



**”EXPANSION OF GAS TRANSMISSION
CAPACITY FROM ROMANIA TO
HUNGARY UP TO 4.4 BCM/Y (BRUA
PHASE 2) (REFERENCE NUMBER IN EU
LIST: 6.24.7.)”**

**A flagship Project
for Romania and Europe
promoted by TRANSGAZ**



INFORMATION LEAFLET

for the Project

”Expansion of Gas Transmission Capacity from Romania to Hungary
up to 4.4 bcm/y (BRUA Phase 2) (Reference number in EU List:
6.24.7.)”

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1. PROJECT DESCRIPTION AND PROJECT SCOPE

Considering the European Union's increasing dependence on gas imports, based on the constant increase of the gas demand and the decrease of the domestic production, the security of gas supplies represents a necessity.

Taking into account the perspective of new projects aimed to diversify gas transmission routes from the Caspian region to Central Europe, as well as the new off-shore gas sources in the Black Sea, Transgaz aims to construct a new gas transmission route to assure the capitalization of the gas volumes from such offshore sources on the Romanian and European markets, and the possibility of permanent reverse flow at the Bulgarian and Hungarian Connectors.

The Project "Expansion of Gas Transmission Capacity from Romania to Hungary up to 4.4 bcm/y (BRUA Project, Phase 2) consists of the construction of a new gas transmission pipeline section to connect the Technological Node at Recaş with Horia Gas Metering Station (GMS), upgrading of Podişor, Bibeşti and Jupa Gas Compressor Stations and upgrading of Horia Gas Compressor Station.

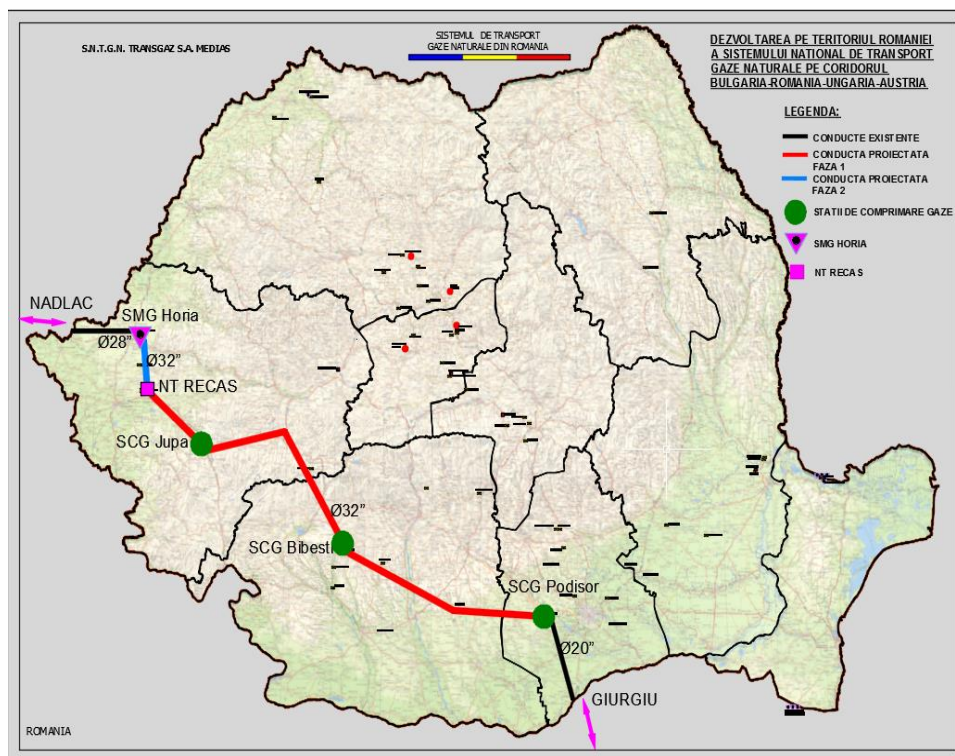


Fig. 1 – BRUA Phase 1 and Phase 2 route

The implementation of "The Development of the Romanian Gas Transmission System along Bulgaria – Romania – Hungary – Austria route" (BRUA Project) is 2-phased as follows:

Phase 1:

- Podişor – Recaş gas transmission pipeline of approximate length 479 km, with a diameter of 32" (Dn 800), and a design pressure of maximum 63 bar;
- Podişor GCS, Bibeşti GCS and Jupa GCS, each with two compression aggregates (one active and a backup), with the possibility of reverse flow.

Phase 2:

- Recaș - Horia GCS gas transmission pipeline of approximate length 50 km, with a diameter of 32" (Dn 800), and a design pressure of maximum 63 bar;
- Podișor GCS upgrade, Bibești GCS upgrade and Jupa GCS upgrade, whereby each station will be equipped with one more compression aggregate;
- Horia GCS upgrade.

By implementing the Project "Expansion of Gas Transmission Capacity from Romania to Hungary up to 4.4 bcm/y (BRUA Project, Phase 2)" the following objectives will be attained:

- diversification of gas supply sources for European countries;
- transmission of Caspian gas to Central European markets;
- assurance of 1.5 bcm/y of gas capacity to Bulgaria;
- gas capacity increase from 1.75 bcm/y to 4.4 bcm/y to Hungary;
- security of gas supplies to Romania by access to new gas sources.

This transmission pipeline will allow future interconnection with pipelines that may be sourced by potential Black Sea shore LNG (AGRI Project) and by Black Sea gas.

According to the provisions of the *Technical Norms for Design and Execution of Gas Transmission Pipelines*, the width of the working strip for pipeline arrangement is 21 m in agricultural land, grass land, hayfields and non-productive land, and 14 m for vineyards, orchards, and woods.

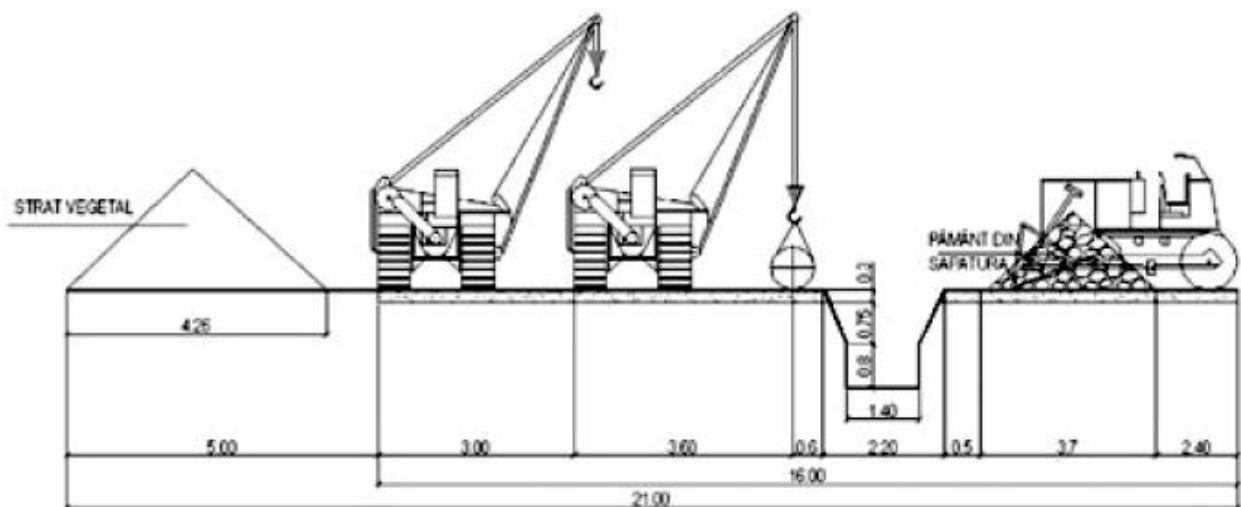


Fig. 2 – the 21 m working strip

Along the route, in the 2 counties, the pipeline crosses the following obstacles: access ways (national roads DN, county roads DJ, country roads DC, railways CF), water bodies that are registered in the land register or not, valleys and channels, oil, gas and water pipelines, telecom networks (fibre optic), and forest areas.

Pipeline route

The pipeline route mainly follows the SE-W direction and crosses the counties of Arad and Timiș.

On this route there will be installed:

- 5 line valves;
- 2 cathodic protection stations.

These are the following:

- R 39 – km 495 ÷ 441: upstream from railway undercrossing CF 207, locality Remetea Mică, commune Maşloc;
- R 40 ÷ SPC 19 – km 495 ÷ 729: downstream from railway undercrossing CF 207, locality Remetea Mică, commune Maşloc, vent stack valve station, including cathodic protection station;
- R 41 – km 525 ÷ 406: downstream from railway undercrossing CF 100, locality Tudor Vladimirescu;
- R 42 – km 525 ÷ 560: upstream from railway undercrossing CF 100, locality Tudor Vladimirescu;
- R 43 ÷ SPC 20 – km 528 ÷ 948: GMS Horia connection, including cathodic protection station.

2. THE NATIONAL DEVELOPMENT PLAN

BRUA Project Phase 2 is on the updated PCI list adopted by the European Commission in November 2015:

- ✓ 6.24.7 Expansion of transmission capacity from Romania to Hungary up to 4.4 bcm/y (phase 2)

and is part of the National Gas Transmission Development Plan 2014-2023 approved by the National Energy Regulatory Authority, at position 7.1 „The Development of the Romanian Gas Transmission System Along Bulgaria – Romania – Hungary – Austria Route”.

Link:

http://new.transgaz.ro/sites/default/files/uploads/users/admin/Temp/plan_de_dezvoltare_pe_10_ani_2014_-_2023_14.12.2014.pdf



3. IMPACT ON ENVIRONMENT

According to ORDER No. 135/76/84/1284 of February 10, 2010 on the approval of the Methodology for the Environment Impact Assessment for Public and Private Projects, if an investment is phased the environment impact assessment has to be conducted for the entire investment. Considering these provisions the general environment aspects presented below refer to the entire BRUA Project (Phase 1 + Phase 2).

More detailed information are presented in the Report on the Environment Impact assessment and in the Environmental Agreement that are published on the National Environment Protection Agency web page:

- The Environmental Impact Report:

Link: <http://www.anpm.ro/documents/12220/2231306/Raport+privind+Impactul+asupra+Mediului+-+BRUA.pdf/fc9a15b1-b22b-42fc-8f5a-b79158ee6f31>

- The Environmental Agreement:

Link: <http://www.anpm.ro/documents/12220/2537467/Acord+mediu+BRUA.pdf/3218d7cf-d4a8-430d-a3a4-d83b7c68ddc1>

3.1 CROSSING OF PROTECTED AREAS

BRUA Phase 2 route, starting from km 479, Recaş-Horia, a 50 km route, will not cross and will not pass close to any protected natural areas.

3.2 ALTERNATE ROUTES

Due to technical, economic and environmental reasons the initial route of BRUA pipeline was aimed to follow in parallel Transgaz' incumbent lines for the entire route (Podişor – Horia). Following the route surveys for the optimisation and selection of the final route, several sections and alternate routes to the incumbent lines have been assessed based on the following considerations:

- minimum impact on agricultural lands;
- avoidance of landslide areas;
- necessity of minimum land improvement as compared to other possible alternatives;
- technical, economical and construction related considerations, and the possibilities to monitor the pipeline during operation;
- minimum impact on the environment (and on all environmental aspects);
- assurance of conditions for mechanical digging and construction-mounting works;
- safety of operation;
- observance of safety distances to nearby objectives;
- minimum social impact.

After application of the above stated criteria pipeline route had to be changed from the initial route on several sections.

3.3 POTENTIAL CHARACTERISTICS OF PROJECT IMPACT

Impact on population and human health

The impact on population and human health is insignificant because the construction-mounting works will be mainly performed outside town limits. Due to the fact that the works execution team will observe the labour, health and safety measures, the possibility of technical or human accidents is reduced to minimum.

The following factors may cause a potential impact on population and on human health:

- Loss of income source following the permanent occupation of the land (direct, long term, permanent negative impact);

- Loss of income source following the temporary occupation of the land (direct, medium term, temporary, negative impact);
- Possible deterioration of local roads because of the construction site traffic (direct, short term, temporary, negative impact);
- Noise and vibrations caused by the construction site traffic (direct, short term, temporary, negative impact);
- Use of local work force (direct impact, during the construction works, temporary, positive).

Impact on fauna and flora

The potential impact on fauna is caused by the presence of devices and labour force in the working area and by the construction-mounting works. The following factors may have an impact:

- Sound pollution in the working area (direct, short term, temporary, negative impact);
- Disruption of access to feeding and drinking areas (direct, short term, temporary, negative impact).

The impact on flora is caused by:

- Loss of habitat because of the permanent occupation of land (direct, long term, permanent negative impact);
- Loss of habitat because of the temporary occupation of land (direct, medium term, temporary, negative impact);
- Preparation of land surface for the construction-mounting works, where the topsoil needs to be removed for a width of max. 21 m before the digging and pipe laying works.

Impact on soil and on land use

FEED for "Expansion of Gas Transmission Capacity from Romania to Hungary up to 4.4 bcm/y (BRUA Project, Phase 2)" is conducted according to the provisions of "The Technical Norms for Design and Execution of Gas Transmission Pipelines" approved by Order no. 118/2013 issued by the Chairman of the National Energy Regulatory Authority.

The technical design provides for the separate removal of the topsoil on the working strip of the pipeline.

The following factors may cause a potential impact on soil:

- Soil pollution because of the inadequate waste disposal, because of pipeline cleaning that leaves dust and metal oxides on the soil, and because of fuel and lubricant leakage during the operation and maintenance of the devices (direct, short term, temporary, negative impact);
- Alteration of soil structure that may lead to lower soil fertility because of the digging works needed for pipeline laying (direct, short term, temporary, negative impact).

Works will be performed with observance of the project execution stages, of the technological discipline during the construction-mounting works, of adequate waste storage and land reinstatement as specified in FEED. Impact on soil will thus be reduced.

The following factors may cause a potential impact on land use:

- permanent land removal from the Agricultural Land Reserve for arrangement of aboveground facilities (direct, long term, permanent, negative impact);

- temporary land removal from the Agricultural Land Reserve / Forestry Land Reserve for the entire route of the pipeline, in the working strip and in the site management areas (direct, medium term, temporary, negative impact).



Impact on water quality and quantity regime

The impact on some water bodies is caused by the undercrossing works.

Water undercrossing works will be carried out as follows:

- underground concrete cast pipeline in open ditch;
- by horizontal drilling.

The following factors may cause a potential impact on water quality and quantity regime:

- increased water turbidity because of the ditches executed to lay the pipeline (direct, short term, temporary, negative impact);
- bentonite contamination in case of drill string failure (direct, short term, temporary, negative impact);
- accidental spilling of fuels and lubricants from the undercrossing works devices (direct, short term, temporary, negative impact).

The execution works are supposed not to affect water quality in the working area, and the physical-chemical, biological and bacteriological quality parameters are supposed to remain within admissible limits.

As one may notice, the impact on surface waters is temporary during Project execution stage, and when works are completed shores will be reinstated.

Impact on air quality and on climate

During pipeline mounting works the air pollution sources are represented by the engines of vehicles and machines, as well as the welding works for pipeline sections and paint coating protection works for fittings.

Under these circumstances the following factors may cause a potential impact on air and climate:

- pollutants caused by burning emissions (exhaust gas) from engines (direct, short term, temporary, negative impact);

- emissions of volatile organic compounds caused by paint coating operations (direct, short term, temporary, negative impact).

Devices at working points will work intermittently and, as a result, engines emissions will be punctiform and instantaneous, which makes the impact on air insignificant.

Paint coated surfaces will also be reduced.

Impact of noise and vibrations

The sources of noise and vibrations are represented by the equipment needed to dig and cover the ditch, needed to ship and handle linepipe, to transport staff during works execution and to operate the gas compressor stations after commissioning.

Since the devices and equipment used must be homologated, the noise and vibrations are considered to be within admissible limits and the impact is considered to be insignificant, namely within the admissible limits.

In order to reduce the noise produced by the operation of the gas compressor stations measures have been taken by their design and location so that the maximum noise level at enclosure limit is max. 65 dB(A) according to the provisions of STAS 10009/88 – urban acoustics.

In order to comply with the maximum noise level for inhabited areas, as set by Order 119/2014 on the approval of the public hygiene and public health regarding the population's way of life, namely 55/40 dB day/night, the Project's design will provide for adequate measures.

Impact on landscape and scenery

The following factors may cause a potential impact on landscape:

- change of use of land during the pipeline mounting works (direct, medium term, temporary, negative impact);
- deforestation of forest areas on the working strip (direct, long term, negative impact for the entire period pipeline is in operation);
- the aboveground facilities of the gas transmission system (direct, long term, permanent, negative impact).

At the end of the pipeline construction-mounting works land will be reinstated to its initial use, the deforested area will be reforested, save for the 6m area to the left and to the right of the pipeline generatrix where no trees, bushes, neither vineyards may be planted.

Impact on historical and cultural patrimony

No historical monument of local or national importance was identified on the pipeline route.

Impact on the interaction between environment components

Taking into account all the activities necessary to carry out the project we believe there is no impact on the interaction of such components.

Cross-border impact

There was no environmental cross-border impact identified.

3.4 MEASURES TO AVOID AND REDUCE THE SIGNIFICANT IMPACT ON THE ENVIRONMENT

Measures to reduce the impact on population and on human health

Taking into account the potential impact on population and on human health, we propose the following measures to reduce the impact:

- compensation of affected land owners;
- rehabilitation of infrastructure affected by heavy traffic;
- reduction, to the minimum necessary, of running time for devices;
- reduction of speed for moving the devices on access roads to the working space in order to diminish dust emissions during draught times.

Measures to reduce the impact on fauna and flora

Considering the impact on flora and fauna, we propose the following measures to reduce the impact:

- avoid placing aboveground facilities in protected areas;
- placing of above ground facilities as much as possible in areas that have lost their ecological function;
- assurance of legal limits for noise emissions of devices and correct maintenance thereof;
- observance of technical norms on design and execution of gas transmission pipelines with regards to the preparation of the land surface for the construction-mounting works;
- trees will be cut down in forest areas by directing the fall of the trees along the working strip (along the 14 m wide working strip) to avoid damages to the trees in the neighboring area;
- deforestation will be performed with observance of the exploitation technical norms and the surface will be cleaned of branches and vegetable waste;
- the exploitation technology will be the technology that causes minimal damage to soil and vegetation in the neighboring area of the deforested perimeter;
- save for the surfaces of land that have permanently changed their initial use, the surfaces of land that are temporary affected will be brought back to their initial state when works are completed.



Measures to diminish the impact on soil and on land use

During the execution stage control is recommended by execution phases, and adequate storage of topsoil is recommended in order to reinstate land quality by ploughing, braking and fertilizing operations.

In order to avoid soil pollution the following measures will be taken:

- there will be no dumping, no burning, no storage on soil and no burying of garbage or other type of waste (used tires, oil filters, cloths, paint recipients, etc.); waste will be stored separately, by categories (paper, metal, plastic and glass, polyethylene packing, metals, etc.) in specially designed recipients or containers;
- any spilling of used oils or fuels is forbid;
- only preset access ways and parking areas will be used for devices;
- any storage of tubing outside the working strip is forbid.

During the pipeline execution works the following works are envisaged for soil/subsoil protection:

- digging operations for pipeline mounting will be executed in correlation with the general flow of the pipeline mounting works so as to reduce the time when ditch is kept open and to avoid caving, water filling, infiltrations in lower layers, landslides;
- topsoil will be stored to be later used for soil reinstatement when works are completed;
- after pipeline is laid, ditch is to be filled and adequately compacted so as to avoid rain water infiltrations through the sandy ground of the pipeline ditch.

In case of permanent and temporary removal from the Agricultural Land Reserve / Forestry Land Reserve the following measures are proposed to reduce the impact:

- sizing of the works to the minimum necessary surface;
- strict delineation of the working strip.

Measures to diminish the impact on water quality and quantity regime

For safe exploitation of the pipeline under-crossings, geotechnical and hydrological studies have been performed to determine the maximum levels for the calculation and control of water bodies and of general scouring.

Storage of materials, of waste, and stationing of devices in the river beds are forbid.

After the execution of the works the affected shores will be reinstated to their initial state.

During works execution the constructor and the beneficiary are bound to assure free flow of water.

Taking into account the potential specific impact on water quality and quantity regime the following measures are proposed to reduce the impact:

- in case of increased water turbidity, temporary shutdown of water supply is recommended, or a longer decanting time if there are upstream water supply sources;
- the use of viable materials for water crossings by horizontal drilling so as to avoid bentonite leaks;
- proper maintenance of devices used for undercrossing works.

Measures to reduce the impact on air and climate quality

During the construction-mounting works the impact on air is represented by the flue gas from engines and devices, by insignificant emissions of volatile organic compounds from valves and fittings painting jobs.

In order to reduce flue gas emissions devices and/or vehicles will be stopped during the breaks.

To reduce the impact on the air we propose rigorous checking of vehicles engines and devices used for project works.

Measures to reduce the impact of noise and vibrations

The promoters have the following obligations:

- to assure the adequate quality of their own quality system designed and created by own staff, with certified technical staff;
- to use the products and equipment specified in the project for works execution;
- to observe the execution details and the arrangement of the compressor stations as specified in the project.

FEED provides that construction control and quality are mandatory and are performed by investors through their site supervisors or through expert consultants.

In order to reduce the noise caused by the operation of the compressor stations, measures have been embedded in the design and arrangement of the stations so as to assure a maximum noise level at enclosure limit of maximum 65 dB(A) according to the provisions of STAS 10009/88 – urban acoustics.

For observance of the maximum noise level at inhabited dwellings, as set by Order no.119/2014 on the approval of the public hygiene and public health regarding the population’s way of life, namely 55/40 dB day/night, the Project’s design will provide for adequate measures.

Measures to reduce the impact on landscape and scenery

Considering the potential impact on landscape and scenery the proposed mitigation measure is to reinstate the temporary occupied lands when project works are finished.

4. PROJECT PRELIMINARY SCHEDULE

Development and implementation stages	Period
Prefeasibility study	complete
Feasibility study	complete
Environmental Impact assessment	complete*
FEED and permitting documentation for the construction permit	2015 – 2017
Construction of Recaş – Horia pipeline section	2019 – 2020
Compressor stations upgrading (GCS Podișor, GCS Bibești, GCS Jupa)	2019 – 2020
Start of operation PHASE 2	2020

* ANPM issued the Environmental Agreement no. 03/05.12.2016

5. SUMMARY OF PROJECT STATUS

The feasibility study that also includes topographical studies, geotechnical studies and hydrological studies has been completed. The pipeline route has been set in this study.

The pipeline FEED is elaborated by S.N.T.G.N. Transgaz S.A. through their Engineering and Research Division, and is close to completion. FEED comprises the final route of the pipeline and the permitting process for all 2 counties the pipeline crosses, as required by the Urbanism Certificates. FEED is elaborated with observance of *GD 28 /2008 on the approval of framework contents of technical – economical documentation for public investments and of the Technical norms for design and execution of gas transmission pipelines*, as approved by Order no. 118/2013 issued by the Chairman of the National Energy Regulatory Authority.

FEED for the 3 compressor stations part of BRUA (both Phase 1 and Phase 2) is currently in progress, performed by an expert engineer.

FEED comprises the technical and economic solutions for implementation of the investment scope based on which the authorized construction works will be performed.

The Environmental Impact Assessment is complete, and the Report on the environmental impact has been sent to the National Environment Protection Agency – the authority in charge with the elaboration and issuing of the Environmental Permit. During the quality analysis stage of the Report on the environmental impact, between August 24, 2016 and September 1, 2016 the public hearings on the environment impact have been held. The Environmental Agreement for BRUA Project has been issued by the National Agency for Environment Protection on December 05, 2016.

6. EU SUPPORT

In 2015, for the financing of FEED for the three gas compressor stations of BRUA for both Phases of BRUA, S.N.T.G.N. Transgaz S.A. **has signed a grant agreement for 1,52 Mil EUR with The Innovation and Networks Executive Agency (INEA), Department C – Connecting Europe Facility (CEF)**, representing 50 % of all eligible costs for gas compressor stations FEED.

Additional information on this subject at: <http://www.transgaz.ro>.

7. PUBLIC HEARINGS

According to the provisions of Art. 9 (7) under “*Regulation (EU) 347/2013 of the European Parliament and European Council, dated April 17th, 2013 on the guidelines for trans-European energy infrastructure and repealing Decision no. 1364/2006/CE and amending Regulations (EC) No.713/2009, (EC) No. 714/2009 and (EC) No. 715/2009*”, S.N.T.G.N. Transgaz S.A. invites the interested public to take part in the public hearings. The times and locations for such hearings and other relevant documents to this process and relevant documents for BRUA Phase 2 are published on the company’s webpage.

Link: <http://www.transgaz.ro/ro/informatii-clienti/extinderea-capacitatii-de-transport-gazelor-naturale-din-romania-catre-ungaria>

The interested public may get additional information on the Project from the following contact:

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8. OTHER RELEVANT INFORMATION

- Project webpage:

<http://www.transgaz.ro/ro/informatii-clienti/extinderea-capacitatii-de-transport-gazelor-naturale-din-romania-catre-ungaria>

- For information on PCIs access the following link:

<https://ec.europa.eu/energy/en/topics/infrastructure/projects-common-interest>

- The manual of procedures for the permit granting process applicable to PCIs and elaborated according to Regulation EU no. 347/2013 has been published for public consultation purposes by the Competent Authority for PCIs and may be found on the Ministry of Energy webpage:

<http://energie.gov.ro/wp-content/uploads/2016/09/Manual-procedura-PCI-intreg.pdf>