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## Abbreviations and acronyms used

ABA	=	Water Basin Administration
AG	=	(County) Arges
AGA	=	Water Management Permit
NARW	=	National Administration of Romanian Waters
NAMR	=	National Agency for Mineral Resources
APM	=	Environmental Protection Agency
AR	=	(County) Arad
REPA	=	Regional Agency for Environmental Protection
BAT	=	<i>Best Available Techniques</i> (BAT)
BBOP	=	<i>Business and Biodiversity Offset Programme</i> (balancing biodiversity program investments)
BH	=	basin
		(Draft) Development in Romania of the National Gas Transmission System corridor Bulgaria-Romania-
BRHA	=	Hungary-Austria
CF	=	Railroad
CJ	=	County Council
CL	=	local council
CLC	=	CORINE Land Cover
CS	=	(County) Caras-Severin
CU	=	Urban certificate
DB	=	(county) Dambovita
DC	=	Communal road
DJ	=	County Road
DN	=	National road
DS	=	Forestry Department
EA	=	Adequate assessment
EIA	=	Environmental Impact Assessment
EM	=	Environmental assessment
GJ	=	(County) Gorj
GM	=	Environmental guard
GNM	=	National Environment Guard
GR	=	(county) Giurgiu

Ha	=	Hectare (ha)
HD	=	(County) Hunedoara
IPG	=	Global pollution index
IPJ	=	County Police Department
ITRSV	=	Territorial Inspectorate for Forestry and Hunting
IUCN	=	International Union for Nature Preservation
kg	=	Kilogram (s)
km	=	Kilometer (s)
m	=	Meter (meters)
mc	=	Meter (meters) cubic
mp	=	Meter (meters) square
OS	=	Forest Fold
OT	=	(County) Olt
PATJ	=	County Spatial Plan
Patz	=	Zonal Spatial Plan
PIG	=	Intelligent cleaning gas pipelines
P.M.	=	Management Plan
POT	=	Percentage of land occupation
PUG	=	General urban plan
PUZ	=	Area Town Planning
RA	=	Location report
RM	=	Environment Report
RS	=	Hazard Ratio
RSEIM	=	The study compared the environmental impact assessment
SCG	=	Natural gas compressor stations
SNTGNT	=	National Gas Transmission Company "Transgaz" SA
SPC	=	Station's cathodic protection
TM	=	(Timis county)
TR	=	(County) Teleorman
u.a.	=	Forest production units
UP	=	Production Unit
USI	=	SC Unitatea de Suport pentru Integrare SRL
UVM	=	"livestock" units
VL	=	(County) Valcea
vl	=	limit value
vla	=	the annual limit value
vlo	=	hourly limit value
vlz	=	daily limit value

## Definition and meaning of certain terms used

Project footprint	=	It is a measure of the impact that most often refers to the area coverage (view) (area of deployment) overlapping the categories of habitats;
Ecological footprint	=	It represents all environmental burdens posed by the implementation of a project and the induced effects manifested by different categories of impact (direct / indirect / cumulative, etc.)
Expert analysis	=	Is an approach that in the absence of any clear, concrete quantification through several stages of analysis which account for one level of relationship established by convention; such a process is intended to facilitate interpretation of scenarios, solutions, models, etc.
Conflicts	=	Cartographical model resulting by overlapping proposed elements of a plan or project development to

map		specific environmental factors; overlapping areas can attain gradation obtained under the category of associated impact and thus help illustrate and quantify the impact, justifying the proposed mitigation measures;
Global pollution index	=	An index calculated based on a methodology proposed by V. Rojanschi <sup>1</sup> that calls for scaling impact categories that influence environmental factors that can be quantified in a cumulative manner by going through an algorithm that uses a geometric methodology.
Lines of hunting (shooting)	=	Usually straight corridors, up to 15m wide made within forest formations created by deforestation and maintained by mowing, intended particularly to support hunting activities, but having other roles, such as delimitation of stands (ua) limiting fire spread litter, favoring some species of fauna, etc.
Leopold matrix	=	A methodology to measure the impact of the proposed LB Leopold <sup>2</sup> involving estimation of the importance and magnitude of impact
The exemplary method		A method proposed by V. Rojanschi (see global pollution index) which is widely used at national level, that became one of the currently estimating the value impact.
Rojanski	=	Usually straight corridors, up to 8m width made within forest formations created by deforestation and maintained by mowing with multiple role: delimitation of stands (ua), limiting the spread of fire litter, favoring some species of fauna, etc.
Forest Lines	=	

## Introduction

The purpose of this documentation is to identify, evaluate and present the potential impact of the Project “*The Development of the National Gas Transmission System on Bulgaria-Romania-Hungary-Austria Corridor*”, crossing Romania from South (Giurgiu county) to West (Arad), crossing as well the counties of Teleorman, Dambovita, Arges, Olt, Valcea, Gorj, Hunedoara, Caras-Severin and Timis.

This study has been prepared in accordance to:

- Ministry Order 863/2002 on the approval of the methodological guidelines applicable to the stages of the framework procedure for the environmental impact assessment;
- Government Emergency Ordinance 195/2005 on environmental protection, as further supplemented and amended;
- Government Emergency Ordinance 57/2007 regarding natural protected areas, conservation of natural habitats, of wild flora and fauna;
- Ministry Order 445/2009 on the impact assessment of certain public and private projects on the environment;
- Ministry Order 135/2010 on the approval of the Methodology for the application of the environmental impact assessment to public and private projects;
- Ministry Order 19/2010 on the approval of the Methodological Guidelines on adequate assessment of the potential effects of the plans and projects on protected natural areas of community interest;

and taking into account all relevant national and European legislative provisions.

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<sup>1</sup> Rojanschi, V., Diaconu, S., Florian, G. (2004): “**Evaluarea impactului ecologic și auditul de mediu**”, Ed. ASE

<sup>2</sup> Leopold, L. B., F. E. Clarke, B. B. Hanshaw, and J. E. Balsley (1971): “**A procedure for evaluating environmental impact**”. U.S. Geological Survey Circular 645, Washington, D.C.

In the elaboration of this report we also considered the following documents developed within the project Phare: 2000 *Technical assistance to ensure compliance with the Environmental Impact Assessment Directives* - beneficiary Ministry of Environment and Water Management:

- *Public participation in the assessment of the environmental impact procedure*<sup>3</sup>;
- *EIA manual*;
- *Guidelines for inclusion of biodiversity topics in the assessment of the environmental impact procedure*;
- *Guidance on the environmental assessment for development plans and programs in the energy sector (PHARE 2004 program - Ministry of Environment and Sustainable Development)* - In terms of area expansion and importance in the overall national energy strategy;
- *Methodological guidelines on adequate assessment* ([www.mmediu.ro/pdf/legislatie/biodiv/Ghid\\_Evaluare\\_Adecvata.doc](http://www.mmediu.ro/pdf/legislatie/biodiv/Ghid_Evaluare_Adecvata.doc)) as well as:
- *Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitat Directive 92/43 / EEC*, proposed by the European Commission, DG Environment, 2002 as well as the provisions of European Directives 2000 / 60 / EEC "Waters", 79/409 "Birds", 92/43 "Habitats" (in terms of it's the potential influence of some Natura 2000 criterion-elements in the Project influence area).

The content and structure of the document is following as closely as possible previously developed technical documents in order to give the opportunity to conduct comparative analyses. In this regard they have been complied with some wording from the titles of sections as they were formulated in the context of normative contents or working models.

Any project, plan or program, in addition to direct effects (for which it was designed) causes a number of indirect effects that must be managed in order to comply with the environment protection regulations. Therefore the need to manage the effects is also based on all the principles underlying the environmental legislation:

- early initiation of measures in order to eliminate undesirable effects;
- objective assessment of all alternatives and possibilities regarding the choice of optimum technology;
- the need to involve all institutional factors responsible with the decision making process in the management of projects having an impact on the environment;

The environmental impact assessment aims to highlight the negative, but also the positive influences as a result of a planned or ongoing activity (for projects of development or reconditioning of existing capacity) on the environment (as a whole) and, from the point of view of the pollution, the effects on human health.

The environmental impact study is trying to anticipate the effect of project associated activities, taking into account all environmental conditions, whether variable or constant. The environmental impact study contains technical analysis which provides information on the causes and effects induced by the project, their cumulative consequences, summed up with the impact caused by past and present activities, with assumptions and on future developments for a more accurate quantification of the impact levels on the environment factors in the studied area.

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<sup>3</sup> Public participation to the Environmental Impact assessment Procedure – Technical assistance to assure compliance with the provisions of the Directives regarding the Environmental Impact Assessment [http://www.anpm.ro/Files/EIA\\_ghid\\_200710303743768.pdf](http://www.anpm.ro/Files/EIA_ghid_200710303743768.pdf)

Environmental impact assessment has emerged as a basic tool to identify and reduce negative consequences on the environment due to human activities, reflecting a precautionary approach to environmental management for sustainable development. This assessment seeks to incorporate environmental planning in the early stages of development projects in order to prevent or reduce the negative environmental impacts of the proposed activity.

The assessment of the environmental impact of a given project aims thus to provide information to the responsible factors that facilitate and support decision makers in order to adopt the most appropriate measures to reduce or, if possible, eliminate all project adverse effects.

A definition for this type of documentation has been proposed in 1979<sup>4</sup>, and in 1991 the UNECE (United Nations Economic Commission for Europe) concluded that it represents an *assessment of the impact of planned activities on the environment*. Over time EIA became a *process of analysis of the potential environmental impact of a project*. The EIA Guide<sup>5</sup> defines EIA as a *procedure which assess the environmental impact and the way the potential negative environmental impacts are reduced or eliminated, if possible. EIA is a process intended to collect information used to identify and understand the effects of proposed projects on the environment (air, water, soil, fauna, vegetation, etc.) and on the social and economic environment of the potentially affected population*.

In EU Directive 85/337 / EEC on the assessment of the environmental effects of certain public and private projects (the EIA Directive) is applicable since 1985 as revised, amended and supplemented on several occasions, and represents the basis of European environmental regulation policies and underlies the environmental national legislative systems.

Since 1991, under the auspices of UN, the Espoo Convention was ratified establishing the reference elements on cross-border environmental impact.

Further on, internationally, the environmental impact assessment has been acclaimed as the essential tool for implementing the policies of environment protection in 1992 at the Rio Conference (principle 17), becoming thus an element to be transposed in each signatory nation.

Environmental impact assessment is defined by Environmental Law as supplemented by GEO 195/2005 (Article 2 pt. 31) as "*a process designed to identify, describe and establish, depending on each case and in accordance with the law, direct and indirect effects, synergistic, cumulative, main and secondary effects of a project on human health and the environment*", and to this end, in accordance with MO 135/2010 (Annex on methodology enforcement environmental impact assessment for public and private projects; art. 16 paragraph 4) *Report on the environmental impact has to observe the framework-contents of the methodological guides on environmental impact assessment*.

The purpose of this EIA is that Transgaz SA Medias be granted the Environmental Permit for the project "*The Development of the National Gas Transmission System on Bulgaria-Romania-Hungary-Austria Corridor*", classified in the category of projects requiring environmental assessment as defined by Annex I, item 16, *Pipelines with diameters exceeding 800mm and a length of at least 40 km, letter (a) gas transmission, oil, chemical substances*.

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<sup>4</sup> Munn: by the need to *identify and provision an environmental impact, an impact on human health and the good practice of legislative bills, of the policies, programs, projects and operational procedures and to construe and communicate information on such impact* [Glasson, J., Therivel, R., Chadwick (2005): **Introduction to Environmental Impact Assessment**, 3<sup>rd</sup>. Eds. Routledge Eds: Taylor & Francis Group, London & New York.

<sup>5</sup> Participation of the public in the Procedure of Environmental Impact Assessment – Technical Assistance, to assure alignment with the provisions of the Directives regarding the Environmental Impact Assessment [http://www.anpm.ro/Files/EIA\\_ghid\\_200710303743768.pdf](http://www.anpm.ro/Files/EIA_ghid_200710303743768.pdf)



The EIA is not an exhaustive scientific research making a monographic summary of all attributes related to the environmental factors in the targeted area. EIA, as defined in GEO 164/2008<sup>6</sup> introducing the latest changes and supplementations to the Environmental Law, is *"part of the documentation, plan or program, which identifies, describes and assesses the possible significant effects on the environment, part of their application and its reasonable alternatives, taking into account the objectives and the related geographical range, according to the applicable legislation."*

Thus, this document is intended to be just a tool to assist decision-making of environmental authorities, on the effects on the environment by promoting the proposed project, through the identification and assessment of possible significant effects on the environment, including its rational alternatives. EIA took into account the elements of documentation provided by the Project promoter as well as relevant the information currently in the study.

Given that BRHA crosses sites included in Natura 2000 network, in accordance with Law 49/2011<sup>7</sup>, the Adequate Assessment was included in the documentation and analysis of EIA in order to identify the possible negative impact on the elements that were considered as the criterion underlying the Site designation. In this respect, the Adequate Assessment is definitely the document that focuses on these specific elements that led to the designation of Natura 2000 sites.

According to the legal provisions, the notion of significant negative impact must be determined in relation with the specific features of the protected community interest area. It should be noted that what may have a significant negative effect in a particular protected community interest area, may not have the same effect for another type of protected community interest area. Therefore, each individual case assessment is to be treated according to the preservation objectives of the protected community interest area and to the plan or Project characteristics.

The likelihood of significant impacts may result not only from the characteristics of a plan or Project located in a protected community interest area, but also of a plan / project located outside such area. In accordance with Law 49/2011, art. 28, paragraph 4, the Adequate Assessment was included in this documentation of the Report to the Environmental Impact Assessment Study.

The Adequate Assessment has the aim of highlighting the potential negative effects that may occur at criterion elements underlying the designation of Natura 2000 sites expected to result from implementation of a plan or project, which would lead to the loss of the conservation value of the site because of the negative effects on flora, fauna, or habitats, leading to bio-ecocenotic malfunctions or disruptive effects on Natura 2000 network.

The Adequate Assessment has emerged as a basic tool to identify and reduce the negative impacts of human activities on Natura 2000 network objectives transposing EU Directives 92/43 "Habitats" and 79/409 "Birds".

The Adequate Assessment is not an exhaustive scientific research conducting a monographic synthesis of all attributes related to the environmental factors in the target area. The Adequate Assessment is defined by the Environment Law supplemented by GEO 195/2005 (article 2 section 30<sup>1</sup>) as: *the process designed to identify, describe and establish, according to the preservation objectives and in accordance with the applicable legislation, direct and indirect effects, synergistic, cumulative, main and secondary effects of any plan or project, not directly connected with or unnecessary for the management of protected natural areas*

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<sup>6</sup> Government Emergency Ordinance no. 164 of 2008 on amendment and supplementation of Government Emergency Ordinance no. 195 of 2005 on environment protection, published in the Official Gazette no. 808 of December 3<sup>rd</sup>, 2008

<sup>7</sup> art.28 para.4

of community interest, but which could significantly affect the area, whether individually or in combination with other plans or projects "

Also, in the documents entitled:

- *Managing Natura 2000 Sites - The provisions of Article 6 of the Habitats Directive 92/43/EEC*<sup>8</sup>;
- *Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*<sup>9</sup>;

The focus is on the carrying-out of this assessment stage by addressing potential project impacts (planned) on items criterion (species / habitats) that led to the designation of the site. By applying the provisions of Art. 6 (3) and 6 (4) reference is made to one of the fundamental principles underlying environmental legislation, namely *the precautionary principle*. Thus, the Adequate Assessment is triggered by *the potential occurrence* of damage to the elements underlying the designation of sites and not necessarily the certainty of the existence of an undeniable impact. However, it remains unacceptable that when there is sufficient evidence that a significant impact cannot be predicted, to impose the appropriate assessment based on this principle.

Thus, the scope of the Adequate Assessment is to analyze the situation posed by the implementation of BRHA project, the impact this may have on the elements that led to the designation of the targeted Natura 2000 sites, but also on the integrity of the ecological functions. This documentation analyses:

1. Impact (direct / indirect / cumulative, etc.) the Project may have criteria elements underlying the designation of the site;
2. Evaluation of the potential influences on ecological features that may affect the criterion elements underlying the designation of the site;
3. The impact mitigation solutions (and, if the case, compensation of the ecological losses) to be taken by the project proponent;

The entire technical documentation for the environmental impact assessment and for the Adequate Assessment was carried out taking into account the decision of the screening stage no. **18 / 09.09.2015** and the Guidelines **1/2581 / MF / 09.16.2015** issued by NEPA and based on the reference items issued by the beneficiary, Transgaz Medias, and reference was made to relevant expert documentation, used as reporting, information or research elements, as follows:

- RSEIM Nabucco Gas Transmission Pipeline - SC Iptana SA;
- Adequate Assessment (I-IX) Nabucco Gas Transmission Pipeline - SC Iptana SA, Institute of Biology, Bucharest;
- Environmental Report for the interconnection strategy of the National Gas Transmission System with neighboring countries gas transmission systems - SC Iptana SA;
- *The impact of Natural Gas pipeline easements on residential property values - Vermont homes studies*;
- *Effects of development of the natural gas pipeline and associated well on the natural and scientific resources of the Fernow Experimental Forest - USDA NRS-R GT 76, Delaware Ohio*;
- *The Environmental Impacts of the Nord Stream Gas Pipeline in the Baltic Sea - SYKE Velko-Venäjä*;
- *Impacts of Natural Gas Pipeline for NC - NCSU*;

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<sup>8</sup> European Communities, 2000, Luxembourg: Office for Official Publications of the European Communities;

<sup>9</sup> Impact Assessment Unit: School of Planning, Oxford Brookes Univ., Luxembourg: Office for Official Publications of the European Communities

- *Natural Gas Pipelines - Excerpt from Report # 2 of the Pennsylvania Energy Impacts Assessment* - RK Mellon Foundation;
- *Understanding Natural Gas Pipeline Infrastructure and Impacts* - Penn State Extension;

The elaboration of the documentation starts with explanations for certain elements for a clear understanding of the entire process of environmental assessment; to this end each section contains insertions of explanatory elements, defining elements and relevant descriptions.