the supply chain. CEI components dedicated to the armed forces are required since the military bases need their own connections to the pipeline system and micro-grid. When it comes to the supplements of its military, NATO relies on the Central European Pipeline System (CEPS), operated by the U.S. and alliance members connected to it (France, Germany, Netherlands, Belgium, and Luxembourg). Its construction began in the 1950s as a supply infrastructure for NATO air bases, yet it evolved and now serves mainly commercial subjects, but the needs of NATO forces are always prioritized.[xx]

7 Conclusion and recommendations

The threats to energy security are evolving; therefore, it is necessary to innovate if they are to be successfully addressed. Cybersecurity is becoming increasingly important and should have a priority due to vulnerable operating systems. A large portion of NATO energy imports comes from unstable regions or countries that might pose a threat. Therefore, it would be wise to reconsider import policies, and how they should develop into the future and/or how to ensure stability in the regions. Another central point is the self-sufficiency of NATO, green technologies, and the construction of new infrastructure.

7. 1 Potential negotiating points

In general, it might be reasonable to divide your efforts into a few "blocks" addressing broader issues, for example:

Imports

Desired state of imports
Imports from Russia
Security of imports from MENA region
Development of imports from Caucasus

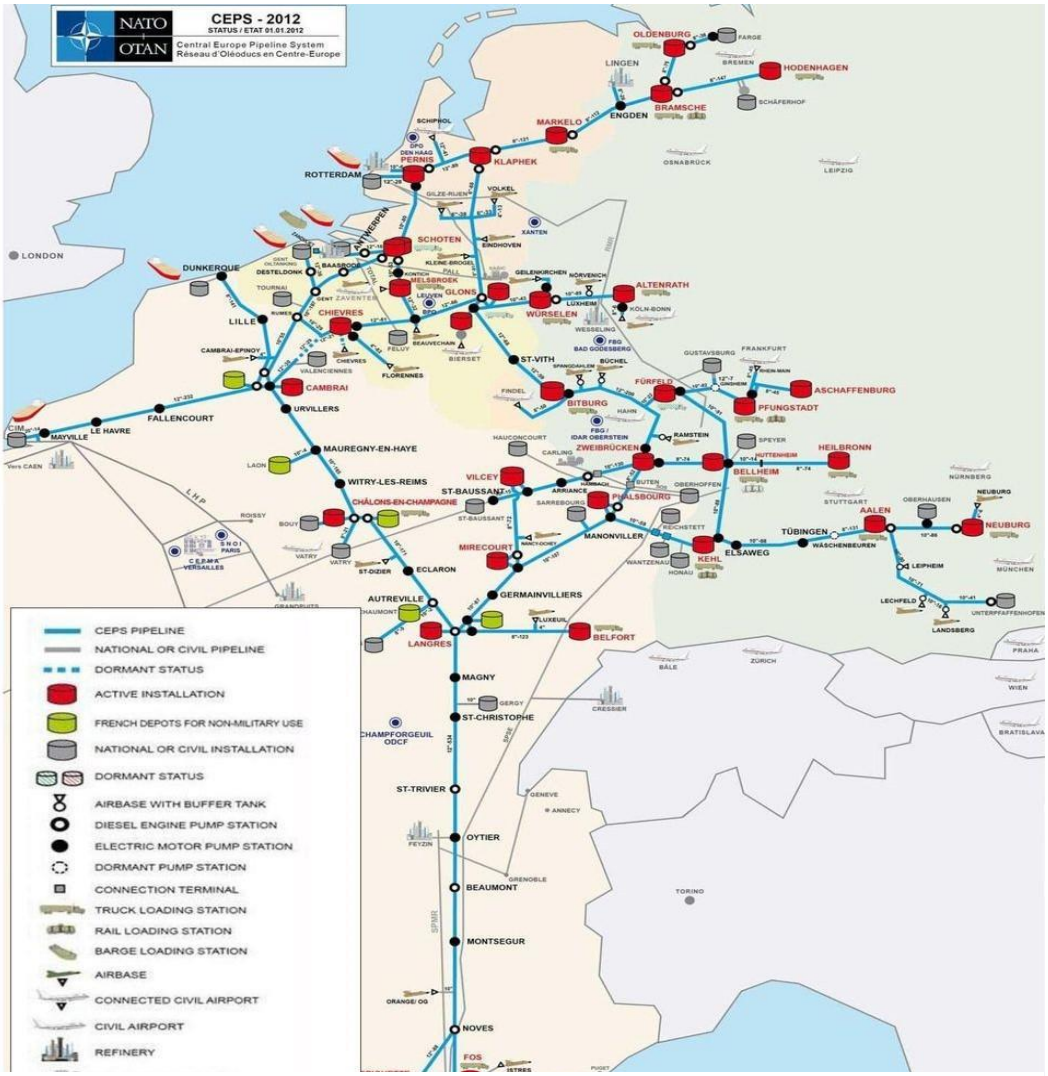
Infrastructure

State of pipelines, their security and development
Enlargement of CEPS or creation of a similar infrastructure in other strategic region
State and security of NATO's/member states' CEI

Innovation

Green technologies
Self-sufficiency
Operating systems for CEI
Electricity sources and power grid
Security or threat-addressing initiatives

Consider these blocks as mere recommendations, not guidelines, since priorities of NATO members differ.



5 Central European Pipeline system

8 Fundamental questions

Is your country an exporter or importer of energy? Where does it import from/export to?

What is the rough energy mix of your country?

Does your country take part in some significant energy project? Is there an important pipeline?

What is the stance of your country on gas imports from Russia?

Is there a military facility with specific energy supply needs in your country?

How secure are the main energy facilities of your country?

Is your country active in the development of energy technologies? Could they be somehow used to NATO's benefit?

9 Further reading

Extensive introduction to energy security.

- NATO Energy Security Center of Excellence - Energy in Conflict series:
  https://www.enseccoe.org/en/resources/224/journals/energy-in-conflict-series-18

Contributions and data covering a broad scale of energy security topics

- International Energy Agency websites:
  https://www.iea.org/topics/energy-security

Introduction to the European energy geopolitics

- Carnegie Europe - The Geopolitics of Energy Security in Europe
  https://carnegieeurope.eu/2019/11/28/geopolitics-of-energy-security-in-europe-pub-80423

  Articles about various energy security topics

- NATO Organisation of Canada - Energy Security
  https://natoassociation.ca/category/programs/energy-security/

Statistics and data regarding majority of subjects including energy security

- Statista and Our World in Data:
  https://www.statista.com/
  https://ourworldindata.org/

NATO & Energy security

- NATO websites about energy security:
  https://www.nato.int/cps/en/natohq/topics_49208.htm

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Pražský studentský summit

Pražský studentský summit je unikátní vzdělávací projekt existující od roku 1995. Každoročně vzdělává přes 300 studentů středních i vysokých škol o současných globálních tématech, a to především prostřednictvím simulace jednání tří klíčových mezinárodních – OSN, NATO a EU.

Asociace pro mezinárodní otázky

AMO je nevládní nezisková organizace založená v roce 1997 za účelem výzkumu a vzdělávání v oblasti mezinárodních vztahů. Tento přední český zahraničně politický think-tank není spjat s žádnou politickou stranou ani ideologií. Svou činností podporuje aktivní přístup k zahraniční politice, poskytuje nestrannou analýzu mezinárodního dění a otevírá prostor k fundované diskusi.

Petr Novák

Autor je spolupracovníkem Asociace pro mezinárodní otázky a členem přípravného týmu Pražského studentského summitu.

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