



MARCH 2025

## The Caspian Sea Region: a renewable hub for European energy security?



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### Spotlight on the Caspian Sea region

In recent years, Europe has turned its attention to the Caspian Sea as a key region to diversify away from Russian energy supplies and strengthen European energy security. The Caspian Sea is the world's largest inland water body which lies at the crossroads between Europe and Asia, bordering on Azerbaijan, Kazakhstan, Turkmenistan, Russia and Iran. With its abundant energy sources, European stakeholders are intensifying their relations with some of the littoral countries.

Immediately after the full-scale invasion of Ukraine, the EU secured an agreement with [Azerbaijan](#) to double natural gas supplies to 20 bcm annually by 2027, fulfilling around 6% of the EU's annual gas consumption. Moreover, some EU member states like Germany and Italy have increased imports of [Kazakhstan](#)'s oil to cover for short-term demand.

Beyond traditional fossil fuels, the Caspian Sea region is positioning itself as a key producer and

Figure 1 The Caspian Sea region



Source: [World Atlas](#)

transport hub of renewable energy (RE), green hydrogen and critical raw materials (CRM) in the long run. The proposed [Caspian Green Energy Corridor](#) – initially planned between Georgia and the EU – opens up opportunities for Kazakhstan, Azerbaijan, and Uzbekistan to supply renewable electricity to the European market via two cables in the Caspian Sea and the Black Sea – which are yet to be built.

However, the position of the Caspian Sea does not always allow countries to bypass Russia’s grip, posing a challenge to European energy security. This alert maps the geopolitical dynamics underpinning Caspian Sea energy relations and cooperation with Europe, highlighting the position of each littoral country. Can Europe navigate these dynamics and shape a role for the Caspian Sea region in its energy procurement?

### Energy cooperation amidst geopolitical tensions

The geography of the Caspian Sea countries offers promising opportunities to generate renewable energy, especially solar and wind. According to the [World Bank](#), the Caspian Sea has enormous technical potential for offshore

wind, estimated at 845 GW of installed power capacity. [Azerbaijan](#) alone has a potential of 157 GW, corresponding to over 20 times the country’s current installed energy capacity. Moreover, the Caspian Sea’s geographical location makes it a key transit region for energy exports from Central Asia to Europe. Yet, the five littoral countries – Azerbaijan, Kazakhstan, Turkmenistan, Russia and Iran – have very different ambitions in the energy domain, thereby affecting European interests.

### Azerbaijan’s green energy ambitions

On top of the export of oil and natural gas via the Southern Gas Corridor, Azerbaijan has set the ambition to supply the EU with green energy by 2030. A strategic agreement signed by Hungary, Romania, Georgia and Azerbaijan intends to construct the [Black Sea Submarine Cable \(BSSC\)](#), expected for 2029 (Figure 2). The planned 1,200-kilometre cable would allow Azerbaijan to transport electricity generated from offshore wind in the Caspian Sea to Europe. The cable is part of an EU [Global Gateway’s](#) Team Europe Initiative, which aims to attract investments to cover the estimated cost of €2.3 billion.

A [feasibility study](#) confirmed the viability of the project, as well as positive net economic benefits for the BSSC countries. Yet, ongoing attacks between Russia and Ukraine pose sabotage risks to the proposed cable which would be positioned south of Crimea. Other risks include cyber security as the Georgian grid is connected to Russia. For the Caspian Sea, cable safety could also be an issue, as Russia and Iran could easily cut or damage the proposed cable between Kazakhstan and Azerbaijan.

### Kazakhstan’s export diversification

With its abundant oil reserves, Kazakhstan is Europe’s third largest oil supplier. But as the EU moves towards Net Zero by 2050, it will gradually [reduce fossil fuel demand](#). Astana recognizes the need to diversify its oil-dominated economic model, with the ambition to become

Figure 2 The planned Black Sea Submarine Cable



Source: [Georgian Foundation for Strategic and International Studies](#)

a large-scale exporter of renewable energy and CRM by 2030.

The EU and its member states are already exploring options to import green hydrogen from Kazakhstan, as agreed in the [Memorandum of Understanding](#) (MoU) of November 2022. The German-Swedish company Svevind, for instance, is planning to build the world’s largest [green hydrogen](#) plant in the Mangystau region, which would allow Kazakhstan to become a key hydrogen supplier to Europe.

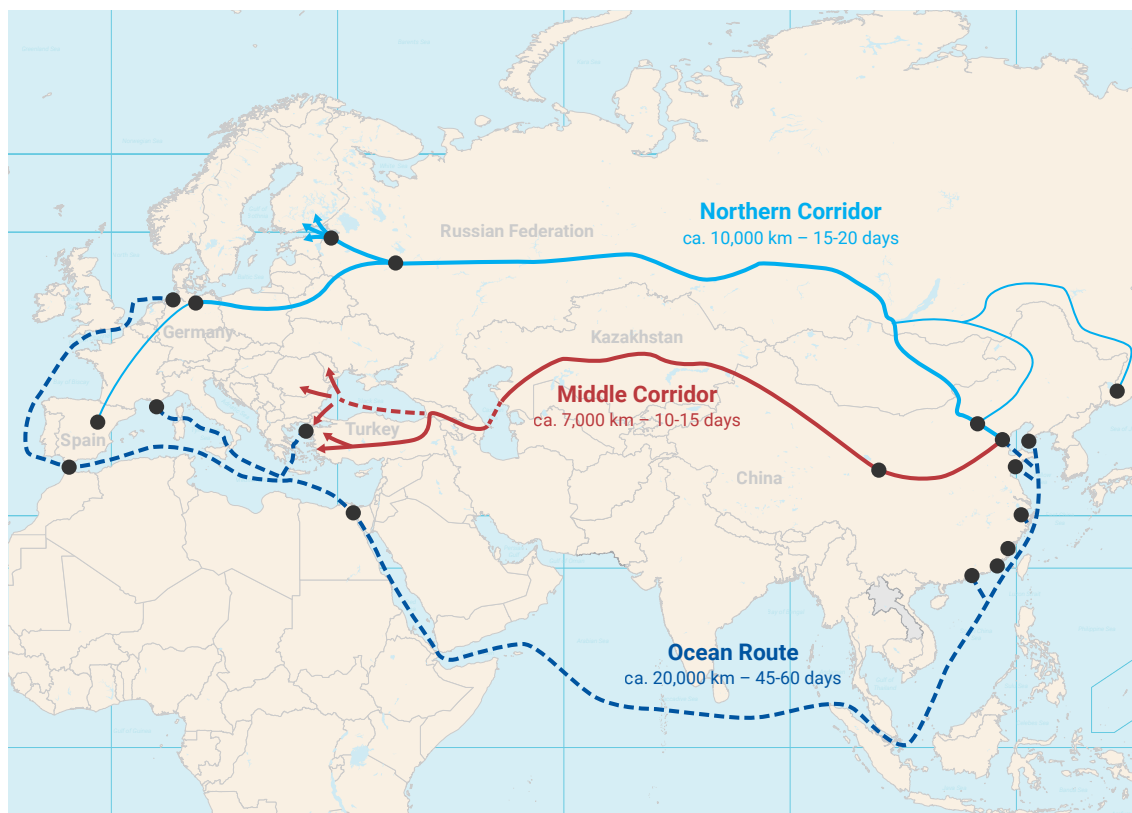
However, export corridors for hydrogen do not look promising. Bypassing Russia by building a pipeline, or a pipeline and shipping system, along the [Middle Corridor](#) (Figure 3) will be difficult. While there are political difficulties, investors also remain [concerned](#) about the high financial cost of the infrastructure and its long-

term feasibility. Declining water levels will make shipping more difficult and costly. Also, Russia and Iran are likely to block any proposal for a pipeline, relying on the 2018 [Convention on the Legal Status of the Caspian Sea](#).

### The gas lock-in of Turkmenistan

Turkmenistan’s energy interests still revolve around the export of natural gas, with no intention to step up renewable energy production and no concrete deals with European countries. Since the 1990s, there have been proposals to build the [Trans-Caspian Gas Pipeline](#), connecting Turkmenistan and Azerbaijan. This underwater pipeline would transport vast natural gas resources from Turkmenistan to Europe via the Southern Gas Corridor, circumventing Russia and Iran.

Figure 3 The Middle Corridor



Source: SWP, 2022

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However, little progress has been made due to geopolitical obstacles. Two neighbouring countries along the Caspian Sea, Russia and Iran, are important transit countries for Turkmen gas, with vested interests in controlling export routes. As such, they have repeatedly [vetoed](#) the pipeline’s proposal on “environmental grounds”, pointing to the impact on the fragile Caspian ecosystem.

More recently, the Trans-Caspian Gas Pipeline has received a [new impetus](#) due to the EU’s efforts to phase out Russian gas imports, as well as Turkmenistan’s interest in diversifying export routes and Türkiye’s ambition to become a gas hub for Europe. Nonetheless, securing investments for a new fossil gas pipeline is difficult given the EU’s plan to reduce fossil fuel imports in the long term.

### Russia’s grip on the region

Russia’s systemic presence in the Caspian Sea region comes from Soviet historic connections as well as control over security, economic dependencies and regional institutions. An example is the [Commonwealth of Independent States \(CIS\)](#), a post-Soviet intergovernmental organization in which all littoral countries – except for Iran – are members. Moreover, cross-Caspian export routes for oil and gas are almost completely [monopolized](#) by Russia. Moscow controls [94%](#) of Kazakhstan’s oil exports to Europe via the CPC pipeline whereas Gazprom pipelines operate the westward export of Caspian natural gas.

Moscow is [disturbed](#) by the increased energy cooperation between the EU and Caspian Sea countries as it could potentially strengthen their political-security cooperation and diminish

Russia's authority. In particular, concerns revolve around the growing national determination of Kazakhstan, Azerbaijan, and Turkmenistan which are looking to boost their exports to Europe and to bypass Russian-dominated routes.

To limit cooperation with the EU, Russia is seeking to isolate the countries in question by promoting its own [platforms](#) for intraregional dialogue and cooperation, such as the Caspian Economic Forum and the 'Caspian Five'. Moreover, Russia is exerting pressure to prioritize infrastructure along the International North-South Transport Corridor over the Middle Corridor. An example is Moscow's political and financial support for the [TAPI](#) – a gas pipeline construction project between Turkmenistan, Afghanistan, Pakistan, and India – that could prevent Ashgabat from turning its attention to the West.

### Iran's alignment with Russia

Iran is another key player which is pursuing its own fossil energy interests in the Caspian Sea region by getting closer to Russia. Hit by years of Western sanctions, Tehran has decided to join forces with Moscow to build a [North-South pipeline](#) across the Caspian Sea and import cheap gas from Russia to ramp up its own oil and gas production. This pipeline would position Iran as a [regional gas hub](#) by re-exporting the Russian gas to Pakistan, Turkey, and Iraq. Moreover, the pipeline's planned capacity would be equivalent to that of four Nord Stream 1 and 2, offering Russia an alternative to the market lost in Europe, which Moscow is eager to replace.

The new Russian-Iranian [strategic partnership](#), signed in January 2025, poses a challenge to European energy interests in the Caspian Sea region. If the North-South pipeline does materialize, the ambitions of the other countries to build East-West interconnectors could be undermined.

### Navigating the geopolitics of the Caspian Sea region

While the Caspian Sea region offers abundant potential to generate renewable energy, crossing the sea to export green hydrogen and electricity to Europe seems to be hard to achieve in the current geopolitical context. Azerbaijan, on the East side of the Caspian Sea, is geographically best placed to supply the EU with renewable energy. If the Black Sea Cable project is successful, Azerbaijan together with Georgia could play a greater role in the future of EU energy security. However, that will largely depend on the security and political developments in Ukraine and Georgia.

For Kazakhstan, bypassing Russia in the Caspian Sea will be more difficult. Still, investing in renewable energy capacity in countries like Kazakhstan and Uzbekistan would benefit EU interests by strengthening its geopolitical position in the region. [Central Asian countries](#) are looking at RE investments to meet their rapidly growing energy demand and diversify away from Russian fossil fuels. Moreover, they are placing themselves as key producers of CRM, opening up opportunities for European companies to invest in green extraction and processing in order to reduce dependency on China.






The success of green energy projects hinges on the capacity of the EU to deepen regional cooperation and attract foreign investments. The EU should act more geopolitically by increasing its cooperation with Caspian Sea and Central Asian countries with tangible projects such as with bilateral Team Europe Initiatives on green energy and CRM. Additionally, providing guarantees for European investors in green infrastructure is needed to attract the private sector. If Europe waits too long, it risks lagging behind China and the Gulf States, which are already capitalizing on the Caspian RE potential.

Finally, while some Caspian Sea countries wish to expand fossil fuel production for exports, the shrinking gas demand in Europe makes new investments in fossil fuels at risk of becoming stranded assets. Countries should therefore prioritise renewable energy investments, whose demand will increase in the run up to Net Zero by 2050.

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[info@clingendael.org](mailto:info@clingendael.org)  
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### About the author

**Giulia Cretti** is a Research Associate at the EU & Global Affairs Unit of the Clingendael Institute. Her work revolves around EU energy diplomacy and energy security.