

## THE NEPTUN DEEP PROJECT AND THE REDESIGN OF THE REGIONAL ENERGY SECURITY

<b>Abstract:</b>	<p><i>In the context of the changes in the architecture of the global security of energy resources supply and the volatile changes in the natural gas market, the offshore sector of the Black Sea experienced a redesign regarding energy security. In the last ten years, the use of natural gas has increased a lot, in this sense the development of the Neptun Deep project has become a necessary variable for the consolidation of the energy security of Romania and the South-Eastern Europe region.</i></p> <p><i>By exploiting the potential of hydrocarbons in the Black Sea, Romania can become a regional provider of energy security. Also, in the context of the military developments between Russia and Ukraine that have led to major effects on global energy security, causing regional redefinitions in the direction of natural gas supply chains, Romania, through the development of the offshore sector in the Black Sea, can contribute to the redesign of regional energy security.</i></p> <p><i>Considering the significant potential of natural gas reserves that could become commercial exploitations, large-scale investments will be carried out within this project in the coming years. For this reason, a closer examination and analysis is required not only of natural gas as a resource but also of the economic consolidation and the potential for industrial rise that these investments would bring to Romania as a whole.</i></p>
<b>Keywords:</b>	<b>Energy security; Neptun Deep; offshore; natural gas; Black Sea</b>
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### Introduction

In the context of the changes in the architecture of the global security of energy resources supply and the volatile changes in the natural gas market<sup>643</sup>, the offshore sector of the Black Sea experienced a redesign regarding energy security. In the last ten years, the use of natural gas has increased a lot, in this sense the development of the Neptun Deep project has become a necessary variable for the consolidation of the energy security of Romania and the Southeast Europe region<sup>644</sup>.

### The Evolution of Romania's Offshore Sector

Romania has a historical experience of producing crude oil and gas in the Black Sea. The projects related to offshore oil activities started from 1967-1969. Their goal was to increase national production by accessing the exploitation potential of the Black Sea continental plateau. As a result, in 1976 the first maritime oil platform was installed, which led to the first oil production in the Black Sea in 1987 (Lebăda Est oil field). Following the example and the history of the Lebăda Est field, more than 100 exploratory drilling followed, which led to the discovery of oil and gas fields such as Sinoe (1988), Portița (1990), Doina (1995), Cobălcescu (1997), Pescăruș (1999)<sup>645</sup>. Between 1988 and 2001, 6 production platforms were built for exploitation, located

<sup>643</sup> Thijs Van de Graaf, Benjamin Sovacool, *Global Energy Politics*, Polity Press, Chichester, 2020, p. 15

<sup>644</sup> Benjamin Sovacool, *Energy Security: Vol. 4*, SAGE Publications, London, 2013, p. 344

<sup>645</sup> Nicolae Anastasiu, *Hidrocarburile din Marea Neagră: între provocări și riscuri*, "Academica", Academia Română, București, No. 9, Septembrie, 2016, pp. 30-31

on the continental shelf of the Black Sea, at a water depth of up to 150 meters. The constructed platforms follow an alignment approximately 80 – 100 km offshore. Currently, OMV Petrom exploits the structures of the Pescăruș, Lebăda Est, Lebăda Vest, Sinoe, and Delta fields, located under shallow waters and from which a production of approximately 31,000 bep<sup>646</sup>/day is obtained<sup>647</sup>.

After the decision at The Hague in February 2009, regarding the delimitation of maritime perimeters in the Black Sea between Romania and Ukraine, resulting in Romania winning the case<sup>648</sup>, the National Agency for Mineral Resources put up for auction the concession of 11 offshore perimeters with a total area of 11,000 km<sup>2</sup>, five of the perimeters put up for auction were from the area won by Romania following the delimitation of the maritime perimeter<sup>649</sup>. Out of the 11 perimeters, because of the auction, only five were awarded. They were taken over by the following companies:

- Rapsodia and Trident perimeter: Lukoil Overseas&Vanco International;
- Muridava and Cobălcescu perimeter: Melrose Resources & Petromar Resources;
- Luceafărul perimeter: Petro Ventures BV.

The summer of 2009 marked another extremely important moment in the development of Romania's offshore sector in the Black Sea. The OMV Petrom company started, in partnership with the local subsidiary of the American group ExxonMobil, the exploration campaign to evaluate the potential of hydrocarbons in deep waters, in the Neptun Deep perimeter of the Black Sea. In the period 2009-2010, the two companies acquired over 3,000 square kilometers of 3D seismic data on the Neptun Deep block, this being the largest seismic acquisition program carried out in Romania until then<sup>650</sup>. Between 2011 and March 2012, ExxonMobil and OMV Petrom drilled, in the Neptun Deep area, the Domino-1 the first exploration in deep waters in Romania, which confirmed the presence of natural gas. Thus, in 2012, through the Domino-1 probe, positioned in the Neptun Deep perimeter, recoverable reserves of approximately 42-84 billion m<sup>3</sup> of gas were discovered, becoming one of the largest natural gas discoveries in the Black Sea<sup>651</sup>. From November 2012 to June 2013, ExxonMobil and OMV Petrom conducted a second 3D seismic campaign, covering more than 6,000 square kilometers in the deep-sea area of the Neptun Deep perimeter<sup>652</sup>. Data collected during the seismic campaign and exploration drilling program were intended to help assess the size and commercial feasibility of the Domino-1 discovery, announced in 2012, and the potential of other prospects in the Neptun Deep field<sup>653</sup>.

After the discovery in the Neptun Deep area, in 2015 new gas resources were discovered in the Trident offshore perimeter. The consortium made up of Lukoil Overseas Atash BV, PanAtlantic Petroleum, and Romgaz discovered other reserves of about 30 billion m<sup>3</sup> of gas around Trident and Rapsodia. At the same time, the Lukoil Overseas Atash BV Consortium, PanAtlantic Petroleum, and Romgaz gave up on the Rapsodia perimeter concession in 2016, due to unsatisfactory results of exploration operations<sup>654</sup>.

After a chronological evolution of approximately 30 years since the last development of natural gas from the Romanian continental plateau of the Black Sea, in June 2022 the production of natural gas by the MGD project (Midia Natural Gas Development Project) began. The project is carried out by Black Sea Oil & Gas (BSOG), together with its concession partners, Petro Ventures Resources and Gas Plus Dacia. Current

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<sup>646</sup> BEP – a Barrel of Oil Equivalent

<sup>647</sup> Nicolae Anastasiu, *Hidrocarburile din Marea Neagră: între provocări și riscuri*, “Academica”, Academia Română, București, No. 9, Septembrie, 2016, p. 30

<sup>648</sup> International Court of Justice, *Maritime Delimitation in the Black Sea (Romania v. Ukraine)*, <https://www.icj-cij.org/case/132> (15.11.2023)

<sup>649</sup> Agenția Națională pentru Resurse Marine, *Concurs Public de Oferte – Resurse Petrol RUNDA a X-a*, <https://www.namr.ro/resurse-de-petrol/concurs-public-de-oferta-arhiva-petrol/arhiva/> (15.11.2023)

<sup>650</sup> OMV Petrom, *Largest 3D seismic survey in Black Sea completed on Neptun Deep block*, 25.06.2013, <https://www.omvpetrom.com/en/news/largest-3d-seismic-survey-in-black-sea-completed-on-neptun-deep-block> (15.11.2023)

<sup>651</sup> *Contribuția proiectelor de explorare și producție a hidrocarburilor din Marea Neagră la dezvoltarea economiei românești*, Deloitte Report, București, Mai 2018, p. 13

<sup>652</sup> Gaz de România, *Resurse offshore*, <https://www.gazderomania.ro/resurse-offshore/> (15.11.2023)

<sup>653</sup> Forbes România, *Romgaz a cumpărat acțiunile Exxon la Neptun Deep*, 04.05.2022, <https://www.forbes.ro/romgaz-a-cumparat-actiunile-exxon-la-neptun-deep-261808> (15.11.2023)

<sup>654</sup> *Economica*, *Lukoil și Romgaz au renunțat la perimetrul petrolier Rapsodia din Marea Neagră. Nu au găsit gaz sau petrol*, 17.02.2016, [https://www.economica.net/lukoil-si-romgaz-au-renuntat-la-perimetrul-petrolier-rapsodia-din-marea-neagra-nu-au-gasit-gaz-sau-petrol\\_114846.html](https://www.economica.net/lukoil-si-romgaz-au-renuntat-la-perimetrul-petrolier-rapsodia-din-marea-neagra-nu-au-gasit-gaz-sau-petrol_114846.html) (15.11.2023)

daily production is approx. 3.1 million m<sup>3</sup> of gas and was achieved in the first month of production. The estimated production at the plateau is approximately 1 billion m<sup>3</sup>/year for the next three years out of the ten years of life estimated for the Ana and Doina deposits from the MGD project<sup>655</sup>. Now, the offshore area of Romania covers 22,000 km<sup>2</sup> and reaches depths of over 1,000 m. The entire area is divided into perimeters of different sizes, some of which are concessioned by holders for exploration, development, and exploitation activities such as OMV Petrom, Romgaz, Lukoil, Black Sea Oil & Gas, and others<sup>656</sup>.

Each offshore plan has its characteristics, based on geological aspects and other situational factors. Compared to onshore plans, offshore plans are significantly more expensive and have a long implementation cycle<sup>657</sup>. The mentioned factors are the reason why offshore projects have a high risk in their development, especially in the first part, that of field exploration<sup>658</sup>. At the same time, the long implementation period of the offshore project can also be considered an asset since offshore plans are less exposed to short-term fluctuations and volatile developments in the price of crude oil/natural gas than onshore projects<sup>659</sup>.

Thanks to the ultra-modern technology and investments in the exploration of about 3.5 billion dollars made by the concession companies, huge deposits for Romania were discovered in the offshore area. They were evaluated at a total of about 200 billion m<sup>3</sup> of gas. In context, in 2022, Romania had a total natural gas production of 8.7 billion m<sup>3</sup> of gas, according to CEIC data. Approximately 1 in 10 m<sup>3</sup> of gas produced nationally came from the offshore perimeter, the difference being covered by onshore production<sup>660</sup>. In the long term, this energy equation can be reversed, with offshore production covering Romania's onshore gas production. Also, considering the prospects of the current onshore fields, combined with those of the consumption of crude oil and natural gas, due to intensive exploitation from the beginning of the last century to the present, we can note that the current reserves on land (onshore) are declining. Most of the fields are old and fragmented, and the production at the well is one of the lowest in Europe. Thus, to maintain the current level of energy security (Romania has a low level of dependence on natural gas imports) or to become a regional energy hub, the entire upstream sector must be redefined. In this sense, we can identify three alternatives:

- Development of onshore oil and gas reserves, especially of reserves located at great depth. This exploitation represents only a potential solution for the supply of crude oil and gas in the national economy of Romania;
- The development of hydraulic fracturing extraction, although theoretically there is a significant reserve potential (the equivalent of 300 million barrels of crude oil, or else 1,473 billion m<sup>3</sup> of shale gas<sup>661</sup>), this activity faces strong regulatory, safety, and environmental opposition;
- Exploitation of proven reserves of crude oil and natural gas in the Black Sea (offshore). The Black Sea Basin, through Romania, can be one of the most important natural gas-producing regions in the European Union<sup>662</sup>.

The Black Sea has the greatest capacity to redesign Romania on the regional energy scale. By exploiting the potential of hydrocarbons in the Black Sea, Romania can become a regional provider of energy security. Also, in the context of the military developments between Russia and Ukraine that have led to major effects on

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<sup>655</sup> Black Sea Oil & Gas, *Proiectul MGD*, <https://www.blackseaog.com/ro/proiectul-mgd/> (15.11.2023)

<sup>656</sup> Daria Crisan, *A Fiscal Framework for Offshore Oil and Gas Activities in Romania*, "SPP Research Papers", Vol. 9, No. 8, University of Calgary, 2016, pp. 3-4

<sup>657</sup> *The contribution of Black Sea oil & gas projects to the development of the Romanian economy*, Deloitte Report, Bucharest, Mai 2018, p. 11

<sup>658</sup> Mikhail Kashubsky, *Offshore Oil and Gas Installations Security: An International Perspective*, Routledge, London, 2016, p. 214

<sup>659</sup> *Contribuția proiectelor de explorare și producție a hidrocarburilor din Marea Neagră la dezvoltarea economiei românești*, Deloitte Report, București, Mai 2018, p. 12

<sup>660</sup> CEIC, *Romania Natural Gas Production: OPEC: Marketed Production*, 01.12.2022, <https://www.ceicdata.com/en/indicator/romania/natural-gas-production-opec-marketed-production#:~:text=Production%20in%202022%3F-Romania%20Natural%20Gas%20Production%3A%20OPEC%3A%20Marketed%20Production%20was%20reported%20at,table%20below%20for%20more%20data> (15.11.2023)

<sup>661</sup> U.S. Energy Information Administration, *Report – Technically Recoverable Shale Oil and Shale Gas Resources: Other Eastern Europe*, U.S. Department of Energy, Washington, 2015, p. 11

<sup>662</sup> *Contribuția proiectelor de explorare și producție a hidrocarburilor din Marea Neagră la dezvoltarea economiei românești*, Deloitte Report, București, Mai 2018, p. 11

global energy security, causing regional redefinitions in the direction of natural gas supply chains, Romania, through the development of the offshore sector in the Black Sea, can contribute to the redesign of regional energy security.

### **The Final Decision on the Development of the Neptun Deep Project**

The debate regarding the evolution of offshore activities in Romania is a subject of major importance for society and a strategic one for the state authorities, largely due to the impact on the economy and energy security of Romania, as well as against the background of the complexity of developments on the international energy market. In this volatile context, OMV Petrom and Romgaz announced at the end of June 2023, the final decision to develop the Neptun Deep offshore project<sup>663</sup>, the largest natural gas project in the Romanian area of the Black Sea. Considering the significant potential of natural gas reserves that could become commercial exploitations, large-scale investments will be carried out within this project in the coming years. For this reason, a closer examination and analysis is required not only of natural gas as a resource but also of the economic consolidation and the potential for industrial rise that these investments would bring to Romania as a whole.

The strategic message, mostly explicit, sent by OMV Petrom and Romgaz<sup>664</sup>, mentions the fact that the Neptun Deep offshore project will increase the security of natural gas providing for Romania and the Southeast European region. Also, Neptun Deep will have a major impact on Romania's energy transition by replacing coal and preparing the way for the increase in the energy mix of renewable sources<sup>665</sup>.

The significance of this strategic message develops a series of hypotheses regarding the potential of Neptun Deep, which can be divided into several levels:

- Romania can become a net exporter of natural gas;
- Southeast and Central Europe will have received another source of natural gas supply, in addition to gas imports from Russia, liquefied natural gas imports and imports from the Southern Gas Corridor (SGC) pipeline system;
- Neptun Deep will support the energy transition, as natural gas is seen as a fundamental element in achieving a safe transition;
- The gas from the Neptun Deep project will contribute to the consolidation and redevelopment of Romania's industry;
- Capitalizing on natural gas domestically for economic growth<sup>666</sup>.

The implications of the Neptun Deep development are very broad, including changing gas prices in Southeast Europe; creation and use of modern energy infrastructure; decarbonization; and replacement of Russian gas supplies<sup>667</sup>. Also, thanks to the Neptun Deep energy project, Romania will become the largest producer of natural gas in the EU and a reliable source of energy for the South-Eastern European region. In the current geopolitical context, the project is slated to start delivering natural gas in the 2nd quarter of 2027.

### **Technical and Financial Data Regarding the Neptun Deep Project**

The planned investment in the development of the project is 4 billion euros. Half of these will be taken over by OMV Petrom, and Romgaz will invest in the other half. A large part of the investments will be allocated in the period 2024-2026. OMV Petrom expects the project to also contribute to increasing the company's EBIT by 50% by 2030<sup>668</sup>.

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<sup>663</sup> NS Energy, *OMV Petrom and Romgaz take FID on €4bn Neptun Deep gas project*, 22.06.2023, <https://www.nsenergybusiness.com/news/omv-petrom-romgaz-take-fid-e4bn-neptun-deep-gas-project/> (15.11.2023)

<sup>664</sup> Julian Bowden, Patrick Heather, *Romania's Neptun Deep FID: can it be a regional gamechanger?*, "Energy Insight", No. 133, The Oxford Institute for Energy Studies, Oxford, June 2023, p. 1

<sup>665</sup> *Ibidem*, pp. 1-2

<sup>666</sup> Energy Analytical Studies, *Romanian International Gas Conference – 2023: Redesigning Security of Supply*, 10.11.2023, <https://energystudies.ro/rigc-2023-redesignin-security-of-supply/> (15.11.2023)

<sup>667</sup> Julian Bowden, Patrick Heather, *Romania's Neptun Deep FID: can it be a regional gamechanger?*, "Energy Insight", No. 133, The Oxford Institute for Energy Studies, Oxford, June 2023, p. 1

<sup>668</sup> Offshore Technology, *Romania's OMV Petrom makes FID on Neptun Deep project*, 21.06.2023, <https://www.offshore-technology.com/news/omv-fid-neptun-deep/?cf-view> (15.11.2023)

Neptun Deep is a deposit block with an area of 7.5 thousand km<sup>2</sup> located in the deep-water sector of the Black Sea, approximately 160 km from the coast. The depth of the block is 100-1,700 m<sup>669</sup>. Between 2008-2016, 3D seismic data surveys were conducted, and 8 exploration and appraisal wells were drilled, most of which yielded a steady gas flow. OMV Petrom and ExxonMobil in the US were satisfied with the results of the geological exploration work but did not approve the field development plan at the time. Subsequently, ExxonMobil considered a significant part of the mining projects in Europe not in line with the development strategy and began the process of exiting them. On May 4, 2022, ROMGAZ bought the rights to exploit the Neptun Deep natural gas fields from ExxonMobil<sup>670</sup>.

With the approval of the final decision to develop the Neptun Deep project, OMV Petrom and Romgaz catalyze a new stage in Romania's energy industry, which changes energy security in Europe:

- Neptun Deep becomes the first offshore development project at depth in Romania;
- The project will contribute to Romania's economic growth and increase the country's energy security;
- The estimated production of natural gas is approximately 100 billion m<sup>3</sup> of gas;
- Production at the plateau will be approximately 8-10 billion m<sup>3</sup>/year (~140,000 bep/day), for approx. 10 years. The mentioned volumes represent the estimated values of the project. The exact final volumes are to be confirmed by the National Agency for Mineral Resources;
- The unit production cost is estimated at an average of 3 USD/bep (for the lifetime of the field);
- Total development capex of \$4.4 billion.

The two companies approved the development plan for the Domino and Pelican Sud commercial natural gas fields in the Neptun Deep offshore perimeter, which was submitted and confirmed by the National Agency for Mineral Resources (ANRM)<sup>671</sup>. The infrastructure required for the development of Domino and Pelican Sud includes:

- 10 probes;
- 3 underwater production systems;
- 1 offshore platform;
- the main gas supply pipeline (MGP) to Tuzla and a gas measuring station (GIS)<sup>672</sup>.

The entire infrastructure of the offshore platform will be operated remotely, using a digital replica (digital twin). This will enable the optimization of processes and contribute to the improvement of environmental performance, by making electricity consumption more efficient and reducing carbon emissions.

For Romania, at current production rates, the Neptun Deep project's 8 billion m<sup>3</sup> of gas will double Romania's gas production (8.7 billion cubic meters in 2022<sup>673</sup>) and firmly anchor Romania as the largest gas producer in the EU. Overall, the project will invest 20 billion euros in the state budget, and the total added value of the project is 40 billion euros. Natural gas prices are expected to be aligned with the most important European trading centers, and for 2027 a range of 25-30 Euro/MWh was assumed<sup>674</sup>.

OMV Petrom and Romgaz will rely on its natural gas transportation capabilities for Romania's internal needs and, in addition, on the Southeast and Central European energy market, interconnecting adjacent countries that lack alternative natural gas supply resources. In context, long-term contracts will not have a

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<sup>669</sup> Romgaz, *Despre Proiectul Neptun Deep*, <https://www.romgaz.ro/despre-proiectul-neptun-deep> (15.11.2023)

<sup>670</sup> Forbes România, *Romgaz a cumpărat acțiunile Exxon la Neptun Deep*, 04.05.2022, <https://www.forbes.ro/romgaz-a-cumparat-actiunile-exxon-la-neptun-deep-261808> (15.11.2023)

<sup>671</sup> Economica, *Undă verde pentru gazele din Marea Neagră: ANRM a confirmat planul de dezvoltare a perimetrului Neptun Deep*, 03.08.2023, [https://www.economica.net/unda-verde-pentru-gazele-din-marea-neagra-anrm-a-confirmat-planul-de-dezvoltare-a-perimetrului-neptun-deep\\_685648.html](https://www.economica.net/unda-verde-pentru-gazele-din-marea-neagra-anrm-a-confirmat-planul-de-dezvoltare-a-perimetrului-neptun-deep_685648.html) (15.11.2023)

<sup>672</sup> Romgaz, *Începe Faza De Dezvoltare a Zăcămintelor Domino și Pelican Sud*, <https://www.romgaz.ro/incepe-faza-de-dezvoltare-zacamintelor-domino-si-pelican-sud#:~:text=Dezvoltarea%20zăcămintelor%20comerciale%20presupune%20o,stație%20de%20măsurare%20a%20gazelor> (15.11.2023)

<sup>673</sup> European Commission, *Quarterly report on European gas markets*, Vol. 15, No. 4, Bruxelles, 2023, p. 7

<sup>674</sup> OMV Petrom Webcast, *OMV Petrom analyst and investor conference*, 22.06.2023, [https://webcast.omvpetrom.com/cast/event/dindex\\_c.asp?string=bHjGy283x](https://webcast.omvpetrom.com/cast/event/dindex_c.asp?string=bHjGy283x) (15.11.2023)

perspective in this market environment, placing the Neptun Deep project in the context of recent developments in the regional energy market<sup>675</sup>.

To transport natural gas from the Neptun Deep offshore project, in March 2023, OMV Petrom and Romgaz signed a framework contract with Transgaz<sup>676</sup>. Binding capacity allocation commitments from May 2026 to October 2042 have been made<sup>677</sup>. In June 2023, Transgaz signed the contract (a work start order) with the Turkish company, Kalyon Insaat Sanayiv, for the construction of the 308, 3 km Tuzla - Podișor pipeline, which will fully take over the production from Neptun Deep through the main Transgaz network<sup>678</sup>. Also, the Tuzla – Podișor gas pipeline will connect with the BRUA corridor, thus ensuring the possibility of transporting natural gas through the existing interconnections. According to the data mentioned by the general director of Transgaz, Ioan Sterian, the gas pipeline will become operational in July 2025, with capacity reserves also for the gas transport corridor in the Caspian Sea area (Azerbaijan, Turkmenistan), as well as the LNG terminals in Greece<sup>679</sup>.

### **The Strategic Importance of the Neptun Deep Project**

The launch of the Neptun Deep offshore project and its planned rapid growth up to 8-10 billion m<sup>3</sup> of gas/year will consistently change Romania's energy balance. In this sense, the importance of Neptun Deep will strengthen on two levels:

- 1) the level of manifestation;
- 2) the latent level, with long-term effects.

At the manifestation level, we can include the importance of the Neptun Deep project for the consolidation of Romania's energy security and the strategic development of Romania's energy direction. In this sense, through the development of offshore gas, Romania can cover its natural gas needs from domestic production. In this context, Romania can become a regional actor, in the future even a regional node, in the regional energy market, with a major impact on the energy security of the South-Eastern Europe region<sup>680</sup>. Considering that natural gas supply is a physical reality based on reason, it is determined one hundred percent by the existence and capabilities of the infrastructure. Currently, there are bottlenecks in the gas pipeline network in South-Eastern Europe, which has limited capacity. Therefore, unless pipeline capacity can be increased in the South-Eastern Europe region, gas supply and diversification remain an illusion<sup>681</sup>. As part of the prospect of becoming an important regional energy node, Romania can develop its gas supply capabilities through the Vertical Corridor that will intensify natural gas transportation from South-Eastern Europe to Central Europe. Transgaz from Romania, together with DESFA from Greece, Bulgartransgaz from Bulgaria, and FGSZ from Hungary (natural gas transmission system operators) can develop the natural gas supply capacities through the Vertical Corridor, which will allow natural gas transportation through bidirectional flows<sup>682</sup>. Thus, the offshore natural gas from the Neptun Deep project can intensify the development of a

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<sup>675</sup> Julian Bowden, Patrick Heather, *Romania's Neptun Deep FID: can it be a regional gamechanger?*, "Energy Insight", The Oxford Institute for Energy Studies, Oxford, No. 133, June, 2023, p. 11

<sup>676</sup> Romgaz, *Comunicat de presă Romgaz - semnarea contractului cadru de transport pentru preluarea în sistemul național de transport a gazelor naturale ce vor fi exploatate din zăcămintul Neptun Deep*, 16.03.2023, <https://www.romgaz.ro/comunicat-de-presa-romgaz-semnarea-contractului-cadru-de-transport-pentru-preluarea-sistemul> (15.11.2023)

<sup>677</sup> Julian Bowden, Patrick Heather, *Romania's Neptun Deep FID: can it be a regional gamechanger?*, "Energy Insight", The Oxford Institute for Energy Studies, Oxford, No. 133, June, 2023, p. 12

<sup>678</sup> Christopher E. Smith, *Transgaz awards pipeline contract as OMV Petrom reaches Neptun Deep FID*, in „Oil & Gas Journal”, 21.06.2023, <https://www.ogj.com/pipelines-transportation/pipelines/article/14295391/transgaz-awards-pipeline-contract-as-omv-petrom-reaches-neptun-deep-fid> (15.11.2023)

<sup>679</sup> Financial Intelligence, *Sterian (Transgaz): Gazoductul Tuzla-Podișor, care va prelua integral producția Neptun Deep, va fi operațional la 1 iulie 2025*, 07.11.2023, <https://financialintelligence.ro/sterian-transgaz-gazoductul-tuzla-podisor-care-va-prelua-integral-productia-neptun-deep-va-fi-operational-la-1-iulie-2025/> (15.11.2023)

<sup>680</sup> Aleh Cherp, Jessica Jewell, *The concept of energy security: Beyond the four As*, "Energy Policy", Knoxville, TN, USA, Vol. 75, December 2014, p. 416

<sup>681</sup> Energy Analytical Studies, *Romanian International Gas Conference – 2023: Redesigning Security of Supply*, 10.11.2023, <https://energystudies.ro/rigc-2023-redesignin-security-of-supply/> (15.11.2023)

<sup>682</sup> Mihai Melintei, *Turkey – future regional gas hub. Opportunities and risks for Romania*, "Energy Analytical Studies", 24.03.2023, <https://energystudies.ro/turkey-future-regional-gas-hub-opportunities-and-risks-for-romania/> (16.11.2023)

related energy infrastructure, interconnecting Romania and the countries of South-Eastern Europe in a network of modern gas pipelines with a solid capacity to satisfy the consumption of natural gas. In this direction, the Neptun Deep project flattens and catalyzes the process of interconnections in the region as well as increases the capacity of gas pipelines by developing a modern infrastructure, corresponding to the new realities on the energy market<sup>683</sup>.

Within the manifestation level, from a strategic perspective, it can be noted that Romania, along with Turkey, could transform the Black Sea into a natural gas production hub, concentrating natural gas extraction projects in various stages of the development of Romania's Neptun Deep project and Turkey's Sakarya project<sup>684</sup>. The presence of gas demand on the market from the industry, free access to critical infrastructure in the energy market, the availability of various gas routes (their diversity), and the presence of many gas producers, intensify the launches of offshore natural gas extraction. The production of gas in the Black Sea from the Neptun Deep and Sakarya projects reconfigures regional energy security, also contributing to redefining a much more competitive energy market in the region<sup>685</sup>. Becoming an important producer of natural gas, Romania will have the ability to trade gas contracts through derivative financial instruments such as futures contracts, put options, and swaps. The volumes of gas, due to be delivered in 2027 from the Neptun Deep project, could eventually stimulate the energy market in the Southeast European region, providing the creation of a reference price and its use in physical pricing contracts<sup>686</sup>.

The latent level, with long-term effects, includes the importance of the Neptun Deep project for Romania's economic and industrial development, as well as in the direction of Romania's objectives in its policies for the use of renewable resources, i.e. the energy transition. Natural gas from the Black Sea can represent the basis for the development of related industries, which, in turn, will generate considerable economic benefits for the Romanian state. When it comes to 8-10 billion m<sup>3</sup> of gas, additional annual production for Romania means a great chance for reindustrialization and economic development. Since the gas from the Neptun Deep project is subject to Romania's offshore legislation, this means that Romania has the first option to purchase this gas at a preferential price<sup>687</sup>. In the long term, offshore gas from the Neptun Deep project can cover all of Romania's internal needs, developing various directions of Romania's industry such as the fertilizer industry; the pharmaceutical industry; chemical; the transition of energy complexes in Romania from coal-fired plants to gas-fired plants. In this sense, Romania's offshore gas can be sustainably exploited, not just exported.

As part of the latent level of importance of the Neptun Deep project and to fulfill Romania's commitments assumed in the Oltenia Energy Complex Restructuring Plan, approved by the European Commission in January 2022<sup>688</sup>, offshore natural gas from the Neptun Deep project can contribute to the realization of new capacities for the transition to less polluting energy sources. In this sense, the viability of the Oltenia Energy Complex, a company with a strategic role in Romania's National Energy System, will also be restored. The Neptun Deep project also supports OMV Petrom's strategic transition towards a gas-weighted portfolio and a 70% gas production mix by 2030<sup>689</sup>.

Regarding the use of renewable resources, Romania cannot abruptly abandon coal, natural gas, and nuclear energy without having energy security problems in the system. Energy must first and foremost be safe and at the fairest possible price. Also, there is no energy transition without infrastructure and pragmatism<sup>690</sup>.

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<sup>683</sup> Emil Lyutskanov, Leila Alieva, Mila Serafimova, *Energy Security in the Wider Black Sea Area - National and Allied Approaches*, IOS Press BV, Amsterdam, 2013, p. 84

<sup>684</sup> Mihai Melintei, *Turkey's prospects as a regional gas hub*, "Energynomics Magazine", Vol. 39, No. 2, București, 2023, p. 82

<sup>685</sup> *Ibidem*, pp. 82-84

<sup>686</sup> Julian Bowden, Patrick Heather, *Romania's Neptun Deep FID: can it be a regional gamechanger?*, "Energy Insight", The Oxford Institute for Energy Studies, Oxford, No. 133, June 2023, p. 14

<sup>687</sup> Energy Analytical Studies, *Romanian International Gas Conference – 2023: Redesigning Security of Supply*, 10.11.2023, <https://energystudies.ro/rigc-2023-redesignin-security-of-supply/> (16.11.2023)

<sup>688</sup> EUR-Lex, *Decizia (UE) 2022/1920 a Comisiei din 26 ianuarie 2022*, 26.01.2022, <https://eur-lex.europa.eu/legal-content/RO/TXT/?uri=CELEX%3A32022D1920> (16.11.2023)

<sup>689</sup> OMV Petrom, *Neptun Deep: un proiect transformator*, "Studiu", București, 2023, p. 11

<sup>690</sup> Energy Analytical Studies, *Romanian International Gas Conference – 2023: Redesigning Security of Supply*, 10.11.2023, <https://energystudies.ro/rigc-2023-redesignin-security-of-supply/> (16.11.2023)

Thus, since the role of gas is a fundamental one in the energy transition, the Neptun Deep project can contribute to a fair and intelligent transition.

The consolidation of the Neptun Deep project on the two levels mentioned above demonstrates the importance and value of natural gas. From a pragmatic and national interest perspective, the latent level takes precedence over the manifestation level, because on this level, the offshore gas from the Neptun Deep project contributes to the development of a new stage in Romania's economy, which can be exploited sustainably and in the long term. In this direction of the latent level, Neptun Deep coagulates three more securities around Romania's energy security: 1) economic security; 2) security of supply, and 3) environmental security by achieving the energy transition. At the same time, the synchronization of the 2 levels of manifestation latent, leads to a larger contribution of the Neptun Deep project for Romania, catalyzing supply autonomy and strengthening energy efficiency.

## Conclusions

Neptun Deep is an important offshore project for Romania and the two companies (OMV Petrom and Romgaz), which provides an impetus for Romania in the direction of the role of natural gas in the region, both for economic development and for the energy transition.

From the micro perspective, at the domestic level, the offshore gas from the Neptun Deep project is decisive for the implementation of Romania's industrial redevelopment plan and the implementation of the energy transition, in which the basic role belongs to natural gas. Industrial development brings with it economic benefits and efficient modern technologies, with a multiplier effect in other related industries, including renewables. Also, by using the offshore gas from the Neptun Deep project on the domestic market, Romania could gain, before other states, the technical know-how, which would allow the development of a local industrial base to serve the countries of the Southeast European region. At the same time, in addition to improving energy security and industrial development, the Black Sea gas of the Neptun Deep project can contribute positively to the trade balance, strengthening the national currency.

In macro terms, regionally, the Neptun Deep project will also be a new source of gas for the EU. Considering Romania's current production, this will consist of an addition of approximately 8 billion m<sup>3</sup> of natural gas/year, which Romania will divide between the domestic market and export. Considering the balance of natural gas production in the Neptun Deep project and, depending on the level of onshore production, starting from 2027 – 2028, Romania will have an additional 3 – 4 billion m<sup>3</sup> of gas for export to the states in the region, which register a deficit of gases. Adding to this the LNG import capacities in Southeast Europe, the interconnection capacities of Bulgaria – Serbia, Greece – Bulgaria, and the expansion of the Romania – Hungary connection, we can conclude that a diversity of gas supply is developing. Launching the works on the Neptun Deep offshore project, Romania is also developing the national natural gas transportation network, which represents a critical infrastructure for energy security. In this sense, through the interconnection pipelines, the natural gas infrastructure projects underway or planned for the development of the network internally, but also for the connection to the European energy corridors, Romania can become a European natural gas transport corridor<sup>691</sup> and facilitate the transport of natural gas from the Caspian area to Europe<sup>692</sup>.

In conclusion, we can note the following aspects regarding the Neptun Deep offshore project:

- the project has a solid regional perspective, developing the business environment in the field of natural gas and renewables;
- Neptun Deep supports the strategic transition of OMV Petrom and OMV towards a gas-weighted portfolio. Also, the project will support the energy transition of Romania's industrial sector;
- the project benefits from low unit costs and an extremely low carbon intensity due to its optimized scope;
- Neptun Deep catalyzes a new stage in Romania's energy industry, which changes European energy security;
- the project develops Romania's direction and objectives in its energy transition policies;

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<sup>691</sup> Gaz de România, *Securitate energetică. Avantajul geostrategic al României: propriile resurse*, <https://www.gazderomania.ro/securitate-energetica/> (16.11.2023)

<sup>692</sup> Mihai Melintei, *Proiectul conductei Trans-caspice. Oportunitate pentru consolidarea securității energetice europene*, “Legea și Viața”, Ediție Specială, Academia de Poliție “Ștefan cel Mare”, Chișinău, 2023, pp. 330-331



- mitigates the risks of national gas supply malfunctions, in cases of force majeure, such as the military developments in Ukraine;
- represents the basis for the development of related industries, which, in turn, would generate economic benefits;
- Neptun Deep transforms Romania into an important regional energy node;
- strengthens Romania's energy security, which in turn facilitates economic security, supply security, and environmental security by achieving the energy transition.

The Neptun Deep project is the offshore project of the gas sector in Romania, with a potential of over 100 billion m<sup>3</sup> of natural gas, which can ensure and reconfigure regional energy security, offering a series of opportunities to accelerate economic development in the region, diversify sources of supply as well as in ensuring a smart energy transition.

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