German Council on Foreign Relations

No. 2
May 2025

DGAP REPORT

Connectivity Policy

A Strategic Tool for the EU in its Eastern Neighborhood

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Connectivity Policy – A Strategic Tool for the EU in its Eastern Neighborhood

Given the shifts in the geopolitical landscape, connectivity is no longer just an economic tool – it has become a strategic instrument used for influence, resilience, and security, as China has demonstrated with its Belt and Road Initiative. The EU must understand that connectivity is central to its engagement with the Eastern Partnership (EaP) countries, where the EU faces growing competition not only from China's BRI, but also from Russia's infrastructure dominance, and Turkey's regional ambitions. This memo explores the new momentum that connectivity has gained as a part of the EU foreign policy in the EaP and examines its significance in the emerging new regional order. It assesses whether and how connectivity can be reframed as a strategic instrument for the EU's engagement.

DIVERGENCE WITHIN THE REGION

Russia's war against Ukraine and the consequences for European security are reshaping the geopolitical landscape of the EU's eastern neighborhood. These shifts are driving significant changes in regional dynamics and altering relations between the EU and its Eastern Partnership (EaP) neighbors, which are diverging in their EU ambitions. Ukraine and Moldova, now EU candidate countries, are undergoing the EU's screening process and have the ambition to open negotiations on the first cluster of chapters, "Fundamentals," very soon. Armenia is also developing closer ties to the EU, deepening security cooperation, and starting negotiations on visa liberalization, as well as launching the country's accession process to the EU.

Meanwhile, Georgia's government is consolidating its authoritarian rule and has paused the country's EU accession process. Azerbaijan is keen on economic cooperation and deepening connectivity, particularly in the energy and infrastructure sectors, but rejects the normative conditions that accompany EU partnerships. These diverging developments mean that the EU must tailor its approach to each country's specific context. To that end, it should make use of its connectivity policy, which is relevant to all five countries and could also serve to strengthen Europe's normative approach.

THE EU'S CONNECTIVITY POLICY

The EU's connectivity policy is defined by the EU's approach to the relations between Europe and Asia. Originally, it was all "about networks," meaning links in the transport sector, digital networks, energy and flows as well as ties in the human dimension. As a normative actor with a values-based foreign and neighborhood policy approach, the EU is aiming to create connections and interdependencies within Europe and beyond. According to this approach, investment in infrastructure should be sustainable and reflect respect for the rule of law, human rights, and international norms and standards. In 2021, the EU launched Global Gateway as a "new European strategy to boost smart, clean and secure links in digital, energy and transport sectors and to strengthen health, education and research systems across the world."

In the EaP countries, the EU's connectivity projects are supported by plans "to promote growth-enhancing investments, fostering economic resilience and progressive integration both among our Eastern partners and with the EU." They are part of the Eastern Partnership policy, for instance by linking EaP countries to the Trans-European Transport Network (TEN-T), a planned network of roads, railways, airports, and water infrastructure across Europe, and the European Network of Transmission System Operators (ENTSO-E) for interconnecting high voltage electricity networks. As part of the EU's cooperations agreements, partner countries are granted trade benefits in exchange for their compliance with the Union's norms and values.

A CONTESTED REGION

Russia's full-scale war against Ukraine has transformed connectivity from a predominantly economic concept to a security imperative. In this new geopolitical reality, infrastructure is increasingly being weaponized, particularly in the Black Sea region. Energy dependencies and digital networks have become instruments to exert influence. As Western countries are using trade as a weapon against Russia, Russia, as a result of Western sanctions, has become ever more dependent on trading via the South Caucasus and the Caspian and Black Seas.

At the same time, the EU's connectivity policy in the eastern neighborhood and the South Caucasus is coming under increasing competition from other players: Russia controls key energy, railway, and other infrastructure assets particularly in the South Caucasus and is a major trade partner there. China is also present and uses the Belt and Road Initiative (BRI) to expand its regional and global influence through infrastructure investments. Turkey, although a regional rather than a global player, is seeking to dominate the Black Sea region and to add to its influence in the South Caucasus.

Given the shifts in global power dynamics, now dominated by security and transactional relations, the EU must adapt if it wants to remain relevant to its Eastern neighborhood and beyond. Since Donald Trump's return to the White House, the pace of geopolitical change has accelerated. With the United States scorning multilateral institutions, turning towards transactional policies, and unleashing a global trade war, Europe is emerging as the main proponent of a norms- and rules-based order.

As a result, connectivity is becoming even more important as part of the EU's foreign and neighborhood policy. The concept of connectivity now intersects with geopolitical competition, security policy, hybrid threats, regional stability, and the protection of strategic infrastructure.

EU WEAKNESSES

Despite the EU's ambitious rhetoric, its connectivity projects remain chronically underfunded. The Global Gateway is a dwarf when compared to the scale of China's BRI. Moreover, funding is fragmented, which greatly lessens the impact of EU projects. And as there are no clear rules to ensure the projects are carried out by the EU or local companies, some EU-funded projects are implemented by Chinese to the local economy.

Unless the EU mobilizes new financial instruments or sets up a dedicated European Connectivity Fund, it will not be able to meet its geopolitical ambitions. At the same time, the EU needs to be much more stringent about ensuring that its connectivity projects comply with European standards and regulations to of the process.

The new European Commissioner for Enlargement, Marta Kos, has been tasked with developing "a coordinated approach to supporting the countries of the Southern Caucasus, including on regional connectivity, together with the High Representative/ Vice-President." However, these ambitions have yet to be translated into concrete policies, norms, and objectives and backed by new financial instruments.

The absence of a clear strategy also points to a lack of ambition and political consensus among member states. The EU as a whole must agree on defining the scope of its infrastructure investments and tying them to its normative agenda. In this context, connectivity should be seen as a tool to deepen EU alliances with the EaP countries, maintain the EU's influence, and address competition with other actors.

A more strategic approach to connectivity could enable the EU to engage with Azerbaijan and possibly Georgia. Investment levels should be linked to progress on reforms and human rights while acknowledging that partner countries may not fully share the EU's values. A "more-for-more, less-for-less" approach could be applied, ensuring that the EU safeguards both its interests and its values. This requires defining differentiated levels of ambition, country-specific priorities, and engagement strategies.

The EU should also expand its connectivity approach to include Turkey and Central Asian countries, given their growing influence and potential as partners. This process has already started, and while further steps might require scaling back political ambitions, the EU would regain influence in a region where Russia and China remain dominant actors. Defining connectivity in both financial and strategic terms would provide greater clarity on how the EU competes with other actors. It would also enable the EU to create stronger East- West connectivity routes and integrate the countries into global trade.

Meanwhile, connectivity projects in Ukraine and Moldova should be continued and scaled up to support both countries' EU integration.

BALANCING NORMATIVE COMMITMENTS AND PRAGMATIC NEEDS

The EU must balance its normative commitments (human rights, rule of law, environmental standards, labor rights, democracy) with pragmatic needs (security partnerships, trade, and resource access) to maintain regional influence. The key questions remain: *What kind of connectivity does the EU need? Should the EU prioritize economic connectivity over political influence? To which extent should financial support be linked to the values-based approach? Where are the red lines?*

The EU's connectivity offer is different from that of China and Russia due to Europe's normative agenda and participative approach. As a result, the eligibility criteria for project funding need to be redefined, particularly concerning engagements with authoritarian states and implementing partners to ensure that projects comply with the EU standards. As Russia's hybrid warfare targets critical infrastructure in the Black Sea and Baltic regions, the EU's approach must also address the links between connectivity and security. Similar attention should be given to cybersecurity.

At the same time, the EU's connectivity policy must remain flexible enough to swiftly respond to political shifts, such as Armenia's deepening of relations with the EU. The EU could, for instance, help Armenia gain access to new markets to diversify its trade. Even if there are limits, the EU's strategic connectivity initiatives could bridge the increasingly divergent trajectories of EaP countries while fostering closer ties to the EU.

In redefining its connectivity approach, the EU has a choice between three models:

- A more transactional and pragmatic connectivity model: The EU would focus on the economic aspects of an investment without imposing strict normative conditions. Such an approach, however, carries the risk of eroding the EU's values. The EU might end up mimicking China's approach without being able to financially match the BRI.
- A normative connectivity model: EU projects would be conditioned on democratic reforms and human rights. As a result, the EU would have to reduce its engagement with authoritarian regimes such as Azerbaijan and Georgia, which would mean losing influence in these countries.
- A hybrid approach: The EU would differentiate its approach. The level of political and economic engagement would depend on each partner country's commitment to reforms and norms as well as the EU's strategic interests. While this would allow the EU to remain present and maintain its influence, it must be careful not to legitimize authoritarian regimes.

RECOMMENDATIONS

Despite its ambitions, the EU's connectivity agenda faces significant resource constraints –particularly given that Europe's domestic infrastructure is underfunded, too. Lack of funding has hampered initiatives such as the Global Gateway, the Middle Corridor, and the Black Sea connectivity projects. Divergent interests among member states account for a lack of political commitment. As a result, the expectations the EU created with its connectivity agenda remain unfilled.

To address these issues, the EU should:

- Engage in a strategic review of its connectivity ambitions in the new geopolitical context, setting clear priorities and defining red lines.
- Redefine its engagement with authoritarian states, linking funding to governance and reform benchmarks while acknowledging that full alignment may not be possible.
- Differentiate its engagement based on each EaP country's level of integration with the EU.
- Mobilize greater financial resources to match expectations, including through low-interest loans.
- Focus on improving security by prioritizing cybersecurity and resilient infrastructure.

CONCLUSION

The EU should focus on connectivity in its revised Eastern Partnership policy. As security and connectivity are becoming increasingly intertwined, the EU must make sure that its investments serve both its geopolitical interests and its commitment to democratic values and norms. Without a more strategic and better-funded approach, the EU risks losing relevance as a geopolitical actor, particularly in countries not interested in EU accession.

THE INPUT PAPERS

In July 2024, the German Council on Foreign Relations (DGAP) and the Georgian Institute of Politics (GIP) organized a colloquium on connectivity and geopolitics in Tbilisi. Nine papers on different aspects of connectivity were presented at the conference, including on economic and infrastructure issues, green hydrogen, the roles of China and the EU, the Middle Corridor, and the EU's space policies.

This report and its policy recommendations for the EU are based on those nine papers, which frame the topic from different angles, reflecting the wide variety of connectivity approaches.

As geopolitical competition over infrastructure and connectivity is intensifying, the EU needs to address the growing influence of both Russia and China in its eastern neighborhood and the South Caucasus. The papers show China's growing influence in Georgia (through projects linked to the Belt and Road Initiative) and in Central Asia (via supply chains for critical raw materials).

At the same time, Russia continues to act as a disruptor, exerting pressure through its leverage over energy supplies. Several papers focus on reducing reliance on Russian energy, covering topics such as Moldova's heating sector, biogas in the Eastern Partnership (EaP) region, and hydrogen development in Ukraine, as well as infrastructure and trade routes in Armenia.

Transport corridors, according to several papers, play a strategic role in this geopolitical competition. The North-South Corridor with its Russia-Azerbaijan-Iran route is strengthening Russia's position. Meanwhile, the initiatives like the Black Sea Submarine Electricity Cable (BSSEC)and the Trans-Caspian Corridor highlight the EU's efforts to bypass Russia and develop alternative supply routes for goods and energy. While the CEHC (Hydrogen Corridor) and Ukraine's hydrogen sector have potential as future suppliers for Germany and the EU, developing them would also require significant investment.

Technology and digital sovereignty are at the focus of yet another paper. It examines whether the EU's IRIS satellite project has the potential to reduce dependence on foreign satellite networks (such as Starlink and China's systems). It also highlights cybersecurity concerns, as seen in Russia's hacking of Ukraine's networks, which exposed vulnerabilities in the digital infrastructure of both the EU and its partner countries.

The papers assess the EU's role in the Eastern Partnership (EaP) countries and the South Caucasus. The key takeaway is that geopolitical developments are directly shaping the EU's connectivity agenda and infrastructure ambitions in the region. While opportunities for EU engagement exist, the substantial investment required by those projects is often underestimated. The EU also needs to be careful to not indirectly support Chinese state-owned enterprises (SOEs), as has happened in Georgia.

At the workshop, the following conclusions were reached:

The EU must adapt to the new geopolitical reality dominated by transactional and security-driven policies without losing its normative identity. This is a dilemma which the EU finds particularly difficult to overcome as it was not designed as a security actor. But if the EU fails to take security sufficiently into account, it could lose its relevance in in its eastern neighborhood and the South Caucasus – regions where China and Russia are highly active.

Connectivity can be a strategic tool for addressing both regional divergence and external challenges, but it requires robust safeguarding mechanisms, financial backing, and high-level policy alignment among EU member states.

The Black Sea and energy networks are pivotal to the EU's connectivity ambitions, presenting both opportunities and risks. While there is no consensus on the way forward, particularly due to differing opinions on Turkey's engagement, it is clear that the EU must redefine its priorities. That means making choices between the projects it will invest in and the project that do not enjoy the same priority.

The EU must align its connectivity initiatives, including the Global Gateway, with its broader regional strategy and its geopolitical objectives, ensuring a security-conscious, values-driven approach.

Disclaimer: Please be aware that the subsequent input papers were published as submitted by the authors, without any editorial modifications

INPUT PAPER 1

How Reforming Residential Heating can Enhance Moldova's Energy Security

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EXECUTIVE SUMMARY

In 2020, Moldova met only 22 percent of its energy needs domestically, down by 2 percent since 2016 due to increased imports and reduced local production. It relies heavily on imports for its energy security, with 100 percent of gas and oil products and 80 percent of electricity imported, mainly from the Transnistrian Power Plant.

To enhance its energy security, Moldova has diversified its gas and electricity supplies by connecting with Romania's ENTSO-E and completing the Iași-Chișinău gas pipeline. This allows potential gas-supply diversification using the reverse Trans-Balkan route.

According to the International Energy Agency, Moldova's district heating infrastructure covers over 60 percent of the urban population, with 1,200 km of pipelines. Promoting district heating system (DHS) connectivity enhances residential energy security by integrating diverse energy sources and optimizing usage. Connecting multilevel and public buildings to DHS reduces reliance on individual systems and enhances resilience.

This paper introduces a comprehensive approach to enhancing Moldova's residential energy security by promoting DHS connectivity, diversifying gas resources, improving energy efficiency, and strengthening urban infrastructure.

Key proposed solutions are:

- Promoting new mini-DHSs
- Encouraging the connection of new and previously disconnected buildings to DHS, including with financial support
- Designing new multilevel buildings for potential DHS connection
- Integrating renewable energy sources into mini-DHS as alternatives to natural gas.

By implementing these measures, Moldova can achieve greater energy security, efficiency, and sustainability.

CONTEXT AND BACKGROUND

Moldova does not have natural-gas production capacities and is entirely dependent on imports. The lack of storage capacity results in complete dependence on uninterrupted import flows through the country's transit system to meet demand. As shown in Figure 1, natural-gas consumption varies significantly by season, with consumption in winter (October to March) more than double that in summer (April to September).

The vast majority of gas consumption during winter is related to heating buildings (through district heating and individual heating) and generating electricity (at the MGRES power plant in Transnistria and the combined heat and power plants in Chişinău and Bălţi).

Until 2022, Moldova was dependent on a single source of natural-gas imports, based on a contract between Moldovagaz and Russia's Gazprom. In 2021 and 2022, the sector faced a contractual deficit due to reduced gas deliveries under this contract, affecting the electricity sector and the overall economy.

In the fall of 2022, Gazprom limited daily gas deliveries to 5.7 million cubic meters, which was insufficient to meet even reduced consumption and to ensure continuous supply to consumers. This was a form of energy intimidation by Russia just after its invasion of

Ukraine. Consequently, in October 2022, the Commission for Exceptional Situations mandated Energocom to purchase additional gas volumes from European markets to address the deficit and to ensure continuous supply.

As a result, gas consumption in 2022 decreased strongly in comparison with 2019-2021. The biggest factor that caused this was higher prices, but the major national campaign for reducing energy consumption during a national crisis and the lack of natural gas delivered by Gazprom also played a role.

Natural Gas Consumption in Moldova, 2019–2022

(Figure 1)

Moldavian District Heating Operator "Termoelectrica" SA

PROBLEM STATEMENT

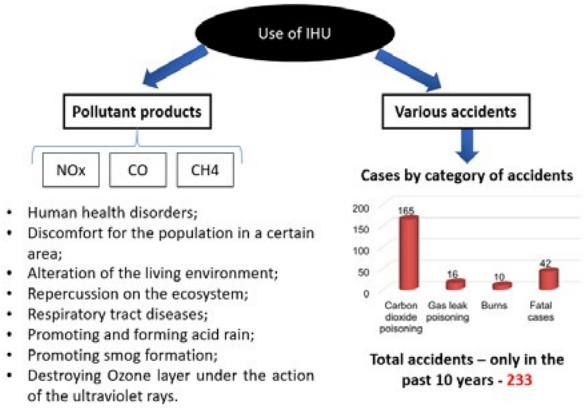
With approximately half of the final energy consumption in Moldova, the residential sector is the main energy consumer, followed by the transportation sector (31 percent), industry (9 percent), commerce and public services (10 percent), and agriculture (6 percent). At the same time, most residential buildings use individual boilers, which have many disadvantages, such local pollution and greater probability of accidents (see Figure 2).

There are several problems related to the heating sector that show the urgent need to change from individual heating systems to centralized ones where possible, but the main issue is the insecure and not resilient energy system.

There is low efficiency for a high investment. Individual heating systems serve a single consumer (a house or an apartment) and consist of a wall-mounted gas boiler or, less commonly, an electric boiler. The operating mode of this boiler is variable, depending on the thermal energy demand of the respective house. Operating at variable loads results in a relatively low

Disadvantages of Individual Heating Units (IHU)

(Figure 2)



National Bureau of Statistics of Moldova

efficiency, around 75 to 80 percent, while in continuous and stable operation the boiler has an efficiency of about 95 percent.

The increasing cost of natural gas and low energy security exacerbates the problem. It is expected that consumers will face significantly higher energy costs over the coming years. As the access to and availability of natural gas is uncertain, as proven in recent years, having alternatives is necessary for society's energy security.

And using natural gas in individual heating units as the only alternative is not a sustainable-development solution – adopting renewable energy sources is necessary for environmental conservation.

Few centralized district heating systems (DHSs) are operational in Moldova. DHS Chişinău and DHS Bălţi primarily function in cogeneration. DHS Chişinău, operated by Termoelectrica, provides thermal energy to 7,151 buildings, including 2,346 public institutions and 203,496 apartments in 3,824 residential blocks. In 2022, Termoelectrica delivered 1,395,100 gigacalories to the network, with 1,131,770 Gcal as useful energy and 263,300 Gcal as thermal energy losses.

Additionally, Apă-Canal Chişinău supplied 22,000 Gcal of domestic hot water, with 20,300 Gcal being useful energy and 1,700 Gcal in losses. The DHS of Chişinău Municipality covers 70 percent of the necessary thermal energy consumption.

In some district centers, smaller thermal energy suppliers are operational. According to the National Agency for Energy regulation's licensing registry, license holders include Comgaz-Plus (Ungheni), the Municipal Enterprise of Thermal Plants and Networks (Comrat), Servicii Comunale Glodeni, Antermo (Anenii-Noi), Rețele Termice Florești, Servicii Comunal-Locative (Orhei), and Termotrans Taraclia. The agency's Activity Report for 2022 indicates these companies mainly serve public institutions, with limited service to household consumers or economic agents. Rețelele Termice Cahul withdrew its license in 2021, and the enterprises in Orhei and Florești are also in the process of license withdrawal. Mostly, this happens because of lack of support for DHSs from the government.

THE IMPORTANCE OF DISTRICT HEATING SYSTEMS

Integrating multilevel residential and public buildings into district heating systems can help tackle various challenges, such as increasing energy security, reducing prices for heating services for consumers, ensuring system resilience, and lowering pollution.

Connecting residential buildings to district heating networks reduces reliance on imported gas by providing access to various energy sources, thus improving resilience against supply disruptions. Centralized DHSs optimize energy use through streamlined heat production and distribution, reducing gas dependency, and mitigating the effects of price fluctuations. Also, this integration drives investments in urban infrastructure, modernizing urban areas. It also diversifies heating options and reduces import reliance, creating a more resilient energy infrastructure and ensuring access to affordable, reliable heating amid geopolitical uncertainties.

The main advantages of DHSs are:

- Lower costs for heating and domestic hot water supply
- Reduced pollution compared to thousands of individual heating units, even with fossil-fuel consumption, ensuring a healthy environment in residential areas
- Advanced emissions-treatment technologies for larger units
- More economical and flexible monitoring and maintenance
- Substantially reduced risk of explosions compared to individual units and a high level of security
- Enabling high-efficiency energy production technologies like cogeneration and allowing the use of biofuels, providing flexibility for energy-mix changes over time
- Fostering competition among various heat producers, leading to lower thermal energy prices.

By leveraging DHSs, Moldova can significantly enhance its energy security. They offer flexibility and resilience against external energy-supply disruptions, and they reduce dependency on Russian gas. This approach makes the heating solution a central policy focus for achieving a sustainable and secure energy infrastructure.

POLICY RECOMMENDATIONS

The following four policy recommendations will increase the energy security of Moldova, reduce dependency and price volatility, increase efficiency, and lead to less environmental impact.

- **Promoting the construction of mini district heating systems (mini-DHSs)** at the level of residential buildings is crucial for sustainable development in the thermal energy sector for multilevel buildings. In Europe, several countries are leading in the development of district heating systems, particularly mini-DHS ones for residential areas. Estonia, Denmark, Finland, Latvia, Lithuania, and Sweden are prominent examples. Mini-DHSs provides long-term economic benefits by lowering operational and maintenance costs and stabilizing energy prices, reducing dependency on volatile fossil-fuel markets. They improve energy security by diversifying the energy mix and reducing reliance on imported fuels, particularly Russian gas. Additionally, mini-DHSs support sustainable urban development by offering reliable and efficient heating solutions for densely populated areas and improving air quality by minimizing the use of fossil fuels. This recommendation is the hardest to implement, and the following are key measures to encourage the

construction of, and connection to, mini-DHSs:

- **Providing financial support to developers and preferential loans for mini-DHS projects**. This can significantly reduce initial investment barriers for developers of mini-DHSs. This support will encourage the adoption of efficient, low-carbon heating solutions, promoting sustainable urban development and energy security.

- **Implementing regulations that require buildings to connect to existing district heating networks maximizes the utilization of centralized systems.** This will reduce individual reliance on less efficient heating sources, improving overall energy efficiency and reducing emissions.

- **Providing tax reductions for using renewable energy sources in mini-DHSs, aligning with third-generation DHSs and beyond.** This will support the transition to sustainable energy, reducing carbon footprints and fostering innovation in renewable technologies.

- **Certifying buildings utilizing renewable energy in mini-DHSs.** Certification programs for buildings using renewable energy in mini-DHSs provide recognition and assurance of sustainability. They encourage the adoption of eco-friendly practices and inform consumers, driving market demand for green energy solutions.

- **Encouraging public-private partnerships to develop mini-DHS infrastructure.** These partnerships leverage the strengths of the public and private sectors to develop mini-DHS infrastructure efficiently. They bring together resources, expertise, and innovation, accelerating the deployment of sustainable heating systems and enhancing energy security.

- **Demonstrating the benefits and efficiency of mini-DHSs through pilot projects**. Pilot projects showcase the practical benefits and efficiency of mini-DHSs, providing real-world data and experience. These demonstrations build confidence among stakeholders, illustrating the viability and advantages of adopting mini-DHSs more widely.

- **Encourage, including through financial support, the connection of new buildings and of existing previously disconnected ones to DHSs.** As multilevel buildings mostly do not have many solutions to reduce their natural-gas consumption, mini-DHSs offer significant benefits, including high energy efficiency, as they centralize heat production and reduce energy losses compared to individual heating systems. They can incorporate renewable energy sources such as biomass, geothermal, and solar thermal, as well as waste heat from industrial processes, enhancing overall energy efficiency and reducing greenhouse-gas emissions. This contributes to climate-change mitigation and aligns with sustainability goals.

- **New multilevel buildings should be designed to connect to a centralized DHS if there is an opportunity.** This would ensure compatibility with the broader energy infrastructure and maximize the benefits of centralized efficiency and renewable integration. Mandating that new multilevel buildings be designed with infrastructure for future connection to centralized heating systems ensures compatibility and scalability. This would facilitate seamless integration with district heating networks, enhancing long-term sustainability and energy efficiency.

- **Integrating renewable energy sources into mini-DHS should be strongly encouraged,** in line with third-generation DHSs and beyond (with individual heat substations for each building). This includes technologies like solar thermal, biomass, and geothermal energy, together with heating storages.

By implementing these measures, Moldova can stimulate the adoption of mini-DHSs, support sustainable thermal energy development, and enhance its energy security while reducing its dependence on Russian gas. These steps will pave the way for a resilient and eco-friendly heating infrastructure, ensuring long-term sustainability and securing true energy independence, transforming the country's energy future.

INPUT PAPER 2

Energy Connectivity Amid EU-Georgia Political Disconnection: The Last Bridge?

Dr. Teona Giuashvili, *London School of Economics and Political Science, United Kingdom*

Strengthening resilience and connectivity has long been a central component of the EU's approach to neighboring regions. Russia's full-scale invasion of Ukraine has fractured the European security order, reshaping the priorities of the EU and of its partners in Eastern Europe. This also applies to the connectivity agenda. The EU and Georgia agreed in 2022 to explore the development of two important submarine energy and digital cables across the Black Sea. Since then, however, Georgia's government has taken a sharp illiberal turn, at the risk of disconnecting from the EU politically. This paper briefly outlines the evolution of the approach to connectivity by the EU and Georgia in the volatile context defined by Russia's aggression against Ukraine. It then assesses the benefits that the Black Sea Submarine Electricity Cable (BSSEC) could bring to both sides, as well as the challenges that the project's realization faces. The paper concludes that the project's future hangs in the balance because of security, technical and financial challenges, and of the uncertainty surrounding Georgia's political trajectory.

INTRODUCTION

Russia's full-scale invasion of Ukraine in February 2022 has disrupted the European order, with far-reaching implications for European security, politics, and economics, as well as for the foreign and security policy of the European Union. The war has also shaken the EU's long-standing approach to its eastern neighborhood, injecting a new sense of urgency and a new focus on the strategic dimension of enlargement. Connectivity is part of the larger redefinition of the EU's policy priorities in the region, not least with a view to meeting the EU's energy security needs. New goals have been formulated and action taken to support Ukraine, push Russia back, and revive enlargement, but all these agendas face considerable challenges. Connectivity is no exception, and the increasingly troubled relationship between the EU and Georgia is a manifestation of that. The context has drastically changed in the last two years.

In December 2022, the leaders of Azerbaijan, Georgia, Hungary, and Romania signed, in the presence of European Commission President Ursula von der Leyen, the memorandum of understanding for the development of the Black Sea Submarine Electricity Cable (BSSEC) that would carry green energy from the South Caucasus to the EU. This and the Black Sea Connectivity Submarine Digital Cable[1] are the two flagship projects to boost EU-Georgia connectivity under the EU's Global Gateway connectivity strategy.[2] President von der Leyen praised the energy cable as "a new transmission route full of opportunities."[3]

Eighteen months later, and five months after being granted the status of membership candidate by the EU, Georgia is as far away from the EU as it has ever been in the last 20 years. Right after these important milestones, Georgia's government is disconnecting from the EU politically. The cracks that surfaced in relations in the immediate aftermath of Russia's war

1 This project, which would run in parallel to the BSSEC, is expected to enhance digital connectivity across the Black Sea, from Romania to Georgia and Armenia. It would ensure high-capacity internet and reduce connection costs and dependence on networks transiting Russia.

2 European Commission and High Representative of the Union for Foreign Affairs and Security Policy, *Joint Communication to the European Parliament, the Council, the European Economic and Social Committee, the Committee of the Regions and the European Investment Bank, The Global Gateway*, JOIN/2021/30 final (December 1, 2021): https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021JC0030&qid=1653525883495 (accessed June 13, 2024).

3 Ursula von der Leyen, *Statement by President von der Leyen at the signing ceremony of the Memorandum of Understanding for the development of the Black Sea Energy submarine cable* (December 17, 2022): https://neighbourhood-enlargement.ec.europa.eu/news/statement-president-von-der-leyen-signing-ceremony-memorandum-understanding-development-black-sea-2022-12-17_en (accessed June 13, 2024).

against Ukraine have grown wider due to the further illiberal turn of the Georgian Dream ruling party. This is uncharted territory for relations between Georgia and the EU, with wide-ranging implications for their connectivity agendas.

This paper outlines the evolution of the approach to connectivity by the EU and Georgia in the volatile context defined by Russia's full-scale invasion of Ukraine. It then assesses the benefits that the BSSEC could bring to both sides as well as the challenges that its realization faces. The paper concludes that the future of this important project hangs in the balance because of security, technical and financial challenges, and of the uncertainty surrounding Georgia's political trajectory. The paper builds on the review of the policy literature and official sources as well as on interviews conducted with experts and officials from Georgia and the EU in spring 2024.

SHIFTING APPROACHES TO CONNECTIVITY

Strengthening resilience and developing connectivity have emerged as the principal drivers of the EU's approach to neighboring countries to the east and south.[4] The two priorities are closely related given the diversification of supply routes for critical goods and commodities as well as the expansion of the relevant infrastructure are key requirements to enhance resilience.[5] Since 2015, the importance of connectivity has been systematically reaffirmed in the EU's strategic documents related to the Eastern Partnership (EaP) as one of the four priority areas of its engagement.[6] The EU has advanced connectivity as an important vector of cooperation with partners in its eastern neighborhood, with a view to strengthening their resilience while extending the application of its norms and technical standards. By "supporting sustainable, rules-based, open and secure connectivity, in terms of transport, energy and digital," the EU has sought to foster "economic development, regional integration, trade and mobility."[7] Sustainable connectivity is expected not only to enhance economic growth and competitiveness, but also to deliver a transformative effect for economies and societies.[8]

Russia's invasion of Ukraine, which is a stark manifestation of a broader trend toward rising great-power rivalry and the weaponization of interdependence, is reshaping the priorities of the connectivity agenda of the EU and of its partners. It is also testing the prospects for their convergence. The new strategic landscape affects the EU's connectivity agenda in two principal ways. First, the war has underscored the importance of energy security for the EU, which entails reducing its strategic dependencies and diversifying its supply sources and routes. As a manifestation of this, in the summer of 2022, Brussels stroke a deal with Baku envisaging the doubling of the volumes of gas flowing from Azerbaijan to the EU by 2027, even though the perspectives to implement this deal are currently uncertain.[9] Second, as the war has imposed a new paradigm of geopolitical confrontation in the EU's eastern neighborhood, it has elevated infrastructure security to a top priority amid conventional and hybrid threats. Overall, the war has tilted the balance of the EU's connectivity agenda in Eastern Europe, accentuating the focus on security concerns, including economic security, as opposed to framing connectivity as a vector of reform.

The war in Ukraine has also shifted Georgia's domestic and foreign policy paradigm in directions that were not anticipated. The government's illiberal turn and shift away from a pro-Western foreign policy carry significant implications for the country's connectivity agenda. For Georgia, connectivity has never been just an economic issue; it has been a matter of strategic, security and political significance. Over the last two decades, the development of regional energy infrastructure projects changed the strategic configuration of the South Caucasus, allowing Georgia and

4 Kristi Raik, "Connectivity of the EU's Eastern Partnership region: contestation between liberal and illiberal approaches," *Journal of Contemporary European Studies 31,* No.4 (2023), p. 1126.

5 The 2016 EU Global Strategy "Shared Vision, Common Action: A Stronger Europe" defined resilience as "the ability of states and societies to reform, thus withstanding and recovering from internal and external crises", p. 23.

6 Council of the European Union, *Joint Declaration of the Eastern Partnership Summit,* Riga, (May 21-22, 2015): https:// www.consilium.europa.eu/media/21526/riga-declaration-220515-final.pdf (accessed June 13, 2024). European Commission, *Joint Communication to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions: Review of the European Neighbourhood Policy* (November 18, 2015): http://eeas.europa.eu/archives/docs/enp/documents/2015/151118_joint-communication_review-of- the-enp_en.pdf (accessed June 13, 2024).

7 Council of the European Union, *Council Conclusions on Eastern Partnership policy beyond 2020* (May 11, 2020), p. 7: https://www.consilium.europa.eu/media/43905/st07510-re01-en20.pdf (accessed June 13, 2024).

8 Council of the European Union, *A Globally Connected Europe* (July 12, 2021), p. 3: https://data.consilium.europa.eu/doc/document/ST-10629-2021-INIT/en/pdf (accessed June 13, 2024).

9 David O'Byrne, "Plans for doubling Azerbaijan's gas flows to Europe on hold," *Eurasianet* (September 27, 2023): https://eurasianet.org/plans-for-doubling-azerbaijans-gas-flows-to-europe-on-hold (accessed June 13, 2024).

the region to serve as an important link in a new transit route from Central Asia to Europe. It helped the country strengthen its energy security and reduce its dependence on Russia.[10] Western engagement in the development of the energy infrastructure in the South Caucasus was part of the broader political support for the independence of the young states of the region, including Georgia. The development of energy connectivity put Georgia on the map, transforming its "role from a small and unstable former Soviet state into an energy transit country with global significance."[11] Investing in connectivity has also helped Georgia to compensate for its distance from the EU. In short, connectivity became a pathway to Europe.

Following the outbreak of the war in Ukraine, however, the strategic calculus of Georgia's government has changed. With the country's European aspirations sidelined and an illiberal domestic agenda promoted, connectivity risks being instrumentalized as a bargaining chip within a multi-vector foreign policy.[12] The pivot away from the West that the Georgian Dream party is orchestrating is part of the wider and highly volatile geopolitical realignment of the region triggered by the war. For the government, however, distancing from the EU politically does not mean ditching the economic benefits that connectivity with it may bring.

THE BSSEC AND ITS ADDED VALUE

The BSSEC project, which foresees the transmission of green energy from the South Caucasus to Europe, was defined as "ambitious" and holding "a lot of promises" by President von der Leyen.[13] The assessment of the importance of this project for the wider connectivity agenda in the Black Sea region requires a close look at the interests of the EU and Georgia in its development and at its added value.

Since 2018, Georgia has advocated the deployment of cables that would improve data and energy connections with the EU through the Black Sea. In a clear sign of EU support, the Economic and Investment Plan for the Eastern Partnership encompassed this initiative together with four other flagship projects.[14] However, it is the unprecedented energy crisis that the EU member states confronted after February 2022 that provided an additional, if not decisive, impetus to the recent advances on the project.

For the EU, the submarine energy cable carries potential added value on two levels. First, amid mounting geopolitical tensions with Russia, the security of energy supplies is a priority for its member states. This requires diversifying supply sources, and the South Caucasus is one axis of this strategy. Second, as the energy crisis added a geopolitical rationale and a sense of urgency to the pursuit of the clean energy transition, the BSSEC is expected to contribute to the objective of increasing the share of renewable energy in the EU's consumption. The 2022 REPowerEU Plan envisaged to increase the share of renewables in the EU's energy mix. The goal was set in 2023 to have at least 42.5 percent of EU energy consumption from renewable sources by 2030 (the share stood at 23 percent in 2022).[15]

For Georgia, the BSSEC would bring considerable benefits on top of constituting a direct physical connection to the EU via Romania. First, it would promote Georgia's geoeconomic relevance since it would not only boost the country's transit potential, but also transform Georgia into an electricity hub and a supplier of green energy from hydro and, potentially, wind and solar power. Based on International Energy

10 The construction of the Baku-Supsa oil pipeline in the late 1990s, and the completion of the Baku-Tbilisi-Ceyhan oil pipeline and of the Baku-Tbilisi-Erzerum gas pipeline in the mid-2000s encouraged closer political and economic cooperation between Azerbaijan, Georgia, and Turkey. Mamuka Tsereteli, "US-Georgian Relations: Expanding the Capacity of a Small State," in Tracey German, Stephen F. Jones and Kornely Kakachia (eds.), *Georgia's* Foreign Policy in the 21st Century. Challenges for a Small State, (Bloomsbury Publishing, 2022), p. 222.

11 Ibid., p. 220.

12 On Georgia's multi-vector foreign policy, see Natalie Sabanadze, "EU-Georgia Relations: A Local Show of the Global Theater", Carnegie Endowment, November 16, 2023: https://carnegieendowment.org/research/2023/11/eu-georgia-relations-a-local-show-of-the-global-theater?lang=en&center=europe (accessed June 13, 2024).

13 Ursula von der Leyen (2022), *Statement by President von der Leyen at the signing ceremony of the Memorandum of Understanding for the development of the Black Sea Energy submarine cable*, Bucharest, December 17, 2022. Available at: https://neighbourhood-enlargement.ec.europa.eu/news/statement-president-von-der-leyen-signing-ceremony-memorandum-understanding-development-black-sea-2022-12-17_en (accessed June 13, 2024).

14 European Commission and High Representative of the Union for Foreign Affairs and Security Policy, *Joint Staff Working Document: Recovery, resilience and reform: post 2020 Eastern Partnership priorities*, SWD(2021)186final, Annex 1 (July 2, 2021): https://www.eeas.europa.eu/sites/default/files/swd_2021_186_f1_joint_staff_working_paper_en_v2_p1_1356457_0.pdf (accessed June 13, 2024).

15 European Commission, *Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions REPowerEU Plan*, SWD(2022)230final (May 18, 2022): https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52022DC0230 (accessed June 13, 2024).

Agency data, in 2022, the share of renewables in Georgia's electricity consumption reached 76 percent.[16] The Ten-Year Network Development Plan of Georgia 2023-2033 approved by the Ministry of Economy and Sustainable Development in March 2023 forecasted a further expansion of Georgia's green potential.[17] According to this estimate, by 2033, the share of hydropower in the total national installed power production capacity would grow to 73 percent, and the share of wind and solar power plants would stand approximately at 10 percent.

Second, the BSSEC would help strengthening Georgia's energy security. It would diversify electricity exports and decrease dependency on Turkey as the main export market. It could also diversify Georgia's energy supply sources. This is particularly important given increasing domestic consumption. It would mitigate the growing share of Georgia's energy imports from Russia, which in 2023 accounted for more than 21 percent of total gas imports, a 16.5 percent increase year-on-year.[18]

Third, the BSSEC might attract foreign investment in hydro, wind, and solar power generation. The latest auction organized by the Ministry of Economy in the spring of 2023, which saw growing interest by investors, confirmed the potential of Georgia's green energy sector. If implemented, selected projects would mobilize $2 billion in investment.[19] Increasing foreign direct investments would in turn support Georgia's economic growth and help consolidate its market economy. Furthermore, the realization of the submarine cable project would help Georgia's gradual approximation and legislative and regulatory harmonization with the EU's energy acquis and advance the country's integration in the EU internal electricity market.[20]

Finally, the development of the regional green energy infrastructure could involve the three countries of the South Caucasus, potentially contributing to peace and stability in the region. While today the BSSEC project counts on the participation of Georgia and Azerbaijan, Armenia has also expressed its interest to join.[21] If this happened, it would create a successful precedent of cooperation in the region.

To sum up with President von der Leyen's words in December 2022, "the mutual interest is very clear and evident." Given the government's current pivot away from Europe, however, recent domestic developments in Georgia contradict her statement that "the two shores of the Black Sea have never been closer." The illiberal agenda of Georgia's government might also discourage foreign investment. This would in turn preclude much of the potential added value of the BSSEC project to foster economic growth in the country, with the risk of reverting to greater economic dependence on Russia. On top of the serious political challenges affecting the EU-Georgia relationship, the BSSEC faces a range of difficult questions concerning its feasibility, profitability, and, therefore, funding.

CHALLENGES AND UNCERTAINTIES

Georgia's government commissioned the Italian consultancy CESI to conduct a feasibility study for the BSSEC.[22] The report, which has been two years in the making, is expected to be finalized in the summer of 2024. It should include geophysical and geotechnical studies of the Black Sea bottom, deliver an estimate of the required investment, and provide an environmental and social impact assessment.[23]

16 IEA, "Georgia: Share of renewables in energy consumption": https://www.iea.org/countries/georgia/renewables#what-is-the-role-of-renewables-in-electricty-generation-in-georgia (accessed June 13, 2024).

17 Georgian State Electrosystem, "Ten-Year Network Development Plan of Georgia 2023-2033": https://www.gse.com.ge/sw/static/file/TYNDP_GE-2023-2033_ENG.pdf (accessed June 13, 2024).

18 "Georgia Increased Natural Gas Imports from Russia by 16.5% in 2023", *Civil Georgia*, January 24, 2024: https://civil.ge/archives/578743 (accessed June 13, 2024).

19 Ministry of Economy and Sustainable Development of Georgia, "First Auction on Power Generation Capacity of Renewable Sources by Power Stations Revealed 24 Winner Companies" (April 28, 2023): https://www.economy.ge/index.php?page=news&nw=2222&s=ganaxlebadi-wyaroebidan-eleqtrosadguris-mier-eleqtroenergiis-warmoebis-simdzlavris-pirvel-auqcionshi-24ma-kompaniam-gaimarjva (accessed June 13, 2024).

20 Energy Community, *Georgia: Annual Implementation Report* (November 1, 2023): https://www.energy-community.org/implementation/report/Georgia.html (accessed June 13, 2024).

21 The Prime Minister of the Republic of Armenia, "Nikol Pashinyan and Irakli Garibashvili summarize the results of the session of the intergovernmental commission", Press Release (January 26, 2024): https://www.primeminister.am/en/press-release/item/2024/01/26/Nikol-Pashinyan-Announcement/ (accessed June 13, 2024).

22 For a preliminary economic assessment of the submarine cable, see World Bank Group, "Economic Analysis of Georgia – Romania Interconnection Methodology Note" (June, 2020): https://documents.worldbank.org/pt/publication/documents-reports/documentdetail/442791598001931856/methodology-note (accessed June 13, 2024).

23 CESI, "New important steps in the Black Sea submarine cable project", News (April 13, 2023): https://www.cesi.it/news/2023/cesi-new-important-steps-in-the-black-sea-submarine-cable-project/ (accessed June 13, 2024).

While the BSSEC project has mobilized considerable political interest in Georgia and in the EU member states to which the envisaged infrastructure would connect the country, its realization confronts several challenges.[24] The first and, given the strategic context, most immediate one concerns infrastructure security. Due to its location under the Black Sea, the cable would be vulnerable to sabotage and hybrid warfare by Russia, a risk recently stressed by a NATO commander.[25] Based on early assessments of the potential route of the cable, it would pass less than 150 kilometers away from the southern cape of the Crimean peninsula, which would accentuate security risks. Issues under international law would also need addressing. With a view to bypassing the territorial waters of Russia and Ukraine, the cable may need to go through the exclusive economic zone of Turkey.[26]

The second set of challenges is of a technical nature, related to the difficult geography of the Black Sea.[27] The high voltage direct current cable, running 1,195 km (including 1,100 km under water) between Georgia and Romania, would be one of the longest in Europe. The technical difficulties associated with its installation explain in part the uncertainties surrounding the financing of the project. Experts believe that the completion of the submarine cable would cost more than the estimated €2.3 billion, perhaps even twice as much.[28] Part of this funding could come from the European Commission. The 2021 Economic and Investment Plan for the EaP mobilized €2.3 billion from the EU budget in grants, blending, and guarantees. Among other priorities, the plan aimed to support connectivity and the green and digital transitions and was expected to leverage up to €17 billion in public and private investments.[29] At this stage, however, it remains unclear how much of the funds under the plan could be allocated to the BSSEC. If the project succeeds to secure the recognition as a European Commission's Project of Mutual Interest (PMI), financial instruments, such as the Connecting Europe Facility (CEF) or the European Fund for Sustainable Development Plus (EFSD+), could be mobilized. The decision of the European Network of Transmission System Operators for Electricity (ENTSO-E) to acknowledge the BSSEC project in the initial results of the 2024-2034 10-year network development plan marked a step on a technical level.[30]

The study of the geophysical and geotechnical structure of the seabed of the Black Sea, as well as the strengthening of the land transmission, will cost Georgia $20 million according to Georgia's Ministry of Finance. To cover this cost, in January 2023, the government applied to the World Bank for additional funding, amounting to $75 million.[31] In May 2024, the bank approved a $35 million loan for the first phase of the Enhancing Energy Security through Power Interconnection and Renewable Energy (ESPIRE) program for Georgia.[32] The ESPIRE program includes three phases, with a potential overall financing envelope of $500 million, and combines two components. The first component consists of financing the surveys of the Black Sea seabed and of supporting institutional capacity building and knowledge transfer to Georgia in relation to the development of the project. The second component focuses on legal and financial advice and technical assistance to support the BSSEC project.[33] While the World Bank loan is essential in this early stage, the question of the project's financing remains open.

Finally, the high costs of the BSSEC project raise skepticism about its commercial viability and profitability,

24 Rouven Stubbe, Sebastian Staske and Tommaso Ficara, "The Black Sea Submarine Cable Project: Economic prospects and challenges", German Economic Team (December 4, 2023): https://www.german-economic-team.com/en/publication/the-black-sea-submarine-cable-project-economic-prospects-and-challenges/ (accessed June 13, 2024).

25 Miranda Bryant, "Undersea 'hybrid warfare' threatens security of 1bn, Nato commander warns", *The Guardian* (April 16, 2024): https://www.theguardian.com/world/2024/apr/16/undersea-hybrid-warfare-threatens-security-of-1bn-nato-commander-warns (accessed June 13, 2024).

26 "Submarine cable to link Georgia and the EU", En:former (September 28, 2023): https://www.en-former.com/en/submarine-cable-to-link-georgia-and-the-eu/ (accessed June 13, 2024).

27 Mamuka Tsereteli, "Black Sea Cables to Slake Europe's Thirst for Energy," CEPA (January 31, 2023): https://cepa.org/article/black-sea-cables-to-slake-europes-thirst-for-energy/ (accessed June 13, 2024).

28 Hans Gutbrod, "The Black Sea Submarine Cable Project: Update from Tbilisi", German Economic Team (May-June 2023): https://www.german-economic-team.com/en/newsletter/the-black-sea-submarine-cable-project-update-from-tbilisi/ (accessed June 13, 2024).

29 European Commission and High Representative of the Union for Foreign Affairs and Security Policy, *Joint Staff Working Document: Recovery, resilience and reform: post 2020 Eastern Partnership priorities* (see footnote 14).

30 Georgian State Electrosystem, "ENTSO-E's 10-Year Development Plan Unveils Promising Initial Results", (February 27, 2024): https://www.gse.com.ge/communication/news/2024/ENTSO-E-10-Year-Development-Plan-Unveils-Promising-Initial-Results (accessed June 13, 2024).

31 Natia Taktakishvili, "Government to Borrow USD 75 MLN from the WB for the Black Sea Cable Project", *Business Media* (January 9, 2023): https://bm.ge/en/news/govt-to-borrow-usd-75-mln-from-the-wb-for-the-black-sea-cable-project/124328 (accessed June 13, 2024).

32 World Bank Group, "World Bank Approves $35 Million Investment for Black Sea Submarine Cable Project Preparatory Activities": https://www.worldbank.org/en/news/press-release/2024/05/21/world-bank-approves-35-million-investment-for-black-sea-submarine-cable-project-preparatory-activities (accessed June 13, 2024).

33 World Bank Group, "Enhancing Energy Security through Power Interconnection and Renewable Energy Program": https://projects.worldbank.org/en/projects-operations/project-detail/P179950 (accessed June 13, 2024).

especially, given the uncertainty about the capacity of Georgia and Azerbaijan to generate sufficient energy volumes.[34] While the planned transmission capacity of the BSSEC is expected to be 1–1.5 gigawatt, factors determining Georgia's potential for electricity exports include growing domestic consumption, the seasonal character of energy generation, and difficulties associated with hydropower expansion. The possibility to extend the project to Central Asia, thereby expanding energy supply, could be an option to maximize the potential of the project.

CONCLUSION

The realization of the BSSEC project hinges on political and technical challenges. Under the present political circumstances, its future appears highly uncertain. Whether the cable will be developed will depend on the shape and direction of EU-Georgia relations. The parliamentary elections in Georgia in October 2024 will be a decisive milestone in this context. If the country's drift away from the EU is confirmed, the latter will face difficult choices. With fractured relations, it appears unlikely that major infrastructural projects could be pursued. An alternative scenario would involve a purely transactional relationship, in which the EU could envisage practical areas of cooperation, such as in infrastructure connectivity, while the political partnership and enlargement process would be frozen. The balance between geopolitical and normative drivers in the EU's connectivity agenda in the Black Sea will also play a role. Two important additional factors will affect these difficult decisions. First, the outcome of the war in Ukraine might once again change the set of incentives for Georgia. Second, the evolution of the EU's energy security agenda and green transition will shape the future EU demand for green electricity and, therefore, determine the importance of this additional supply route.

34 Sebastian Staske and Rouven Stubbe, "Prospects for the Black Sea Sub-marine Cable", German Economic Team (January-February 2024): https://www.german-economic-team.com/en/newsletter/prospects-for-the-black-sea-submarine-cable/ (accessed June 13, 2024).

INPUT PAPER 3

Chinese Construction Contractors in Georgia: European Funding, Strategic Interests, and Policy Concerns

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CHINESE CONTRACTORS ARE DOMINATING GEORGIA'S CONSTRUCTION SECTOR

Over the past decade, Georgia has embarked on an ambitious growth strategy centered on infrastructure expansion,[2] pulling in a diverse set of actors from across the world. While the majority of this connectivity infrastructure is being financed by multilateral development bank (MDB) loans, including from the EU's European Investment Bank (EIB),[3] a large majority of its large projects are being constructed by Chinese state-owned construction enterprises (SOCEs).[4]

This dominance is especially visible in the roads sector, where data from the Georgian Ministry of Regional Development and Infrastructure reveals that between 2015 and 2023, despite taking on no Chinese loans, Chinese SOCEs secured 90 percent of EIB-funded, 91 percent of Asian Development Bank (ADB)-funded, 100 percent of European Bank for Reconstruction and Development-funded, 87 percent of World Bank-funded, and 54 percent of Georgian state-funded road construction contracts.[5] China and the EU (via the EIB), as well as numerous MDBs, are co-constructing Georgia's connectivity infrastructure.

This finance-construction relationship raises issues that EU policymakers should assess at the global and neighborhood levels, as such relations exist elsewhere too. However, the wider context of Georgia's democratic backsliding and rapid retreat from its once declared EU integration goals make the country's case particularly pertinent.

COMPETING NARRATIVES

The EU frames its involvement in financing Georgia's infrastructure within the context of integration, building connections to the Trans-European Transport Network in order to strengthen "social, economic, and territorial cohesion" in the EU and its partner states, as well as increasingly within the context of the Global Gateway.[6,7] For the EU, connectivity has long been a key mode of engagement with the South Caucasus, as embodied in the earlier development of the Transport Corridor Europe Caucasus Asia and the EU-Asia Connectivity Strategy.

1 This article is based on Valentin Krüsmann's PhD research, which was part of the research consortium "De:link // Re:link – Local perspectives on transregional (dis-)entanglements", funded by the German Federal Ministry for Education and Research.

2 Infrastructure for development is anchored in national economic growth strategies: "Social-Economic Development Strategy – Georgia 2020" and "Ten Year Economic Development Strategy - Economy 2030".

3 The EIB is owned by the member states and the European Council maps out the main guidelines of its policies. See: European Investment Bank, The Governance, June 2015, https://www.eib.org/attachments/general/governance_of_the_eib_en.pdf

4 Self-reported procurement data from the ADB shows that Chinese contracts make up 80 percent of its financed projects in Georgia's transport sector. At the European Bank for Reconstruction and Development, this share is 99 percent, at the World Bank is 35 percent. No data from the EIB is available. Data available at respective bank project databases.

5 Allheilig, Gaby; Gugushvili, Temur; Salukvadze, Gvantsa; Lundsgaard-Hansen, Lara (August 2023). *New transit routes are reshaping Georgia.* In: CDE Spotlight. Centre for Development and Environment, University of Bern https://boris.unibe.ch/192820/

6 European External Action Service, Team Europe: "EIB provides €106.7 million to Georgia for major upgrades of its East-West highway", January 7, 2021, https://www.eeas.europa.eu/delegations/georgia/team-europe-eib-provides-€1067-million-georgia-major-upgrades-its-east-west-highway_en

7 IInsights based on research conducted by Beril Ocaklı and Valentin Krüsmann in 2022, See: Ocaklı, B., & Krüsmann, V. (2025). Whom the roads bypass: Rikoti's East-West connections in a disconnecting Georgia. Mobilities, 1–21. https://doi.org/10.1080/17450101.2024.2445808

However, the Chinese SOCEs building projects that the EU is financing are increasingly presenting their involvement within the label of China's global infrastructural initiative, the Belt and Road Initiative (BRI). The China State Construction Engineering Corporation, for example, frames its construction of the F1 section of the Rikoti segment of the East-West Highway – which is funded by a €67 million loan from the EIB and a €16.9 million loan from the World Bank – as a "key project of the Belt and Road Initiative," which aims to "create a business card for the BRI."[8] In addition to referring to Chinese workers involved in the construction of the F3 segment of the highway as "BRI Warriors," the Hunan Road and Bridge Corporation has claimed that Georgia's East-West Highway is, "an important node in the interconnection of the Eurasian continent along China's BRI plans."[9] Referencing one of the Chinese Communist Party's most fundamental global governance concepts, in 2023 China's ambassador to Georgia framed Chinese-Georgian cooperation in infrastructure via the BRI as related to the building of a "Community of Common Destiny."[10],[11]

THE EU COULD BE FUNDING CHINESE STRATEGIC INTERESTS

Most major economies of the Global North, including the EU, have never formally endorsed the BRI, reflecting their evaluation of it as a tool for China to advance its strategic interests. Western connectivity and infrastructure schemes such as the EU's Global Gateway or the G7's Partnership for Global Infrastructure and Investment are often presented as responses or counter-initiatives to the BRI.[12] European Commission President Ursula von der Leyen has claimed that the Global Gateway is above all a "geopolitical project" and that "infrastructure investments are at the heart of today's geopolitics."[13] At the same time, however, China and Western actors are actively cooperating in infrastructure development around the world, including in Georgia.

Importantly, in contrast to the EU's interest in nudging Georgia closer toward integration, the country's government has in recent years increasingly been reiterating the importance of infrastructure cooperation with China, often parroting Chinese BRI language as it deepens its political relations with Beijing. For instance, in an interview with China's CGTN television in August 2023, then president Irakli Garibashvili claimed that Georgia fully supports President Xi Jinping's initiatives – the BRI, the Global Development Initiative and the Global Security Initiative – as they are "what the world needs today."[14] He added that "cooperation between China and Georgia as part of the BRI is thriving in infrastructure" and claimed that the East-West Highway, in which the EU has invested close to €1 billion over the last decade,[15] is part of the BRI and will become an "interesting alternative route." In 2023, Georgia signed a strategic partnership with China that, amongst other points, aims to further deepen infrastructure cooperation.[16] While the market competitiveness of Chinese SOCEs might have established their presence in Georgia, the projects they construct are apparently deepening political relations between the two countries. Closer alignment with China also stands against the wider backdrop of the ruling Georgian Dream party rapidly distancing the country from EU integration in recent years, including via the introduction of a Russian style "foreign agents law" and national elections marred with irregularities. By late 2024, Georgia's EU accession process has been effectively suspended.[17]

8 China Construction First Group Corporation Limited, "魏焱一行赴格鲁吉亚调研慰问", 29.03.2023, https://www.cscec1b.net/xwzx29/yjyw/202303/3644994.html

9 Hunan Road and Bridge Corporation, ""路桥湘军"最美逆行！集团包机赴格鲁吉亚复工复产", August 31, 2020, http://www.hnrb.cn/2020/jituanyaowen_0831/3133.html

10 Foreign Ministry of the People's Republic of China, "驻格鲁吉亚大使周谦在"'一带一路'倡议十周年：中国式现代化与发展经验"国际研讨会上的致辞", November 27, 2023, https://www.fmprc.gov.cn/web/gjhdq_676201/gj_676203/yz_676205/1206_676476/1206x2_676496/202311/t20231128_11188318.shtml

11 Translated from Chinese phrase: "命运共同体

12 For example, Michele Barbero, "Europe Is Trying (and Failing) to Beat China at the Development Game", Foreign Policy, January 10, 2023, https://foreignpolicy.com/2023/01/10/europe-china-eu-global-gateway-bri-economic-development/; Oliver Noyan, "Western leaders gear up against Chinese influence", Euractiv, June 27, 2022, https://www.euractiv.com/section/global-europe/news/western-leaders-gear-up-against-chinese-influence/

13 European Commission, "Global Gateway: First Meeting of the Global Gateway Board", press release, Brussels, December 11, 2022, https://ec.europa.eu/commission/presscorner/detail/en/ip_22_7656.

14 CGTN, "Exclusive with Georgian PM Irakli Garibashvili", August 6, 2023, https://news.cgtn.com/news/2023-08-06/Exclusive-with-Georgian-PM-Irakli-Garibashvili-1m1OIUhRPAk/index.html

15 European External Action Service, "Team Europe: EIB provides €106.7 million to Georgia for major upgrades of its East-West highway", July 1, 2021, https://www.eeas.europa.eu/delegations/georgia/team-europe-eib-provides-€1067-million-georgia-major-upgrades-its-east-west-highway_en

16 Embassy of the People's Republic of China in Georgia, "Full text: Joint Statement of the People's Republic of China and Georgia on Establishing a Strategic Partnership", August 7, 2023, http://ge.china-embassy.gov.cn/eng/xwdt/202308/t20230807_11123383.htm

17 Federal Foreign Office of Germany, "Foreign Minister Annalena Baerbock on the situation in Georgia", December 26, 2024, https://www.auswaertiges-amt.de/en/newsroom/news/2691940-2691940

With Russia's invasion of Ukraine in February 2022, the development of the "Middle Corridor," which includes east-west transit routes such as the above-mentioned highway, has gained increased relevance, including for China. Statements from Chinese state bodies, such as claims by the ambassador to Georgia that "China attaches great importance to promoting the construction of a 'Middle Corridor' under the framework of the BRI," especially due to the new "international situation" suggests that Beijing has reignited its strategic interest in its involvement in Georgia.[18] In May 2024, it was announced that a Chinese consortium would be developing the long-planned and contested deep-sea port in Anaklia – a project that, it has frequently been claimed, had been shelved due to EU and U.S. concerns about China's involvement in the development of a Black Sea port.[19]

THE EU IS DAMAGING ITS LEGITIMACY

A look into Chinese-built projects such as the Rikoti segment of the East-West Highway, one of the most expansive of such projects in the country, exposes significant environmental, social, and governance (ESG) shortcomings and violations.[20] Local populations were not sufficiently informed of the project, resettlement and compensation practices were questionable and often arbitrary, local livelihoods were adversely damaged, and local workers are often employed without contracts.[21] ADB project-monitoring reports and labor inspections have documented numerous safety violations and several accidents and deaths have been reported.[22] Numerous strikes regarding working conditions have also been documented.[23] These issues persist despite the projects operating under the nominally strict ESG criteria and monitoring mechanisms of the financing institutions. In other words, EU and MDB financing has failed to ensure that projects are constructed according to international best practice.

The large number of subcontractors hired for projects like Rikoti, and their procurement practices also create transparency issues. Information on subcontractors is not readily available on public platforms, with the exception of ADB Environmental Monitoring Reports. A lack of transparency into how subcontractors are selected opens speculation that contracts could be individually negotiated on a non-market basis.[24] For those employed without contracts, it is often difficult to identify the employers when labor disputes arise.[25] Moreover, like most major projects in the country, the Rikoti project uses cement and iron provided by Heidelberg Cement Georgia, which is 45 percent owned by a German parent company, and Hunnewell Partners, companies frequently criticized for severe environmental violations in the country.[26]

EU and multilateral finance seem to have had limited effect on the ESG outcomes of Chinese-constructed projects. Poor performances in these areas in projects such as the East-West Highway risk harming the EU's efforts to portray itself as a responsible partner and a harbinger of "inclusive development." This is especially problematic as EU schemes such as the Global Gateway or the EU-Asia Connectivity Strategy claim that connectivity should follow an ethical and values-based approach, of which sustainability, transparency, the rule of law, and good governance are fundamental pillars.[27]

18 Embassy of the People's Republic of China in Georgia, "Zhou Qian, the ambassador to Georgia, accepted a written interview with the MTAVARI Media Center on the 20th National Congress of the Communist Party of China", October 31, 2022, http://ge.china-embassy.gov.cn/chn/xwdt/202210/t20221031_10794782.htm

19 Maximilian Hess and Maia Otarashvili, "Georgia's Doomed Deep-Sea Port Ambitions: Geopolitics of the Cancelled Anaklia Project", Foreign Policy Research Institute, October 2020; Radio Free Europe, "Chinese-Led Consortium To Build Massive Port Project On Georgia's Black Sea Coast", May 29, 2024, https://www.rferl.org/a/anaklia-georgia-china-port-winner/32970697.html

20 Insights based on field research conducted by Beril Ocaklı and Valentin Krüsmann in 2022. See: Ocaklı and Krüsmann (forthcoming), "Whom the Roads Bypass. Rikoti's East-West Connections in a Disconnecting Georgia", submitted to Mobilities; Ocaklı, Beril, and Benedikt Ibele. 2023, "Georgia's Modern (Not so Environmental) Problems. The Nature of Road and Energy Infrastructures", pp. 133–43 in N. Mörner (ed.), *Ecological Concerns in Transition : A Comparative Study on Responses to Waste and Environmental Destruction in the Region, CBEES State of the Region Report 2022/23*, Centre for Baltic and East European Studies, Södertörn University.

21 Ibid.

22 ADB, "Environmental Monitoring Report: Georgia: East-West Highway (Shorapani-Argveta Section) Improvement Project", January 2024; Georgia Fair Labour Platform, "Lack of follow-up safety inspections implicated in construction worker's death at Rikoti Pass", June 27, 2023, https://shroma.ge/en/news-en/rikoti-pass-death-labor-inspection/

23 Georgia Fair Labour Platform, "Fair Labor Platform: Government must step in to ensure labor rights of truck drivers working on Rikoti Pass", April 21, 2023, https://shroma.ge/en/news-en/truck-drivers-rikoti-pass/

24 Interviews with civil society organizations and NGOs in Tbilisi, April-May 2022

25 Ocaklı and Krüsmann (forthcoming), "Whom the Roads Bypass. Rikoti's East-West Connections in a Disconnecting Georgia", submitted to Mobilities

26 HeidelbergCement Georgia, LinkedIn, 2022, https://www.linkedin.com/posts/heidelbergcement-georgia_heidelbergcement-georgia-the-rikoti-pass-activity-6945302315033595904-W1Es/?trk=public_profile_like_view; Giorgi Mgeladze, "Accused Of Polluting, Georgian Cement Giant Faces Few Consequences", Radio Free Europe, December 1, 2022, https://www.rferl.org/a/32157673.html

27 European Commission, "Questions and Answers on Global Gateway", December 1, 2021, https://ec.europa.eu/commission/presscorner/detail/en/qanda_21_6434

QUESTIONS ON TENDERING PROCEDURES

Beyond the notion that Chinese contractors enjoy a dominant position in Georgia's construction market, there are also question marks about the transparency of tenders in projects such as the Rikoti one, particularly regarding the criteria on which tenders are assessed. According to reports published by the Georgian think tank Civic Idea, "there is no additional information about the selection process and compliance issue of the documents submitted by the company in the Georgian electronic Government Procurement (Ge-GP) system. The Department of Roads also refuses to provide this information for the reason that only the entity participating in the tender can request additional information and clarifications regarding the selection process."[28] EIB reports include several complaints regarding procurement at projects financed by the bank between 2019 and 2021. A 2020 complaint, for example, references "allegations with respect to compliance of the winning tender with the procurement documents and with the maximum budget," and "allegations with respect to the promoter's evaluation."[29] A 2019 complaint specific to the East-West Highway also references "allegations with respect to compliance with the selection criteria."[30]

THE EU SHOULD CRITICALLY REFLECT ON ITS FUNDING OF CHINESE SOCES

Despite Georgia's deepening integration into the BRI and alignment with Chinese interests, discussion on the strategic implications for the EU have been largely limited, at least in public. In November 2022, a report by the European Parliament noted the "negative security implications of Chinese investments in strategic infrastructure."[31] At the same time, however, the report called on the European Commission and Georgia to "consider increasing the number of Trans-European Transport Network projects in Georgia." For the EU, the notion that multilateral funds, especially EU ones, are financing infrastructure projects that reference the BRI and its associated narratives, and thus Chinese geoeconomic strategy, is a profoundly under-discussed topic.

The EU should clarify its positioning toward the BRI. Policymakers should ask whether EU connectivity schemes in the region are compatible with Chinese ones, especially if EU-funded projects are being presented as BRI projects. As it advances its de-risking policy in the wake of the strategic challenges provoked by Russia's war against Ukraine as well as China's assertive global positioning and revisionist agendas, the EU should more deeply incorporate connectivity and infrastructure dimensions in its neighborhood into discussions on economic security, such as via the European Economic Security Strategy. Connectivity infrastructure is critical infrastructure, whether in the EU, its candidate states, or in its neighborhood.

SYSTEMIC DILEMMAS

Should the EU be funding activities that feed Chinese strategic interests, it needs to find methods to limit its interactions with Chinese SOCEs. This would however put the EU into two difficult dilemmas.

First, the EU (and MDBs) cannot simply rule out the participation of Chinese bidders in projects it funds without impeding on its public-procurement protocols and damaging the rules-based market system that it sees at the core of its economic governance model and aims to uphold. Conversely, the EU should not fund projects that benefit Chinese strategic interests at the expense of EU interests.

Second, if EU- or MDB-funded projects are seen as Chinese by Georgia's public, the EU should increase the visibility of its involvement in the country's infrastructural transformation. However, a stronger focus on visibility and narrative building would risk elevating the power-competition logic that is increasingly prevailing in global infrastructure development and that distracts from the real needs of countries in the Global South to develop infrastructure in a just and equitable manner, a manner wherein narrative building is not the utmost priority of infrastructure development.

28 Civic Idea, "CSCEC in Georgia", China Watch Report 10, September 2022.

29 For example, European Investment Bank, "Procurement Complaints Activity of the EIB – Annual Report 2020", February 2021

30 European Investment Bank, "Procurement Complaints Activity and Procurement Complaints Committee of the European Investment Bank – Annual Report 2019", February 2020.

31 European Parliament, "REPORT on the implementation of the EU Association Agreement with Georgia ", 2021/2236(INI), November 16, 2022, https://www.europarl.europa.eu/doceo/document/A-9-2022-0274_EN.html

INCREASING EU PROJECT MONITORING AND TRANSPARENCY

Cooperation between the EU and China in infrastructure should not be ruled out. The nominally strict ESG safeguards of EU and multilateral institutions have the potential to lead to more just and positive outcomes for China-constructed infrastructure projects. Countries like Georgia can benefit from large infrastructural expansion if it is done right. However, the EU and MDBs involved should double down on ensuring that their standards and norms are enforced by national authorities, and thus adhered to by Chinese contractors. Without deeper and stricter project monitoring, EU standards and credibility remain at risk.

While there might not be any wrongdoing by Georgia's government in public procurement, a lack of transparency has opened speculation with opposition politicians and civil society saying that its practices might not be entirely market-based.[32] The EU should engage with Georgia to ensure that the criteria on which contractors are selected be made easily available to the public. Equally important, the EU should work with MDBs to ensure that subcontractor procurement data is made available in project data sheets, as well as in the project procurement databases of the EIB and other MDBs, as well as by the Georgian authorities.

Most crucially, the EU should work to ensure project transparency in all dimensions, from informing local residents about planned projects and addressing adverse outcomes to increasing the availability of project-related data. Given that large-scale infrastructure projects are highly centralized by the Ministry of Regional Development and Infrastructure, deeper monitoring and accountability toward project transparency are a necessary course of action. One particular area concerns the EIB, which publishes significantly less project data than the ADB, and appears to have a significantly lower monitoring capacity. Civil society organizations in Georgia play a crucial role in holding project developers accountable and in supporting grievance redress, but their capacity is now threatened by the "foreign agents law."[33] This makes enhancing the EIB's monitoring capacity and the efficacy of its grievance-redress mechanisms even more crucial if the EU aims to continue financing infrastructure projects in Georgia.

32 Forbes Georgia, "საქართველო პოლონეთში და პოლონეთი საქართველოში", February 1, 2020, https://forbes.ge/saqarthvelo-polonethshi-da-polonethi-saqarthveloshi/; Interpress News, "Mamuka Khazaradze: An international audit regarding the construction of Rikoti should be conducted immediately - Rikoti may become the next big disaster for us", August 9, 2023, https://www.interpressnews.ge/en/article/126775-mamuka-khazaradze-an-international-audit-regarding-the-construction-of-rikoti-should-be-conducted-immediately-rikoti-may-become-the-next-big-disaster-for-us/

33 Nino Gelashvili, "Georgian 'Foreign Agent' Bill Would Hamper NGOs, OSCE Official Warns", Radio Free Europe, April 30, 2024, https://www.rferl.org/a/georgian-foreign-agent-bill-osce-ngos/32927822.html; Nini Gabritchidze, "Major hydropower project caught up in Georgia's "foreign agent" turmoil", Eurasianet, March 23, 2024, https://eurasianet.org/major-hydropower-project-caught-up-in-georgias-foreign-agent-turmoil

INPUT PAPER 4

EU-Central Asia Mineral Supply Chains and the Changing Nature of Trans-Caspian Connectivity

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EXECUTIVE SUMMARY

Russia's full-scale invasion of Ukraine and ensuing weaponization of energy supplies have pushed the EU to reconsider its dependence on China for critical raw materials needed for its clean energy transition and defense production. Central Asian countries emerged as crucial partners in the EU's de-risking efforts, highlighting the need for reliable supply chains across the Caspian Sea. However, Brussels faces a set of financial and political challenges, which if successfully dealt with, will not only help it diversify its CRMs partnerships but will also bolster its geopolitical standing in an increasingly important neighborhood.

Safe access to critical minerals undergirds great-power competition in an increasingly multipolar world order.[1] Russia's weaponization of energy exports after its full-scale invasion of Ukraine in February 2022 woke Western countries up to the reality that relying on revisionist powers for a sustainable supply of critical resources was a strategic mistake. The European Union is now taking costly steps to diversify its dependence on the mining and processing of critical raw materials (CRMs), which are essential for its green transition and defense buildup, away from China. Central Asia, rich with these resources, stands to benefit from this policy reorientation. The Trans-Caspian International Transport Route (TITR) that links the region to the EU through the Caspian Sea, the South Caucasus, and Turkey or the Black Sea is a vital geostrategic tool to serve European and Central Asian aspirations to build reliable CRMs value and supply chains.

Better known as the Middle Corridor, the trans-Caspian route gained momentum after February 2022 as a viable transit solution for EU-China land trade, offering an alternative to the Northern Corridor through Russia.[2] Now that it is in high demand by the EU, China, and the region's countries, the TITR is being transformed from a mere intercontinental transit link to a full-fledged economic corridor to expand intra-regional trade and connect regional countries to alternative power centers. Enhancing economic resilience, the trans-Caspian route is set to help decrease Central Asian countries' traditional economic dependence on China and Russia while strengthening trade ties with Western and Middle Eastern countries. For the EU, the recent pledge to allocate €10 billion in financial investments for supporting trans-Caspian connectivity was a timely intervention to bolster its position in the region's "New Great Game" over strategic resources.[3] Yet, challenges abound as political uncertainty in the South Caucasus, lack of funding, and a risky business climate in Central Asia, among other things, hinder collective efforts to achieve swift results. This paper analyzes the strategic importance of the trans-Caspian route for the EU's plans to establish sustainable mineral supply chains to Central Asia amid growing worries about climate change and increasing geopolitical decoupling.

1 Gregory Wischer, "The U.S. Military and NATO Face Serious Risks of Mineral Shortages", Carnegie Endowment for International Peace (February 12, 2024): https://carnegieendowment.org/research/2024/02/the-us-military-and-nato-face-serious-risks-of-mineral-shortages?lang=en (accessed June 9, 2024)

2 Sandra Baniak et al., "The Middle Corridor: A Eurasian Alternative to Russia", Report, Center for Eastern Studies (January 2024): https://www.osw.waw.pl/en/publikacje/osw-report/2024-01-26/middle-corridor (accessed June 17, 2024)

3 European Commission, Global Gateway: €10 billion commitment to invest in Trans Caspian Transport Corridor connecting Europe and Central Asia announced at Investors Forum (January 29, 2024): https://ec.europa.eu/commission/presscorner/detail/mt/ip_24_501 (accessed June 8, 2024)

THE DRIVERS BEHIND THE EU'S PIVOT TO CENTRAL ASIA'S CRMS

The exporting of metals from Central Asia to the EU is not a new phenomenon. Kazakhstan has been supplying some member states with chromium, cadmium, and titanium for some time, though it did not become one of the EU's major suppliers.[4] Not surprisingly, the EU's Central Asia Strategy, adopted in 2019, does not include provisions for CRMs partnerships. Recently, however, access to Central Asia's CRMs has been elevated to Brussels' top regional policy agenda as traditional supply chains came to be increasingly securitized.

Three factors drive the EU's geopolitical pivot to Central Asian when it comes to CRMs. First, demand will grow significantly in the coming years, intensifying great-power competition for access to resource-rich regions. Lithium, cobalt, nickel, chromium, and other strategic materials are crucial for green energy transition, supplying key ingredients for producing solar panels, wind turbines, electric vehicles, and grid-scale batteries. According to the International Energy Agency, a concerted effort to reach the goals of the Paris Agreement will require 40 times more lithium and 20 to 25 times more graphite and cobalt by 2040.[5]

Second, as the European Commission put it in March 2023 Communication on CRMs, unlike for oil and gas, for most CRMs production is heavily concentrated in a few countries that create excessive dependencies with serious geopolitical vulnerabilities.[6] More importantly, even fewer countries dominate the processing operations, with China topping the list. The EU's recent de-risking efforts through export-control measures and the creation of screening tools to monitor risky Chinese investments in the tech sector are expected to have negative ripple effects on the trade in CRMs.

Third, increasing uncertainty around the Taiwan Strait and a possible US-China conflict in the South China Sea could disrupt European access to major mineral markets in East Asia, exacerbating the already tense situation caused by Russian aggression toward Ukraine.[7] The EU faces stiff competition from China in its access to CRMs markets in Africa, Central Asia and Latin America, where Beijing's huge infrastructure investment spree under its Belt and Road initiative helps increase its odds of success.

CENTRAL ASIA IN EU'S DE-RISKING POLICY

The EU has come up with various solutions to overcome possible supply shocks in the medium-to-long term, including declaring Central Asia one of its major partners. The EU seeks a three-pronged strategy to de-risk its dependence on Chinese and, to a lesser degree, Russian, supplies. First, it plans to upgrade its mining, refining, and recycling capabilities to tap into domestic reserves. However, the efficiency of this strategy is under question due to an array of reasons ranging from environment-related bureaucratic hurdles to the lack of large reserves. Second, the EU teamed up with like-minded partners including Australia, Canada, Japan, and the United States, to establish CRMs groupings such as the Mineral Security Partnership or the planned Critical Raw Materials Club to deal with possible sustainability challenges.[8] Third, Brussels has been negotiating bilateral trade agreements with CRMs-rich countries like Australia, Chile, and Indonesia to integrate its raw material value chains with theirs. In Central Asia, the EU-Kazakhstan deal on strategic partnership in the field of raw materials, batteries, and renewable hydrogen became operational in May 2023.[9] In April 2024, the EU and Uzbekistan signed a Memorandum of Understanding launching a strategic partnership on CRMs.[10]

4 European Commission, Study on the EU's list of critical raw materials (2020): https://op.europa.eu/en/publication-detail/-/publication/c0d5292a-ee54-11ea-991b-01aa75ed71a1/language-en (accessed June 17, 2024

5 International Energy Agency, The Role of Critical Minerals in Clean Energy Transitions (May 2021), p. 8, https://www.iea.org/reports/the-role-of-critical-minerals-in-clean-energy-transitions (accessed June 17, 2024)

6 European Commission, A secure and sustainable supply of critical raw materials in support of the twin transition (March 2023): https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2023%3A165%3AFIN (accessed June 17, 2024)

7 Mark Cancian et al., "The First Battle of the Next War: Wargaming a Chinese Invasion of Taiwan", Report, Center for Strategic and International Studies (January 2023): https://www.csis.org/analysis/first-battle-next-war-wargaming-chinese-invasion-taiwan (accessed June 17, 2024)

8 Alberto Nardelli and Iain Marlow, "EU, US to Align Global Minerals Push Against China's Supply Grip", Bloomberg (February 9, 2024): https://www.bloomberg.com/news/articles/2024-02-09/eu-us-to-align-global-minerals-push-against-china-s-supply-grip?embedded-checkout=true (accessed June 17, 2024)

9 European Commission, EU-Kazakhstan strategic partnership becomes operational (May 19, 2024): https://ec.europa.eu/commission/presscorner/detail/en/ip_23_2815 (accessed June 9, 2024)

10 EEAS, EU establishes strategic partnership with Uzbekistan on critical raw materials (April 5, 2024): https://www.eeas.europa.eu/delegations/uzbekistan/eu-establishes-strategic-partnership-uzbekistan-critical-raw-materials_en?s=233 (assessed June 17, 2024)

Central Asia holds 38.6 percent of global manganese ore reserves, 30.07 percent of chromium ones, and 5.3 percent of cobalt ones, as well as significant reserves of other CRMs mentioned in the European Commission's CRMs list.[11] The growing EU-Central Asia partnership on mining and processing these resources will not only help Brussels achieve its goal of reducing dependence on China to less than 65 percent but will also offer Central Asian countries opportunities to de-risk their economies and geopolitical alignments. Growing revenues from new CRMs projects will help diversify their economies away from dependence on oil and gas exports.

Transfer of European technological know-how and processing capacities in exchange for a political commitment to providing a reliable business environment will facilitate the Central Asian countries' integration into global value and supply chains, leading to sustainable growth. It will also help prepare Central Asian industries for the EU's Carbon Border Adjustment Mechanism, creating additional economic incentives to decarbonize green production processes for CRMs and other resources.[12] These are crucial for economic resilience, an essential component of the EU's partnership priorities with the region's countries since 2019 when the European Commission put resilience at the center of its geopolitical engagements in the neighborhood.

THE TRANS-CASPIAN CORRIDOR FOR CRMS TRADE

Building sustainable trans-Caspian connectivity lies at the heart of the EU-Central Asia CRMs partnership and cooperation in renewable energy. It is part of a larger EU plan to develop or modernize CRMs value chains in different parts of the globe, using a wide array of mechanisms under its Global Gateway program. In Africa, the recent agreement on developing the Lobito Corridor is expected to establish reliable access to large CRMs reserves in Zambia and DR Congo, connecting these countries to global trade markets via the port of Lobito in Angola.[13] Brussels eyes similar frameworks in Latin America, especially with Argentina, Bolivia, and Chile – the Lithium Triangle. In Central Asia, new Team Europe initiatives provide a comprehensive framework to leverage the EU's political and financial muscle to move away key transit bottlenecks in the Caspian Sea and help major TITR countries – Azerbaijan, Georgia, and Kazakhstan – overcome hard and soft infrastructure deficiencies along the route.

The investors' forum for EU-Central Asia transport connectivity held in Brussels in January 2024 was a remarkable step forward in bringing together major stakeholders and showcasing the EU's commitment to trans-Caspian connectivity post-February 2022. Especially, the creation of a coordination platform to monitor progress and coordinate moves with partners in the region was a significant departure from the EU's otherwise lackluster support for the route in previous years. With billions of euros in European Commission-guaranteed loans from the European Investment Bank and the European Bank for Reconstruction and Development in the pipeline, the TITR countries may feel more confident in pushing forward with costly steps to improve the route's transit capacity.

In 2023, the TITR saw a 39 percent decrease in container traffic due to capacity issues, long delays at border crossings, lack of coordination among transit countries, and the eventual shift of cargo to cheaper maritime routes.[14] The EU-funded Regional Transport Program and Resident Twinning Advisors instrument will provide technical assistance to help overcome these bottlenecks. Azerbaijan, Georgia, and Kazakhstan recently agreed to eliminate these weaknesses in a roadmap for developing the Middle Corridor by 2027.[15] In June 2023, the three countries established a joint logistics operator for state-owned railway companies, which will oversee tariff management issues and cargo operations along the route. According to the World Bank report, trade along the TITR is projected to triple by 2030 if necessary soft and hard

11 Roman Vakulchuk and Indra Overland, "Central Asia is a missing link in analyses of critical materials for the global clean energy transition", One Earth 4 (December 2021), p. 1680, https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3989008 (accessed June 17, 2024)

12 Giulia Cretti and Louise van Schaik, "Resource Curse or Darling: Rethinking EU energy interests in Kazakhstan", Policy Brief, Clingendael (March 2024): https://www.clingendael.org/publication/resource-curse-or-darling-rethinking-eu-energy-interests-kazakhstan (accessed June 2, 2024)

13 European Commission, Global Gateway: EU signs strategic partnerships on critical raw materials value chains with DRC and Zambia and advances cooperation with US and other key partners to develop the 'Lobito Corridor' (October 26, 2023): https://ec.europa.eu/commission/presscorner/detail/eN/ip_23_5303 (assessed June 11, 2024)

14 Trend News Agency, Kazakhstan, China to boost container transportation along Middle Corridor (May 29, 2024): https://en.trend.az/casia/kazakhstan/3905398.html (accessed June 17, 2024)

15 APA, Azerbaijan, Turkiye, Kazakhstan and Georgia sign Road map on Middle Corridor (November 25, 2022): https://apa.az/en/infrastructure/azerbaijan-turkiye-kazakhstan-and-georgia-sign-road-map-on-middle-corridor-390382 (accessed June 17, 2024)

infrastructure measures are taken.[16] Although container traffic is expected to see bigger growth, oil products as well as ferrous and non-ferrous metals will be among the key transported commodities in terms of volumes.

LOOMING CHALLENGES

Although Russia's declining regional influence opens a window of opportunity to make the trans-Caspian connectivity fit for a larger EU-Central Asia partnership, politico-economic uncertainty in Central Asia and the South Caucasus discourages much-needed investors from active involvement. First, the ongoing disagreements between Armenia and Azerbaijan about the contents of a peace agreement between them and the deepening arms race threaten the South Caucasus's status as a stable link between Central Asia and the EU. Furthermore, the increasing securitization of opening transport corridors between the two countries is depriving the trans-Caspian route of an additional leg in the South Caucasus. Adding to these the deterioration of EU-Georgia relations and Georgia's preference for a Chinese company to develop the geopolitically vital Anaklia deep sea port in the Black Sea makes the picture much gloomier for European investors.

The bigger challenge is the uncertain future of EU-Russia relations once the war in Ukraine ends. A potential return to business as usual with Russia would put the region's countries in a difficult spot, just as was the case in the aftermath of Russia's occupation of Georgia and Ukraine in 2008 and 2014, respectively. This could also be the factor triggering investors' hesitance to invest in the TITR as the Northern Corridor passing through Russia offers a more efficient land route to Europe. These could in part explain the slow speed of progress in moving from promising field studies to getting to work to realize the TITR's real potential.

Weaker private sector engagement also hampers efforts to deal with hard and soft infrastructure deficiencies along the TITR. The uncertain business climate and domination of the transport sector by state companies cause increased costs and delays in transit, discouraging interested international logistics companies away from involvement. This in turn aggravates funding problems as the EU's Global Gateway program and TITR public funds may not be enough to cover the costs of integrating the region into the EU's value and supply chains.

MOVING FORWARD

To build sustainable supply chains across the Caspian Sea, Brussels needs to create synergies among large infrastructure projects in renewable energy, CRMs mining and processing, digital connectivity, and trans-Caspian transport connectivity, thus establishing a strategic corridor instead of a mere transit route. The EU needs to use its financial muscle to encourage public and private investments and make better use of grants, one of its main competitive advantages over China in the region.

The EU must also closely coordinate its moves with its member states and the private sector to avoid policy duplications and decrease costs. France, Germany, and Italy have been especially active in forging new CRMs deals in Central Asia since February 2022. The efficient use of the Team Europe approach would increase Brussels' competitiveness vis-à-vis established regional powers such as China and Russia that enjoy easier cross-border market access.

The EU must also ensure that new projects to bolster trans-Caspian connectivity are tailored to the interests of the TITR countries. As Russia's regional influence wanes, these countries become more confident in their international relations, trying to keep working channels with all great powers invested in the region's CRMs reserves.[17] The recent pivot by Azerbaijan and Georgia to China pivot on renewables and transport cooperation as well as Kazakhstan's deepening CRMs partnership with Beijing indicate the need for a more geopolitical EU approach to the region. Brussels should heed Central Asian concerns that new CRMs and transport deals do not focus only on resource extraction but also promote local industry development based on sound environmental standards and respect for community interests. Initiatives such as technology transfers, vocational training, and the development of green industries could transform these nations into

16 World Bank, Middle Trade and Transport Corridor: Policies and Investments to Triple Freight Volumes and Halve Travel Time by 2030 (November 2023): https://www.worldbank.org/en/region/eca/publication/middle-trade-and-transport-corridor (accessed June 17, 2024)

17 Meike Schulze, "Security of Supply in Times of Geo-economic Fragmentation: Enhancing the External Dimension of the EU's Raw Materials Policy", SWP Comment, German Institute for International and Security Affairs (April 15, 2024): https://www.swp-berlin.org/10.18449/2024C15/ (accessed June 17, 2024)

key players in the global value chain, countering the narratives that the EU is seeking climate colonialism.

Last, the EU needs to better coordinate its moves with Turkey and the South Caucasus countries, making sure that deepening ties with Central Asian countries facilitates the emergence of a more economically integrated region on the two sides of the Caspian Sea. The EU's current declarations on fostering regional supply chains put less emphasis on the former while highlighting broader prospects of cooperation with the latter. In the South Caucasus, the EU and the United States may also link their increasing focus on trans-Caspian connectivity to the Armenia-Azerbaijan normalization process. Restoration of rail connectivity between Armenia and Azerbaijan would expand the transit capacity of the South Caucasus leg of the Middle Corridor, creating economic interdependencies with peace dividends. It would further integrate Armenia's CRMs reserves in the south, from where the new rail route is expected to pass, into regional supply chains. In his visit to Yerevan in June 2024, US Assistant Secretary of State for European and Eurasian Affairs James O'Brien said the two countries should seize the once-in-a-lifetime opportunity provided by the war in Ukraine to open communication links with big potential to establish new industries all across the route.[18] Using sticks and carrots, the EU is one of the few players that can help achieve that goal.

18 Radio Free Europe/Radio Liberty, O'Brien: Pattern Of New Demands And Then Further Negotiations Needs To Stop (June 12, 2024): https://www.azatutyun.am/a/32989684.html (accessed June 15, 2024)

INPUT PAPER 5

Energy Dynamics: Georgia's Impact on the Middle Corridor's Development

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EXECUTIVE SUMMARY

The Middle Corridor, an innovative transport route between Asia and Europe, emerges as a strategic alternative amid geopolitical tensions, facilitating energy-resource transport. Yet, regulatory and infrastructural challenges demand substantial investment and coordinated efforts from all involved parties. Georgia's strategic role in the corridor's development is underlined by its infrastructure projects and policy alignment with the European Union. Initiatives like the Anaklia deep sea port and Black Sea Submarine Cable (BSSC) further enhance Georgia's energy security and integration with the European market. Intending to pursue a multi-vector foreign policy, Georgia's recent undemocratic actions have strained relations with the West while increasing the influence of China and Russia on the country. This situation raises concerns about national security and the development of the Middle Corridor ahead of the coming parliamentary elections.

Recommendations:

- Georgia's government can play a pivotal role in the development of the Middle Corridor by enhancing regional cooperation, investing in critical infrastructure, and aligning its regulatory frameworks with international standards. By fostering regional cooperation, Georgia can help ensure the corridor's operational efficiency and security. Additionally, strategic investments in infrastructure projects, such as the modernization of the ports of Batumi and Poti and the development of the Anaklia deep sea port, are essential. Upgrading Georgia's railway systems and expanding road networks can further enhance the corridor's capacity, making it a competitive alternative to northern and southern routes.
- By adopting best practices in customs procedures, border controls, and logistics management Georgia can minimize delays and reduce transportation costs.
- Georgia should continue its reforms in the energy sector, focusing on the integration of renewable energy sources and the development of green hydrogen projects.
- Despite the considerable technological, financial, and security risks, the BSSC project has substantial geopolitical significance and potential to drive economic cooperation and resilience. The mitigation of existing threats can be achieved through effective coordination and strong political commitment from the EU and the participating member states.
- Georgia's strategic location positions it as a regional hub for academic initiatives related to the Middle Corridor's development and as a leader in financial technologies, fostering an innovative environment conducive to large energy projects.

INTRODUCTION

The Middle Corridor's significance lies in its role as a secure, efficient, and sustainable transport route from Asia to Europe that enhances trade connectivity, energy security, and regional economic development. Georgia's energy policy framework – encompassing regulatory measures aligned with European Union standards, infrastructure development, international cooperation, and strategic initiatives – bolsters its role as a key energy transit hub between Asia and Europe. To advance the Middle Corridor, Georgia must enhance regional and international cooperation, invest in critical infrastructure, and align its regulatory frameworks with international standards. Strategic investments in the modernization of existing ports and the development of the new Anaklia deep sea port, railway upgrades, and road network expansions are essential for improving the corridor's capacity and competitiveness. Additionally, adopting best practices in customs and logistics management will minimize delays and reduce costs. Continued energy-sector reforms, particularly in integrating renewable energy sources and developing green hydrogen projects, will support the EU's green transition goals and reinforce Georgia's position as a regional energy hub. Despite the considerable technological, financial, and security risks, the Black Sea Submarine Cable (BSSC) project has substantial geopolitical significance and potential to drive economic cooperation and resilience. The mitigation of existing threats can be achieved through effective coordination and strong political commitment from the EU and the participating states.

Despite the ongoing advances in the development of the Middle Corridor and Georgia's emerging role within it, the country currently faces significant challenges. The government has implemented undemocratic measures, straining relations with the United States and the EU and inciting mass protests. Concurrently, negotiations for a strategic partnership with China have commenced, and there is a noticeable increase in Russian influence within the country. The viability of a multi-vector foreign policy, aimed at balancing economic and security interests, remains uncertain. Achieving a balanced relationship with all stakeholders is imperative to ensure national security and foster the development of the Middle Corridor, which offers Georgia additional economic, security, and developmental opportunities. Achieving this equilibrium necessitates careful navigation, as any disruption could pose significant risks to Georgia's future and the corridor's development. The coming parliamentary elections will be pivotal in shaping Georgia's political, economic, and social landscape, influencing domestic policies, international relations, and democratic progress.

GEOSTRATEGIC SIGNIFICANCE AND CHALLENGES IN THE DEVELOPMENT OF THE MIDDLE CORRIDOR

The Middle Corridor is an innovative multimodal transport route that integrates a variety of infrastructure projects, aimed at enhancing connectivity and trade between Asia and Europe via Central Asia, the Caspian Sea, and the South Caucasus. This initiative was conceived in 2013 through collaboration between Azerbaijan, Georgia, Kazakhstan, Romania, and Turkey. In 2014, a Coordination Committee of Azerbaijan, Georgia, and Kazakhstan was established to develop the Trans-Caspian International Transport Route.[1]

The strategic importance of the Middle Corridor has significantly increased in the context of the Russia–Ukraine conflict and the resulting Western sanctions on Russia and Iran. This corridor has the potential to evolve into a global initiative, fostering international trade and cooperation, while simultaneously enhancing geopolitical stability, security, and economic ties between Asia and Europe.[2] For a small country such as Georgia, the development of the Middle Corridor is of paramount importance as it offers significant opportunities for economic, political, security, and technological advances. The initiative will enhance Georgia's prospects of becoming a regional hub.

The Middle Corridor is a shorter and faster[3] route between Asia and Europe than the Northern Corridor (through Russia) and the Southern Corridor (via the Suez Canal). By providing a more direct and efficient transport route, it can substantially reduce the carbon footprint associated with longer, less efficient ones. The Middle Corridor facilitates the transport of various energy resources, including liquefied natural gas (LNG), natural gas, oil, green electricity, and renewable hydrogen, thereby accelerating the EU's

1 Middle Corridor, "History", https://middlecorridor.com/en/about-the-association/history-en (Accessed: June 1, 2024)

2 Mukhigulishvili, G. "The Growing Importance of the Middle Corridor as an Energy Transport Route" https://hagueresearch.org/the-growing-importance-of-the-middle-corridor-as-an-energy-transport-route/ (Accessed: June 1, 2024)

3 Freight transported from Shanghai to Europe could take ten days along the Middle Corridor, compared to up to 20 days along the Northern Corridor or 45 to 60 days by sea. Why should Europe/China trade use the Middle Corridor route? | World Economic Forum (weforum.org)

green transition and potentially reducing shipping times. Additionally, it is crucial for transporting critical minerals from Central Asia to European and Chinese markets, including essential raw materials for renewable energy technologies.

Here, the Middle Corridor is primarily examined within the context of energy trade between Central Asian and Europe. It diversifies energy supply routes for Europe, diminishing reliance on Russian energy supplies and bolstering energy security. By capitalizing on the rich energy reserves of Central Asia and the South Caucasus, the Middle Corridor offers a vital conduit for meeting the EU's growing energy needs. China's interest in diversifying its trade routes with Europe aligns synergistically with the Middle Corridor concept, which diversifies trade routes for it and other Asian countries. The corridor bypasses conflict zones in the north (in Russia) and the south (in the Middle East), offering a stable and secure pathway between Asia and Europe.

Substantial investments have been directed at modernizing and expanding infrastructure along the Middle Corridor, encompassing rail, road, and maritime transport, thus providing flexible and efficient solutions for a wide array of goods, including energy resources. The development of the Middle Corridor serves the interests of all participating countries, including China, the Central Asian states, Azerbaijan, Georgia, and the Black Sea countries, but not of Russia.

Despite the numerous benefits associated with the development of the Middle Corridor, several significant challenges persist. It crosses multiple regions, each exhibiting varying degrees of political stability, which poses risks to its continuous and secure operation. The disparate customs regulations, procedures, and border controls among the corridor's countries can cause delays and increase transportation costs. Harmonizing these regulatory and administrative processes requires extensive coordination among the involved states. Additionally, the existing infrastructure along the Middle Corridor is currently inadequate to compete effectively with the Northern Corridor in transporting the energy resources Europe needs. Substantial investment and development are necessary to enhance the infrastructure to a competitive level. Financial constraints also pose a concern as ensuring that investments in the Middle Corridor are financially sustainable and capable of generating adequate returns is critical for investors and stakeholders. Furthermore, large infrastructure projects can have significant environmental and social impacts, and mitigating these while advancing the corridor's development is crucial but challenging. This requires comprehensive planning and adherence to sustainable development practices.

Despite these challenges, the Middle Corridor has substantial geopolitical importance and has become increasingly relevant in the current global context. Its development is not only a strategic priority but also a collective responsibility of all participating states. Achieving its timely and effective implementation necessitates strong coordination and joint efforts from all.

The Role of Georgia:

ENABLING FACTORS AND BARRIERS FOR MIDDLE CORRIDOR DEVELOPMENT

Georgia is a pivotal link in the Middle Corridor, significantly enhancing energy transportation through its strategic infrastructure and policy framework. The evaluation of key energy projects – such as the Baku-Tbilisi-Ceyhan (BTC, oil), and the Western Route Export Pipeline (WREP, oil), the South Caucasus Pipeline (SCP, gas), the Baku-Tbilisi-Kars (BTK) railway, and the planned innovative Georgia-Romania Black Sea Submarine Cable (BSSC) project – underscores Georgia's vital role in bolstering regional energy connectivity. Additionally, Georgia's ports like Batumi, Poti, and Kulevi, alongside the prospective Anaklia deep sea port, are crucial gateways to the Black Sea, significantly enhancing the Middle Corridor's potential.

Georgia has considerable renewable energy potential in hydro, solar, and wind power, which remains largely undeveloped. According to REN21,[4] the economic potential for renewables in Georgia is estimated at 18 GW (compared to 3.4 GW in 2024), encompassing 15 GW of hydropower and 1.5 GW each for wind and solar energy. The National Integrated Energy and Climate Plan of Georgia aims to achieve a 27.4 percent share of renewables in the country's final energy

4 REN21, "Factsheet: Renewable Energy in Georgia", 2021, https://ren21.net/wp-content/uploads/2019/05/Factsheet_Georgia-HardTalk-2021.pdf (Accessed: June 1, 2024)

consumption by 2030, thereby increasing electricity exports during the spring and summer.[5]

Moreover, Georgia is exploring opportunities for the development of green hydrogen, with a strategy already in place. The production and export of green electricity and hydrogen represent a promising pathway for promoting renewable energy within the Middle Corridor. [6]

Since joining the Energy Community in 2017, Georgia has undertaken significant reforms in the energy sector by adopting EU directives and regulations, thereby creating a favorable investment climate for renewable energy resource development intended for export to the EU. However, the full realization of a competitive power market remains a work in progress.[7] Georgia's energy policy framework supports energy transit and transportation, strengthened by the EU-Georgia Association Agreement and the Deep and Comprehensive Free Trade Area, which aligns national energy laws with EU regulations and facilitates integration into the European energy market. The implementation of EU directives and regulations, as part of Georgia's commitments, can create a more predictable and transparent business environment. Membership in the Energy Charter Treaty enhances international energy cooperation, investment protection, and dispute resolution, while bilateral and multilateral agreements with neighboring countries and key energy players ensure smooth transit and mutual benefits from energy projects.

Georgia's favorable geopolitical location positions it as a regional educational center for significant academic and scientific initiatives related to the Middle Corridor's development. Furthermore, it is a regional leader in developing financial technologies,[8] utilizing innovative technology to provide services and solutions. This can foster an innovative financial environment conducive to large energy projects, supporting the broader objectives of the Middle Corridor.[9]

Despite Georgia's significant potential as a transit country and its critical role in supporting the Middle Corridor's development, several challenges persist. Political tensions within the country, increasing Russian influence, and recently deteriorating relations with the EU and the United States[10] complicate Georgia's ability to fully engage in regional projects of mutual interest with the EU. Its growing cooperation with China adds another layer of complexity.[11] Nevertheless, the unwavering determination of the Georgian people to pursue independence, democracy, and integration with the EU and NATO remains a powerful force. The coming parliamentary elections are poised to be a critical juncture for the nation's political, economic, and social landscape. They will significantly influence the trajectory of Georgia's domestic policies, international relations, and democratic development. Addressing these challenges requires a nuanced and strategic approach that balances internal stability, external alliances, and the aspirations of the Georgian population.

Georgia's government can play a pivotal role in the development of the Middle Corridor by enhancing regional cooperation, investing in critical infrastructure, and aligning the country's regulatory frameworks with international standards. By fostering regional cooperation, Georgia can help ensure the corridor's operational efficiency and security. Additionally, strategic investments in infrastructure projects – such as the modernization of ports like Batumi and Poti, and the development of the Anaklia deep sea port – are essential. Upgrading railway systems and expanding road networks can further enhance the corridor's capacity, making it a competitive alternative to northern and southern routes. Furthermore, adopting best practices in customs procedures, border controls, and logistics management to minimize delays and reduce transportation costs. Georgia should continue its reforms in the energy sector, focusing on the integration of renewable energy sources and the development of green hydrogen projects. These initiatives not

5 Ministry of Economy and Sustainable Development of Georgia, "Draft National Integrated Energy and Climate Plan (NECP), of Georgia", as of December 2023

6 Ministry of Economy and Sustainable Development of Georgia, "Draft National Integrated Energy and Climate Plan (NECP), of Georgia", Tbilisi, as of December 2023

7 Energy-Community, "The 2023 Country Report Georgia", 2023, https://www.energy-community.org/implementation/report/Georgia.html (Accessed: June 1, 2024)

8 Business Insider Georgia, "Georgia: The Next Regional Powerhouse in Fintech", 2023, https://www.businessinsider.ge/en/georgia-the-next-regional-powerhouse-in-fintech (Accessed: June 1, 2024)

9 National Bank of Georgia, "Natia Turnava: Georgia Has All Prerequisites To Become A Regional Fintech Hub In The Middle Corridor", 2023, https://nbg.gov.ge/en/media/news/natia-turnava-georgia-has-all-prerequisites-to-become-a-regional-fintech-hub-in-the-middl (Accessed: June 1, 2024)

10 Foreign Policy, "Turmoil in Georgia Could Draw in Russia", 2024, https://foreignpolicy.com/2024/05/01/georgia-russia-foreign-influence-bill-protests-democracy-eu/ (Accessed: June 1, 2024)

11 Foreign Policy Research Institute, "China Continues to Deepen its Political Influence in Georgia", 2023, https://www.fpri.org/article/2023/09/china-continues-to-deepen-political-influence-in-georgia/ (Accessed: June 1, 2024)

only support the EU's green transition goals but also position Georgia as a key energy hub in the region. By addressing these regulatory and infrastructural challenges, the government can significantly contribute to the Middle Corridor's development, thereby enhancing regional connectivity and economic resilience.

THE BLACK SEA SUBMARINE CABLE PROJECT: PERSPECTIVES AND CHALLENGES

The Black Sea Submarine Cable (BSSC) project was initiated by Georgia's transmission system operator (TSO), JSC Georgian State Electrosystem, with the support of the Ministry of Economy and Sustainable Development, in collaboration with Romania's TSO, Transelectrica CNTEE.[12] The origin of the project dates back to discussions between Georgia and the EU in 2018, with Georgia pushing for greater economic integration and exploring the potential to export hydro energy to Europe. The initiative was formalized in December 2022, aiming to establish a new transmission grid for green energy from the South Caucasus to Europe.

Recently, a Memorandum of Understanding (MoU) was signed by Azerbaijan, Georgia, Hungary, and Romania, signifying broader cooperation in the energy sector and support for the BSSC.[13] The MoU includes provisions for the creation of a joint venture to oversee the project, which entails the construction of a cable spanning approximately 1,195 kilometers, with 1,100 kilometers underwater and 95 kilometers onshore. The cable will operate at a voltage level of 500 kV and have a capacity of 1,000 to 1,500 MW.[14] Upon completion, the BSSC will enable South Caucasus countries to export electricity to Europe, thereby enhancing energy security for the EU and the South Caucasus.

The BSSC will also incorporate a fiber-optic cable, providing high-quality internet connectivity between Georgia and Romania. This aims to establish a secure and reliable internet connection between Asia and Europe, bypassing Russian control. The commercial operation of the interconnector is expected to commence by 2030, with an estimated project cost of €2.3 billion.[15]

The BSSC project also has significant geopolitical importance, particularly in the context of the Ukraine-Russia war. It offers a direct energy and internet connection between Europe and the South Caucasus. It aligns with the EU's efforts to diversify its energy sources and to enhance its energy security, especially given the geopolitical shifts affecting energy supplies from Russia. For Georgia, the project promises substantial benefits, including synchronous operation with European states, advancing potential membership in the European Network of Transmission System Operators for Electricity (ENTSO-E). It will also bolster the development of Georgia's renewable energy sector and increase transit opportunities and trade options between the EU and the South Caucasus.

The project has been selected for the ENTSO-E Ten-Year Network Development Plan 2022 list.[16] Currently, Georgia is undertaking efforts to finance the technical and economic study of the project to the fullest extent possible.[17] Georgia and Romania plan to submit the project to the European Commission's Project of Mutual Interest by the end of 2024, further solidifying its strategic importance and Georgia's commitment to regional energy cooperation.

The development of the BSSC is associated with significant challenges that necessitate careful consideration and strategic planning. First, it will be the longest and deepest underwater transmission cable in the world, presenting substantial technological and engineering difficulties. Despite the anticipated increase in electricity demand in Europe, it is crucial to develop adequate power-generation facilities in the South Caucasus countries. These facilities must not only meet domestic demand but also generate a sufficient surplus for exports. Currently, Georgia's

12 Georgian State Electrosystem (GSE), "Black Sea Submarine Cable Project", Zviad Gachechiladze, 2024

13 GSE, "A Memorandum Was Signed on the Establishment of a Joint Venture of Four Countries Implementing the Black Sea Submarine Cable Project", 2024, https://gse.com.ge/communication/news/2024/a-memorandum-was-signed-on-the-establishment-of-a-joint-venture-of-four-countries-implementing-the-black-sea-submarine-cable-project/ (Accessed: June 1, 2024

14 GSE, "Georgia-Romania Black Sea Submarine Interconnection Cable Project Feasibility Study to be Conducted", 2022, https://gse.com.ge/communication/news/2022/Georgia-Romania-Black-Sea-Submarine-Interconnection-Cable-Project-Feasibility-Study-to-be-Conducted (Accessed: June 1, 2024)

15 Georgian State Electrosystem (GSE), "Black Sea Submarine Cable Project", Zviad Gachechiladze, 2022

16 GSE, "ENTSO-E's 10-Year Development Plan Unveils Promising Initial Results", 2024, https://gse.com.ge/communication/news/2024/ENTSO-E-10-Year-Development-Plan (Accessed: June 1, 2024)

17 GSE, "Ten-Year Network Development Plan of Georgia 2023-2033", 2023, https://gse.com.ge/sw/static/file/TYNDP_GE-2023-2033_ENG_corr.PDF (Accessed: June 1, 2024), p. 68

electricity production is insufficient, although strategic documents outline the construction of large-scale generation facilities to address this issue.

Moreover, the Black Sea remains at the epicenter of the most significant European conflict since 1945, with broad implications for NATO and its partners in the region. The tense security environment, characterized by constant naval harassment and restricted freedom of navigation, poses a substantial risk. The presence of free-floating maritime mines poses an ongoing threat to the project.

The Montreux Convention, the absence of international waters in the Black Sea, and the relatively weak naval capabilities of Bulgaria and Romania, in the absence of substantial NATO maritime reinforcements, further underscore the need for credible action plans and robust deterrence strategies against potential disruptive attacks.

Russia's hostility to the energy independence of Black Sea states is significant challenge. This resistance is not only due to the financial losses it would incur but also because it undermines its regional influence. Russian hybrid warfare tactics, including acts of sabotage and coordinated disinformation campaigns, can have devastating impacts on national political stability and allied cohesion. Additionally, cybersecurity risks related to critical information infrastructure and the weaponization of environmental NGOs and narratives concerning resource ownership can erode public and political support for the project.

Concurrently, Romania's large-scale development of wind farms in the Black Sea, intended to supply energy to its western regions, could be perceived as competition to the BSSC. However, it is essential to consider that the demand and price for electricity in Europe are projected to continue rising, and that the BSSC will play a crucial balancing role for the production of variable wind power.

Despite these substantial risks, the BSSC project has significant geopolitical importance. Effective coordination and political commitment from the EU and the project states can help mitigate existing threats. This requires a thorough analysis of the project's geopolitical and economic benefits and robust advocacy at various levels. Sovereign guarantees and substantial financial investments from the states, alongside international aid, are imperative for the project's successful implementation.

CONCLUSION

The Middle Corridor as an innovative multimodal transport route enhances connectivity and trade between Asia and Europe. Amid the Russia-Ukraine conflict and Western sanctions on Russia and Iran, it has emerged as a strategic alternative to the Northern and Southern Corridors, facilitating the transportation of various energy resources such as LNG, natural gas, oil, green electricity, and renewable hydrogen. However, regulatory, infrastructural, and geopolitical barriers necessitate substantial investments in infrastructure modernization along the corridor and robust coordination among participating states.

Georgia, positioned strategically along the Middle Corridor, plays a vital role in enhancing regional energy connectivity through strategic infrastructure development and EU-aligned policy frameworks. Notable projects like the BTC, WREP, SCP oil and gas pipelines, and the BTK railway underline the country's integral position, with its ports serving as vital gateways to the Black Sea, thus enhancing the corridor's capabilities. Georgia's commitment to energy-sector reforms, aligned with EU directives and regulations, further strengthens its position in the Middle Corridor framework.

Additionally, projects like the Anaklia deep sea port and the BSSC, aimed at enhancing trade and energy transmission between the South Caucasus and Europe, underscore Georgia's endeavor toward energy security and integration with the European energy market. Despite technological and geopolitical hurdles, these projects have promise for advancing regional energy cooperation and align with the EU's strategic objectives of energy diversification and security. The Middle Corridor has already gained significant geopolitical significance and relevance within the existing global landscape. Successful and prompt realization of this initiative hinges on robust coordination and unified endeavors among participating states.

While Georgia seeks to balance its relations with various global powers and advance its economic interests, undemocratic measures, strained international relations, and increasing Russian influence pose significant hurdles. Achieving a balanced approach is crucial for national security and the corridor's development, with the coming parliamentary elections poised to shape Georgia's future trajectory across political, economic, and social dimensions.

The Middle Corridor/The Trans-Caspian International Transport Route

Source: www.middlecorridor.com

The WREP, BTC, and SCP Pipelines

Source: TITR - The State Oil Company of Azerbaijan Republic (SOCAR, 2018)

INPUT PAPER 6

Unlock the Potential of Biogas and Biomethane in the Eastern Partnership

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EXECUTIVE SUMMARY

The Eastern Partnership countries are undertaking an energy transition, which is a prerequisite for further development and the deepening of relations with the EU. One avenue for diversification of energy sources, reduction of fossil fuel consumption, and adaptation of the well-developed gas infrastructure is the expansion of biogas and biomethane. This paper identifies potential opportunities for the deployment of renewable gases in the region, highlights the advantages, and proposes recommendations for the utilization of their potential in changing geopolitical context.

- Biogas and biomethane can be used to produce electricity, and heat, or organic fertilizer. Biomethane can replace natural gas, reducing stranded costs incurred as part of the energy transition. Biogas plants also facilitate the circular economy, enhance local self-sufficiency in energy, reduce methane emissions and costs associated with waste storage.

- The Eastern Partnership countries present a promising potential for the development of biogas regarding (a) the robust agricultural and feedstock availability necessary for biogas production, (b) the gas infrastructure, which includes transmission, distribution, and consumption adapted to export biomethane, and (c) the opportunities to shape laws and policies conducive to effective foreign investment.

- Paper proposes more efforts in implementation *acquis communitare* in the field of biomethane and biogas. The EU should support the study of the potential for biogas and biomethane development in the EaP countries, with a view to their eventual incorporation into government development strategies. The EU may invite stakeholders from EaP countries to participate in EU forums developing institutional cooperation in the biomethane area that will support scientific, technological, and practical cooperation and ensure the operationalization of the gas trade platforms.

BIOMETHANE AND BIOGAS – WHY NOW?

Connectivity in the EU's eastern neighborhood has a significant energy dimension that should be placed in the context of the global energy transition and the EU's ambition to achieve a net-zero future by 2050. Concerning the EU's biogas and biomethane policies, three factors define the current direction, which will affect the energy policies of the Eastern Partnership (EaP) countries. First, the methane reduction policy from 2020,[1] which indicates that more biomethane in use means fewer emissions into the atmosphere from agriculture and waste. Second, the Fit for 55 package[2] implies more renewable energy in the heating, cooling, and transport sectors, which requires more gas from renewable sources. Third, and decisive in accelerating the energy transition of the EU and its neighborhood, is Russia's full-scale invasion of Ukraine

1 Communication, European Commission, *Communication from the Commission to the European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions on an EU strategy to reduce methane emissions;* 2020, Brussels.

2 Pilszyk, M., Lipiński, K., Miniszewski, and M., *Challenges of the Fit for 55 package. EU expert feedback on the targets of the energy transition;* Polish Economic Institute, 2024 Warsaw.

that led to the RePowerEU plan,[3] which, among other things, aims at independence from Russian fossil fuels and transition to renewable energy sources. It also means the substitution of Russian gas with biomethane with the non-binding target for the EU to produce 35 billion cubic meters per year from 2030.

The EU is also preparing a new emissions trading system (ETS 2) for the transport and construction sectors It will cover motor and heating fuels and industries that could become key to biomethane demand. It will provide an additional incentive to increase the use renewable gases, including biomethane.

WHY IN EASTERN PARTNERSHIP?

The EU's implementation of energy policy goes beyond its borders and directly impacts the EaP countries through economic, political, or institutional instruments, because the EU will favor diversification strategies that encompass gas and hydrogen investments in the long term.[4] The EU plans to support this process financially and technically.

The region's energy transition requires special recognition, considering investment capabilities, adaptation to existing infrastructure capacities, social reception of the green transition, involving local communities, and promoting reforms that enhance energy security and independence in a changing geopolitical environment. It may stabilize energy prices, strengthen economies, and improve resilience to energy crises. Further integration of energy markets and development of connectivity, intensification of economic, investment, and technological cooperation can deepen the EU's relations with the region's countries and strengthen their resilience to external shocks, including those caused by Russia and other non-democratic regimes. It could also accelerate their integration with the EU in the long term.

One of the keys to the energy security of the EU and of the EaP countries is diversification. This refers to the supply of energy sources and the technologies for their production, including renewables, storage, and transmission. In the region, biogas and biomethane are an available solution with high potential, in addition to energy production from wind, solar, or hydro. The specificities of climate, local agriculture, and the municipal sector determine their development. Furthermore, these countries already have a considerably developed gas infrastructure, which is an asset for advancing biomethane. And, as it turns out, the most significant barriers are also opportunities for the sector's growth: the regulatory environment, market concentration, social awareness, and the resources to undertake investments.

POTENTIAL OF BIOGAS AND BIOMETHANE

Biogas plants produce biogas in the fermentation process as well as heat, electricity, fertilizer, and, with the appropriate plant adaptation, biomethane. Biogas can be used directly to produce electricity and heat, or as an energy source for cooking. Biomethane, a near-pure methane source, can be used without any changes in transmission, distribution infrastructure, or end-user equipment, and it is fully compatible for use in compressed natural gas vehicles.[5] Indirect benefits include local self-sufficiency in electricity and heat, and reducing problems and costs associated with waste storage and disposal. Biogas plants also optimize the circular economy in agriculture. Production results in a reduction of methane emissions into the atmosphere. In modern energy markets, biogas plants have significant potential for being energy storage and backups that are synchronized with renewable energy sources, and they can operate in a flexible manner.

Three key issues need to be considered regarding the possibility of developing biogas, and particularly biomethane. The first is the feedstock necessary for biogas production, which is determined by the characteristics and structure of the agricultural or municipal sector. Biogas is produced in plants from a diverse range of feedstock and technologies that are still developing, but the primary feedstock are agrarian residues, animal manure, bio waste, roadside verge grass, municipal solid waste, and wastewater.[6] The second, for biomethane, is the development of

3 REPowerEU Communication, European Commission, *Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions REPowerEU plan*; 2022 Brussels

4 Communication, European Commission, *Joint Communication to the to the European Parliament, The Council, The European Economic And Social Committee And The Committee Of The Regions on an EU external energy engagement in a changing world*; 2022, Brussels.

5 IEA, Analysis, *Outlook for biogas and biomethane: Prospects for organic growth*; 2020, Paris, https://www.iea.org/reports/outlook-for-biogas-and-biomethane-prospects-for-organic-growth (accessed May 22, 2024).

6 Guidehouse, *Biogases towards 2040 and beyond*; 2024, London, p. 5, https://guidehouse.com/-/media/new-library/services/sustainability/documents/2024/biogases-towards-2040-and-beyond.ashx (accessed May 29, 2024

gas infrastructure related to transmission, distribution, and consumption (for example, gas furnaces, gas cookers, and heating plants, or gas power plants). The use of these resources avoids the effect of stranded costs. The third, and perhaps the most challenging one for EaP countries, is an adequate legal environment, market structure, financial and technological support, and social acceptance for renewable gas development.

REGIONAL CONDITIONS

The Eastern Partnership countries possess adequate climate and environmental conditions as well as a thriving agricultural sector for developing biogas plants. Production capacity and transmission infrastructure enable efficiently exporting biomethane to the EU and meeting local demand.[7] For example, Ukraine boasts a robust agricultural sector and favorable conditions for biomethane production, including extensive land resources and a strong crop production potential. Additionally, its extensive gas transmission system, comprising a total length of 33,400 kilometers, provides a infrastructure for the transportation and distribution of biomethane. Ukraine's biomethane production potential is estimated at 17.6 to 21.8 billion cubic meters per year.[8] The potential of the other EaP countries is not fully estimated at this point.

The EaP countries also face challenges in the municipal sector, including waste disposal and wastewater processing. Using these resources to produce energy, biogas, and biomethane will improve the environment and water conditions. In addition, the development of renewable gas will allow for cheaper and organic fertilizer production that will make agriculture more sustainable.

A MORE SUSTAINABLE AND INDEPENDENT WAY

The development of biogas and biomethane in the EaP countries will strengthen the region's energy independence and contribute to the resilience of Europe to external shocks. Energy production from biogas and biomethane will enhance the smooth electrification of energy sector and reduce imports of natural gas and fossil fuels from Russia, with the revenue going to local producers rather than the Russian state budget.

The physicochemical properties of biomethane allow it to be used in the same way as natural gas, so its development will not result in a significant financial and investment burden for the state, as it can use the existing infrastructure. This applies not only to the developed transmission and distribution network or municipal gas heating and power plants but also to individual gas stoves or ovens, which allows for the reduction of the transition costs for companies, farmers, and consumers. It also allows locating biogas plants in rural areas, where the gas distribution system is well developed. Biomethane can serve to stabilize energy systems during increased demand and when generation of renewable energy sources is insufficient. It also improves competition in the local energy and gas market (which are highly concentrated). The development of biogas promotes sustainable electrification and meets the growing demand for energy in the emerging economies[9] of the EaP.

In this context, biomethane trade is of great importance. There is a growing demand for this fuel in the EU, which domestic production cannot meet.[10] Therefore, the EU countries are looking for external suppliers, even at a higher price than for natural gas. For geopolitical and infrastructural reasons (a developed transmission network from Eastern to Western Europe), the EaP countries can be suppliers to the EU ones. The progress of the biomethane trade, coupled with investment and technology transfer between EU and EaP countries, represents an additional potential for economic integration and resulting institutional ties. This can enhance the stability and economic development of the region, which is also in the interest of the EU.

Biogas development can positively impact the sustainable development of rural areas and improve regional cohesion. It will reduce agriculture's carbon footprint, lower the cost of heat, electricity, and fertilizers, and make agriculture more environmentally

7 Pirani S., *Ukraine's gas sector*. Oxford Institute for Energy Studies; 2007 pp. 73–81, https://www.oxfordenergy.org/wpcms/wp-content/uploads/2010/11/NG21-UkrainesGasSector-SimonPirani-2007.pdf (accessed May 29, 2024).

8 Kozachenko A., *Біоенергетика в Україні "пробуксовує": розвиток галузі зупинило держрегулювання [Bioenergy in Ukraine is "stuck": the development of the industry has been halted by state regulation]*; 2024, delo.ua. https://delo.ua/energetics/bioenergetika-v-ukrayini-probuksovuje-rozvitok-galuzi-zupinilo-derzregulyuvannya-428940/ (accessed June 2, 2024)

9 IEA, *World Energy Outlook 2021*; 2021, Paris https://www.iea.org/reports/world-energy-outlook-2021 (accessed May 22, 2024).

10 Sulewski P., Ignaciuk W., Szymańska M., and Wąs A., *Development of the Biomethane Market in Europe*; Energies 16, no. 4: 2001; 2024, https://doi.org/10.3390/en16042001 (accessed June 3, 2024).

friendly. Farmers can diversify their sources of income and reduce their energy and fertilizer costs, thereby increasing their competitiveness. Biogas as a distributed and local energy source can improve the security of energy infrastructure in situations of war and crisis (the current experience of Ukraine show that full-scale installations are most often damaged).[11] With adequately prepared programs, biogas plants can strengthen the involvement of local communities in the energy transition, improve public awareness of climate and environmental issues, and positively impact the development of jobs in energy transition.

CHALLENGES AND RECOMMENDATIONS

The European Union should elevate the development of biogas and biomethane in its policies toward the Eastern Partnership. It has the potential to support the development of the biogas sector in terms of influencing development policies, legal and social changes, new investments, and technological development. Supply and demand in the EaP countries have a high growth potential, and the existing technological possibilities enable biomethane production in an economically justified way.[12]

An effort that can be implemented jointly with the Energy Community is to support the implementation of the *acquis communautaire* in the field of biomethane and biogas, and to create a friendly legal environment. The development of the sector requires infrastructural and legislative adjustments to enable producers to sell and export biomethane (for example, injection into the gas network) and liberalized network access regimes. A potential solution is to involve Ukraine in this process, giving it the status of a mentor in the creation of similar regulations in, say, Georgia or Moldova since it is the only country in the region to have legislation regulating the transfer and export of biomethane. Due to the existing gap in legal systems, it is possible to create rules in which getting approval for the realization of investments will be simpler and faster than in the EU countries, allowing for reduced costs and faster investments. The development of regulatory cooperation to ensure the safe operation of installations and technical supervision of the functioning gas network is also an important issue. However, the development of this technology will depend on the effective removal of barriers to competition between biomethane and natural gas.

The EU should support the study of the potential for biogas and biomethane development in the EaP countries, including local research and think tanks, in preparing programs on the potential for biogas and biomethane development in the region. These analyses should also serve as reference for the authorities in planning policies for the sector's growth. Research should identify effective models for supporting the sector, tailored to local conditions, and the experience of EU countries (feed-in tariff, feed-in premium, quota systems or green certificates,[13] fiscal incentives, investment support, export assistance, obtaining feedstock). It is also crucial for the development of the biogas and biomethane sector to include both in strategic documents and development policies. Potential investors should be sure about the direction of a state's energy policy in relation to biogas and biomethane in order to undertake long-term investment and financing commitments.

For these purposes, it is advisable to introduce dedicated programs for scientific, technological, and practical cooperation in biogas – within the region and with the EU members. It is possible to expand existing scientific exchange programs with study visits to producers or operators of biogas facilities in EU members in connection. It is also crucial for the success of the sector's development to carry out activities in education to raise public awareness and increase support for the energy transition, because the investments in biogas plants are often met with strong resistance from local communities.

An important measure is the admission and involvement of stakeholders from the EaP countries in EU forums developing institutional cooperation in the biomethane sector, such as the Biomethane Industrial Partnership.[14] One solution is to create a special platform for establishing cooperation between EU and EaP entrepreneurs and to organize periodic conferences on this topic, with the involvement of

11 Karwowski M., *Zaniewicz: Konflikt na Ukrainie pokazał, że OZE są bezpieczniejsze od węgla [Zaniewicz: The conflict in Ukraine has shown that RES are safer than coal]*; 2024, biznezalert.pl https://biznesalert.pl/infrastruktura-energetyczna-bezpieczenstwo-rosyjskie-ataki-oze-energetyka/ (accessed June 3, 2024).

12 Sulewski P., Ignaciuk W., Szymańska M., and Wąs A., *Development of the Biomethane Market in Europe*; Energies 16, no. 4: 2001; 2024, https://doi.org/10.3390/en16042001 (accessed June 3, 2024).

13 Couture, T.D., Cory, K., Kreycik, C., and Williams, E., *Technical Report: A Policymaker's Guide to Feed-in Tariff Policy Design*; NREL, 2010. https://www.nrel.gov/docs/fy10osti/44849.pdf (accessed June 3, 2024).

14 *Biomethane Industrial Partnership*; 2024, bip-europe.eu https://bip-europe.eu/about-the-partnership/ (accessed June 2, 2024).

local authorities. In cooperation with the EaP countries, the EU should also ensure the operationalization of the EU Energy Platform and regional platforms.

Regarding domestic policy, the EU should support the involvement of financial institutions, entrepreneurs and the member states in investing in biomethane plants projects. It is possible to develop funds for investment in rural regions that support the establishment of biogas plants, taking into account the wide involvement of local actors, the transfer of benefits to the local community, and related educational activities. It may also be advisable to invest in urban areas to support the modernization of heating plants or wastewater treatment plants with biogas production in mind. The EU should create convenient platforms for cooperation, and provide entrepreneurs opportunities for favorable investment financing so that local technologies and entrepreneurs remain competitive with those of third countries.

INPUT PAPER 7

How the Central European Hydrogen Corridor Can Promote Europe's Decarbonization

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EXECUTIVE SUMMARY

The REPowerEU plan released by the European Commission after Russia's full-scale invasion of Ukraine set the ambitious goal to import 10 million tons of green hydrogen to strengthen the European Union's energy security and to facilitate decarbonization. To enable this, five major supply corridors were suggested to link hydrogen producers from outside the EU with industrial hubs within it. Although suggested around the same time, an alternative route – the Central European Hydrogen Corridor (CEHC) that would link Ukraine with Germany – is currently out of favor due to the ongoing war in the former. However, after the war, it could become one of Europe's key hydrogen import routes while supporting Ukraine's reconstruction efforts. This is not only because of Ukraine's significant green hydrogen generation potential but also due to the shorter length of the CEHC route, much of which could also be repurposed from the existing natural gas pipelines. For this to happen, Ukrainian policymakers must implement several policies aimed at fostering the development of the domestic hydrogen sector.

Apart from a National Hydrogen Strategy where the vision, goals, and roadmap for Ukraine's hydrogen production, distribution, and usage will be outlined, further supportive legislation should be adopted. This includes defining standards, safety protocols, and specific incentives that will be fully compatible with EU ones.

Ukraine should establish effective mechanisms for monitoring and evaluation as well as implement certification schemes to guarantee the origin of green hydrogen to boost consumer and investor confidence while ensuring that hydrogen production adheres to strict environmental standards.

Investors should be provided with effective financial incentives, which should include dedicated financial instruments such as hydrogen bonds as well as policy support like tax breaks, subsidies, and grants to encourage investment in all elements of the hydrogen value chain. The process of allocating these incentives should be fair and transparent to avoid corruption-related issues and challenges.

Ukraine should further encourage collaboration and partnerships to fund hydrogen projects with private companies, governments, and international organizations.

INTRODUCTION

Considering clean hydrogen a crucial element for the decarbonization of Europe, the European Union adopted a Hydrogen Strategy in 2020, in which it admitted that, apart from producing it locally, the EU would have to import hydrogen from countries with favorable conditions for its low-carbon production.[1] In 2022, after Russia's full-scale invasion of Ukraine, the European Commission released the REPowerEU plan, which set the ambitious goals to import 10 million tons of hydrogen and to generate the same amount locally by the end of the decade to help the

1 European Commission, *A hydrogen strategy for climate-neutral Europe* (July 8, 2020), pp. 1-24: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020DC0301 (accessed May 29, 2024).

The Five Hydrogen Supply Corridors of the European Hydrogen Backbone and the Central European Hydrogen Corridor

(Figure 1)

Adapted from European Hydrogen Backbone, *Implementation Roadmap – Cross Boarder Projects and Costs Update* (November 2024), pp. 1-41 and CEHC, *Project vision* (2022): https://www.cehc.eu/cehc-project/ (accessed May 29, 2024).

Hydrogen is often considered an important element in the decarbonization strategies of many countries primarily because it does not emit carbon when burned and can be produced with minimal or no carbon emissions if generated through the electrolysis of water powered by renewables or nuclear energy ("green" and "purple" hydrogen) or from fossil fuels using carbon capture and storage ("blue" or "brown" hydrogen). Therefore, many expect it to replace fossil fuels in sectors where direct electrification is not possible, such as oil refining or the production of fertilizers or steel.

continent mitigate its dependence on Russian natural gas while simultaneously spurring its energy transition.[2] While shipping hydrogen from distant regions is actively being considered by countries like Germany and the Netherlands, transporting it by pipelines from closer ones is generally viewed as preferable because pipelines appear to be the cheapest transportation method for gases.[3] This is not only because of the physical properties of hydrogen but also because much of Europe's existing natural gas infrastructure is generally considered suitable for conversion to the delivery of hydrogen.[4] As a result, creating hydrogen infrastructure through repurposing the existing natural gas pipelines is expected to have costs that would be only around 10-35 percent of those associated with new construction.[5]

In 2020, a consortium of European energy infrastructure operators decided to promote the development of the European Hydrogen Backbone (EHB) – a network of transmission pipelines that would connect potential suppliers of clean hydrogen from within and outside the EU with Europe's key off-takers of this fuel. To this end, five major supply corridors were suggested to be developed to link European industrial hubs with North Africa, the North Sea, and Southern, Southwestern, Southeastern, and Eastern Europe, as well as the Nordic and Baltic regions (see A in Figure 1). In addition, in 2021, four gas infrastructure companies proposed an alternative, sixth route – the Central European Hydrogen Corridor (CEHC) – that would link Ukraine, which has significant clean hydrogen potential, with Germany through Slovakia and Czechia (see B in Figure 1). Although this option is currently a high-risk one because of the war, creating the CEHC after the war may not only serve as a push toward the green reconstruction of the country but also become an important element of Europe's postwar decarbonization and energy security strategy. This paper uses a simplified SWOT analysis to demonstrate the key

2 European Commission, *REPowerEU Plan* (May 18, 2022), pp. 1-21: https://eur-lex.europa.eu/resource.html?uri=cellar:fc930f14-d7ae-11ec-a95f-01aa75ed71a1.0001.02/DOC_1&format=PDF (accessed May 29, 2024).

3 Aliaksei Patonia et al, "Hydrogen pipelines vs. HVDC lines: Should we transfer molecules or electrons?", *OIES Paper* ET27 (2023), pp. 1-36.

4 Ibid.

5 DNV, *Repurposing onshore pipelines for hydrogen. Guiding operators through the re-evaluation process* (2023): https://www.dnv.com/focus-areas/hydrogen/repurposing-pipelines-for-hydrogen-guiding-operators-through-the-re-evaluation-process/ (accessed 29 May 2024).

strengths and opportunities as well as the weaknesses and threats that the creation of the CEHC could bring to Europe and Ukraine.

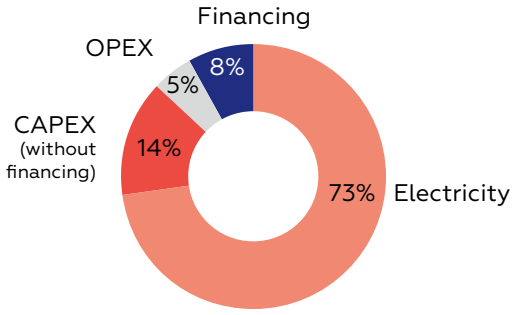
STRENGTHS AND OPPORTUNITIES

In principle, from the European perspective, there would be two main advantages in connecting Ukraine with the EU's industrial hubs via the CEHC. The first one relates to the estimated low cost of clean hydrogen that could be manufactured in the country. In this respect, since Germany, as the main destination country for this fuel, focuses primarily on the imports of green hydrogen,[6] despite significant potential for the production of carbon capture and storage (CCS)-related blue and brown hydrogen as well as nuclear-powered electrolytic pink hydrogen, Ukraine can concentrate on manufacturing renewable hydrogen for exports via the CEHC. Luckily, the country's estimated potential is quite significant and in a decade could reach 1.7 million tons per year (mtpa).[7] Although fulfilling this will require the construction of a large number of wind and solar energy-generating facilities to power the 15 GW of electrolyzers needed to manufacture these amounts,[8] Ukraine can gain a competitive advantage in that market due to the relatively low cost of electrical power – the main cost component of green hydrogen (see Figure 2). In fact, initial estimates demonstrate that in the coming years the levelized costs of energy for onshore wind and utility-scale solar photovoltaic (PV) projects in Ukraine can drop by half to around €40 per MWh, which will be similar to those of countries like Spain or Italy[9].

The second potential advantage of transporting clean hydrogen via the CEHC is associated with the relatively short distance involved (Table 1). In particular, in contrast to the key suggested EHB corridors, the route piping hydrogen from Ukraine to Germany via Slovakia and Czechiac is expected to stretch for only 1,225 km.[10] Given that the consortium behind the EHB estimates the average cost of transporting hydrogen over 1,000 km of pipeline to be around €0.11-0.21 per kg,[11]

Main Cost Drivers for Green Hydrogen

(Figure 2)



Aliaksei Patonia and Rahmatallah Poudineh, "Cost-competitive green hydrogen: how to lower the cost of electrolysers?", OIES Paper EL 47 (2022), pp. 1-45.

Key Hydrogen Corridors of the European Hydrogen Backbone vs. Central European Hydrogen Corridor

(Table 1)

Hydrogen corridor	Approximate minimal length	Approximate cost of hydrogen transportation (€/ton/1,000 km)
A. North Africa and Southern Europe	~3,000	330-630
B. Southwest Europe and North Africa	~2,000	220-420
C. North Sea	~500	55-105
D. Nordic and Baltic Regions	~2,500	275-525
E. East and Southeast Europe	~2,800	308-588
Central European Hydrogen Corridor	**~1,225**	**135-257**

Author's estimates based on European Hydrogen Backbone, Implementation Roadmap – Cross Boarder Projects and Costs Update (Nov. 2024), pp. 1-41 and CEHC, Project vision (2022): https://www.cehc.eu/cehc-project/ (accessed May 29, 2024).

6 Kirsten Westphal, "The focus on green hydrogen slows down climate protection", *German Institute for International and Security Affairs* (May 12, 2021): https://www.swp-berlin.org/en/publication/climate-purists-only-want-green-hydrogen-that-is-a-mistake (accessed May 30, 2024).

7 The National Council for the Recovery of Ukraine from the Consequences of the War, *Draft Ukraine Recovery Plan. Materials of the Energy security working group* (July 2022), pp. 1-151.

8 Ibid.

9 This is expected to be achieved because of high capacity factors of solar and wind power-generating facilities as well as the overall trend toward decreasing levelized costs of energy owing to learning curves, etc. (Ibid).

10 CEHC, *Project vision* (2022): https://www.cehc.eu/cehc-project/ (accessed May 29, 2024).

11 GRTgaz, *European Hydrogen Backbone* (2023): https://www.grtgaz.com/en/medias/press-releases/european-hydrogen-backbone (accessed May 31, 2024).

delivering 1 ton of clean hydrogen through the CEHC will cost only between €135 and €257.[12] This is quite a contrast with the runners-up (Corridor B and Corridor D) and their respective transportation costs of around €220-420 and €275-525.

Although the CEHC will be longer than Corridor C from the North Sea, cost-wise it is likely to still be preferable due to higher expected costs of offshore hydrogen generation and the expenses related to the necessity to construct a new subsea pipeline to the mainland. In addition, since, according to the REPowerEU plan, the EU will also need to domestically generate 10 mtpa of green hydrogen, Corridor C is likely to be used for helping to meet those goals.

The possibility to repurpose most of the existing natural gas transmission pipelines that link Ukraine with Germany will undoubtedly further improve the economic attractiveness of the CEHC project, although the conversion will further contribute to its overall cost. Nevertheless, as claimed by Ukraine's government, these pieces of infrastructure relate to the most modern and well-maintained ones, and they could therefore be repurposed for the use of clean hydrogen at a relatively low cost.[13] In addition, in the current state of full-scale war with Russia, it seems unlikely that Ukraine will extend its five-year gas-transit contract with Gazprom that was signed in 2019.[14] Therefore, in the postwar period, there will be an opportunity for the country's transmission network to be used for the transport of clean hydrogen to Europe.

In addition, it is also expected that, apart from the hydrogen hub at the far end of the pipeline (HyPipe Bavaria),[15] there will be additional demand centers as well as storage facilities for this fuel along the way (see B in Figure 1). This will make investment in this infrastructure project even less risky because it will diversify the to-be-created market for Ukraine's clean hydrogen by creating a greater number of potential off-takers and therefore stimulating demand for this fuel. As a result, Ukraine will be able to conclude long-term supply contracts with various partners while simultaneously becoming Europe's stable partner in the supply of clean hydrogen, which is considered critical for the EU's decarbonization. In return, Ukraine could obtain some €1-1.5 billion in direct investment[16].

WEAKNESSES AND THREATS

Although, in principle, the prospects of generating clean hydrogen in Ukraine for subsequent export to Europe are quite significant, with the country's total potential estimated by the National Academy of Sciences to be up to 44.96 mtpa,[17] it is uncertain to what extent the country will be able to realize them. The main reason is obviously the ongoing war and Russia's constant attacks on Ukraine's energy infrastructure. For instance, so far, 80 percent of the country's thermal power plants and 50 percent of its hydroelectric power plants have been severely damaged or completely destroyed by Moscow's bombs.[18] This means that, in the postwar reconstruction period, rebuilding the lost power-generation capacities is likely to be a higher priority than ramping up facilities for the generation of green hydrogen. Since solar and wind projects are normally completed much faster than large fossil-energy plants, there is a high chance that renewable energy, which could otherwise have been dedicated to powering electrolyzers, will instead be used directly by consumers from the grid.[19]

In addition to that, a significant share (if not most) of Ukraine's territory with the highest renewable power generation and, therefore, green hydrogen production capacity are located in regions or close to regions that have been occupied by Russia and are near the front lines Many of these regions have been

12 In fact, the Ukrainian Hydrogen Council estimates the CEHC-related transport costs to be even lower: €0.10-0.15/kg/1,000 km (Oleksandr Riepkin and Iaroslav Kryl, "Powering the Future: Ukraine's Hydrogen Initiatives", *Ukrainian Hydrogen Council* (2023), pp. 1-11).

13 The National Council for the Recovery of Ukraine from the Consequences of the War, *Draft Ukraine Recovery Plan. Materials of the Energy security working group* (July 2022), pp. 1-151.

14 At least as claimed by Ukraine's government (Reuters, *Ukraine has no plan to extend Russian gas transit deal* (March 17, 2024): https://www.reuters.com/business/energy/ukraine-has-no-plan-extend-russian-gas-transit-deal-2024-03-17/ (accessed 31 May 2024)).

15 HyPipe Bavaria, *The Hydrogen Hub* (2024): https://www.hypipe-bavaria.com/en/ (accessed May 31, 2024).

16 Oleksandr Riepkin and Iaroslav Kryl, "Powering the Future: Ukraine's Hydrogen Initiatives", *Ukrainian Hydrogen Council* (2023), pp. 1-11.

17 Yulia Valova, "Ukraine's green hydrogen potential", *Emerging Europe* (May 2, 2024): https://emerging-europe.com/news/ukraines-green-hydrogen-potential/ (accessed June 1, 2024).

18 United Nations, "Escalating attacks on Ukraine's civilian, energy infrastructure making humanitarian aid delivery even more dangerous, Relief Chief tells Security Council", *Meetings Coverage 9625th Meeting* (PM): https://press.un.org/en/2024/sc15695.doc.htm (accessed June 1, 2024)

19 Direct use of electricity will also be preferable in terms of lower efficiency losses and therefore costs (Aliaksei Patonia et al, "Hydrogen pipelines vs. HVDC lines: Should we transfer molecules or electrons?", *OIES Paper* ET27 (2023), pp. 1-36).

mined and require comprehensive rehabilitation and demining, which will likely be a very time-consuming and costly process (Figure 3). Therefore, it is unclear when it will be possible for the country to supply the suggested hydrogen route with sufficient volumes of green hydrogen. If this is not achieved, operating the CEHC below the declared capacity of 1.3 mtpa[20] is likely to result in losses, and consequently, the economic attractiveness of operating the project will substantially decrease.[21]

Ukrainian Territories Contaminated with Explosive Objects

Figure 3

Government Portal of Ukraine, *Interactive map of potential mine hazard created in Ukraine* (2024): https://www.kmu.gov.ua/en/news/v-ukraini-stvorena-interaktyvna-mapa-potentsiinoi-minnoi-nebezpeky-1 (accessed June 1, 2024).

Ukraine is likely to have a chance to fill the CEHC pipeline with other types of clean hydrogen such as natural gas or coal and CCS-based blue and brown as well as nuclear-powered electrolytic purple hydrogen. However, because fossil fuels and atomic energy do not pose the same intermittency challenge as do most renewable energy sources (for example, wind and solar PV power plants), they will most likely be used for providing base load and balancing the grid, as the electric system has to be balanced at all times.[22] Apart from that, it is not clear whether hydrocarbons- or nuclear-based hydrogen from Ukraine will meet the constantly evolving EU standards.

There will also likely be domestic conflicts of interest between those sectors willing to export hydrogen to the EU and those advocating for the local use of this clean fuel for the rebuilding of Ukraine's industrial potential after the war. In fact, with the country's industrial facilities in hard-to-abate sectors such as steelmaking, oil refining, and fertilizer production being severely damaged, the reconstruction period will represent a window of opportunity to rebuild the economy in a sustainable way. This green recovery of the country most likely would include the use of domestically sourced clean hydrogen in the hard-to-electrify industries.[23] In that case, for instance, hydrogen-based green steel or green steel manufactured by electric arc furnaces powered by local renewables could replace carbon-intensive steel made with coal in blast furnaces. If this happens, hydrogen exports will be limited, and the added value stemming from the use of clean hydrogen for manufacturing sustainable products will be kept at home.

Finally, because of the high consumption of fresh water by the electrolyzers needed for the production of green hydrogen (9-20 liters per kg of hydrogen),[24] in the postwar period, the government will need to consider the potential impact that the buildup of the green hydrogen industry will have on other water-demanding sectors. This is likely to be important not only for the agricultural sector, which is critical for the economy, but also for residential housing and other sectors. In fact, the regions of the country with the highest green hydrogen generation potential also often happen to be the ones with the highest value for agriculture and some of the most dire needs for water supplies.[25]

CONCLUSION

In the post-war period, because of the enormous challenges and costs of rebuilding Ukraine after the war, the country will face the dilemma of whether to take the easier path to reconstruct its economy

20 Oleksandr Riepkin and Iaroslav Kryl, "Powering the Future: Ukraine's Hydrogen Initiatives", *Ukrainian Hydrogen Council* (2023), pp. 1-11.

21 Aliaksei Patonia et al, "Hydrogen pipelines vs. HVDC lines: Should we transfer molecules or electrons?", *OIES Paper* ET27 (2023), pp. 1-36.

22 Aliaksei Patonia and Rahmatallah Poudineh, "Ammonia as a storage solution for future decarbonised energy systems", *OIES Paper* EL42 (2020), pp. 1-44.

23 Hydrogen Europe, *Ukraine's Timmermans Recovery Plan* (2024): https://hydrogeneurope.eu/ukraines-timmermans-recovery-plan/ (accessed June 1, 2024).

24 Kaitlyn Ramirez et al, "Hydrogen Reality Check: Distilling Green Hydrogen's Water Consumption", *RMI* (August 02, 2023): https://rmi.org/hydrogen-reality-check-distilling-green-hydrogens-water-consumption/ (accessed June 1, 2024).

25 EU4Environment, *The toll of two years of war on water: Damage and needs assessment in Ukraine's water sector* (March 20, 2024): https://www.eu4waterdata.eu/en/blog-news/34-ukraine/334-the-toll-of-two-years-of-war-on-water-damage-and-needs-assessment-in-ukraine-s-water-sector.html (accessed June 1, 2024).

STRENGTHS	OPPORTUNITIES	WEAKNESSES	THREATS
• Significant renewable energy potential with high capacity factors for solar PV and win • Existing natural gas transmission infrastructure that can be repurposed for H2	• Opportunity to ramp-up cost-competitive green hydrogen production • Opportunity to export it in large volumes to EU industrial hubs at low cost	• Uneven distribution of renewable energy potential • Territories with highest renewable energy potential severely affected by war (e.g. contaminated with explosives)	• Necessity to rebuild the country's power generation capacity due to critical damage by war • Potential conflicts of interests: domestic use of H2 by industries vs. exports

via replacing the damaged infrastructure and facilities and continue with business as usual or create a modern and sustainable economy that will comply with the nation's desire to become an integral part of the European Union[26]. In case the former is chosen, there will be few arguments in support of creating and ramping up Ukraine's clean hydrogen sector and operating CEHC, as the country's economy will still be run primarily on cheaper and more polluting fossil fuels. Choosing the latter will, in turn, create an array of opportunities for the build-up of Ukrainian H2, which will also be associated with significant challenges and constraints. That is why, if both Ukrainian and EU policymakers want the post-war reconstruction of the country to be built forward rather than back, handling these challenges and constraints should start today rather than when the war is over. Otherwise, if the policy, legal, and regulatory landscape of the country is not made suitable for the rapid development of a highly competitive and fast evolving clean hydrogen sector, chances are high that Ukraine may not utilize its potential competitive advantages.

RECOMMENDATIONS

To facilitate and secure the development of the Ukrainian clean hydrogen sector in the post-war period, Ukraine's policymakers should focus on the following areas:

Policy and regulatory framework

- **Develop a National Hydrogen Strategy** to outline the vision, goals, and roadmap for hydrogen production, distribution, and usage. This should include specific targets for green H2 production as well as local consumption and exports to the EU.
- **Implement hydrogen legislation** that will define standards, safety protocols, and incentives for H2 production, storage, transport, and utilization. These standards and protocols should be fully compatible with the European ones. Ukraine should also implement certification schemes to guarantee the origin of green H2 to boost consumer and investor confidence while ensuring that hydrogen production adheres to strict environmental standards to minimize the carbon footprint and avoid negative ecological impacts.
- **Establish effective mechanisms for monitoring and evaluation.** This assessment of hydrogen projects and policies should ensure that they meet the original objectives and can be adapted as needed. Here, robust data collection and transparency measures should be in place to track progress and build trust among stakeholders.
- **Develop effective financial incentives for investors.** These should include, among others, tax breaks, subsidies, and grants to encourage investment in all elements of the hydrogen value chain. The process of allocating these incentives should be made fair and transparent to avoid corruption-related issues and challenges.

Investment and financing

- **Encourage collaboration and partnerships to fund hydrogen projects**. They should not only include private companies and governments (public-private partnerships), but also international organizations.
- **Create dedicated financial instruments** to attract investment in hydrogen infrastructure. These instruments could include but should not be limited to green hydrogen bonds, etc.

26 Novita Andari et al, "Green Horizon Fund for Ukraine. Derisking Private Sector Investment in Green Energy Infrastructure", *Willy Brandt School of Public Policy, University of Erfurt* (March 2024).

INPUT PAPER 8

Rasht-Astara: The Gap in the Western Route of the North-South Corridor

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EXECUTIVE SUMMARY

The North-South International Corridor was previously conceived as a corridor linking not only India and Russia, but also Northern Europe. However, after the war in Ukraine, the corridor is practically used by Russia, which, having lost its traditional routes to the west, has emphasized the development of the North-South corridor. The policy paper discusses three main routes of the North-South corridor: Western (through the territory of Azerbaijan), Eastern (through the territory of Turkmenistan, Kazakhstan), Trans-Caspian (through the Caspian Sea). Each of these routes has its own problems that prevent the corridor from being used to its full potential. The most used route is the Western route, which is incomplete; the Rasht-Astara railway, which is part of the route, has not been built on the territory of Iran. After the war in Ukraine, Russia undertook to finance the construction of this railway.

The paper also discusses one of the possible routes of the North-South Corridor passing through Armenia and Georgia. It acknowledges that there are infrastructure problems in that route. On the other hand, Russia makes the use of the route through the territory of Armenia conditional on opening the route through the territory of Armenia between Azerbaijan and Nakhchivan, while Armenia applies to join the corridor by building its North-South highway.

The analysis considers that the construction of the Rasht-Astara railway could strengthen Azerbaijan's transit role while reducing Armenia's transit positions. We propose that with the construction of the North-South highway, the RA can play a transit role not only in the North-South Corridor, but also in the Persian Gulf-Black Sea Corridor. As the EU sees the South Caucasus as an opportunity to bypass Russia, Armenia can be a transit route to India for the EU. This is important for Armenia to strengthen its transit position and resist external pressures. The synchronous development of Armenian and Georgian infrastructure is important for the realization of this goal, for which recommendations have been made.

INTRODUCTION

The North-South International Transport Corridor aims to link India with Russia and northern Europe, providing an alternative to the Suez Canal by reducing transit times from 40 to 60 days to 20 to 25 days. As a result of the war in Ukraine, it has taken on a new importance for Russia, evolving from an opportunity to a vital link for Moscow for its global trade. This shift has resulted in the corridor being used and developed primarily by Russia, highlighting the need to develop alternative routes between Europe and India.

What Does the North-South Corridor Plan For?

The North-South International Transport Corridor was established by a trilateral agreement signed by India, Iran, and Russia in the 2000s. Under the scheme, goods from India are shipped to the Iranian port of Bandar Abbas. From there, they travel north through Iran by rail, with the corridor branching off into three main routes:

- **A western route:** Railway and road connection through Iran, Azerbaijan, and Russia.
- **A trans-Caspian route:** Roads/railways and sea connection crossing the Caspian Sea.
- **An eastern route:** Railway and road connection through Iran, Turkmenistan, Kazakhstan, and Russia.

Although the start and end points of the North-South Corridor are in Russia and India, it was intended to cover a wider area. Moreover, after the six-day blockage of the Suez Canal in March 2021, discussions about activating the North-South Corridor intensified and already in June 2021, a first test cargo from Finland was sent to India on its western route.[1] However, the war in Ukraine changed this trend.

Due to the war the traditional routes in a western direction were closed for Russia, and those in the direction of the east and of the Azov-Black Sea were overloaded.[2] Under these conditions, the North-South Corridor gained new significance. However, it needs investments as each one of its routes faces challenges, impeding their optimal utilization.

The eastern route (the longest at 6,200 km), which includes the Kazakhstan-Turkmenistan-Iran railway, was officially inaugurated in 2014 but it has almost never been operational due to technical and logistical problems. The main reason is the difference in the standards of the railways of Iran and Turkmenistan, which were reportedly solved only in 2021.[3] In November 2021, the three countries signed a memorandum on the development of the route.[4] In July 2022, the first container train from Russia to India ran on this route. Another problem was high tariffs. In 2023, Iran, Kazakhstan, Russia, and Turkmenistan agreed to set lower ones.[5] As a result of these changes, cargo transportation on the eastern route has increased significantly, but the volumes remain small because the line's capacity problems remain: it stretches 1,350 km

1 First block train from Finland to India already on the move, railfreight.com, (June 23,.2021), https://www.railfreight.com/beltandroad/2021/06/23/first-block-train-from-finland-to-india-already-on-the-move/?gdpr=deny, (accessed June 17, 2024).

2 Пешков Н.,Началось расширение Международного транспортного коридора "Север - Юг" [Peshkov N., The expansion of the International Transport Corridor "North - South" has begun], (May 11,2023), https://rg.ru/2023/05/11/reg-skfo/nachalos-rasshirenie-mezhdunarodnogo-transportnogo-koridora-sever-iug.html, (accessed June 17, 2024).

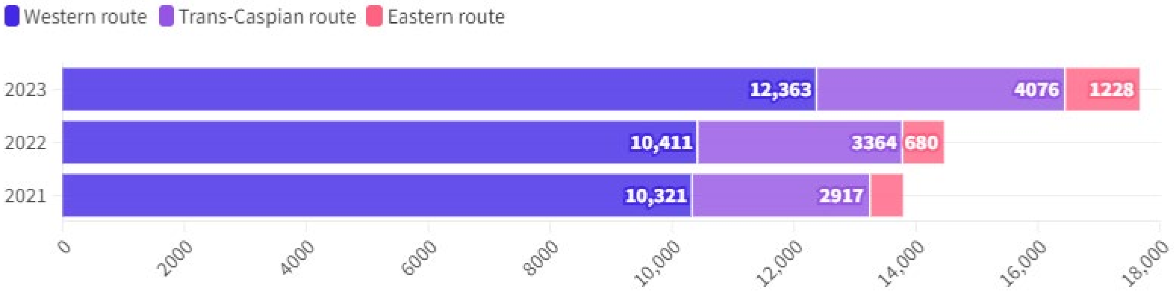
3 Ղազախստան-Թուրքմենստան-Իրան երկաթուղի՝ տարածաշրջանային համագործակցության հաջողված օրինակ [Kazakhstan-Turkmenistan-Iran railway - a successful example of regional cooperation], parstoday.com, (June 20, 2022), https://parstoday.com/hy/news/uncategorised-i175148, (accessed June 7, 2024).

4 ایران، ترکمنستان و قزاقستان تفاهمنامه سه جانبه ریلی امضا کردند [Iran, Turkmenistan and Kazakhstan signed a trilateral railway memorandum], Irna.ir, (November 26, 2021), https://www.irna.ir/news/84556091/, (accessed June 7, 2024).

5 Началось расширение Международного транспортного коридора "Север - Юг" [The expansion of the International Transport Corridor "North - South" has begun], rg.ru, (May 11, 2023, https://rg.ru/2023/05/11/reg-skfo/nachalos-rasshirenie-mezhdunarodnogo-transportnogo-koridora-sever-iug.html, (accessed June 7, 2024).

North-South Cargo Transportation from 2021 to 2023

Million tons



N.Trans Lab, «*Из варяг в Персы»:перспективы развития транспортного коридора «Север-Юг*» [*"From the Varangians to the Persians": prospects for the development of the North-South transport corridor*], https://ntranslab.ru/analytic/doklady/iz-varyag-v-persy-perspektivy-razvitiya-mtk-sever-yug/, p. 21 (accessed June 17, 2024).

from Astrakhan to Aktau, with limited electrification and a throughput of 11 million tons per year. In Turkmenistan, the 900 km section between Bereket and Inche-Burun also lacks electrification, with similar capacity constraints. Issues such as inadequate facilities at border stations further hamper efficiency. Key problems include multiple transit countries and low freight demand exacerbating track underutilization.[6] There are problems with the low capacity of roads in Russia and partly in Kazakhstan.[7]

The trans-Caspian route (4,900 km) is the most desirable, at least for Iran. It is also the most problematic, however. Iran and especially Russia have port capacity and logistical problems, as well as a shortage of cargo ships, including river-sea class ships. In the case of Iran, another problem was the lack of a railway to the ports,[8] with only the port of Amirabad connected by rail. In June 2024, the railway from Rasht to the port of Caspian was put into operation[9] after many years of construction and several postponements.[10]

Another problem for the trans-Caspian route arises in winter, when the ports are frozen. This means that in this period, almost half of all cargo traffic will require additional icebreaker service, which will inevitably lead to a seasonal increase in prices and delivery times. In winter conditions, only the port of Makhachkala in Russia operates[11]. As a result, freight is diverted to other routes, causing congestion.

In the case of the western route (5,100 km) through Azerbaijan, the problem is the incompleteness of the railway network – in particular the absence of the Rasht-Astara section – as a result of which cargo transport is carried out in a multimodal way, which takes additional time. Another challenge is the different capacities of the railway lines in Iran, Azerbaijan and Russia. The last two have more railway capacity than Iran. But Iran has better highway capacity, with mainly four-lane sections throughout the country with a carrying capacity of 40,000 cars per day and six-lane sections near Tehran with a carrying capacity of 80,000 cars. Azerbaijan has mainly four-lane sections with a carrying capacity of 40,000 cars. Russia has two-lane sections with a carrying capacity of 14,000 cars per day.[12] This is one of the reasons for the formation of queues at the Azerbaijan-Russia

6 Развитие транспортного коридора «Север-Юг» [Development of the North-South transport corridor], e-cis.info, (May 14,2024), https://e-cis.info/news/566/118105/, (accessed June 17, 2024).

7 N.Trans Lab, «*Из варяг в Персы»:перспективы развития транспортного коридора «Север-Юг*» [*"From the Varangians to the Persians": prospects for the development of the North-South transport corridor*], https://shorturl.at/eFAsx, p. 5, (accessed June 17, 2024).

8 МТК «Север – Юг»: от замысла к реализации [ITC "North - South": from concept to implementation], morvesti.ru, (January 9, 2024), https://morvesti.ru/analitika/1685/106899/, (accessed June 7, 2024).

9 دمآرد ادص هب نیپساک - تشر راطق توس, [The whistle of the Rasht-Caspian train sounded], Irna.ir, (June 20, 2024) ,https://www.irna.ir/news/85513868/, (accessed June 20, 2024).

10 دوش یم حاتتفا رجف ههد رد نیپساک -تشر نهآ هار, [The Rasht-Caspian railway will be opened in the decade of Fajr], Tahlilbazaar.com, (December 18, 2023), https://www.tahlilbazaar.com/news/262446/, (accessed June 7, 2024)

11 Развитие транспортного коридора «Север-Юг» [Development of the North-South transport corridor], e-cis.info, (May 14, 2024), https://e-cis.info/news/566/118105/, (accessed June 17, 2024).

12 N.Trans Lab, «*Из варяг в Персы»:перспективы развития транспортного коридора «Север-Юг*» [*"From the Varangians to the Persians": prospects for the development of the North-South transport corridor*], https://shorturl.at/eFAsx, p. 5 (accessed June 17, 2024).

border, which also affects the formation of queues at the Iran-Azerbaijan border. The highways in this direction cannot cope with the large volumes of cargo.

Despite the challenges, the western route remains the corridor's most frequented pathway. In the first quarter of 2023, trans-Caspian cargo transport took 45 to 60 days, with costs ranging from $3,450 to $6,000 to 7,000 per TEU container. Slowness and high costs were mainly due to a lack of transport tonnage on the route, congestion in Russia's Caspian ports and insufficient depth of inland waterway crossings. Over the same period, the eastern route took 45 to 47 days, with an average tariff of $7,000 per container (which is down on the previous year).

Using the western route took an average of 40 days at a cost of $6,500 per container.[13] The western route was advantageous in terms of time and price because it is a stable one compared to other routes: the trans-Caspian one is seasonal with more infrastructure problems and the eastern one is long and expensive, even with reduced prices. The western route is therefore considered the most attractive and efforts are being made to complete it and increase the volume of cargo transported, which first means building the Rasht-Astara railway from scratch. An N. Trans Lab expert project from Russia considers that this route will be the most important one in the coming decades.[14]

ENDLESS EFFORTS TO BUILD THE RASHT-ASTARA RAILWAY

In 2005, Azerbaijan joined the North-South Transport Corridor initiative. At that time, Iran's railway network extended north to Qazvin, near the Caspian Sea, and Azerbaijan's southern network reached to its Astara town, near the border with Iran.

The plan to link the Azerbaijan and Iran railways involved constructing the Qazvin-Rasht-Astara section in Iran up to the border of Azerbaijan and repairing the Baku-Astara section in Azerbaijan, extending it to Iran. A significant milestone was achieved in 2018, when the section connecting the two towns of the same name on the Iran-Azerbaijan border, Astara, was put into operation. This segment covers approximately 8.5 km in Azerbaijan and 1.5 km in Iran. In 2019, the Qazvin-Rasht section was also opened.

However, the Rasht-Astara section remains unfinished due to financial constraints, challenging terrain, and changes in contractors. Discussions intensified in 2015 to 2016, with an estimated $1.1 billion agreement initially financed by the two countries.[15] However, the agreement was not implemented and progress stalled. Subsequently, Iran began to seek Russia's involvement.

The potential role of Moscow became significant in 2022 during a visit by President Ebrahim Raisi to Russia. It was announced that Iran and Russia planned to construct the Rasht-Astara section within a $5 billion credit line from Russia.[16] In February, the head of the Iranian railways stated that Azerbaijan could not finance the project due to sanctions and that Russia was prepared to step in.[17]

After the onset of its war against Ukraine in February 2022, Russia underscored the importance of the North-South Corridor. On April 21, Deputy Prime Minister Alexander Novak stated that the corridor had transitioned from a prospect to a necessity.[18] Negotiations led to a contract being signed in May 2023.[19] It was announced that Russia was providing Iran with a loan of €1.3 billion for the project.[20]

Despite initial projections for construction to start by mid-2023, construction has yet to commence. It is

13 МТК «Север – Юг»: от замысла к реализации [ITC "North - South": from concept to implementation], morvesti.ru, (January 9, 2024), https://morvesti.ru/analitika/1685/106899/, (accessed June 7, 2024).

14 N.Trans Lab, *«Из варяг в Персы»:перспективы развития транспортного коридора «Север-Юг»* [*"From the Varangians to the Persians": prospects for the development of the North-South transport corridor*], https://ntranslab.ru/analytic/doklady/iz-varyag-v-persy-perspektivy-razvitiya-mtk-sever-yug/, p. 45.

15 Azərbaycan-İran biznes forumuda İlham Əliyevin nitqi [Ilham Aliyev's speech at the Azerbaijan-Iran business forum], President.az, (March 29, 2018), https://president.az/az/articles/view/27637, (accessed June 7, 2024).

16 خبر خوش وزیر اقتصاد دارایی اب روسیه/ جزئیات توافق ها از سفر موفق رئیس جمهور روسیه به ایران [The good news of the Minister of Economy about Iran's agreement with Russia/ details of the economic achievements of the President's visit to Russia], Khabaronline.ir, (January 21, 2022), https://www.khabaronline.ir/news/1594748/, (accessed June 7, 2024).

17 سرمایه‌گذاری مسکو و باکو در ریل خط راه آهن رشت – آستارا ایران و روسیه در مسیر تحریم شکن [Investment of Moscow and Baku in the path of anti-sanctions], Irna.ir, (February 10, 2022), https://www.irna.ir/news/84640118/, (accessed June 7, 2024).

18 Новак: транспортный коридор "Север - Юг" станет основой для цепи поставок в России [Novak: the North-South transport corridor will become the basis for the supply chain in Russia], Tass.ru, (April 21, 2022), https://tass.ru/ekonomika/14442643, (accessed June 7, 2024).

19 مفاد توافقنامه اجاد خط راه آهن رشت – آستارا میان ایران و روسیه President.ir, (May 17, 2023), https://www.president.ir/fa/143951, (accessed June 7, 2024).

20 Россия выделит €1,3 млрд госкредита на проект железнодорожного участка Решт—Астара в Иране, kommersant.ru [Russia will allocate €1.3 billion of state credit for the Rasht-Astara railway section project in Iran], (May 17, 2023), https://www.kommersant.ru/doc/5987447, (accessed June 7, 2024).

not known exactly what the reason for the delays is, but Moscow and Tehran have reportedly encountered certain problems that are not being talked about.[21] Moreover, Iran has not yet fully secured the area necessary for the construction of the railway. The railway will pass through specially protected forest areas, which has already caused dissatisfaction among environmental activists and officials in the country.[22]

Once completed, the Rasht-Astara section is expected to handle 15 million tons annually, significantly improving the route's efficiency and eliminating the need for multimodal freight transport.

THE ROUTE PASSING THROUGH ARMENIA AND GEORGIA

Although the attempts to build the Rasht-Astara railway have reached a new level and a contract for its construction has been signed, construction has not yet started. The planned construction period is four years, but given past delays this timeline seems overly optimistic. The completion date of 2028 is not realistic.

Due to the unreliability of foreign investments, Iran also emphasizes the need to build this railway with its own funds. But the entire annual budget of the Ministry of Roads and Urban Development for one year would not be enough for the construction of this railway.[23]

Iran also attaches importance to the development of the route through Armenia, which can connect Iran with Russia and Europe. The Armenian route can become competitive in the event of the construction of Armenia's North-South Highway, which has been repeatedly emphasized by Iran as well.

According to Armenia's Road Department, the North-South Highway will:

- Provide access to the Black Sea through Armenia and Georgia and then to European countries.
- Connect to Georgia's road leading to the ports of Poti and Batumi, crossing Armenia from Meghri to Yerevan, Ashtarak, Gyumri, and Bavra.
- Improve Europe–Caucasus–Asia road communication at the intersection of West Asia and East Europe.[24]

Most of the northern part of the highway is being operated, but construction has not yet begun on the most difficult part in the south. The construction of the whole 560 km highway will make it possible to connect the south and north of the country in 4.5 hours instead of 9 to 9.5 hours.[25]

Underlining the importance of its development, Armenia and Iran signed an agreement in 2023 to build the Kajaran-Agarak section of the North-South Highway.

The highway will continue from Armenia to Georgia, where major construction projects are underway. The European Investment Bank has provided a €106.7 million loan to upgrade sections of the East-West Highway, extending it to the borders with Armenia and Azerbaijan.[26] This investment aims to enhance safety along the 388 km highway, with new roads from Algeti to Sadakhlo (bordering Armenia) and Rustavi to Red Bridge (bordering Azerbaijan). Additionally, construction is progressing on a 23 km road with a 9 km tunnel in the Kvesheti-Kobi section of the North-South Highway. This will cut travel by 11 km and almost two hours, bypassing the problematic Gudauri-Kobi route, something crucial for year-round connectivity between Georgia, Armenia, and Russia.[27][28]

21 اجداث کریدور شمال جنوب نقش مهم و هم‌ردیف برای کل منطقه دارد [The construction of the North-South Corridor has an important and strategic role for the entire region],Isna.ir, (February 28, 2024), https://www.isna.ir/news/1402120906194/, (accessed June 7, 2024).

22 راه آهن رشت آستارا نقشه و برای تنها جنگل جلگه ای ایران است [Rasht-Astara railway is the plan of destruction of Iran's only plains forest],tinn.ir, (May 17, 2023), https://www.tinn.ir/fa/tiny/news-256139, (accessed June 7, 2024).

23 بودجه وزارتخانه کمتر از ساخت ۱۶۰ کیلومتر راه‌آهن است [The budget of the ministry is less than the construction of 160 km of railway], Isna.ir, (July 4, 2022), https://www.isna.ir/news/1401041308862/ , (accessed June 7, 2024).

24 North-South Road Corridor Investment Program, armroad.am, https://armroad.am/en/projects/north-south-road-corridor-investment-program , (accessed June 20, 2024).

25 Հայկական «Հյուսիս-հարավ» Ինչպե՞ս չմնալ ճանփեզրին [Armenian "North-South". How not to stay on the side of the road?], Ampop Media, (July 31, 2018), https://ampop.am/north-south-project-armenia/, (accessed June 7, 2024).

26 The European Investment Bank was also supposed to finance the construction of the third tranche of the North-South Highway in Armenia, but in 2022 the Armenian authorities announced that the bank had not ,made transfers. It is not known whether the cooperation was finally achieved or not.

27 Հասմիկ Մելիքսեթյան,Վրաստանը վերանորոգում է Արևելք-Արևմուտք ճանապարհը [Hasmik Meliksetyan, Georgia is repairing the East-West road], Orbeli.am, (September 13, 2021), https://shorturl.at/88hli, (accessed June 7, 2024).

28 Հասմիկ Մելիքսեթյան,ՀՀ-Վրաստան հարաբերությունները ու դրանց զարգացման հեռանկարները [Hasmik Meliksetyan, RA-Georgia relations and their development prospects], arvak.am, (August 10, 2023), https://shorturl.at/Vu9Jk, (accessed June 7, 2024).

The problem is that the roads of Armenia and Georgia are not being developed at the same time, and the roads being built and repaired in the two countries do not meet. In particular, Armenia's North-South Highway ends at the border at Bavra, where Georgia's roads are less developed. And Georgia's East-South Highway reaches the border with Armenia at Bagratashen, which is not part of the latter's developing infrastructure.

There is no clear data on how much cargo transits to and from Russia through Armenia and Georgia. This route seems to be the most neglected and least used, because there is no railway linking Armenia's south to the north and the North-South Highway is not complete, while the operation of the Upper Lars checkpoint in Georgia is not stable. Therefore, it is crucial to develop infrastructure in Armenia and Georgia simultaneously, not just for the North-South Corridor but also for the Persian Gulf-Black Sea corridor.

This is particularly important given that Russia is using the Azerbaijan factor to put pressure on Armenia, suggesting that if Armenia does not agree to the construction of the railway through the Syunik region to Nakhichevan, it will be left out of the North-South and East-West Corridors.[29] In this way, Russia is questioning Armenia's prospects as a transit country. However, Armenia has always expressed its willingness to open the routes under its control.[30] On the other hand, in order to play an important transit role in the North-South Corridor, Armenia is developing its highway infrastructure with the North-South Highway. This should be a priority for it, because there are concerns in the country that opening communication channels with Azerbaijan and Turkey could deepen its disproportionate dependence on Russia, Azerbaijan, and Turkey in this area,[31] especially if it never completes the construction of the North-South Highway.

In the context of unblocking regional transport routes Iran's approach is mainly negative, for which the creation of a connection through the Syunik region of Armenia to Nakhichevan is undesirable, especially if it is out of Armenia's control. For Iran, the restoration of the Jolfa-Nakhichevan-Yerevan rail link is preferable.[32]

As long as the unblocking negotiations do not yield results, Russia controls the North-South Corridor and current politics prevent direct links between Europe and India, the development of infrastructure in Armenia and Georgia could create an alternative route. This route would bypass the Suez Canal and connect Europe to India through the Persian Gulf, the Indian Ocean, and the Black Sea. The operation of this route will strengthen Armenia's transit role and enable it to withstand external pressure. This is an issue that deserves EU attention, especially in the context of the EU's increased interests in the South Caucasus[33] and the search for routes bypassing Russia to improve connectivity as a result of the war in Ukraine[34].

Armenia is also taking steps in this direction by announcing its willingness to develop cooperation in the Iranian port of Chabahar, for the development and operation of which Iran and India signed an agreement in May 2024.[35] In 2023, discussions focused on launching a multimodal high-speed route for international cargo transport and Armenia's becoming an operator in the port. An inter-ministerial working group headed by the minister of economy has been established.[36] At the beginning of 2024, the minister announced that a logistics link will be established between Armenia, Iran and India, enabling cargo to be delivered from India to Armenia and vice versa within ten days and at low prices. In March 2024, it was announced that a pilot project to transport cargo on this route had been launched. Although the results of these tests are not yet known, Armenian expresses

29 Армения рискует выпасть из проекта транспортного коридора «Север – Юг», [Armenia risks falling out of the North-South transport corridor project], vedomosti.ru, (October 23, 2022), https://www.vedomosti.ru/business/articles/2022/10/24/946972-armeniya-riskuet-vipast-iz-proekta-koridora-sever-yug, (accessed June 19, 2024).

30 The answers of the Spokesperson of the MFA of Armenia to the questions of "Armenpress" News Agency, mfa.am, (March 27, 2024), https://www.mfa.am/en/interviews-articles-and-comments/2024/03/27/spox_comment/12578, (accessed June 7, 2024).

31 Լույս հիմնադրամ, Հյուսիս-Հարավ տրանսպորտային միջանցքի երեք զուգահեռ ուղղությունները և Հայաստանը, [Luys Foundation, *The three parallel directions of the North-South transport corridor and Armenia*, Luys Foundation], (September 1, 2024), https://www.luys.am/img/artpic/small/141b851ab8a1daea1d0a08-%D5%80%D5%85%D5%88%D5%92%D5%8D%D4%BB%D5%8D-%D5%80%D4%B1%D5%90%D4%B1%D5%8E.pdf, p.23, (accessed June 7, 2024).

32 Zhanna Vardanyan, Why is the Border with Armenia important for Iran?, Regionalpost.org, (September 28, 2022), https://regionalpost.org/en/articles/why-is-the-border-with-armenia-important-for-iran.html, (accessed June 7, 2024).

33 Josep Borrell, Why we need more EU engagement in the South Caucasus, eeas.europa.eu, (July 2, 2021) https://www.eeas.europa.eu/eeas/why-we-need-more-eu-engagement-south-caucasus_en, (accessed June 20, 2024))

34 Stefan Meister, Russia's War against Ukraine: Connectivity and Disruption in the South Caucasus, DGAP.org, https://dgap.org/en/research/publications/russias-war-against-ukraine-connectivity-and-disruption-south-caucasus, accessed June 20, 2024.

35 India inks 10-year deal to operate Iran's Chabahar port, Reuters.com (May 13,2024), https://www.reuters.com/world/india/india-sign-10-year-pact-with-iran-chabahar-port-management-et-reports-2024-05-13/, (accessed June 24, 2024).

36 Հայաստանը շահագրգռված է Հյուսիս-հարավ տրանսպորտային միջանցքի և Չաբահար նավահանգստի ծրագրերում ներգրավվածության հարցում. ԱԳՆ, [Armenia is interested in involvement in the North-South transport corridor and Chabahar port projects. MFA], Factor.am, (May 18, 2024), https://factor.am/784825.html, (accessed June 19, 2024).

the hope that the launch of the trade route will significantly increase the circulation of goods and cargo transportation between itself and India, Iran and later Georgia and the EU.[37]

With the successful launch of this route and the construction of the port of Anaklia in Georgia, Armenia and Georgia could in the long term become an alternative route connecting India with Europe through Iranian territory.[38]

CONCLUSION

In the current geopolitical environment, the North-South Corridor, previously seen as Europe's potential alternative to the Suez Canal, now primarily benefits Russia, which is enhancing its development. The corridor's route through Azerbaijan remains the most used, despite its unfinished infrastructure, and this is expected to continue for decades.

The construction of the Rasht-Astara railway could strengthen Azerbaijan's role as a transit hub while reducing Armenia's transit and regional positions, especially as the Middle Corridor also bypasses Armenia.

On the other hand, and especially since the war in Ukraine, the EU has shifted its focus on the South Caucasus, viewing it as a strategic gateway to Asia that avoids Russia. This implies a greater emphasis on investing in infrastructure development in the region. While the EU prioritizes the Middle Corridor to Central Asia and China, Armenia can offer a potential route to connect with India.

Armenia should focus on improving its transit infrastructure. Achieving this goal depends on cooperation with Georgia as well. Simultaneous development of infrastructure in both countries is essential.

The following recommendations identify ways to strengthen the role of Armenia in regional transit networks and to provide viable alternatives to the EU's trade routes.

- Encourage the governments of Armenia and Georgia to harmonize infrastructure projects, including Armenia's North-South Highway and Georgia's East-West Highway, and extending port roads in Georgia to the border with Armenia. This can also happen with more extensive regional corridor projects, as well as loan and grant concessions.
- Increase the capacity of the checkpoints and the orderliness of cargo transit at the checkpoints that have become the main ones as a result of the harmonization of roads, including through the preliminary declaration of cargo.
- Promote transparency in road construction in Armenia, especially considering past corruption cases in the sector. Encourage the participation of observer groups in the monitoring of road projects.
- Attract additional investments to speed up the construction of the North-South Highway. Promoting cooperation with the European Development Bank could be considered. The possibility of EU investments can make the highway attractive for European companies.
- Carry out trial deliveries from India to Europe through Armenia and Georgia to find out what infrastructural, legal, financial, and further problems there are for deliveries on such a route.
- Take stock of all areas of cooperation with Iran that are not subject to sanctions, in order to increase the attractiveness of investments in these areas, thus enhancing Armenia's transit role.

37 Փոթճախաճ բեռներ. Երևանում ներկայացվել են Հնդկաստան-ՀՀ-ԻԻՀ առևտրային երթուղու մանրամասները [Test loads. The details of the India-RA-IRI trade route were presented in Yerevan], Sputnik Armenia, (March 14, 2024), https://arm.sputniknews.ru/20240314/pvordznakan-berner-erevanum-nerkajacvel-en-hndkastan-hh-iih-arevtrajin-ertughu-manramasnery-73362116.html, (accessed June 20, 2024).

38 Բենիամին Պողոսյան, Վրաստանի դերը Հայաստանի արտաքին բազմաձևակերպման դիվերսիֆիկացման համատեքստում [Beniamin Poghosyan, Georgia's role in the context of diversification of Armenia's foreign policy], 24news.am, (January 19, 2024), https://www.24news.am/news/323336, (accessed June 20, 2024).

INPUT PAPER 9

The Necessity of Diversifying Internet Access Sources in the European Union and the Eastern Partnership

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EXECUTIVE SUMMARY

The paper discusses the need for the European Union (EU) to diversify its internet access sources, particularly in light of the war in Ukraine and the vulnerabilities exposed in the existing communication networks. The focus lies on the EU's initiative to develop the IRIS2 satellite system, which aims to provide secure and reliable internet access during crises, such as cyber-attacks or natural disasters.

The Russian invasion of Ukraine in 2022 highlighted significant weaknesses in current communication infrastructures when Russian hackers attacked the KA-SAT satellite network, disrupting services across Ukraine and parts of the EU. In response, the EU has planned the IRIS2 (Infrastructure for Resilience Interconnectivity and Security by Satellite) project.

Post-2022, the EU has pursued greater autonomy in its communication systems. The IRIS2 initiative is a cornerstone of this strategy, aiming to deploy a secure satellite constellation by 2027. However, funding challenges and geopolitical tensions created significant hurdles to the project's implementation.

To ensure the reliability and security of communication networks in the European Union and Eastern Partnership countries, it is recommended to accelerate the implementation of the IRIS2 project and expand it to include Eastern Partnership countries. The financial models should be reviewed due to the increased cost of the project, and additional public funding and resources from the EU budget or individual member states should be considered.

It is also important to harmonize the legislation and technical standards of Eastern Partnership countries with EU norms to ensure system compatibility and effective operation of IRIS2, develop long-term digital sector development strategies, and enhance cooperation in cybersecurity between the EU and Eastern Partnership countries.

INTRODUCTION

The war in Ukraine has prompted the European Union to intensify efforts to create its own satellite internet network. One of the main reasons for this decision is the vulnerability of existing communication networks during conflicts. At the beginning of Russia's invasion, Russian hackers carried out a cyberattack on the KA-SAT satellite internet network, resulting in the disconnection of thousands of modems in Ukraine and EU countries that use this network. This caused significant disruptions to government websites and to banks, highlighting the need for more secure and autonomous communication systems for the EU.[1]

In response, the EU plans to create the IRIS2 (Infrastructure for Resilience, Interconnectivity and Security by Satellite) satellite system, which will provide reliable and secure internet access, especially in crises such as cyberattacks or natural disasters. The project has received a budget of €6 billion, of which

1 "Russian Cyber Operations against Ukraine: Declaration by the High Representative on Behalf of the European Union." https://www.consilium.europa.eu/en/press/press-releases/2022/05/10/russian-cyber-operations-against-ukraine-declaration-by-the-high-representative-on-behalf-of-the-european-union/.

€2.4 billion are directly funded by the EU, with the remainder provided by private investors. The system launch is scheduled for 2027.[2]

One of the key advantages of this initiative is reducing dependence on third-country providers, such as China and Russia, and ensuring the EU's digital sovereignty. However, the IRIS2 project is currently focused on developing a satellite network within the EU. Accelerating its implementation and including Eastern Partnership countries could not only improve security within the EU but also deepen cooperation with these countries.

USING STARLINK SATELLITE INTERNET IN UKRAINE DURING THE WAR

Starlink, the satellite internet service developed by SpaceX, has played a crucial role in Ukraine since the beginning of Russia's full-scale invasion in 2022. It has demonstrated unprecedented efficiency and adaptability for both civilian and military needs.

Civilian Use

The Starlink satellite system has played a significant role in maintaining Ukraine's communication infrastructure. Despite its relatively high cost by Ukrainian standards, it has become the backbone of the country's communication infrastructure, especially in areas with damaged communication networks. The system has provided stable internet access for civilians, journalists, resistance groups, and government structures. In active combat zones, "invincibility points" were established where citizens had access to the internet via Starlink terminals, along with other basic services.

It is important to note the versatility of the technology: Starlink terminals were used to restore mobile operator services and support the operation of critical infrastructure. The system has been widely used in schools, hospitals, railways, the energy sector, and telecommunications. Minister of Digital Transformation Mykhailo Fedorov said that Starlink played a crucial support role for Ukraine's infrastructure and in restoring destroyed territories.[3] The system enabled the restoration of mobile communications in the Kyiv region faster than electricity supply and fixed internet access were restored.

Military Use

Starlink was first used in Ukraine during the War near Kyiv in early 2022. It played a key role in providing uninterrupted communication for military units, especially in conditions of targeted Russian attacks on Ukraine's communication infrastructure.

The system has found wide application in various aspects of military operations. In particular, Starlink was used to control unmanned aerial vehicles, adjust artillery fire, and create mobile networks with encrypted group chats for communication between commanders and soldiers on the battlefield. The military adapted the technology for various tactical tasks, including installing terminals on strike drones.

CHANGES IN EU POLICY REGARDING SATELLITE INTERNET ACCESS

In 2022, following Russia's attack on Ukraine, the European Union decided to ensure greater autonomy and resilience for its communication systems. In November 2022, the EU Council and the European Parliament reached a preliminary agreement on the regulation for the EU's secure connectivity program for 2023 to 2027. The program involves deploying an EU satellite constellation called IRIS² (Infrastructure for Resilience, Interconnectivity and Security by Satellite), which aims to provide secure communication services by 2027.[4]

One of the most significant catalysts for creating IRIS² was a cyberattack that highlighted vulnerabilities in existing communication infrastructures. On February 24, 2022, Viasat's KA-SAT network suffered a sophisticated cyberattack that caused a partial disruption of satellite broadband service for consumers.[5] The incident affected thousands of clients in Ukraine and tens of thousands of other users across Europe. The attack targeted the consumer segment of the KA-SAT

2 European Commission, "Space: EU Initiates a Satellite-Based Connectivity System and Boosts Action on Management of Space Traffic for a More Digital and Resilient Europe," European Commission, February 15, 2022. https://ec.europa.eu/commission/presscorner/detail/en/IP_22_921.

3 Mykhailo Fedorov, (2022, May 2), X (Formerly Twitter), Retrieved June 26, 2024. https://x.com/FedorovMykhailo/status/1521115986711175168

4 Council of the European Union, "Council and European Parliament Agree on Boosting Secure Communications with a New Satellite System," Consilium, November 17, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/11/17/council-and-european-parliament-agree-on-boosting-secure-communications-with-a-new-satellite-system/

5 Viasat Inc, "KA-SAT Network Cyber Attack Overview," Viasat, March 30, 2022. https://news.viasat.com/blog/corporate/ka-sat-network-cyber-attack-overview.

network, which many Ukrainian official institutions used as a backup communication channel. The attack also affected the operations of 5,800 wind turbines in Central Europe serviced by Viasat.[6]

The IRIS² policy represented a comprehensive strategy by the EU aimed at developing space technologies and ensuring secure satellite communications. This initiative was integrated into the broader EU space policy and aimed to create a multi-orbital satellite communication system to enhance communication resilience and reliability. After the start of the war in Ukraine, the cybersecurity dimension was significantly strengthened.

The main goal of IRIS² was to ensure continuous access to secure and reliable satellite governmental communication services. The program also aimed to stimulate innovation in the European space industry by promoting advanced technologies. IRIS² was planned as a complement to the existing GOVSATCOM program, expanding the EU's capabilities in satellite communications.[7]

As of 2024, funding for the IRIS² project remains a key issue for the EU. The cost of the project was estimated at €6 billion in 2022, with almost half to be financed by the EU. The EU allocated €2.4 billion for the period from 2023 to 2027, with the remaining amount expected to come from the private sector through public-private partnerships.

The main participants in the project include the SpaceRise consortium, which includes companies such as SES, Eutelsat, Hispasat, Airbus Defence and Space, and Thales Alenia Space. This consortium was selected to manage the multi-tiered satellite constellation for 12 years. France has additionally allocated about €300 million as part of its France 2030 investment program,[8] and the European Space Agency is providing €380 million.[9]

One of the biggest challenges for the European satellite system is funding. EU global projects tend to increase significantly in cost during implementation. According to a report by Handelsblatt, several key problems have been identified. The expected cost of the project has risen from €6 billion to €12 billion. Moreover, the project has exacerbated long-standing disagreements between France and Germany regarding EU space policy. The project's financial model as a public-private partnership also poses difficulties, as large companies are not accustomed to investing their own funds in space projects as they usually work on government contracts. Germany is also dissatisfied that most of the main contractors are based in France or associated with it, and the constellation's operational center is planned to be located in Italy.[10]

Given the significant increase in the cost of the IRIS² project, reviewing its financial model becomes critical for its successful implementation. It is necessary to consider increasing public funding by attracting additional funds from the EU budget or individual member countries.

In parallel, it is crucial to resolve disagreements between key players, particularly France and Germany. The rivalry between them while their companies are in the same consortium and not directly competing with one another will harm the project's implementation.

REGIONAL COOPERATION BETWEEN THE EU AND ITS NEIGHBORS AND ACCESS TO IRIS2

In Ukraine the European Union and Eastern Partnership countries were able to see the consequences of the inability to have access to the internet in a critical situation.

According to Regulation (EU) 2023/588 of the European Parliament and of the Council of 15 March 2023 Establishing the Union Secure Connectivity Programme

6 Maria Sheahan, Christoph Steitz, and Andreas Rinke, "Satellite Outage Knocks Out Control of Enercon's Wind Turbines," Reuters, February 28, 2022. https://www.reuters.com/business/energy/satellite-outage-knocks-out-control-enercon-wind-turbines-2022-02-28/.

7 European Union, "Regulation (EU) 2023/588 of the European Parliament and of the Council of 15 March 2023 Establishing the Union Secure Connectivity Programme for the Period 2023-2027," EUR-Lex, March 17, 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2023.079.01.0001.01.ENG&toc=OJ%3AL%3A2023%3A079%3ATOC

8 "Bruno Le Maire et Sylvie Retailleau annoncent une contribution de la France en forte hausse lors du Conseil de l'Agence spatiale européenne au niveau ministériel, afin de renforcer l'autonomie de l'Europe dans le secteur spatial et d'assurer un meilleur suivi du changement climatique," French Ministry of Finance, November 23, 2022. https://presse.economie.gouv.fr/23102022-bruno-le-maire-et-sylvie-retailleau-annoncent-une-contribution-de-la-france-en-forte-hausse-lors-du-conseil-de-lagence-spatiale-europeenne-au-niveau-ministeriel-afin-de-renforcer-lautonomie/

9 "IRIS2: European Commission and European Space Agency signed a Contribution Agreement," Defence Industry and Space, September 21, 2023. https://defence-industry-space.ec.europa.eu/iris2-european-commission-and-european-space-agency-signed-contribution-agreement-2023-09-21_en

10 Eric Berger, "Europe's ambitious satellite Internet project appears to be running into trouble," Ars Technica," May 2, 2024 https://arstechnica.com/space/2024/05/europes-ambitious-satellite-internet-project-appears-to-be-running-into-trouble/

for the Period 2023–2027, "The Programme should improve secure connectivity over geographical areas of strategic interest, such as Africa and the Arctic as well as the Baltic, the Black Sea, Mediterranean regions and the Atlantic."[11] However, at present, the EU's plans for developing IRIS2 as a secure and reliable source of satellite internet access are focused on its member states.

Eastern Partnership countries closely cooperate with the EU, and their participation in implementing and utilizing IRIS2 would positively impact both sides. For a fruitful partnership, initial steps can be taken even before launching satellites into space.

The first of these steps is preparing technical possibilities for cooperation. This includes harmonizing the legislation and technical norms of Eastern Partnership countries with EU standards for the compatibility of systems and procedures necessary for IRIS2's effective functioning. This is especially relevant to the cybersecurity dimension at the level of physical equipment and software. Adopting all necessary protocols and procuring required equipment may take considerable time, so dialogue on this should begin as soon as possible.

The second step is adopting a long-term strategy for developing the digital sector. As the EU emphasizes in its cybersecurity strategy increasing the share of European components in EU countries' internet equipment, retrofitting internet networks in Eastern Partnership countries would also align with the EU's long-term interests for deepening cooperation. Retrofitting is a long and expensive process. To illustrate the cost of such a transition, Germany serves as an example. As of December 2022, the share of Chinese 5G equipment in the country's internet network was 59 percent. The government aims to reduce this share to 25 percent by the end of 2026, but representatives of telecommunications companies call this timeline unrealistic.[12] Upgrading internet networks may take a considerable period, so it should be included in the long-term development strategies of Eastern Partnership countries.

Incorporating Eastern Partnership countries into the IRIS2 project could significantly enhance the EU's strategic position and digital resilience in the region. By extending secure satellite internet access beyond its borders, the EU could strengthen its geopolitical influence, support democratic processes, and improve crisis-response capabilities in neighboring countries.

RECOMMENDATIONS

- Accelerate the implementation of the IRIS² project and consider including Eastern Partnership countries in it. This will enhance communication security in the region and deepen cooperation between the EU and its eastern neighbors.
- Review the financial model of the IRIS² project due to its significant cost increase. Consider increasing public funding and attracting additional funds from the EU budget or the member states.
- Resolve disagreements between key participating countries, particularly France and Germany, regarding the allocation of resources and the placement of key IRIS² infrastructure elements.
- Initiate the process of harmonizing the legislation and technical standards of Eastern Partnership countries with EU standards, especially in the field of cybersecurity. This is necessary to ensure system compatibility and the effective functioning of IRIS².
- Develop long-term strategies for the development of the digital sector in Eastern Partnership countries, including plans for gradual retrofitting of internet networks in accordance with EU standards and increasing the share of European components.
- Strengthen cooperation in cybersecurity between the EU and Eastern Partnership countries, including the exchange of experience and technologies to counter cyberattacks on critical infrastructure.

11 European Union, "Regulation (EU) 2023/588 of the European Parliament and of the Council of 15 March 2023 Establishing the Union Secure Connectivity Programme for the Period 2023-2027," EUR-Lex, March 17, 2023. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv%3AOJ.L_.2023.079.01.0001.01.ENG&toc=OJ%3AL%3A2023%3A079%3ATOC

12 Sarah Marsh, Andreas Rinke, and Hakan Ersen, "German Interior Ministry Wants to Force 5G Operators to Slash Huawei Use – Official," Reuters, September 19, 2023. https://www.reuters.com/business/media-telecom/german-interior-ministry-wants-force-5g-operators-slash-huawei-use-official-2023-09-19/

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DGAP receives funding from the German Federal Foreign Office based on a resolution of the German Bundestag.

Publisher
Deutsche Gesellschaft für Auswärtige Politik e.V.

ISSN 2198-5936

Editing Bettina Vestring

Layout Marie Bauer

Design Concept WeDo

Author picture(s) © DGAP