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The Neptun Deep Project and the Changing Architecture of the Natural Gas Market in South-Eastern Europe

Neptun Deep is one of the most important energy projects currently under development in the European part of the Black Sea. Its launch, planned for 2027, could significantly alter Romania's position in the natural gas market. The project, implemented by OMV Petrom and Romgaz, is expected to increase domestic production, strengthen Romania's energy security, and create new export opportunities in South-Eastern Europe. The significance of the investment, therefore, extends beyond the local dimension and may influence the balance of power in the regional natural gas market.

Significance of the project. The most important effect of the launch of the Neptun Deep project will be a substantial increase in natural gas production in Romania, which is expected to begin in 2027. Peak production is projected to reach approximately 8 bcm per year. The recoverable volume of natural gas over the lifetime of the project is estimated at around 100 bcm, making Neptun Deep one of the largest undeveloped natural gas fields in Europe. On this scale, Romania could significantly increase its domestic supply of the resource and become the largest natural gas producer among all European Union member countries ("IEŚ Commentaries", no 1164).

OMV Petrom and Romgaz are expected to jointly invest up to 4 billion EUR in the development phase of Neptun Deep. The investment decision was made in June 2023. This means that, more than a decade after the discovery of the field in 2012, the project has entered the implementation phase. An important confirmation of this shift was the drilling, in March 2025, of the first production well in the Pelican South field. The development concept provides for a total of ten production wells: four in Pelican South and six in Domino. Drilling operations are planned to be completed by the fourth quarter of 2026. This is important for Romania because additional natural gas production may improve the country's energy balance, reduce the need for imports, and increase budgetary and investment revenues related to the extraction of energy resources.

The project's importance for Romania also stems from the fact that the state has exercised its pre-emption right over part of future production (approximately 5 bcm of natural gas over a seven-year period from 2028, or an average of around 700 mcm per year). This is not a dominant volume compared with the planned peak production level of 8 bcm per year, but it is politically and strategically significant. It shows that the Romanian authorities regard Neptun Deep as an instrument for strengthening security of supply, rather than merely as a commercial project implemented by energy companies.

Regional context. The Neptun Deep project may also increase Romania's importance as a natural gas supplier to neighbouring countries. OMV Petrom has stated that, as the start of production approaches, it is actively analysing opportunities to sell the resource both on the Romanian market and across the region. A practical confirmation of this direction is the three-year agreement signed in May 2025 with Moldova's Energocom for the purchase of natural gas from Neptun Deep. Supplies are to be delivered through a virtual trading point in Romania, ensuring a stable flow of gas to Moldova.

The project's regional significance should be assessed primarily through the lens of supply diversification for the countries of South-Eastern Europe. Following the 2022 energy crisis, countries in the region have intensified their search for alternative sources of natural gas to replace Russian supplies. The importance of alternative routes increased further after the termination, on 1 January 2025, of Russian natural gas transit through Ukraine ("IEŚ Commentaries", no 1274). In this context, the Trans-Balkan pipeline may play a particularly important role.

Its use in the south-north direction would enable natural gas supplies from Greece, Bulgaria, and Romania to Moldova and Ukraine. The European Commission has pointed to the need to accelerate work on establishing reverse-flow capability on the pipeline (reversing the direction of gas transmission), stressing that this functionality is crucial for diversifying supplies in the region and reducing imports from Russia.

The potential of the Trans-Balkan pipeline is expected to increase from 2027, coinciding with the planned start of production under the Neptun Deep project. The importance of this infrastructure is also confirmed by an analysis published in 2025 by the Energy Community Secretariat concerning the enhancement of the commercial attractiveness of the Trans-Balkan system in reverse-flow mode. The analysis indicated that the Greece-Bulgaria-Romania-Moldova-Ukraine corridor could be used to transport LNG from terminals in Greece, natural gas from the Caspian Sea region, and volumes available in regional hubs to Central and Eastern Europe. This means that the project may not only increase domestic supply in Romania but also improve the utilisation of existing transmission infrastructure in the region. For countries such as Moldova and Bulgaria, as well as for states relying on supplies through southern natural gas corridors, Romanian gas from the Neptun Deep project could constitute an additional element of energy security. It does not have to fully replace other sources, but it may increase purchasing flexibility and reduce the risk of political pressure linked to gas supplies.

Neptun Deep may increase the liquidity of the regional market, as it creates an additional source of supply connected to Romania's existing transmission network. In practice, this means the possibility of developing contracts not only with domestic consumers, but also with partners in neighbouring countries. The example of the agreement with Energocom shows that natural gas from the project can be used to strengthen regional trade links even before production begins.

Risks and limitations. Despite its considerable potential, Neptun Deep is a project exposed to several significant risks. The first concerns its history of delays. The field was discovered in 2012, yet for more than a decade the project did not enter the production phase. Progress was slowed by regulatory uncertainty and by a change in the ownership structure following ExxonMobil's withdrawal, with Romgaz replacing it in 2022. Only the final investment decision (FID) taken in June 2023 made it possible to launch the development phase. This means that the planned start of production in 2027 will be a key test of the ability of both investors and the administration to efficiently implement a large-scale project of this kind in the Black Sea.

A second limitation concerns the commercialisation of future production. With planned peak output of approximately 8 bcm per year, it will be crucial to contract volumes in a way that reconciles the needs of the Romanian market, the interests of the state, and potential regional exports. OMV Petrom emphasises that it is actively analysing marketing opportunities, but it does not disclose details of its strategy due to competition law and commercial confidentiality.

Further grounds for caution are provided by the results of OMV Petrom's exploration activity in the Bulgarian part of the Black Sea. In the Han Asparuh block, exploration results to date have not confirmed the presence of commercially significant natural gas deposits. Neither the Vinekh well nor Krum-1 produced the expected results. Earlier, when the block was being developed by Total, OMV Petrom, and Repsol, three exploration wells were drilled, but they also failed to lead to commercial development. Despite the region's substantial geological potential, exploration risk remains high.

Nevertheless, OMV Petrom continues to develop its exploration portfolio in the region. In the Han Asparuh block, OMV Petrom is the main operator with a 45% stake. Israel's NewMed Energy holds the same share, while Bulgaria's BEH owns 10%. At the same time, the company has entered the neighbouring Han Tervel block, acquiring a 25% stake alongside Shell, the operator with 42%, and Turkey's TPAO with 33%. The company regards the Black Sea as a strategic area for development, but the results in Bulgaria serve as a reminder that the success of Neptun Deep does not automatically translate into further discoveries.

Conclusions

- Neptun Deep could become a breakthrough project for Romania and one of the more important sources of natural gas in South-Eastern Europe. Its launch would increase Romanian production, improve security of supply, and strengthen Romania's position as a regional energy player. The use of Romanian gas to diversify supplies to Moldova and to countries relying on the infrastructure of the Trans-Balkan pipeline could be of particular importance.
- At the same time, the scale of the project's impact will depend on several conditions: the timely start of production in 2027, the efficient use of transmission infrastructure, the effective commercialisation of natural gas, and a stable regulatory environment. Neptun Deep strengthens Romania's prospects in the natural gas market, but its actual regional significance will only be possible to assess once production has begun and the directions of natural gas sales have been established.
- The significance of Neptun Deep should be distinguished from OMV Petrom's broader exploration ambitions in the Black Sea basin. The Romanian project is already at an advanced stage of implementation and has a defined launch schedule, whereas activity in the Bulgarian Han Asparuh and Han Tervel blocks is subject to greater geological uncertainty. Neptun Deep can, therefore, realistically strengthen Romania's position, but it does not yet signify a lasting breakthrough across the entire Black Sea region.