



MINISTERUL MEDIULUI,
APELOR ȘI PĂDURILOR

MINISTER'S CABINET

No. DGEICPSC/124786/05-02.2026

To: MINISTRY OF ENERGY

DEPARTMENT OF ENVIRONMENTAL PROTECTION

In att.: Mr. Csaba LANTOS, Minister of Energy

For info.: Dr. Hunor Orbán, Focal Point for the Espoo Convention

Dear Minister Lantos,

We hereby acknowledge the receipt of Ministry of Energy's letter no. KMF/21585-2/2025-EM regarding the notification for the "Nyékpusztá Corvinus Project" sent in accordance with the *Convention on environmental impact assessment in a transboundary context, signed in Espoo on 25 February 1991* (the Espoo Convention) and the EIA Directive (Directive 2011/92/EU modified by Directive 2014/52/UE).

In this context, we would like to inform you that since significant effects on the environment of Romania as a result of the implementation of the project cannot be excluded, Romania will participate in the transboundary environmental impact assessment procedure regarding the proposed project "Nyékpusztá Corvinus Project".

In accordance to article 17 para. 5 of Romanian Law no. 292/2018 *on the assessment of impact of certain public and private projects on environment* and article 3 para. 8 of the Espoo Convention, the Ministry of Environment, Waters and Forests has distributed the notification to the public and the competent authorities and institutions for submission of comments, proposals, objections and opinions.

Public access to the notification has been provided by publishing the letter and documentation on the website of the Ministry of Environment, Waters and Forests and the websites of the Arad and Bihor county environmental departments for a period of 30 days. The comments received from citizens and NGO's have been attached to this letter. We mention that the public has requested additional information to be included in the EIA report, the cessation or non-authorization of the exploitation of hydrocarbons through hydraulic fracturing near the town of Ciumeghiu and the real consultation of the local community, as well as the presentation of independent, transparent and complete studies on the impact on the environment and the population.

The Sarkad I hydrocarbon mining perimeter, where hydrocarbon exploitation activities are carried out by hydraulic fracturing from sandstone formations, is located in Békés County, Hungary, and includes territories in the municipalities of Sarkad, Sarkadkeresztúr, Mezőgyân, Okány and Tarhos. The perimeter has an area of 64.96 km² (extended).

In the Sarkad I perimeter, 7 hydrocarbon wells were drilled between 2009 and 2025, of which 6 are currently in operation. The wells are between 3702m and 4800m deep and exploit unconventional hydrocarbon accumulations located in Badenian age deposits. The project plans to build 2-3 new wells annually, with an extraction volume that will exceed 500 tons/day of crude oil and 500,000m³/day of natural gas.

Given the geographical proximity and hydrogeological links between the two countries, the use of groundwater in large quantities requires a rigorous assessment of the impact on the environment and on communities in cross-border areas, to combat the risk of pollution of cross-border waters, surface waters and shared groundwater.

The eastern boundary of the Sarkad I perimeter is at a minimum distance of approx. 11-12 km from the Romanian border. In this area, on the Romanian side, there are: the phreatic groundwater body ROCR01 *Oradea*, the medium-depth body ROCR07 - *Crișuri* and the deep-depth groundwater body ROCR08 - *Arad-Oradea-Satu Mare*. Of these bodies, ROCR01 and ROCR07 are cross-border water bodies with Hungary. The closest localities to the eastern limit of the Sarkad perimeter, on the Romanian side, are Salonta, Ciumeghiu, Avram Iancu, Mădăraș, Martihaz and Ateas (Bihor County).

Since the deposits in which the hydrocarbons have accumulated are characterized by low permeability, the exploitation of the deposit can only be achieved by the hydraulic fracturing method, the purpose of this process being to create cracks/microcracks in the reservoir rock that would facilitate the migration of hydrocarbons towards the well and their exploitation in industrial quantities. According to the information provided, the microcracks created by this

process will have a vertical/horizontal extension of maximum 100m. The future fluid used for hydraulic fracturing will be injected with a pressure of up to 900 bar and a flow rate of up to 6 m³/min, consisting of 98.3% water and 1.7% chemical additives, consisting of: gelling agent (guar gum), crosslinking agent (nitrilotriethanol), high temperature stabilizer (sodium thiosulfate), clay stabilizer (quaternary ammonium salts, alcohol), surfactant (polyethylene glycol monohexyl ether), bactericide (ethylenedioxy dimethanol), gel breaker (sodium bromate), encapsulated gel breaker, caustic soda and gel stabilizer (amines). Most of the fluid used is recovered by "flow-back".

The total water requirement for the execution of a hydrocarbon well and the performance of three hydraulic fracturing operations is approximately 3800 m³. The water requirement is provided from the K-141 well (borehole), which has an authorized extraction volume of 13000 m³/year. According to the information provided, the borehole is located outside the built-up area of the Sarkad locality and would have a depth of 81 m and filters positioned in the depth ranges 59.0 m - 62.0 m and 74.0 m - 78.0 m. Within the Sarkad I mining area, there are approximately 30 other hydrogeological wells with depths ranging from 150 to 550 m, which have been/are being exploited and in which there is already a content of methane gas, independent of the fracturing activities already carried out.

The roof of the Sarkad I hydrocarbon mining area is located at approximately 1,300 m below sea level. The Hungarian side ensures that no fracturing operations will be carried out above this depth range. According to the geological section of the Sarkad I hydrocarbon mining area, the reservoir rock is found at depths greater than 3,500 m below sea level. The Hungarian side also informs that the geological deposits from which groundwater is exploited are located up to a maximum depth of approximately 550 m.

The water resulting from the processing of the exploited hydrocarbons will be reinjected into the depleted hydrocarbon wells Sarkad-20 and Sarkad-43, located on a neighboring mining site. They have a depth of 3000m and perforated sections ranging from 2806 to 2954m.

In order to determine the state of air quality resulting from the activities carried out in the mining area and from the current operation of the Gas Station, emission measurements were carried out in 2025 for the following indicators: nitrogen monoxide (NO), nitrogen dioxide (NO₂), nitrogen oxides (NO_x), carbon monoxide (CO), sulfur dioxide (SO₂), benzene, suspended particulate matter (SPPM) and mercury (Hg). It was found that the values determined for the analyzed atmospheric parameters did not exceed the health limit value nor the design target value. Also, the Hungarian side estimates that for the wells to be dug later within the mining area, the size of the impact zone in terms of air protection is approx. 943 m.

According to the official documents analyzed, the Hungarian side assures Romania that the process of hydrocarbon exploitation through the hydraulic fracturing method will not have an impact on the groundwater aquifers in Hungary or on the transboundary aquifers with Romania.

Although the depth of the hydrocarbon wells is 3-4 km, there is a risk of contaminating the aquifers due to technological defects in the cementing of the drilling column or leaks of wastewater collection basins, loaded with salts and chemical substances. At the same time, the groundwater level can be modified by the high consumption of water used in the exploitation process, with repercussions on crop productivity. As an extension, hydrographic risk area can exceed 5-10 km from the well hole.

The analyses of the Hungarian side generally summarize the geological, hydrogeological and technical characteristics of the Sarkad I mining perimeter area, providing Romania with an overview and a commitment to the fact that all work operations will be carried out in accordance with the legislative norms provided.

Given that the chemical analyses presented in the analyzed documents are specific only to groundwater aquifers, it is recommended that the Hungarian side also monitor the deep aquifers in terms of groundwater quality in the Sarkad I perimeter area (preferably upstream and downstream along the groundwater flow directions). It is also recommended that the Hungarian side inform the Romanian side, through an annual report, of the situation regarding the monitoring carried out and the resulting values.

Taking into account the information transmitted by the Hungarian side regarding the exploitation of hydrocarbons by the method of hydraulic fracturing in the Sarkad I perimeter, the risk of having a direct and immediate impact on groundwater on the territory of Romania is considered reduced. However, it should be taken into account that, in the longer term, the use of the method of gas exploitation by hydraulic fracturing of sandstones and other types of reservoir rocks may have dangerous consequences for the underground environment from a structural and chemical point of view, in ways that can only be partially anticipated through detailed analyses with specialized equipment and personnel. Therefore, the Hungarian Party should take into account Recommendation No. 2014/70/EU on *minimum principles for the exploration for and extraction of hydrocarbons using high-volume hydraulic fracturing*, in particular the operational and monitoring requirements, during the development of the Nyékpusztá Corvinus Project. Even if the data submitted show that the method used for hydraulic fracturing cannot be considered high-volume (the total water requirement for a well is 3800 m³ compared to the 10,000 m³ mentioned in the definition in the Recommendation), these principles are generally valid and contribute to the prevention and optimal management of risks.

In the localities bordering Hungary, several geothermal water exploitation projects are underway, so we consider it necessary to analyze in the EIA the possible impact of the project on geothermal water exploitation projects, given that hydraulic fracturing technology may interfere with thermal water aquifers in the earth's crust. Geothermal resources represent a strategic asset for the local economy and the energy transition. The impact of hydraulic fracturing technology on geothermal aquifers must be analyzed in light of the following specific risks:

- risk of cross-contamination;
- alteration of pressure and temperature;
- risk of induced seismicity.

In this regard, in order to identify possible risks, the development of an impact study by an expert in the field, which would include both countries and would establish the need to monitor seismic activities on both sides of the border, should be considered.

After analyzing the published information, we consider that the Nyékpusztá Corvinus Project presents significant risks of transboundary seismotectonic impact, through activities involving hydraulic fracturing and pressurized fluid injections. Although the documentation mentions reports on vibrations generated during hydraulic fracturing operations, there is not sufficient public data regarding:

- operational parameters (pressures, volumes, depths, frequency of injection stages);
- stratigraphic characteristics of the formations involved, distance from pre-existing faults;
- detailed results of seismic monitoring, including magnitudes and location of induced events.

We note that there is no report regarding the seismotectonic context in which the proposed site for exploitation is located. We draw attention to the fact that there is surface seismic activity in the area, therefore little studied faults, not yet reported in the current European database ESFM20 (Basili et al, 2022 <https://doi.org/10.13127/efsm20>).

Considering that fluids injected at high pressure diffuse over long distances, far from the injection well, the seismic impact area of the proposed exploitation may exceed the supervised/monitored area. Please observe the distribution of seismicity of the respective area for the period 1800-2016 (only $M_w \geq 2$ earthquakes) on the interactive map <https://bigsees.infp.ro/Results.html> (Bigsees Selection of Earthquakes).

It is well known that hydraulic fracturing generates induced seismicity, mainly by injecting fluids that increase pressure on pre-existing faults, causing them to slip and release energy in the form of small earthquakes (microseismicity). Most of the earthquakes felt are related to the large volumes of wastewater/fluids injected, rather than to the hydraulic fracturing process itself. This local microseismicity is felt by the population, generating anxiety and disruption/interruption of daily life in the respective communities.

Larger events ($M > 3$), potentially damaging to the built environment, are rare but possible, as shown by case studies in American states with a long history of gas exploitation through hydraulic fracturing, earthquakes of 3.8 (British Columbia, CA) and 4.0 (Texas 2018) directly linked to hydraulic fracturing activity or the Oklahoma sequence of 2011 (the strongest event $M_{L5.6}$) being correlated with the injection and propagation of wastewater into the crust.

The vibration monitoring report correctly concludes that during the monitored period, the surface effects of hydraulic fracturing could not be highlighted, since the effects of this activity can extend over a larger area than the monitored area and over a much longer period than the actual exploitation period. Seismic monitoring subsequent to extraction activity cannot substitute for the need to prevent possible effects on the population and the environment.

We consider that the Corvinus Nyékpusztá Project poses significant risks with transboundary impacts on the geological, seismotectonic and hydrogeological environment. We recommend the suspension of any hydraulic fracturing activity in the area until a detailed, independent assessment of the transboundary seismic and hydrogeological hazard has been carried out. For your convenience, annexed to this letter is information regarding local seismicity and seismic events in the last 3 years.

To identify natural protected areas of community interest potentially affected by a project in the field of non-renewable resource extraction, 4 criteria are applied:

a) intersection - not the case here;

b) proximity (area of influence), the site targeted by the neighboring status is located at a distance of:

- 12 km from the Natura 2000 Site ROSC10387 Salonta,
- 13.4 km from ROSPA0097 Pescăria Cefa - Pădurea Rădvani,
- 15.28 km from ROSAC0049 Crișul Negru
- 21.7 km from ROSPA0015 Câmpia Crișului Alb și Crișului Negru;

c) species mobility - many species of birds (ROSPA0097 and ROSPA0015 respectively) and bats (ROSAC0049) - are mobile species,

d) ecological connectivity - Natura 2000 sites on the Romanian territory located right on the border are mirrored with similar sites on the Hungarian side.

Given the short distance from the above-mentioned protected natural areas, we believe that attention should be paid to possible differences between the direct area of influence during construction, during operation or at another stage of the project life cycle. A cautious approach involves creating a single area of influence, which includes the differences that arise in the different stages of the project and subsequently the activity.

The statement in the submitted documentation, according to which *"The location of the drilling points and the hydrocarbon well areas does not affect any protected natural areas of national or local importance, Natura 2000 sites, or areas of the National Ecological Network. The execution works have a tolerable impact on fauna"*, needs to be supported, argued and analyzed through appropriate assessment studies and environmental impact assessment, especially since the applied technology involves fracturing the groundwater table which may lead to major changes in the hydrological and hydrogeological network of the region, with potential changes to the Natura 2000 Sites.

It is also necessary to assess the possibility of a major disaster that could affect the Romanian side, so that prevention or mitigation strategies can be developed.

Even if fracturing takes place at depths of 3500-4000 meters, the main environmental risks remain:

- groundwater contamination, in case of well isolation deficiencies;
- induced seismicity, especially during the fracturing and reinjection phases;
- high water consumption and wastewater management;
- fugitive methane emissions, with climate impact.

These risks are not hypothetical, but well documented in the specialized literature, which is why they require continuous and transparent monitoring.

We consider it imperative to implement joint prevention and rapid intervention measures to limit the effects of extractive activities on soils, biodiversity and infrastructure in border areas and even conclude a bilateral agreement for the management of mineral resources that includes the exchange of information, cross-border impact studies and joint protection measures.

The aspects related to the management of waste generated within the technological process are within the competence of the regulatory and control authority in the field of environmental

protection. It must ensure, through the measures established within the regulatory act and the application of BREF/BAT, that measures are applied to reduce waste generation, and that waste whose generation cannot be avoided within the processes taking place on site will be eliminated in accordance with the provisions of specific legislation.

We note that the submitted documentation did not specify the distances between the proposed objective (Corvinus Nyekpuszta Project) and the nearest settlements/localities located on the territory of Romania, in the vicinity of the border. Considering that the distance between the mining perimeter and the border area with Romania is 11-12 km and taking into account the field of activity of hydrocarbon exploitation in the Sarkad I mining perimeter by hydraulic fracturing, we consider it necessary to specify the nearest settlements located on the territory of Romania and the distances between them and the proposed objective, on maps and/or in the text of the EIA report.

Given that no details were provided regarding the distances to the nearest residential areas in Romania and the proposed project, we cannot formulate a pertinent opinion regarding the impact on the population groups in Romania living in the vicinity of the analyzed objective.

In order to avoid potential negative effects on the health of the population in the area, measures to prevent, avoid and reduce the impact on environmental factors must be observed during the completion of the remaining works of the investment objective and the operation of the objective.

We believe providing the requested information and studies can help us formulate our opinion regarding the implementation of the project.

Please accept, Mr. Minister, the expression of my high consideration and esteem.

Diana-Anda BUZOIANU
Minister of Environment, Waters and Forests

