

# THE EMERGING POTENTIAL OF LNG & HYDROGEN IN CENTRAL & EASTERN EUROPE

## Overview of the LNG & hydrogen markets in CEE





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Central and Eastern European countries are increasingly looking to liquified natural gas (LNG) as they aim to ensure energy and supply security in the wake of Europe's energy crisis and the fallout from Russia's invasion of Ukraine. LNG exports to Europe reached an all-time high in 2022, with the European bloc now considering LNG a strategic priority.

Coastal countries in CEE are all determined to increase their terminal and storage capacities, in addition to developing other infrastructure projects. Poland is currently building its second major LNG terminal and aims to enhance regional interconnectivity; Romania is gearing up for its first major LNG investment project with Azerbaijan, while Bulgaria is looking to Turkey's LNG network. Croatia, another crucial LNG market, is preparing to double its LNG capacity in a move that will likely benefit landlocked regional countries, including Hungary. Post-war, Ukraine could also see its first major LNG project play a key role in the country's recovery.

In addition to LNG, European interest in hydrogen technology is also rapidly growing. While hydrogen accounts for only 2% of European energy consumption, the EU is determined to increase its role, with CEE countries, including Poland, the Czech Republic and Slovakia, all aiming to be a major part of the region's hydrogen infrastructure. Below, Aretera provides an introduction into the importance of LNG and hydrogen in Central and Eastern Europe.

### This memo will cover:

-  an introduction into the role of LNG in Europe,
-  Central and Eastern Europe's growing interest in LNG,
-  notable regional and international LNG investments across the region,
-  a brief introduction into the role of hydrogen in Europe and CEE.

**Aretera** was proud to support the 2023 editions of the Budapest LNG Summit and the Budapest Hydrogen Summit, where industry leaders, business executives and government representatives gathered on 3-4<sup>th</sup> April to discuss the future of these crucial industries. To learn more about the two landmark conferences that bring together industry leaders across CEE and Europe, click [here](#) and [here](#).

## IN SEARCH OF ALTERNATIVES

Combined with Russia's war against Ukraine, the Kremlin's move to weaponize energy and Europe's resulting energy crisis have forced Europe to rethink its practices, plans and strategies to ensure energy security. Several European countries, particularly those in CEE, which have been heavily reliant on Moscow, have started looking for ways to ensure stable supplies as the European Union looks to phase out Russian fossil fuels from its energy mix.

In recent years, several alternatives have been considered. In the CEE region, these include expanded nuclear energy production, alternative sources of natural gas and oil, increasing the share of different renewable energy resources, turning back to using more fossil fuels (as in the case of coal energy in Poland), and shoring up supplies of liquified natural gas (LNG) as the Kremlin halted gas supplies for several regional economies.

Over the past decade, but especially since 2021 when the Russian-fuelled energy crisis started, LNG has played a key role in Europe's energy transformation. [Recent data](#) shows that European countries imported more than 121 million tonnes of LNG in 2022, an all-time high increase that is 60% more than during the previous year. This skyrocketing increase is now equal to an import capacity sufficient to meet 40% of the EU's total current gas demand (an annual 157 million cubic metres in regasified form). Paradoxically, however, Russian LNG exports to Europe also increased, even as the EU is aiming to decrease its overall dependence on Russia.

## TOP EXPORTERS TO EUROPE & TOP EU IMPORTERS IN 2022

Exporter	Capacity (mt)	Importer	Capacity (mt)
US	38.86	France	24.9
Russia	15.12	Spain	21.16
Qatar	13.45	Netherlands	12
Africa	19.72	Italy	10.43
Norway	2.29	Belgium	9.9
Latin America	2.78	Poland	4.45
Asia	1	Greece	160,000
Australia	0.1	Lithuania	160,000

\*80% of African exports came from Algeria, Egypt and Nigeria. Latin American LNG supplies are primarily from Trinidad & Tobago, while Asian exporters include Oman, the UAE, China and South Korea. (Source: IEA)

## LNG IN CENTRAL & EASTERN EUROPE

In the European Union, increasing LNG supplies and developing the corresponding continental infrastructure is a Project of Common Interest (PCI); a strategic instrument for the implementation of the bloc's common industrial strategy. Similarly to EU institutions, CEE governments are also heavily investing in new LNG import capabilities, particularly in import and storage terminals, as well as regasification units and interconnectors to supply landlocked countries within the region.

According to the International Energy Agency (IEA), CEE's regasification capacity could double to over 50 bcm a year by the end of 2023 and could reach 100 bcm a year by 2026, if all current regional projects are completed. This is equal to the region's total imports of Russian gas in 2021.

## RECENT REGIONAL INVESTMENTS

Coastal countries in CEE are all investing in LNG infrastructure development. Poland, which remains the region's largest LNG importer, plans to increase the capacity of its Śwonoujście LNG terminal from 6.3 to 8 billion cubic metres (bcm) and to invest in a new floating unit (used for production storage and offloading) with a capacity of 5 bcm.

Warsaw was looking to phase out Russian gas well before the energy crisis and Russia's invasion of Ukraine. Together with the Baltic Pipe natural gas pipeline, which delivers Norwegian natural gas to Poland, LNG supplies and infrastructure development have now become even more vital for the country's energy security and a new LNG terminal at Gdansk should be operational by 2025.

Similarly to Poland, Lithuania – largely due to its pressing dependence on Russian gas and the lack of domestic energy production – started investing in LNG well before its regional peers, leading to the inauguration of the Klaipėda terminal in 2014. The country is the second biggest regional importer and Klaipėda remains a regional energy hub of high significance. Vilnius started exporting LNG to Warsaw in 2022, while neighbouring Latvia also receives a considerable share (1.1 bcm in 2022).

In addition to terminal and storage development, increasing regional interconnectivity also remains a key priority. Poland is also aiming to enhance already existing interconnectors with Lithuania, the Slovak Republic, the Czech Republic and Germany. The new Poland-Slovakia gas interconnector came online this month. Estonia and Finland are each investing in new floating units and imports from both of those units can supply the regional gas market through the Baltic Connector.

## GROWING REGIONAL INTEREST

Elsewhere in the region, Romania is also eyeing its first major LNG project. Last October, Bucharest expressed interest in working with Azerbaijani state energy giant SOCAR to develop a joint LNG project which would include an LNG plant, a regasification plant and other facilities to import LNG from the Caspian Sea. This came after Bulgaria and Romania – together with Hungary and Slovakia, two landlocked regional economies – proposed to start or increase gas supplies from Azerbaijan.

While Romania produces around 90% of its required gas locally through the Black Sea, neighbouring Bulgaria has been dependent on energy imports for decades, primarily from Russia, which cut off deliveries in April 2022. In a move to reduce this dependence, Bulgaria signed an agreement with Turkey for a long-term gas deal which gives Sofia access to Turkey's gas network and LNG terminals. The recent inauguration of the Greece-Bulgaria interconnector pipeline (ICGB), which became operational last October, also provides Bulgaria with access to the Trans Adriatic Pipeline (TAP), a section of the Southern Gas Corridor which supplies Azerbaijani gas to Europe.

Croatia's LNG terminal at Krk was in the works for several years and finally became operational in 2021. In mid-2022, Zagreb decided to more than double the terminal's capacity to 6.9 bcm by the end of 2023. Supported by the EU, this €180 million-worth investment has the potential to position Croatia a crucial player on the European energy map. In spite of concerns about the current lack of network capacity, this investment can also be highly beneficial to landlocked countries such as neighbouring Hungary, which received its first ever LNG supplies from Krk last August.

Ukraine is also looking to LNG to ensure its post-war energy future. Despite Russia's war, Kyiv has been able to meet close to 70% of its gas demands through domestic production, while the remainder was covered by imports, primarily from Poland, Slovakia and Hungary (Ukraine stopped importing Russian gas in 2015 in response to the annexation of Crimea and the war in Eastern Ukraine). Talks about a potential LNG terminal at Odesa date back to the 2010s, however the Ukrainian government [is now expressing growing interest](#) in realizing this long-awaited project, most likely as part of the country's anticipated recovery and reconstruction.

## LNG INFRASTRUCTURE IN CEE & SEE

Country	Terminal	Capacity (bcm)	Storage (m3)	Start-up Year
Croatia	Krk	2.9	140,000	2021
Greece	Alexandroupolis	5.5	153,500	2023
Greece	Argo FSRU	5.2	170,000	2024
Greece	Dioriga FSRU	2.5	-	2023
Greece	Revithoussa	7	225,000	1999
Estonia	Inkoo	-	151,000	TBD
Estonia	Paldiski	2.5	160,000	2025
Estonia	Tallinn	4	160,000	TBD
Latvia	Riga	-	40,000	TBD
Latvia	Skulte	1.5	-	2023
Lithuania	Klaipėda FSRU	4	170,000	2014
Poland	Gdańsk	6.1	170,000	2025
Poland	Świnoujście	6.2	320,000	2016

\*Croatia is looking to more than double the capacity of the Krk terminal to 6.9 bcm. (Source: European Commission)

## HYDROGEN BOOM?

In addition to increasing energy supplies through LNG, as well as nuclear, renewable and other sources, Europe is increasingly looking to hydrogen technology. Climate goals have generated increasing momentum for hydrogen, a sector that now enjoys rapidly growing worldwide attention, including in the EU, as well as the CEE region. In 2022, hydrogen accounted for less than 2% of Europe's energy consumption and was primarily used to produce chemical products, such as plastics and fertilizers. Since 96% of this hydrogen was produced with natural gas, this resulted in significant amounts of CO<sub>2</sub> emissions. The EU now hopes to produce 10 million tonnes (mt) of renewable hydrogen by 2030 and import 10 million tonnes by 2030.

The EU started focusing on hydrogen in 2020 as a result of the COVID-19 crisis and the European Commission's push has subsequently been accelerated by the energy crisis. Most significantly, in September 2022, the Commission announced the "European Hydrogen Bank", a €3 billion investment initiative to help member states guarantee hydrogen purchases.

This comes after the Commission approved €13 billion in state aid proposals for plants in several European countries, including Romania (worth €194 million).

## **HYDROGEN IN THE EU & CEE**

In February, the Commission presented draft legislation setting out the rules for renewable hydrogen production. Focusing on hydrogen produced through renewable means (green hydrogen), the EU's top executive body is widely expected to commit further financial support to developing the bloc's hydrogen potential. At present, the global hydrogen market [is led](#) by China, followed by the US and the Middle East. The EU is fourth, with production costs for electrolyzer systems four times higher in Europe than in China.

Central Europe is also looking to benefit from the vast interest in hydrogen. A recent example of this interest is the Central European Hydrogen Corridor (CEHC). The CEHC initiative was launched in 2021 by four gas infrastructure companies (OGE, NET4GAS, eustream, Gas TSO of Ukraine) to develop a hydrogen pipeline corridor in Central Europe for transporting hydrogen from major hydrogen supply areas in Ukraine via Slovakia and the Czech Republic to hydrogen demand areas in Germany. The corridor will also enable the transport of hydrogen between hydrogen production facilities and consumers in the Czech Republic and Slovakia. The project is estimated to be worth €1-1.5 billion and is currently in its very early stages (at the pre-feasibility study).

In addition to the Czech Republic, Slovakia and Ukraine, Poland is also demonstrating strong interest. Polish energy giant PKN Orlen has recently signed an agreement to build refuelling stations in Poland, similar to those it recently built in the Czech Republic, used for passenger cars. Furthermore, a number of international companies are investing in deploying hydrogen in the transport and mobility sectors across the region.

## **LOOKING AHEAD**

Despite the ongoing debates over the sustainability of the different hydrogen-producing technologies and the alleged overflow of liquified natural gas in Europe, both LNG and hydrogen are expected to be prioritized by the EU, as well as by CEE governments, with new regulations to come at the EU level. The countries of the region have been among the most impacted by the energy crisis, with investments into sustainable and long-term energy solutions and imports likely to remain a priority for the region and the European bloc. The skyrocketing growth of LNG's European significance and the EU's ambitious goal to transform the bloc into a global player on the hydrogen market are widely expected to drive a large volume of international investments to the CEE region.

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