

**Request for defining scope and content of the Study on Environmental Impact Assessment
for the South Stream Project**

1. General Contractor's Data

General Contractor: SOUTH STREAM DOO Novi Sad

Registry Code: 20785683

Tax Ident. Number: 107350223

Legal Form: Limited Liability Company

Registered Seat: 12 Narodnog-fronta-Str., Novi Sad

Activity Code: 4950

Study on EIA prepared by: Public Enterprise "Srbijagas" Novi Sad

Registry Code: 20084600

Tax Ident. Number: 104056656

Legal Form: Public Enterprise

Registered Seat: 12 Narodnog-fronta-Str., Novi Sad

Activity Code: 4950 – pipeline transmission

2. Project and Location Description

a) Location Description

A high-pressure gas pipeline South Stream is a gas transmission system (in Russian abbreviated as "GTS") for Russian gas export supplies to the countries of South and Central Europe amounting up to 63,0 bcm/year (including fuel gas).

It contains the following pipeline sections: submarine gas pipeline sections through the Black Sea aquatory and on-shore sections across the territories of South and Central European countries.

The branch running through the territory of the Republic of Serbia includes the following sub-sections:

- High-pressure gas pipeline sections
- Gas pipeline sections for gas transit to the Republic of Srpska
- Gas pipeline sections for gas transit to the Republic of Croatia (depending on the approved alternative solution)

Length of the designed high-pressure gas pipeline branch on the territory of Serbia is 451,5 km from the starting point at the Bulgarian border to the ending point at the Hungarian border. The route runs in the vicinity of the following major villages and cities: Zaječar, Boljevac, Paraćin, Čuprija, Jagodina (Svetozarevo), Svilajnac, B. Plana, Smederevo, Pančevo, Temerin, Vrbas, Kula and Sombor. The last village at the Hungarian border is Bački Breg.

Design boundaries on the territory of the Republic of Serbia are defined by the points the high-pressure gas pipeline crosses the state borders of the Republic of Serbia and Bulgaria, Hungary, Croatia and Bosnia & Herzegovina (branch to the Republic of Srpska). Gas supply to Bosnia & Herzegovina are expected to be carried out also through the existing gas transport system owned by PE Srbijagas.

The gas pipeline enters the territory of the Republic of Serbia in the sector of border crossing „Vrška Čuka“, near the city of Zaječar. The route runs around the border crossing Vrška Čuka from the north and goes down into the valley of the river Beli Timok, crosses the river and runs along the slopes of the mountains Stara Planina, Tupižnica and Rtanj up to the Boljevac-village. The route runs from Boljevac parallel to the highway Zaječar – Paraćin, with three crossing points, and across the mountain part in the area of a mountain pass Čestobrodice it reaches the city of Paraćin. It is a mountain relief crosscutted with river valleys, made of limestone and vulcanic sediments. Watershed elevations reach 1560 m. The route uses mainly river valleys and lowlands between mountains. Route elevations range between 200 m (in valleys) and 700 m, in average.

Between the cities of Čuprija and Paraćin the route goes down from the mountains to the valley of the river Morava, turns north and enters the corridor of the existing gas pipeline and the major highway, running along the Morava river valley. Near the city of Smederevo the gas pipeline crosses the Danube river in the vicinity of the place where the Morava flows into the Danube. The route part between Paraćin and the Danube crossing is characterised by flat relief forms of alluvial soil, created by the deposition of bedrock sediments. The local lower parts contain extensive swamps forming biogenic strata. The main route direction of this section is north.

The route passes Belgrade in the east, near the city of Pančevo, and goes on toward the city of Novi Sad. It is envisaged that the route pass the area of Novi Sad twenty kilometers eastward. The route of the designed gas pipeline turns north-west in the vicinity of the village Gospođinci, passing by the cities of Temerin, Kula, Vrbas, and heading north around Sombor. The route between Gospođinci and Sombor should run within the corridor of the existing gas pipeline.

In terms of geomorphology the route part to Hungarian border runs through the Central Danube Plain, on its southwest outskirts being the Pannonian Basin, with the absolute elevations ranging between 70 and 90 m. The relief is flat, with a complex and extended hydrographic system of tributaries of the Danube.

Main natural and artificial (constructed) barriers on the route are large and mid-size watercourse crossings (rivers Danube, Tamiš, Tisa; Danube-Tisa-Danube Canal, the Grand Canal) as well as 1. and 2. category motorways and railways.

Compressor stations along the route of the high-pressure gas pipeline are planned to be located as follows: the compressor station 1 (CS 1) at 147 km and the compressor station 2 (CS 2) at 342,5 km of the route.

The south gas pipeline branch (to Serbia) is foreseen to be constructed at 83,6 km within the area of Paracin and the north branch (to Serbia and Bosnia&Herzegovina) at 310,5 in the area of the hub Gospodjinci.

Gas pipeline branch to the Republic of Srpska

The starting point of the branch to the Republic of Srpska is situated at 261,5 km of the high-pressure gas pipeline route, near the village of Centa, and its length is about 105 km. The route direction is southwest.

The gas transmission to the Republic of Srpska envisages three major river crossings over the rivers Danube, Sava and Drina. The Drina river in the area of Novi Sad represents the ending point of the branch on the territory of Serbia. There are also large road and railway crossing planned. The starting point of the route is located within the swampy lowland in the area of Centa. The whole route runs through river lowlands. There are over 100 m elevations only on the rather steep right bank of the Danube.

Gas pipeline branch to the Republic of Croatia

The starting point of the branch is situated at 344,8 km of the high-pressure gas pipeline, at 2,3 km from CS 2 in the gas flow direction. The branch length is 52,7 km. The route runs southwest in relation to the base route across a flat terrain. The elevations do not exceed 85 m. The ending point is the Danube (state border with the Republic of Croatia) in the area of the village Backo Novo Selo. The main barriers on the route are regulated watercourse crossings – canals Mali Mali and Backi Petrovac.

2. Description of main features of the production procedure (the nature and the extent of material usage)

The Project envisages gradual increase in natural gas quantities to be transported through the territory of Serbia from 20,9 bcm/year (2017) to 40,5 bcm/year (2025).

Table 1 shows a preliminary gas composition to be transported.

Table 1 - Preliminary gas composition to be transported

Description	Indicator
Gas composition (volume fraction %)	
Methane (CH ₄)	97,5278
Ethane (C ₂ H ₆)	0,8797
Propane (C ₃ H ₈)	0,1397
Isobutane (C ₄ H ₁₀)	0,0149
N-butane (C ₄ H ₁₀)	0,0248
Isopentane (C ₅ H ₁₂)	0,018
N-pentane (C ₅ H ₁₂)	0,0203
Hexane (C ₆ H ₁₄)	0,0222
Heptane (C ₇ H ₁₆)	0,0126
Nitrogen (N ₂)	0,9303
Carbon dioxide (CO ₂)	0,41

Within the designed part of a lineal gas pipeline the following structures and communications should be constructed:

- Section of the gas pipeline South Stream with ball valve hubs
- Gas Measuring points at GIS
- Receiving Traps connected to the connection point of the compressor station (CS)
- Remote Control Structures (i.a. remote operation checkpoints)
- Electrochemical gas pipeline protection
- Optic cable along the designed gas pipeline
- Complete transformer sub-stations (KTP)

In addition, submarine crossings are foreseen to be constructed at the locations where the route of the designed gas pipeline crosses watercourses (rivers).

1. Construction of a line part of the gas pipeline

A preparatory stage of the construction includes the following works: preparatory work outside the route, preparatory work on the gas pipeline route, basic line work, work regarding installation of electrochemical protection.

Works to be made under basic construction stage shall commence upon completion of preliminary work. Construction of the high-pressure gas pipeline is conducted using various types of mechanization, machinery and devices for the following: earth works, loading, unloading, storage and transport of large-diameter pipes, pipeline laying and insulation works.

Prior to the basic earth works, the top soil with vegetation is cleared away from the construction zone and stockpiled separately so it can be re-used for site recultivation and landscaping. The excess soil will be delivered to a soil user.

The line concerning works include the following:

- Pipe delivery and their line up along the route;
- Welding and installing;
- Trenching and excavation;
- Foundation;
- Pipe laying and installing fittings;
- Installing electrochemical pipeline protection and other;
- Pipe insulation and insulation inspection;
- Backfilling the trenches.

2. Construction of gas pipeline river crossings may be conducted through three principally different methods – by digging trenches (primarily for small rivers and streams with water mirror width up to 30 m), horizontal directional drilling (mid-size and major watercourses) and microtunneling (for mid-size and major watercourses where soil conditions make it impossible to use horizontal directional drilling).

Construction of gas pipeline crossings by the method of trench digging is conducted based on the mechanized procedure using the equipment for the following works:

- Vegetation clearance on bank sections;

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- Clearing away the top soil to be re-cultivated later on;
- Construction site planning;
- Construction of access roads, temporary dams and watercourse crossings (temporary embankments in case of small watercourses);
- Testing of crossing underwater section;
- Trench digging within a watercourse bed and on bank sections;
- Assembly and welding of pipe joints;
- Weld quality inspection;
- Insulation and installing ballast material on pipe joints;
- Insulation and insulation inspection;
- Pipeline laying;
- Trench backfilling;
- Bank strengthening works.

Construction of gas pipeline crossings using the method of horizontal directional drilling includes the following works:

- Site preparation for drilling equipment installment on watercourse banks;
- Pilot borehole drilling;
- Borehole expanding up to the requested diameter;
- Pipe joint assembly and welding;
- Inspection of work quality, welded joint insulation;
- Insulation and insulation inspection;
- Pipeline laying;
- Equipment dismantling.

During a drilling process a compressed bentonite solution is continuously injected in order to reduce friction, strenghten borehole walls and press out a drilling mud to the surface. Excess of the bentonite solution is collected at inlet and outlet points and pumped out, carried away and

utilised. Bentonite is a fine grade white natural clay of a specific quality, eco-friendly and containing no toxic ingredients.

A list containing basic contraction works required for a new compressor station with the associated structures is almost the same as it is the case for the construction of the line gas pipeline section, having in mind that in this case it relates to a structure to be constructed at the specific location and that all the works required are to be conducted at this specific location.

Construction of the compressor station includes the following works:

- Earth works and scaffolding
- Null cycle works, installing
- Overground structure part, installing covers, block-compartments, metal structures
- Installing aggregates, technological pipelines, equipment for natural gas pumping
- Internal sanitary works, electrical mounting works
- Final adjustments, commissioning and landscaping.

Prior to commencement of excavation preparation and upon determining excavation boundary/perimeter it is necessary to define location of all underground communications within the construction zone and mark it overground.

3. Summary of the main alternatives considered

Gas pipeline route selection is primarily based on:

- Having optimal engineering and geological conditions
- Features of the existing infrastructure (mostly roads and the existing pipelines), considering that pipeline foundation is envisaged along the main highways.

There are various routes determined regarding:

- Line pipelines
- Compressor stations.

Accordingly, several routes have been considered. They all match in the longer part between the Boljevac village in Eastern Serbia to the village Temerin, north-east Vojvodina.

a) Alternatives considered

Line part of the pipeline

The alternatives considered for the gas pipeline South Stream offer different solutions at the pipeline entry in the southern part and at the pipeline exit in the northern part of the Republic of Serbia. The entries considered are those from Rumania and Bulgaria.

The following route alternatives have been considered:

- ALTERNATIVE 1: Zaječar (or Negotin) – Horgoš
- ALTERNATIVE 2: Zaječar – Bački Breg
- ALTERNATIVE 3: Zaječar – Horgoš

Within the alternative with a pipeline entry at the border between Rumania and Serbia, the route would start in the area of the city of Negotin (eastern part of Serbia). The alternative from Bulgaria implies serbian entry to be located more south, in the vicinity of the city of Zaječar, also in the eastern border region of Serbia.

The considered alternatives show more differences regarding the proposed exit points in the northern part of Serbia, on the territory of the Provinz Vojvodina. One alternative runs through the valley of the river Tisa in the north, nearby the village Temerin, and crosses the Hungarian border in the north-west (over the South Backa District and West Backa District) near the area of the village Bački Breg. The other route alternative runs from the village Temerin through the municipalities of Bečej, Ada. Senta, Kanjiža, crossing the Hungarian border in North Banat, within the area of the village Horgoš.

A part of the gas pipeline route identical for all the route alternatives starts in the vicinity of the village Boljevac within the Zajecar District and ends near the village Šajkaš in the Municipality of Titel.

Based on a careful consideration of all the aspects regarding the environmental baseline, technical/ technological solutions and activities during the construction, exploitation and upon facility decommissioning it has been decided that the route alternative Zajecar-Backi Breg is the most acceptable solution. According to this alternative, the route shall run near the following major villages and cities: Zajecar, Boljevac, Paracin, Cuprija, jagodina, Svilajnac, Velika Plana, Smederevo, Pancevo, Temerin, Vrbas, Kula and Sombor.

Based on that the branches to the Republic of Srpska nad the Republic of Croatia have been defined. The branch to the Republic of Srpska starts near the village Centa and ends in the vicinity of the village Badovinci, Novo Selo. The branch towards the Republic of Croatia starts at

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Backo Dobro Polje, the municipality of Vrbas, and ends at the Danube, near Bačko Novo Selo in the municipality of Bač.

Alternatives for compressor station allocation

Alternatives for compressor station allocation along the route of the gas pipeline South Stream in Serbia are as shown below in Table 2.

Table 2 - Alternatives for compressor station allocation

Route alternatives for the gas pipeline South Stream	Location of CS (in km from entering the Republic of Serbia)	
	CS 1	CS 2
ALTERNATIVE 1S: - Gas supply for Croatia from Serbian territory	86,6 North-east of the city of Paracin	240,4 North of the city of Pancevo
ALTERNATIVE 2S: - Gas supply for Croatia from Serbian territory	146,0 North of the city of Svilajnac	337,0 South-east of the city of Vrbas
ALTERNATIVE 3S: - Gas supply for Croatia from Serbian territory	100,0 North of the city of Cuprija	237,7 North of the city of Pancevo
ALTERNATIVE 1M: - Gas supply for Croatia from Hungarian territory	86,6 North-east of the city of Paracin	261,5 South of the city of Titel
ALTERNATIVE 2M: - Gas supply for Croatia from Hungarian territory	146,0 North of the city of Svilajnac	345,5 South-west of the city of Vrbas
ALTERNATIVE 3M: - Gas supply for Croatia from Hungarian territory	100,0 North of the city of Cuprija	237,7 North of the city of Pancevo
ALTERNATIVE 1a: - Gas pipeline entry from the Rumanian territory, Gas supply for Croatia from Serbian territory	72,0 East of the village of Boljevac	344,1 South of the village of Gospodjinci

The following alternative for compressor station allocation has been adopted: CS 1 at 147,7 km and CS 2 at 342,5 km.

b) Alternative processes

Upon detailed terrain inspection it came to a minor modifications in the gas pipeline South Stream route, Zajecar-Backi Breg alternative. Modifications include spatial deviations up to several hundreds of meters, all in order to facilitate and improve implementation of the project.

Taking into account the aspects of work process, construction, exploitation and the phase upon decommissioning, the alternative to be adopted shall enable the most favourable economic, environmental and social solutions, with minimal safety risks involved.

c) Possibility of project implementation cancelling

The high-pressure gas pipeline South Stream is internationally considered a high priority project. Analysis of its profitability and the benefits its construction and operation could bring for the Republic of Serbia fully justifies not only the project itself, it also creates preconditions for preservation and improvement of environment, health, economic and social aspects for both the population living in a direct vicinity of the high-pressure gas pipeline route but also those in other parts of Serbia.

4. Description of the environmental aspects that might be affected by the project

a) Population

The gas pipeline design and construction processes have taken into account safety zone categories and the respective technical requirements and normatives to be applied in line with the Rolebook on technical conditions and norms for a safe transportation of liquid and gaseous hydrocarbons through high-pressure gas pipelines and oil and gas pipelines for international transportation. It provides maximum safety for people and assets within gas pipeline protection zones, minimizing the probability of an accident.

b) Flora and Fauna

The construction of the gas pipeline South Stream might have effects on the flora and fauna since there are several protected areas in its direct vicinity.

A direct construction impacts on vegetation may be permanent and provisional. A permanent loss refers to the construction areas of the line production management of the high-pressure gas pipeline, metering and regulating stations, compressor stations. These are smaller surfaces and areas with mostly anthropogenic habitats, so it can be deemed that this is no significant impact, all circumstances considered.

A provisional loss of plant communities is related to a terrain preparation measures requiring a humus topsoil removal. A spontaneous vegetation recovery is expected to happen by succession,

since the humus layer will be reinstated into the top soil at backfilling the trench. Removal of plants and trees from a work zone increases the possibility of soil erosion, causes stronger winds and flooding in adjacent areas.

Gas pipeline impact on the fauna is limited. During the construction phase it may cause degradation of habitat and occupy movement corridors for migratory animals (night/day or seasonal migrations) causing habitat fragmentation. These changes are provisional since they occur only during the construction phase, followed by a total or approximate reinstatement of the ecosystem. Execution of works will be in line with the requirements for protected animal species that inhabit the gas pipeline perimeter, especially during period of migration or reproduction (bird nesting, fish spawn) in order to avoid disturbing the endangered animal species and reducing animal population.

A regular gas pipeline operation implies gas transmission through a sealed/closed pipeline system having no impact on the flora and fauna in the respective area.

c) Soil

During gas pipeline construction it comes to a changes in the top soil (due to trench digging, installing pipeline, pig launching and receiving traps, block station, primary metering and receiving station, compressor station). It is necessary to maintain the highest possible quality of the construction works in order to prevent causing exogenic processes in river valleys and the mountain slope sections.

At trench digging in agricultural land, the humus layer should be separated from the rest of the excavated material and deeper layers displaced separately to be used later on as the excavated material to start backfilling a trench with, followed by the top soil and the final reinstatement of the terrain. Backfill material shall not contain any decomposable material and shall protect gas pipeline from welding rods, sharp rocks, metal dross and other damaging materials.

Right upon completion of works, the area around the work zone shall be reinstated and re-cultivated, so that changes in soil quality are only local and temporary.

A regular gas pipeline operation will not influence the quality of the soil it runs through.

d) Surface Water and Ground Water

Construction of the new gas pipeline will influence the existing water quality of the watercourses it crosses causing local and temporary water rile. The impact rate to the watercourses is directly proportional to duration of the construction works and their scope.

When gas pipeline crosses a watercourse it shall not disturb the surface and ground water flow regime. It implies implementation of the appropriate measures for water extraction – by channeling, drainage or using water extraction pumps.

A trench digging involves also removal of coastal vegetation. Once the piping is laid, a re-cultivation and coastal area landscaping is made. The re-cultivation and landscaping works include reinstatement of all work surfaces. The gas pipeline section through the Republic of Serbia crosses natural and artificial barriers. It crosses the following natural and artificial watercourses: the rivers Beli Timok, Velika Morava (three times), Danube, Tamiš, Karašac, Tisa and the Danube-Tisa-Danube Canal.

The gas pipeline construction will not influence the level and quality of ground water.

The regular gas pipeline operation will not have impact on the existing surface water and ground water quality.

e) Air

The construction works may cause local air pollution from dust particles produced by construction and transportation equipment. Operation of the construction and transportation engines may also produce the following pollutant exhaust gases: nitrogen-oxides, sulfur-oxide, carbon monoxide and hydrocarbons. Welding and operation of diesel aggregates may also have a significant impact on the air quality. The impact on the air quality will be local and temporary. The regular gas pipeline operation will have no impact on the existing air quality.

A noise occurrence is expected during the gas pipeline construction stage, produced by machines and transportation means as a non-stationary noise sources (trucks, trench digging machines...). Conducting of works that produce an increased noise level is not allowed at night in the vicinity of settlements and vulnerable ecosystems (driftwoods, swamps, backwaters, etc). During gas pipeline exploitation noise occurs only by operation of Metering Stations, Regulating Stations and Compressor Stations. Such noise levels have been considered within design phase, so that the noise produced by gas pipeline operation will not disturb environment and the existing wildlife in the area of the gas pipeline and the Compressor Station. The regular operation of CS causes periodical discharging i.e. gas exhausting at high speed rate and with sound emission energy. Many of such nose sources are fitted with sound dampers to achieve noise reduction. The distance to the nearest residential buildings considering, such noise sources shall not exceed the allowed noise level stipulated under "Role book on the allowed environmental noise level" (Official Gazette of the Republic of Serbia, no. 54/92).

f) Buildings

There are no residential buildings along the gas pipeline route. The high-pressure gas pipeline route has been designed with the minimum distance of 200 m to the residential buildings and business entities, ensuring minimum impacts.

g) Immovable cultural properties and archeological sites

There is number of natural resources along the designed gas pipeline route. If the contractor during the construction phase comes across a natural resource being paleontological, geological, mineralogical or petrographical resource, assumed to have the features of natural monument, the contractor shall notify the Institute for Nature Conservation of Serbia and take all the necessary measures to protect such a natural resource until arrival of the authorized person.

Immovable cultural properties, units of special historic, cultural, artistic or other importance are protected in line with the Law on the Protection of Cultural Monuments and with the urban protection measures based on heritage conservation and revitalization. There are specific measures and regimes determined in order to facilitate revitalization program implementation.

If the contractor during the construction phase hits on archeological site or movable objects assumed to have the features of natural monument, the authorized person from the Institute for Nature Conservation of Serbia shall visit the site without delay. It is also necessary to obtain that the site remains undamaged and that the objects preserve their position and place as found.

A normal gas pipeline operation will have no impact on material and immovable cultural resources.

h) Landscape

Construction and normal operation of the gas pipeline will have no impact on landscape changing.

i) Interaction between the above stipulated factors

Composed primarily of methane, the main by-products of the combustion of natural gas are carbon dioxide (CO₂) and water vapor, the same compounds we exhale when we breathe. Natural gas releases 27% less CO₂ emission than fuel oil, for example. The scientific results show that natural gas usage as energy fuel reduces the following:

- Global warming and the 'greenhouse effect' that decrease plant productivity, increase skin cancer, cataract, immunodeficiency and mild illnesses in humans;
- Acid rain that damages crops, forests, wildlife populations, and causes respiratory and other illnesses in humans;
- Photochemical smog that can contribute to respiratory problems and permanent lung damage;
- Disturbance in humid/energy exchange between the earth surface and the atmosphere;
- Changing landscape of earth;

- Increase in soil and water acidity;
- Increasing development of dry and diluvial land, increasing world hunger;
- Decrease in drinking water quantity;
- Global migrations;
- Adverse impact on general health in humans;
- Number of human victims.

Natural gas as energy fuel enables not only increased efficiency of thermal power plants and industrial facilities, it also contributes to global preservation of the environment.

5. Description of possible significant impacts of the project on the environment that may occur due to the following aspects:

a) Project implementation

Assessment of the possible impacts associated to the project implementation and resulted from the operation of the facility being the subject of the analysis show that the quantitative data can be obtained based on a comprehensive analysis. It seems clear that the impacts are different, taking into account specific spatial relations of the structural content assessed.

1. Noise – limited impact

Vibrations produced by the mechanization used during the construction phase, as well as vibrations and noise produced by facility operation will be in line with the noise level set under the relevant legislation and all possible adverse effects (at compressor stations) mitigated by the appropriate noise protection measures (silencers, mineral wool, etc.)

2. Soil – limited temporary impact

Soil contamination is considered in respect to the two major phases, the construction phase and the gas pipeline operation phase. During the construction phase this issue results from the activities under construction material transport, construction machine operation, accidental lubricant or fuel effusion, etc. Such events may occur with a very small probability and the impacts stipulated are only temporary.

During normal operation within the gas pipeline operation phase there is no soil contamination. In the case of fire and explosion possible effects are only temporary.

3. Occupancy of the land – limited to the locations with surface structures of the project

The gas pipeline is laid underground and the soil reinstated, so that there is no significant impact in terms of occupancy of the land, except in places where surface structures are being constructed such as line production facility for high-pressure gas pipeline operation, compressor stations, metering and regulating stations, etc.

4. Flora and Fauna – limited impact

The gas pipeline construction works causes changes in land surface due to trench digging, pipeline assembly. At trench digging in agricultural land, the humus layer shall be separated from the rest of the excavated material in order to enable a proper trench backfilling and final reinstatement of the terrain. Due to removal of the humus layer and the soil digging an adverse impact on soil quality can be expected. Once the works are done, the area around the work zone is reinstated and re-cultivated. Further soil contamination is prevented by removing all residual waste from the work zone.

Noise and soil vibrations produced by heavy machinery operation and intensified local traffic have adverse effect to animals. Upon completion of the works there will be no such adverse effects.

5. Visual effects – limited impact

Since it is required that the structure of the constructed elements must be adjusted to the environment, it may be considered that the planned structure has no significant adverse impact in terms of change in morphological features and subjective experience of space.

6. Social effects

The common social interest considering, the social impacts of the gas pipeline construction are also positive improving the economic position of the population subsequently facilitating a whole set of global issues and creating better conditions for urban development on a broader scale. A detailed analysis of the situation and the effects shall be described under the Environmental Impact Assessment Study.

Cross-border impacts

It is assumed that there are no such impacts associated to the project. The only cross-border impacts that may be expected to occur during construction and exploitation of this type of project apply to changes in hydrologic regimes and contamination of cross-border rivers, in this case the Danube river. In line with the technical design the Danube crossing will be carried out using the method of horizontal directional drilling and the method of microtunneling with no adverse impact on the water of the Danube.

b) Usage of natural resources - no impact.

c) Emission of polluting material and waste formation - no impact.

1. Exhaust gases - During the construction and operation of the facility the air contamination by engine exhaust emissions from the construction mechanization is local and temporary. Fuel combustion emissions are minimal.

During the gas pipeline operation phase the following air contamination issues are to be considered:

I accident (gas leakage)

II emergency (fire and explosion)

III Natural gas emission through relief valves and safety valves - negligible quantities released in the atmosphere very quickly due to natural gas composition, causing no significant impacts.

IV Petroleum derivatives and oil fuel combustion emission

A detailed analysis and protective measures in the case of accidents shall be developed under the Environmental Impact Assessment Study.

2. Waste – It has been envisaged to conduct waste treatment in line with the relevant legislation and dispose it at the appropriate dumps. Upon pipeline construction, the excess of the excavated humus layer and other excavated material shall be transported by the vehicles to the dedicated disposal sites.

All the sanitary and process waste water are collected to the reservoirs connected to the waste water treatment system.

The implementation of all the proscribed measures for waste disposal should ensure that there is no adverse impact concerning this issue.

It should be stressed that a detailed preparation of technical solution and the level of natural conditions investigated under the stipulated design phase do not allow a quantitative environmental impact assessment for each specific activity. It primarily prevents a proper calculation of ecological and economic efficiency indices to the project. Such a calculation is foreseen to be prepared under the next stage of the project. The analysis made has confirmed acceptability of the anticipated environmental impacts: valuable natural structures will not be jeopardized.

6. Measures to protect and mitigate environmental impacts

Specific measures of environmental protection have been envisaged in order to prevent and remedy the adverse effects upon environment occurring during the implementation of the project South Stream. These measures of environmental protection may be systematically classified into the following groups:

- Measures to prevent interventions

Measures envisaged by legal regulations and by-laws

Measures of protection against natural disasters

Technical and technological safety

- Measures to mitigate negative impacts and monitoring of nature conservation

Specific measures of air, water and soil protection

Specific measures of protection against noise and vibration

Specific measures of forest conservation

Specific measures of flora and fauna protection

Specific measures of structural safety inside gas pipeline zone of impact

Measures to protect cultural and natural heritage

Organizational measures of safety and monitoring of environment

- Compensation and alternative measures

Measures of prevention, preparedness and responsibility in case of accidents

Measures to remedy effects of accident

Safety measures to prevent and mitigate consequences of potential environmental accidents

The afore mentioned list of environmental protection measures is to be amended by all necessary safety measures which shall appear in the further elaboration of the technical documentation, depending on requirements prescribed by competent institutions.

6.1. Measures to prevent interventions

6.1.1. Measures envisaged by legal regulations and by-laws

Measures envisaged by laws and other regulations and standards imply the application thereof in designing, application of norms and standards in the selection and procurement of instruments and equipment for the operational process in question, as well as the application of all safety measures during the construction and exploitation envisaged by valid legal regulations

6.1.2. Measures of protection against natural disasters

In all stages of designing, construction and exploitation of the structure it is necessary to implement safety measures envisaged by the "Emergency Act" (Official Gazzette of RoS No.111/09), such as: floods, accumulation of ice, stormy winds, earthquakes, large fires, water and air pollution and similar incidents, endangering people and causing great material damage.

6.1.3. Technical and technological safety

- detailed technical and technological measures are a constitutive part of preliminary i.e. main design
- natural gas inside the pipeline (gas line) has to be within a closed technological process. No emission of hydrocarbons is allowed from the unit, as well as their potential discharge at points other than the ones envisaged by technical documentation
- Designs need to include a special annex covering fire protection measures specifically during designing, execution and exploitation stages. Specific technical requirements for the construction of electrical installations (Ex proof) of structures to be used for transportation and distribution of natural gas, stipulate that installation can be executed only in compliance with the design approved by competent fire protection institution;
- Protection of structures against atmospheric discharges is envisaged by the main electrical engineering design;
- Based on the derived calculation, it is necessary to accurately size installations, regulation and safety fixtures in accordance with the valid technical norms and standards.
- The regulation and safety fixtures need to be properly laid out, so as to ensure installations against bursting due to uncontrollable rise of pressure.
- Pipe installations need to be stably laid out via sliding and solid supports.

6.2. Measures to mitigate negative impacts and monitoring of environment protection

6.2.1. Specific measures of air, water and soil protection

Specific measures of air protection

a) during construction of the structure

Since this is only a periodic impact of limited scope, it is not necessary to implement environment protection measures unless competent institutions order otherwise.

b) during exploitation of the structure

After the start-up of the structure and after the facilities have started to operate normally, based on the Environmental Protection Act (Official Gazette of RoS No. 135/04, 36/09 and 72/09), Regulation on emission limit values, manner and deadlines of measurements and data recording (Official Gazette of RoS No. 30/97) stipulates mandatory control measuring of emission once a year, unless the inspection has ordered otherwise.

c) after the structure has been closed

After closing, the structure does not affect air in any way.

Specific measures of water protection

a) during construction of the structure

- Since the designed route at several points crosses the routes of the rivers: Tisa, Velika Morava, Crni Timok, etc., particular attention should be paid to the protection of forests and areas around rivers subject to inundation during construction and exploitation of the gas pipeline, as well as to the maximum potential conservation of wet areas around these rivers, all in compliance with the Water Act (Official Gazette of RoS No.30/10)
- Construction of compressor and block station in such, fragile ecosystems is not allowed.
- it is necessary to prevent discharge of hazardous and waste harmful substances into waters.

b) during exploitation of the structure

Free discharges of fecal waters into the recipients is strictly forbidden. The design to be elaborated will envisage the construction of waste water sewage systems with automatic waste water treatment systems at locations of compressor stations.

If possibly a discharge into water course is necessary, special attention needs to be paid to the "Decree on Water Classification" (Official Gazette of SRS, No. 5/68) as well as to adhere to the "Ordinance on Hazardous Substances in Water " (Official Gazette of SRS, No. 31/82) which defines maximum quantities of hazardous substances that must not be exceeded.

c) after the structure has been closed

After closing, the structure does not affect waters in any way.

Specific measures of soil protection

a) during construction of the structure

- The planned gas pipeline route to a large extent crosses over the agro ecosystem areas of: vallies of Crni Timok and of Velika Morava, and over Negotinska Krajina so it is necessary to define a narrow (50 m) and wider area (100 m) of impact of the construction and operation of the gas pipeline rout upon the environment (particularly from the aspect of the conservation of the top quality agricultural soil and production of food of acceptable quality). Zones of impact and quantities of pollutants that may enter soil and water during construction and exploitation should be defined, and based on that define measures and recommendations for the use of soil. Consider the areas both on the left and right of the route.
- For the construction of a waste disposal site and access and manipulation roads, areas within lower soil category should be selected. It is not allowed to use top quality plough lands for such purposes.
- During the execution of the design in question certain amounts of solid waste shall be created that the contractor will be obligated to dispose at a site designated based on the Law on Waste Management (Official Gazzette of RoS No. 36/09).
- Major repairs and maintenance works on construction machinery in work areas should be avoided, and if they are necessary apply required safety measures. The plans i.e. work site organization design, for each route section should define and ensure temporary sites for disposal of construction material and equipment, temporary sites for the collection of municipal waste and their regular evacuation by the local municipal utility services.
- The contractor has to install temporary discharge points in all drainage trenches, canals and other draining facilities that will be closed during execution of works and also at all points where shutting down of the draining system might cause damage
- If during the site preparation works an emergency spilling of fuel, oil or other hazardous and harmful substances occurs, it is necessary to evacuate the contaminated soil to the site and according to the requirements of the competent utility service and immediately restore the site;
- During execution of works maximally use existing roads, pathways and already used areas in order to avoid inflicting damage to nature. Thus the negative effects upon the region, including the removal of vegetation and damaging of the root system of the surrounding vegetation will be reduced.
- All storage sites, disposal sites, landfills and access roads should be located far away from protected areas, settlements and recreational zones.
- All temporary roads and passageways that are not used for long term maintenance should be closed and returned to the use of the surrounding soil or based on the agreement with the local municipal authorities.
- All finishing earthworks should be adjusted to the existing contoures (geoplastics) of the site.
- Colors, materials and structure of built elemenets needs to be adjusted to the environment

b) during exploitation of the structure

- Permanent deposition of waste along the route and in the corridor, and particularly in the vicinity of settlements is forbidden.
- It is necessary to foresee regular inspections of erosion processes and prompt reactions in terms of urgent interventions related to the remediation of the problem.
- Free discharges of fecal waters into the soil and recipients is strictly forbidden.

c) after the structure has been closed

After closing, the structure does not affect soil in any way. The equipment (gas pipeline) may remain in the ground, while soil contamination that would occur as a consequence of corrosion process and of disintegration of steel pipes is negligible.

6.2.2. Specific measures of protection against noise and vibration

a) during construction of the structure

The investor should list adequate requirements when ordering the equipment. Safety measures aimed to reduce effects of noise during construction of sections of planned gas pipeline in the vicinity of settlements should be foreseen (allowed level of noise during the daylight is 65 dB, and during the night 55 dB).

b) during exploitation of the structure

The investor is obligated to follow the instructions provided by the manufacturer of the equipment which has been sized not to exceed the level of noise stipulated by the Law on Protection against Noise in Environment (Official Gazzette of RoS No.36/09 и 88/10). The design needs to foresee the activities aimed to reduce the level of noise and vibrations produced by power and technological equipment and ventilation chambers. If the level of noise exceeds the allowed threshold it will be necessary to apply some of the additional safety measures in order to reduce noise. In order to eliminate the noise of ventilation chambers, the sections for intake of air are to be insulated by mineral wool and perforated sheets.

c) after the structure has been closed

After closing, the structure does not generate any effects.

6.2.3. Specific measures of forest conservation

The design should foresee minimal removal of existing forest vegetation on the gas pipeline route during the site preparation for construction works. If afforesting is needed, use nursery plants of indigenous woody and bushy kinds of trees, in accordance with the prevailing type of the forest as well as with the requirements submitted by competent institutions.

Along the entire length of the corridor it is forbidden to cut down all varieties of trees that are deemed as rare, relic, endemic or endangered.

6.2.4. Specific measures of flora and fauna protection

Execution of works will be aligned with the needs of protected animal species living inside the gas pipeline area, particularly during migration and reproductive periods (nesting, spawning..) in order to avoid harassment of endangered animal species and decrease of population. Thus unobstructed migrations of animals between protected subpopulations at protected natural habitats will be ensured. Therefore it is necessary to form ecological corridors that will reconnect isolated areas of natural habitats.

6.2.5. Specific measures of structural safety inside gas pipeline zone of impact

In designing and construction of the gas pipeline, particular attention should be paid to the class of the shelterbelt and accordingly it is necessary to apply all technical requirements and norms for these classes stipulated by the Ordinance on technical requirements and normatives for safe transportation of liquid and gaseous hydrocarbons by magistral gas pipelines and oil and gas pipelines for international transport.

Considering the type and purpose of the structure, during the construction and exploitation the transport of chemical flammable explosive or otherwise hazardous or harmful substances may be expected. Therefore it is necessary to consider the issue of accidental situations and to define adequate procedures and measures for the protection of people, environment, prevention of accidents and mitigation of their adverse effects.

6.2.6. Measures to protect cultural and natural heritage

The route of the gas pipeline has been designed so as to maximally avoid the protected natural heritage sites and all activities planned at such areas are implemented according to the requirements stipulated by the Institute of Nature Protection of Serbia and Institute of Nature Protection of Vojvodina, and in accordance with the article 57 of the Nature Conservation Act.

On the route sections in the vicinity of valuable archeological sites the contractor is obligated to lay the gas pipeline pipes completely in accordance with the requirements stipulated by competent institutions. If during the construction of the gas pipeline the contractor comes across a natural good that is of geological paleontological origin or mineral and petrografic origin, and which is deemed to have properties of a natural monument, the contractor is obligated to inform the Institute of Nature Protection of Serbia and to undertake all necessary measures aimed to protect the natural good from damage until the arrival of an authorized person.

6.2.7. Organizational measures of safety and monitoring of environment

Organizational measures of safety should be regulated by internal acts of the company elaborated in accordance with valid legal regulations regulating the environment protection.

In order to ensure environmental safety in all phases of project implementation it is necessary to foresee ecological monitoring at certain points on the route.

6.3. Compensation and alternative measures

6.3.1. Measures of prevention, preparedness and responsibility in case of accidents

While performing works involving gases one needs to be cautious since handling of natural gases is ranked as one of the activities with the high level of hazard, considering the chemical and physical properties of gas, such as flammability and explosiveness. Fires, explosions and other accidents mostly happen due to inappropriate handling of installations and due to insufficient awareness of the properties of natural gas. The rule to be absolutely obeyed in areas where gas is applied and handles is the : "NO SMOKING" rule.

In order to ensure the safety of people, technological process and decrease of material, environmental, economic and social damage from potential fires and breakdowns for the project South Stream, the Main project of fire protection as a constituent part of the technical documentation foreseen by Fire Protection Act (Official Gazette of RoS No.111/2009) should be elaborated.

For example, for each compressor station (CS) the following will be installed:

- automatic system of fire protection signalization, control of gas presence and fire extinguishing on compressor unit;
- automatic system of fire protection signalization in auxiliary buildings and facilities on CS;
- system of warning and management of evacuation in case of a fire on CS.

In case of a fire or breakdown in the operation of this system it is necessary to ensure the cooperation in automatic mode with systems of technological process management, ventilation systems, smoke control system, firefighting water supply system and other systems of safety and management of technological processes and work processes, as well as the communication with CS staff related to breakdown (including fire) accidents and management of activities in the newly occurred situation.

6.3.2. Measures to remedy effects of accidents

After an accident – fire, or explosion consequences are to be remediated in the same manner as after any other fire which is not caused by ignition of natural gas: reparation of the damaged section of the gas pipe line, burned structures, tall vegetation and similar are removed and transported to a dedicated deposition site.

Remediation measures, including soil remediation, water treatment and similar are not necessary since natural gas as well as the products of its combustion do not threaten these media.

6.3.3. Safety measures to prevent and mitigate consequences of potential environmental accidents

Safety measures to prevent and mitigate consequences of potential environmental accidents imply all afore mentioned measures, from the ones to be observed during the designing and construction stages, up to those related to regular maintenance.

Impact assessment, i.e. accident risk exposure, includes the identification of potential accident hazards, identification of mechanisms of its occurrence and review of potential consequences. In further elaboration of the documentation it is necessary to analyze the problem of accidental situations, during the construction stage as well as during the exploitation and to define suitable procedures and

environmental safety measures, prevention of accidents and mitigation of potential negative effects, if necessary.

Detailed elaboration of safety measures is foreseen in further technical documentation i.e. in the Study of Environmental Impact Assessment of the project South Stream both according to the valid legal regulation, as well as according to the requirements of competent institutions.

7. Non-technical summary of information from 2 – 6

7.2. Project description with site description

Magistral gas pipeline South Stream is a system for the transportation of gas (Russian abbreviation 'GTS') for the purpose of export delivery of the Russian natural gas in the volume of up to 63.0 billion m³ annually (including the fuel gas) into the countries of South and Central Europe.

It comprises the following sections: offshore section of the gas pipeline through the Black Sea and ground section through the countries of South and Central Europe.

The section running through the territory of the Republic of Serbia includes:

- a section of magistral gas pipeline (MG),
- a section of gas pipeline for the Republic of Srpska,
- a section of gas pipeline for Croatia (depending on the adopted version)

The length of the designed section of the route of magistral gas pipeline (MG) South Stream across the territory of Serbia amounts to 421.5 km from the starting point on the border with Bulgaria to the final point – on the border with Hungary.

Border lines (sections) of the routes designed at the territory of Serbia include cross link point of MG with state borders of the Republic of Serbia – the border between Serbia and Bulgaria, the border between Serbia and Hungary, the border between Serbia and Croatia, the border between Serbia and Bosnia and Herzegovina (branch towards the Republic of Srpska). The supply of Bosnia and Herzegovina is planned to be implemented from the territory of Serbia via the existing gas transportation system owned by JP Srbijagas.

Main artificial and natural obstacles on the route are large and medium waterway crossings: rivers Danube, Tamis, Tisza, canals Karas, Danube-Tisza-Danube, Veliki kanal, and also the highways of I and II categories and railways.

Компресорске станице по траси магистралног гасовода се планирају на следећим километрима: КС-1 – км 147,7; КС-2 – км 342,5.

South branch of the gas pipeline (to Serbia) is foreseen at km 83.6 in Paracin region, north branch (to Serbia, Bosnia and Herzegovina) – at km 310.5 in the region of Gospodjinci junction point.

The project foresees incremental increase of the amount of gas to be transported over the territory of the Republic of Serbia from 20.9 billion m³ annually (2017) up to 40.5 billion m³ annually (2025).

7.3. Main project alternatives

There were certain alternative routes of the gas pipeline in question, how the optimal one has been adopted considering the legal requirements, the demands of the entity for natural gas as well as the economic feasibility of the project.

Currently, in this case there are no alternatives for the natural gas as an energy generating product, because all other energy sources do not meet the criteria in terms of capacity or are not suitable for climate, geographical or other properties of the project.

7.4. Description of environmental factors that may be affected by the project

All the afore mentioned facts are indicating that the explanation of the interrelations and impact upon the environmental factors may be expected if each of the listed criteria is analyzed within specific spatial relations and by quantification procedures it is brought to the representative indicator.

7.5. Description of potential significant environmental impacts of the project that may be caused by

(a) existence of the project

Noise – limited impact

Soil – limited and temporary

invasion of the area – limited merely to the location where surface sections of the project are placed

Visual effects – limited

Social effects – positive impacts of the project are being assumed

(b) use of natural resources – no impact

(c) emission of contaminants and waste generation – no impact

7.6. Safety measures

Respecting the properties of the site, the purpose of the areas within the road corridor, as well as main regulations of authorities within the framework of the majority of criteria defining the interrelations natural gas – environment, and based on the already quantified indicators, the requirements in terms of necessary safety measures have been identified and can be systemized into the following groups:

- Measures to prevent interventions

Measures envisaged by legal regulations and by-laws

Measures of protection against natural disasters

Technical and technological safety

- Measures to mitigate negative impacts and monitoring of nature conservation

Specific measures of air, water and soil protection

Specific measures of protection against noise and vibration

Specific measures of forest conservation

Specific measures of flora and fauna protection

Specific measures of structural safety inside gas pipeline zone of impact

Measures to protect cultural and natural heritage

Organizational measures of safety and monitoring of environment

- Compensation and alternative measures

Measures of prevention, preparedness and responsibility in case of accidents

Measures to remedy effects of accident

Safety measures to prevent and mitigate consequences of potential environmental accidents

8. Data about potential difficulties, technical defaults or lack of adequate professional knowledge and skills discovered by the project owner

Within the framework of elaboration of technical documentation of the project, the application of Russian norms and standards used for the construction of the magistral gas pipeline at the territory of the Russian Federation and countries of ex Soviet Union, which is safe and aligned with the requirements of the Investor – JAD Gazprom, has been agreed.

The observance of requirements and standards of international financial institutions is necessary in further elaboration of the technical documentation of environment protection as well, and accordingly the expansion of the content of the Study on Environment Impact Assessment, provided that these requirements are not contrary to the valid legal regulations in the Republic of Serbia.

All listed impact have been categorized according to the currently available information as well as based on previous experiences in implemented projects, while detailed quantification of indicators will be presented in Study on Environment Impact Assessment. Based on these findings, and specific environmental indicators that will be the result of elaborate environmental researches implemented by the Institute Jaroslav Cerni, with suitable numerical procedures and functional rules, accurate assessment of potential negative environmental impacts of the project will be performed. It is assumed that certain indicators will deviate from the initial values presented in the Request.