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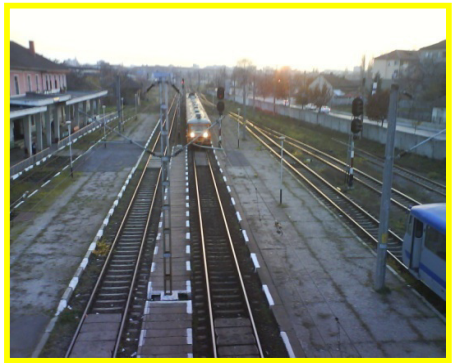
PROGRAMUL OPERAŢIONAL SECTORIAL TRANSPORT
TRANS
Mobilitate în România. Conexiuni cu Europa.

APPROPRIATE ASSESSMENT STUDY for the GENERAL TRANSPORT MASTER PLAN OF ROMANIA



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CERTIFICAT DE ÎNREGISTRARE

În conformitate cu prevederile Ordonanţei de urgenţă a Guvernului nr. 195/2005 privind protecţia mediului, aprobată cu modificări şi completări prin Legea 265/2006, cu modificările şi completările ulterioare şi ale Ordinului ministrului mediului nr. 1026/2009 privind condiţiile de elaborare a rapoartelor de mediu, rapoartelor privind impactul asupra mediului, bilanţurilor de mediu, rapoartelor de amplasament, rapoartelor de securitate şi studiilor de evaluare adecvată.

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În conformitate cu prevederile Ordonanţei de urgenţă a Guvernului nr. 195/2005 privind protecţia mediului, aprobată cu modificări şi completări prin Legea 265/2006, cu modificările şi completările ulterioare şi ale Ordinului ministrului mediului nr. 1026/2009 privind condiţiile de elaborare a rapoartelor de mediu, rapoartelor privind impactul asupra mediului, bilanţurilor de mediu, rapoartelor de amplasament, rapoartelor de securitate şi studiilor de evaluare adecvată.

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PREŞEDINTELE COMISIEI DE ÎNREGISTRARE

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ABBREVIATIONS AND ACRONYMS

CFR SA:	National Railway Company, the entity responsible for managing and administration of the national rail infrastructure
CLC:	CorineLandCover
CNADNR:	National Company of Motorways and National Roads in Romania, the entity responsible for the management and administration of national road infrastructure
CO:	Carbon monoxide
CO_2:	Carbon dioxide
EA/AA:	Appropriate Assesment
EEA:	European Environment Agency
EIM/EIA:	Environmental Impact Assessment
ESM/SEA:	Strategic Environmental Assessment
GIS:	Geographical Information System
HG:	Government Decision
MMP:	Ministry of Environment and Forests
GTMP	General Transport Master Plan
MT:	Ministry of Transportation
N_2O:	Nitrogen Dioxide
NO_x	Nitrogen Oxides
OUG 57/2007	Emergency Ordinance no. 57 of 20 June 2007 on the regime of natural protected areas, conservation of natural habitats, flora and fauna, approved by Law no. 49/2011
$PM_{2,5}$/PM_{10}:	Particulate matter
POS-T:	Transport Sectoral Operational Programme
SCI:	Site of Community Importance
SPA:	Special Protection Area
SO_x:	Sulphur dioxide
TEN-T:	*Trans-European Transport Network*
UE:	European Union

1. General Informations

This study represents the **Appropriate Assessment Study** of potential impacts on protected natural areas of community Importance of the **General Transport Master Plan of Romania**, promoted by the **Ministry of Transport** (as the beneficiary of the General Transport Master Plan) through the **Technical Assistance for Projects Directorate** and supported technically by **AECOM Ingenieria SRL**. The study was developed in order to obtain the Environmental Consens for development the General Transport Master Plan of Romania.

According to the Decision no. 145790/23.10.2012 issued by the Ministry of Environment and Forestry - Impact Assessment and Pollution Control Directorate, Master Plan is subject to environmental assessment procedure, according to GD 1076/2004 on establishing the procedure for environmental assessment for plans and programs, respectively the appropriate assessment procedure, according to GEO no. 57/2007 on the regime of natural protected areas, conservation of natural habitats and of wild fauna and flora, approved with amendments by Law no. 49/2011, with subsequent amendments and OM no. 19/2010 for approving the Methodological Guide for the appropriate assessment of the potential effects of plans or projects on protected natural areas of community Importance.

The appropriate assessment study was prepared in accordance with the requirements of the Methodological Guideline on the appropriate assessment of the potential effects of plans or projects on protected natural areas of community Importance (OM no. 19/2010).

The conclusions of this appropriate assessment study will be included in the Environmental Report.

For ellaborating this appropriate assessment study, were considered the following elements:

- The technical documentation provided by the beneficiary: the first draft version of the *General Transport Master Plan of Romania* completed in 2012, the *Preliminary version of the Master Plan on short, medium and long term* completed in August 2013 and the *Revised final version of the Master Plan Report on short, medium and long term* completed in September 2014;
- Geospatial coordinates of the projects provided by the AECOM consultant (for some projects);
- Existing database on the European Environment Agency website (EEA - http://www.eea.europa.eu/) on SCIs and SPAs designated at national level, including data on protected components within them;
- SCIs and SPAs boundaries, in Stereo 70 projection (updated October 20, 2011), available on the website of the Ministry of Environment and Climate Change (http://www.mmediu.ro/protectia_naturii/protectia_naturii.htm) ;
- Geospatial coordinates on land use categories at national level, Corine Land Cover 2006, available on the website of the European Environment Agency;
- The specialty literature.

2. Information on the Plan submitted for approval

2.1 General information on the Plan

2.1.1 NAME, DESCRIPTION AND PLANS OBJECTIVES

The plan submitted to assessment and approval is represented by the **General Transport Master Plan of Romania**, promoted by the **Ministry of Transport** (as the holder of the Master Plan) through the **Technical Assistance for Projects Directorate** and supported technically by **AECOM Ingenieria SRL**..

The role of the General Transport Master Plan is to provide a development strategy of the transport sector in Romania for the next 20 years and to be valued, it must provide implementable solutions to the problems and requirements of the transport sector in Romania.

The Master Plan aims to contribute to the economic development of Romania in a sustainable way and does not represent a scope in itself. Results to be derived from the Master Plan are:

- ✓ *A long-term plan for time period 2020-2030, which will contribute to Romania's economic development in a sustainable manner;*
- ✓ *More efficient use of financial resources in the transport sector;*
- ✓ *Improved connections and thus improved trade with neighboring countries;*
- ✓ *Increased productivity for industry and services in Romania and therefore stronger economic growth and improved living standards;*
- ✓ *A sustainable transport system.*

The General Transport Master Plan will identify projects and policies that will best meet the needs of the transport sector in Romania in the next 5 to 15 years for all modes of transport, thus providing a solid, analytical base in choosing those policies and projects.

The **general objective** of the Master Plan is to *"Ensure conditions to achieve a transport system that is efficient, durable, flexible, secure, balanced between transport modes, in harmony with the environment and connected with the trans-European transport systems"* essential preconditions for the economic development of Romania.

An efficient transport system is vital for the economic development of the country, and this can be achieved by considering the following aspects:

- ***Economic efficiency:*** the transport system must be economically efficient in terms of transport operations, but also for users themselves. Generally the benefits of the transport system must exceed the costs of transport, and furthermore, the transport system must be configured to allow economic development at national and regional level;
- ***Sustainability***: the transport system must be sustainable economically, financially and environmentally. It should be developed with priority the so-called sustainable transport modes that are more efficient in terms of energy consumption and produce fewer emissions, to leave to future generations a viable system*;*
- ***Safety:*** investment in transport sector must produce a safer transport system;
- ***Environmental impact***: the transport system should not have a negative impact on the physical environment;

- ***Economic development***: the transport system must be configured to allow economic development at national and regional level. Also investments should increase equity to Romanian citizens;
- ***Financial Efficiency***: EU funds are available through the Structural Funds (CF, ERDF), the Connecting Europe Facility (CEF) and public-private partnership – (PPP) will affect the possibility of implementing such projects and their prioritization. The general program will be part of a realistic estimate of national funds and other sources of funding for the planned period.

The ***strategic environmental objective of GTMP*** is:

OM1. Development of a modern transport infrastructure, taking into account the environmental effects.

The ***specific environmental objectives*** of the General Transport Master Plan, agreed in the working group specially constituted on 13.12.2013, for the completion stage of the draft plan and achievement of the Environmental Report are:

- OM1-1. Promoting investment projects for transport sector that contribute to a sustainable transport system with measures of avoidance and mitigation of adverse effects, such as: pollutants emissions in the atmosphere, noise pollution in urban areas and on roads with heavy traffic, water and soil pollution due to diffuse sources, the impact on the landscape and cultural heritage;
- OM 1-2. Reduction of greenhouse gas emissions from the transport sector;
- OM 1-3. Protection of human health by improving the environmental conditions and transport safety;
- OM 1-4. Reducing the impact on biodiversity by providing measures to protect and conserve biodiversity and ensure consistency of the national network of natural protected areas.

In the following, are shown the working versions of the General Transport Master Plan.

A first draft version of the ***General Transport Master Plan of Romania*** was ellaborated in 2012, representing a synthesis of initial elements from the preparatory work for the *Master Plan,* designed primarily to list the objectives and strategic context, so as to provide necessary information to initiate the environmental assessment process.

The ***preliminary version of the Master Plan on short, medium and long term period***, basically, a first draft of the Master Plan, was published in August 2013 and has been developed in order to be analyzed, debated and refined. In this version there were included a number of 403 projects submitted to be analysed by the promoter authorities. Of these 403 projects, AECOM selected a total of 201 projects, the other being, at that time, in the process of refining and testing by the National Model and evaluating based on the guidelines proposed by AECOM.

The *preliminary version of the General Trasnport Master Plan on short, medium and long term* period has included two important scenarios, respectively *2020 Scenario* and *2030 Scenario* and the *Reference Case Scenario*, which represents the situation from which were compared the candidate projects in the Master Plan. The lists containing the 3 scenarios related projects are presented in Appendix I.

Master Plan version on which was made the first version of the Appropriate Assessment Study (revision no. 1)

On 04.16.2014 was published, on the website of the Managing Authority for Transport Sectoral Operational Programme, the List of projects approved for testing in GTMP, comprising a total of 530 projects, of which 42% belong to the road, 26 % to the railway sector, 14% to the water sector, 16% to the air sector and 2% to the intermodal transport. Some of the projects included in this list are part of the Reference Case ("Do Minimum") included in the *Preliminary version of the Master Plan on short, medium and long term*. The projects from the Reference Case Scenario were approved by the promoter authorities and are listed in Annex no. 2 of this study. Of the 530 candidate projects were selected (based on two criteria: economic performance and multi-criteria analysis), after testing with the National Transport Model (information available on the 31/08/2014 - see Annex no. 2), projects to be included in the final revised Master Plan draft on short, medium and long term period.

Master Plan version analysed within the second version of the Appropriate Assessment Study (revision no. 2)

On 29.08.2014, the Managing Authority for Sectoral Operational Transport Programme has received the final revised version of the General Trasnport Master Plan Report on short, medium and long term period.

This version includes, in addition to the 108 projects for the "Do Minimum" scenario, a total of 85 distinct projects, related to the development scenarios, of which 48% belong to the road sector, 11% to the railway sector, 13% to the water sector, 13% to air transport sector and 15% for intermodal transport.

According to information provided on the website of the Managing Authority for Sectoral Operational Transport Programme, these projects have been tested according to two criteria, respectively economic performance and multi-criteria analysis, by the National Transport Model.

Thus, based on all available information, were available to be analysed within the Appropriate Assessment Study the following 4 scenarios:

- **"Do nothing" Scenario** - which does not propose any measures or investments in transport infrastructure - (DN);
- "**Refference case Scenario**" ("Do Minimum") - which takes into account projects already under construction / implementation or for which funding are already allocated (DM or Ref.);
- **"Development Scenario"** - requested through the terms of refferences, which takes into account infrastructure projects needed to eliminate bottlenecks and increase the accessibility of regions and cities in Romania, identified for the time horizons 2014 (2015), 2020, 2030. The Individual projects candidate to be included in the Master Plan, were tested by the National Transport Model (NTM) before their inclusion in the development scenario. After testing, the projects were ranked based on a multi-criteria analysis as follows:
    - prioritize the order of implementation of projects aimed at removing bottlenecks, increasing accessibility of regions and cities in Romania based on economic sustainability - "Development based on economic sustainability" or "Do Something" (ES);

- prioritize the order of implementation of projects aimed at removing bottlenecks, increasing accessibility of regions and cities in Romania based on economic and environmental sustainability, promoting modal transfer from road transport to alternative transport modes - "Development based on economic and environmental sustainability "or" Do Something Policy "(EES).

- In addition to the terms of reference, AECOM team developed **a second development scenario** called **"Core TEN-T"** (CTT), which differs from previous scenario only by projects proposed for the road sector - for this sector are considered only projects contributing to the completion / expansion of the Core TEN-T network. For the other transport sectors (rail, water, air and intermodal), the investments list is similar to that proposed in the development scenario required by the terms of reference.

The list of projects included in the three scenarios that proposes measures or investments is presented in Appendix no. II and contains a total of 239 projects.

Table no. 2-1 Number of projects in the three scenarios depending on the transport sector

Crt. No.	Name of transport sector	Number of projects		
		Do Minimum	Development Scenario (ES/EES)	CTT
1	Road	54	32	11
2	Rail	30	9	9
3	Water	22	11	11
4	Air	2	13	13
5	Intermodal	-	11	11
Total		**108**	**76**	**55**

The General Transport Master Plan Version analyzed by the Appropriate Assessment Study (revision no. 3)

Following public debates organized for each transport sector, after the publication of the *Final version of the revised Master Plan Report on short, medium and long term period* on 10.01.2014, on AM POST website, to the list of projects included in this version of GTMP were added a number of other projects. The changes for the development scenario (ES / EES) consisted mainly of:

- Inclusion, for some motorway projects, of bypasses as part of the same project, exclution of Câmpia Turzii - Târgu Mureş motorway, inclusion of 2 express roads at motorway rank (Gilău - Borş and Sibiu - Piteşti), inclusion of the second ring of Bucharest project;
- Inclusion for some express roads, of bypasses, as part of the same project, the inclusion of other 3 new express roads (Bucharest-Alexandria-Craiova, Târgu Mureş - Sighişoara – Făgăraş and express road connection between Otopeni Airport - A3Motorway);
- inclusion of rehabilitation projects for the national roads (transregio roads and eurotrans roads);
- exclusion of some bypasses and including others as separate projects;
- including new sections of rehabilitation and electrification of railway lines;

- including a new intermodal terminal modernization project;
- re- including Sulina channel and other 2 ports;
- inclusion of a new project for modernization and expansion of airport infrastructure.

Regarding the CTT scenario, projects related to the transport sector does not change, and the changes for the other modes of transport are transmitted to this scenario because the list is similar to the one proposed in the development scenario.

List of projects included in the 3 scenarios, according to these changes, is presented in Appendix no. III and comprises a total of 293 projects.

Table no. 2-2 Number of projects of the three scenarios on transport sectors

Crt. No.	Name of transport sector	Number of projects		
		Do Minimum	Development Scenario (ES/EES)	CTT
1	Road	54	64	11
2	Rail	30	15	15
3	Water	22	14	14
4	Air	2	14	14
5	Intermodal	-	12	12
Total		**108**	**119**	**66**

2.1.2 INFORMATION ON USED RAW MATERIALS, CHEMICAL SUBSTANCES OR CHEMICAL PREPARATIONS

The degree of details of the General Transport Master Plan does not allow estimation of quantities of raw materials, substances or chemical preparations to be used to implement all the projects included in it. They will be further detailed for each project. Project implementation will require the use of large quantities of soil, sand, gravel, ballast, mineral aggregates, concrete, asphalt mixture, paint, fuels etc.

The main types of projects that are part of the *Do Minimum* scenario are classified as follows:

- construction of new infrastructure: motorways, bypasses etc;
- maintenance and repair projects for existing assets: Rehabilitation and modernization of national roads, rehabilitation and modernization of railway lines and stations, rehabilitation of bridges, railway culverts and tunnels electronic interlocking etc.;
- investment projects in equipment: acquisition of rolling stock, ships etc.;
- transport policies.

Projects that are part of the development scenario (*ES/EES*) and *CTT* are classified, depending on the transport sector, in the following types of projects:

- Road sector:
  - construction of new infrastructure: motorways, expressways, bypasses, bridges and passages;
  - rehabilitation of national roads (regiotrans and eurotrans roads);

- Rail sector:
  - construction / rehabilitation of railway infrastructure;
  - electrification of existing railway lines;
- Water sector:
  - new waterway and existing channel bank protection;
  - improving navigation on the fairway;
  - modernization of existing port infrastructure;
- Air sector:
  - modernization and expansion of existing airport infrastructure;
- Intermodal sector:
  - modernization of existing intermodal transport infrastructure.

The only information available on this subject refers to the road sector, respectively information on the average quantities of materials used for the construction of one km of motorway (2x2 lanes plain relief) of one km of expressway and for one km rehabilitation of national road.

For example, can be mentioned the following categories of work necessary for the construction of one km of motorway, expressways or for one km of rehabilitation of national road:

- earthworks;
- road superstructure;
- water flow;
- traffic safety;
- consolidation works;
- hydraulic works;
- environmental protection works.

According to the information provided by the GTMP, for the construction of 1 km of motorway /expressway or rehabilitation of 1 km of national road, will be used the following types of raw materials:

- earth, ballast, ballast stabilized with cement, reinforced concrete support structures, gabions (protection and steps), rough stone, expressed in cubic meters (m^3);
- revetment embankment protection, geotextile, concrete walls, transparent walls (glass or acrylic), concrete paving, topsoil, gabions, gravel, expressed in square meters (m^2).

Given that, as stated in the *Do Minimum* Scenario, will be built about 333 km of motorways and according to the available data for 1 km of motorway (2x2 lanes for plain relief) will be used approximately 108,538 cubic meters or 85,354 square meters of raw materials and the above mentioned raw materials, the total quantities of raw materials and products used for the construction of motorways included in this scenario is about 36,178,047 cubic meters, respectively 28,450,438 sqm.

Regarding the rehabilitation of national roads included in this scenario, their total length is about 822 km, and according to the available data, for 1 km of road rehabilitated will be used approximately 21,707 cubic meters, respectively 17,070 square meters of raw materials. Therefore, the total quantity of raw materials and products used for rehabilitation of all national roads included in this scenario is about 17,836,194 cubic meters, respectively 14,026,393 sqm.

Given that in the development scenario (ES / EES) is proposed the construction of approximately 887 km of motorway, the total quantity of raw materials and products used for the construction of motorways included in this scenario, is about 96,273,490 cubic meters, respectively 75,709,530 sqm.

Regarding the expressways construction, their total length is approximately 2.241 kilometers, and according to the available data, for 1 km of expressway, will be used approximately 86,830 cubic meters or 68,283 square meters of raw materials and products. Therefore, the total quantity of raw materials and products used for the construction of expressways included in this scenario is about 194,587,500 cubic meters or 153 023 727 sqm.

Regarding the national road rehabilitation for the development scenario, their total length is approximately 3.225 kilometers, and according to the data presented above, on quantities of raw materials and products used for the rehabilitation of national roads, in this scenario will be used approximately 70,072,216 cubic meters or 55,053,717 square meters.

As proposed by the CTT scenario, will be constructed about 1.589 km of motorways, the total quantities of raw materials and products used being about 172,467,390 cubic meters or 135,628,459 sqm.

2.2 Geographical and administrative location

The proposed projects in the General Transport Master Plan are located on the national territory.

Do Minimum scenario includes a list of 106 separate projects, from which have been identified:

- 7 (6.6%) projects that do not include construction work: 1 - road sector, 2 – rail sector; 4 – water sector and 0 for the air sector;
- 31 (29.2%) of projects that include construction works, but can not be located spatially (due to the vague formulation, eg. Water project belonging to water sector - Locks modernization. Equipment and facilities): 2 - road sector, 14 - rail sector; 15 - water sector and 0 for the air sector;
- 68 (64.1%) of projects that include construction work and can be located spatially, of which for 26 (24.5%) we were provided indicative routes and for 42 (39.6%) was achieved an approximate location based on project titles: 50 - road sector; 14 - rail sector; 2 – water sector and 2 for the air sector;

The 119 separate projects included in the development scenario (ES / EES) (64 - road sector, 15 – rail sector; 12 - intermodal sector, 14 – water sector and 14 for the air sector) include construction works and could be spatially localized, of which for 92 (77.3%) we were provided indicative routes, and for 27 (22.7%) was achieved an approximate location based on project titles.

Also all the 66 projects included in the CTT scenario include construction works and could be located spatially (11 - road sector, 15 – rail sector; 12 - intermodal sector, 14 – water sector and 14 for the air sector), of which for 39 (59.09%) we were provided indicative routes, and for 27 (40.9%) was achieved an approximate location based on project title.

Must be underlined that, for a significant part of the projects, **the available alignments are only indicative routes that can undergo significant changes during designing phase**. Also, the location of projects (for which it was not provided data in vector format by the GTMP developer) performed for the purpose of this study, on the basis of the projects titles are approximate locations, and in this case significant changes may occur at the time of project implementation. Details of the methodology used to achieve these approximate locations are given in Section 4.3.

Following are presented indicative route maps with the location of the 3 scenarios related projects that include measures and investments, according to major relief units, respectively location on the administrative territory of the country according to the development regions.

Regarding projects from the *Do Minimum* Scenario, we can estimate that 16 (23.5%) of the 68 projects include construction works and can be located spatially, are located in the mountainous region of the country, respectively a rate of 15.1% of the total 106 different projects belonging to this scenario. The 16 projects mostly belong to the road sector and, to a lesser extent, to the rail sector, most of the works are represented by new construction works of motorways, bypasses, modernization and rehabilitation of national roads and rail lines and stations modernizarion.

In terms of framing in the developing regions of the country, it can be seen that most of the new works of infrastructure (motorways, bypasses) are proposed in the development regions in the center, west and northwest part of the country.

For projects included in the development scenario (ES/EES), we can estimate that 34 of the 119 projects include construction works and can be located spatially, are located in the mountainous region of the country, namely a percentage of 28.6% of the total of 119 different projects belonging to this scenario. Of the 34 projects, 21 belongs to the road sector, 8 belongs to the rail sector, 2 to water sector, 2 to air sector and 1 belongs to the intermodal sector.

For the CTT scenario, we can estimate that 16 of the 66 projects are located in the mountainous region of the country, namely a percentage of 24.2% of the total 66 distinct projects belonging to this scenario, in which 3 belong to the road sector, the others being located identically with the one corresponding to the ES/EES scenario considering that for other modes of transport projects coincide. In ES/EES and CTT scenarios, most new infrastructure works (motorways, expressways, bypasses) are proposed in the development regions: southern, southeastern, northeastern and center of the country.

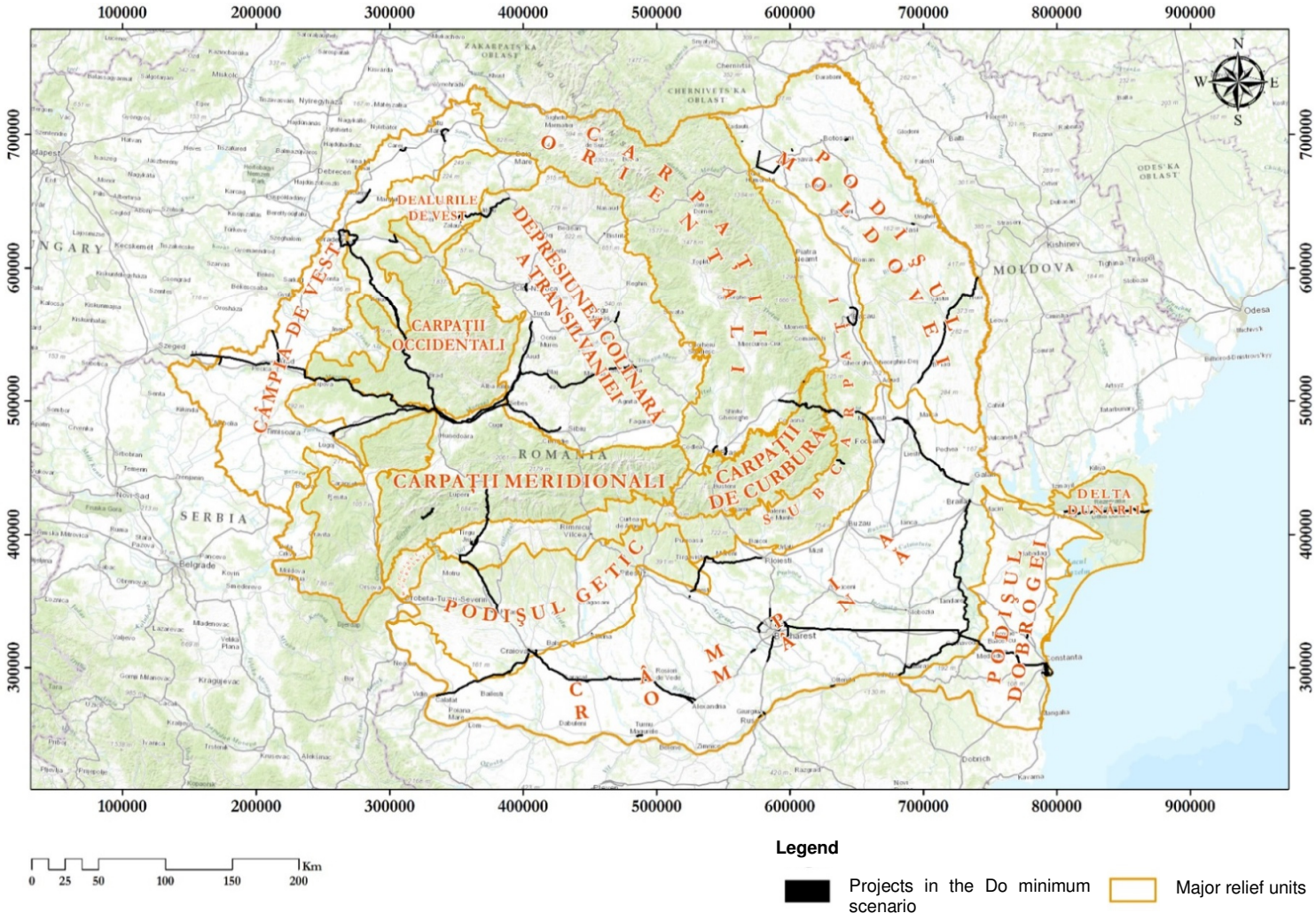


Figure no. 2-1 Location of projects that include construction works, which can be spatially localized, highlighting the major relief units. According to the Final revised GTMP version (published on 10.01.2014, with amendments related to the list of projects after further public debates) – Do minimum scenario

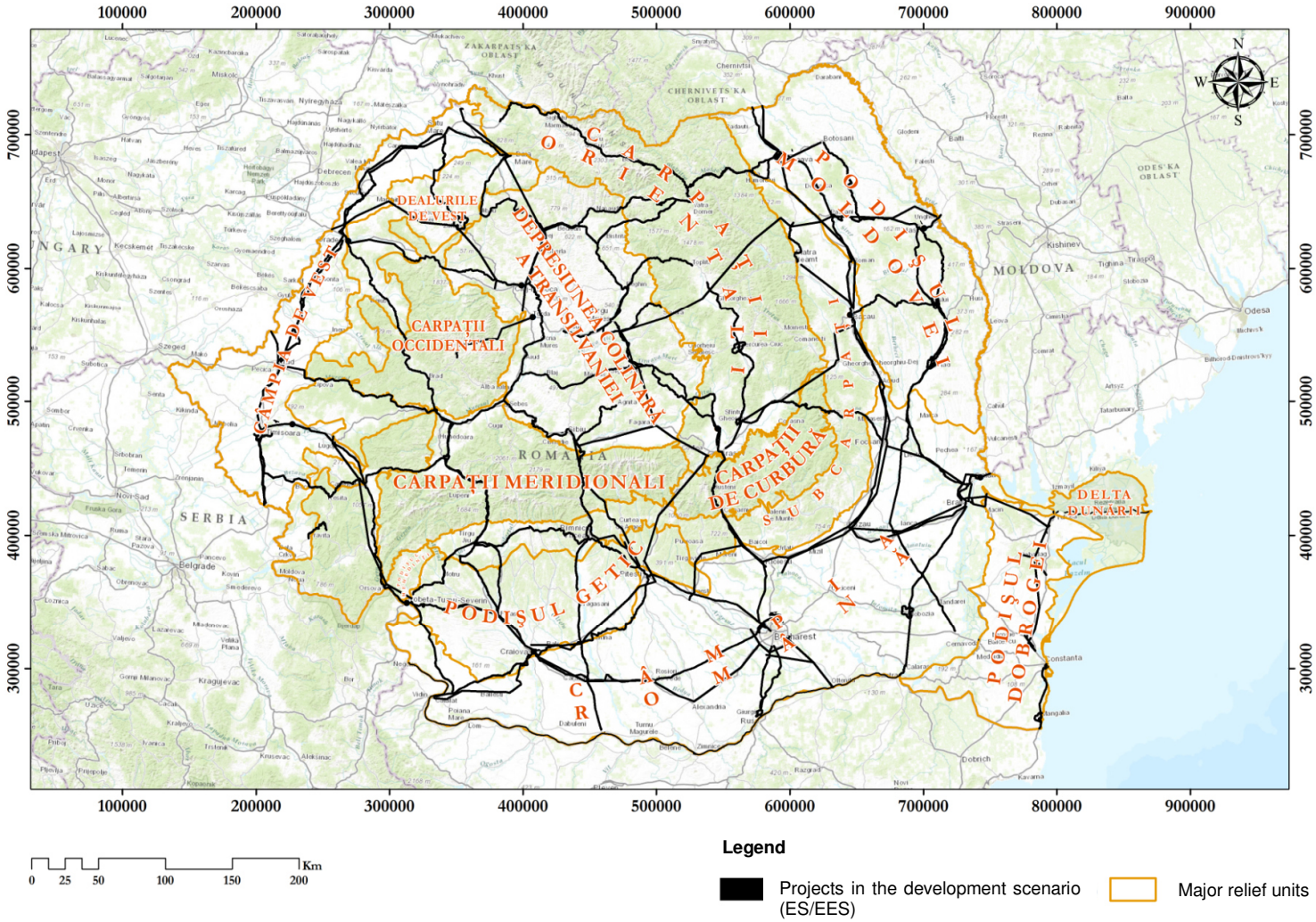


Figure no. 2-2 Location of projects that include construction works, highlighting the major relief units. According to the Final revised GTMP version (published on 10.01.2014, with amendments related to the list of projects after further public debates) – Development scenario (ES/EES)

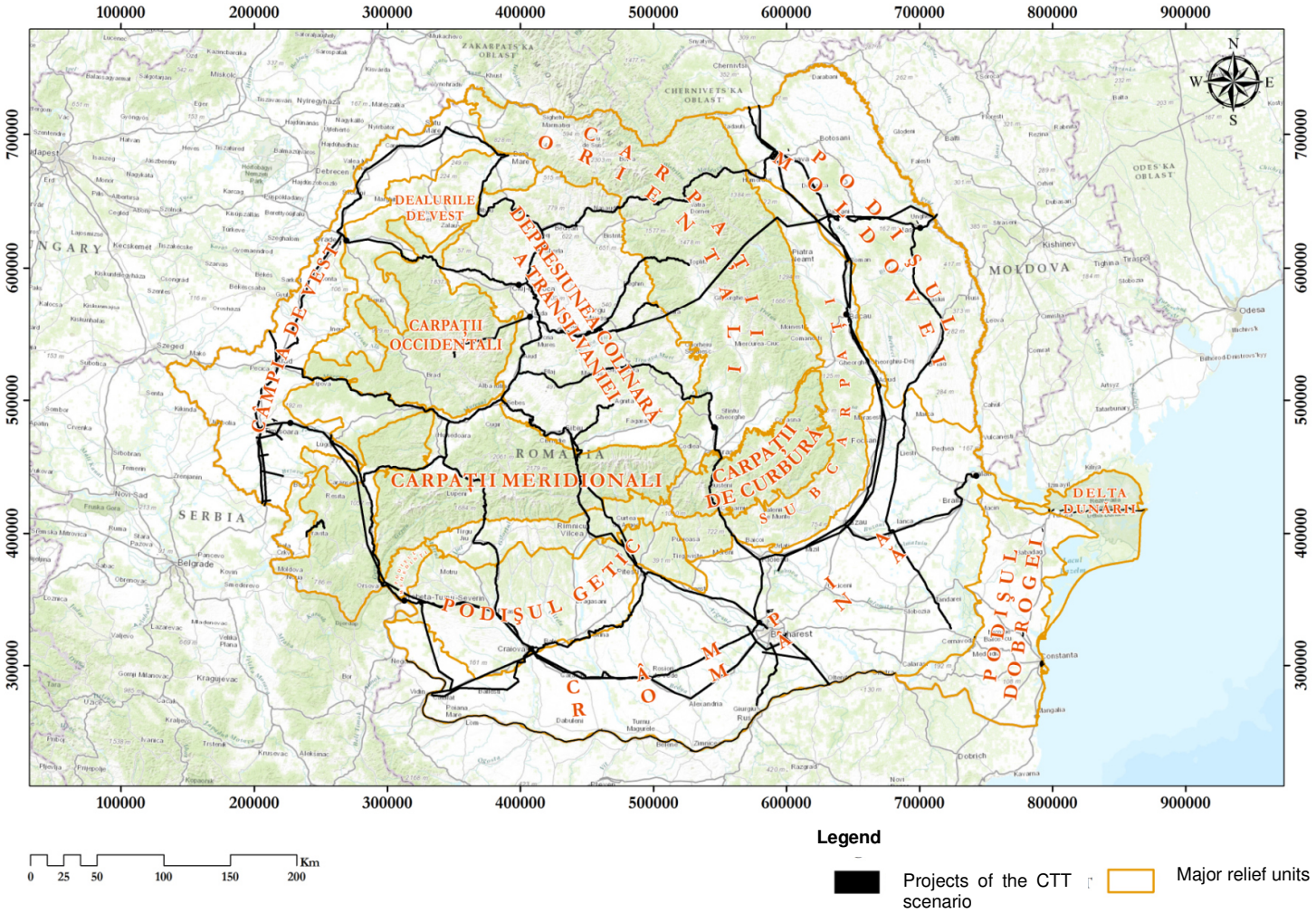


Figure no. 2-3 Location of projects that include construction works, highlighting the major relief units. According to the Final revised GTMP version (published on 10.01.2014, with amendments related to the list of projects after further public debates)– CTT scenario

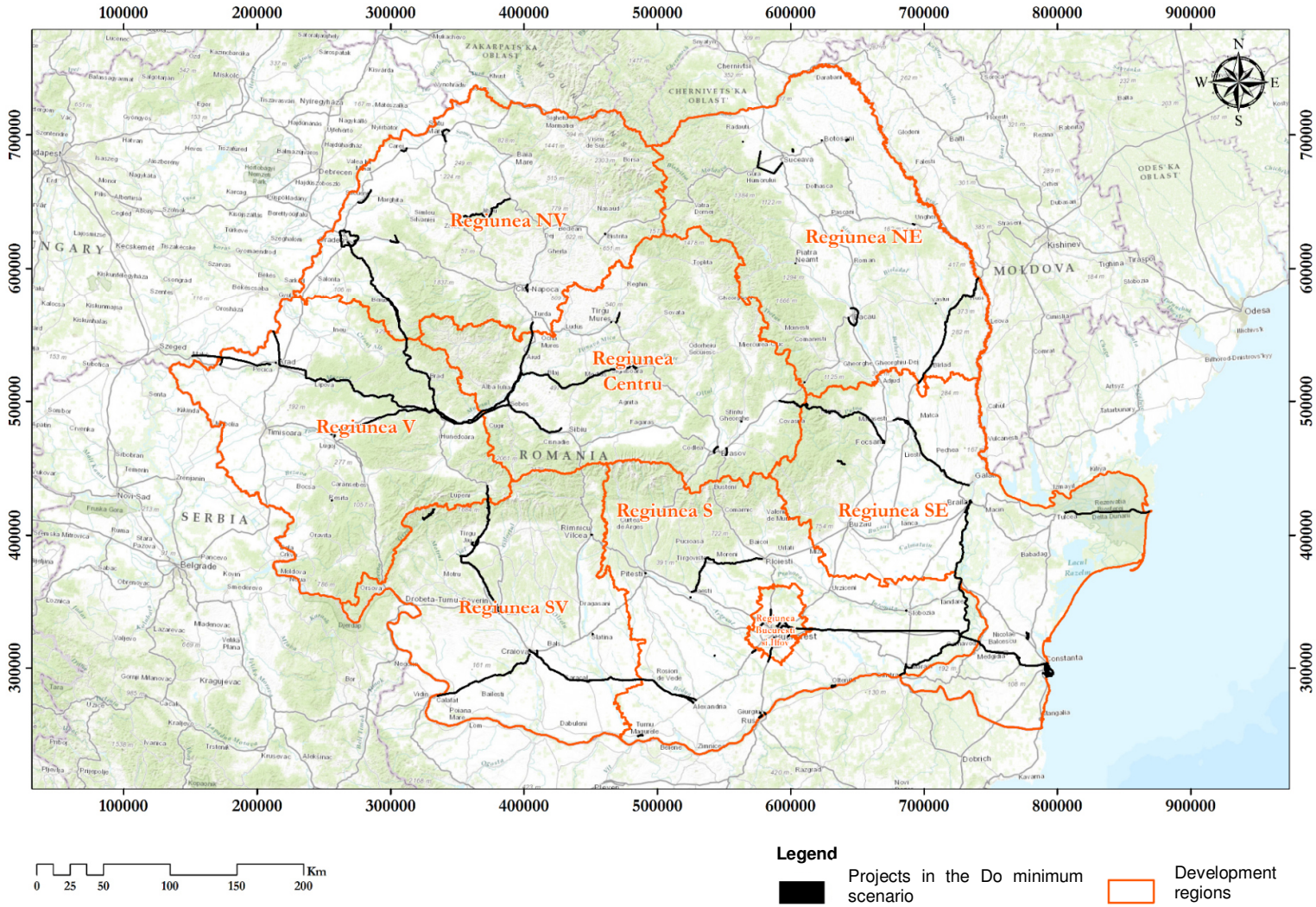


Figure no. 2-4 Location of projects that include construction works, highlighting the development regions. According to the Final revised GTMP version (published on 10.01.2014, with amendments related to the list of projects after further public debates) – Do minimum scenario

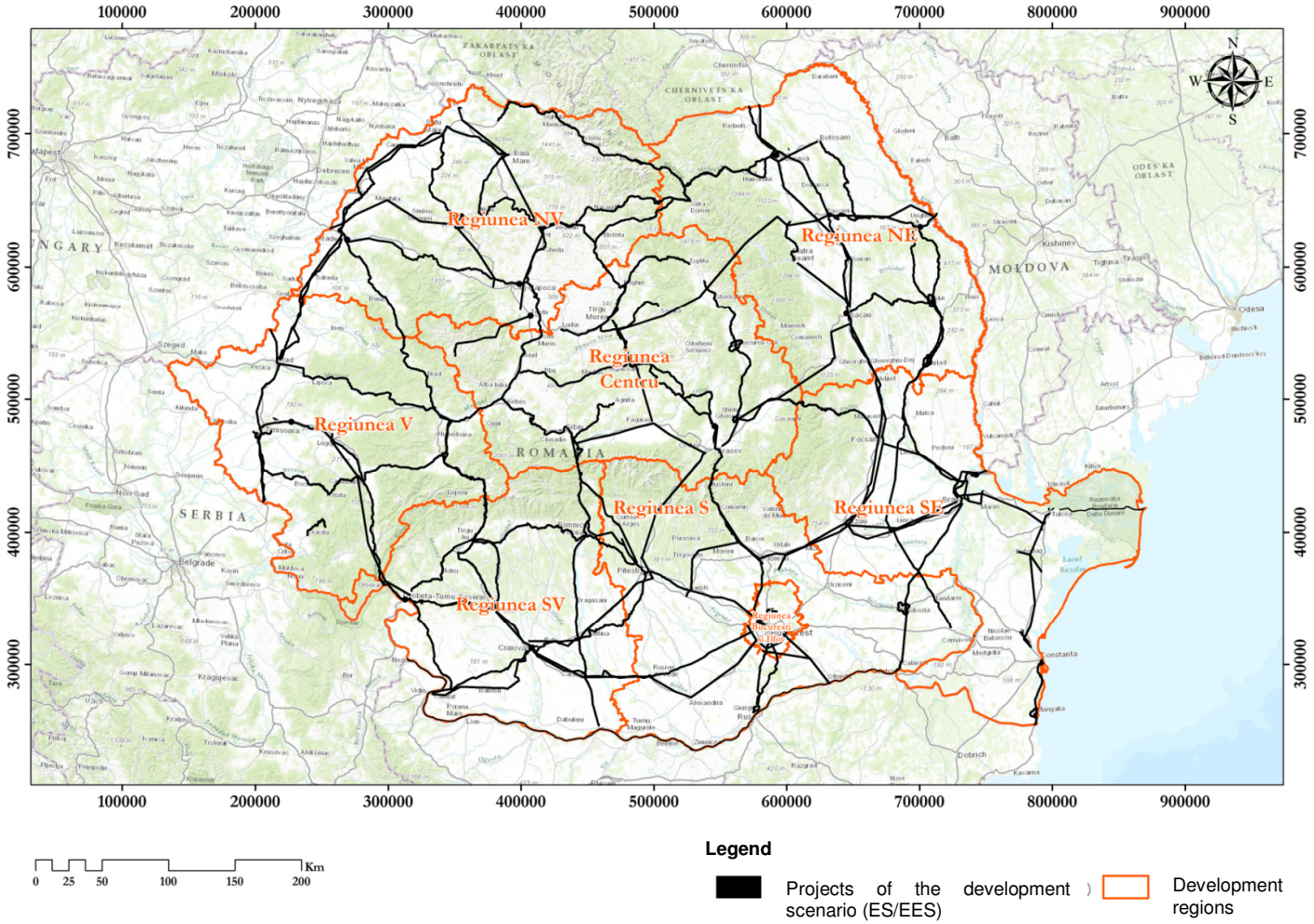


Figure no. 2-5 Location of projects that include construction works, highlighting the development regions. According to the Final revised GTMP version (published on 10.01.2014, with amendments related to the list of projects after further public debates) – Development scenario (ES/EES)

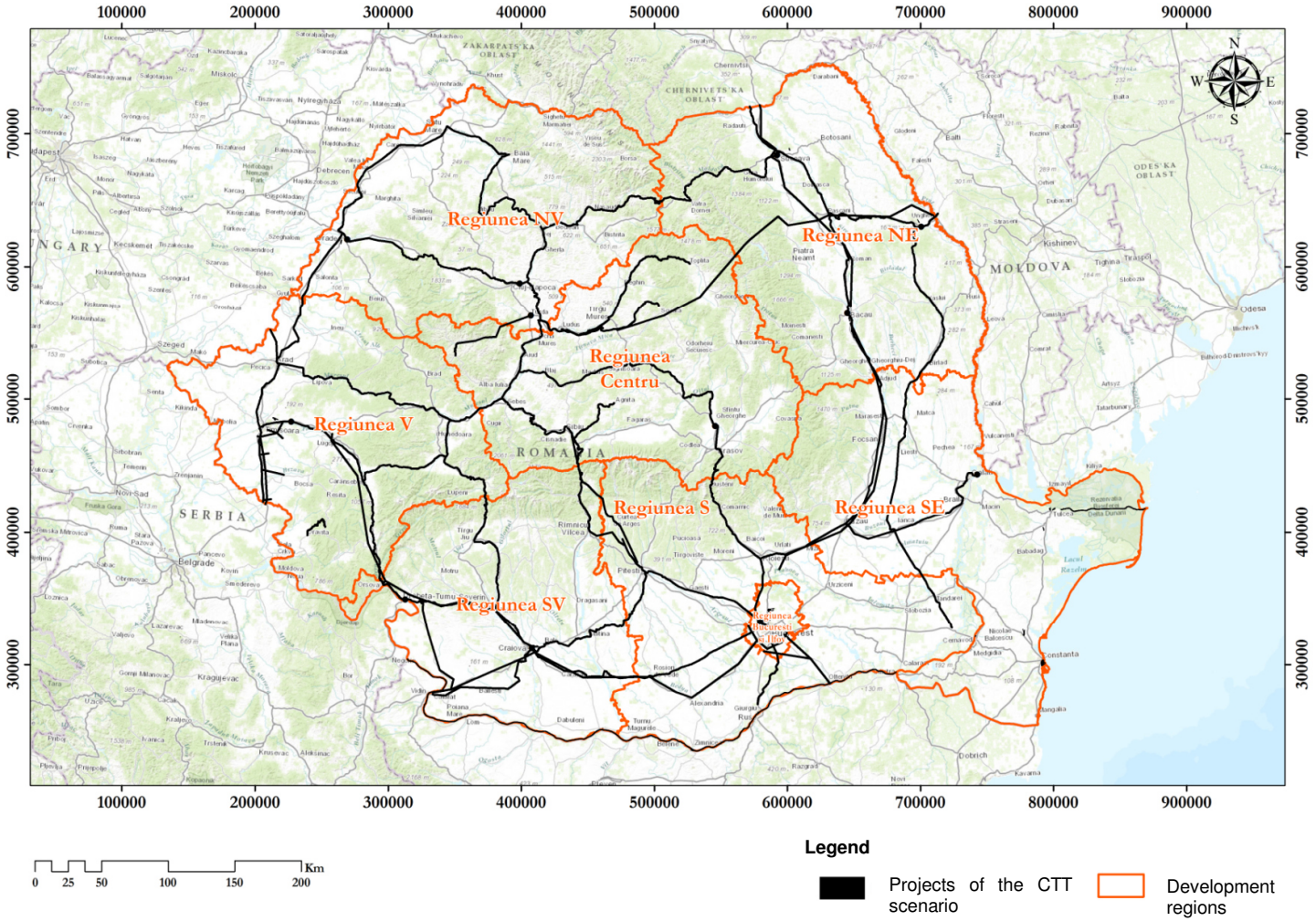


Figure no. 2-6 Location of projects that include construction works, highlighting the development regions. According to the Final revised GTMP version (published on 10.01.2014, with amendments related to the list of projects after further public debates – CTT scenario

2.3 Physical changes resulting from the implementation of the Plan

Projects proposed under GTMP are very diverse in terms of their nature and depend largely on the mode of transport belonging. Physical changes resulting from the implementation of these projects are also very varied, and mostly could be grouped according to categories of projects for each transport sector. These were presented in section 2.1.2, for each transport sector separately.

Physical changes resulting from activities for implementation of various works (building motorways, express roads, bypasses, rehabilitation of national roads, railways, modernization of port infrastructure, airport and intermodal terminals, etc.). More detailed information on this subject were made available for the road sector, ie information on the types of work performed for the construction of one km of motorway (2x2 lanes plain relief) and for the construction of one km of express road.

For example, can be mentioned the following categories of work necessary for the construction of one km of motorway, express road, respectively:

- earthworks;
- stripping, excavation, filling;
- superstructure way;
- water flow;
- traffic safety;
- consolidation works;
- hydraulic works;
- environmental protection works.

Given the diversity of the projects included in the four scenarios of the Master Plan and the current level of detail, a detailed description of the physical changes that will occur as a result of the implementation of all projects can not be made at this time and therefore will be elaborated further in the evaluation of each project.

Please refer to section 4.3.1 for details of the physical changes considered for the appropriate assessment.

2.4 Natural resources needed to implement the Plan

As noted above, the implementation of projects which are subject to the General Transport Master Plan will require the use of large quantities of soil, sand, gravel, ballast, etc. mineral aggregates. At this stage can not be estimated accurately all the natural resources needed to implement the Master Plan and any quantities.

Natural resources needed to implement each project will be detailed in the EIA procedures / EA, being different from project to project and from one mode of transport to another.

For example, under appropriate assessment study for " Sibiu - Pitesti Motorway" amongst the natural resources needed to implement the project are: wood, sand, ballast and earth, all of renewable character.

According to appropriate assessment study for project "Rehabilitation of Brasov - Simeria Railway, part of European Corridor IV for the trains circulation with a maximum speed of 160 km / h", the project implementation does not require the water uptake during work execution, does not require consumption of natural gas and electricity, and the consumption of energy is reduced and are available due to the mobile generator fueled with liquid combustibles.

2.5 The natural resources to be exploited within the natural protected areas of community Importance to be used for the implementation of the Plan

The main resource to be used for the implementation of projects included in the General Transport Master Plan, from the natural protected areas of community importance that could be crossed by future projects, is represented by the soil surface, which will be occupied temporarily in activities of implementation of the various infrastructure works or permanently due to the construction of new infrastructure elements.

It is recommended that sources of ballast, sand, mineral aggregates, etc., required for projects should not be located within Natura 2000 sites.

2.6 Emissions and waste generated by the plan and how to remove them

Transport provides significant socio-economic benefits, but also have an impact on the environment. On the one hand, transport activities support increasing demand for passenger and freight mobility, and on the other hand, transport activities are associated with the increase in the level of environmental externalities. This has reached a level where transport is the dominant source of emissions of most air pollutants. The main environmental externalities associated with transport are related to the activities, capabilities and results of transport systems. The relationship between transport and the environment is also complicated:

- First, transport activities contribute, among other anthropogenic and natural causes, direct, indirect and cumulative to environmental issues; in some cases may be even the dominant factor, while others, their role may be marginal and difficult to determine accurately;
- Secondly, transport activities contribute, at different geographic scales, to some environmental issues, from locally (noise and CO2) to the globally level (climate change), and even problems at continental / national / regional (smog, acid rain) level.

In addition to the environmental impact of transport infrastructure itself, traffic and transport sectors, the economic processes / industrial which are supporting the transport system must be considered. These include the production of fuels, vehicles and materials for construction, some of which, are very large consumers of energy (eg aluminum), as awell as removal of end of life vehicles, pices and infrastructure provision.

The most important effects of transport on the environment relates to climate change, air quality, noise, water quality, soil, biodiversity and land degradation.

2.6.1 EMISSIONS

The environmental impact generated by the transport sector is important because it is a major user of energy, and consumes the most of the world's oil resources. This leads to air pollution (including pollution with nitrogen oxides and particulates), thus representing a significant contributor to climate change through emissions of carbon dioxide (CO2), for which the transport sector generates the fastest growth. As subsector, road transport has the biggest contribution to global warming.

Greenhouse gases emissions (carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs), sulfur hexafluoride (SF6), aerosols, ozone (O3) water vapor) is one of the main causes of climate change.

According to the latest National Inventory of Greenhouse Gases Emissions (INEGES) of Romania, submitted in early 2013, Energy sector contribution to the overall emissions of greenhouse gases, in 2011, was 69.98 % (the highest percentage) of which a percentage of 16.89% genertaed by the transport sector (Figure no. 2 7 and Figure no. 2 8).

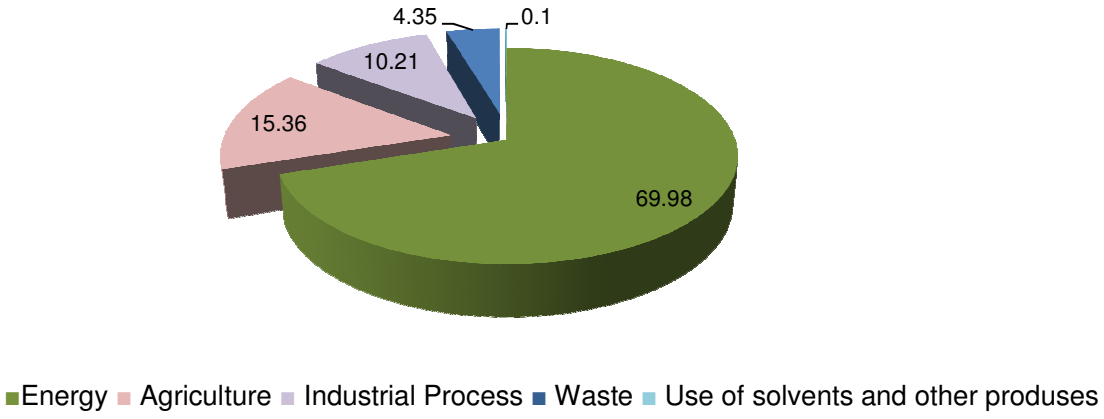


Figure no. 2-7 The contribution of various sectors to total greenhouse gas emissions, in 2011 (source: National Inventory Report Greenhouse Gas, submitted in 2013)

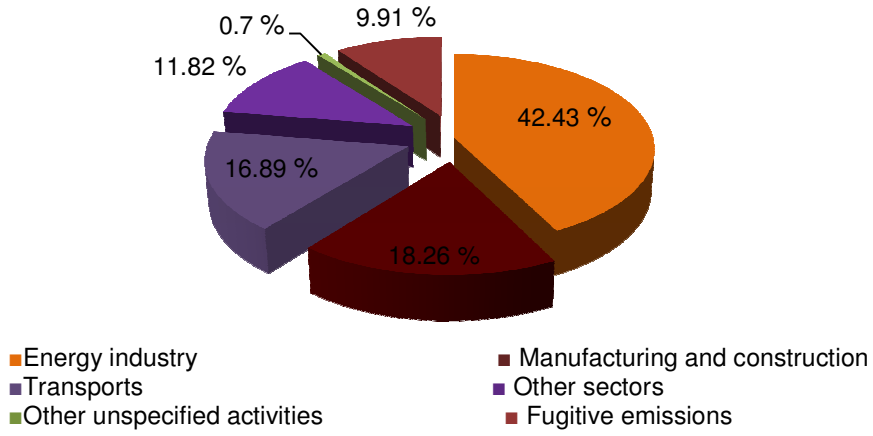


Figure no. 2-8 The contribution of sub-activity of the energy sector to total emissions of greenhouse gas emissions in 2011 (source: National Inventory Report Greenhouse Gas, submitted in 2013)

According to statistics presented on the website of the European Commission (http://epp.eurostat.ec.europa.eu/) regarding the total level of greenhouse gas emissions from the transport sector, in the period 1990-2012, for Romania is observed that the total emissions fell down in 2012 to about half, compared with emissions of 1990. In terms of greenhouse gases emissions in the European Union (the average of the 28 member countries to in the year 2012), there is also a downward trend, but the difference between 2012 and the base year is about 20%.

Regarding the average carbon dioxide emissions per kilometer for new cars in a given year, according to the same sources mentioned above, the level of 2012 in Romania the average carbon dioxide emissions per kilometer for new cars was 139 g CO2 / km.

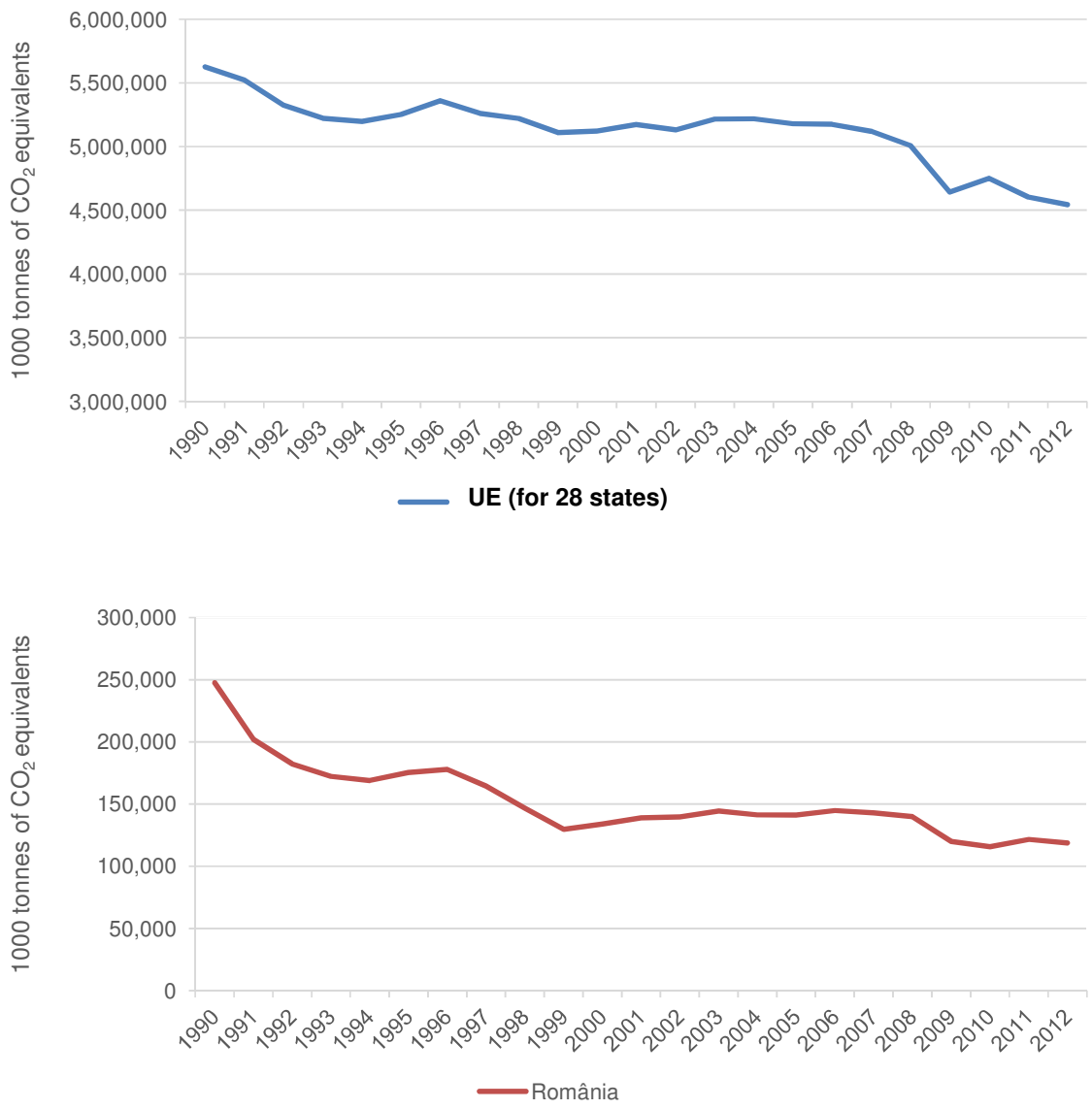


Figure no. 2-9 Total quatities of greenhouse gas emissions generated by the transport sector, during 1990 - 2012
(http://epp.eurostat.ec.europa.eu/tgm/table.do?tab=table&init=1&language=en&pcode=tsdcc210&plugin=1)

In terms of air quality, vehicles, ships engines, locomotives and planes are pollution sources that generate emissions and particulate matter, affecting air quality causing damage to human health. Toxic air pollutants are associated with cancer, cardiovascular disease, respiratory and neurological.

According to the Institute of Atmospheric Physics, *German Aerospace Center*, road and inland waterway transport influence decreases with height, but air traffic flight levels affect the atmosphere, which means up to about 12 km height. The emissions from ships leads to increased air pollution over the oceans. From this point of view as the only local source, and therefore plays an important role.

At the moment, in Romania, road sector is the most important element of the Romanian transport system (including passenger and freight) and also the most polluting having a significant contribution to total atmospheric emissions (NOx, particulate matter, NMVOC, heavy metals).

Lack of investment to improve the quality of road infrastructure works for the maintenance, modernization and repairs of railways, make medium travel speeds to be low and travel period long, this contributes to a high fuel consumption and emissions in large quantities the atmosphere, with a negative impact on air quality.

The projects proposed in the Master Plan contain a number of measures for rail transport sector to become competitive with the road transport (increasing the speed of transport, reducing travel time, improve transport conditions, increasing access to several regions of the country, electrification of railway lines etc.).

By implementing projects proposed by General Transport Master Plan will consider a number of factors that may influence variation in air pollutant emissions resulting from road traffic:

- economic development of the area;
- costs of fuels and car maintenance;
- supply and demand for cars;
- duties / taxes levied on cars;
- need for individual mobility;
- existence variants bypass congested urban areas;
- improved vehicle technology and usability of alternative fuels;
- application of intelligent transport systems (advanced applications that without embodying intelligence as such aim to provide innovative services on transport modes and traffic management);
- inefficiency or lack of public transport services;
- average traffic speed (transition between localities, in villages etc).

2.6.2 WASTE

Associated waste to the transport sector can be generated both, in the construction phase and the operational phase of the transport infrastructure, depending on the mode of transport (road, rail, water, air and intermodal).

Compared with industrial activities, activities and transport infrastructure can not be considered important sources of waste generation. The main groups of associated waste for the transport sector are:

- Waste generated during construction / rehabilitation / modernization / maintenance of transport infrastructure and related facilities: waste concrete, bricks, pottery; waste wood, glass, plastic; waste asphalt, tar and tarred products; scrap metal; scrap cuttings - earth, stone, gravel; waste insulating materials; mixed construction and demolition waste.

At the national level there are not records of construction and demolition waste, the main causes are represented by: the absence of specific legislative regulations for these types of waste and that the holders of such types of waste are difficult to identify by the authorities environment, the operators whose activity profile does not require holding an environmental permit. The only existing information on the quantities are construction and demolition waste collected from households, which are reported annually by sanitation operators.

In confromity with information presented on the website of the European Commission (http://ec.europa.eu/), in 2011 was developed a study on "Management of construction and demolition waste in the EU - requirements arising from the Waste Framework Directive and assessing the situation in the medium term ". According to this study, Romania is among the countries that did not report the quantities of construction and demolition waste.

According to the National Waste Management Strategy, 2014 - 2020, construction and demolition waste can be inert, non-hazardous or contaminated with various hazardous substances, and therefore it is recommended to collect them separately. Construction and demolition waste, classified as hazardous waste may include: asbestos, heavy metals, paints, adhesives, treated wood, soil contaminated with PCB materials. Although these amounts are small compared to total waste of this type generators (manufacturers) must apply special measures to address them in an appropriate way without hurting the environment or human health. According to the same report, in terms of the structure of municipal waste generated in Romania, for period 2006 - 2010 the share of waste from this sector was approximately 7.05% of the total municipal waste generated in the period.

Waste generated during operation of transport infrastructure:

- *Spent batteries and accumulators*

According to reports on the state of the environment, in the period 2009 – 2012, in Romania was collected an amount of 249,862.85 tons of batteries and accumulators, and in case of portable batteries was registered a gradually increasing, reaching from 12.45 tons in 2009, to 312.08 tonnes in 2012. The distribution by year and category is shown in the charts below.

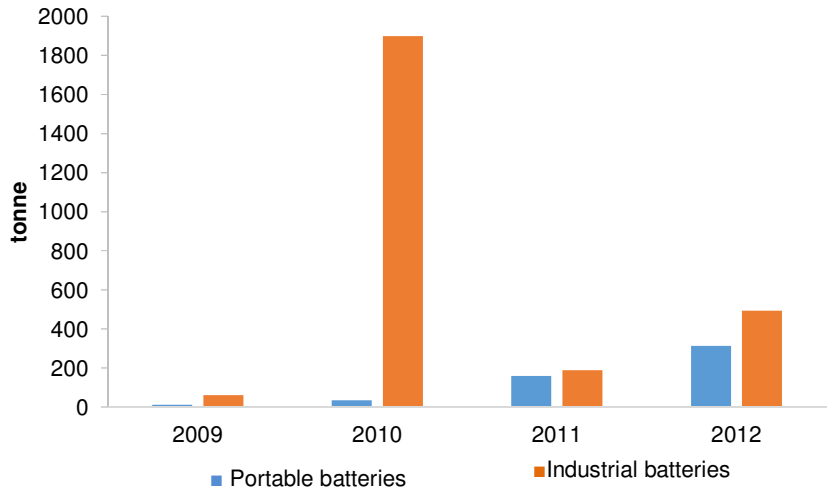


Figure no. 2-10 The evolution of quantities of industrial and portable batteries collected in 2009-2012

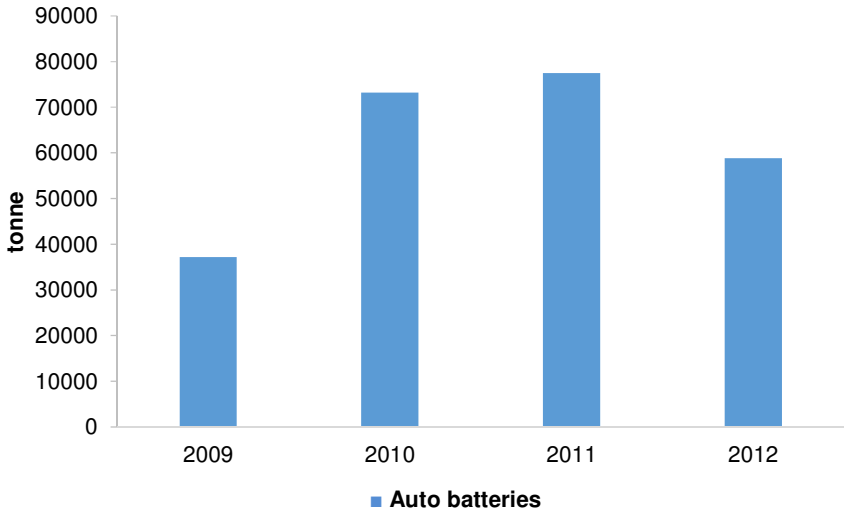


Figure no. 2-11 The evolution of quantities of auto batteries collected in 2009-2012

- *End of life vehicles*

According to reports on the state of the environment in Romania, in 2011, the following targets were reached for the end of life vehicles:

- Reuse and recovery of 86.80% of average weight per vehicle;

- Reuse and recycling of 82.90% of average weight per vehicle.

Since 1 January 2015, the operators will be required to provide the following objectives, taking into account the average weight when empty:

- Reuse and recovery of at least 95% of average weight per vehicle and year, for all end of life vehicles;
- Reuse and recycling of at least 85% of average weight per vehicle and year, for all end of life vehicles.

The number of end-of-life collected vehicles and for which where issued Certificates of destruction, during 2006 – 2011, registered an upward trend, mainly due to Car Fleet Renewal Program - RABLA. The number of end-of-life vehicles was recorded in year 2010 at aprox.197,445 units.

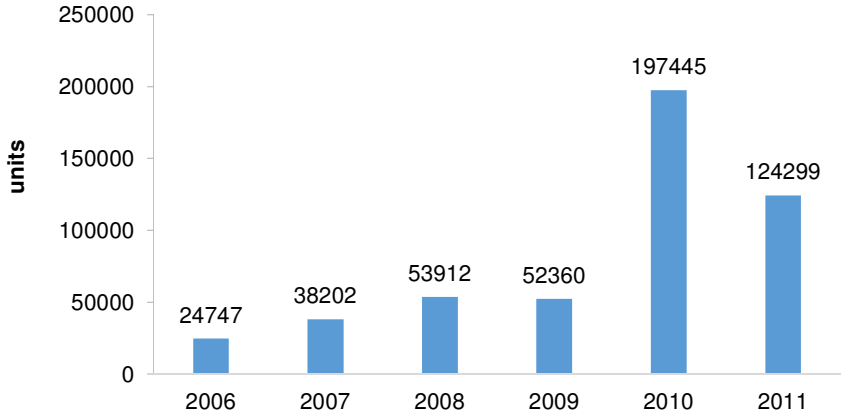


Figure no. 2-12 Evolution of end-of-life collected vehicles, for which were issued Certificates of destruction during 2006 - 2011

- *End-of-life ships*

Most seagoing ships at the end of its life, are decommissioned and dismantled in facilities using methods with significant effects on environment and health.

The scrapping of ships with Romanian flag must comply with the provisions of Regulation (EU) No. 1257/2013 of the European Parliament and of the Council from 20 November 2013 related to ship recycling and amending Regulation (EC) no. 1013/2006 and Directive 2009/16 / EC.

Romania currently has no maritime fleet, and all operators on the Danube are private companies. Nationally, there are only 1,500 registered ships (barges type, tugs-pusher and cabotiere) and responsible for disposal of them are the phisical or legal persons registered as owners of the ships.

- *Used tyres*

According to the National Waste Management Strategy, 2014 - 2020, the statistical data holds by the Ministry of Economy, in 2011 were collected 60,000 tons of used tires, out of which 75% were coprocessor in cement factories, 20% were recovered as recycled material, and the remaining 5% were reused (dams, pens, fences etc.).

- *Use oils*

According to reports on the state of the environment, the total quantity of fresh oils put on market nationally in 2011 was approx. 60,733.75 tonnes and the total quantity of waste oil collected, recovered and disposed in the same year was approx. 20,587.9364 tons. Information specifically on waste oils from transport activity are not available.

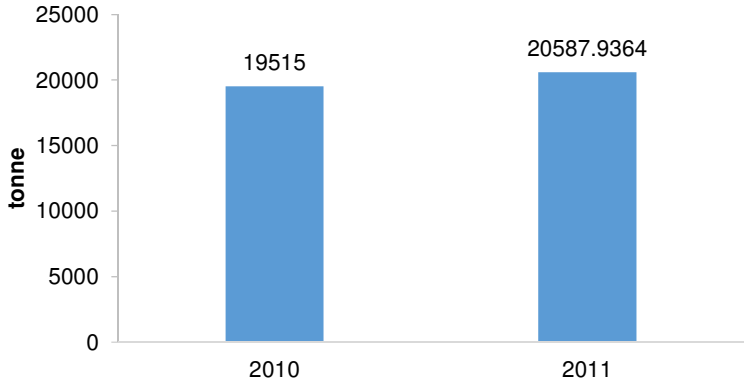


Figure no. 2-13 The evolution of the quantity of waste oils collected, recovered and disposed of in 2010 and 2011

- *Other types of waste generated during the operation of various objectives (CFR depots, road maintenance centers, car parks, airports, ports, etc.)*

These goals, which generate different waste categories according to the specific activity, operates in terms of environmental protection under the environmental permit and must comply with the provisions of Law no. 211/2011 on waste regime. Waste transportation activity is made only by operators who hold an environmental permit required by law for collection / temporary storage / treatment / recovery / disposal.

Transport of hazardous waste and hazardous substances has no impact on the environment, but only where accidents occur involving transport or in case of any accidental spills during transport activity. These types of accidents are imprevezibile in terms of time, place, type or intensity. The main components which are affected and, in certain circumstances, can register long-term negative effects, depending on the material / waste transported are: air, soil / subsoil and water (surface and underground).

Improper maintenance of transport infrastructure, the quality of their composition could increase the amount of waste associated transport activity (especially waste resulting from repair work and maintenance of transport vehicles, such as waste oil, tires, used batteries etc.).

Implementation of proposed projects by the General Transport Master Plan can positively influence the practices relating to the management of waste from transport activities.

2.6.3 NOISE

Noise associated transport sector, which comes from motor traffic operations in ports, airports and rail stations, affecting human health through an increased risk of cardiovascular disease, deafness, mental illness, endocrine diseases, etc. Also, increased noise presents a negative impact on the urban environment, reflected in land values and loss of productive land.

According to the study "*European environment. Status and Perspective 2010 – Summary*" developed by the European Environment Agency, about 40% of the population living in the largest cities from EU-27 may be exposed to long-term average noise levels exceeding 55 dB traffic, and at night, almost 34 million people may be exposed to long-term average road noise levels above 50 dB. The Guides of the World Health Organization (WHO) for night noise for Europe, recommends that people must not be exposed to noise above 40 dB during night. The noise level for night of 55 dB, described as "growing threat to public health", should be considered as an intermediate target in situations where the development guidelines is not feasible.

At the national level, following the provisions of Directive no. 2002/49 / EC of the European Parliament and Council, transposed into national legislation by GD. 321/2005 on the assessment and management of environmental noise, it is necessary to make strategic noise maps as follows:

- since 2007 has started implementing the noise maps for: the agglomerations with more than 250,000 inhabitants, major roads which have more crossings traffic of 6,000,000 vehicles per year, major railways which has more than 60,000 train passages per year, civil airports which has more than 50,000 air movements per year and ports in agglomerations with more than 250,000 inhabitants;
- since 2012 started the development of these maps for all agglomerations, including airports and ports situated within them, as well as major roads and major railways.

Development of the strategic maps for transport infrastructure is the responsibility of subordinated units, or under the authority of the central public transport authority that manages road, rail, airport and port.. Based on the information obtained from these noise maps, are being developed action plans that include measures to reduce and to manage the noise.

The transport sector has an important contribution to noise pollution, given the results of studies on the influence of noise on health made at national level (National State of the Environment Report - Year 2011), which is confirmed by the information provided by the strategic noise maps.

Road Sector

National Company of Motorways and National Roads is responsible for developemnt of the strategic noise maps and action plans to reduce noise in the localities where were found exceeding of the permissible values for main roads, which have higher traffic crossings than 6,000,000 vehicles per year.

The main results arising from these strategic noise maps are:

- noise source affecting large urban areas is road traffic (including public transport vehicles), followed by the industrial areas;

- ❖ percentage of people disturbed by road traffic noise in residential areas with heavy traffic is two times higher than in residential areas with low traffic.

Rail Sector

Rail Company "CFR" SA, which is the manager of the railways in Romania, has the responsibility to make strategic noise maps for major railways with more than 30,000 train passages / year conflict maps, including action plans related to insurance / management to reduce noise from rail transport. Railway segments which has more than 30,000 train passages / year, for which were carried out the noise maps are presented in the following table.

Table no. 2-3 Approximate maximum distance (from the center of the railway track) in meters, to where occurring noise excedings above 55 dB (daytime) and 50 dB (at night)

No. crt	Sector name	Lzsn (day – evening - night)	Ln (night)
1	Bucuresti Nord – Post 5	300	250
2	Post 5 - Ramura Baneasa	400	250
3	Ramura Baneasa - Depoul Bucuresti Triaj	450	400
4	Depoul Bucuresti Triaj - Chitila	350	250
5	Chitila - Brazi	400	400

Railway traffic noise affects the population, by the exposure to a level above the maximum admissible value for day and night, along the runway of the railway and, in the depots.

Naval sector

NC Maritime Danube Ports Administration Galati (CN APDM SA Galati) and NC Maritime Ports Administration Constanta (NC MPA SA Costa) have the obligation to develop strategic noise maps and action plans for the ports of Galati, Braila and Constanta.

According to available data in the report *Strategic Noise Mapping Port Galati*, in terms of population and buildings exposure to industrial noise generated by port under Lszn and Lnight and from the analysis of the data obtained, is observed that there are no people exposed to noise levels above the addmissible limit.

Also, according to the report *Elaboration of the noise maps and action plans developed for the management of noise and its effects for Braila Port (Hârşova, Turcoaia, ground, Gura Arman)*, and *Strategic noise maps for Constanta port*, the noise level is felt especially in the port area, with no impact on public health (surfaces exposed to noise levels above 65 dB (A) (Lden), and respectivly 55 dB (A) (Ln) are mostly within the industrial area).

Air Sector

Authonomous regia of airports is obliged to develop strategic noise maps and action plans for the airports.

According to the strategic noise maps for Henri Coandă International Airport, the population is affected by air traffic noise, by exposure to a level of 60 dB (A) during the day and 50 dB (A) during night.

The population will continue to be affected by noise from road traffic growth in urban areas (due to lack of motorways and bypasses which cause directing the traffic to the peri-urban areas).

Developing the strategic noise maps for transport infrastructure (ports, airports, roads, road, railways) will allow the identification of areas where noise levels exceed the admissible limit values and the establishment of measures to reduce the impact of noise on sensitive receptors.

2.7 Requirements related to land use, necessary for implementation of the Plan

The General Transport Master Plan includes a number of projects to be implemented in the time period 2014-2020, 2021-2030 and after 2030. The following table presents the land areas to be occupied, permanently and temporarly by the projects included in the three scenarios, depending on the code and the land use category, according to Corine Land Cover 2006. The methodology which was used to calculated the areas occupied permanent and temporary by the projects is presented in section 4.3.

Table nr. 2-4 The land occupied permanently or temporarily, by code and category of land use, for Do Minimum scenario

Code and category of land use	Land surfaces occupied permanently (ha)	Land surfaces occupied permanently (ha)
112 - Localities - Discontinuous urban fabric	654.26	775.10
121 - Industrial or commercial units	275.29	238.80
122 - Road and rail networks and associated land	197.13	139.30
123 -Ports	1.10	1.68
131 - Mineral extraction sites	3.46	5.84
132 - Dump sites	13.35	16.47
141 - Green urban areas	1.82	2.78
142 - Sport and leisure facilities	4.48	5.90
211 - Non-irrigated arable land	2359.74	2069.44
221 - Vineyards	87.60	96.46
222 - Orchards	35.27	31.35
231 - Pastures	348.14	327.75
242 - Complex cultivation patterns	137.38	146.83
243 - Principally occupied by agriculture, with significant areas of natural vegetation	226.87	197.28
311 - Broad-leaved forest	242.82	318.46
312 - Coniferous forest	12.60	21.40
313 - Mixed forest	36.03	45.02
321 - Natural grasslands	0.90	5.03
324 - Transitional woodland-shrub	45.62	39.25

Code and category of land use	Land surfaces occupied permanently (ha)	Land surfaces occupied permanently (ha)
331 - Beaches	1.81	2.03
411 - Inland marshes	80.67	93.34
511 - Water courses	189.96	3607.58
512 - Lakes	22.58	18.04
523 - Sea and ocean	0.62	0.69
Total	**4979.51**	**8205.82**

Table no. 2-5 The land occupied permanently or temporarily, by code and category of land use, for (*ES/EES) developemnt scenario*

Code and category of land use	Land surfaces occupied permanently (ha)	Land surfaces occupied permanently (ha)
112 - Localities - Discontinuous urban fabric	1477.77	3915.58
121 - Industrial or commercial units	373.41	1125.39
122 - Road and rail networks and associated land	21.46	236.84
123 - Ports	15.44	1263.00
124 - Airports	12.78	7.84
131 - Mineral extraction sites	10.86	34.93
132 - Dump sites	10.27	20.02
133 - Construction sites	9.02	9.11
141 - Green urban areas	3.61	62.51
142 - Sport and leisure facilities	13.86	35.74
211 - Non-irrigated arable land	7312.18	11661.96
213 - Rice fields	22.81	6.56
221 - Vineyards	378.72	380.08
222 - Orchards	382.79	403.93
231 - Pastures	1582.20	2162.85
242 - Complex cultivation patterns	556.32	1174.90
243 - Principally occupied by agriculture, with significant areas of natural vegetation	693.47	1258.76
311 - Broad-leaved forest	2130.39	2249.45
312 - Coniferous forest	215.56	250.94
313 - Mixed forest	403.55	373.18
321 - Natural grasslands	51.67	36.16
324 - Transitional woodland-shrub	192.74	324.67
331 - Beaches	16.41	15.16

Code and category of land use	Land surfaces occupied permanently (ha)	Land surfaces occupied permanently (ha)
333 - Sparsely vegetated areas	-	0.01
411 – Inland marshes	141.68	281.60
511 - Water courses	277.72	5240.98
512 - Lakes	202.53	142.02
523 - Sea and ocean	0.14	48.23
Total	**16509.38**	**32722.39**

Table no. 2-6 The land occupied permanently or temporarily, by code and category of land use, for *CTT Scenario*

Code and category of land use	Land surfaces occupied permanently (ha)	Land surfaces occupied permanently (ha)
112 - Localities - Discontinuous urban fabric	821.85	2361.03
121 - Industrial or commercial units	230.14	944.64
122 - Road and rail networks and associated land	12.24	209.32
123 -Ports	15.19	1262.14
131 - Mineral extraction sites	-	23.84
132 - Dump sites	7.38	11.28
133 - Construction sites	9.92	8.15
141 - Green urban areas	1.55	55.62
142 - Sport and leisure facilities	1.75	19.03
211 - Non-irrigated arable land	4428.67	8871.32
213 - Rice fields	22.81	6.56
221 - Vineyards	196.54	229.26
222 - Orchards	254.65	290.58
231 - Pastures	733.97	1478.25
242 - Complex cultivation patterns	229.61	803.65
243 - Principally occupied by agriculture, with significant areas of natural vegetation	323.74	919.01
311 - Broad-leaved forest	993.24	1384.85
312 - Coniferous forest	128.84	165.22
313 - Mixed forest	216.50	235.62
321 - Natural grasslands	20.50	12.52
324 - Transitional woodland-shrub	112.18	237.56
331 - Beaches	13.35	10.99
333 - Sparsely vegetated areas	-	0.01

Code and category of land use	Land surfaces occupied permanently (ha)	Land surfaces occupied permanently (ha)
411 – Inland marshes	73.27	225.04
511 - Water courses	189.39	5151.89
512 - Lakes	97.53	77.68
523 - Sea and ocean	0.14	48.23
Total	**9134.94**	**25043.29**

2.8 Additional services required for implementation of the Plan

In terms of strategy, there are no additional services requested by the General Transport Master Plan implementation, will not be necessary any demolition of existing buildings, removal / relocation of existing pipelines or power lines, railways or any other object.

When referring to the projects included in the Master Plan, should be identified those projects that require such additional services (disposal / relocation of pipelines, power lines, etc., the means necessary construction) and how to access to these services could further damage the integrity of natural protected areas of community importance.

Given the diversity, multiplicity and the degree of generality of the projects included in the Master Plan, in this moment it is difficult to estimate accurately the additional services that will be required for the implementation of projects included in the Master Plan. These services could be required for projects involving, for example, the construction of new road infrastructure works, electrification of railways, modernization of railway stations, operating capacity expansion ports, building passenger terminalfor the existing airports, where it may be necessary demolition of existing buildings, removal / relocation of existing pipelines or power lines, railways or any other object.

2.9 Duration of construction and operation of the Plan and the timing of the implementation period

The General Transport Master Plan is designed to provide a clear strategy for the development of the transport sector in Romania for the next 5-15 years. In order to be exploited, the role of the Master Plan is to provide implementable solutions to the problems and requirements of the transport sector in Romania.

The Master Plan will identify projects and policies that will best meet the transportation needs of Romania in the next 5 -15 years, for all modes of transport, thus providing a sound analytical basis for the choice of such policies and projects.

The GTMP project implementation horizon is 15 years, without including periods of actual construction of the projects (duration that can be over a period of 10 years from start to project completion).

At the present time, the schedule for the implementation of prioritized projects has not yet been defined, this being one of the reasons why, in the present study, could not take into account the temporal dynamics of impacts.

2.10 Activities that will be generated as a result of implementation of the Plan

The projects included in the General Transport Master Plan are divided mainly depending on the nature of investment:

- ❖ Projects / Infrastructure programs of national importance;
- ❖ Maintenance and repair projects for existing assets;
- ❖ Investment projects in equipment, eg. rolling stock, ships;
- ❖ Transport policies, etc.

The main activities that will be generated as a result of implementing various projects included in the General Transport Master Plan, may be, depending on the transport sector, the following:

- ✓ Road Sector - as a result of new infrastructure projects (highways, express roads, bypasses):
  - improvement of passenger and freight transport;
  - service areas (including gas stations);
  - accommodation;
  - industrial centers / trade us.
- ✓ Rail Sector
  - improvement of passenger and freight transport;
  - service areas (including gas stations);
  - accommodation;
  - industrial centers / trade us.
- ✓ Naval Sector:
  - improving the business;
  - Improvement of passenger and freight transport;
  - improving related activities.
- ✓ Air sector
  - improvement of passenger and freight transport;
  - service areas;
  - accommodation;
  - industrial centers / trade us.
- ✓ Intermodal Sector
  - enhanced transport between several modes of transport (road, rail, air);
  - improving related activities.

2.11 Characteristics of existing PP proposed or approved, which can generate cumulative impact with the Plan which is under review process and may affect natural protected areas of community Importance

The General Transport Master Plan of Romania will identify those projects and policies that will best meet the needs of the transport sector in Romania, to be implemented over the next 5 to 15 years for all sector of transport. Basically, will include a number of different projects, from projects involving construction of new transport infrastructure, to projects aimed at upgrading works, rehabilitation, strengthening of the existing assets (national roads, railway lines, consolidation banks, etc.).

The main existing plans and programs proposed or approved, which could generate cumulative impact with General Transport Master Plan, thus affecting natural protected areas of community Importance, are energy (especially energy from renewable sources), and plans for flood protection.

Regarding the energy sector, at national level, have been developed a number of strategies and plans of which the most important may be mentioned the *Romanian Energy Strategy, National Action Plan for Renewable Energy (NREAP) 2010-2020-2030*, *The program on energy production from RES (renewable sources): wind, geothermal, solar, biomass, hydro*. The projects related to these plans may involve the construction of hydropower, small hydro, wind farms, power lines, etc., this being projects that could have significant effects on natural protected areas.

Also, at regional level, there are a number of flood defense plans, involving among other things the protection of transport infrastructure, buildings and touristic areas. Since the General Transport Master Plan includes a number of projects related to construction of Danube – Bucharest Navigation Channel, the improvement of navigation conditions on the Romanian-Bulgarian Danube sectro and port infrastructure improvements, must be mentioned that this type of projects could generate cumulative effects with the projects included in the plans and above mentioned programs.

An analysis related to the quantification of cumulative impacts of the GTMP with other plans / programs proposed or approved is impossible to be developed at this time, due to lack of spatial information on the location of other projects PP. Trying to perform this kind of analysis, have been assessed the extent to which information contained in the standard forms of Natura 2000 sites potentially affected by GTMP can provide quantitative information on the existence and spatial forms of some actual impacts. Unfortunately, activities identified in the standard forms and consequences are not associated and accurate spatial information and their location can be partially or totally superimposed.

3. Information on natural protected areas of community Importance affected by the implementation of the Master Plan

3.1 General information related to Natura 2000 network in Romania

The Natura 2000 network is a network of natural protected areas established in 1992, at European level, which includes a representative sample of wildlife and natural habitats of community importance. It was established not only to protect nature, but also to maintain these natural resources on long term, in order to ensure socio-economic resources.

The Natura 2000 network was established on the basis of two EU directives, governing the selection, designation and protection of the sites: Birds and Habitats Directive. Government Emergency Ordinance no. 57/2007 on the regime of natural protected areas, conservation of natural habitats and of wild fauna and flora approved with amendments by Law no. 49/2011, as amended and supplemented in Romanian legislation transposing the two European Directives.

Of the nine biogeographical regions of the European Union, Romania has five, being the country with the largest number of regions:

- ✓ *Continental* - includes central areas, south and northeast areas, mainly agricultural;
- ✓ *Alpine* - include Carpathian Mountains, where lives nearly half of the population of Europe's large carnivores (bear, wolf, lynx);
- ✓ *Pannonian* - includes arid plains of western Romania;
- ✓ *Step* - includes relief of the southeastern lowlands and wetlands in the Danube Delta and the Black Sea;
- ✓ *Pontic* - lies on the western shores of the Black Sea and the eastern part of the Danube Delta.

In 2007, Romania has designated 381 Natura 2000 sites, of which 108 Special Protection Areas (SPA's - 11.89% of the country) and 273 Sites of Community Importance (SCIs - 13.21% of country area), the total surface of proposed Natura 2000 sites (SCI + SPA) being at that time, of 17.84% of the country surface.

This surface was expanded in 2011 to 530 Natura 2000 sites, until the present, in Romania being designated 148 SPAs, whose total surface is 3.694.394,291 ha (15.5% of the country total surface) and 383 SCIs, totaling an area of 4.152.152,607 ha (17.42% of the country total surface). Natura 2000 network represents at the present moment a share of about 22% of the country surface (Figure no. 3-1).

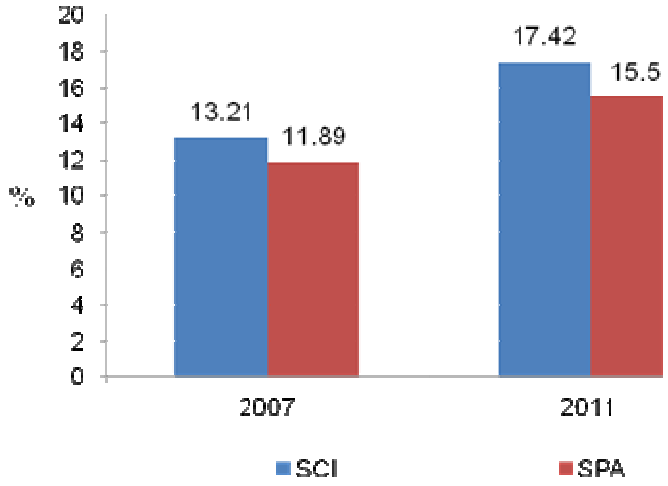


Figure no. 3-1 Share of Natura 2000 surface of the national territory in the years 2007 and 2011

In accordance with the Natura 2000 standard forms, updated in 2011, the Sites of Community Importance (SCIs) of our country are mostly in the Continental biogeographical region (51%), followed by Alpine region (28%) and steppe (11%), the fewer being found in the Black Sea region (Figure no. 3-2).

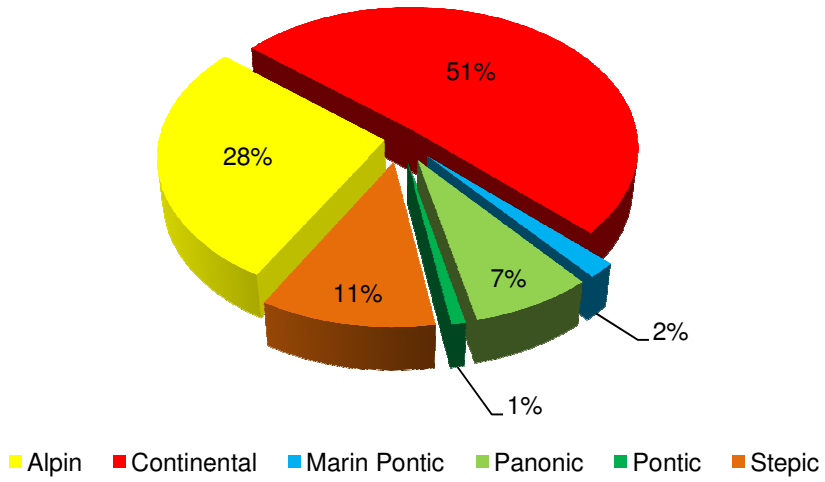


Figure no. 3-2 Share of SCIs and biogeographical region (according to the Natura 2000 Standard Forms updated in 2011)

Most of the Special Protection Areas (SPAs) are also in mainland bioregions (42%), followed by the steppe (28%) and alpine (17%), the least being found in the Black Sea region, respectively Pontic sea (Figure no. 3-3).

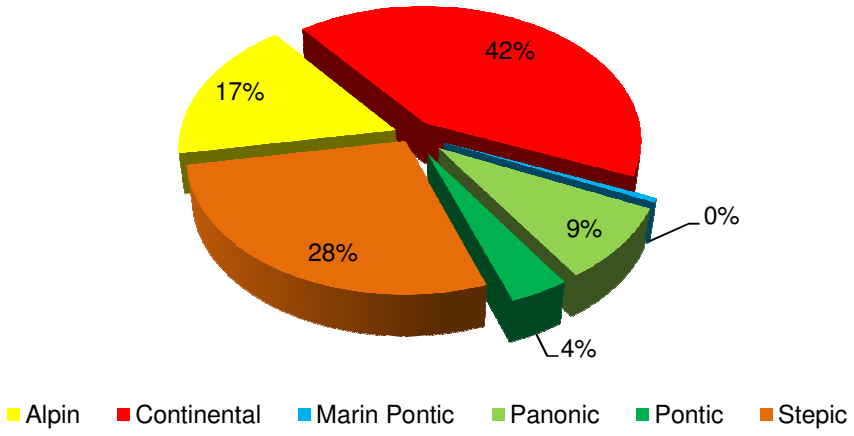


Figure no. 3-3 Share of the SPAs and biogeographical region (according to Natura 2000 Standard Forms updated in 2011)

Regarding the habitat classes from Natura 2000 sites, according to the Standard Forms of Natura 2000, the most represented class of habitats in the SCIs is improved pastures class (14% of the total area of SCIs), the least being: marine areas, bays (8 such habitats encountered in the SCIs), coastal lagoons, estuaries (2 habitats), swamps, grasslands and salt steppes (1 habitat) (Figure no. 3-4).

The most common classes of habitats in the SPAs are: improved pastures, extensive crops of grain, other types of land (including towns, villages, roads, mines, industrial sites) and other arable land (each occupying a share of 11 %), followed by deciduous forests (10%) and continental water bodies (running or standing - 9%). Also, the less representative classes are: coastal lagoons, estuaries (2 habitat of its kind found in the SPAs), swamps, grasslands and salt steppes (1 habitat) and marine areas, bays (one habitat) (Figure no. 3-5).

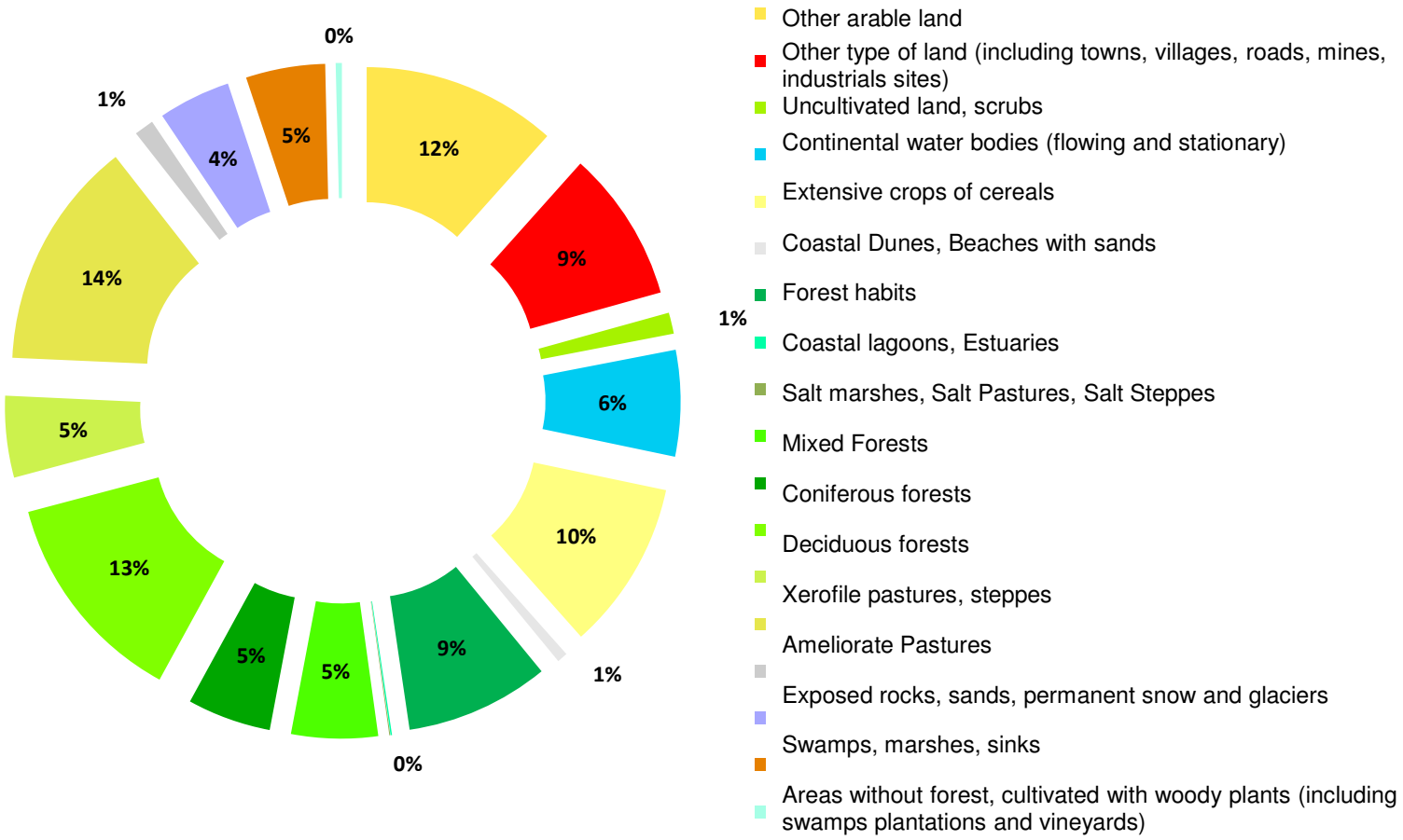


Figure no. 3-4 Share of habitat classes for SCIs (in conformity with Standard Forms of 2011)

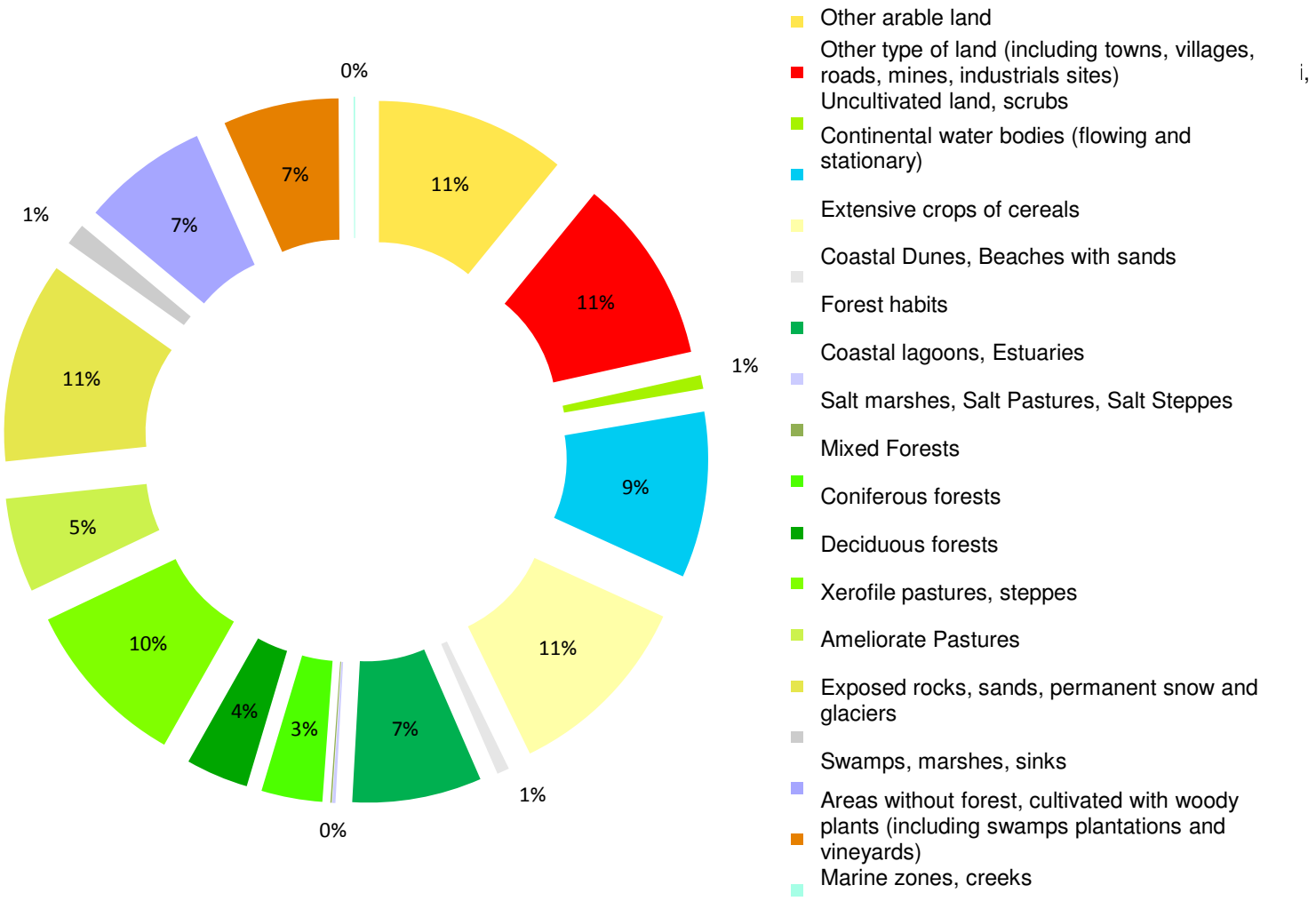


Figure no. 3-5 Share of classes of habitats for SPAs (according to Standard Forms updated in 2011)

3.2 Data on natural protected areas of community importance that could be affected by the Master Plan

To identify potential Natura 2000 sites affected by the implementation of the Master Plan was performed an analysis for all projects proposed by Do Minimum Scenario and (ES / EES) and CTT Development Scenario. The analysis included the following data:

- Elements of existing transport infrastructure, subject to the Master Plan for the sectors of air, sea, rail and road (Do Nothing Scenario);
- Projects proposed by Do Minimum Scenario and by (ES / EES) and CTT Scenarios including construction works that could be spatially localized for sectors: air, naval, intermodal, rail and road (some provided by the consultant AECOM, others are vectorized in Stereo 1970 projection, shapefile format);
- Existing database on the website of the European Environment Agency (EEA - http://www.eea.europa.eu/) on SCIs and SPAs designated at national level and their protected elements;
- Limits of Natura 2000 sites, in 70 Stereo projection (shapefile format, updated October 20, 2011), available on the website of the Ministry of Environment and Forests (http://www.mmediu.ro/protectia_naturii/protectia_naturii.htm).

Must be mentioned that *„Do Nothing" Scenario* reflects the current situation, which was not included in the analysis of the *„Do Minimum" Scenario* and (ES / EES) and CTT development scenario (current transport infrastructure is not in the list of projects for the three scenarios).

This analysis was done on two levels, namely:

1. Identifying transport infrastructure in the four scenarios considered, intersecting SCIs and SPAs;
2. Identification of transport infrastructure projects included in *Do Minimum Scenario* and (*ES / EES) and CTT Development Scenario*, which does not cross the Natura 2000 sites, but whose alignments are indicative, at distances less than 1 km from the limits of SCIs and SPAs.

3.2.1. IDENTIFICATION OF THE PROJECTS WHICH ARE INTERSECTING NATURA 2000 SITES

Identification of the number of projects whose aligments intersect indicative Natura 2000 sites can be made only for development scenarios *Do Minimum Scenario*, *(ES / EES) and CTT Scenarios*, in case of *Do Nothing Scenario* can not discuss about the "number of projects". For this scenario was considered the current transport network, thus being in this way, identified the number of Natura 2000 sites crossed by it.

The number of projects intersecting Natura 2000 sites for each trasnport sector are presented in the following tables. Most projects intersecting Natura 2000 sites belong to road sector. Also worth mentioning, that no project related to air and intermodal sectors, proposed on the lists of projects related to the three scenarios, will not intersect any Natura 2000 sites.

Table no. 3-1 Number of projects for each scenario that intersect SCIs

Scenario	No. of projects intersecting SCIs					Total no. of projects
	Naval	Railway	Road	Air	Intermodal	
Do minimum	2	5	23	0	-	30
ES / EES	6	15	43	0	0	64
CTT	6	15	9	0	0	30

Table no. 3-2 Number of projects for each scenario that intersect SPAs

Scenario	No. Of projects intersecting SCIs					Total no. of projects
	Naval	Feroviar	Rutier	Aerian	Intermodal	
Do minimum	2	4	14	0	-	20
ES / EES	5	14	35	0	0	54
CTT	5	14	9	0	0	28

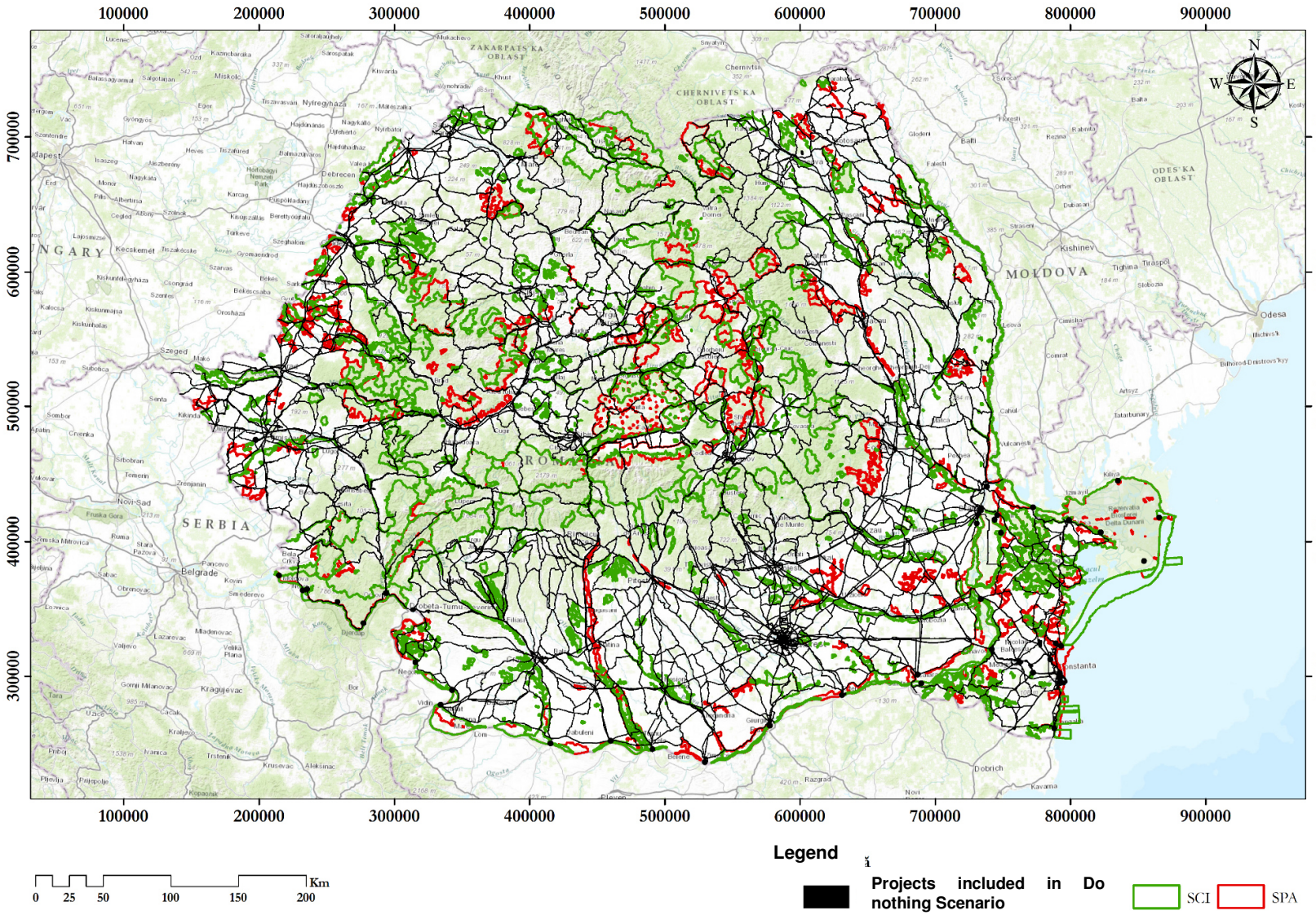


Figure no. 3-6 Do nothing Scenario (present situation) and Natura 2000 sites

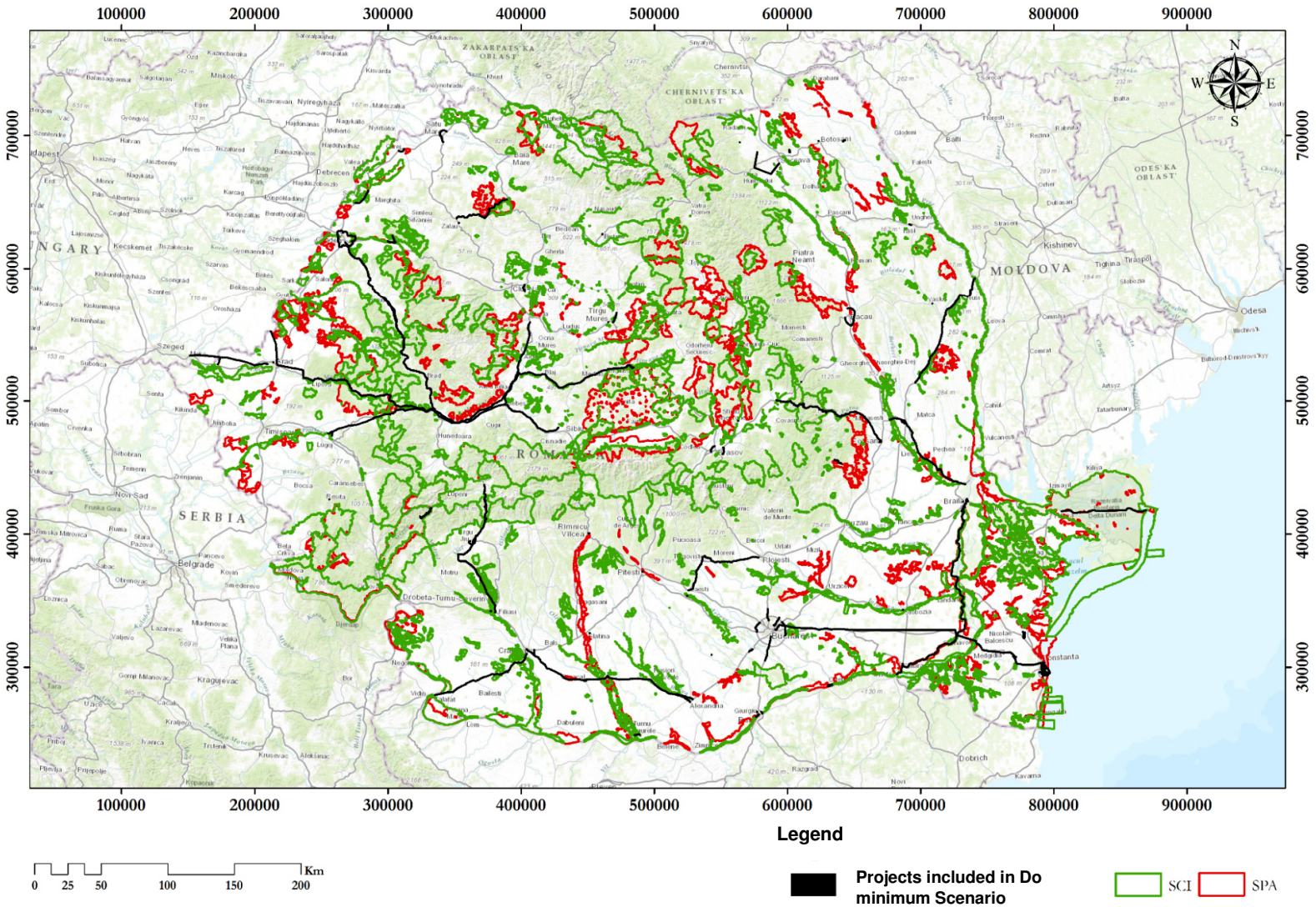


Figure no. 3-7 Location of Do Minimum projects comparing to Natura 2000 sites

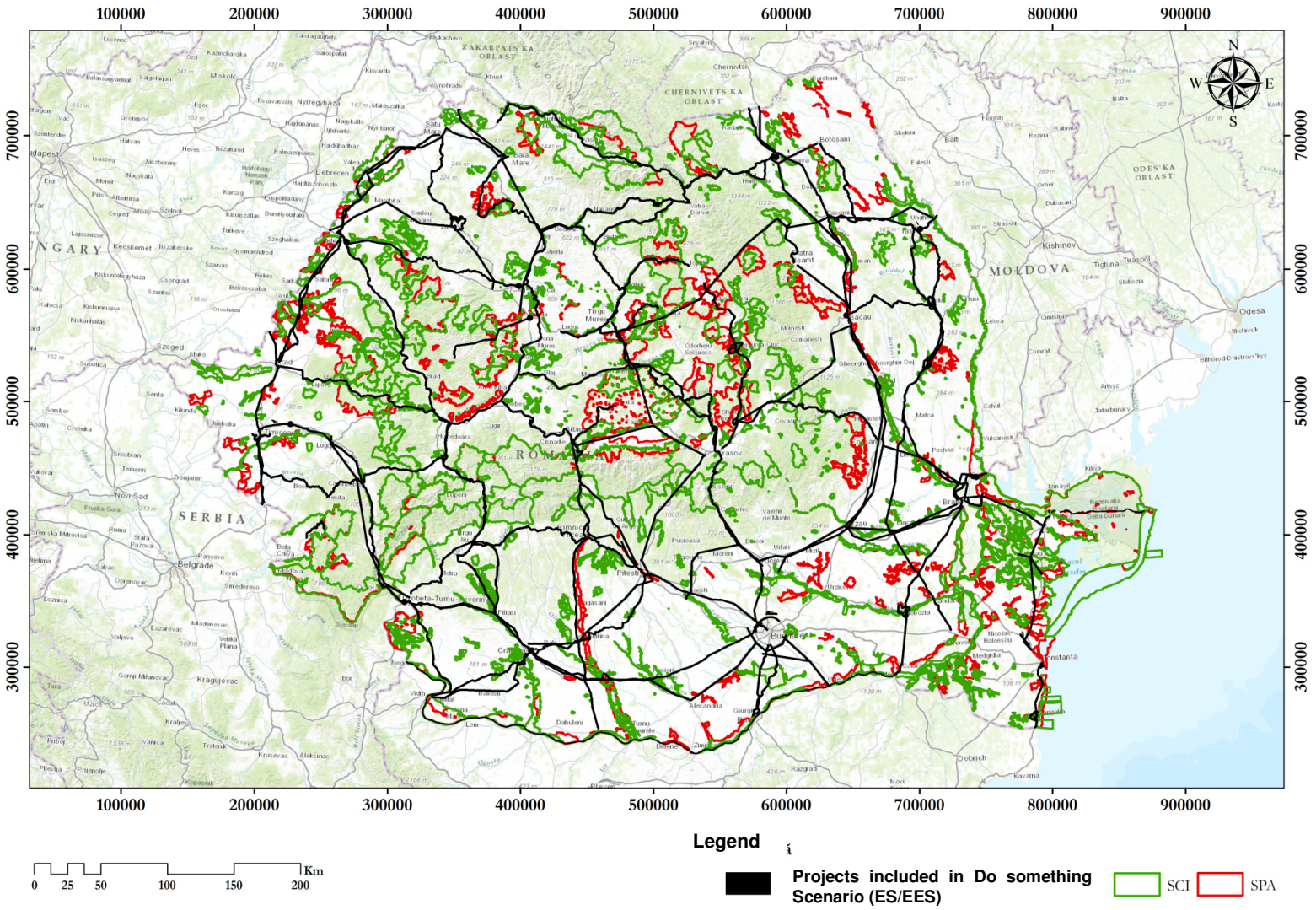


Figure no. 3-8 Location of (ES/EES) development scenario projects comapared to Natura 2000 sites

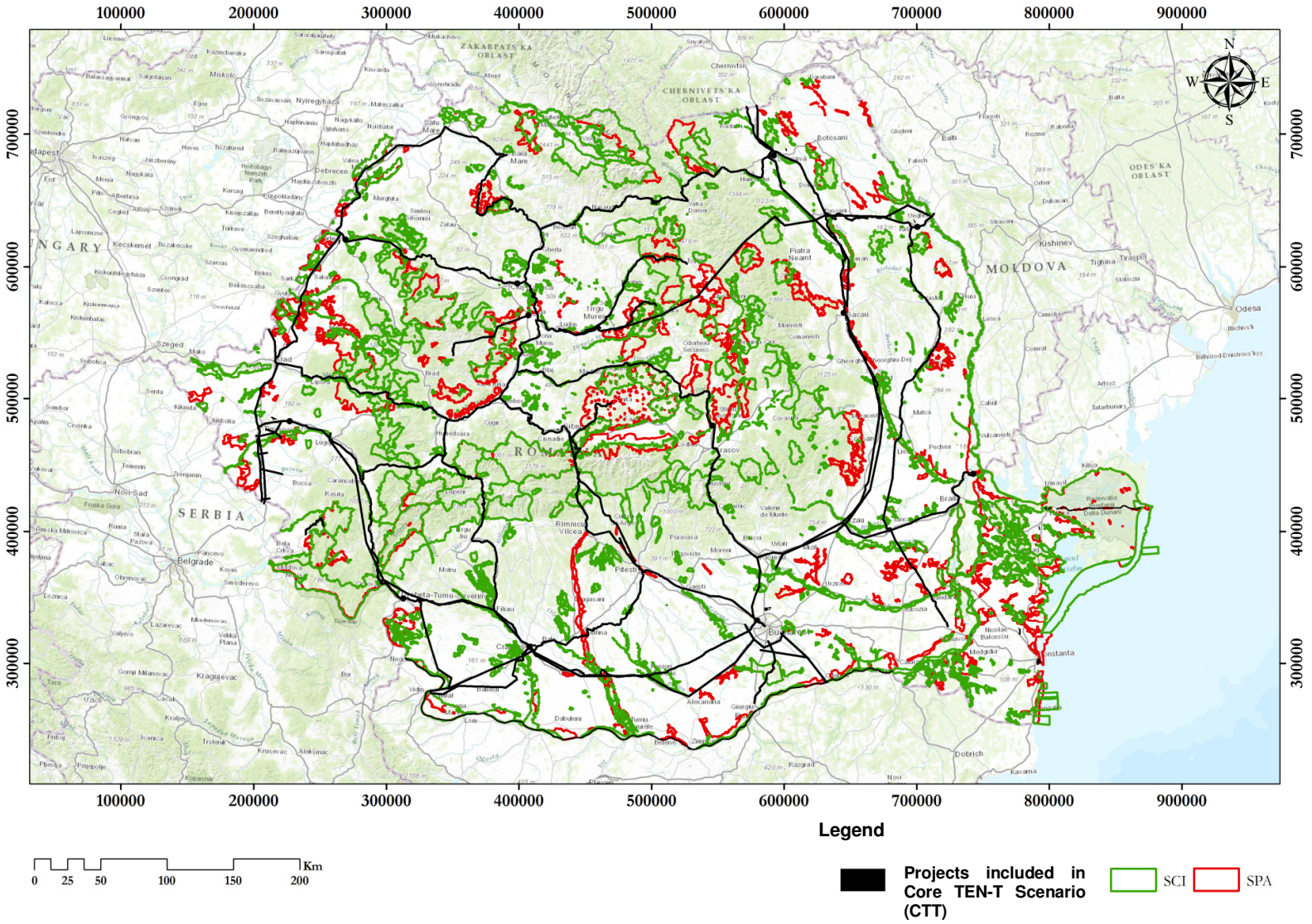


Figure no. 3-9 Location of CTT projects compared to Natura 2000 sites

The number of Sites of Community Importance on which are currently existing some transport infrastructure elements and are subject to this Master Plan, or which will further cross the projects included in Do Minimum Scenario and (ES / EES) and CTT Scenarios is shown in Table no. 3-3. Also in the same table are presented the values for the number of habitats and species total existing within SCIs which are intersected by the four scenarios.

Table no. 3-3 Total number of SCIs, habitats and species of flora and fauna protected by SCIs intersected by the 4 scenarios

Nr. crt.	Scenario	No. of intersected SCI	No. of SCIs in România	No. habitats	Nr. Habitats in România	No. species	Nr. specii România
1	Do nothing	225	383	72	74	153	159
2	Do minimum	48		67		100	
3	ES / EES	131		70		144	
4	CTT	91		70		130	

In all 383 SCIs nationally designated, 74 Natura 2000 habitats are found. In the Sites of Community Importance intersected by existing infrastructure elements covered by this Master Plan or by the proposed projects under scenarios Do minimum, (ES / EES) and CTT, is found a large part of these habitats (Figure no. 3-10).

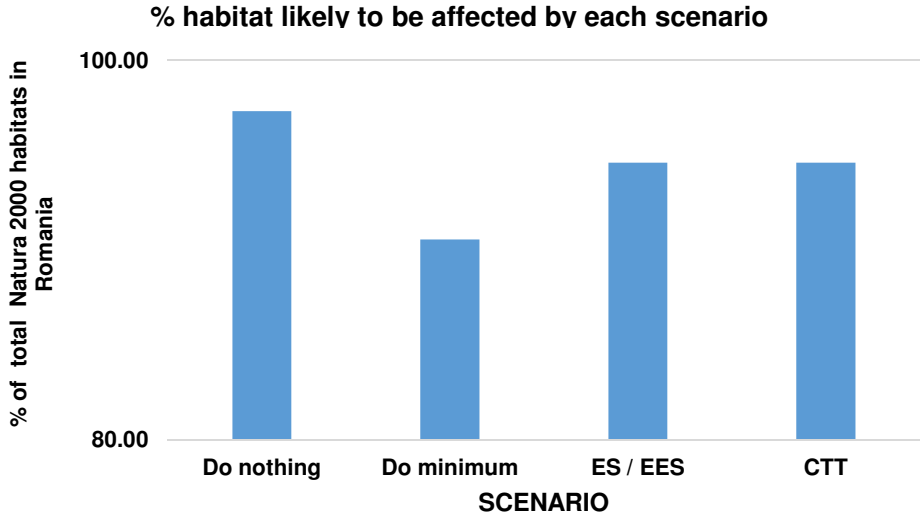


Figure no. 3-10 The percentage of representation of habitats likely to be affected for each scenario

For habitats and species protected by SCIs sites of Natura 2000 network, some habitats and species are priority. By analyzing the data set based on each of the four scenarios, it appears that in the existing situation, out of total intersected SCIs, approximately 56.4% and 30.2% contain priority habitats and priority species. For Do Minimum Scenario, from the total of 48 intersected SCIs, 43.7% and 33.33% contain priority habitats and priority species, while for scenario development (ES / EES), priority habitats were found in 48.09% of SCIs and priority species are in 31.30% of the sites. In case of the CTT Scenario, from the total of 91 SCIs crossed, 52.74% and 23.07% contain priority habitats and priority species. The number of

intersected SCIs containing priority habitats and species are shown, the scenarios in Table nr. 3 4.

Table no. 3-4 Total number of SCIs crossed by the 4 scenarios containing priority habitats and species

No. crt.	Scenario	No. of SCIs intersected containing priority habitats	Nr. SCI intersected containing priority species
1	Do nothing	127	68
2	Do minimum	21	16
3	ES / EES	63	41
4	CTT	48	21

Of the 72 existing protected habitats in the 225 intersected SCIs, 12, from which 4 priority habitats are found only in sites intersected the existing transport infrastructure. In case of Do Minimum Scenario, a number of 7 habitats, from which 2 priority, is found only in SCIs crossed by the proposed projects, while for the development scenarios (ES / EES) and CTT can be found, in intersecting SCIs, 3 priority habitats. Given these considerations, it can be appreciated that these habitats show a very high degree of threat.

Table no. 3-5 Habitats that are found only in SCIs crossing sites separately for each scenario

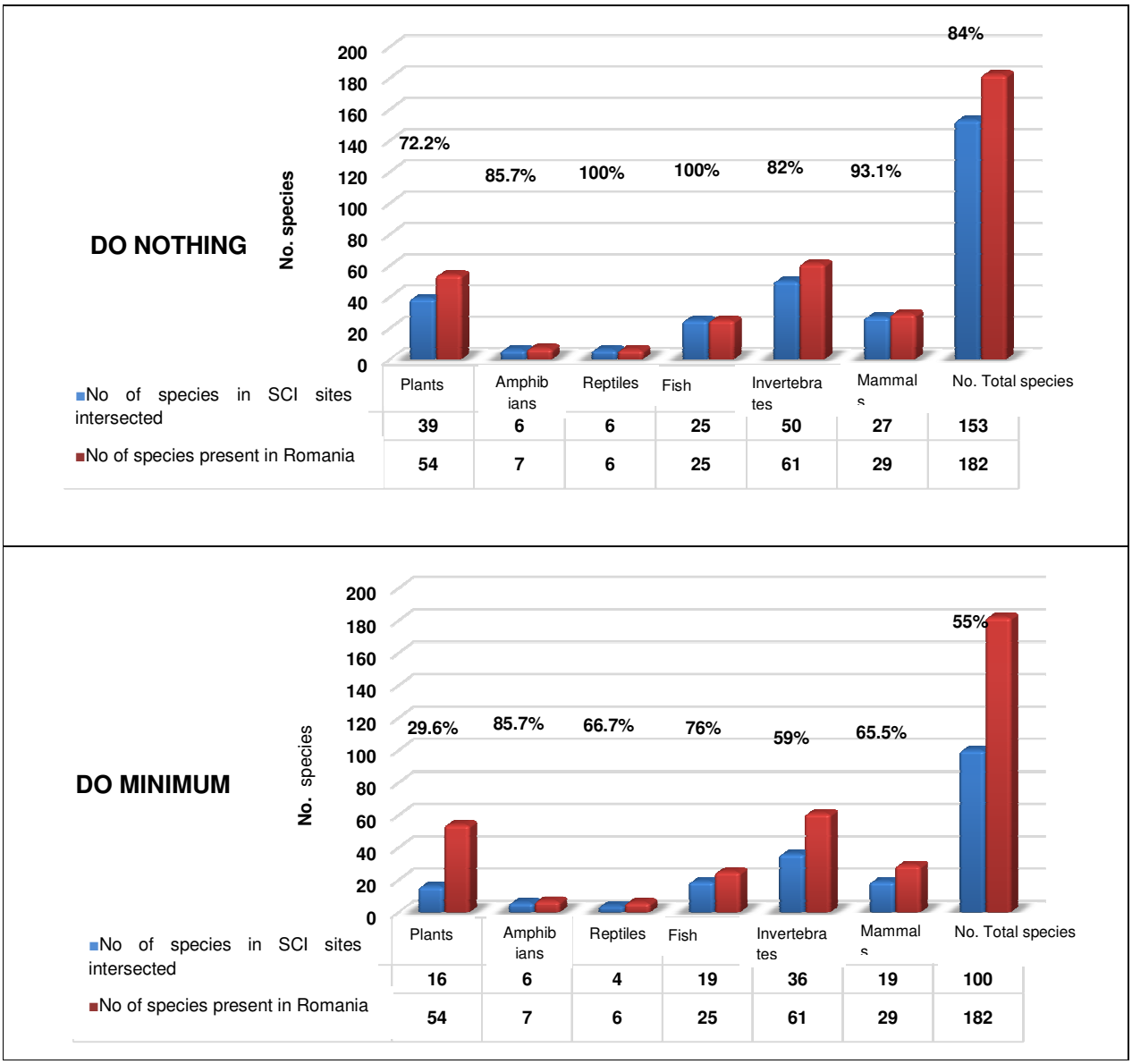
Scenario	Habitats that are found only in intersected SCIs	
	Non-Priority	Priority
Do nothing	1210	1150*
	1410	2340*
	2110	31A0*
	2160	9530*
	2190	
	3130	
	3140	
	29D0	
Do minimum	1130	31A0*
	1140	1150*
	1210	
	1410	
	2110	
ES / EES	1130	1150*
	1210	2340*
	1410	9530*
	2110	
	2160	
	2190	
	3140	
CTT	1130	1150*
	1210	2340*
	1410	9530*
	2110	
	2160	
	2190	

Following the analysis was obtained the number of species, separately for each group under the protection regime.

In Figure no. 3 - 11 are represented the number of species, on groups present in the intersected SCIs by the four scenarios, based on the total number of species present in SCIs in Romania.

Thus, it can be noticed that in all 4 scenarios, 6 of the 7 species of amphibians protected in Romania are present in SCIs currently intersecting (Do nothing) or which could be crossed (Do Minimum, (ES / EES), CTT scenarios), by the transport infrastructure elements. For Do Nothing Scenario, all protected species of community importance, reptiles, fish are found in the intersected sites.

Share and number of species of community importance, on groups, present in intersected SCIs within the 4 scenarios, based on the total number of species of community importance, on groups present in the SCI sites in Romania, is shown in figure below (Figure no. 3-11).



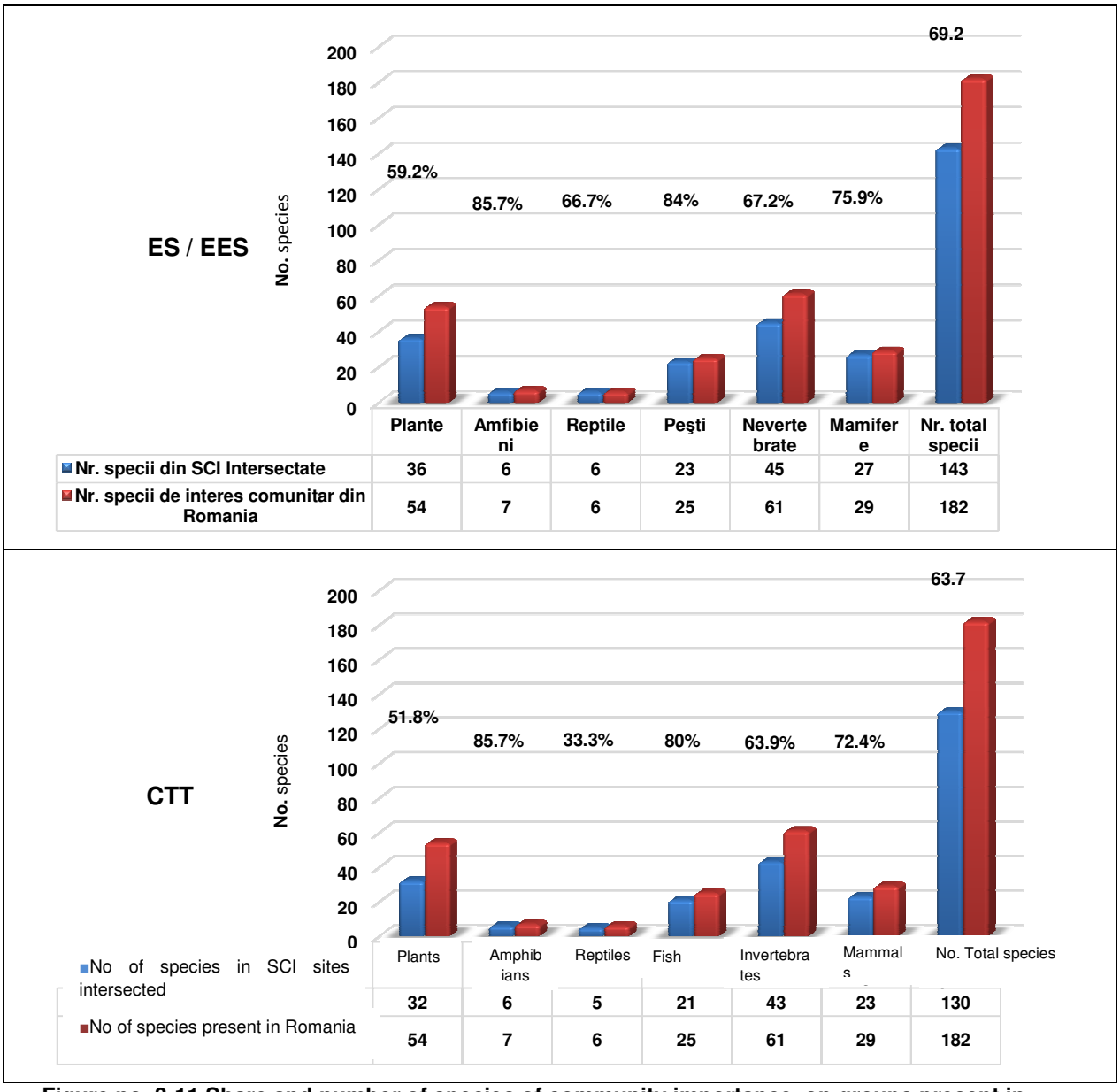


Figure no. 3-11 Share and number of species of community importance, on groups present in SCIs intersected by the four scenarios, based on the total number of species of community importance, on groups present in SCIs in Romania

In terms of number of projects that intersect sites containing priority habitats and species, for Do minimum scenario, a total of 23 projects intersect SCIs, hosting habitats and species of community importance (2 naval projects, 5 railway projects and 16 road projects), while for the (ES / EES) development scenario, 39 projects intersects sites within habitats and / or species of community importance (1 naval project, 12 railway projects and 26 road projects). For the CTT scenario, 28 projects intersects sites with habitats and / or species of community importance (5 naval projects, 14 railway projects and 9 road projects).

Table no. 3-6 Total number of projects that intersect sites hosting priority habitats or species

Scenario	No. of projects that intersect sites hosting priority habitats or species					Total No. of projects
	Naval	Rail	Road	Air	Intermodal	
Do minimum	2	5	16	0	-	23
ES / EES	1	12	26	0	0	39
CTT	5	14	9	0	0	28

In Romania, Natura 2000 network, designated 148 Special Protection Areas(SPAs). In total, on the surface of 129 SPAs already exists transport infrastructure elements subject to this Master Plan, within which are protected 309 bird species, of the 310 present in the Birds Directive and present in SPAs in Romania.

Table no. 3-7 Total number of SPAs and ornithological species protected by SPAs intersected by the 4 scenarios

No. crt.	Scenario	No. of intersected SPAs	No. of SPAs in România	No of bird species in the intersected SPAs	No. of bird protected species in România
1	Do nothing	129	148	309	310
2	Do minimum	21		240	
3	ES / EES	77		276	
4	CTT	54		264	

3.2.2 IDENTIFYING TRANSPORT INFRASTRUCTURE CONSIDERED BY DO MINIMUM SCENARIO, ES / SEE) AND CTT DEVELOPMENT SCENARIOS, WHICH ARE LOCATED IN AN AREA OF 1 KM FROM THE BOUNDARY OF SCI'S AND SPAS, EXCLUDING THE ALREADY INTERSECTING SITES

In Do minimum scenario and development scenarios (ES / EES) and CTT, there are projects that are carried out in close proximity to Natura 2000 sites, excluding those already considered in the analysis presented in the previous section, related to the sites that are interesected by transport infrastructure projects. Although they do not actually intersect the area of Natura 2000 sites, there may the possibility of damage of the components inside the protected natural sites, located in close proximity of those. It was considered that the area where projects do not intersect Natura 2000 sites, but may affect protected components within them, is an "buffer" area of 1 km from the boundaries of protected areas.

Table no. 3-8 and

Table no. 3-9 shows the number of transport infrastructure projects located less than 1 km from the nearest Sites of Community Importance and Special Protection Areas. In this situation, the highest share have projects that consider elements of the road infrastructure.

Table no. 3-8 Number of projects for each scenario that intersect SCI

Scenario	No. of projects located < 1 km comparing to SCIs					Total no. of projects
	Naval	Railway	Road	Air	Intermodal	
Do minimum	0	2	1	0	-	3

Scenario	No. of projects located < 1 km comparing to SCIs					Total no. of
ES / EES	3	0	5	0	1	9
CTT	3	0	1	0	1	5

Table no. 3-9 Number of projects for each scenario that intersect SPAs

Scenario	No. of projects located < 1 km comparing to SPAs					Total no. of projects
	Naval	Railway	Road	Air	Intermodal	
Do minimum	0	4	3	0	-	7
ES / EES	5	1	9	0	1	16
CTT	5	1	1	0	1	8

Total number of Sites of Community Importance within the area of 1 km from the projects presented in Do minimum Scenarios and development scenarios (ES / EES) and CTT is presented in Table nr. 3-10. Also, in the same table, are shown values showing the number of habitats and species of the SCIs.

Table nr. 3-10 Total number of SCIs, habitats and species of flora and fauna which are protected by SCI sites identified on an area of 1 km to the nearest projects

No. crt.	Scenario	No. of projects located < 1 km comparing to SCIs	No. of SCIs in România	No. habitats	No. habitats in România	Total no. of species	No. of species in România
1	Do minimum	3	383	12	74	8	159
2	ES / EES	6		43		61	
3	CTT	6		43		61	

By analyzing the data set based on each of the two scenarios, it is clear that for development scenarios (ES / EES) and CTT, out of the total SCIs located in an area within 1 km from the nearest projects, 50% contain priority habitats. For Do minimum Scenario, out of the 21 SCIs lovcated in an area within 1 km from the nearest projects, 66.6% contain priority habitats and none contain priority species. Number of intersected SCIs containing priority habitats and species are shown, on each scenario, in Table no. 3-11.

Table no. 3-11 Total number of SCIs identified in an area of 1 km from the nearest projects containing priority habitats and species

No. crt.	Scenario	No. SCIs which contains priority habitats	No. SCIs which contains priority species
1	Do minimum	2	0
2	ES / EES	3	2
3	CTT	3	2

The SCIs sites located less than 1 km from the proposed project by Do minimum Scenario, are protecting a number of 8 species, of which there are: 2 species of amphibians, 4 species of fish and one mammal specie. None of these species are listed as priority species. Of all the species located in the 6 SCIs at less than 1 km from the location of the proposed projects by the development scenarios (ES / EES) and CTT, 7 species are of plants, 3 of amphibians, 15 of fish, 20 of invertebrates, 2 reptiles species and 14 of mammals.

Of the 148 SPAs designated at national level, 7 are located less than 1 km from the projects proposed by Do minimum Scenario, 8 to the projects proposed by the development scenario (ES / EES), and 4 to the projects proposed by CTT scenario. Inside those areas are protected: 168, 194, respectively 194 bird species.

Table no. 3-12 Total number of SPAs and ornithological species protected by SPAs located in an area within 1 km from the limits of the nearest projects hosting priority habitats and species

No. crt.	Scenario	No. of SPAs located at < 1 km compared with proposed projects	No. of SPAs in România	No. of bird protected species in SPAs	No of special bird protected species in România
1	Do minimum	7	148	168	310
2	ES / EES	8		194	
3	CTT	8		194	

3.3 Data on the presence, location, population and ecology of the species and / or habitats of community importance presented on the surface and in the immediate vicinity of the Plan, referred to the standard forms of natural protected areas of community importance

Currently, there are no national comprehensive data on the presence and location of Natura 2000 habitats and species, for Natura 2000 network. Have been developed and are still in implementation many projects aimed for habitat mapping and inventory of species of Natura 2000 sites, but they do not fully cover the network.

Because it takes a unified approach within the Appropriate Assesemtn Study, was possible to use only those geospatial resources which fully covers the national territory.

Such an analysis was made for any sensitive areas within the Natura 2000 sites and vicinity, ie those categories of land use (idenificate based on Corine Land Cover 2006), which have the potential to host a large number of Natura 2000 species / habitats. The sensitivity classes were determined based on the percentage of representation of the number of habitats and species of community importance on the different types of land use within each Natura 2000 site (one species can be found in each polygon belonging to a class of land use within Natura 2000 sites). Classes used are: *no sensitivity* (0% of all species), *low sensitivity* (low (0.01 - 24.9%), *moderate sensitivity* (25 - 49.9%), *high sensitivity* (50 - 74.9%), *very high* sensitivity(75-100%). Details on the methodology for determining the sensitivity are presented in Section 6.2.

In the following figures are presented indicative routes and locations of projects included in the Do minimum Scenario, (ES / EES) and CTT development scenario, which could be located in relation to sensitive areas identified within SCIs and SPAs.

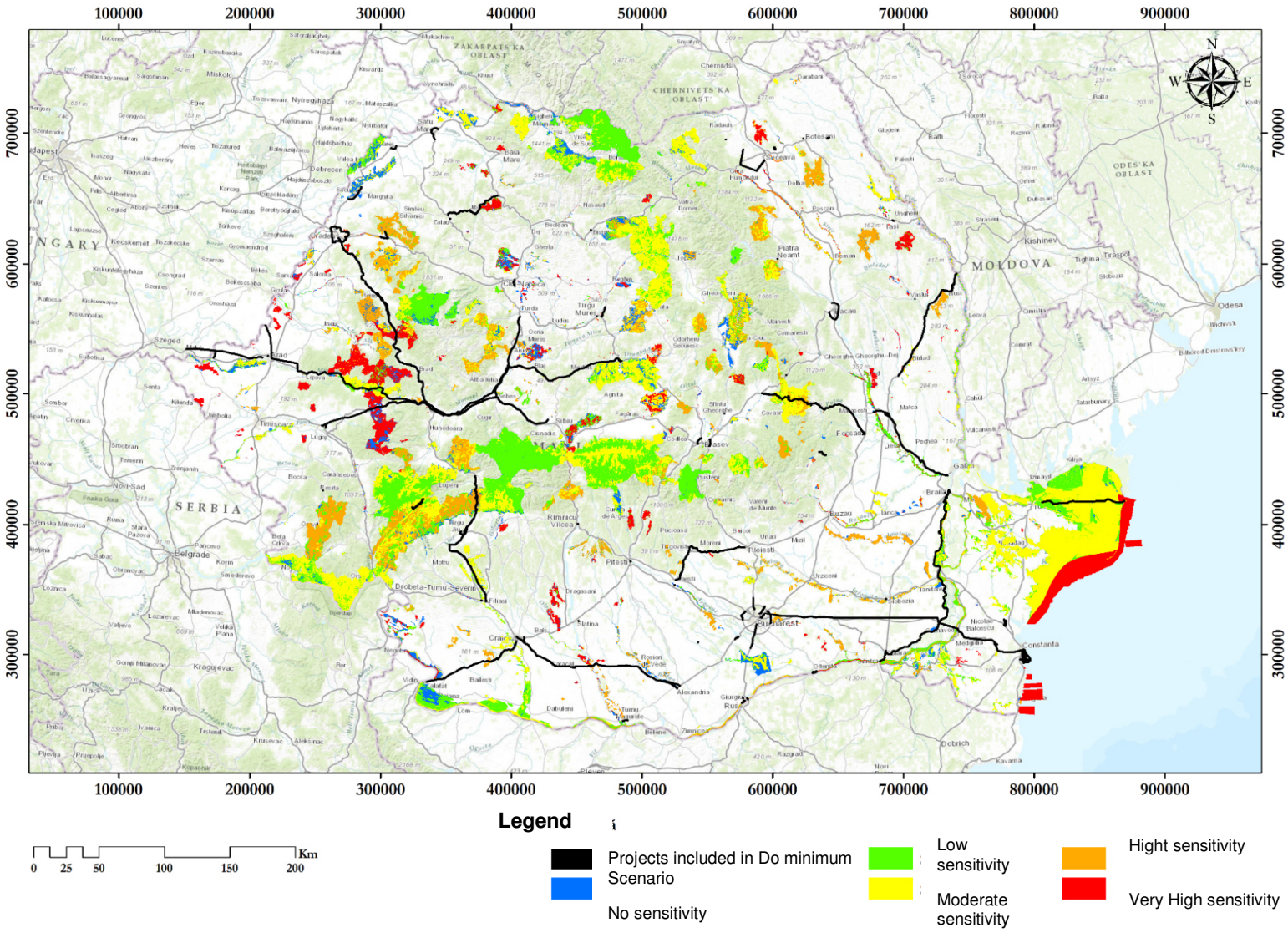


Figure no. 3-12 Location of projects compared to SCI sensitives áreas – Do minimum Scenario

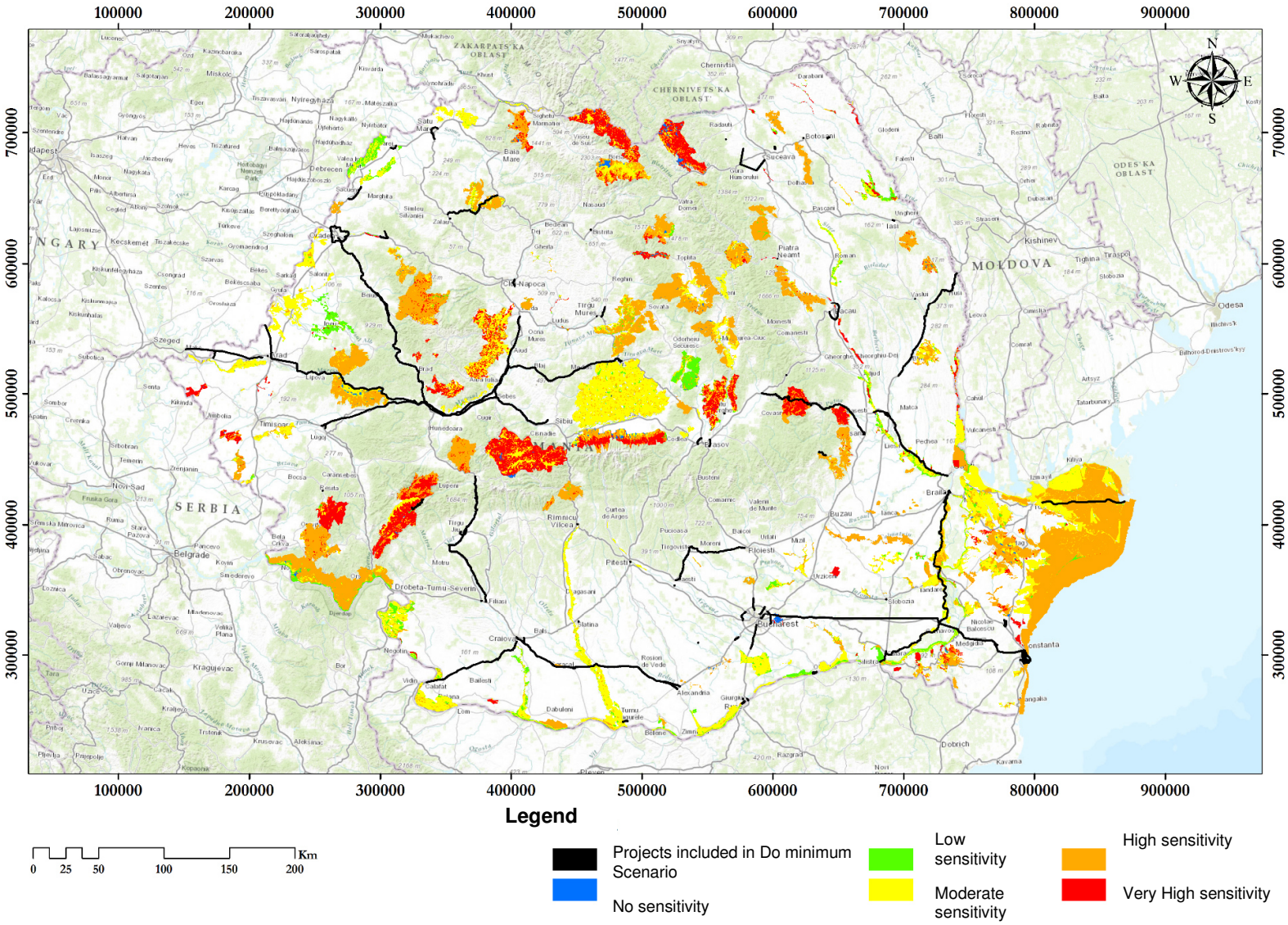


Figure no. 3-13 Location of projects compared to sensitives areas of SPAs – Do minimum Scenario

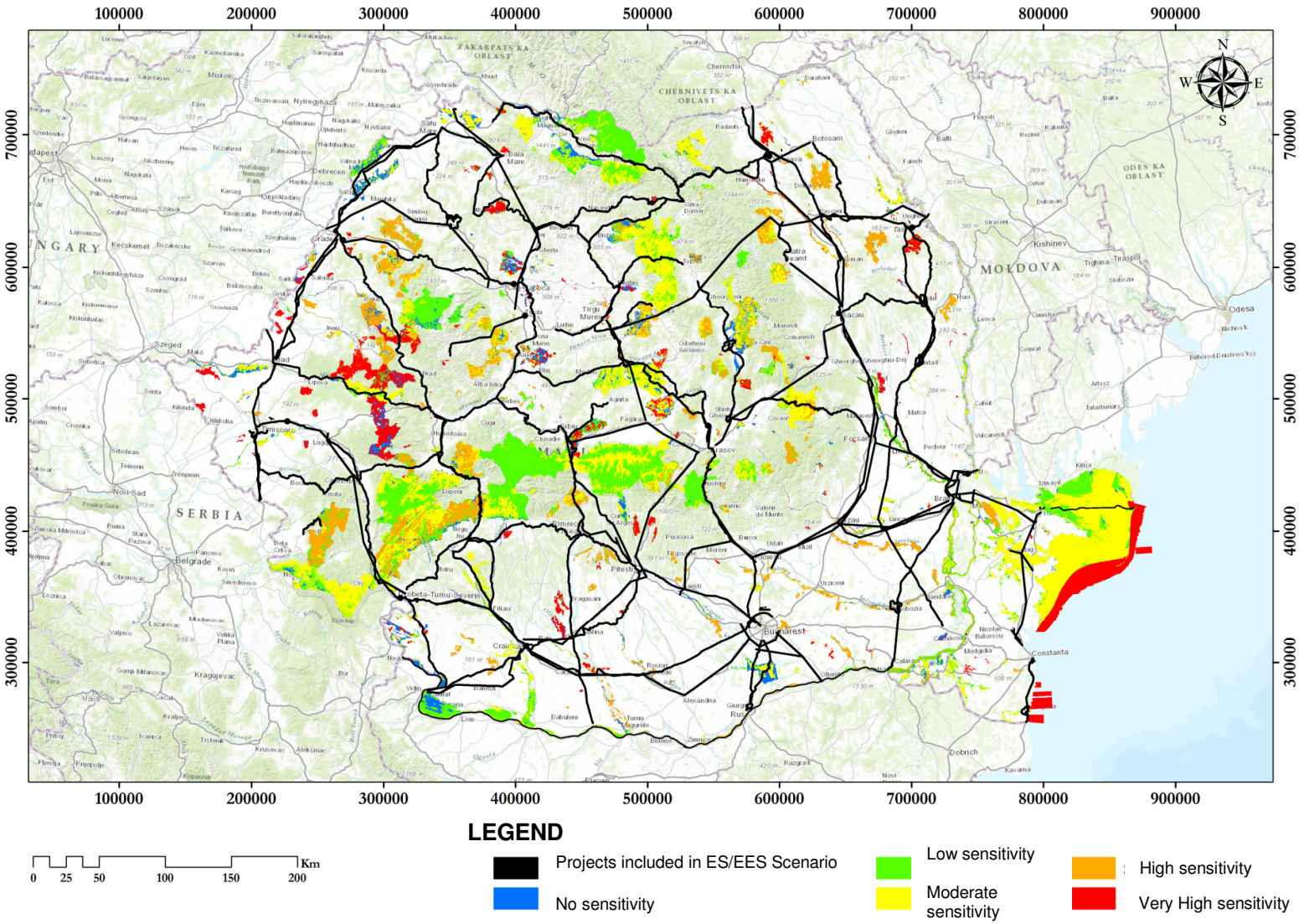


Figure no. 3-14 Location of projects compared to sensitives areas of SCIs - (ES/EES) Development Scenario

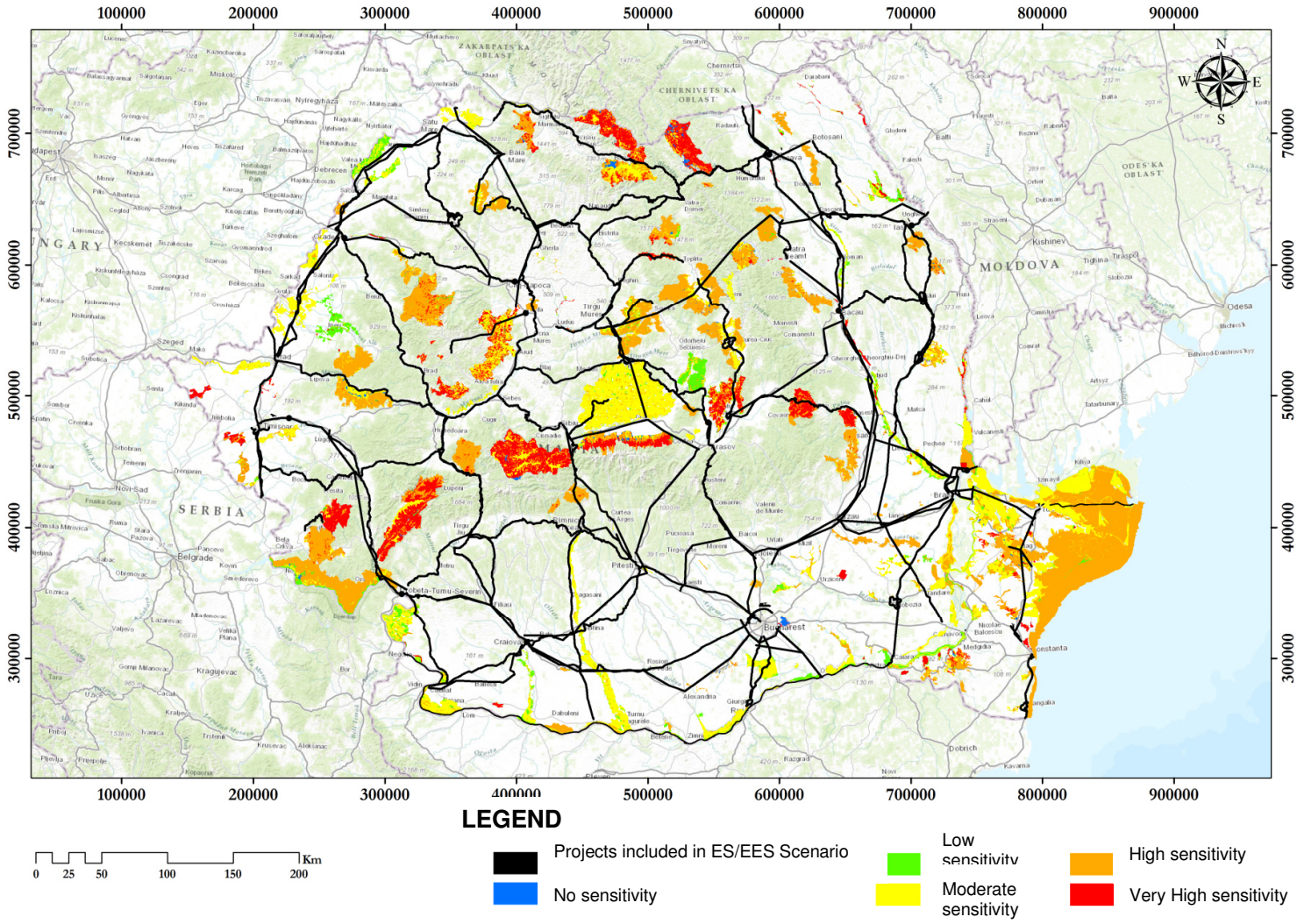


Figure no. 3-15 Location of projects comparing to sensitives áreas of SPAs - (ES/EES) Development Scenario

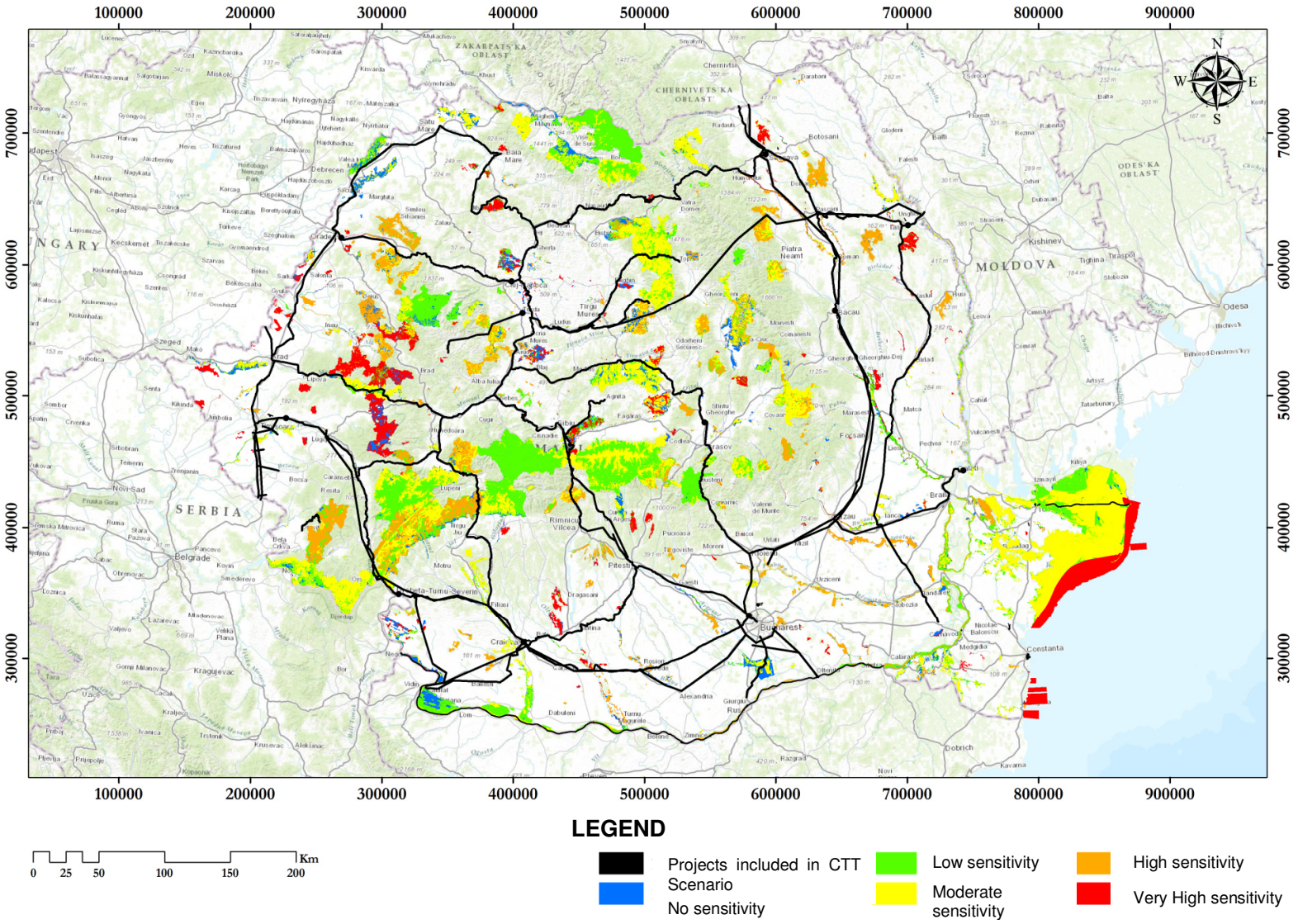


Figure no. 3-16 Location of projects comparing to sensitives areas of SCIs – for CTT Scenario

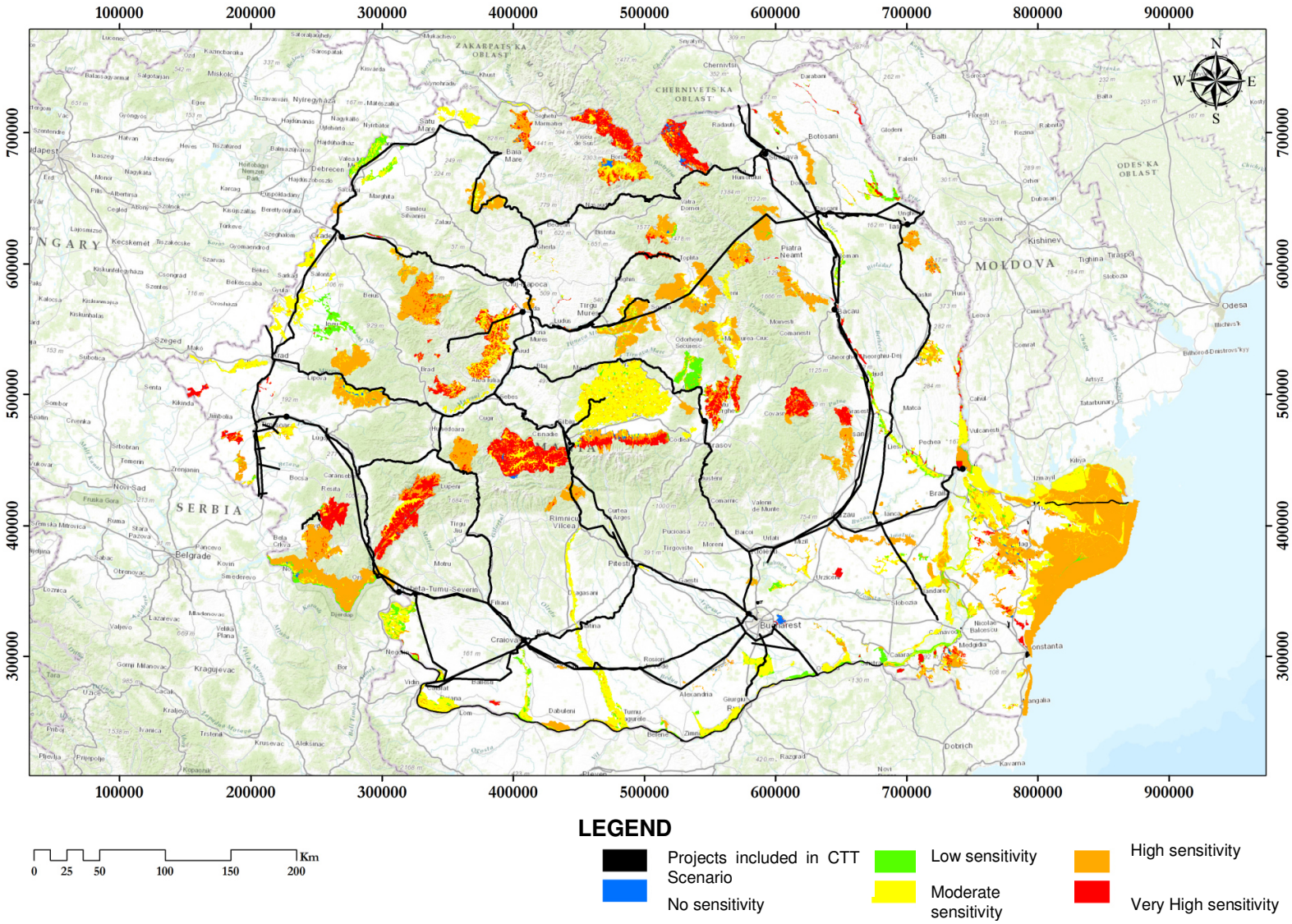


Figure no. 3-17 Location of projects comparing to sensitives áreas of SPAs – for CTT Scenario

3.4 Description of ecological functions of species and habitats of Community Importance affected (area, location, species characteristic) and their relationship with the natural protected areas neighboring community Importance and their distribution

The potentially affected species and habitats, from the interesected sites or from the sites located in the vicinity of transport projects, meet the entire taxonomic spectrum, subject to Natura 2000 sites. The potentially affected species also belong to the majority of the functional spectrum: primary producers, herbivores, insectivores, carnivores or parasitic organisms, being represented both of aquatic and terrestrial species.

Habitats and species of community importance are key components of Natura 2000 sites both in terms of functional role, and the representativeness or uniqueness.

Given the large number of potentially affected species and habitats, a detailed description of ecological functions of species and habitats of community importance for each of the sites potentially affected is difficult to achieve at this level of strategic planning.

We will confine ourselves here to emphasize that each of the habitats and species of community importance potentially affected have an important role in maintaining the structural integrity and functional sites that host them, as well:

Invertebrates play an essential role in the functioning of ecosystems due on the one hand, to feeding regime (covering all levels of consumers - primary and secondary), on the other hand, due to the multifaceted environment. Some are pollinators (eg Lepidoptera species), others are phytophagous, others are primary and secondary phytophagous detritofage.

As prey, the trophic invertebrates represents a source for both invertebrates and amphibians, birds and mammals insectivores (eg bats). Most species of invertebrates show a high degree of stenoecie (preferences more or less related strictly to habitat, food, local conditions, etc.), making them vulnerable to disorders living conditions and habitat degradation. Thus, the presence of invertebrate species is an indicator of the health of the habitat.

Fish is an important feature of most ecosystems in terms of their ecological role, including direct impact on prey populations and indirect impacts on other biotic and abiotic ecosystem and in terms of socio-economic value also.

Fish can be omnivores, herbivores, insectivores, planctivori, piscivori and also the main source of food for many organisms, both terrestrial and aquatic. They control other population by eating other organisms and plankton. There is an interdependence between plants release oxygen into the water, the fish need to breathe, and fish that removes various substances in their system (in the process of defecation), which fertilizes the plants, and when they die their bodies the nutrients from the plants helps the process of development. Also, fish represents an important food source for many species of birds.

Some fish have an important role as biological indicators for waters in which they live, are good indicators of long-term effects of anthropogenic pressure.

Migratory species of fish shall travel along river courses to spawn, and the flow regime and water temperature are important factors in the development of larvae in the early stages.

Amphibians and reptiles play a major role in the trophic networks, such as predators and as prey. Potentially affected species are mainly consumers of insects or small mammals. When

amphibian populations are abundant, they can consume significant amounts of prey organisms, serving to limit the population explosion. The larvae of some species of newts and frogs are important predators in ponds and other water bodies and communities influence the abundance and diversity of aquatic invertebrates and other amphibians. As prey, herpetofauna is an important trophic resource for small and medium mammals, birds or other species of amphibians and reptiles.

The species of amphibians and reptiles are mainly sensitive to habitat disturbance. As a result of dependence on habitat variables, amphibians are considered good indicators of environmental health. The skin of amphibians has a high permeability coefficient, absorbing toxic substances in water, air and soil. Complex life cycle of amphibians require habitats favorable for eggs, larvae and adults.

For most of the amphibians and reptiles movement between habitats is required. Both groups performing migrations - for amphibians, identified two migration periods: spring to autumn and breeding habitats, the habitats of hibernating, while in the case of reptiles are often two steps away, one in summer when males disperse in one habitat, and autumn, when both sexes are crowded near hibernacula. This means that both for amphibians and reptiles helthy habitats are necessary (both the transition and the residence). Moreover, almost all of herpetology fauna species have low dispersal capacity and often can not move to alternative habitats, when this present habitat is degraded.

Birds occupy different levels in the food chain and like other living organisms, birds contribute to maintaining sustainable levels of populations of prey and predator species and, after death, scavengers and decomposers feed provides. Many birds are important in plant breeding through their services as pollinators and seed distributors, and for their contribution to controlling rodent populations. Birds also provides resources critical to many parasites which are specific for the host. Some bird species are considered key because their presence (or loss of) in an ecosystem, indirectly affects other species.

According to Sekercioglu 2006, the main ecological functions provided by the birds are:

- Regulating services: seed dispersal (for species frugivores) pollination (nectarivore species), pest control (bird species that feed on invertebrate and vertebrate species), removal of corpses (scavenger species);
- Support services: nutrient deposition (aquatic species) services "modeling" ecosystem (species digging wells).

Small mammals play an important role in ecosystems, both by contributing to the diversity of life and as predators that consume particularly invertebrates, plant material, other mammals, as well as prey for medium and large mammals, birds (especially for raptors) and snakes. Through this interaction with other groups of animals, micro trophic networks and controlling influence the population levels of predators, insects and parasites host species.

Medium-sized carnivores (mesocarnivores) facilitates the flow of nutrients by connecting adjacent ecosystems and occupies a unique place in trophic networks that can not be occupied by other animals, such as direct dispersal of seeds or animals that disperse seeds consumption. Also, as with other species of predators, the medium sized mammals controlls the population levels of prey species - small mammals, reptiles, amphibians and birds.

Large carnivores represents trophic pyramid peak species being considered key species involved in maintaining the ecosystem functioning and balance of the biocenosis. These species play an important role in the ecosystem by controlling the "top-down", which it exercises over

wide territories on prey populations. The presence of these species indicates natural habitats with a high ecological value and functional ecosystems.

Large carnivores provides a number of benefits, and their disappearance could lead to triggering a chain reaction, for example, due to a decline in populations of wolf / lynx can be seen a dramatic increase of herbivores which can cause further disruptions of vegetation, populations of birds and small mammals.

3.5 Data on the structure and dynamics of species populations affected (numerical evolution of the population within the protected area of community Importance, the estimated percentage of the population of a species affected by the implementation of the Plan, habitat area is sufficiently large to ensure the maintenance of the species in the long term)

Information on the structure and population dynamics of the species of community importance in the potentially affected sites are not available in a common format at national level at this time. This analysis will be done at the level of appropiate assesemnt of GTMP subsequent projects.

3.6 The structural and functional relationships that create and maintain the integrity of the natural protected area of community Importance

Given the diversity of biogeographical conditions of the sites which are crossed by the proposed projects and the large number of potentially affected species and habitats, detailed analysis of structural and functional relationships that maintain the integrity of the sites concerned is difficult to achieve this level of strategic planning.

It is considered to be necessary to point out the fact that the sites crossed by projects proposed by Do minimum scenario and development scenarios (ES / EES) and CTT, covers most of the structural and functional diversity of Natura 2000 sites in Romania.

It is important to note that in any of the sites intersecting the complex structure of habitats is essential to maintain the conservation status of species of community importance. Any change in the system (loss or alteration of habitat areas, disturb fauna, etc.) can lead to structural and functional changes in the long term, some of which potentially irreversible. It should also be noted that many of the existing species of community importance in these sites (mainly those with high mobility such as mammals or birds) may use different habitats existing in the site or off site, and can often be present even in habitats strong anthropic.

It is very important that in the appropriate assessment studies that will be made for the subsequent projects of GTMP, the environmental impact analysis to be extended to all types of land uses potentially affected by the proposed projects, trying to achieve estimates of the effects generated by these projects on distance and long-term on the structure and functioning of the ecological systems. Evaluations based only on calculation of lost surfaces are insufficient at project level, knowing that in many cases insignificant changes in the areas of habitat can generate significant long-term effects (the best example for transport projects is the risk and extent of species invasive).

For small sites is very high risk of irreversible damage when they intersect transport projects or are located in the immediate vicinity. In case of Natura 2000 sites, which occupy large areas, it is important to identify if the affected areas are hosting rare conservative highlights or with low spatial coverage at the site level, and the extent to which changes generated by the proposed projects, even on small surfaces can generate structural and functional alterations on larger surfaces within the site.

Finally, it should be noted that the limits of any conventional boundaries of Natura 2000 site is not necessarily translate, by geographical or anthropogenic barriers preventing the movement of species. The land outside protected areas can be, just as valuable, as those inside the sites for the maintenance of the species, especially when they ensure connectivity between population or ensuring food resources connectivity.

3.7 The objectives of conservation of natural protected area of community Importance, for which Management Plans have been developed

The development of Management Plans is not yet complete for most sites potentially affected by GTMP. In line with the main objective of European Natura 2000 network and the requirements of national legislation in force, can be considered that for all potentially affected sites, the conservation objectives will be formulated to ensure a favorable conservation status for habitats and species subject to protection in each site in order to ensure integrity of the site.

The integrity of Natura 2000 sites is ensured by maintaining coherence of its ecological structure and functions, understanding in this way that the complex of habitats and / or species populations for which the protected area was established will not be affected.

3.8 Description of the current state of conservation of protected natural areas of community Importance, including developments / changes that may occur in the future

This information is not yet available for the potentially affected sites. This analysis will be developed at the level of Apropriate Assesement of each GTMP subsequent projects.

4. Environmental impact identification and assessment

4.1 The impacts on Natura 2000 sites associated with the current transport infrastructure

The impacts relevant to transport field, currently exerting pressure on Natura 2000 national network, according to information included in the Natura 2000 standard forms are presented in Table no. 4-1.

Table no. 4-1 Main environmental impacts generated on Natura 2000 Network

Types of imapcts	In		Close		Total	Total share (%)
	SCI	SPA	SCI	SPA		
Airports, heliports	-	1	-	1	**2**	**0.93**
Railways	6	3	3	2	**14**	**6.48**
Transport corridors	6	7	6	6	**25**	**11.57**
Roads, Motoways	52	23	48	17	**140**	**64.81**
Roads, paths and railways	2	5	2	3	**12**	**5.56**
Bridges, viaducts	-	1	-	1	**2**	**0.93**
Noise pollution	5	2	5	1	**13**	**6.02**
Tunnels	2	-	-	-	**2**	**0.93**
Port Areas	1	3	2	-	**6**	**2.78**
Total	**74**	**45**	**66**	**31**	**216**	**-**

As can be seen from the table above, the forms of impact identified are present within the 74 SCIs and in the vicinity of 66 of them, within 45 Special Protection Areas and in the vicinity of 31 of them.

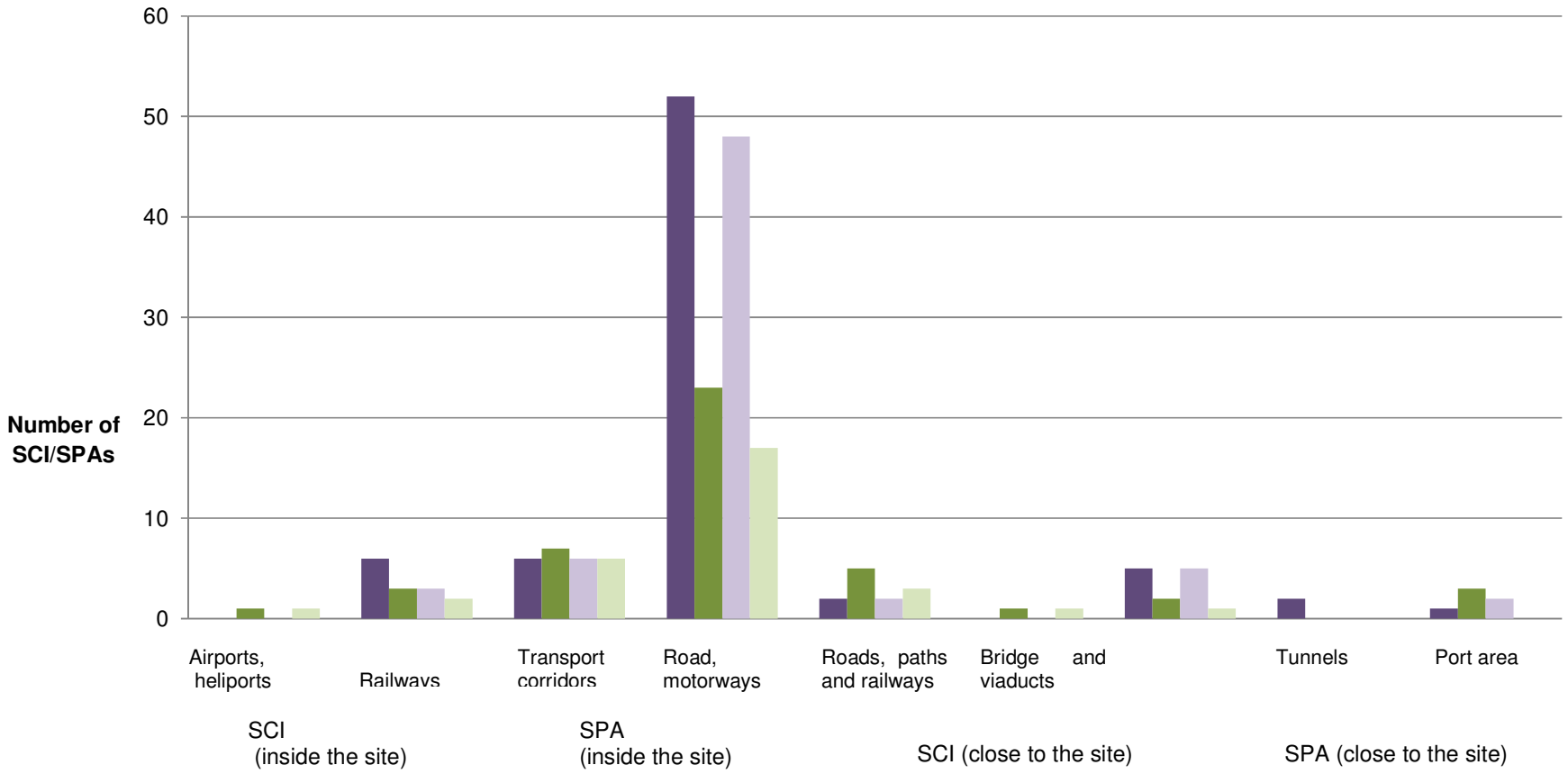


Figure no. 4-1 The main impact forms associated with Transport sector on SCI / SPA sites

Sectors affecting mostly the SCI / SPAs (64.81% of the total of impacts identified) are roads and motorways. These sectors affects 140 SCI / SPAs, 100 SCI (52 in and 48 in the neighborhood) and 40 spas (23 in and 17 in the vicinity). The next sector is the transport corridors - 11.57%, with 25 sites affected (12 SCI and 13 SPAs), and followed by rail - 6.48% (9 SCI and 5 SPAs).

In Figure no. 4-2 and Figure no. 4-3 are presented the impact forms depending on their intensity, as well as for SCIs and SPAs.

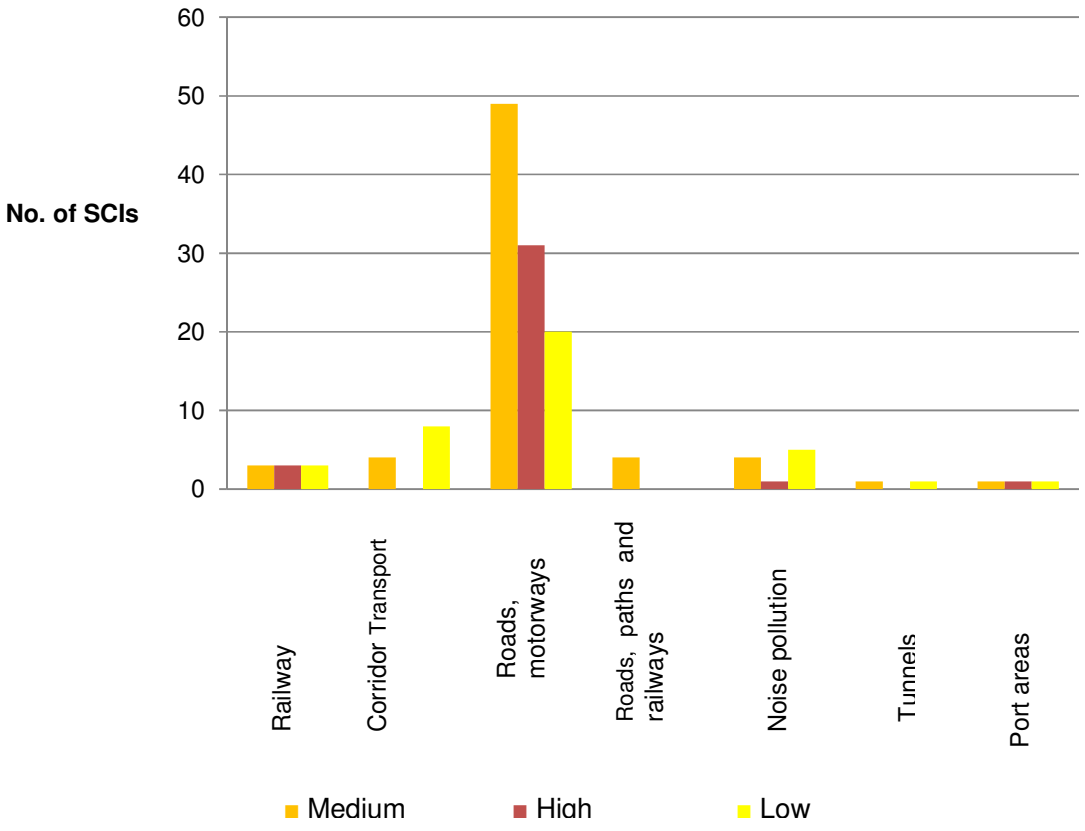


Figure no. 4-2 Main impact forms on SCIs, identified for Transport Sector, according to their intensity

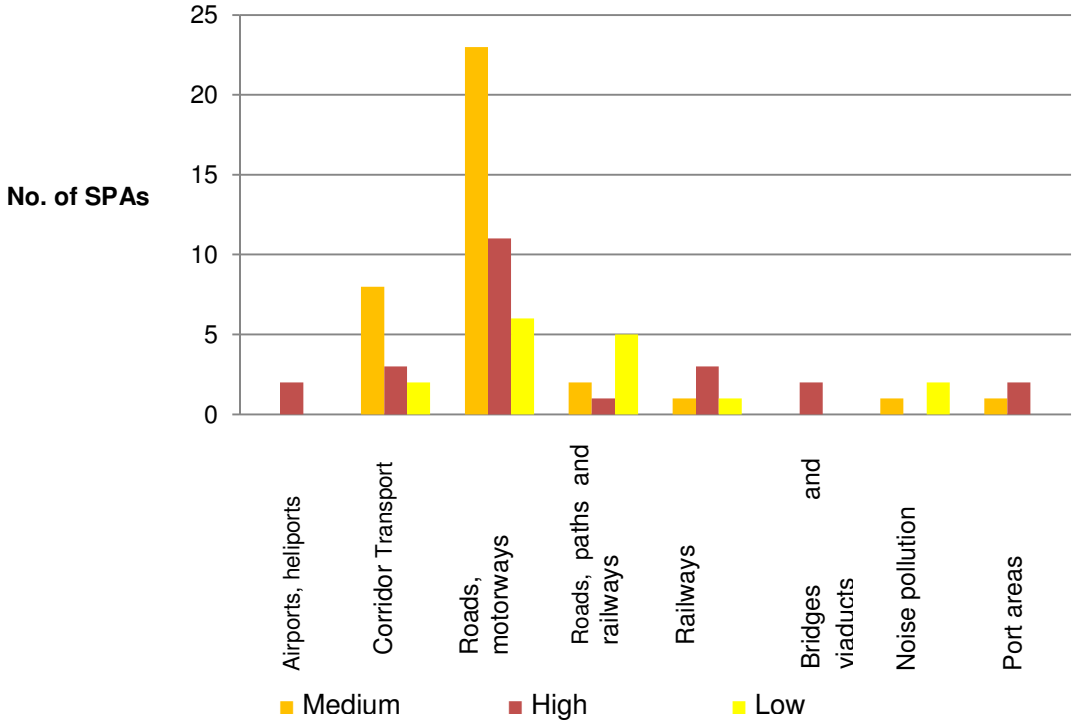


Figure no. 4-3 Main impact forms on SPAs, identified for Transport Sector, according to their intensity

As regards SCI's, the Roads and Motorways sectors affect almost half of them with a medium intensity (49 of 100 sites). The following two sectors with higher contribution in terms of the number of sites affected, *Transport Corridors and Noise*, affecting most sites with low intensity. The sectors that affect the fewest SCIs are the *Tunnels and Port Areas*.

Regarding the SPAs, the *Roads and Motorways* affects the majority of them with medium intensity (23 of 40 sites). *Transport Corridors* affect 13 SPAs, of which 8 with a medium intensity and the *Roads, Paths And Railways*, affecting eight SPAs, of which 5 with low intensity. The sectors that affect the fewest SPAs are the aerodromes, heliports and bridges, viaducts, but with a high intensity.

4.2 Identification of potentially impacts

To quantify the potential impact of the project on flora and fauna, the first step was to identify the type of activities that can generate an impact on the biodiversity components that may be affected during the activities and impacts.

In the following are presented the potential impacts that may occur in the various sectors of transport (road, rail, water and air) on biodiversity components.

4.2.1 POTENTIAL IMPACTS ON FLORA AND ON NATURAL HABITATS

Road transport can result in a negative impact on flora and habitats manifested by the development of new transport routes that contribute to loss of natural habitats covered surfaces (von Haaren et al., 2006, Hanski, 2011 Forman et all. 2003 , Spellerberg, 1998), alteration of existing (Spellerberg, 1998 Formann, 2003), by the expression of specific pressures in adjacent areas (dispersion of pollutants, fuel leaks or other substances associated vehicular traffic or network maintenance processes roads, dispersion noise contamination adjacent wetland), the increasing fragmentation of natural habitat areas (von Haaren et al., 2006, Tillman, 2005 Votsi et al., 2012 Hanski, 2011 Vihervaara et al. 2010, Gurrutxaga et al., 2011, in press, Clevenger & Wierzchowski 2006, Coffin, 2007 Forman, 2003 Andrews, 1990, Soule et al, 1992 Spellerberger 1998, Jaeger et al., 2007), by split unit areas traversed, the disruption to their natural state and the dispersion of solid particles - dust. The impacts associated with road transport are equally present in the construction phase, the presence of specific processes and associated equipment, and operating phase, being dependent on the size of the consturcted objective in the first case, and traffic intensity, in second. Due to the high density of road network, and the fact that road transport is a broad way addressed for a variety of purposes (domestic transportation of persons, goods, tourism, etc.), this component is the element with the largest impact in the territory.

Railway transport generates essentially the same types of impact in the same way as those found in road transport, but the differences are played by some major issues:

• higher share of associated construction and the extent of their presence in the territory;

• low level of pollution due to fuel leakage;

• lower intensity of traffic;

• low density of the rail network compared to the road network.

The types of impacts identified for this type of transport are represented by the the loss, alteration and fragmentation of natural habitats and areas of the species of plants, and disturbance of their natural activity or natural processes by helping to increase emissions of dust and other substances or wastes associated with this type of transport, as well as by increasing the degree of ruderalisation and facilitating the access of non-native species (Hansen & Clevenger, 2005 Andrews, 1990 Haigen et al., 2009, Woods & Munro, 1996) .

Naval transport The impacts generated by the naval sector on natural habitats and on wild flora, generally include as a major and direct factor the replacement of natural habitats with artificial surfaces through the construction or expansion of infrastructure, this being dependent on the size of the building by ruderalised adjacent vegetation and by facilitating access of the non-native species, but secondary and indirect, by intensifying activities of transport of goods and passengers, which increase, as a result, the degree of localized presence of ships. Development of the structures built affects local flora and habitats through their loss, by altering the natural condition (pollution, degradation) by fragmentation and disruption of normal function, in this case, by changing the natural processes of erosion and deposition of sediment due to the

development of construction generating a barrier effect for aquatic currents (Davenport & Davenport, 2006 Sub - Sectoral Environmental and Social Guidelines: Small Harbour Development - European Bank for Reconstruction and Development, Short & Wyllie - Echeverria, 1996 Chapter five: Marine Transportation - Northeast Fisheries Science Center, National Oceanic and Atmospheric Administration, Indian Institute of Science, Center for Ecological Science, Maia et al., 1998).

Air transport may generate impacts on flora and habitats, specifically, through activities involving construction or expansion of infrastructure built on areas that are currently occupied by natural habitats (many developed areas of the airport are green areas, rural or suburban), the changes in management activities in order to comply with the safety standards imposed (for example, works of cutting and pruning trees from adjacent natural structures), accidental spills of fuels, the use of substances necessary treatment processes or frost thawing, the dispersion of solid particles suspended (dust), both due to air traffic and land traffic because of freight and passenger transport vehicles or equipment technical maintenance of ruderalised (Spanou et al. 2010, Upham et al. 2003 Hussaini 2013, Doody, 2004 Doody, 2005 Apostoloupoulou et al., 2010, Anon. 2007 Anon. 1974 Slodczyc, 2010 Lavrysen, 2006 Milot et al., 2008). The effects of these activities on flora and habitats are represented by loss, damage and fragmentation of habitats.

4.2.2 POTENTIAL IMPACT ON INVERTEBRATES

Road, rail and air transport. Potential negative effects on invertebrate species associated to transport infrastructure development are not documented enough at the moment (Fahrig & Rytwinski, 2009), but may have, according to some authors, divergent results regarding the generated impact. However, it can be assumed, that the way this group is influenced by land transport infrastructure development, is directly influenced by how natural habitats are affected, namely, that there is a dependency relationship between habitat loss, altered habitat and degree of fragmentation and abundance of invertebrate species, since they are spatially associated with the natural habitats by the prevalence of reduced mobility within the group. The few works (Trombulak & Frissell, 2000 Seibert & Conover, 1991 Keller & Largiader, 2003 Spellerberger 1998, Fahrig & Rytwinski, 2009) which deals with the effects of road network on invertebrates, do in a synthetic way, by compared assessing the effects of these structures on components of biodiversity.

Naval trasnport Due to the fact that aquatic habitats have generally dominated fauna of invertebrates, whether freshwater or marine ecosystems, the same parallel can be drawn in this case, when associating infrastructure development naval manifest impact on the types of aquatic habitat potential forms, which can be found in the component invertebrates. And in this situation, the conclusive studies showing negative effects of naval transport sector development on the species of invertebrates are missing.

4.2.3 POTENTIAL IMPACTS ON FISH

Road and Rail. The impacts of the road and rail transport sector (both similar by types of structures that can be used in areas of contact with aquatic habitats reofile, passages and bridges and through related activities with potential negative impact, consisted mainly of pollution accidental fuel or other products associated with these types of transport) mainly refers

to the barrier effect of these structures which can increase fragmentation of these important habitats for fish, and the alteration of these habitats, sometimes up to total degradation or loss when draining or drainage works (Bouška & Paukert, 2009 Warren & Pardew 1998, Gibson, et al., 2011, Vander Pluym et al., 2008).

Naval transport. Fish species are probably most affected by component of impacts associated with naval trasnport. These may be manifested by loss of habitats, from the development of new infrastructure built or extending existing infrastructure by modifying (altered) habitats, either changing the natural dynamics of aquatic currents that lead to changes in sedimentation processes, resulting particles in the water, aspect which, by increasing turbidity, can affect the orientation species or even cause death by depositing gill tissue, or like a local thermal regime change, through water flowing at different temperatures to the natural environment, by developing a greenhouse barrier, which contribute to increasing fragmentation, through the interposition of new structures built during travel routes used, by fish mortality, by suction small specimens in the ship propulsion (Walter & Arlinghaus, 2003 Gutreuter et al ., 1999, 2003, Cohen, Gomoiu, 2001).

Air transport. There are not identified any potential impacts resulting from air transport on fish species.

4.2.4 POTENTIAL IMPACT ON AMPHIBIANS AND REPTILES

Road transport. Due to the extremely large spatial extent, road network show the most intense negative effect on the species of amphibians and reptiles. The manner in which these effects occur are represented by almost all detectable catergories, ie habitat loss, either by overlapping structures built with natural and semi natural habitats of amphibians and reptiles populated either by their irreversible damage (eg, drainage of aquatic habitats or paludic road adjacent structures built). Other identifiable forms are represented by the alteration of the habitats due to the generation of the "road effect" (road effect), operating from 100 to 800 m from the edge of the structure itself, of death, of the fragmentation or „barrier effect” or disturbance activity (intensity, or qualitatively) (Ramp et al., 2005, Clevenger et al, 2003, Ashley & Robinson, 1996 Glista et al, 2008 Lesbarreres et al, 2004, Lesbarreres et al, 2012 Teixeira et al, 2013 Andrews et al., 2007, Kannan, 2007 Pragatheesh & Rajvanshi, 2013 Eigenbrod et al, 2008 Langeveld et al., 2009, Trakimas & Sidaravicius, 2008 Lehtinen et al., 1999, Andrews, 1990 Brzezinski et al., 2012 Ascensao & Mira, 2007 Bager & da Rosa, 2011).

Rail transport. The aspects which give different effects of rail versus road, in terms of impact on the species of reptiles and amphibians, consist of lower density and intensity of network or rail traffic compared to road transport, which causes less extensive breadth of this phenomenon, but also a smaller spatial extent. However, in terms of the types of impact, we notice the same form as for road transport, namely habitat loss by replacing natural areas with surface structure associated rail other than its transport infrastructure - itself (which share the teritoriuliui level is higher than for road transport) their alteration by dust and pollutants dispersion (specific substances rail), increased fragmentation of natural habitats, carrying out drainage works and drainage, etc. It is also present, although with less weight than for road transport, also the mortality due to impact / collision, as well as the disturbance of the natural activity, for example, by increasing the vibration and noise (The Impacts of Railroads on Wildlife, 2001 SCV, 1996,

Wieman et al., 2000, Barandun, 1991 Igelmann 1994, Wolf, 1993, Reh & Seitz, 1990, Vos, 1999 Pontoppidan & Nachman, 2013, Jackson, 2000).

Naval transport. Because in the analyzed territory are not being identified marine reptiles species, on the one hand, and because it is recognized intolerance of amphibian species in saline environments, it can be considered, that there is no impact on the species of reptiles and amphibians from naval transport sector, except for areas where construction works will take place on ground infrastructure that overlap with areas of natural habitat occupied by amphibians and reptiles.

Regarding the impact of naval on the river amphibian and reptile species could not be found references that address this issue, but it is possible extrapolation of impacts generated by this type of transport by comparison with the types of adverse effects, occurring for the natural habitats and fish (component amphibians).

Thus, can be mentioned the likelihood of impacts manifested by habitat destruction, in case of the development of structures built on land (ports, piers, etc.), fragmentation, where these structures are interposed in some areas represented by natural habitats occupied by amphibians and reptiles, the natural degradation / alteration of natural habitats where accidental spills or unintentional importation of non - native species. No data are currently available related to induced mortality of clutch amphibian larvae or ship propulsion systems, or of the effect of the noise and vibration on them, but their estimation is possible by comparison with known cases in case of the fish species. However, this type of impact is also possible for the aquatic species of reptiles, especially for juveniles, small (ex .: Emys orbicularis).

Air. Although there are only a very limited number of works treating the adverse effects of air transport on reptiles and amphibians, there are a number of impacts shown by this mode of transport on the target group, but which manifests itself with a rather casual. These impacts include fragmentation and habitat loss and in case of construction of airports, runways, fixed deposits or other permanent structures overlapping or interleaved natural habitats populated by reptiles or amphibians, degradation / damage to habitats where are drained areas adjacent wet, or if they are contaminated by the materials used for the prevention of freezing or thawing of the frost affected areas or equipment. However, an important aspect may be the incidental mortality, especially for reptiles, which are attracted to and the use of paved surfaces to sunlight (Cardena, F., 2010, Hupe, J., 2010, Khalafallah, A. & El Rayes , K, 2006, Trincsi, K & Kieu, T., 2011, Gardner, AS & Howarth, B, 2009, Bennet, LD, 2004).

4.2.5 POTENTIAL IMPACTS ON BIRDS

Road transport. In case of the most important bird populations, the negative effects caused by the road infrastructure are loss of habitat, alteration and mortality, due to collisions with vehicles. Habitat loss and alteration are among the most important causes of biodiversity loss recorded in the past and present century and, like the other species of organisms, also the birds are affected by these kinds of human activities.

Road mortality is a direct threat to bird species, especially those that feed, nest and refuge in the habitats in the vicinity of roads (Erritzoe et al. 2003 Huijser et al. 2007) and in areas where roads pass through neighborhood of the wetlands or water (Ascensao & Mira 2006). Also, collisions with vehicles are more likely to occur in low or open areas than in forest habitats

(Ascensao & Mira 2006). Some birds are more strongly affected in the breeding season or during migration (Fulton et al. 2008), while others suffer more road mortality during wintering (Boves 2007).

The other negative effects observed after road transport network are decreasing abundance of individuals in areas located close to the road network (ex: Kuitunen et al. 1998 Fahrig & Rytwinski 2009), changing the vocalization hours for times when noise is low (Bergen & Abs 1997) or stronger vocalization (Brumm & Todt 2002).

Rail transport essentially manifests the same types of impact with those identified for the road transport, except that there are several railways construction associated with a wider expansion in Romania than in road transport, environmental pollution(chemical, noise) is lower and the traffic intensity is much smaller having an overall lower level of impact during operation.

Naval Trasnport. Until now, there are no studies detailing the impact of naval on bird species, but it can be assumed that during construction of facilities associated to annexes of the naval network leads to loss and alteration of habitast, accidental mortality and disturbance during construction work and natural activity disturbance of the birds population in the area, following the noise generated by the used equipments.

Also, the accidental killing of fish species, by boat propellers can reduce trophic resource available, leading to potential population contractions. The waves caused by boats, especially those with high gauge and speed, causes bank erosion which are potential sites for nesting, and may destroy nests, their flooding, destruction or eben killing the juveniles clutch.

Air. The impact of air transport expressed on resident bird species seems to have, by te multitude of thepossible forms, one of the most important weights, locally. Can be registered cases of mortality from collision with aircraft, or ground transportation vehicles, with significant values, especially in times of bad weather and poor visibility, when the ceiling birds flying falls in low values (CAA 2001). However, for the construction and extension of infrastructure elements associated to air transport (air traffic control towers, runways, etc.) can be recorded cases of loss or alteration of habitat fragmentation (Apostolopoulou & Pantis 2010), especially if species from the plain, underbrush / bushes or water. The high level of noise, along with quantities of suspended solid particles (dust) associated both air traffic and the road vehicles, can contribute to soil quality degradation of natural habitats, especially during breeding and rearing (Anon. 2007).

4.2.6 POTENTIAL IMPACT ON TERRESTRIAL MAMMALS

Road and Rail. Probably one of the most documented aspects of the impact of land transport (both road and rail, as most authors do not treat these forms separately) on terrestrial mammals refers to the negative effects of mortality, seen as a major factor of anthropogenic pressure associated to all forms of transport. This form of impact is closely followed, in terms of the scale of the negative effects, by the habitat fragmentation and barrier effect that occurs in the development of new roads or railway network within or adjacent to natural areas inhabited by mammals, leading to isolation of micropopulations, by limiting access to disparate surfaces which are formed on the one hand due to loss of natural habitat following the occupation of specific infrastructure, and on the other hand, by the degradation of habitats adjacent to roads and railways as a result of natural vegetation ruderalisation, appearance showing high

favorability opportunistic species and feral predators, but induce a restrictive for more specialized taxa with regard to habitat preferences. Other important issues related to impacts on mammals, induced by the development of land transport networks are the natural habitat alteration and disturbance by ruderalised of the natural activity due to increased noise level of particulates in the air (dust) or different specific pollutants (fuel control substances used in frozen surfaces etc) (Alexander et al, 2005, The Impacts of Railroads on Wildlife, 2001 Andrew, 1994 Spelleeberg 1998, Sherburne, 1985, Adams 1983, Bacowski & Kosakiewicz, 1988 Brody & Pelton, 1989, Burnett, 1992, Garland & Bradley, 1984, Kkorn, 1991 Mader, 1984, Merriam et al., 1989, Murphy & Curatolo, 1987, Murphy & Dowding, 1994 Oxley et al., 1974 , Bennet, 1991 Madsen, 1996 Morris & Morris, 1988, Romina & Bissonette, 1996 Swihart & Slade, 1984, Ramp et al., 2005).

Naval transport. The negative impact of naval on the species of terrestrial mammals have only occasional character, in case of construction for infrastructure elements associated with this type of transport which will be developed on land adjacent to wetland areas, represented by the natural habitat with value for those mammals species. Due to the absence of terrestrial mammals in the aquatic environment can not discuss about death induced by this type of transport, but occasionally may occur aspects of loss, fragmentation or alteration of natural habitats occupied by these species. Another aspect that can be considered, is the level of noise produced by this type of transport, or the occasional pollutions related to asociated substances.

Air. Regarding the impact of development of air transport and its effects on mammalian species there are few studies devoted, but in terms of small and medium-sized mammals, can be extrapolated for this group, the forms of imapact found in the species of reptiles and amphibians. The development of air transport infrastructure typical favorize the small and medium (some rodents, foxes) species intallation, who found a semi-natural environment where access of the predators is relatively limited, but unfavors the installation of species with high selectivity on habitats. The impacts are similar to those described for rail and road, but with very low weight, even occasionally, due to limitations in terms of the relief required by this type of transport (developed mainly in flat areas), the low share in terms of spatial extent of affected areas by this type of transport, and the possibility of very small, occasional, direct collisions between vehicles and specific mammalian species resident. Mortality of the species is generally occasional, caused by land vehicles serving this type of transport, the loss of habitats have low share because in Romania there are a few areas proposed for construction for air transport, which generates therefore a reduced contribution to increasing fragmentation, however, adjacent habitat alteration can have significant impact due to high levels of noise and dust associated with air transport, as well as migration to adjacent habitats reins under the effect of rain waters, of substances used to prevent freezing or thawing for equipment and surfaces (Khalafallah, A. & El Rayes, K, 2006).

4.2.7 POTENTIAL IMPACT ON AQUATIC MAMMALS

Road, rail and air. There are no known impacts of road transport, rail and air for the species of aquatic mammals. In particular cases where certain elements of the network infrastructure road or rail crossing aquatic areas, local effects can occur, as mortality, disturbance of activity, habitat alteration, and, to a lesser extent, due to the existence of bridges crossing or other similar structure, habitat fragmentation. In the marine mammals, these effects are unknown, but for certain aquatic species (otter) there are some bibliographical references (Madsen, 1996).

Naval transport. Naval transport can affect both occasional and localized marine mammals, mainly by occasional pollution and increased noise (eg species of dolphins) and partially terrestrial mammals associated to aquatic environment (eg, otter, or some species of Chitcani aquatic), where the phenomena as loss, alteration, habitat fragmentation, may occur (Madsen, 1996). We do not believe that mortality cauzed by collision may be a real cause of negative impact.

4.2.8 POTENTIAL IMPACTS ON BATS

Road, rail and air. Impact categories of road and rail transport on bat populations involving occasional mortality caused by collisions. Such examples are found mainly in those species that express ultrasound at a frequency modulated (FM) or high, such as gender *Myotis sp., Rhinolophus spp., Or Plecotus sp.*, as there is a practice to flight at small distances from the ground. The main known negative impacts relate to the loss and alteration of existing shelters and feeding habitats, transit or migration (fragmentation). This can occur if will be developed infrastructure elements built in natural habitats inhabited by bats, which after construction disappear, being replaced by anthropogenic elements which do not provide accommodation for displaced installation of bat colonies (where they are antropofile) or if the former infrastructure elements or elements that are strongly related damaged (such as a broken bridge or a former water station locomotives) may enter into a process of rehabilitation without consulting teams biologists resettlement colonies, before work begins. Some bat species with higher tolerance to anthropogenic elements will be partially favored by new artificial landscape elements, with new spaces feeding while stenotope species that do not tolerate the anthropogenic presence will be disadvantaged. Habitat fragmentation, disruption of dispersal and migration or works exectuion duritn the season in which bats are hibernating (October to April) can generate a significant impact on local populations and also for those migrating. Bats prefer using linear elements in the landscape, both for guiding and feeding or avoiding predators. The introduction of new elements, especially in a wooded area, can concentrate certain species hunted in the tree line, increasing the chances of impact with a means of transport. The open spaces in the key areas of transit, such as a forest narrow segmentation can be impenetrable barriers to species flying at a low height and can subsequently lead to decreased gene pool diversity and local extinctions. The impacts present in air transport are identical to those of rail and road transport in addition defending a higher risk of mortality due to collisions with planes. For air transport, there are documented cases of alteration / loss of habitat, especially if they provide grooming of old trees within and around airports, to comply with safety standards and visibility (Lavrynsen, L., van de Berghe, J 2006, Khalafallah, A., El Rayes, K., 2006).

Naval transport. The impact of naval sector on the species of bats is difficult to be estimated in terms of mortality, because the form of impact (in this case, shipping) and taxon concerned, mostly use different habitats. There are times when colonies under long migration may use ships or oil platforms to rest. In terms of the loss, alteration or fragmentation of natural habitats, may be referred the cases where the built infrastructure associated to the naval is spatial overlaped with habitat inhabited by bats, most likely represented by areas with old trees with hollows in which can be found colonies of bats or cliffs to be arranged. Light areas of ports offers optimum feeding habitats for species of antropofile bat and related elements can accommodate colonies (ex. Lighthouse of Port Sulina or transfer cargo area in Constanta). To generate as little impact as possible on populations, a specialized team of chiropterologists must be consulted before rehabilitate or demolish an old building in the port.

Table no. 4-2 Preliminary analysis of potential impacts on biodiversity

Biodiversity	Trabsport sector	Impacts				
		Habitat loss	Habitat alteration	Fragmentation / barrier effect	Death rate	Disruption activity / natural processes
Flora and aquatic habitats	Road		X			X
	Rail		X			X
	Naval	X	X	X		X
	Air					
Flora and terrestrial habitats	Road	X	X	X		X
	Rail	X	X	X		X
	Naval					
	Air	X	X	X		X
Aquatic Invertebrates	Road	X	X		X	X
	Rail	X	X		X	X
	Naval	X	X			X
	Air					
Terrestrial Invertebrates	Road	X	X	X	X	X
	Rail	X	X		X	X
	Naval					
	Air	X	X	X	X	X
Fish	Road		X	X	X	X
	Rail		X		X	X
	Naval	X	X	X	X	X
	Air					
Amphibians	Road	X	X	X	X	X
	Rail	X	X		X	X
	Naval		X			X
	Air		X		X	X
Aquatic reptiles / amphibians	Road	X	X		X	X
	Rail	X	X		X	X
	Naval		X			X

Biodiversity	Trabsport sector	Impacts				
		Habitat loss	Habitat alteration	Fragmentation / barrier effect	Death rate	Disruption activity / natural processes
	Air					
Reptile Land	Road	X	X	X	X	X
	Rail	X	X		X	X
	Naval					
	Air		X		X	X
Birds	Road	X	X		X	X
	Rail	X	X		X	X
	Naval		X			X
	Air	X	X		X	X
Aquatic Mammals	Road	X	X		X	X
	Rail	X	X		X	X
	Naval		X			X
	Air					
Terrestrial Mammals	Road	X	X	X	X	X
	Rail	X	X		X	X
	Naval					
	Air		X		X	X
Bats	Road	X	X	X	X	X
	Rail	X	X	X	X	X
	Naval	X	X			
	Air	X	X		X	X

[1]Habitat loss – total destruction of habitat by building construction or similar activities; [2]Habitat alteration – pollution, changes in water regime, etc..; [3]Fragmentation – limiting dispersion / mobility; [4]Mortality – road death or injuries as a result of activities; [5]Perturbation of natural activities – animal disturbance from activities (Human presence, noise) or alteration of natural processes that ensure the integrity of habitats.

4.3 Estimation and neighborhood areas within Natura 2000 sites potentially affected by the proposed project implementation GTMP

4.3.1 METHODOLOGY

Location of projects was carried out using vector data received from the beneficiary, and by means of digitization made based on satellite imagery Google Earth Pro, the information available in the project title. In the latter category are the rehabilitation and upgrading of sections of railways, airports and limits within port areas. Also, in case of the project aimed at improving navigation conditions was extracted the corresponding portion of the fairway available on the website of the Dunarea de Jos R.A. Galati Administration.

For the assessment of land affected by the implementation of the Master Plan polygons were created, corresponding to projects involving new roads construction (roads, railways, buildings, poles electrification) and those providing rehabilitation or upgrading works using the "Buffer" from ArcGIS 10.1. The distances used were different depending on the type of work involved (highway, road, rail, waterways, buildings) and anticipated impacts (habitat destruction, alteration, disruption). Following this projects, polygons were intersected with sensitive areas of Natura 2000 sites (SCIs and SPAs) and 1 km buffer zone around the sites designated, then the calculated joint surfaces and classified down by the degree of sensitivity, scenario, type of work and location comparing to the protected area (indoors or buffer zone). The distances used for fault type impact were established according to the information available in the literature (eg: Forman et al. 2002).

Note that, the main difference between the rehabilitation and modernization is that in case of the first group, the works are realized on the existing infrastructure, and in the case of the second category, the work may involve an extension of the existing infrastructure.

It should be noted that in the case of road infrastructure, the current situation of which the document refers, only treats existing motorways and national roads, not including county roads, roads or forest roads. In this respect the results are not a full assessment of the reality on the degree of damage to Natura 2000 sites.

For the air sector should be noted that the buffer was chosen by consulting the literature and strategic noise maps for airports in Romania. Although the Otopeni airport noise values are much higher, has not been used a different buffer, because the nearest protected area was over 10 km away and would not affect calculations.

Regarding the intersection of the projects with land use categories (as Corine Land Cover 2006), can be noted that in case of the permanent employment, in the analysis, was considered the buffer afferent ot the projects involving new construction or extensions (ie where there will be a loss of habitat), and in case of temporary employment was considered the buffer for projects involving modernization or rehabilitation of existing constructions (ie where there will be an alteration of habitat).

Buffers used for each type of work and impacts are presented in the following table.

Table no. 4-3 Buffers used to create polygons that were later used in the calculation of areas affected

		Existing construction buffers (m)	Buffer permanent building (direct effects) (m)	Temporary Works (altered habitats) (m)	Disruption (indirect effects) (m)
ROAD SECTOR					
Present situation	Motorway	25	-	-	675
	National road	5	-	-	495
New roads	Motorway	-	25	15	675
	Expressways	-	25	15	675
	Bypasses		20	15	680
Modernization	National road	5	10	10	488
Rehabilitation	National road	5	-	5	495
RAILWAY SECTOR					
Present situation	Railways	20	-	-	680
	Railways stations	50	-	-	650
New projects	Railways	-	20	15	680
Rehabilitation	Railways	-	-	15	-
INTERMODAL					
New projects	Intermodal Terminal	-	140	-	560
NAVAL SECTOR					
Improved navigation	Fairway	-	-	Existing Polygons	-
New construction	Waterway	-	40	10	-
Defense and consolidation of bank	Sides	-	5	10	-
Rehabilitation	Ports	-	-	Existing Polygons	-
AIR SECTOR					
Modernization	Airports	-	-	-	200

4.3.2 "DO MINIMUM" SCENARIO

Road sector

In scenario "Do Minimum" existing affected built areas are equivalent to 0.02% of the sites of community importance intersected and 0.03% from the 1km buffer zone around the sites. In total the affected areas are equivalent to 0.02% of the total area of intersected sites and 1km buffer area.

Areas of habitat that will be lost through the effective implementation of this scenario is equivalent to 0.04% of the SCI sites intersected and with 0.05% of 1km buffer zones around them. In total, will be lost a surface equivalent to 0.04% of the total existing sites area and buffer zones. The areas lost with high sensitivity will be equivalent to <0.01% of the sites crossed or to buffer zones.

Areas of habitat altered as a result of implementation of this scenario represents 0.04% of the intersected SCIs sites and 0.07% of the 1 km buffer zones, the total affected area being equivalent to 0.05% of protected areas and buffer area around them. Areas with high sensitivity and altered by implementing scenario is equivalent to 0.02% of the sites crossed and <0.01% of the buffer area.

The disturbance areas are estimated to cover 2.96% of the total area of intersected sites and 4.32% of the buffer zones. In totasl the areas surface affected by disturbances is equivalent to 3.61% of all sites and buffer zones. The areas affected by disturbances in areas with high sensitivity and are equivalent to 0.96% of the total area of sites SCI intersected 0.33% and buffer area.

In "Do Minimum" Scenario, in case of the road network, a total area equivalent to 3.05% will be affected of the total area of sites and surfaces intersecting SCI and equivalent to 4.47% of 1km buffer zone around Natura 2000 also. The total area affected is about 3.73% of the habitats present on the site and 1km buffer around protected areas. In areas with very high and high sensitivity will be affected surfaces representing 0.99% of the sites and intersecting 0.35% of buffer area created for the sites.

In case of the protection network sites (SPA), the existing built areas affects 0.01% of the total area of sites crossed and <0.01% of the area designated as 1km buffer zones. The total affected area is equivalent to 0.02% of all sites and buffer area.

Areas of habitat lost through the implementation of the scenario are equivalent to 0.02% of the total area of SPA sites intersected and 0.03% of the buffer zones. In total, the lost surfaces are equivalent to 0.03% of the total area of sites and buffer zones. The buffer zones and areas with very high sensitivity and high sensitivity that will be lost is equivalent to 0.01% of the sites and areas SPA buffer.

Areas of habitat affected by implementing scenario are quivalent to 0.03% of the total area of sites intersected SPAs and with 0.05% of the designated buffer zones. The total surface of altered areas is 0.04% of the total area of sites and buffer zones. In areas with very high and high sensitivity, the altered areas represent 0.02% of the total area of intersected sites and 0.01% of the buffer zones.

The disturbance areas affected by the implementing scenario represent 2.53% of the intersected SPAs and 1.13% of the buffer zones. The total areas affected are equivalent to 1.97% of the total area of sites designated as SPA and buffer area. In areas with very high and high sensitivity the affected areas by faults are equivalent to 1.33% of the sites and with 0.22% of the buffer zones area.

The total areas affected by the implementation scenario are equivalent to 2.60% of the total area of SPA sites intersected and 2.73% of the buffer zones. In total, the affected areas represent 2.65% of the total area of sites designated as SPA and buffer area. For areas with very high and high sensitivity the total areas affected are equivalent to 1.36% of the SPA sites and 0.57% of the buffer zones.

Rail Sector

Scenario "Do Minimum" does not involve actual loss of the surface from the sites of community iImportance (SCIs) or within them, nor of the perimeter buffer area of 1 km.

The analysis of the affected surfaces, as a result of implementing the scenario by performing works of modernization of railways, represent 0.18% of the intersected sites of community importance (SCIs) and 0.06% of the area located 1 km buffer area around them.

Inside the areas of Community importance, will be altered surfaces with high sensitivity of 0.01%, moderate sensitivity of 0.04%, low sensitivity of 0.07%, no sensitivity of 0.04%, of the total area of intersected sites of Community importance, and surfaces within the 1 km buffer around the sites of Community importance with moderate sensitivity of 0.07%, low sensitivity of 0.04% and no sensitivity of 0.12%, of the total area of 1 km buffer around the sites of Community importance intersected.

There will be no disruption to the sites of community importance caused by proposed projects of the "Do Minimum" Scenario or within protected areas or buffer area of 1 km.

Neither at the level of Special Protection Areas (SPAs), the scenario "Do Minimum" does not involve loss of natural habitat within those areas or buffer area of 1 km.

Habitat alterations caused by the implementation of this scenario within the Special Protection Areas (SPAs), represents 0.09% of the total sites affected area, and 0.04% of 1 km buffer area adjacent to them.

These alterations will occur in the areas of high sensitivity of 0.01%, moderate sensitivity of 0.04% and and no sensitivity of 0.01% from the total area of bird protection areas and some areas with increased sensitivity of 0.01%, 0.06% average, low 0.05%, and no sensitivity, 0.01% of the total area of 1 km buffer area around sites of bird protection.

However, neither at the level of the Special Protection Areas (SPAs) there will be no disturbance of natural habitats due to this scenario.

Naval Sector

Areas of habitat that will be lost through the effective implementation of this scenario is equivalent to 0.33% of the SCIs intersected. There will be no lost surfaces, in areas with very high sensitivity and high sensitivity, but only in areas with medium, low or no sensitivity, being equivalent to 0.33% of the crossing sites. None of the projects analyzed does not involve loss of habitat in the area of 1km, named the buffer zone of SCIs.

Areas of affected habitat, as a result of implementation of this scenario, represent 14.77% of the intersected SCI sites and 0.10% of 1km buffer area, the total affected surface being equivalent to 6.42% of protected areas and buffers around them. The areas with very high and high sensitivity altered by implementing the scenario are equivalent to 14.63% of the crossed sites and 0.10% of the buffer zones.

In "Do Minimum" Scenario for projects related to naval sector, will be affected, in total, an area equivalent to 15.10% of the total area of sites and surfaces intersecting SCI and surfaces equivalent to 0.10% of 1km buffer zone around Natura 2000. The total affected area is 6.57% of habitats present on the site and 1km buffer around protected areas. In areas with very high and high sensitivity will be affected surfaces representing 14.10% of the intersected sites and 0.10% of buffer zones created for the sites.

In case of the Special Protection Areas (SPAs), the areas of habitat lost through implementation scenario is equivalent to 0.04% of the total area of sites SPA intersected and to 0.02% of the buffer zones. In total, the lost surfaces are equivalent to 0.04% of the total area of sites and

buffer zones. The buffer zones and areas with very high and high sensitivity that will be lost are equivalent to 0.01% of the sites and SPA and buffer areas.

The surface of affected habitat by implementing the scenario is equivalent to 1.80% of the total area of SPA intersected sites and 0.13% of the designated buffer zones. The total affected surface represents 1.54% of the total area of sites and buffer zones. In areas with very high and high sensitivity the affected areas represent 0.01% of the total area of sites intersected, and in case of the buffer zones, these are not intersected by any projects.

The total areas affected by the implementation scenario are equivalent to 1.84% of the total area of SPA intersected sites and 0.15% of the buffer zones areas. In total, the affected areas represent 1.58 of the total area of sites designated as SPA and buffer zones. For the areas with very high and high sensitivity, the total affected areas affected are equivalent to 0.02% of the SPA sites surface.

Air sector

In case of the air transport, "Do Minimum" Scenario proposes two projects aimed for the airports Suceava and Mihail Kogălniceanu:

"Modernization of surface movement and lighting, control tower and landscaping to type ILS navigation system installed in Suceava Airport";

"Rehabilitation of the aircraft parking platform" for Constanta Airport.

Given that both international airports are located at about 3 km from the nearest Natura 2000 protected areas and the works specified in Project title are located within the airport perimeter, we can consider that the projects will not affect the habitats and species within of the protected areas of community Importance.

4.3.3 DEVELOPMENT SCENARIO (ES/EES)

Road Sector

Areas of habitat lost as a result of effective implementation of this scenario represent 0.16% of the SCI sites and 0.33% of the buffer zones. In total, the lost surfaces are equivalent to 0.09% of the sites and buffer zones. In areas with very high and high sensitivity, the lost areas are equivalent to 0.04% of the crossed sites and 0.03% of the buffer zones.

The affected areas by implementing scenario represents 0.04% of the total area of SCI crossed sites and 0.12% of the buffer zones. Overall affected areas are equivalent to 0.08% of the sites and buffer zones. In areas with very high and high sensitivity, the affected surfaces are equivalent to 0.01% of the total area of intersected sites or 0.01% of the buffer zones.

The areas affected by disturbances, for this scenario are equivalent to 2.82% of the SCI intersected sites and 6.90% of the buffer zones, in total the affected area representing 4.67% of the sites and buffer zones. Affected areas with very high and high sensitivity are of 0.75% form the sites areas and 0.46% of the sites buffer zones.

In total, in case of the network of Sites of Community Importance affected by the implementation of the development scenario is equivalent to 2.92% of the protected areas and 4.30% of the

buffer zones. In total the affected areas are equivalent to 7.14% of the sites surface and buffer zones. In areas with very high and high sensitivity, the affected areas represent 0.77% of sites areas and 0.48% of buffer zones.

In case of the Special Protection Areas (SPAa), effectively lost habitat areas by implementing this scenario represent 0.30% of the sites crossed and 0.39% of the buffer zones. In total, the lost surfaces are equivalent to 0.8% of the sites and intersected buffer zones. In areas with very high and high surface sensitivity the is lost area represents 0.16% of the sites areas and 0.09% of the buffer zones.

The affected areas by implementing the project are equivalent to 0.04% of the surface of SPA sites and 0.12% of the buffer zones. In total, the affecetd altered areas are equivalent to 0.06% of the total area of sites and buffer zones. In areas with very high and high sensitivity, the affected surfaces represent 0.02% of the sites areas and 0.03% of the buffer zones.

Areas affected by disruption by implementing scenario is equivalent to 2.47% of the intersected SPA sites and 6.62% of the buffer zones, in total the affected area being equivalent to 3.71% of the sites and buffer zones. Of these, the areas with high and very high sensitivity that are affected represent 1.22% of the SPA sites, ie 1.22% of the buffer zones.

In total, in case of the network of sites for Special Protection Areas, by implementing this scenario for the road sector are affected surfaces equivalent to 2.57% of the intersected SPA sites and to 6.86% of the buffer zones. In total, the affected areas are equivalent to 3.85% of the sites and buffer zones. In areas with very high and high sensitivity, the affected areas is 1.27% of the sites and 1.27% of the buffer zones.

Rail Sector

Implementation of development scenario (ES / EES) will not cause habitat loss in cumulative surface of Sites of Community Importance in areas crossed or 1 km buffer areas around them.

The potential habitat alterations produced by the implementation of projects proposed by the development scenario (ES / EES) at the level of the Sites of community Importance affecting the areas with very high sensitivity of 0.01%, 0.01% - high sensitivity, moderate sensitivity - 0.02%, 0.02% - low sensitivity, and no sensitivity of 0.01% of the total intersected areas of Sites of community Importance, and surfaces with very high sensitivity of 0.01%, 0.01% high, moderate of 0.02%, 0.04% - low sensitivity and now sensitivity of 0.15% of the total buffer areas of 1 km around them.

The disruptions caused by the implementation of development scenario (ES / EES) in the railway sector will be felt in areas with very high sensitivity of 0.55%, high sensitivity of 0.77%, moderate of 1.59%, with low sensitivity of 1.04% and of 0.89% - no sensitivity, of the total Sites of community Importance and on areas intersected with very high sensitivity of 0.42%, 0.54% high sensitivity, moderate sensitivity of 1.52%, of 2.56% with low sensitivity 8.49% of the total area represented by 1 km buffer around the intersected Sites of Community Importance.

In total, in case of the network of Sites of Community Importance, the areas affected by the implementation of development scenario for the rail sector are equivalent to 4.94% of the protected areas and 13.85% of the buffer zones. In total, the affected areas are equivalent to 8.82% of the sites areas and buffer zones. In areas with very high and high sensitivity, the affected areas represent 1.34% of the site areas and 0.98% of the buffer zones.

At the level of Special Protection Areas, the habitat loss will affect areas with moderate sensitivity of 0.002% of the total surface of protected area and areas with moderate sensitivity of 0.003%, 0.002% of low sensitivity from the total areas represented by the 1km buffer zones of around the sites of avifaunistic protection.

The habitat alterations that may be generated by the implementation of development scenario (ES / EES) will affect areas of moderate sensitivity of 0.03% and low of 0.01% of the total area of Special protection sites and intersected areas with very high sensitivity of 0.01%, higher of 0.02, moderate of 0.09%, of 0.04% - lower sensitivity and of 0.01% - no sensitivity, of the total area represented by 1km buffer zones around them.

Disruption of natural habitats with probability of occurrence in case of the implementation of the development scenario (ES / EES) will be felt on the surface of 7.05% of the intersected SPA sites and 10.04% of the buffer zones; in total, the affected area is equivalent to 6.70% from the sites surface and from the buffer areas.

In total, in case of the the network of Special Protection Areas (SPAs), by implementing this scenario for the rail sector, are affected areas equivalent to 7.99% of the intersected SPA sites and 21.42% of the buffer zones. In total, the affected areas are equivalent to 13.96% of the sites surface and buffer zones. In areas with very high and high sensitivity, the affected areas represent 2.18% of the sites surface and respectively 1.55% of the buffer zones surface.

Naval sector

The areas of habitat that will be lost from the surface of actually intersected SCIs by implementing this scenario, are equivalent to 0.09% of the surface, of which, 0.07% represents moderately sensitive areas and the areas with low sensitivity represents 0.02%. The buffer zones, adjacent to SCIs will not be lost, as a result of the implementation of projects related to naval sector in this scenario.

The affected habitat areas, as a result of implementation of this scenario is about 2.24% of the intersected SCI sites and 2.26% of the 1km buffer zones, the total affected area is equivalent to 2.25% from the total surface of the protected areas and buffers around them. The areas of high and very high sensitivity, affected by implementing the scenario are equivalent to 1.22% of the sites crossed and 0.46% of the buffer zones.

The development scenario (ES / EES) for projects related to naval sector, will be affected, in total, areas equivalent to 2.33% of the total area of intersected SCI sites and equivalent surfaces with 2.26% of the 1km buffer zone around Natura 2000 sites. The total affected area is 2.29% of habitats present on the site and 1 km buffer around the Natura 2000 protected areas. In areas with very high and high sensitivity will be affected surfaces representing 1.22% of the intersected sites and 1.46% of buffer zones created for the sites.

In case of special protection areas (SPAs), the surface of habitat lost through implementation scenario within the sites is equivalent to 0.08% of the surface, ie 0.04% of the buffer zones surface. In total, the lost surfaces are equivalent to 0.06% of the total area of sites and buffer zones.

The areas of affected habitats by implementing the scenario are equivalent to 2.28% of the total area of intersected SPA sites and 3.01% of the buffer zones. The total, the affected surface is 2.62% of the total area of sites and buffer zones. In areas with very high and high sensitivity the affected surfaces represents 0.20% of the total intersected buffer zones.

The total surface affected by the implementation scenario is equivalent to 2.36% of the total area of SPA intersected sites and 3.05% of the buffer zones. In total, the affected areas is 2.69% of the total area of sites designated as SPA and buffer zones. For areas with very high and high sensitivity, the total areas affected are equivalent to 0.20% of the buffer zones.

Air sector

None of the projects considered for the air sector by the development scenario (ES / EES) does not cross the Sites of Community Importance. The only areas of habitat that could be disrupted as a result of implementing this scenario, represents 0.08% of the 1 km buffer zones. No areas with high and very high sensitivity that could be disrupted by implementing this scenario in the buffer zones have been identified.

In case of the Special Protection Areas (SPAs), were not identified areas of habitat that could be disrupted of the total area of sites SPA intersected and buffer zones designated, by implementing the proposed scenario.

Intermodal Sector

The areas of habitat lost as a result of effective implementation of this scenario represent 0.03% of the buffer zone, being the areas equivalent with the surfacees with no sensitivity. None of the projects considered by the intermodal sector for the development scenario (ES / EES), does not cross the Sites of Community Importance.

The areas of habitat that could be disrupted by implementing the development scenario (ES / EES) represent 0.12% within the SCIs and 0.62% of the buffer zones. The areas with high and very high sensitivity, disturbed by implementing the proposed scenario are equivalent to 0.03% of the intersected sites surfaces.

The total areas affected by the implementation of the scenario are equivalent to 0.12% of the total area of intersected SCIs and 0.65% of the buffer zones. In total the affected areas represents 0.61% of the total area of SCIs and buffer zones.

In case of Special Protection Areas (SPAs), the habitat surface that could be lost through the implementation scenario, represents 0.06% of the total area designated as buffer zones.

Areas of habitat that could be disrupted by implementing the development scenario (ES / EES) represent 0.03% within intersected SPAs and 1.64% of the designated buffer zones. The areas with high and very high sensitivity, disturbed by implementing the proposed scenario is equivalent to 0.03% of the sites crossed and 0.82% of the buffer zones.

The total surface affected by the implementation scenario is equivalent to 0.03% of the total area of the intersected SPA sites and 1.70% of the buffer zones. In total the affected areas is 0.47% of the total area of designated SPA sites and buffer zones. For the areas with very high and high sensitivity, the total areas affected are equivalent to 0.03% within the SPAs and 0.82% of the designated buffer zones.

4.3.4 „CTT" SCENARIO

Road sector

The areas of habitat lost as a result of effective implementation of this scenario represent 0.06% of the SCIs and 0.17% of the buffer zones. In total, lost surfaces are equivalent to 0.1% of the sites and buffer zones. In areas with very high sensitivity and lost areas are equivalent to 0.02% of the sites crossed and 0.01% of the buffer zones.

Possible surfaces affected by implementing the proposed scenario represents 0.04% of the total area of intersected SCI and 0.10% of the buffer zones. Overall altered surfaces are equivalent to 0.06% of the sites and buffer zones. In areas with very high sensitivity and altered surfaces are equivalent to 0.01% of the total area of sites intersected or 0.01% of the buffer zones.

Areas potentially affected by disturbances for this scenario are equivalent to 1.68% of the intersected SCI sites and 4.27% of the buffer zones, in total the affected surface representing 2.75% of the sites and buffer zones. Areas with high sensitivity and very sensitivity, possibly affected by disturbances are 0.54% of the surface area sites and 0.35% of the buffer zones.

In total, in case of the network of Sites of Community Importance, the surface affected by the implementation scenario is equivalent to 1.77% of the protected areas and 4.53% of the buffer zones. In total, the affected surfaces are equivalent to 2.91% of the sites and buffer zones. In areas with very high and high sensitivity affected areas is 0.57% of the 0.38% of the sites and buffer zones.

The surface of habitat lost through the implementation of this scenario actually represents 0.09% of the intersected SPAs and 0.17% of the buffer zones. In total, the lost surfaces are equivalent to 0.12% of the sites and buffer zones intersected. In areas with high and very high sensitivity the surface which is lost represents 0.06% of the sites and 0.05% of the buffer zones.

Affected surfaces by implementing the projects of the scenario are equivalent to 0.05% of the SPAs and 0.10% of the buffer zones. In total, there are affected surface is equivalent to 0.07% of the total area of sites and buffer zones. In areas with very high and high sensitivity the altered surfaces represents 0.04% of the sites and 0.03% of the buffer zones.

Areas affected by disruption by implementing the scenario are equivalent to 2.4% of the intersected SPAs and 4.33% of the buffer zones, in total the affected surface is equivalent to 3.11% of the sites and buffer zones. Of these, areas with high and very high sensitivity that are affected represent 1.47% of the SPAs sites and 1.15% of the buffer zones.

In case of the sites for Special protection Areas, by implementing this scenario, are affected surfaces equivalent to 2.53% of the intersected SPAs and 4.6% of the buffer zones. In total, the affected areas are equivalent to 3.3% of the sites and buffer zones. In areas with very high and high sensitivity the affected areas represents 1.56% of the sites and 1.23% of the buffer zones.

In case of all other sectors, the values obtained are identical to those for the development scenario (ES / EES) presented in **Section 4.3.3.**

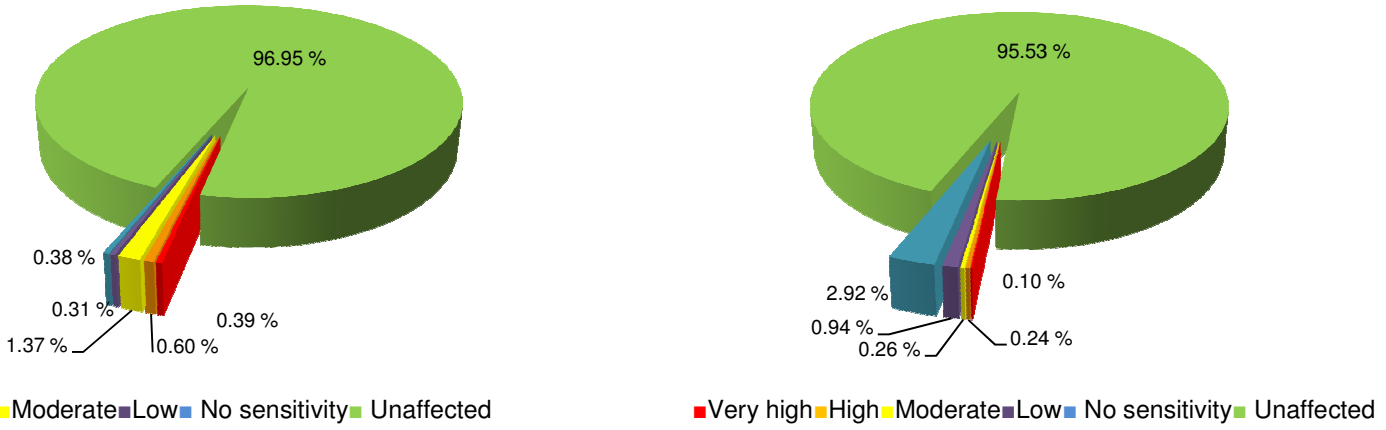


Figure no. 4-4 Road Sector - Share of total areas within sites of community Importance (SCI) intersected projects and associated buffer zones affected by the implementation scenario "Do Minimum"

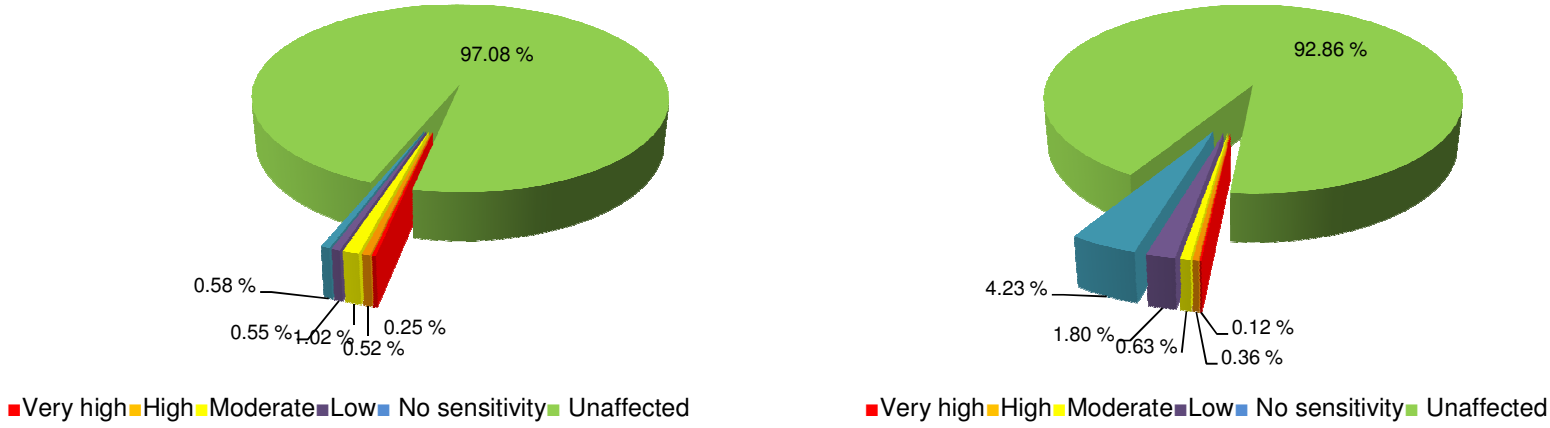


Figure no. 4-5 Road Sector - Share of total areas within sites of community Importance (SCI) intersected projects and associated buffer zones affected by the implementation of development scenario (ES / EES)

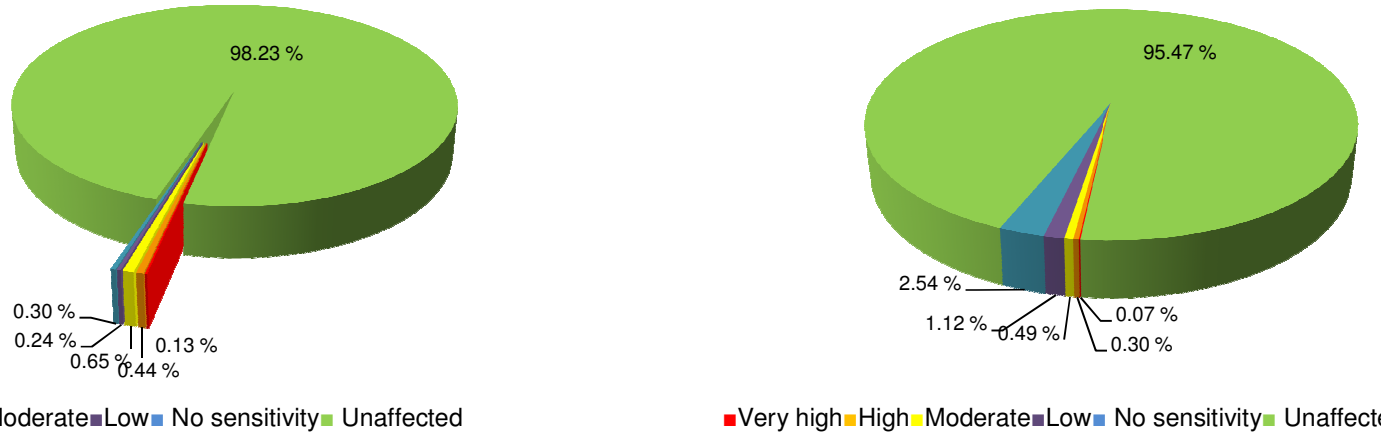


Figure no. 4-6 Road Sector - Share of total areas within sites of community Importance (SCI) intersected projects and associated buffer zones affected by the implementation scenario "CTT"

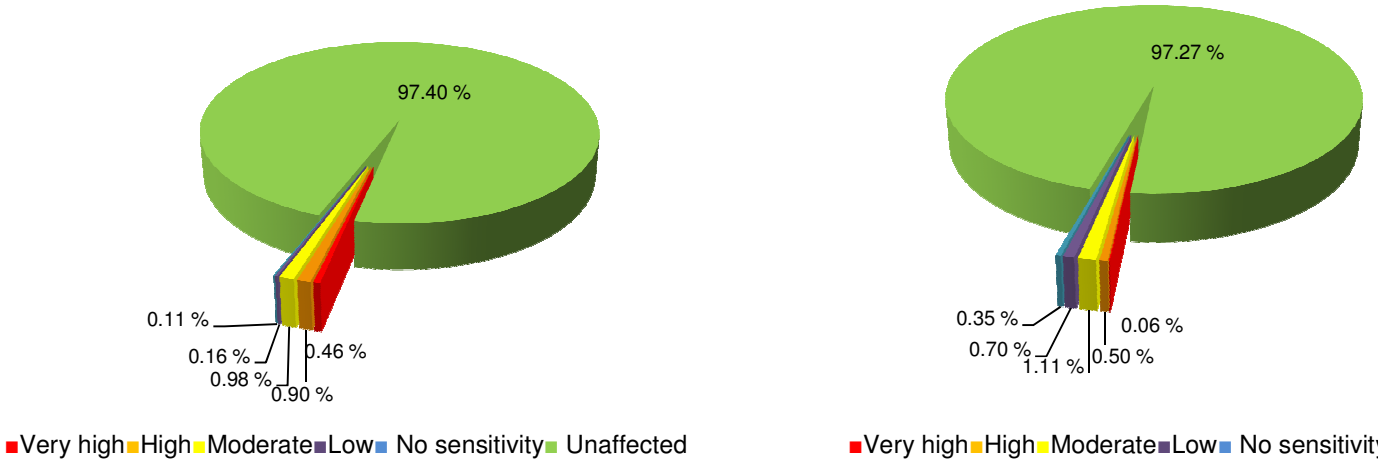


Figure no. 4-7 Road Sector - Share of total areas within sites of special protection (SPA) intersected projects and associated buffer zones affected by the implementation scenario "Do Minimum"

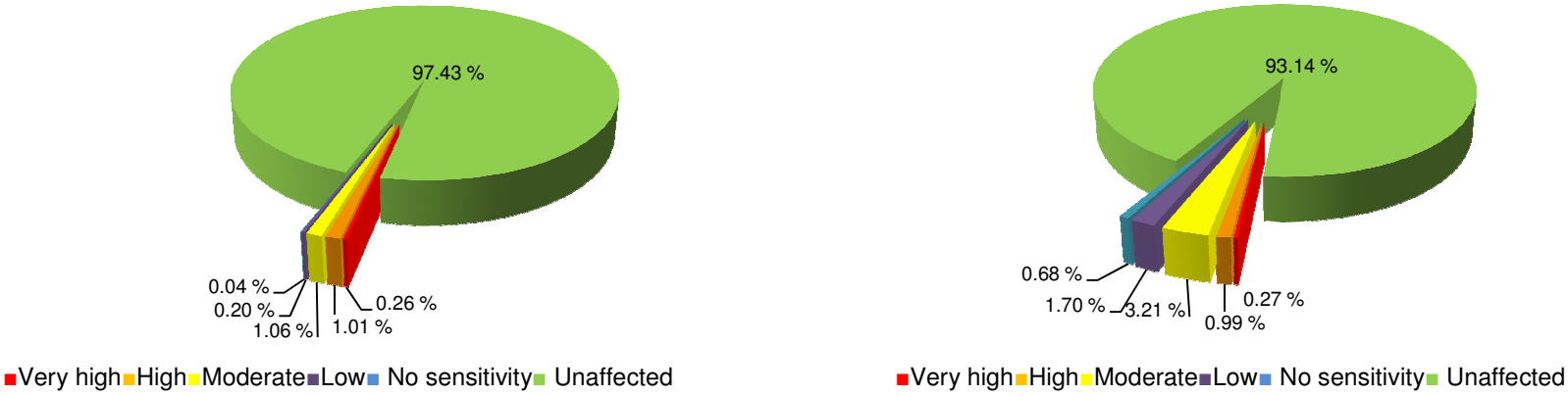


Figure no. 4-8 Road Sector - Share of total areas within sites of protection (SPA) intersected projects and associated buffer zones affected by the implementation of development scenario (ES / EES)

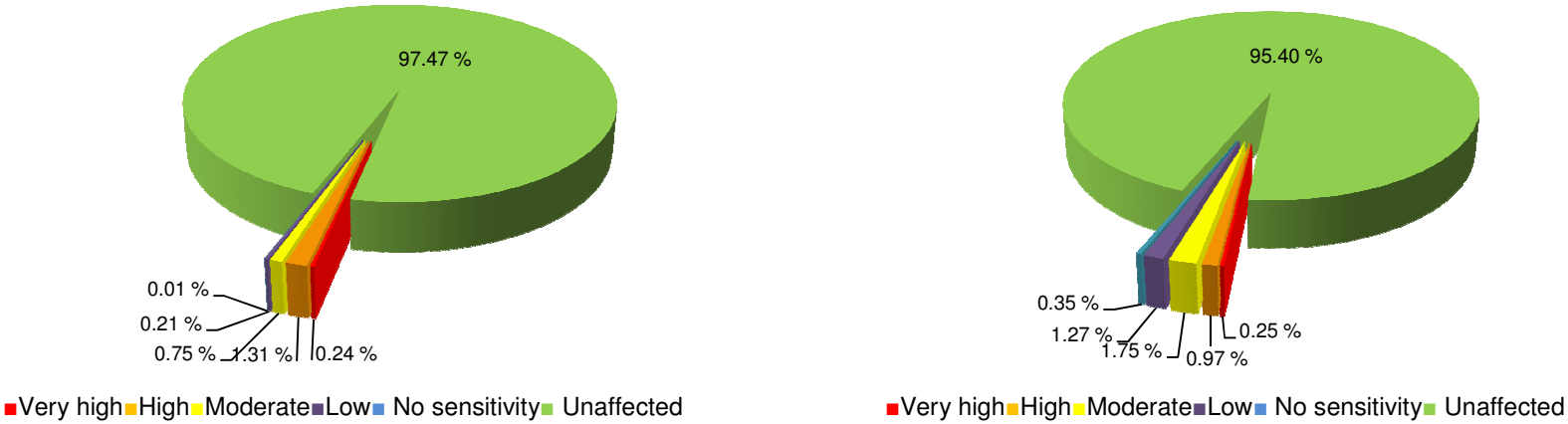


Figure no. 4-9 Road Sector - Share of total areas within sites of protection (SPA) intersected projects and associated buffer zones affected by the implementation scenario "CTT"

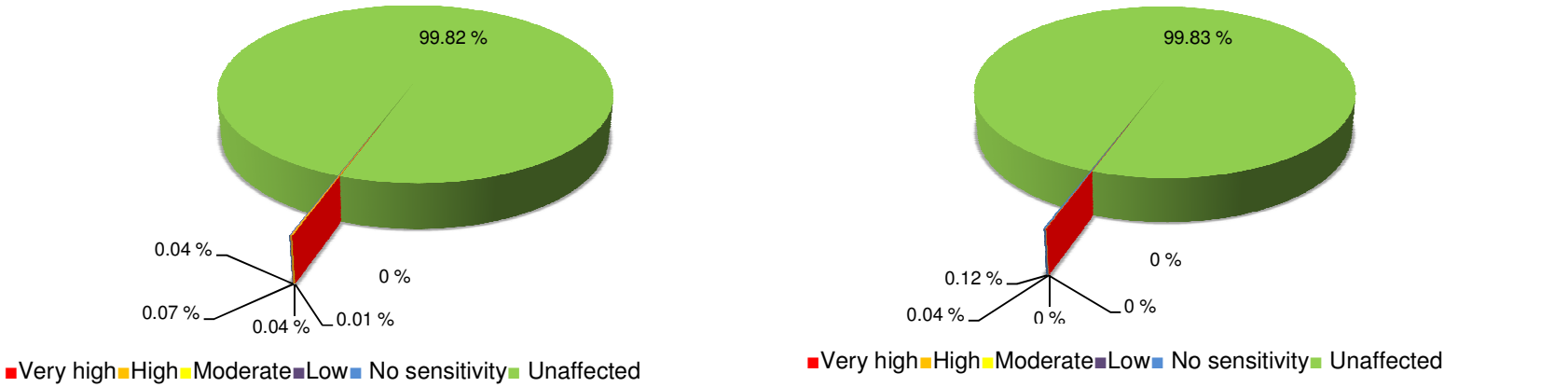


Figure no. 4-10 Rail Sector - Share of total areas within sites of interest (SCI) intersected projects and associated buffer zones affected by the implementation scenario "Do Minimum".

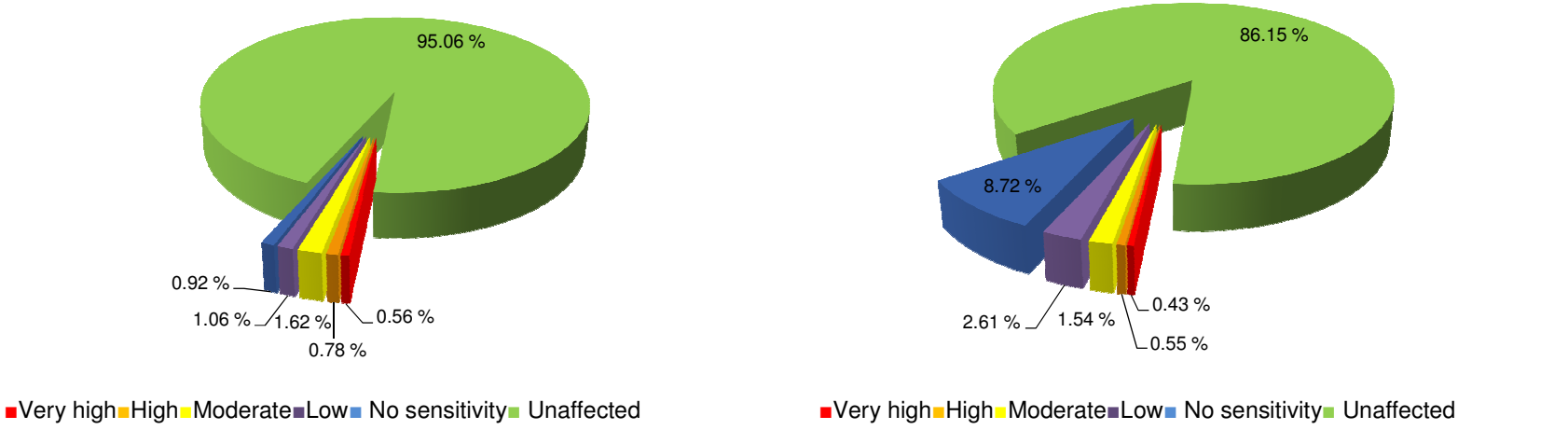
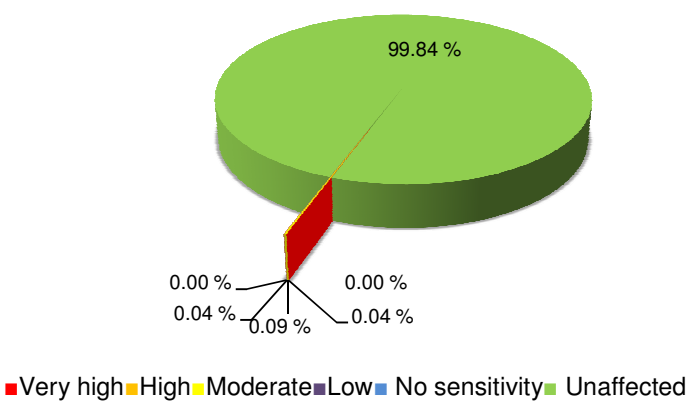


Figure no. 4-11 Rail Sector - Share of total areas within sites of interest (SCI) intersected projects and associated buffer zones affected by the implementation of development scenario (ES / EES) / script CTT



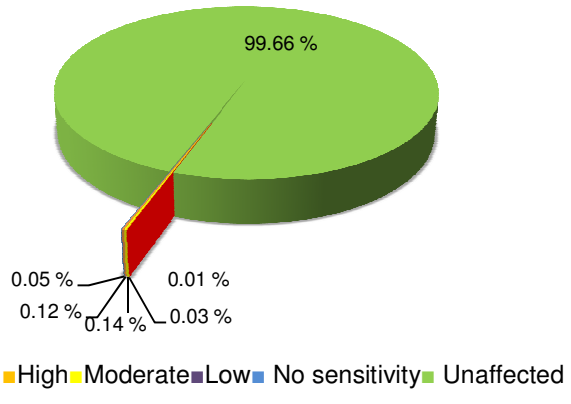
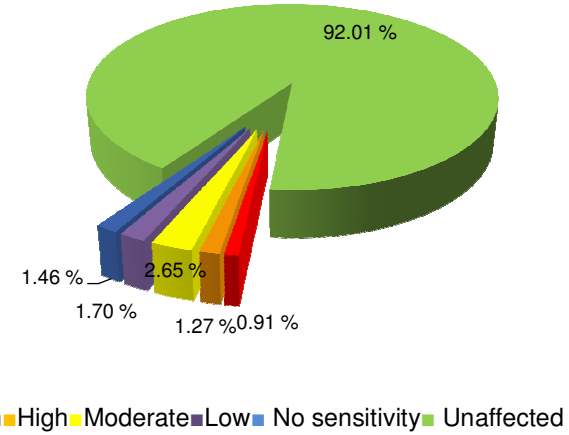


Figure no. 4-12 Rail Sector - Share of total areas within sites of special protection (SPA) intersected projects and associated buffer zones affected by the implementation scenario "Do Minimum"



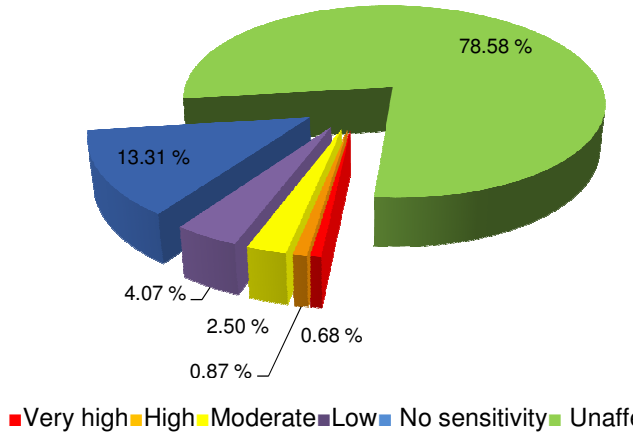


Figure no. 4-13 Rail Sector - Share of total areas within sites of protection (SPA) intersected projects and associated buffer zones affected by the implementation of development scenario (ES / EES) / CTT scenario.

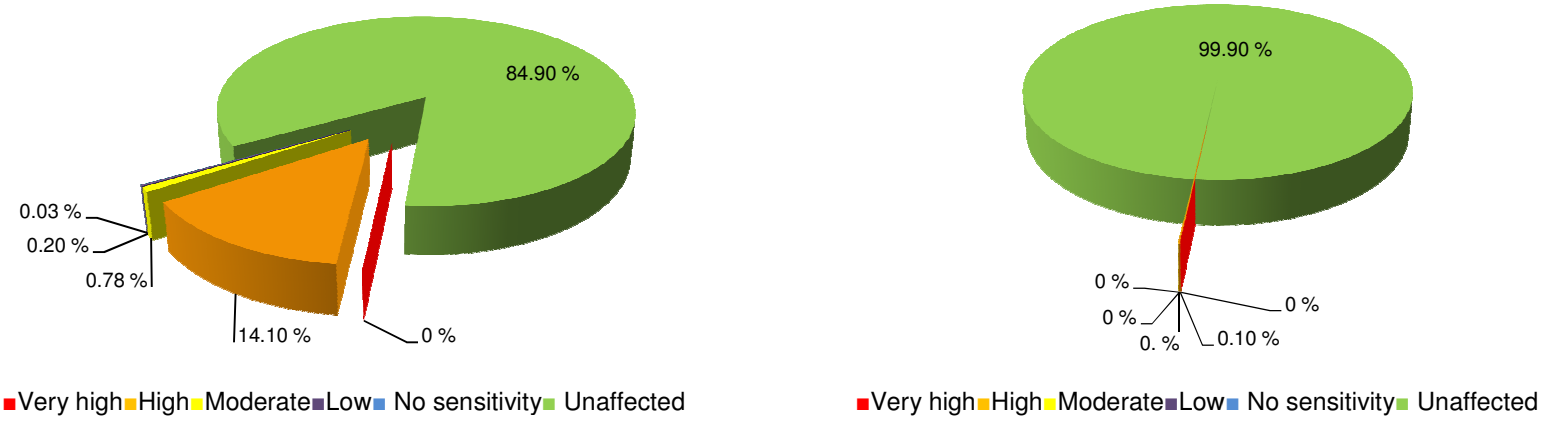


Figure no. 4-14 Naval Sector - Share of total areas within sites of community Importance (SCI) intersected projects and associated buffer zones affected by the implementation scenario "Do Minimum".

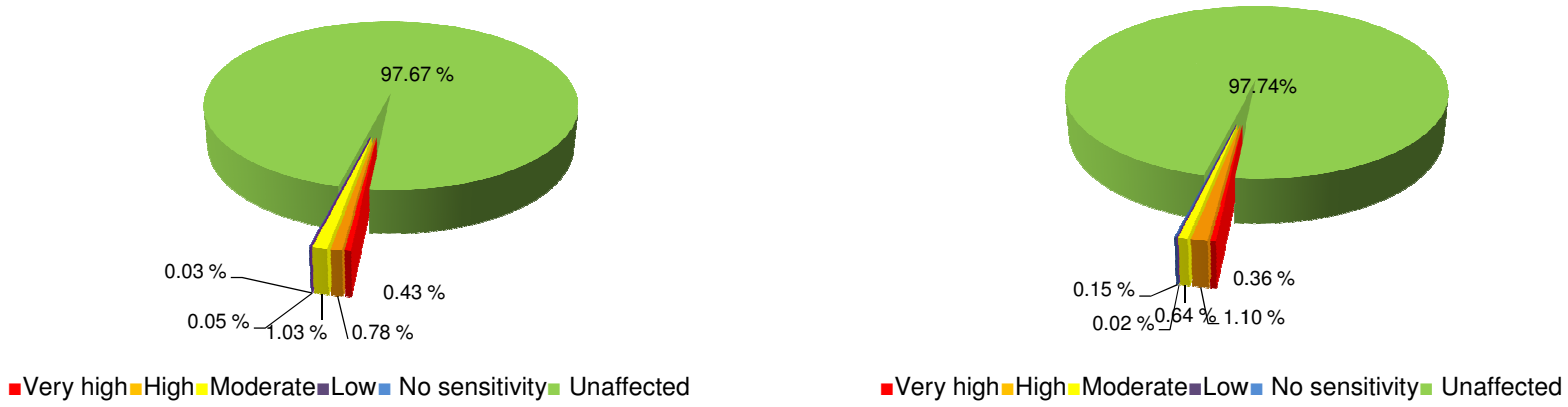


Figure no. 4-15 Naval Sector - Share of total areas within sites of community Importance (SCI) intersected projects and associated buffer zones affected by the implementation of development scenario (ES / EES) / script CTT

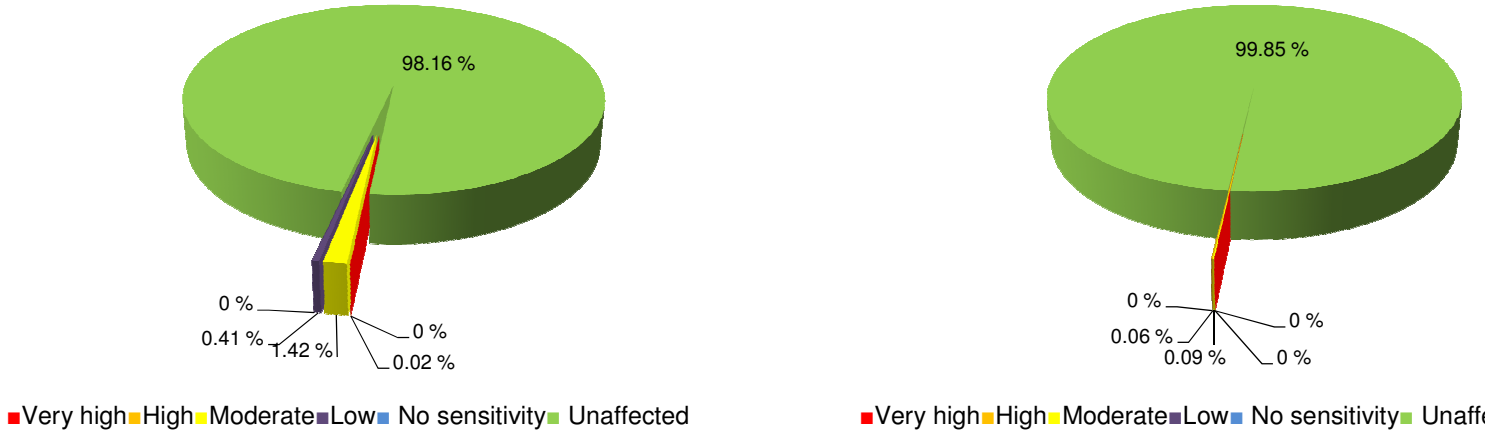


Figure no. 4-16 Naval Sector - Share of total areas within sites of special protection (SPA) intersected projects and associated buffer zones affected by the implementation scenario "Do Minimum"

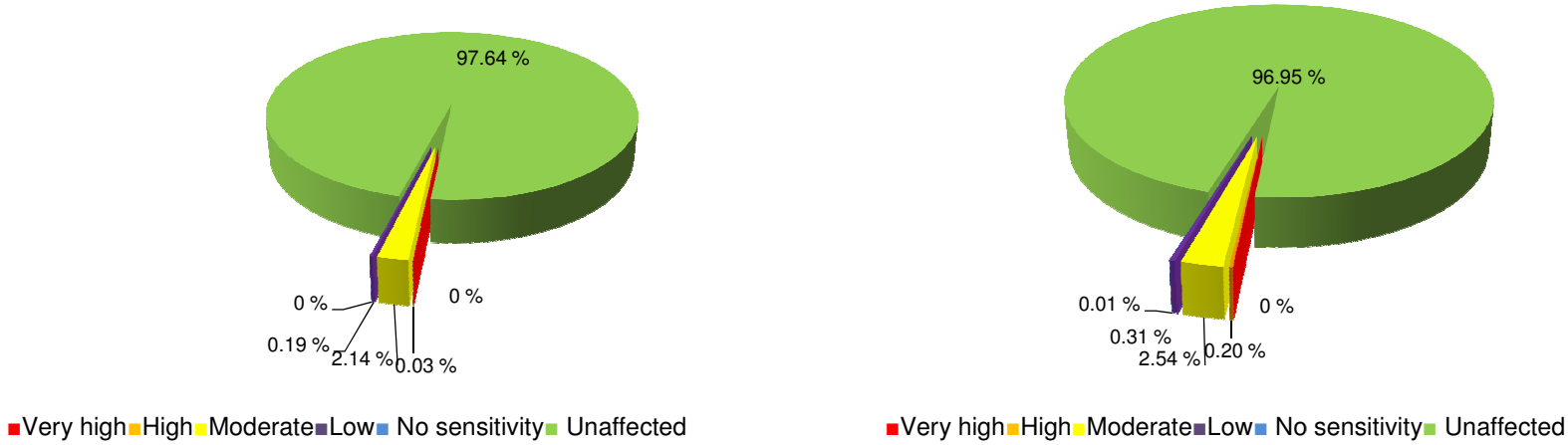


Figure no. 4-17 Naval Sector - Share of total areas within sites of protection (SPA) intersected projects and associated buffer zones affected by the implementation of development scenario (ES / EES) / script CTT

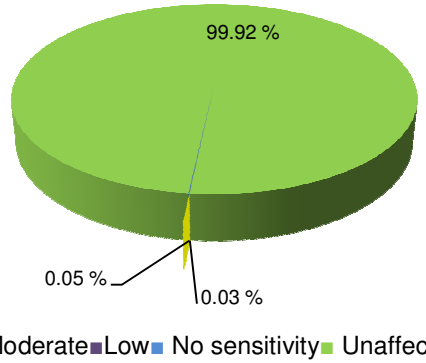
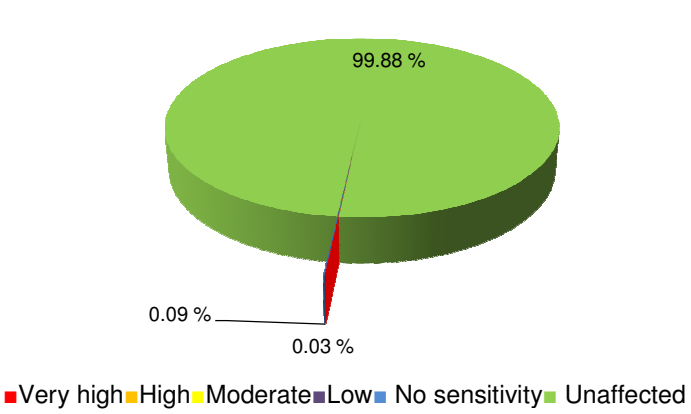


Figure no. 4-18 Air Sector - Share of disturbed areas in the buffer zone 1 km of Sites of Community Importance (SCI) development scenario (ES / EES) / script CTT



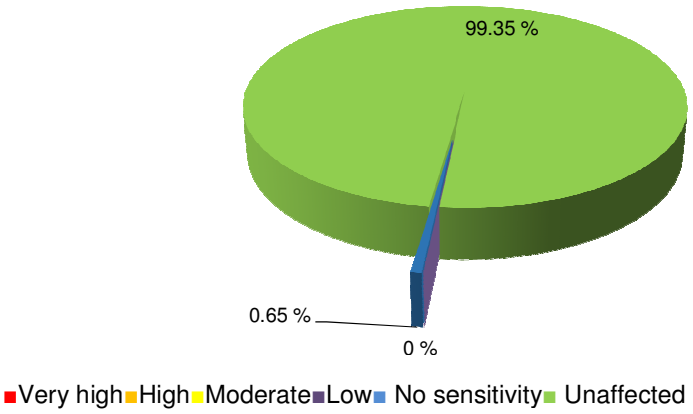


Figure no. 4-19 Intermodal Sector - Share of disturbed areas inside and 1 km buffer zone of sites of Community Importance (SCI) development scenario (ES / EES) / script CTT

Figure no. 4-20 Intermodal Sector – Share of disturbed areas inside and 1 km buffer zone protection sites (SPA) development scenario (ES / EES) / CTT scenario.

Table no. 4-4 Road Sector - The surface (ha) actual loss of Sites of Community Importance (SCI) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SCI)					In the buffer area of 1km (SCI)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway	22.93	16.17	8.19	0.06	21.00	5.10	10.59	1.37	36.21	109.71
		Express road/DN/by pass	33.38	12.09	100.88	35.66	39.06	1.46	9.06	1.11	14.12	77.59
	Modernization	DN	2.45	0.20	2.19	0.39	1.41	2.90	3.19	4.25	4.76	14.55
	Rehabilitation	DN										
		Total/sensibility	58.76	28.46	111.27	36.12	61.47	9.46	22.84	6.74	55.09	201.85
		Total/location	296.08					295.98				
		TOTAL	592.06									
ES/EES	New	Motorway	20.19	9.46	60.84	59.62	37.68	7.96	24.23	74.12	106.12	277.45
		Express Road	47.05	159.03	387.69	144.06	139.26	30.43	112.49	90.35	450.76	738.23
		By passes	4.39	15.50	27.48	1.75	26.26	0.75	7.59	38.24	50.12	109.08
		Total/sensibility	71.64	183.99	476.01	205.44	203.20	39.14	144.31	202.70	607.01	1124.75
		Total/location	1140.28					2117.91				
		TOTAL	3258.18									
CTT	New	Motorway	48.02	150.99	229.24	72.49	88.53	21.80	76.67	106.24	269.43	674.22
		Total/sensibility	48.02	150.99	229.24	72.49	88.53	21.80	76.67	106.24	269.43	674.22
		Total/location	589.27					1148.35				
		TOTAL	1737.62									

Table no. 4-5 Road Sector - The surface (ha) actually lost of the special protection areas (SPAs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SPA)					In the buffer area of 1km (SPA)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway	0.00	5.22	15.82	0.00	0.00	0.00	2.95	46.90	0.00	7.03
		Express road/DN/by pass	50.31	6.81	17.46	3.99	18.42	1.99	5.49	4.76	19.57	0.00
	Modernization	DN	0.05	0.10	5.39	0.13	0.36	0.80	9.23	2.33	7.69	3.88
	Rehabilitation	DN	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	50.36	12.13	38.67	4.12	18.78	2.79	17.67	53.99	27.26	10.91
		Total/location	124.06					112.63				
		TOTAL	236.68									
ES/EES	New	Motorway	25.66	66.48	48.73	4.62	4.66	41.89	10.24	88.08	32.47	17.39
		Express Road	107.55	605.46	558.46	85.31	15.03	9.38	220.60	485.19	271.89	58.31
		By passes	0.28	33.70	23.47	4.38	1.35	2.93	15.99	68.25	18.97	22.22
		Total/sensibility	133.49	705.63	630.67	94.31	21.04	54.20	246.83	641.52	323.33	97.92
		Total/location	1585.14					1363.80				
		TOTAL	2948.95									
CTT	New	Motorway	57.16	323.31	169.77	37.23	1.14	37.60	153.40	236.20	190.02	55.65
		Total/sensibility	57.16	323.31	169.77	37.23	1.14	37.60	153.40	236.20	190.02	55.65
		Total/location	588.60					672.87				
		TOTAL	1261.47									

Table no. 4-6 Road Sector - The surface (ha) affected of the sites of Community Importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SCI)					In the buffer area of 1km (SCI)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway	17.45	12.35	5.96	0.12	15.51	3.88	8.07	1.58	26.55	82.27
		Express road/DN/by pass	15.29	5.58	47.61	17.58	14.08	1.19	7.52	0.94	11.71	64.95
	Modernization	DN	1.91	0.61	3.18	1.21	1.44	2.71	3.00	3.88	4.31	14.67
	Rehabilitation	DN	4.85	23.68	59.11	14.86	19.52	2.45	7.16	8.38	32.77	131.86
		Total/sensibility	39.50	42.22	115.86	33.77	50.54	10.23	25.75	14.78	75.33	293.75
		Total/location	281.89					419.84				
		TOTAL	701.73									
ES/EES	New	Motorway	12.68	5.65	36.28	36.76	22.83	4.95	14.48	45.30	61.54	165.21
		Express Road	28.21	95.24	232.04	84.49	84.88	18.04	67.01	53.88	273.34	440.12
		Rehabilitation DN	16.66	24.00	48.86	41.28	76.67	7.44	11.66	24.44	157.35	474.91
		By passes	3.09	11.77	20.21	1.22	20.02	0.41	5.62	28.21	37.93	82.34
		Total/sensibility	60.65	136.66	337.40	163.75	204.40	30.84	98.77	151.83	530.16	1162.58
		Total/location	902.86					1974.18				
		TOTAL	2877.04									
CTT	New	Motorway	28.77	90.62	135.87	44.02	53.83	12.98	45.65	64.28	160.82	403.78
		Total/sensibility	28.77	90.62	135.87	44.02	53.83	12.98	45.65	64.28	160.82	403.78
		Total/location	353.09					687.52				
		TOTAL	1040.61									

Table no. 4-7 Road Sector - The surface (ha) affected of the special protection sites (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SPA)					In the buffer area of 1km (SPA)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway		3.87	11.92		0.00		2.24	34.99		5.27
		Expressroad/DN/by pass	44.85	6.21	16.73	3.00	9.46	1.72	4.49	3.74	16.32	
	Modernization	DN	0.05	0.10	5.39	0.13	0.36	0.81	9.24	2.42	7.51	3.81
	Reabilitation	DN	0.27	24.73	32.43	5.71	11.56	1.88	10.06	18.89	26.38	9.21
		Total/sensibility	45.16	34.90	66.48	8.83	21.38	4.41	26.03	60.04	50.21	18.29
		Total/location	176.76					158.99				
		TOTAL	335.74									
ES/EES	New	Motorway	15.54	39.28	28.48	2.74	3.01	25.33	6.14	50.07	18.87	9.97
		Express Road	65.02	362.31	333.99	51.00	9.13	5.72	132.49	293.09	162.08	34.13
		Reabilitation DN	16.40	35.40	38.84	34.93	13.16	26.02	43.47	159.14	173.40	71.26
		By pass	0.22	25.14	17.64	3.29	0.98	2.38	12.12	51.84	14.57	16.96
		Total/sensibility	97.18	462.12	418.94	91.96	26.29	59.44	194.21	554.14	368.92	132.32
		Total/location	1096.49					1309.03				
		TOTAL	2405.52									
CTT	New	Motorway	34.39	193.27	100.23	22.95	0.68	22.42	92.37	139.82	113.17	32.50
		Total/sensibility	34.39	193.27	100.23	22.95	0.68	22.42	92.37	139.82	113.17	32.50
		Total/location	351.52					400.28				
		TOTAL	751.81									

Table no. 4-8 Road sector - The surface (ha) affected by the disruption of Sites of Community Importance (SCI) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SCI)					In the buffer area of 1km (SCI)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway	898.87	720.67	176.23	45.82	771.32	159.42	390.72	345.55	908.15	3238.68
		Expres/DN/by pass	732.82	419.81	2139.64	723.37	588.82	63.96	306.81	72.76	571.16	3116.24
	Modernization	DN	139.74	124.95	292.39	97.74	62.44	111.45	117.74	219.69	230.06	928.82
	Reabilitation	DN	848.36	2837.65	6711.52	1246.96	1081.84	301.87	671.29	969.64	4138.27	10675.19
		Total/sensibility	2619.79	4103.09	9319.78	2113.89	2504.43	636.70	1486.56	1607.64	5847.64	17958.92
		Total/location	20660.98					27537.46				
		TOTAL	48198.44									
ES/EES	New	Motorway	694.23	229.41	1963.28	2057.01	796.02	277.21	474.91	2268.83	2446.11	7148.35
		Express Road	1246.32	4271.07	10201.99	3916.08	3942.02	640.95	3065.68	2786.57	13003.64	18611.42
		Reabilitation DN	2820.35	5144.99	7023.75	4659.18	5554.73	1003.11	2083.69	4218.90	12196.56	39596.26
		By pass	145.61	637.54	846.98	125.46	1066.47	46.20	220.04	1084.51	1543.53	3723.44
		Total/sensibility	4906.52	10283.00	20036.00	10757.73	11359.23	1967.46	5844.32	10358.81	29189.84	69079.47
		Total/location	57342.48					116439.89				
		TOTAL	173782.37									
CTT	New	Motorway	1221.54	4092.75	6052.03	2246.84	2827.94	478.27	1972.62	3248.40	7362.25	16539.75
		Total/sensibility	1221.54	4092.75	6052.03	2246.84	2827.94	478.27	1972.62	3248.40	7362.25	16539.75
		Total/location	16441.09					29601.28				
		TOTAL	46042.37									

Table no. 4-9 Road Sector - The surface (ha) affected by disturbances of protection sites (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SPA)					In the buffer area of 1km (SPA)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway	3.24	141.85	576.37	3.13	16.31		120.79	1421.71	15.06	224.36
		Expres/DN/by pass	2157.54	427.04	579.11	202.46	142.24	67.29	160.23	176.93	878.84	4.66
	Modernization	DN	58.93	182.61	453.12	13.56	12.57	63.08	376.52	144.11	165.12	176.92
	Rehabilitation	DN	109.39	3922.39	3435.34	591.79	351.12					
		Total/sensibility	2329.11	4673.88	5043.94	810.95	522.25	130.36	657.54	1742.74	1059.03	405.94
		Total/location	13380.12					3995.62				
		TOTAL	17375.74									
ES/EES	New	Motorway	869.49	1709.33	1145.41	114.02	161.71	1170.46	219.41	2530.49	859.32	334.19
		Express Road	2833.95	15562.41	15796.21	2746.39	468.19	341.51	5476.07	13127.03	6942.78	1523.45
		Rehabilitation DN	2902.58	6945.73	8849.90	2035.14	308.09	1361.32	4313.52	16930.24	10010.03	4832.41
		By pass	53.02	1292.70	1051.13	137.96	54.65	96.49	683.06	2275.89	559.73	687.97
		Total/sensibility	6659.04	25510.17	26842.65	5033.51	992.64	2969.78	10692.05	34863.65	18371.86	7378.01
		Total/location	65038.01					74275.35				
		TOTAL	139313.36									
CTT	New	Motorway	1577.15	8510.27	4911.64	1399.21	70.04	963.73	3686.75	6683.68	4822.10	1333.27
		Total/sensibility	1577.15	8510.27	4911.64	1399.21	70.04	963.73	3686.75	6683.68	4822.10	1333.27
		Total/location	16468.31					17489.53				
		TOTAL	33957.83									

Table no. 4-10 Road Sector - Total surface (ha) affected of the Sites of Community Importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SCI)					In the buffer area of 1km (SCI)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway	939.26	749.19	190.38	46.00	807.83	168.41	409.38	348.50	970.90	3430.66
		Express/DN/by pass	766.20	431.90	2240.53	759.03	627.88	66.60	323.40	74.82	596.98	3258.78
	Modernization	DN	144.96	125.84	299.03	99.44	65.83	118.61	125.42	230.17	241.75	965.66
	Rehabilitation	DN	857.86	2885.09	6830.08	1276.71	1120.73	306.78	685.67	986.28	4203.88	10939.04
		Total/sensibility	2708.27	4192.02	9560.02	2181.18	2622.27	660.40	1543.87	1639.78	6013.52	18594.15
		Total/location	21263.75					28451.71				
		TOTAL	49715.46									
ES/EES	New	Motorway	727.11	244.52	2060.39	2153.40	856.52	290.12	513.62	2388.25	2613.77	7591.01
		Express Road	1321.59	4525.34	10821.73	4144.62	4166.16	689.41	3245.19	2930.80	13727.74	19789.76
		Rehabilitation DN	2837.01	5168.99	7072.62	4700.46	5631.40	1010.55	2095.34	4243.34	12353.90	40071.17
		By pass	153.09	664.81	894.68	128.43	1112.75	47.35	233.25	1150.95	1631.59	3914.86
		Total/sensibility	5038.80	10603.65	20849.42	11126.91	11766.83	2037.43	6087.40	10713.34	30327.00	71366.81
		Total/location	59385.61					120531.98				
		TOTAL	179917.59									
CTT	New	Motorway	1298.32	4334.36	6417.13	2363.35	2970.30	513.04	2094.95	3418.92	7792.50	17617.74
		Total/sensibility	1298.32	4334.36	6417.13	2363.35	2970.30	513.04	2094.95	3418.92	7792.50	17617.74
		Total/location	17383.46					31437.15				
		TOTAL	48820.60									

Table no. 4-11 Road Sector - Total affected surface (ha) of the special protection sites (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Inside the sites (SPA)					In the buffer area of 1km (SPA)				
Scenario ↓	**Type of investment↓**	**Sensitivity→**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Do minimum	New	Motorway	3.24	150.93	604.11	3.13	16.32		125.98	1503.60	15.06	236.67
		Express road /DN/by pass	2252.70	440.06	613.29	209.45	170.12	71.01	170.21	185.43	914.74	4.66
	Modernization	DN	59.16	182.76	465.38	14.81	13.15	65.08	399.56	149.94	184.22	186.59
	Rehabilitation	DN	110.01	3971.94	3500.07	603.56	373.69	81.58	1085.46	2093.66	1374.99	800.38
		Total/sensibility	2425.11	4745.69	5182.86	830.95	573.27	217.67	1781.21	3932.63	2489.01	1228.30
		Total/location	13757.87					9648.82				
		TOTAL	23406.69									
ES/EES	New	Motorway	910.70	1815.08	1222.62	121.38	169.38	1237.68	235.79	2668.64	910.67	361.54
		Express Road	3006.52	16530.18	16688.66	2882.71	492.35	356.60	5829.15	13905.31	7376.74	1615.89
		Rehabilitation	2918.98	6981.13	8888.73	2070.07	321.25	1387.34	4356.99	17089.38	10183.43	4903.66
		By pass	53.51	1351.53	1092.25	145.63	56.98	101.79	711.17	2395.98	593.28	727.15
		Total/sensibility	6889.71	26677.92	27892.26	5219.78	1039.97	3083.42	11133.10	36059.31	19064.12	7608.25
		Total/location	67719.65					76948.19				
		TOTAL	144667.83									
CTT	New	Motorway	1668.70	9026.85	5181.64	1459.39	71.86	1023.75	3932.51	7059.70	5125.29	1421.43
		Total/sensibility	1668.70	9026.85	5181.64	1459.39	71.86	1023.75	3932.51	7059.70	5125.29	1421.43
		Total/location	17408.43					18562.68				
		TOTAL	35971.11									

Table no. 4-12 Railway sector - The surface(ha) actual loss of Sites of Community Importance (SCI) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09
		Total/Location	0.00					0.00				
		Total	0.00									
	ES/EES	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/Location	0.00					0.00				
		Total	0.00									
	CTT	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/Location	0.00					0.00				
		Total	0.00									

Table no. 4-13 Railway sector - The surface (ha) actually lost the protection of sites (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/Location	0.00					0.00				
		Total	0.00									
	ES/EES	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	15.99	8.78	0.00
		Rehabilitation	0.00	0.00	13.41	0.01	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	0.00	0.00	13.41	0.01	0.00	0.00	0.00	15.99	8.78	0.00
		Total/Location	13.43					24.76				
		Total	38.19									
	CTT	New	0.00	0.00	13.41	0.01	0.00	0.00	0.00	15.99	8.78	0.00
		Rehabilitation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	0.00	0.00	13.41	0.01	0.00	0.00	0.00	15.99	8.78	0.00
		Total/Location	13.43					24.76				
		Total	38.19									

Table no. 4-14 Railway Sector - The affected surface (ha) of the sites of Community Importance (SCI) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	9.16	27.53	72.73	139.22	81.94	3.50	0.47	10.55	93.48	289.09
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	9.16	27.53	72.73	139.22	81.94	3.50	0.47	10.55	93.48	289.09
		Total/Location	330.58					397.09				
		Total	727.67									
	ES/EES	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	110.25	142.27	282.51	281.69	228.35	72.95	104.29	220.75	464.56	1975.15
		Total/sensibility	110.25	142.27	282.51	281.69	228.35	72.95	104.29	220.75	464.56	1975.15
		Total/Location	1045.07					2837.70				
		Total	3882.76									
	CTT	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	110.25	142.27	282.51	281.69	228.35	72.95	104.29	220.75	464.56	1975.15
		Total/sensibility	110.25	142.27	282.51	281.69	228.35	72.95	104.29	220.75	464.56	1975.15
		Total/Location	1045.07					2837.70				
		Total	3882.76									

Table no. 4-15 Railway Sector – Total affected surface (ha) of the protection sites (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	15.08	17.60	136.90	13.86	26.31	2.27	17.03	159.66	115.41	20.43
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	15.08	17.60	136.90	13.86	26.31	2.27	17.03	159.66	115.41	20.43
		Total/Location	330.58					209.75				
		Total	524.56									
	ES/EES	New	0.00	0.00	10.05	0.01	0.00	0.00	0.00	11.76	6.68	0.00
		Rehabilitation	73.14	219.27	468.63	153.19	38.55	81.69	154.67	637.93	313.61	109.29
		Total/sensibility	73.14	219.27	478.68	153.21	38.55	81.69	154.67	649.70	320.28	109.29
		Total/Location	962.84					1315.63				
		Total	2278.47									
	CTT	New	0.00	0.00	10.05	0.01	0.00	0.00	0.00	11.76	6.68	0.00
		Rehabilitation	73.14	219.27	468.63	153.19	38.55	81.69	154.67	637.93	313.61	109.29
		Total/sensibility	73.14	219.27	478.68	153.21	38.55	81.69	154.67	649.70	320.28	109.29
		Total/Location	962.84					1315.63				
		Total	2278.47									

Table no. 4-16 Rail Sector – the total surface (ha) affected by the disruption of Sites of Community Importance (SCI) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/Location	0.00					0.00				
		Total	0.00									
	ES/EES	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	6136.29	8493.41	17672.28	11504.00	9929.53	3620.13	4615.50	13005.78	21959.80	72793.47
		Total/sensibility	6136.29	8493.41	17672.28	11504.00	9929.53	3620.13	4615.50	13005.78	21959.80	72793.47
		Total/Location	53735.51					115994.68				
		Total	169730.19									
	CTT	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	6136.29	8493.41	17672.28	11504.00	9929.53	3620.13	4615.50	13005.78	21959.80	72793.47
		Total/sensibility	6136.29	8493.41	17672.28	11504.00	9929.53	3620.13	4615.50	13005.78	21959.80	72793.47
		Total/Location	53735.51					115994.68				
		Total	169730.19									

Table no. 4-17 Railway Sector - Land surface (ha) affected by disturbances of protection sites (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/Location	0.00					0.00				
		Total	0.00									
	ES/EES	New	0.00	0.67	324.81	3.78	0.00	0.00	0.00	535.94	266.55	0.00
		Rehabilitation	4932.19	13665.86	22676.87	5422.02	1256.36	3649.27	8719.13	23443.57	14384.88	4003.73
		Total/sensibility	4932.19	13666.53	23001.69	5425.80	1256.36	3649.27	8719.13	23979.52	14651.43	4003.73
		Total/Location	48282.57					55003.08				
		Total	103285.66									
	CTT	New	0.00	0.67	324.81	3.78	0.00	0.00	0.00	535.94	266.55	0.00
		Rehabilitation	4932.19	13665.86	22676.87	5422.02	1256.36	3649.27	8719.13	23443.57	14384.88	4003.73
		Total/sensibility	4932.19	13666.53	23001.69	5425.80	1256.36	3649.27	8719.13	23979.52	14651.43	4003.73
		Total/Location	48282.57					55003.08				
		Total	103285.66									

Table no. 4-18 Rail Sector - total land surface (ha) affected of the sites of Community importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	20.21	61.18	168.70	329.12	188.44	8.42	1.39	23.01	216.10	678.42
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.09
		Total/Location	767.65					928.41				
		Total	1696.06									
	ES/EES	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	6246.55	8635.67	17954.79	11785.68	10157.88	3693.08	4719.78	13226.53	22424.36	74768.62
		Total/sensibility	6246.55	8635.67	17954.79	11785.68	10157.88	3693.08	4719.78	13226.53	22424.36	74768.62
		Total/Location	54780.57					118832.38				
		Total	173612.95									
	CTT	New	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Rehabilitation	6246.55	8635.67	17954.79	11785.68	10157.88	3693.08	4719.78	13226.53	22424.36	74768.62
		Total/sensibility	6246.55	8635.67	17954.79	11785.68	10157.88	3693.08	4719.78	13226.53	22424.36	74768.62
		Total/Location	54780.57					118832.38				
		Total	173612.95									

Table no. 4-19 Rail Sector - total land surface (ha) affected sites protection (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Railway	Do minimum	CF Modernization	34.84	46.32	310.67	30.82	59.03	5.19	37.30	380.64	269.94	47.35
		Railway station Modernization	0.00	0.00	0.00	0.00	0.00	0.00		0.00	1.57	0.00
		Total/Location	481.68									
		Total	1223.67									
	ES/EES	New	0.00	0.00	23.46	0.03	0.00	0.00	0.00	27.75	15.45	0.00
		Rehabilitation	6209.43	8712.68	18140.91	11657.19	9968.08	3701.82	4770.17	13643.71	22273.41	72902.77
		Total/sensibility	6209.43	8712.68	18164.37	11657.22	9968.08	3701.82	4770.17	13671.46	22288.86	72902.77
		Total/Location	54711.77					117335.08				
		Total	172046.85									
	CTT	New	0.00	0.00	23.46	0.03	0.00	0.00	0.00	27.75	15.45	0.00
		Rehabilitation	6209.43	8712.68	18140.91	11657.19	9968.08	3701.82	4770.17	13643.71	22273.41	72902.77
		Total/sensibility	6209.43	8712.68	18164.37	11657.22	9968.08	3701.82	4770.17	13671.46	22288.86	72902.77
		Total/Location	54711.77					117335.08				
		Total	172046.85									

Table no. 4-20 Naval Sector – Total surface (ha) of actual loss of Sites of Community Importance (SCI) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Naval	Do minimum	Total/sensibility	0.00	0.00	187.95	51.37	4.00	0.00	0.00	0.00	0.00	0.00
		Total/location	243.32					0.00				
		TOTAL	243.32									
	ES/EES	Total/sensibility	0.00	0.00	103.58	26.39	2.96	0.00	0.00	0.00	0.00	0.00
		Total/location	132.93					0.00				
		TOTAL	132.93									

Component ↓	Scenario ↓	Sensibility →	Interior					Exterior Buffer 1 km				
			Very high	High	Moderate	Low	No sensitivity	Very high	High	Moderate	Low	No sensitivity
	CTT	Total/sensibility	0.00	0.00	103.58	26.39	2.96	0.00	0.00	0.00	0.00	0.00
		Total/location	132.93									
		TOTAL	132.93									

Table no. 4-21 Naval Sector – Total surface (ha) of actually lost the special protection sites (SPAs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

Component ↓	Scenario ↓	Sensibility →	Interior					Exterior Buffer 1 km				
			Very high	High	Moderate	Low	No sensitivity	Very high	High	Moderate	Low	No sensitivity
Naval	Do minimum	Total/sensibility	0.00	30.84	182.06	1.01	4.00	0.00	0.21	28.50	30.13	0.00
		Total/location	217.92					58.85				
		TOTAL	276.77									
	ES/EES	Total/sensibility	0.00	15.42	91.03	0.51	0.00	0.00	3.06	18.49	28.79	0.00
		Total/location	106.96					50.34				
		TOTAL	157.30									
	CTT	Total/sensibility	0.00	15.42	91.03	0.51	0.00	0.00	3.06	18.49	28.79	0.00
		Total/location	106.96					50.34				
		TOTAL	157.30									

Table no. 4-22 Naval Sector – total affected surface (ha) of the Sites of Community Importance (SCI) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

Component ↓	Scenario ↓	Sensibility →	Interior					Exterior Buffer 1 km				
			Very high	High	Moderate	Low	No sensitivity	Very high	High	Moderate	Low	No sensitivity
Naval	Do minimum	Total/sensibility	0.07	10366.61	387.69	92.17	18.19	292.23	584.45	532.29	93.95	295.09
		Total/location	10864.74					1798.02				
		TOTAL	12662.75									

			Interior					Exterior Buffer 1 km				
Component ↓	Scenario ↓	Sensibility →	Very high	High	Moderate	Low	No sensitivity	Very high	High	Moderate	Low	No sensitivity
	ES/EES	Total/sensibility	655.36	1179.10	1448.20	46.70	47.33	701.25	2126.42	1232.39	29.35	290.85
		Total/location	3376.70					4380.25				
		TOTAL	7756.94									
	CTT	Total/sensibility	655.36	1179.10	1448.20	46.70	47.33	701.25	2126.42	1232.39	29.35	290.85
		Total/location	3376.70					4380.25				
		TOTAL	7756.94									

Table no. 4-23 Naval Sector – total surface (ha) affected of the special protection sites (SPAs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	Scenario ↓	Sensibility →	Very high	High	Moderate	Low	No sensitivity	Very high	High	Moderate	Low	No sensitivity
Naval	Do minimum	Total/sensibility	0.00	58.46	7939.82	2351.65	0.00	292.23	584.45	532.29	93.95	295.09
		Total/location	10349.93					1798.02				
		TOTAL	12147.94									
	ES/EES	Total/sensibility	0.00	29.15	2761.00	256.12	0.00	0.00	233.24	2943.09	331.43	7.53
		Total/location	3046.27					3515.30				
		TOTAL	6561.57									
	CTT	Total/sensibility	0.00	29.15	2761.00	256.12	0.00	0.00	233.24	2943.09	331.43	7.53
		Total/location	3046.27					3515.30				
		TOTAL	6561.57									

Table no. 4-24 Naval Sector – total surface (ha) affected of the total Sites of Community Importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	Scenario ↓	Sensibility →	Very high	High	Moderate	Low	No sensitivity	Very high	High	Moderate	Low	No sensitivity
Naval	Do	Total/sensibility	0.07	10366.61	575.64	143.54	22.19	292.23	584.45	532.29	93.95	295.09

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
	minimum	Total/location	11108.06					1798.02				
		TOTAL	12906.07									
	ES/EES	Total/sensibility	655.36	1179.10	1551.78	73.09	50.30	701.25	2126.42	1232.39	29.35	290.85
		Total/location	3509.63					4380.25				
		TOTAL	7889.88									
	CTT	Total/sensibility	655.36	1179.10	1551.78	73.09	50.30	701.25	2126.42	1232.39	29.35	290.85
		Total/location	3509.63					4380.25				
		TOTAL	7889.88									

Table no. 4-25 Naval Sector – total surface (ha) affected of the total special protection sites (SPAs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Naval	Do minimum	Total/sensibility	0.00	89.30	8121.88	2352.67	4.00	292.23	584.67	560.79	124.09	295.09
		Total/location	10567.85					1856.86				
		TOTAL	12424.71									
	ES/EES	Total/sensibility	0.00	44.58	2852.03	256.63	0.00	0.00	236.30	2961.58	360.22	7.53
		Total/location	3153.23					3565.64				
		TOTAL	6718.87									
	CTT	Total/sensibility	0.00	44.58	2852.03	256.63	0.00	0.00	236.30	2961.58	360.22	7.53
		Total/location	3153.23					3565.64				
		TOTAL	6718.87									

Table no. 4-26 Air Sector – total surface (ha) disturbed of the Sites of Community Importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Air	Do minimum	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/location	0.00					0.00				
		TOTAL	0.00									
	ES/EES	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	1.48
		Total/location	0.00					2.44				
		TOTAL	2.44									
	CTT	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.96	1.48
		Total/location	0.00					2.44				
		TOTAL	2.44									

Table no. 4-27 Air Sector – total surface (ha) disturbed of the special protection sites (SPAs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Air	Do minimum	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/location	0.00					0.00				
		TOTAL	0.00									
	ES/EES	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/location	0.00					0.00				
		TOTAL	0.00									
	CTT	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
		Total/location	0.00					0.00				
		TOTAL	0.00									

Table no. 4-28 Intermodal Sector - The surface (ha) actual loss of Sites of Community Importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Intermodal	ES/EES	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.15
		Total/location	0.00					6.15				
		TOTAL	6.15									
	CTT	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.15
		Total/location	0.00					0.00				
		TOTAL	6.15									

Table no. 4-29 Intermodal Sector - The surface (ha) actually lost of the special protection areas (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Intermodal	ES/EES	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	2.67
		Total/location	0.00					3.49				
		TOTAL	3.49									
	CTT	Total/sensibility	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.82	2.67
		Total/location	0.00					3.49				
		TOTAL	3.49									

Table no. 4-30 Intermodal Sector - The surface (ha) affected of the sites of Community importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Intermodal	ES/EES	Total/sensibility	0.42	0.00	0.00	0.00	1.34	0.00	0.00	0.00	0.00	145.59
		Total/location	1.76					145.59				
		TOTAL	147.35									
	CTT	Total/sensibility	0.42	0.00	0.00	0.00	1.34	0.00	0.00	0.00	0.00	145.59
		Total/location	1.76					145.59				
		TOTAL	147.35									

Table no. 4-31 Intermodal Sector - The affected surface (ha) of the special protection areas (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Intermodal	ES/EES	Total/sensibility	4.11	0.53	0.00	0.39	0.00	0.00	45.47	0.00	30.03	15.42
		Total/location	5.04					90.92				
		TOTAL	95.95									
	CTT	Total/sensibility	4.11	0.53	0.00	0.39	0.00	0.00	45.47	0.00	30.03	15.42
		Total/location	5.04					90.92				
		TOTAL	95.95									

Table no. 4-32 Sector Intermodal - The surface (ha) affected total of the Sites of Community Importance (SCIs) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Intermodal	ES/EES	Total/sensibility	0.42	0.00	0.00	0.00	1.34	0.00	0.00	0.00	0.00	151.74
		Total/location	1.76					151.74				
		TOTAL	153.50									
	CTT	Total/sensibility	0.42	0.00	0.00	0.00	1.34	0.00	0.00	0.00	0.00	151.74
		Total/location	1.76					151.74				
		TOTAL	153.50									

Table no. 4-33 Intermodal Sector - The surface (ha) affected of the total special protection sites (SPA) and related 1km buffer zone designated by implementing the three scenarios ("Do minimum" , "(ES / EES)", "CTT")

			Interior					Exterior Buffer 1 km				
Component ↓	**Scenario ↓**	**Sensibility →**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**	**Very high**	**High**	**Moderate**	**Low**	**No sensitivity**
Intermodal	ES/EES	Total/sensibility	4.11	0.53	0.00	0.39	0.00	0.00	45.47	0.00	30.85	18.08
		Total/location	5.04					94.40				
		TOTAL	99.44									
	CTT	Total/sensibility	4.11	0.53	0.00	0.39	0.00	0.00	45.47	0.00	30.85	18.08
		Total/location	5.04					94.40				
		TOTAL	99.44									

4.3.5 ANALYSIS OF AFFECTED AREAS BY THE IMPLEMENTING THE GENERAL TRANSPORT MASTER PLAN

"Do minimum" Scenario

Implementation of projects proposed in the "Do Minimum" Scenario will affect surfaces of 3.05% of the total intersected surface of Sites of Community Importance and 4.47% of the total area of 1 km buffer around them, 2.60% of the special protection areas and 2.73% of the total area of buffer zones around them, for road transport sector; also 0.18% of intersected Sites of Community Importance and 0.06% of 1 km buffer zone and 0.23% of the total special protection areas and 0.10% of the total area of 1 km buffer around them, for rail transport sector; 1.49% of intersected Sites of Community Importance and 0.08% of the total buffer area and 1.30% of the Special protection areas and 0.06% of their buffer zone for naval transport sector. For the air transport sector, will not be affected by this scenario implementation, surfaces or Sites of Community Importance, neither special protection areas, nor any 1 km buffer zones will be affected.

The cumulate affected areas by the projects included in the scenario "Do Minimum" represents 0.78% of the total surface of Sites of Community Importance and 0.67% of the total area of Bird Protection Sites.

(ES/EES) Development Scenario

Projects proposed under this scenario will affect: 2.92% of the surface of intersected Sites of Community Importance and 7.14% of the 1 km buffer zones, and 2.57% of the special protection areas and 6.86% of the their buffer areas for the road sector; also 4.94% of intersected Sites of Community Importance and 13.85% of the 1km buffer area and 7.99% of the special protection areas and 21.42% for their buffer zone for projects in the railway sector; 2.33% of Sites of Community Importance and 2.26% of their buffer zone; 2.36% and 3.05% for their buffer area for bird protection sites, for the naval transport sector. For air transport will be affected surfaces of 0.08% of the 1 km buffer zone of the Sites of Community Importance, and in case of the intermodal transport will be affected surfaces of 0.012% of the SCIs and 0.65 of the 1 km buffer area, respective 0.03% of the bird protection areas and 1.70% of the 1 km buffer area.

Cumulative total surfaces potentially affected by the proposed project implementation in the development scenario (ES / EES) represents 8.7% of sites of Community and 8.75% of the total special protection areas.

"CTT" Scenario

Projects proposed under this scenario will affect 1.77% of the intersected Sites of Community Importance and 4.53% of 1 km buffer zones, and 2.53% of the special protection areas, 4.6% of their buffer areas for the road transport sector. In case of all others sectors there are no differences registered comparing to development scenario (ES / EES), taking into account that related projects are common. The cumulative total areas potentially affected by the proposed projects implementation by the "CTT" scenario, represent 5.5% of Sites of Community Importance (SCIs) and 5.8% of Special Protection Areas (SPAs).

Table no. 4-34 Total land area affected (ha) in Natura 2000 sites and related 1km buffer zone by implementing the three scenarios ("Do minimum" of development (ES / EES), "CTT")

	Road				Rail				Naval				Air				Intermodal			
	SCI		SPA		SCI		SPA		SCI		SPA		SCI		SPA		SCI		SPA	
	Interior	Buffer 1km	Interior	Buffer 1km	Interior	Buffer 1km	Interior	Buffer 1km	Interior	Buffer 1km	Interior	Buffer 1km	Interior	Buffer 1km	I Interior	Buffer 1km	Interior	Buffer 1km	Interior	Buffer 1km
Total affected areas by "Do minimum" Scenario	21263.75	28451.71	13757.87	9648.82	330.58	397.09	538.88	837.37	11108.06	1798.02	10567.85	1856.86	0	0	0	0	0	0	0	0
	49715.46		23406.69		727.67		1376.25		12906.08		12424.71		0.00		0		0		0	
Total affected areas by "ES/EES" Scenario	59385.61	120531.98	67719.65	76948.19	54780.57	118832.38	54711.77	117335.08	3509.63	4380.25	3153.23	3565.64	0	2.44	0	0	1.76	151.74	5.04	94.40
	179917.59		144667.83		173612.95		172046.85		7889.88		6718.87		2.44		0		153.50		99.44	
Total affected areas by "CTT" Scenario	17383.46	31437.15	17408.43	18562.68	54780.57	118832.38	54711.77	117335.08	3509.63	4380.25	3153.23	3565.64	0	2.44	0	0	1.76	151.74	5.04	94.40
	48820.60		35971.11		173612.95		172046.85		7889.88		6718.87		2.44		0		153.50		99.44	
Total affected areas by "Do minimum" Scenarios in the SCI									63349.21											
Total affected areas by "Do minimum" Scenario in the SPA									37207.65											
Total affected areas by "ES/EES" Scenario in the SCI									361576.35											
Total affected areas by "ES/EES" Scenario in the SPA									323532.99											
Total affected areas by "CTT" Scenarios in the SCI									230479.37											
Total affected areas by "CTT" Scenario in the SPA									214836.27											

4.4 Impact Assessment

4.4.1 IMPACT ASSESMENT MEANING

Sensitivity classes were established based on the percentage of representation of the number of habitats and species of community importance on the different types of land use within each Natura 2000 site (how many species can be found in each polygon belonging to a class of land use[1] within Natura 2000 sites). Classes used are: *no sensitivity* (0% of all species), *low sensitivity* (low (0.01 - 24.9%), *moderate* (25 - 49.9%), *high* (50 - 74.9%), *very high* (75-100%). Details of the methodology for determining the sensitivity are discussed in Section 6.2.

The magnitude of changes was assessed solely on the basis of the share of damage to the surface sensitivity for each class (what percentage of each zone sensitivity to be affected by the proposed projects). Classes used are: No change (0%), Low (0.01 - 24.9%), moderate (25 - 49.9%), Large (50 - 74.9%), very high (75-100%).

Impact significance assessment matrix (Table no. 4:35) proposes an easy approach of identifying sites which are most likely to show a significant impact due to the implementation GTMP. We emphasize that this strategic analysis, impact significance is not a certainty. **For all sites, significant impacts can not be correctly estimated only by a cumulative assessment, in the project development phase, of all proposals for interventions within the protected areas** (transport projects + other pressures existing and proposed).

Table no. 4-35 Impact significance assessment matrix

		Sensitivity class				
		Very high	High	Moderate	Low	No sensitivity
The magnitude of the proposed changes	Very high	Significant impact	Significant impact	Significant impact	Moderate impact	Reduced impact
	High	Significant impact	Significant impact	Significant impact	Moderate impact	Reduced impact
	Moderate	Significant impact	Significant impact	Moderate impact	Moderate impact	Reduced impact
	Low	Moderate impact	Moderate impact	Moderate impact	Reduced impact	Reduced impact
	No changes	No impact	No impact	No impact	No impact	No impact

[1] Conform Corine Land Cover 2006

4.4.2 ASSESSMENT RESULTS

Sites of Community Importance (SCI)

By implementing "Do Minimum" Scenario may be affected 51 SCIs and may significantly affect 6 sites (Table no. 4-36), and ROSCI0022 Canaralele Dunării, ROSCI0063 Defileul Jiului, ROSCI0267 Valea Roşie, ROSCI0342 Pădurea Târgu Mureş, ROSCI0373 Râul Mureş între Branişca şi Ilia, ROSCI0377 Râul Putna, which represents 11% of sites crossed by the proposed projects in this scenario. Projects that have the potential to significantly affect these sites are: Lugoj-Deva Motorway, Rehabilitation of DN66 Filiasi-Petrosani, km 0 + 000 - km 131 + 000, Rehabilitation of DN 2D Focsani – Ojdula, km 0 + 000 - km 118 + 893; Ring Road in Oradea - Phase II and Targu Mures Bypass, for the road sector; *Rehabilitation of the Bucharest-Constanta CF*, *CF Modernization of Border-Curtici-Arad-Simeria*, *Section 1: 614 km border-Arad and Rehabilitation work and railway bridges across the Danube - km 149 and km 152 + 165 + 817*, *The line CF Bucharest - Constanta - Constanta Regional Branch railway*, for the rail sector; respectively *Improvement of navigation on the Calarasi-Braila* for naval sector. In Appendix. 7, Table no. 29, projects are presented for each site individually. Reported to the entire network of Sites of Community Importance in Romania, about 13% of the sites may be affected by the implementation of this scenario, while 1.5% are highly likely to be significantly affected.

In this scenario, there are 4 sites where can be registered moderate and large magnitude changes in the areas with very high sensitivity, namely ROSCI0267 Valea Roşie, ROSCI0342 Pădurea Târgu Mureş, ROSCI0373 Râul Mureş between Branişca and Ilia, ROSCI0377 Râul Putna. Projects that have the potential to produce such changes at the sites mentioned are: *Bypass road for Oradea Municipality - Phase II -a*, *Targu Mures Bypass*, *Lugoj-Deva Motorway* and *Modernization of Border railway Curtici-Arad-Simeria*, *Section1: Border-Arad-km 614*, respectively *Rehabilitation of DN 2D Focsani – Ojdula, km 0 + 000 - km 118 + 893.*

Table no. 4-36 The magnitude of changes (expressed as a percentage of an area with a known degree of sensitivity) and the impact on sites of Community importance crossed by the proposed projects through the Scenario "Do Minimum"

Scenario	Do minimum						High probability of significant damage of the protected area/site
Protected area Code	Name of the protected area	Sensitivity					
		No sensitivity	Low sensitivity	Moderate sensitivity	High sensitivity	Very High sensitivity	
ROSCI0004	Bagau	3.36	0.00	5.37	0.00	0.00	
ROSCI0006	Balta Mica a Brailei	0.00	0.02	0.00	19.87	0.00	
ROSCI0008	Betfia	1.71	8.43	0.00	0.00	8.38	
ROSCI0014	Bucsani	0.00	0.00	0.00	0.00	0.00	
ROSCI0021	Campia Ierului	0.16	0.14	0.05	0.00	0.00	
ROSCI0022	Canaralele Dunarii	0.08	0.03	0.00	25.31	0.00	DA
ROSCI0044	Corabia - Turnu Magurele	0.05	0.65	0.00	0.01	0.00	
ROSCI0045	Coridorul Jiului	1.76	0.35	0.68	0.00	0.00	
ROSCI0050	Crisul Repede amonte de Oradea	38.66	18.18	0.00	5.72	18.18	
ROSCI0063	Defileul Jiului	10.87	45.23	86.59	21.13	0.00	DA
ROSCI0064	Defileul Muresului	2.94	2.44	0.70	0.94	0.00	
ROSCI0065	Delta Dunarii	0.44	0.09	0.08	0.00	0.00	
ROSCI0066	Delta Dunarii - zona marina	0.00	0.00	0.00	0.00	0.00	
ROSCI0069	Domogled - Valea Cernei	16.03	1.63	4.82	0.50	0.00	

Scenario	Do minimum						High probability of significant damage of the protected area/site
Protected area Code	Name of the protected area	Sensitivity					
		No sensitivity	Low sensitivity	Moderate sensitivity	High sensitivity	Very High sensitivity	
ROSCI0088	Gura Vedei - Saica - Slobozia	0.00	0.00	0.12	0.00	0.00	
ROSCI0098	Lacul Petea	57.73	55.67	0.00	0.00	0.00	
ROSCI0104	Lunca Inferioara a Crisului Repede	4.57	3.55	0.00	0.00	4.16	
ROSCI0106	Lunca Mijlocie a Argesului	2.10	0.00	0.00	0.00	3.42	
ROSCI0109	Lunca Timisului	0.01	0.03	0.00	0.62	0.00	
ROSCI0129	Nordul Gorjului de Vest	0.03	0.29	0.30	0.00	0.00	
ROSCI0130	Oituz - Ojdula	8.87	11.41	7.22	3.01	0.00	
ROSCI0162	Lunca Siretului Inferior	4.31	0.22	0.02	0.00	0.50	
ROSCI0200	Platoul Vascau	0.76	0.05	0.33	1.29	0.00	
ROSCI0202	Silvostepa Olteniei	1.81	0.00	0.00	3.94	0.00	
ROSCI0208	Putna - Vrancea	51.00	23.91	6.71	0.00	0.00	
ROSCI0211	Podisul Secaselor	4.95	0.58	0.00	0.34	0.00	
ROSCI0213	Raul Prut	0.00	0.08	0.11	0.00	0.00	
ROSCI0217	Retezat	0.46	0.12	0.16	0.00	0.00	
ROSCI0227	Sighisoara - Tarnava Mare	0.01	0.03	0.00	0.00	0.00	
ROSCI0240	Tasad	25.61	0.02	2.93	5.38	0.00	
ROSCI0253	Trascau	0.60	0.10	0.05	1.07	0.00	
ROSCI0267	Valea Rosie	39.24	0.00	61.73	0.00	40.16	DA
ROSCI0291	Coridorul Muntii Bihorului - Codru Moma	6.28	0.00	14.03	0.00	4.72	
ROSCI0299	Dunarea la Garla Mare - Maglavit	0.73	0.00	6.28	0.00	0.54	
ROSCI0308	Lacul si Padurea Cernica	4.51	34.69	0.00	1.75	0.00	
ROSCI0314	Lozna	14.01	3.70	0.00	0.00	0.79	
ROSCI0322	Muntele Ses	0.51	0.26	0.00	0.28	0.00	
ROSCI0324	Muntii Bihor	11.72	0.32	0.00	2.29	0.00	
ROSCI0335	Padurea Dobrina - Husi	0.23	0.00	2.51	2.04	0.00	
ROSCI0342	Padurea Targu Mures	35.21	31.14	0.00	0.00	44.71	DA
ROSCI0344	Padurile din Sudul Piemontului Candesti	0.55	0.00	0.00	1.67	0.00	
ROSCI0355	Podisul Lipovei - Poiana Rusca	8.91	0.00	0.00	0.00	2.24	
ROSCI0360	Raul Barlad intre Zorleni si Gura Garbavotulu	1.03	1.79	3.43	0.00	8.69	
ROSCI0370	Raul Mures intre Lipova si Paulis	0.74	1.68	3.51	0.00	3.36	
ROSCI0373	Raul Mures intre Branisca si Ilia	48.05	0.00	0.00	10.38	69.33	DA
ROSCI0374	Raul Negru	0.29	0.00	0.05	0.00	1.59	
ROSCI0376	Raul Olt intre Maruntei si Turnu Magurele	0.72	0.00	1.68	0.00	3.94	
ROSCI0377	Raul Putna	53.86	41.59	0.00	0.00	50.18	DA
ROSCI0382	Raul Tarnava Mare intre Copsa Mica si Mihalt	0.69	0.00	0.36	0.00	0.85	
ROSCI0386	Raul Vedea	2.64	0.00	2.72	0.13	0.00	
ROSCI0407	Zarandul de Vest	1.65	81.99	0.86	1.67	0.05	

By implementing the development scenario (ES / EES) can be affected 162 SCIs and may be also potentially significantly affected another 11 sites (Table no. 4-37), which represents 6.8% of all sites intersected by the proposed projects within this scenario. The 11 sites which may be

significantly affected are: *ROSCI0063 Defileul Jiului, ROSCI0082 Fâneţele seculare Ponoare, ROSCI0101 Larion, ROSCI0147 Padurea de stejar pufos de la Mirăslău, ROSCI0160 Pădurea Icuşeni, ROSCI0170 Pădurea şi mlaştinile eutrofe de la Prejmer, ROSCI0197 Plaja submersă Eforie Nord - Eforie Sud, ROSCI0232 Someşul Mare Superior, ROSCI0284 Cheile Teregovei, ROSCI0368 Râul Mureş între Deda şi Reghin, ROSCI0369 Râul Mureş între Iernuţeni şi Periş.* Reported to the entire network of Sites of Community Importance in Romania, about 42.3% of the sites may be affected by the implementation of this scenario, while for 2.9% there is a high probability to be significantly affected.

In this scenario there is a site for which changes can be produced, with high magnitude in the sensitive areas, also with very high sensitivity, namely *ROSCI0160 Pădurea Icuşeni,* area crossed by the project *Paşcani-Iaşi-Ungheni Express Road.*

Table no. 4-37 The magnitude of changes (expressed as a percentage of an area with a known degree of sensitivity) and the impact on sites of Community importance crossed by the proposed projects through development scenario (ES / EES)

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
ROSCI0005	Balta Albă - Amara - Jirlău - Lacul Sărat Câineni	0.42	0.00	9.31	0.05	0.00	
ROSCI0007	Bazinul Ciucului de Jos	3.28	1.50	0.33	0.00	0.00	
ROSCI0008	Betfia	0.07	0.62	0.00	0.00	7.31	
ROSCI0010	Bistriţa Aurie	30.48	0.37	0.00	0.00	21.50	
ROSCI0012	Braţul Măcin	0.10	2.72	0.40	1.93	0.00	
ROSCI0013	Bucegi	0.38	8.00	0.27	0.00	0.00	
ROSCI0019	Călimani - Gurghiu	0.22	1.14	1.99	0.00	0.00	
ROSCI0020	Câmpia Careiului	2.85	2.51	1.13	0.00	0.00	
ROSCI0021	Câmpia Ierului	5.95	0.89	0.88	0.00	0.00	
ROSCI0022	Canaralele Dunării	0.00	0.00	0.00	0.57	0.00	
ROSCI0025	Cefa	2.63	0.00	3.67	1.09	0.00	
ROSCI0030	Cheile Lăpuşului	4.58	0.00	0.48	6.87	0.00	
ROSCI0037	Ciomad - Balvanyos	0.00	0.03	0.00	0.00	0.71	
ROSCI0039	Ciuperceni - Desa	0.32	0.16	1.49	0.00	0.00	
ROSCI0043	Comana	5.73	2.07	3.59	0.00	0.00	
ROSCI0044	Corabia - Turnu Măgurele	0.00	0.00	0.00	4.21	0.00	
ROSCI0045	Coridorul Jiului	0.07	0.94	3.32	0.00	0.00	
ROSCI0046	Cozia	0.25	0.72	2.27	7.02	0.00	
ROSCI0049	Crişul Negru	1.09	0.55	0.00	0.00	1.07	
ROSCI0050	Crişul Repede amonte de Oradea	0.00	0.09	0.00	0.00	0.31	
ROSCI0051	Cuşma	0.58	0.29	0.77	0.29	0.00	
ROSCI0054	Dealul Cetăţii Deva	24.39	0.00	0.00	0.00	0.00	
ROSCI0058	Dealul lui Dumnezeu	8.11	0.00	0.00	4.02	8.71	
ROSCI0059	Dealul Perchiu	39.74	13.30	0.00	6.83	0.00	
ROSCI0062	Defileul Crişului Repede - Pădurea Craiului	0.09	0.08	0.08	1.19	0.00	
ROSCI0063	Defileul Jiului	2.56	2.20	4.81	42.15	0.00	Da
ROSCI0064	Defileul Mureşului	3.62	7.81	8.54	0.04	0.00	
ROSCI0065	Delta Dunării	0.01	0.02	0.07	0.00	0.00	
ROSCI0066	Delta Dunării - zona marină	0.00	0.00	0.00	0.00	0.00	
ROSCI0067	Deniz Tepe	0.00	0.00	0.00	0.00	0.00	
ROSCI0069	Domogled - Valea	0.01	0.16	0.00	1.02	0.00	

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
	Cernei						
ROSCI0070	Drocea	0.04	0.00	0.05	0.00	0.15	
ROSCI0072	Dunele de nisip de la Hanul Conachi	0.00	0.00	0.00	0.81	0.00	
ROSCI0076	Dealul Mare - Hârlău	0.00	0.00	0.07	0.02	0.00	
ROSCI0082	Fâneţele seculare Ponoare	23.46	0.00	0.00	0.00	72.97	Da
ROSCI0085	Frumoasa	0.04	0.30	0.77	0.00	0.00	
ROSCI0087	Grădiştea Muncelului - Ciclovina	1.35	1.32	0.83	0.19	0.00	
ROSCI0088	Gura Vedei - Şaica - Slobozia	0.00	0.00	0.00	8.30	0.00	
ROSCI0094	Izvoarele sulfuroase submarine de la Mangalia	0.00	0.00	0.00	3.81	0.00	
ROSCI0098	Lacul Peţea	20.07	5.73	0.00	0.00	0.00	
ROSCI0101	Larion	4.75	0.00	3.14	1.18	42.46	Da
ROSCI0103	Lunca Buzăului	0.99	8.71	4.84	0.00	4.32	
ROSCI0105	Lunca Joasă a Prutului	0.00	1.56	0.35	0.00	0.00	
ROSCI0106	Lunca Mijlocie a Argeşului	1.90	0.00	0.00	0.00	0.82	
ROSCI0109	Lunca Timişului	0.26	0.72	0.90	0.97	0.00	
ROSCI0113	Mlaştina după Luncă	0.80	0.24	7.95	0.15	0.00	
ROSCI0114	Mlaştina Hergheliei - Obanul Mare şi Peştera Movil	60.07	0.00	13.31	5.84	0.00	
ROSCI0117	Movila lui Burcel	0.00	0.00	0.22	0.00	4.77	
ROSCI0122	Munţii Făgăraş	0.02	0.02	0.60	0.00	0.00	
ROSCI0123	Munţii Măcinului	0.00	0.05	0.00	0.00	0.00	
ROSCI0124	Munţii Maramureşului	0.07	0.83	0.16	0.00	0.00	
ROSCI0125	Munţii Rodnei	0.03	0.18	1.13	0.00	0.00	
ROSCI0129	Nordul Gorjului de Vest	0.01	0.00	0.00	0.00	0.00	
ROSCI0130	Oituz - Ojdula	0.14	2.28	8.62	0.75	0.00	
ROSCI0131	Olteniţa - Mostiştea - Chiciu	0.09	0.03	0.00	0.00	3.56	
ROSCI0132	Oltul Mijlociu - Cibin - Hârtibaciu	2.86	3.11	7.84	2.27	17.52	
ROSCI0135	Pădurea Bârnova - Repedea	0.24	0.99	0.00	0.00	10.62	
ROSCI0137	Pădurea Bogăţii	0.32	1.72	0.01	19.75	0.00	
ROSCI0138	Pădurea Bolintin	0.75	0.00	0.00	0.00	0.00	
ROSCI0147	Padurea de stejar pufos de la Mirăslău	0.90	0.00	0.00	0.00	54.06	Da
ROSCI0157	Pădurea Hagieni - Cotul Văii	0.04	0.36	1.03	0.00	0.00	
ROSCI0158	Pădurea Bălteni - Hârboanca	32.00	0.00	0.00	0.00	8.22	
ROSCI0160	Pădurea Icuşeni	1.71	0.00	0.00	0.00	91.95	Da
ROSCI0162	Lunca Siretului Inferior	0.54	5.35	0.27	0.00	1.08	
ROSCI0168	Pădurea Sarului	0.07	0.00	0.00	0.00	1.66	
ROSCI0170	Pădurea şi mlaştinile eutrofe de la Prejmer	3.10	2.91	13.87	48.46	0.00	Da
ROSCI0173	Pădurea Stârmina	2.03	2.22	5.47	11.08	0.00	
ROSCI0174	Pădurea Studiniţa	0.03	0.00	0.00	12.70	0.00	
ROSCI0186	Pădurile de Stejar Pufos de pe Târnava Mare	0.00	0.00	0.00	0.00	0.11	
ROSCI0191	Peştera Limanu	98.90	0.00	0.00	0.00	0.00	
ROSCI0192	Peştera Măgurici	10.05	0.00	0.00	16.80	0.00	
ROSCI0194	Piatra Craiului	0.03	2.11	1.72	1.55	0.00	

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
ROSCI0195	Piatra Mare	0.41	3.82	9.24	0.00	0.00	
ROSCI0197	Plaja submersă Eforie Nord - Eforie Sud	0.01	0.00	0.00	0.00	40.96	Da
ROSCI0200	Platoul Vaşcău	0.12	0.00	0.16	0.45	0.00	
ROSCI0201	Podişul Nord Dobrogean	0.04	0.46	4.16	0.00	0.00	
ROSCI0202	Silvostepa Olteniei	0.05	0.00	0.00	3.76	0.00	
ROSCI0205	Poienile cu narcise de la Dumbrava Vadului	0.11	0.01	20.96	2.50	0.00	
ROSCI0206	Porţile de Fier	0.10	0.99	3.23	0.00	0.00	
ROSCI0207	Postăvarul	3.08	0.47	2.26	23.33	0.00	
ROSCI0208	Putna - Vrancea	0.45	0.59	5.59	1.02	0.00	
ROSCI0213	Râul Prut	0.01	0.00	0.17	0.00	0.00	
ROSCI0214	Râul Tur	0.68	0.01	3.25	0.00	0.00	
ROSCI0221	Sărăturile din valea Ilenei	6.29	0.00	23.38	0.00	0.00	
ROSCI0224	Scroviştea	0.96	1.58	23.31	0.32	0.00	
ROSCI0226	Semenic - Cheile Caraşului	0.01	0.41	0.00	0.79	0.00	
ROSCI0227	Sighişoara - Târnava Mare	1.98	2.49	5.15	0.00	0.00	
ROSCI0231	Nădab - Socodor - Vărşad	0.03	0.00	0.00	0.10	3.56	
ROSCI0232	Someşul Mare Superior	19.66	0.00	0.47	0.00	58.96	Da
ROSCI0236	Strei - Haţeg	1.83	0.99	4.64	0.00	0.00	
ROSCI0238	Suatu -Cojocna - Crairât	6.78	0.00	0.01	0.00	8.50	
ROSCI0240	Tăşad	7.60	0.00	0.07	2.58	0.00	
ROSCI0245	Tinovul de la Romăneşti	94.25	0.00	0.00	0.00	0.00	
ROSCI0247	Tinovul Mare Poiana Stampei	1.02	9.79	0.44	0.00	0.00	
ROSCI0251	Tisa Superioară	14.99	10.94	0.77	0.00	0.57	
ROSCI0253	Trascău	0.02	0.32	0.44	0.94	0.00	
ROSCI0259	Valea Călmăţuiului	0.22	0.00	0.00	0.81	0.00	
ROSCI0264	Valea Izei şi Dealul Solovan	0.05	0.00	0.01	0.00	0.00	
ROSCI0265	Valea lui David	1.84	3.95	0.00	0.00	6.23	
ROSCI0266	Valea Olteţului	0.13	4.70	0.04	1.23	0.00	
ROSCI0269	Vama Veche - 2 Mai	0.00	0.00	0.00	0.00	2.26	
ROSCI0270	Vânători - Neamţ	0.03	0.61	0.49	3.59	0.00	
ROSCI0275	Bârsău - Şomcuta	0.11	1.62	0.00	0.00	4.35	
ROSCI0277	Becicherecu Mic	6.49	0.00	0.00	18.09	0.00	
ROSCI0279	Borzont	0.45	0.00	0.00	6.36	0.00	
ROSCI0281	Cap Aurora	0.00	0.00	0.00	0.00	0.23	
ROSCI0284	Cheile Teregovei	21.66	0.81	0.00	0.00	62.17	Da
ROSCI0290	Coridorul Ialomiţei	0.90	0.00	1.34	4.93	0.00	
ROSCI0291	Coridorul Munţii Bihorului - Codru Moma	0.76	0.00	0.10	0.00	4.10	
ROSCI0292	Coridorul Rusca Montană - Ţarcu - Retezat	0.04	0.26	0.00	1.51	0.00	
ROSCI0295	Dealurile Clujului Est	0.02	0.04	0.13	0.00	0.31	
ROSCI0296	Dealurile Drăgăşaniului	0.06	0.00	0.00	0.00	0.12	
ROSCI0297	Dealurile Târnavei Mici - Bicheş	3.61	0.05	2.69	4.47	0.06	
ROSCI0299	Dunărea la Gârla Mare – Maglavit	0.64	0.00	0.98	0.00	2.82	

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
ROSCI0303	Hârtibaciu Sud - Est	0.16	0.00	0.17	0.05	0.13	
ROSCI0304	Hârtibaciu Sud - Vest	3.16	1.75	0.55	0.00	3.55	
ROSCI0305	Ianca - Plopu - Sărat - Comăneasca	34.49	0.00	0.00	4.58	4.88	
ROSCI0307	Lacul Sărat - Brăila	0.09	0.00	0.00	7.35	0.00	
ROSCI0310	Lacurile Fălticeni	7.25	0.00	0.00	4.54	21.98	
ROSCI0314	Lozna	1.33	1.13	0.00	0.00	0.93	
ROSCI0320	Mociar	0.13	0.00	0.00	0.00	0.21	
ROSCI0321	Moldova Superioară	34.45	0.00	8.48	0.00	0.00	
ROSCI0323	Muntii Ciucului	1.69	0.02	0.60	0.21	0.00	
ROSCI0324	Munţii Bihor	0.27	0.04	0.00	0.00	1.31	
ROSCI0328	Obcinele Bucovinei	0.22	0.83	0.50	0.00	0.00	
ROSCI0329	Oltul Superior	18.37	0.04	0.00	0.91	21.60	
ROSCI0330	Oseşti - Bârzeşti	4.47	0.00	0.00	3.34	8.11	
ROSCI0341	Pădurea şi Lacul Stolnici	1.80	13.14	2.36	0.00	16.46	
ROSCI0344	Pădurile din Sudul Piemontului Cândeşti	0.83	0.12	0.00	6.80	0.00	
ROSCI0352	Perşani	12.46	0.00	0.00	0.14	3.65	
ROSCI0354	Platforma Cotmeana	0.16	0.06	0.00	0.85	0.00	
ROSCI0355	Podişul Lipovei - Poiana Ruscă	0.04	0.00	0.00	0.00	0.00	
ROSCI0358	Pricop - Huta - Certeze	2.73	4.75	2.15	4.18	12.23	
ROSCI0360	Râul Bârlad între Zorleni şi Gura Gârbăvoţului	0.75	1.83	19.22	0.00	5.97	
ROSCI0362	Râul Gilort	17.90	0.00	0.00	0.00	5.44	
ROSCI0363	Râul Moldova între Oniceni şi Miteşti	1.71	0.71	0.68	2.58	1.30	
ROSCI0364	Râul Moldova între Tupilaţi şi Roman	0.23	0.00	2.50	0.40	0.00	
ROSCI0365	Râul Moldova între Păltinoasa şi Ruşi	2.32	0.00	0.00	2.49	3.22	
ROSCI0366	Râul Motru	13.63	0.00	1.68	0.10	6.68	
ROSCI0367	Râul Mureş între Moreşti şi Ogra	10.45	10.81	0.22	0.00	2.27	
ROSCI0368	Râul Mureş între Deda şi Reghin	32.85	0.00	0.00	0.00	30.88	Da
ROSCI0369	Râul Mureş între Iernuţeni şi Periş	19.46	0.00	38.08	0.00	32.33	Da
ROSCI0370	Râul Mureş între Lipova şi Păuliş	13.81	0.00	11.54	1.06	12.89	
ROSCI0373	Râul Mureş între Brănişca şi Ilia	2.78	0.00	0.00	5.02	3.94	
ROSCI0374	Râul Negru	0.29	0.00	0.00	0.12	0.22	
ROSCI0376	Râul Olt între Mărunţei şi Turnu Măgurele	0.13	0.00	0.00	3.86	2.16	
ROSCI0377	Râul Putna	14.48	0.00	15.94	0.00	18.33	
ROSCI0378	Râul Siret între Paşcani şi Roman	0.15	0.00	2.65	0.00	0.26	
ROSCI0379	Râul Suceava	1.20	0.00	6.03	0.29	0.00	
ROSCI0380	Râul Suceava Liteni	6.29	0.00	10.37	9.99	5.64	
ROSCI0382	Râul Târnava Mare între Copşa Mică şi Mihalţ	8.74	0.21	12.71	0.00	23.29	
ROSCI0383	Râul Târnava Mare între Odorheiu Secuiesc şi Vânăt	3.12	0.00	18.53	1.20	1.30	
ROSCI0384	Râul Târnava Mică	2.30	0.00	1.42	0.00	2.24	
ROSCI0385	Râul Timis între Rusca şi Prisaca	10.78	0.00	8.46	0.00	4.16	
ROSCI0386	Râul Vedea	11.39	0.01	1.31	4.61	0.00	

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
ROSCI0393	Someşul Mare	27.39	6.07	11.08	0.00	16.06	
ROSCI0394	Someşul Mic	0.34	0.00	0.00	0.00	6.15	
ROSCI0400	Şieu - Budac	3.49	1.41	0.00	0.00	6.57	
ROSCI0402	Valea din Sânandrei	87.46	0.00	0.00	0.00	0.00	
ROSCI0403	Vânju Mare	3.95	0.00	0.00	0.00	12.28	
ROSCI0406	Zarandul de Est	0.02	0.06	0.00	0.00	0.00	
ROSCI0407	Zarandul de Vest	4.50	0.02	0.18	0.36	3.80	

By implementing scenario "CTT" may be affected 107 SCIs and may be significantly affect another 7 sites (Table no. 4-37), ie *ROSCI0082 Fâneţele seculare Ponoare, ROSCI0101 Larion, ROSCI0147 Padurea de stejar pufos de la Mirăslău, ROSCI0160 Pădurea Icuşeni, ROSCI0232 Someşul Mare Superior, ROSCI0284 Cheile Teregovei* and *ROSCI0368 Râul Mureş între Deda şi Reghin*, which represents 6.54% of all sites intersected by the proposed projects in this scenario. Reported to the entire network of the Sites of Community Importance in Romania, about 27.9% of the sites may be affected by the implementation of this scenario, while for 1.8% there is a high probability to be significantly affected.

Table no. 4-38 The magnitude of changes (expressed as a percentage of an area with a known degree of sensitivity) and the impact on sites of Community importance crossed by the proposed projects through the scenario "CTT"

CTT Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
ROSCI0005	Balta Albă - Amara - Jirlău - Lacul Sărat Câineni	0.42	0.00	9.31	0.05	0.00	
ROSCI0010	Bistriţa Aurie	1.50	0.11	0.00	0.00	4.65	
ROSCI0013	Bucegi	0.18	3.85	0.15	0.00	0.00	
ROSCI0019	Călimani - Gurghiu	0.22	1.14	2.00	0.00	0.00	
ROSCI0020	Câmpia Careiului	2.85	2.51	1.13	0.00	0.00	
ROSCI0021	Câmpia Ierului	3.73	0.66	0.54	0.00	0.00	
ROSCI0025	Cefa	2.39	0.00	3.06	1.09	0.00	
ROSCI0039	Ciuperceni - Desa	0.32	0.16	1.49	0.00	0.00	
ROSCI0040	Coasta Lunii	16.93	0.00	0.00	15.34	0.22	
ROSCI0043	Comana	4.29	1.78	3.34	0.00	0.00	
ROSCI0044	Corabia - Turnu Măgurele	0.00	0.00	0.00	4.21	0.00	
ROSCI0045	Coridorul Jiului	0.03	0.86	3.01	0.00	0.00	
ROSCI0046	Cozia	0.25	0.72	2.27	7.02	0.00	
ROSCI0049	Crişul Negru	0.76	0.00	0.00	0.00	0.86	
ROSCI0050	Crişul Repede amonte de Oradea	0.00	0.09	0.00	0.00	0.31	
ROSCI0054	Dealul Cetăţii Deva	24.39	0.00	0.00	0.00	0.00	
ROSCI0058	Dealul lui Dumnezeu	8.12	0.00	0.00	4.02	8.75	
ROSCI0062	Defileul Crişului Repede - Pădurea Craiului	0.09	0.08	0.08	1.19	0.00	
ROSCI0063	Defileul Jiului	1.46	1.17	2.37	23.40	0.00	
ROSCI0064	Defileul Mureşului	3.62	7.81	8.54	0.04	0.00	
ROSCI0065	Delta Dunării	0.01	0.02	0.07	0.00	0.00	
ROSCI0066	Delta Dunării - zona marină	0.00	0.00	0.00	0.00	0.00	
ROSCI0069	Domogled - Valea Cernei	0.01	0.16	0.00	1.02	0.00	
ROSCI0070	Drocea	0.04	0.00	0.05	0.00	0.15	
ROSCI0082	Fâneţele seculare Ponoare	23.46	0.00	0.00	0.00	72.97	Da
ROSCI0085	Frumoasa	0.04	0.30	0.77	0.00	0.00	

Appropriate Assessment Study for General Transport Master Plan

CTT Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
ROSCI0087	Grădiştea Muncelului - Ciclovina	0.74	0.79	0.45	0.08	0.00	
ROSCI0088	Gura Vedei - Şaica - Slobozia	0.00	0.00	0.00	8.30	0.00	
ROSCI0101	Larion	4.75	0.00	3.14	1.18	42.46	Da
ROSCI0103	Lunca Buzăului	0.54	1.88	0.55	0.00	1.01	
ROSCI0109	Lunca Timişului	1.00	2.26	4.12	1.06	0.00	
ROSCI0122	Munţii Făgăraş	0.00	0.02	0.59	0.00	0.00	
ROSCI0129	Nordul Gorjului de Vest	0.01	0.00	0.00	0.00	0.00	
ROSCI0131	Olteniţa - Mostiştea - Chiciu	0.09	0.00	0.00	0.00	3.42	
ROSCI0132	Oltul Mijlociu - Cibin - Hârtibaciu	2.52	2.98	7.84	2.27	16.87	
ROSCI0135	Pădurea Bârnova - Repedea	0.13	0.87	0.00	0.00	5.26	
ROSCI0138	Pădurea Bolintin	0.75	0.00	0.00	0.00	0.00	
ROSCI0147	Padurea de stejar pufos de la Mirăslău	0.90	0.00	0.00	0.00	54.06	Da
ROSCI0158	Pădurea Bălteni - Hârboanca	32.00	0.00	0.00	0.00	8.22	
ROSCI0160	Pădurea Icuşeni	1.71	0.00	0.00	0.00	91.95	Da
ROSCI0162	Lunca Siretului Inferior	0.24	2.77	0.00	0.00	0.73	
ROSCI0192	Peştera Măgurici	10.05	0.00	0.00	16.80	0.00	
ROSCI0195	Piatra Mare	0.41	3.82	9.24	0.00	0.00	
ROSCI0202	Silvostepa Olteniei	0.15	0.00	0.01	5.84	0.00	
ROSCI0206	Porţile de Fier	0.10	0.99	3.24	0.00	0.00	
ROSCI0207	Postăvarul	3.08	0.47	2.26	23.33	0.00	
ROSCI0213	Râul Prut	0.01	0.00	0.17	0.00	0.00	
ROSCI0221	Sărăturile din valea Ilenei	6.32	0.00	23.55	0.00	0.00	
ROSCI0224	Scroviştea	0.96	1.58	23.31	0.32	0.00	
ROSCI0226	Semenic - Cheile Caraşului	0.01	0.41	0.00	0.79	0.00	
ROSCI0227	Sighişoara - Târnava Mare	0.47	0.91	2.44	0.00	0.00	
ROSCI0231	Nădab - Socodor - Vărşad	0.02	0.00	0.00	0.07	2.11	
ROSCI0232	Someşul Mare Superior	19.66	0.00	0.47	0.00	58.96	Da
ROSCI0236	Strei - Haţeg	1.18	0.87	3.24	0.00	0.00	
ROSCI0238	Suatu -Cojocna - Crairât	6.78	0.00	0.01	0.00	8.50	
ROSCI0245	Tinovul de la Romăneşti	94.25	0.00	0.00	0.00	0.00	
ROSCI0253	Trascău	0.02	0.32	0.44	0.94	0.00	
ROSCI0259	Valea Călmăţuiului	0.22	0.00	0.00	0.81	0.00	
ROSCI0265	Valea lui David	1.87	4.02	0.00	0.00	6.27	
ROSCI0266	Valea Olteţului	0.07	4.38	0.04	0.58	0.00	
ROSCI0270	Vânători - Neamţ	0.03	0.61	0.49	3.62	0.00	
ROSCI0275	Bârsău - Şomcuta	0.11	1.62	0.00	0.00	4.35	
ROSCI0277	Becicherecu Mic	6.49	0.00	0.00	18.09	0.00	
ROSCI0279	Borzont	0.45	0.00	0.00	6.58	0.00	
ROSCI0284	Cheile Teregovei	21.66	0.81	0.00	0.00	62.17	Da
ROSCI0290	Coridorul Ialomiţei	0.25	0.00	0.35	2.93	0.00	
ROSCI0292	Coridorul Rusca Montană - Ţarcu - Retezat	0.04	0.26	0.00	1.51	0.00	
ROSCI0295	Dealurile Clujului Est	0.01	0.03	0.09	0.00	0.11	
ROSCI0297	Dealurile Târnavei Mici - Bicheş	3.63	0.05	2.71	4.50	0.07	
ROSCI0299	Dunărea la Gârla Mare – Maglavit	0.49	0.00	1.33	0.00	2.90	
ROSCI0303	Hârtibaciu Sud - Est	0.05	0.00	0.07	0.02	0.01	
ROSCI0304	Hârtibaciu Sud - Vest	2.21	1.21	0.54	0.00	2.11	
ROSCI0305	Ianca - Plopu - Sărat - Comăneasca	2.75	0.00	0.00	2.60	0.51	
ROSCI0310	Lacurile Fălticeni	7.27	0.00	0.00	4.56	22.08	
ROSCI0314	Lozna	1.33	1.13	0.00	0.00	0.93	
ROSCI0320	Mociar	0.13	0.00	0.00	0.00	0.21	
ROSCI0321	Moldova Superioară	17.12	0.00	4.33	0.00	0.00	
ROSCI0328	Obcinele Bucovinei	0.11	0.52	0.30	0.00	0.00	

CTT Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate sensitivity**	**High sensitivity**	**Very high sensitivity**	**High probability of significant damage of the protected area/site**
ROSCI0329	Oltul Superior	10.31	0.04	0.00	0.71	18.32	
ROSCI0330	Oseşti - Bârzeşti	4.47	0.00	0.00	3.34	8.11	
ROSCI0341	Pădurea şi Lacul Stolnici	1.80	13.14	2.36	0.00	16.46	
ROSCI0355	Podişul Lipovei - Poiana Ruscă	0.04	0.00	0.00	0.00	0.00	
ROSCI0360	Râul Bârlad între Zorleni şi Gura Gârbăvoţului	0.38	0.82	6.64	0.00	2.53	
ROSCI0363	Râul Moldova între Oniceni şi Miteşti	1.74	0.71	0.69	2.63	1.33	
ROSCI0364	Râul Moldova între Tupilaţi şi Roman	0.23	0.00	2.50	0.40	0.00	
ROSCI0365	Râul Moldova între Păltinoasa şi Ruşi	2.32	0.00	0.00	2.53	3.23	
ROSCI0366	Râul Motru	13.69	0.00	1.68	0.10	6.72	
ROSCI0367	Râul Mureş între Moreşti şi Ogra	10.50	10.81	0.22	0.00	2.27	
ROSCI0368	Râul Mureş între Deda şi Reghin	32.85	0.00	0.00	0.00	30.88	Da
ROSCI0369	Râul Mureş între Iernuţeni şi Periş	14.24	0.00	28.95	0.00	21.58	
ROSCI0370	Râul Mureş între Lipova şi Păuliş	13.81	0.00	11.54	1.06	12.89	
ROSCI0373	Râul Mureş între Brănişca şi Ilia	2.78	0.00	0.00	5.02	3.94	
ROSCI0376	Râul Olt între Mărunţei şi Turnu Măgurele	0.13	0.00	0.00	3.87	2.16	
ROSCI0378	Râul Siret între Paşcani şi Roman	0.15	0.00	2.66	0.00	0.26	
ROSCI0379	Râul Suceava	1.20	0.00	6.03	0.29	0.00	
ROSCI0380	Râul Suceava Liteni	5.24	0.00	5.99	9.87	4.32	
ROSCI0382	Râul Târnava Mare între Copşa Mică şi Mihalţ	8.74	0.21	12.71	0.00	23.29	
ROSCI0383	Râul Târnava Mare între Odorheiu Secuiesc şi Vânăt	1.88	0.00	12.39	0.61	0.96	
ROSCI0385	Râul Timis între Rusca şi Prisaca	10.78	0.00	8.46	0.00	4.16	
ROSCI0386	Râul Vedea	11.44	0.01	1.32	4.62	0.00	
ROSCI0393	Someşul Mare	22.35	6.07	5.71	0.00	14.01	
ROSCI0394	Someşul Mic	0.34	0.00	0.00	0.00	6.15	
ROSCI0400	Şieu - Budac	1.81	0.00	0.00	0.00	1.58	
ROSCI0402	Valea din Sânandrei	87.46	0.00	0.00	0.00	0.00	
ROSCI0403	Vânju Mare	5.55	0.00	0.00	0.00	13.33	
ROSCI0406	Zarandul de Est	0.02	0.06	0.00	0.00	0.00	
ROSCI0407	Zarandul de Vest	4.50	0.02	0.18	0.36	3.80	

Spatial location of the Sites of Community Importance (SCIs) in which the appearance of a moderate or significant impacts, as a result of changes generated by the proposed projects of "Do minimum" Scenario or the development scenario (ES / EES) and CTT, is shown in Figure no. 4-21, Figure no. 4-22 and Figure no. 4-23 and the lists of these sites and afferent projects that can generate moderate or significant potential impact are presented in Annex VIII.

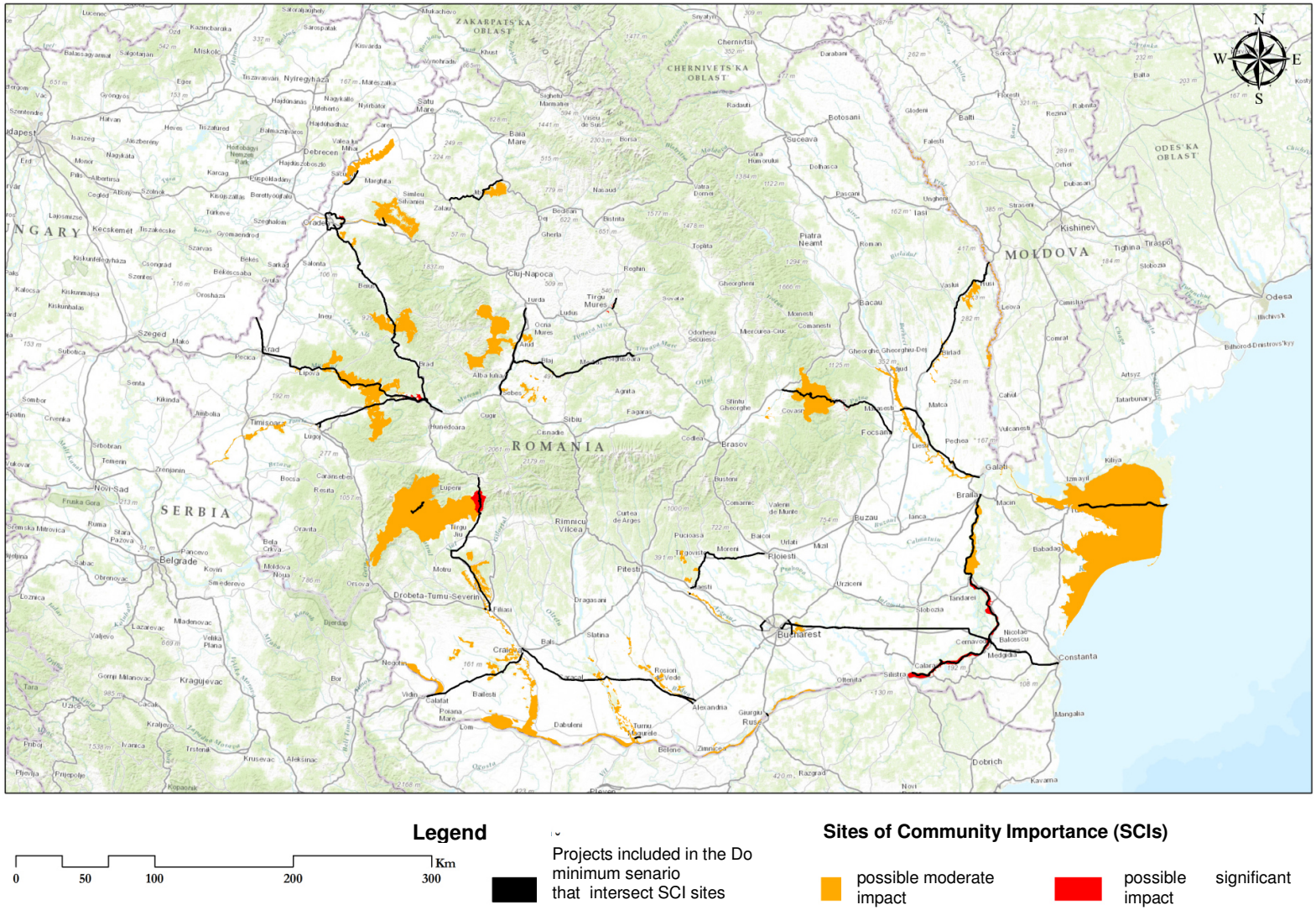


Figure no. 4-21 Sites of Community Importance (SCI) in which the appearance of a moderate impact (orange) or significantly (red) as a result of changes to the projects proposed in Do Minimum scenario

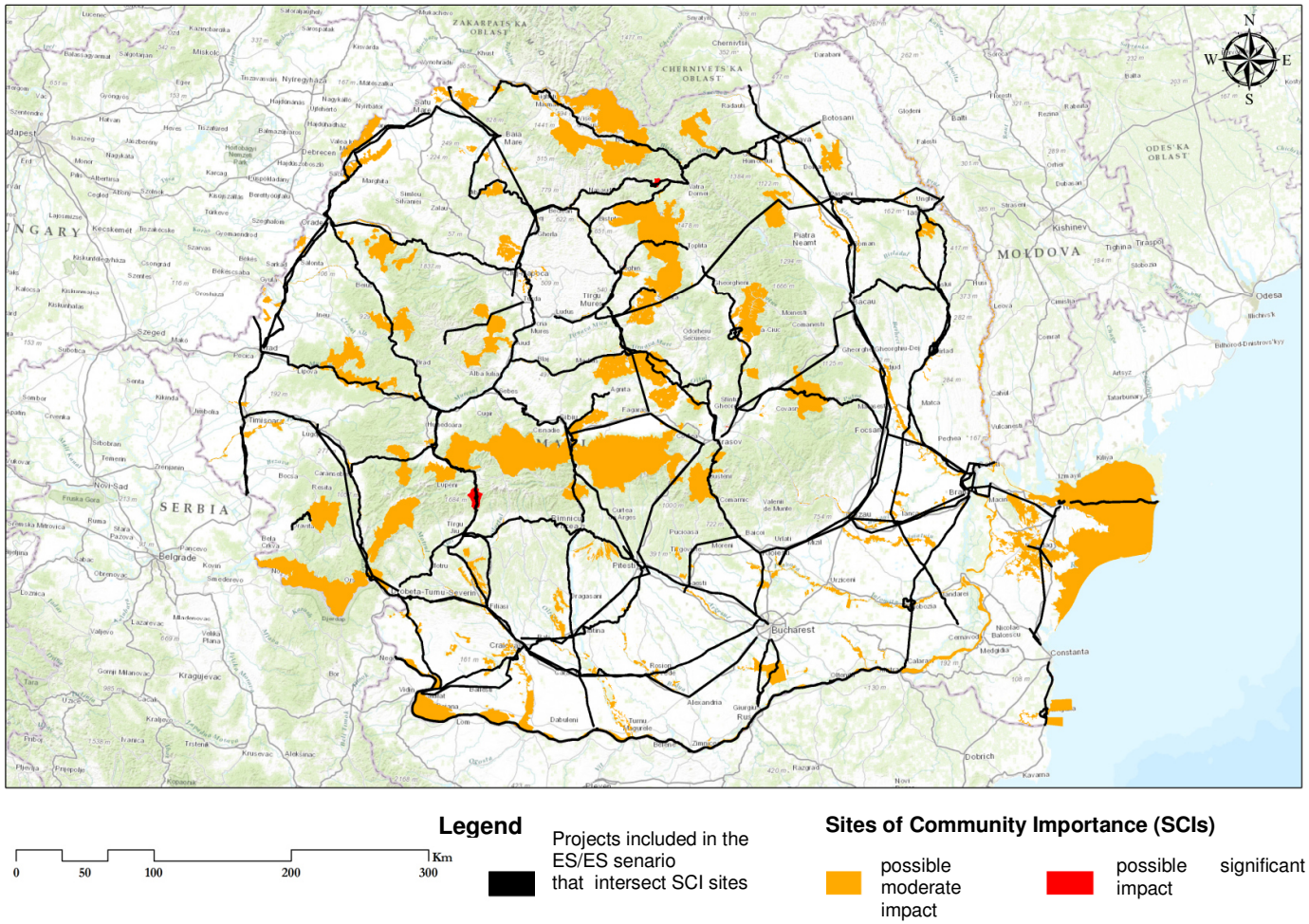


Figure no. 4-22 Sites of Community Importance (SCI) in which the appearance of a moderate impact (orange) or significantly (red) as a result of changes to the projects proposed in development scenario (ES / EES)

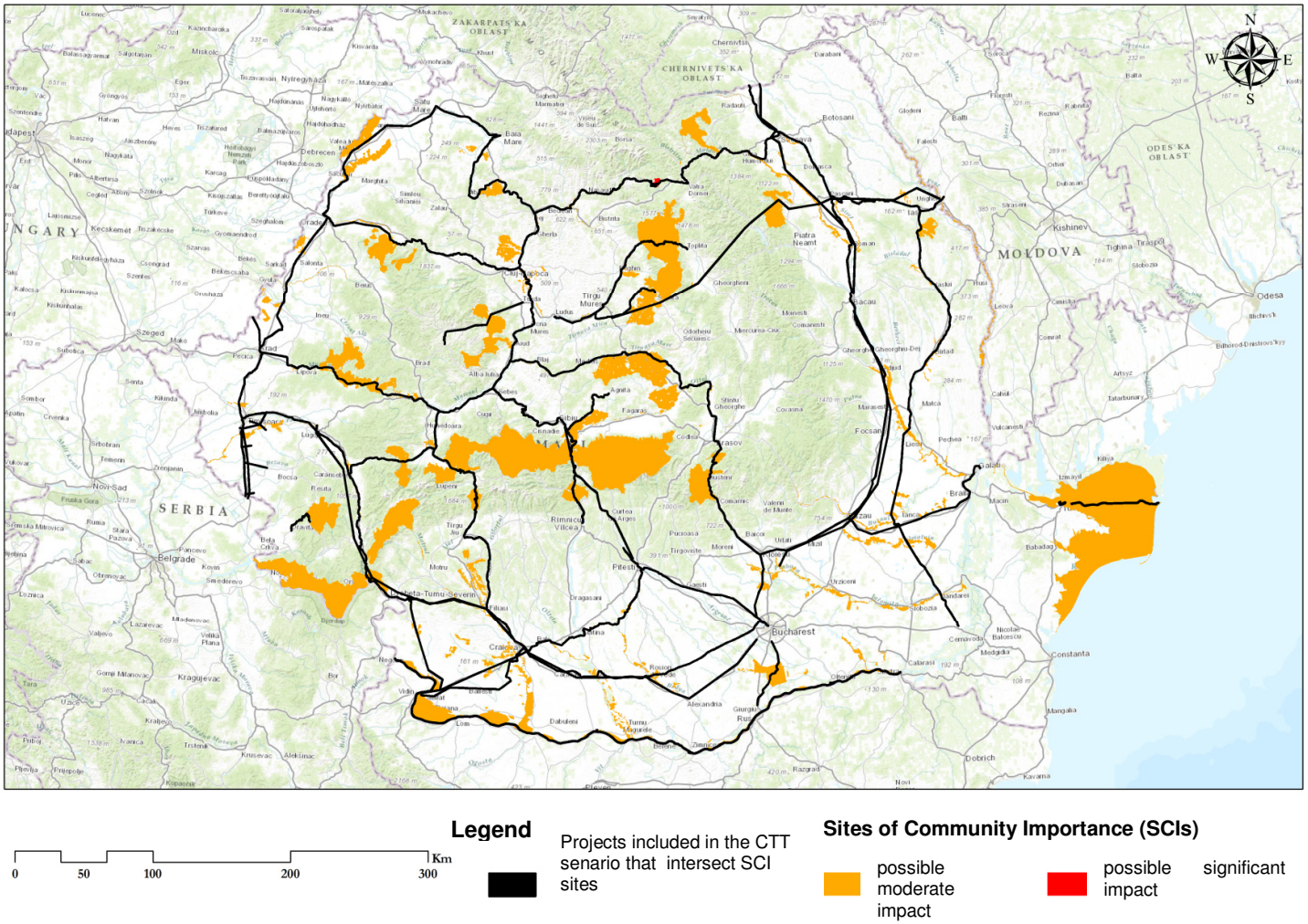


Figure no. 4-23 Sites of Community Importance (SCI) in which the appearance of a moderate impact (orange) or significantly (red) as a result of changes to the projects proposed in CTT scenario

Special Protection Area Network (SPAs)

By implementing "Do Minimum" Scenario, 25 special protection areas (SPAs) may be affected and another 2 sites is likely to be significantly affected, respectively *ROSPA0122 Lacul si Pădurea Cernica* and *ROSPA137 Pădurea Radomir*, representing 8% of the total of the sites crossed by the proposed projects in this scenario. Projects that have the potential to significantly affect the 2 sites mentioned above are: Modernization of the of Bucharest bypass road between A1 - DN7 and DN2 - A2002 and Rehabilitation of Bucharest-Constanta CF, in case of the first site, respectively Rehabilitation of DN 6 Alexandria Craiova, for the second site. Reported to the entire network of Special Protection Area in Romania, about 17% of the total sites may be affected by the implementation of this scenario, while 1% is highly likely to be significantly affected.

In this scenario there are no cases in which changes occur in areas with very high sensitivity, for the two sites mentioned above, being the possibility of changes in areas of moderate magnitude in the areas with high sensitivity, for both sites, respectively changes of high magnitude in areas with moderate sensitivity, in case of *ROSPA0122 Lacul şi Pădurea Cernica site.*

Table no. 4-39 The magnitude of changes (expressed as a percentage of an area with a known degree of sensitivity) and the impact on bird protection sites crossed by the proposed projects through the scenario "Do Minimum"

Scenario	Do minimum						High probability of significant damage of the protected area/site
Code of the protected area	Name of the protected area	Sensitivity					
		No sensitivity	Low sensitivity	Moderate Sensitivity	High Sensitivity	Very High Sensitivity	
ROSPA0002	Allah Bair - Capidava	0.00	26.25	0.00	0.00	0.00	
ROSPA0005	Balta Mica a Brailei	0.00	0.00	7.53	0.00	0.00	
ROSPA0012	Bratul Borcea	0.00	0.00	0.06	0.00	0.00	
ROSPA0017	Canaralele de la Harsova	0.00	18.39	0.00	0.00	0.00	
ROSPA0023	Confluenta Jiu - Dunare	0.00	0.00	0.03	0.00	0.00	
ROSPA0024	Confluenta Olt - Dunare	0.00	0.07	0.82	0.00	0.00	
ROSPA0029	Defileul Muresului Inferior - Dealurile Lip	0.31	2.23	1.14	0.34	1.40	
ROSPA0031	Delta Dunarii si Complexul Razim - Sinoie	0.00	0.11	0.21	0.01	0.00	
ROSPA0035	Domogled-Valea Cernei	13.02	5.27	0.95	3.12	2.30	
ROSPA0039	Dunare - Ostroave	0.00	0.00	22.78	0.00	0.00	
ROSPA0063	Lacurile de acumulare Buhusi - Bacau - Beres	0.00	0.01	0.00	0.00	0.00	
ROSPA0071	Lunca Siretului Inferior	0.52	0.22	0.91	1.21	0.46	
ROSPA0074	Maglavit	0.00	1.29	2.67	12.28	0.00	
ROSPA0075	Magura Odobesti	7.01	0.00	1.96	3.57	0.99	
ROSPA0084	Muntii Retezat	0.00	0.00	0.03	0.25	0.01	
ROSPA0087	Muntii Trascaului	1.77	0.00	0.68	0.05	0.00	
ROSPA0088	Muntii Vrancei	58.76	58.05	9.03	5.81	0.00	
ROSPA0099	Podisul Hartibaciu	0.00	0.01	0.00	0.00	0.00	
ROSPA0106	Valea Oltului Inferior	0.00	1.91	0.77	0.00	0.00	
ROSPA0114	Cursul Mijlociu al Somesului	47.26	11.56	7.57	0.97	0.00	
ROSPA0122	Lacul si Padurea Cernica	1.13	0.00	73.90	39.75	4.77	DA
ROSPA0123	Lacurile de acumulare de pe Crisul Repede	3.81	16.39	13.65	0.00	7.30	
ROSPA0137	Padurea Radomir	0.00	50.99	0.00	38.41	0.00	DA
ROSPA0139	Piemontul Muntilor Metaliferi si Vintului	0.00	0.00	0.22	0.00	0.00	
ROSPA0141	Subcarpatii Vrancei	0.00	1.38	0.00	0.50	0.00	

By implementing the development scenario (ES / EES), 89 special protection areas may be affected by the proposed projects development and there is a high probability of significantly affecting 5 sites, respectively *ROSPA0030 Defileul Mureşului Superior, ROSPA0048 Ianca - Plopu – Sărat, ROSPA0062 Lacurile de acumulare de pe Argeş, ROSPA0064 Lacurile Fălticeni* şi *ROSPA0067 Lunca Barcaului*. In total, it is possible to be significantly affected approximately 5.6% of the 89 sites intersected by the proposed projects of this scenario.

Reported to the entire network of special protection areas in Romania, about 60.1% of the sites may be affected by the implementation of this scenario, while 3.37% are highly likely to be significantly affected.

Table no. 4-40 The magnitude of changes (expressed as a percentage of an area with a known degree of sensitivity) and the impact on bird protection sites crossed by the proposed projects through development scenario (ES / EES)

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate Sensitivity**	**High Sensitivity**	**Very High Sensitivity**	**High probability of significant damage of the protected area/site**
ROSPA0003	Avrig - Scorei - Făgăraş	0.00	0.01	0.12	0.00	0.00	
ROSPA0004	Balta Albă - Amara - Jirlău	0.00	0.07	0.38	12.19	0.00	
ROSPA0006	Balta Tătaru	0.00	0.00	7.01	0.00	0.00	
ROSPA0011	Blahniţa	0.00	0.90	0.70	0.23	0.00	
ROSPA0013	Calafat - Ciuperceni - Dunăre	0.00	0.00	1.72	0.00	0.00	
ROSPA0015	Câmpia Crişului Alb şi Crişului Negru	0.00	0.17	8.18	0.10	0.00	
ROSPA0016	Câmpia Nirului - Valea Ierului	0.03	2.90	2.19	0.28	0.00	
ROSPA0019	Cheile Dobrogei	0.00	0.00	0.00	0.57	0.00	
ROSPA0021	Ciocăneşti - Dunăre	0.00	0.00	0.99	0.00	0.00	
ROSPA0022	Comana	0.00	2.02	9.94	0.10	0.00	
ROSPA0023	Confluenţa Jiu - Dunăre	0.00	0.01	1.80	0.00	0.00	
ROSPA0024	Confluenţa Olt - Dunăre	0.00	0.00	1.50	0.00	0.00	
ROSPA0025	Cozia - Buila - Vânturariţa	0.00	1.67	0.26	7.55	0.12	
ROSPA0026	Cursul Dunării - Baziaş - Porţile de Fier	0.00	10.17	0.17	0.00	0.00	
ROSPA0027	Dealurile Homoroadelor	0.32	1.45	0.50	0.22	0.00	
ROSPA0028	Dealurile Târnavelor şi Valea Nirajului	0.00	1.00	4.59	7.55	0.00	
ROSPA0029	Defileul Mureşului Inferior - Dealurile Lip	0.06	0.09	3.85	1.71	0.00	
ROSPA0030	Defileul Mureşului Superior	9.31	4.23	0.41	7.51	25.37	Da
ROSPA0031	Delta Dunării şi Complexul Razim - Sinoie	0.00	0.00	0.20	0.01	0.00	
ROSPA0032	Deniz Tepe	0.00	0.02	0.00	15.56	7.52	
ROSPA0033	Depresiunea şi Munţii Giurgeului	0.05	0.00	1.38	2.49	0.00	
ROSPA0034	Depresiunea şi Munţii Ciucului	0.11	0.28	3.06	2.14	0.00	
ROSPA0035	Domogled-Valea Cernei	0.00	0.00	0.01	0.00	0.06	
ROSPA0037	Dumbrăviţa - Rotbav - Măgura Codlei	0.00	0.26	18.33	0.00	0.00	
ROSPA0038	Dunăre - Olteniţa	0.00	0.10	2.49	0.00	0.00	
ROSPA0039	Dunăre - Ostroave	0.00	0.00	0.83	0.00	0.00	
ROSPA0040	Dunărea Veche - Braţul Măcin	0.00	0.47	1.66	0.51	0.00	
ROSPA0041	Eleşteele Iernut - Cipău	0.00	12.73	6.77	0.00	7.40	
ROSPA0043	Frumoasa	0.00	0.00	0.19	0.00	0.63	
ROSPA0045	Grădiştea Muncelului - Cioclovina	0.00	0.12	0.00	2.45	1.18	
ROSPA0047	Hunedoara Timişană	0.00	2.20	0.00	0.00	6.62	

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate Sensitivity**	**High Sensitivity**	**Very High Sensitivity**	**High probability of significant damage of the protected area/site**
ROSPA0048	Ianca - Plopu - Sărat	0.00	0.92	3.04	54.71	0.00	Da
ROSPA0051	Iezer Calarasi	0.00	4.88	0.48	0.01	0.00	
ROSPA0060	Lacul Taşaul	0.00	0.64	0.08	0.67	6.53	
ROSPA0061	Lacul Techirghiol	0.00	0.03	0.00	6.73	0.00	
ROSPA0062	Lacurile de acumulare de pe Argeş	0.00	0.21	51.29	1.07	0.00	Da
ROSPA0063	Lacurile de acumulare Buhuşi - Bacău - Bereş	0.00	0.77	0.00	1.24	22.65	
ROSPA0064	Lacurile Fălticeni	0.55	3.47	0.00	0.24	25.68	Da
ROSPA0065	Lacurile Fundata -Amara	0.00	0.02	0.41	2.38	0.00	
ROSPA0066	Limanu-Herghelia	2.25	0.21	20.99	16.12	4.71	
ROSPA0067	Lunca Barcaului	0.00	2.14	0.44	31.32	0.00	Da
ROSPA0068	Lunca Inferioară a Turului	0.00	0.01	3.98	0.00	0.00	
ROSPA0071	Lunca Siretului Inferior	0.00	2.69	4.47	0.10	2.52	
ROSPA0072	Lunca Siretului Mijlociu	0.00	3.67	8.50	0.63	0.00	
ROSPA0073	Măcin - Niculiţel	0.00	1.09	4.11	0.68	0.00	
ROSPA0074	Maglavit	0.00	1.50	7.16	3.04	0.00	
ROSPA0075	Măgura Odobeşti	0.05	0.00	0.15	0.19	0.81	
ROSPA0076	Marea Neagră	0.00	0.00	0.00	0.21	0.00	
ROSPA0080	Munţii Almăjului - Locvei	0.04	0.29	0.39	3.33	0.00	
ROSPA0082	Munţii Bodoc Baraolt	0.03	0.39	0.80	0.00	0.67	
ROSPA0085	Muntii Rodnei	0.01	0.04	0.15	0.95	0.00	
ROSPA0086	Munţii Semenic - Cheile Caraşului	0.01	0.00	0.01	0.00	0.61	
ROSPA0087	Munţii Trascăului	0.07	0.08	2.20	0.44	1.17	
ROSPA0088	Munţii Vrancei	0.45	0.00	0.38	2.85	3.98	
ROSPA0089	Obcina Feredeului	0.22	0.00	0.00	0.39	0.51	
ROSPA0090	Ostrovu Lung - Gostinu	0.00	0.00	12.58	0.00	0.00	
ROSPA0091	Pădurea Babadag	0.72	0.01	3.07	4.46	0.35	
ROSPA0092	Pădurea Bârnova	0.00	0.11	0.10	5.91	0.16	
ROSPA0093	Pădurea Bogata	0.00	0.29	0.04	21.48	0.00	
ROSPA0096	Pădurea Micleşti	0.00	0.03	0.00	3.67	1.19	
ROSPA0097	Pescăria Cefa - Pădurea Rădvani	0.00	0.43	7.63	0.80	0.00	
ROSPA0098	Piemontul Făgăraş	0.27	0.15	0.61	2.56	0.26	
ROSPA0099	Podisul Hartibaciu	0.00	0.08	4.68	0.40	0.00	
ROSPA0100	Stepa Casimcea	0.00	0.00	0.16	0.49	0.00	
ROSPA0102	Suhaia	0.00	0.00	4.16	0.00	0.00	
ROSPA0103	Valea Alceului	0.00	0.00	4.20	0.13	0.00	
ROSPA0106	Valea Oltului Inferior	0.00	0.29	5.01	0.27	0.00	
ROSPA0107	Vânători - Neamţ	0.00	0.33	0.13	4.35	0.00	
ROSPA0108	Vedea - Dunăre	0.00	0.02	1.58	0.15	0.00	
ROSPA0109	Acumularile Belcesti	0.00	0.00	0.01	0.40	0.00	
ROSPA0110	Acumularile Rogojesti - Bucecea	0.01	0.09	0.56	0.00	0.00	
ROSPA0113	Cânepişti	0.00	1.34	0.13	20.91	0.00	
ROSPA0114	Cursul Mijlociu al Somesului	0.01	1.94	8.20	3.92	0.00	
ROSPA0115	Defileul Crisului Repede-Valea Iadului	0.02	0.52	1.28	2.89	0.00	
ROSPA0116	Dorohoi-Saua Bucecei	0.00	0.00	0.00	1.59	0.00	
ROSPA0117	Drocea - Zarand	0.06	0.00	0.06	0.14	0.00	
ROSPA0119	Horga - Zorleni	0.00	0.27	0.96	0.63	0.05	
ROSPA0121	Lacul Brateş	0.10	0.92	0.00	3.71	3.74	
ROSPA0123	Lacurile de acumulare de pe Crisul Repede	0.00	0.00	0.00	0.00	0.00	

(ES/EES) Development Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate Sensitivity**	**High Sensitivity**	**Very High Sensitivity**	**High probability of significant damage of the protected area/site**
ROSPA0128	Lunca Timisului	0.00	0.00	1.28	0.20	0.00	
ROSPA0129	Masivul Ceahlau	0.05	0.01	0.12	0.12	0.08	
ROSPA0131	Munţii Maramureşului	0.02	0.00	0.30	0.00	0.71	
ROSPA0135	Nisipurile de la Dăbuleni	0.00	2.29	0.00	0.00	0.00	
ROSPA0136	Olteniţa - Ulmeni	0.00	0.00	1.77	0.00	0.00	
ROSPA0140	Scroviştea	0.33	0.62	1.42	24.07	0.00	
ROSPA0143	Tisa Superioară	0.00	4.33	23.81	1.72	0.00	
ROSPA0145	Valea Călmăţuiului	0.01	0.00	0.00	0.93	0.01	
ROSPA0146	Valea Calnistei	0.31	0.00	0.00	0.59	0.00	
ROSPA0148	Vitanesti-Rasmiresti	0.00	0.31	0.50	7.26	0.00	

By implementing scenario "CTT" , 64 special protection areas may be affected by the proposed projects development and there is a high probability of significantly affecting another 2 sites, respectively respectiv *ROSPA0030 Defileul Mureşului Superio*r and *ROSPA0064 Lacurile Fălticeni*. In total, it is possible to significantly be affect approximately 3.1% of the 64 intersected sites by the proposed projects of this scenario. Reported to the entire network of special protection areaa in Romania, about 43.24% of the sites may be affected by the implementation of this scenario, while 1.35% are highly likely to be significantly affected.

Table no. 4-41 The magnitude of changes (expressed as a percentage of an area with a known degree of sensitivity) and the impact on bird protection sites intersected scenario projects proposed by "CTT"

CTT Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate Sensitivity**	**High Sensitivity**	**Very High Sensitivity**	**High probability of significant damage of the protected area/site**
ROSPA0004	Balta Albă - Amara - Jirlău	0.00	0.07	0.38	12.19	0.00	
ROSPA0006	Balta Tătaru	0.00	0.00	6.78	0.00	0.00	
ROSPA0011	Blahniţa	0.00	0.19	0.08	0.03	0.00	
ROSPA0013	Calafat - Ciuperceni - Dunăre	0.00	0.00	1.72	0.00	0.00	
ROSPA0015	Câmpia Crişului Alb şi Crişului Negru	0.00	0.06	4.68	0.10	0.00	
ROSPA0016	Câmpia Nirului - Valea Ierului	0.02	2.63	1.48	0.18	0.00	
ROSPA0021	Ciocăneşti - Dunăre	0.00	0.00	0.99	0.00	0.00	
ROSPA0022	Comana	0.00	1.43	8.42	0.10	0.00	
ROSPA0023	Confluenţa Jiu - Dunăre	0.00	0.07	2.27	0.00	0.00	
ROSPA0024	Confluenţa Olt - Dunăre	0.00	0.00	1.50	0.00	0.00	
ROSPA0025	Cozia - Buila - Vânturariţa	0.00	1.67	0.26	7.55	0.12	
ROSPA0026	Cursul Dunării - Baziaş - Porţile de Fier	0.00	10.18	0.17	0.00	0.00	
ROSPA0027	Dealurile Homoroadelor	0.32	1.45	0.50	0.22	0.00	
ROSPA0028	Dealurile Târnavelor şi Valea Nirajului	0.00	0.59	3.18	4.54	0.00	
ROSPA0029	Defileul Mureşului Inferior - Dealurile Lip	0.06	0.09	3.85	1.71	0.00	
ROSPA0030	Defileul Mureşului Superior	9.31	4.23	0.41	7.51	25.37	Da
ROSPA0031	Delta Dunării şi	0.00	0.00	0.05	0.01	0.00	

CTT Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate Sensitivity**	**High Sensitivity**	**Very High Sensitivity**	**High probability of significant damage of the protected area/site**
	Complexul Razim - Sinoie						
ROSPA0033	Depresiunea şi Munţii Giurgeului	0.02	0.00	0.72	2.14	0.00	
ROSPA0035	Domogled-Valea Cernei	0.00	0.00	0.01	0.00	0.06	
ROSPA0037	Dumbrăviţa - Rotbav - Măgura Codlei	0.00	0.14	13.28	0.00	0.00	
ROSPA0038	Dunăre - Olteniţa	0.00	0.10	2.49	0.00	0.00	
ROSPA0041	Eleşteele Iernut - Cipău	0.00	21.59	9.30	0.00	11.88	
ROSPA0043	Frumoasa	0.00	0.00	0.19	0.00	0.63	
ROSPA0045	Grădiştea Muncelului - Cioclovina	0.00	0.06	0.00	1.31	0.75	
ROSPA0047	Hunedoara Timişană	0.00	2.20	0.00	0.00	6.62	
ROSPA0048	Ianca - Plopu - Sărat	0.00	0.26	1.07	4.20	0.00	
ROSPA0062	Lacurile de acumulare de pe Argeş	0.00	0.20	37.37	1.07	0.00	
ROSPA0063	Lacurile de acumulare Buhuşi - Bacău - Bereş	0.00	0.78	0.00	1.67	18.45	
ROSPA0064	Lacurile Fălticeni	0.55	3.48	0.00	0.24	25.77	Da
ROSPA0067	Lunca Barcaului	0.00	1.05	0.12	22.89	0.00	
ROSPA0071	Lunca Siretului Inferior	0.00	0.80	1.10	0.12	0.35	
ROSPA0072	Lunca Siretului Mijlociu	0.00	3.69	8.55	0.64	0.00	
ROSPA0074	Maglavit	0.00	1.13	7.35	3.50	0.00	
ROSPA0080	Munţii Almăjului - Locvei	0.04	0.29	0.39	3.34	0.00	
ROSPA0082	Munţii Bodoc Baraolt	0.01	0.00	0.03	0.00	0.00	
ROSPA0086	Munţii Semenic - Cheile Caraşului	0.01	0.00	0.01	0.00	0.61	
ROSPA0087	Munţii Trascăului	0.07	0.08	2.20	0.44	1.13	
ROSPA0089	Obcina Feredeului	0.12	0.00	0.00	0.25	0.33	
ROSPA0090	Ostrovu Lung - Gostinu	0.00	0.00	12.58	0.00	0.00	
ROSPA0092	Pădurea Bârnova	0.00	0.02	0.06	0.51	0.07	
ROSPA0097	Pescăria Cefa - Pădurea Rădvani	0.00	0.26	6.03	0.47	0.00	
ROSPA0098	Piemontul Făgăraş	0.03	0.00	0.11	0.05	0.01	
ROSPA0099	Podisul Hartibaciu	0.00	0.05	2.16	0.16	0.00	
ROSPA0102	Suhaia	0.00	0.00	4.16	0.00	0.00	
ROSPA0103	Valea Alceului	0.00	0.00	4.20	0.13	0.00	
ROSPA0106	Valea Oltului Inferior	0.00	0.22	3.04	0.18	0.00	
ROSPA0107	Vânători - Neamţ	0.00	0.33	0.13	4.38	0.00	
ROSPA0108	Vedea - Dunăre	0.00	0.00	1.57	0.00	0.00	
ROSPA0110	Acumularile Rogojesti - Bucecea	0.01	0.09	0.56	0.00	0.00	
ROSPA0113	Cânepişti	0.00	1.34	0.13	20.91	0.00	
ROSPA0114	Cursul Mijlociu al Somesului	0.01	1.94	8.20	3.92	0.00	
ROSPA0115	Defileul Crisului Repede-Valea Iadului	0.02	0.52	1.28	2.89	0.00	
ROSPA0117	Drocea - Zarand	0.06	0.00	0.06	0.14	0.00	
ROSPA0119	Horga - Zorleni	0.00	0.27	0.94	0.63	0.05	
ROSPA0121	Lacul Brateş	0.04	0.04	0.00	0.00	0.32	
ROSPA0123	Lacurile de acumulare de pe Crisul Repede	0.00	0.00	0.00	0.00	0.00	
ROSPA0128	Lunca Timisului	0.06	0.00	6.09	2.02	0.00	
ROSPA0129	Masivul Ceahlau	0.05	0.01	0.12	0.12	0.08	
ROSPA0135	Nisipurile de la Dăbuleni	0.00	2.29	0.00	0.00	0.00	
ROSPA0136	Olteniţa - Ulmeni	0.00	0.00	1.77	0.00	0.00	
ROSPA0140	Scroviştea	0.33	0.62	1.42	24.07	0.00	
ROSPA0145	Valea Călmăţuiului	0.01	0.00	0.00	0.88	0.01	

CTT Scenario							
Code of the protected area	**Name of the protected area**	**No sensitivity**	**Low sensitivity**	**Moderate Sensitivity**	**High Sensitivity**	**Very High Sensitivity**	**High probability of significant damage of the protected area/site**
ROSPA0146	Valea Calnistei	0.32	0.00	0.00	0.59	0.00	
ROSPA0148	Vitanesti-Rasmiresti	0.00	0.31	0.50	7.31	0.00	

Spatial localization of special protection areas (SPAs) sites, for which the appearance of a moderate or significant impact, as a result of changes caused by the proposed projects of “Do minimum” Scenario or development scenario (ES / EES) and CTT, is shown in , Figure no. 4-25 and Figure no. 4-26 and lists of these sites and the projects that can generate moderate or significant potential impact are presented in Annex VIII.

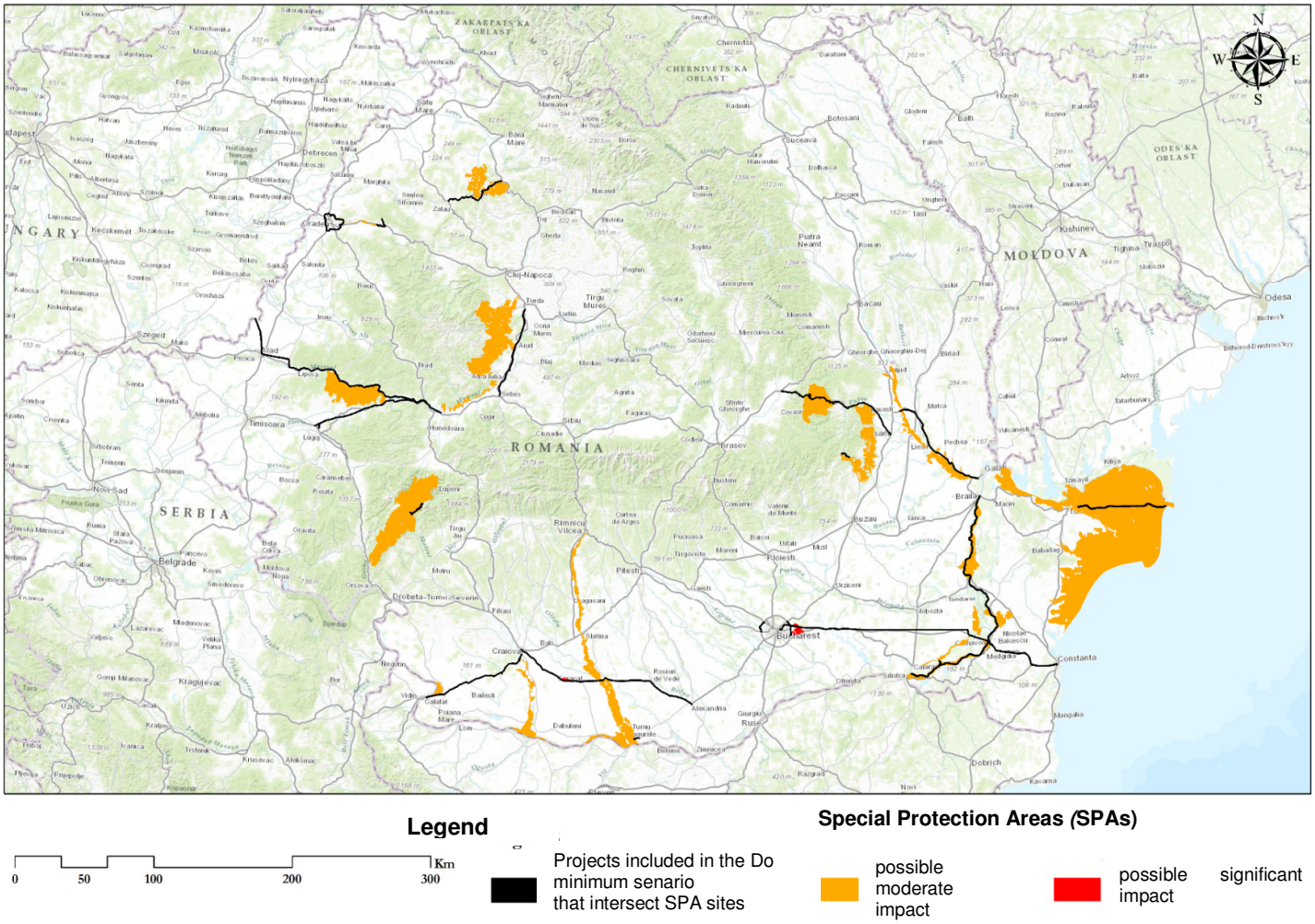


Figure no. 4-24 Special Protection Areas (SPAs) in which the appearance of a moderate impact (orange) or significantly (red) as a result of changes to the projects proposed in Do Minimum scenario

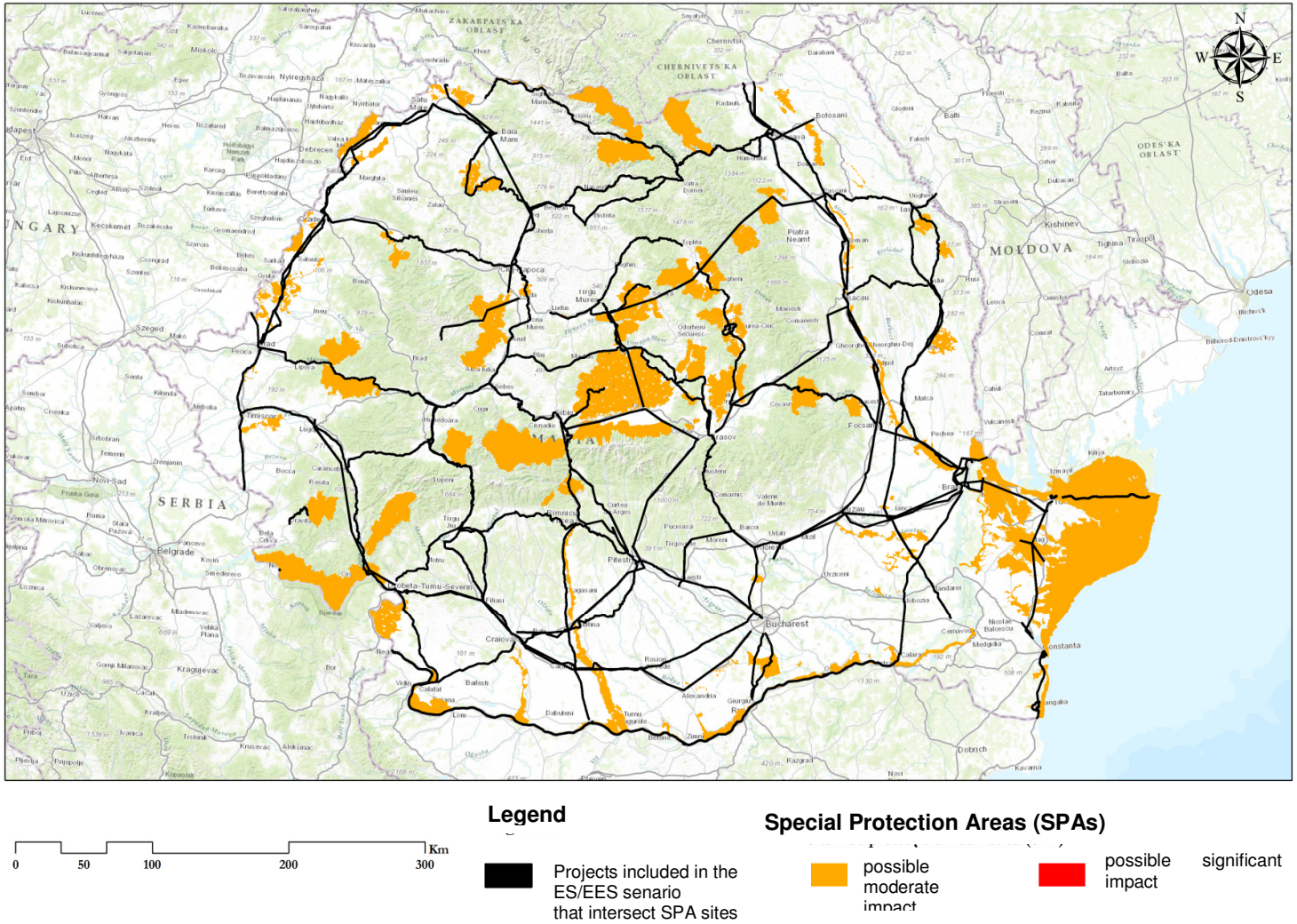


Figure no. 4-25 Special Protection Areas (SPA) in which the appearance of a moderate impact (orange) or significantly (red) as a result of changes to the projects proposed in development scenario (ES / EES)

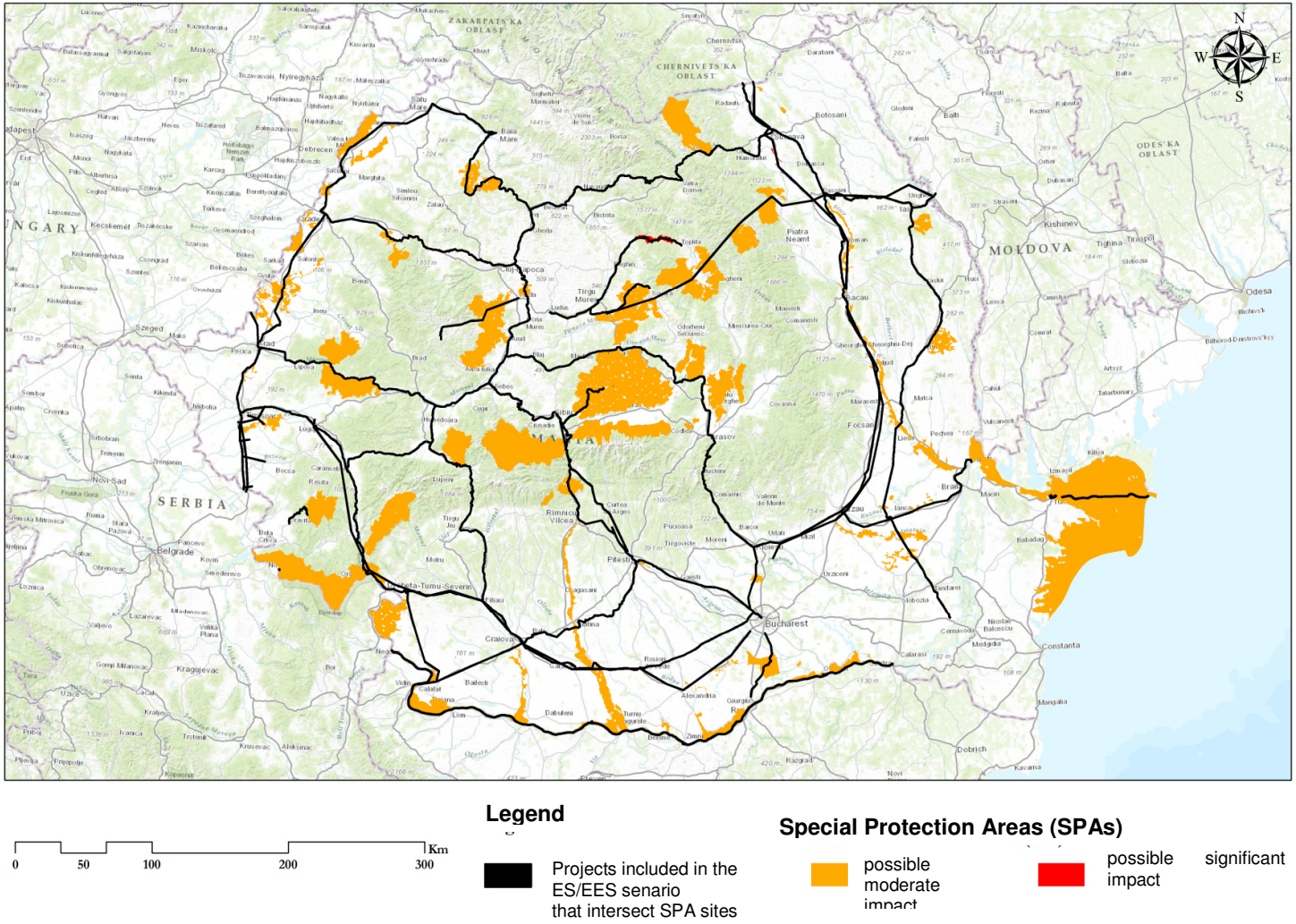


Figure no. 4-26 Special Protection Areas (SPA) in which the appearance of a moderate impact (orange) or significantly (red as a result of changes to the projects proposed in CTT scenario

Most likely the intersection of important areas for migration and / or dispersion of the fauna (natural ecological corridors) can occur in the following cases:

- Projects proposed in the vicinity of a Natura 2000 site (mainly SCI), especially if the route between the project and limit of the protected area is less than 3 km;
- All projects which are intersecting one or more protected areas;
- Projects that intersect many natural habitats.

It is necessary that for the environmental impact assessments and appropriate assessment studies, to be considered also the surfaces outside of protected areas and to be identified (through field investigations and analysis office) the presence of potential natural ecological corridors, throughout species distribution analysis for fauna and seasonal dynamics evaluation / year.

4.4.3 RESIDUAL IMPACT

Reducing the estimated impact can be achieved by implementing the measures proposed in this study (Section 5.1). There are two main approaches:

1. **Avoid sensitive areas.** Avoiding Natura 2000 sites and / or sensitive areas within them. Projects will intersect such territories belonging to lower classes or even of classes with *"no sensitivity",* fact that will generate a reduction of impact significance (from or significant impact to moderate impact or from moderate impact to low impact);
2. **Reduce the magnitude of the changes.** Implement measures to reduce impacts (areas affected by the manifestation of these impacts), which will decrease the magnitude of changes and, hence, the possibility of reducing the impact (similar to the previous approach). For example, installation of sound-absorbing panels in an important nesting area will reduce the area affected by noise from inside the protected area and therefore the significance of the impact of that proposed project.

It is recommended, that for the design stage, to be applied, where appropriate, both approaches to ensure minimizing the risk of significant damage to Natura 2000. For the sites identified in the present study, as most likely to be significantly affected, preliminary implementation of the measures are proposed in order to avoid impact, after that the implementation of mitigation measures beign considered necessary.

5. Measures to avoid and reduce the impact

5.1 Measures to avoid and reduce the impact

GTMP projects will have to follow, in the coming years, successive steps in the planning and design phases, steps which are cosndiered to be necessary for the implementation of the following set of measures in order to prevent and reduce the impact on the Natura 2000 network protected areas. Measures are general and necessary to cover requirements for the entire range of projects proposed by GTMP.

A flowchart of the implementation of the measures for avoidance / mitigation / compensation is shown in Figure no. 5-1, trying to highlight the important role of the avoidance measures and the need to make every effort to limit the adverse effects on the Natura 2000 network sites.

Following, the measures table, presents the main elements of best practices necessary to achieve a good appropriate assesemnt, the only able to provide an accurate assessment of the impacts, as well as of the impacts and the formulation of some effective measures to avoid and reduce the impacts.

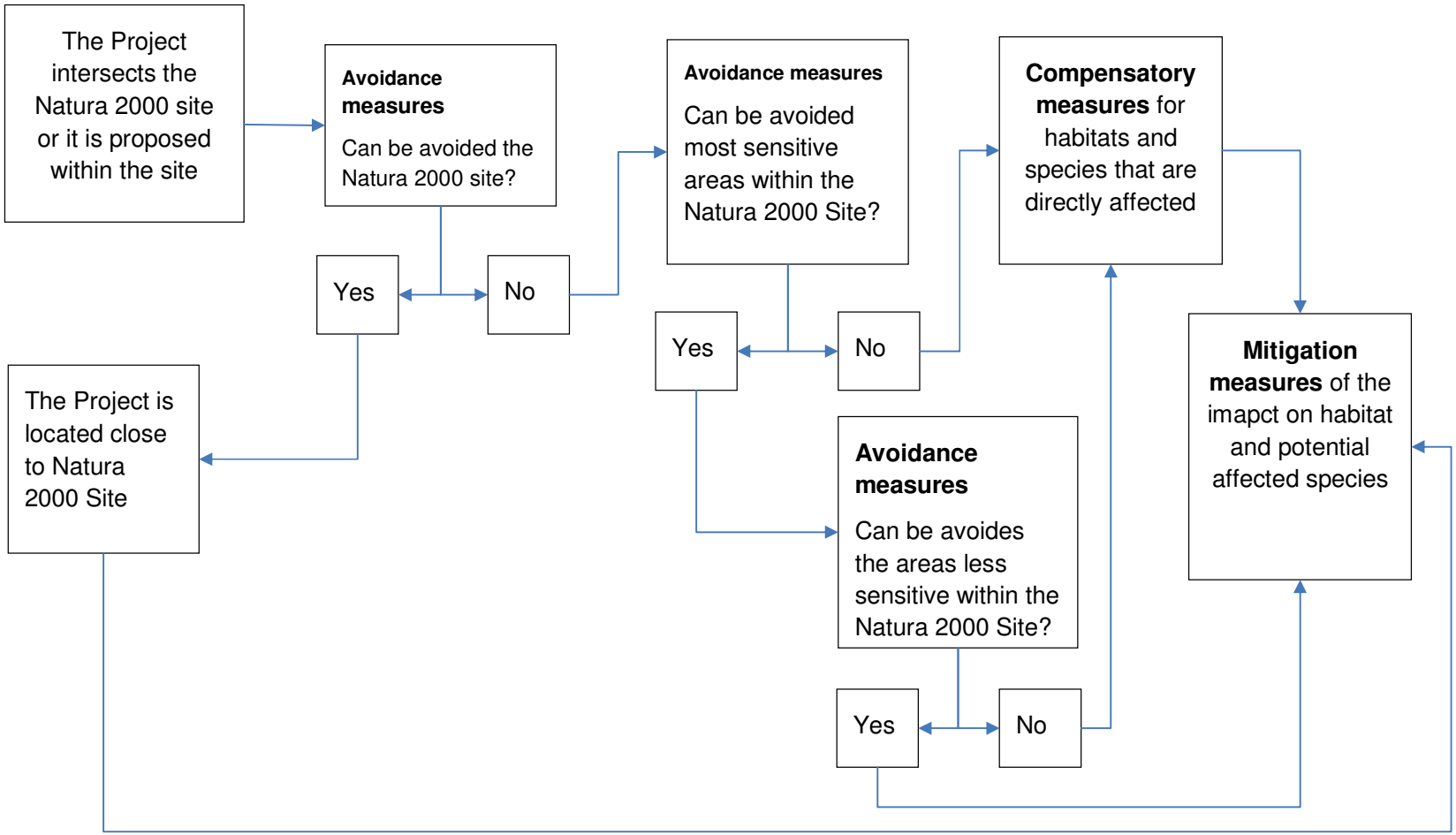


Figure no. 5-1 The flowchart of logic frame for the measures necessary for the protection of Natura 2000 sites (not including potential impacts on the environment other than Natura 2000 sites)

Table no. 5-1 Proposed measures to avoid, reduce and compensation of the impact of GTMP on Natura 2000 sites

Component	Cod measure	Proposed Measure	Estimated results
Planning, design and impact assessment	M1	Strategic environmental assessment, appropriate assessment and environmental impact assessment, should be initiated at the earliest stages of design and continued throughout the project development and implementation, especially for those project proposals which may have an impact on Natura 2000 sites.	Reducing the environmental costs associated transport projects
	M2	Transports projects which intersecting or are located close to borders of Natura 2000 sites should be based on appropriate assesemnt studies, developed rigorous technical and scientific, following best practices (see table below). Assessment of impacts and propose measures for avoidance / mitigation / compensation must be made taking into account the ecological requirements of each species or habitats of Community Importance.	
	M3	In designing the routes and constructive solutions for transport infrastructure, the hierarchy of the options should be as follows: 1. Avoiding impacts on Natura 2000 sites; 2. Reducing impacts; 3. Compensation impacts. Compensatory measures must be the last option because: i) uncertainty of the "recovery" of goods and environmental services lost; ii) the high cost of implementation; iii) the long period of time to producing the expected results.	Avoiding impacts
Loss of habitat	M4	Avoiding intersecting the boundaries of natural protected areas (to take into account also the limitats of other Natura 2000 protected areas).	
	M5	Where it is not possible to avoid intersecting a protected area, should be considered other options to avoid crossing the sensitive areas within the protected areas (mostly Natura 2000 habitats, areas important for reproduction and shelter of the species of community importance, wild areas where human influence is reduced).	Avoid damage to components of conservation interest
	M6	Minimizing the service spaces (parks, fuel stations, accommodation and food areas, etc.) along the proposed road projects in and the immediate vicinity (1 km) sites and avoid their design within the sensitive areas (habitats of Natura 2000, critical areas for protected species).	Reducing the impact on Natura 2000 sites
	M7	Compensation for loss of habitat. The calculation is done both for surfaces compensated for the loss of Natura 2000 habitats and for the loss of favorable habitats areas for the species of interest (areas occupied by these species within Natura 2000 sites). Compensation of these surfaces is achieved through a minimum ratio of 1: 1. The result of compensation should be similar structurally and functionally with the affected habitats. Where this can not be achieved is required to cover losses by	compensation of losses

Component	Cod measure	Proposed Measure	Estimated results
		overcompensation (compensation report should provide the time needed for the new areas / components to reach at the structural and functional leveled of the destroyed areas). Compensation is not just the loss of habitats, but also habitat areas suffering structural or functional changes due to human presence, noise, air pollution or other forms of alteration / disturbance.	
Habitat Alteration	M8	Minimizing the areas affected during construction works within the natural protected areas. It is recommended that the site organization, borrow pits, storage of materials, etc., should not be placed on areas occupied by Natura 2000 habitats and cirtical areas for the protected species.	Reducing the impact on habitats
	M9	All works involving "grassing", "planting", "reforestation", "rehabilitation" or "ecological restoration" will be made only on the basis of ecological restoration plan to prevent the use of alohtone species and installation of invasive species in areas affected temporarily by construction works and subsequently subjected to recovery actions. For each project that can affect one or more Natura 2000 sites have been developed an ecological restoration plan offering point solutions for affected habitats and species in each site.	
	M10	Avoid untreated storm water management (loaded suspensions, oil, salt, etc.) coming from the area of transport infrastructure in water bodies inside or upstream of Natura 2000 sites.	Avoiding impact on aquatic components
	M11	Providing technical solutions in future transport projects to avoid penetration of pollutants into surface water bodies within Natura 2000 sites where water plays an important role in the maintenance of habitats and species of community importance or upstream of this, because the occurrence of accidental pollution (eg accidents followed by leakage of hazardous substances to the environment).	
	M12	Including in the responsibility of the roads administrators of some measures to avoid installation of invasive species and their control over transport infrastructure.	Control of invasive species
Habitat Fragmentation	M13	For all proposed infrastructure projects that will intersect or are close to Natura 2000 sites should be identified feasible technical solutions based on rigorous studies and field investigations, ensuring the highest degree of permeability for wildlife conservation interest. The general principle is that transport infrastructure should not stop connectivityof the green infrastructure. Constructive solutions include: viaducts, tunnels, overpass (ecoducts) or undercrossings for fauna.	Improving transport infrastructure permeability
	M14	For projects related to roads with traffic less than 1000 vehicles per day is not recommended installation of fencing given their low permeability to mammals. For the roads with traffic of over 4,000	

Component	Cod measure	Proposed Measure	Estimated results
		vehicles per day, fences may be necessary to guide the mammals over / under-crossing the proposed structures.	
	M15	By carrying out construction or other interventions on surface water bodies, must be avoided any changes to water flow, to the banks or to the substrate that could significantly affect species of community importance that are strictly dependent on water (mainly fish and amphibians).	Avoiding changes of habitat requirements.
Mortality	M16	For all proposed infrastructure projects that will intersect or will be located close to Natura 2000 sites should be identified feasible technical solutions to limit (preferably excluding) the victims of traffic. These solutions must be linked to the M13 and M14 measures provided, but must also include additional solutions when the species of interest are represented by birds or bats (eg: fences/pannels to help prevent birds in flight ingress in the collision with the means of trasnport).	Reduce the rate of mortality for Species of community importance
	M17	Inclusion in the rehabilitation / expansion projects of existing transport infrastructure, the lengths intersecting protected areas, the necessary solutions to reduce mortality and ensure permeability for fauna species of community importance.	Reducing the current mortality rates for the species of community importance
	M18	For the transport infrastructure (road and rail) where it is not possible to implement constructive solutions to ensure constructive solution (over / under crossings) inside and in the vicinity of Natura 2000 sites, is necessary to consider traffic control measures that may include: limiting travel speeds, installation of warning signs related to fauna presence or possibility of stopping access to certain areas and at certain times to avoid significant effects on populations as a result of high mortality due to collisions.	Reducing mortality rates for the species of community importance
Disturbance of animals activity	M19	The application of technical solutions for noise reduction in the Natura 2000 sites, mainly for critical areas for protected species (areas of shelter, nesting, feeding). These solutions should be implemented for both existing transport infrastructure and for all proposed projects. As a precautionary approach, the value of 40 dB including background noise and the noise that is generated by transport infrastructure must be taken into account, in the critical areas for protected species within protected areas.	Reducing disturbance generated by noise
	M20	Avoid locating landing zones / departure airports (for their expansion projects) in the direction of the SPAs given the large distance where disturbances may occur, due to noise, on bird activity and also the risk of collision.	

Component	Cod measure	Proposed Measure	Estimated results
Monitoring and suplimnetary measures	M21	Implementation of multiannual monitoring programs to assess the residual environmental impact and the success of the measures for avoidance / mitigation / compensation that are implemented.	Controlling impacts generated by the major transport infrastructure on Natura 2000 network
	M22	In case of the rehabilitation projects which can include construction works, both inside and outside of Natura 2000 sites, attention should be given to the presence of species of community importance. If are found bats or birds nesting, measures must be taken to avoid disturbance during the rearing / nesting and to avoid the emergence of somen victims.	Avoiding impacts on species outsidethe Natura 2000 sites

* The critical areas for protected species means: shelter areas, wintering, breeding, feeding, that are found within the habitats with highly favorable degree for species which are subject to Natura 2000 conservation site.

Elements of good practice in appropriate assesment at project level:

1. The appropriate assessment at the project level is developed according to the Order 19/2010, **respecting the smallest details the requirements of this order**. Attention should be paid to the requirements for estimating the size of populations of species of conservation interest and of the areas of each type of habitat, and of density of individuals etc;
2. Appropriate Assessment for the transport projects should be based **on observations, measurements and analysis carried out in the field**. The period of the field observations should be correlated with periods of activity of the interest special of the sites potentially affected [2]/ favorable approval of the custodian of the protected area;
3. Environmental Impact Assessment for the projects will focus primarily on **changes to critical areas of protected areas** (according to the "polluter pays" principle, these areas should be identified by the holder of the plan / project if not indicated in the Management Plans);
4. The appropriate assessment evaluation will consider appropriate and areas outside sites but which are important for species of community importance (feeding areas, migration areas, ecological corridors, etc.);
5. Given the high probability of implementation of compensatory measures is necessary to **achieve quantitative impact assessment not only qualitatively** (quantifying impacts as: number of hectares of "x" habitat lost, number of hectares of "y " habitat temporarily affected, number of individuals of the species" x " that can become victims of trafficking, etc.). To achieve the appreciation of the change conservation status assessments and maintaining populations of species of conservation interest for a long time is necessary to collect relevant data and running models of population viability (keeping the estimate of a population taking into account the mortality rates, restriction / habitat fragmentation, etc.);
6. **Cumulative** environmental impact assessment must be carried out, considering also the existing pressures generated by other plans and programs;
7. Measures to avoid, reduce or compensate the impact should be quantified and spatially localized.

It is preferred that good practices can be applied, both, in the appropriate assesment studies and environmental impact assessments for situations when projects do not cross / borders with Natura 2000 sites, but are proposed to be implemented in mountain areas or areas dominated by semi - natural and natural ecosystems (forests, grasslands).

[2] For example: the period of interest may vary from one month in the case of declared sites for protection of a single species of fauna or flora, a growing season for sites to protect habitats or declared during a whole year for SPA, including both nesting species in the passage and wintering. In all cases have captured all phenological dynamics and spatial (where applicable: fauna) of habitats and species of interest, within a year.

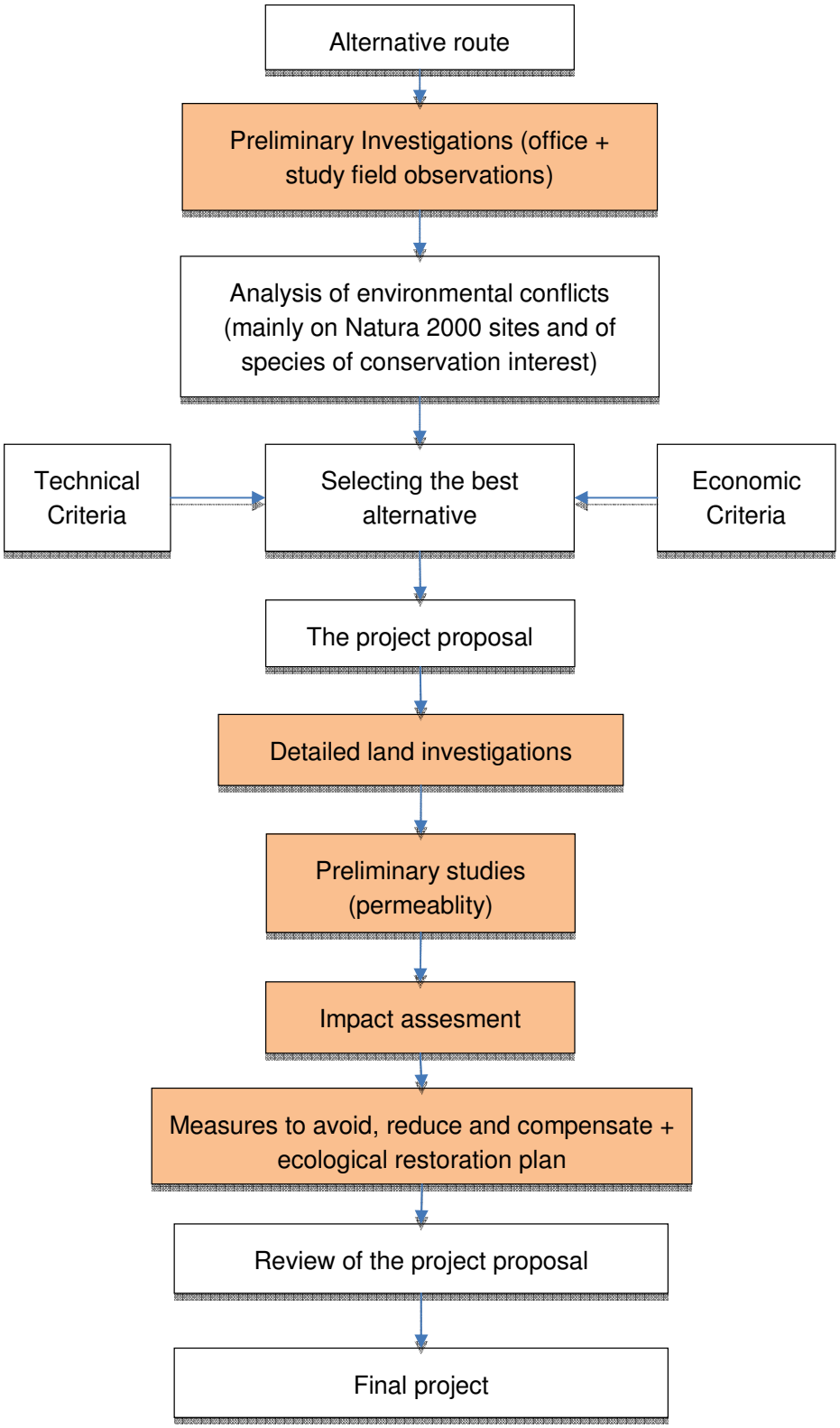


Figure no. 5-2 The steps required in assessing the impact of transport projects which intersects or are located close to Natura 2000 sites (after luell et al., 2003, as amended)

5.2 Monitoring

Implementation of the monitoring program begins with the operation of transport infrastructure. The purpose of the monitoring program should be well established, from the initial phase of the development of the project and during the planning and design phase..

To assess the effectiveness of measures to avoid, reduce and compensate (if any), is required the implementation of the monitoring programs that should identify whether or not the measures fulfill or not the purpose for which they were proposed.

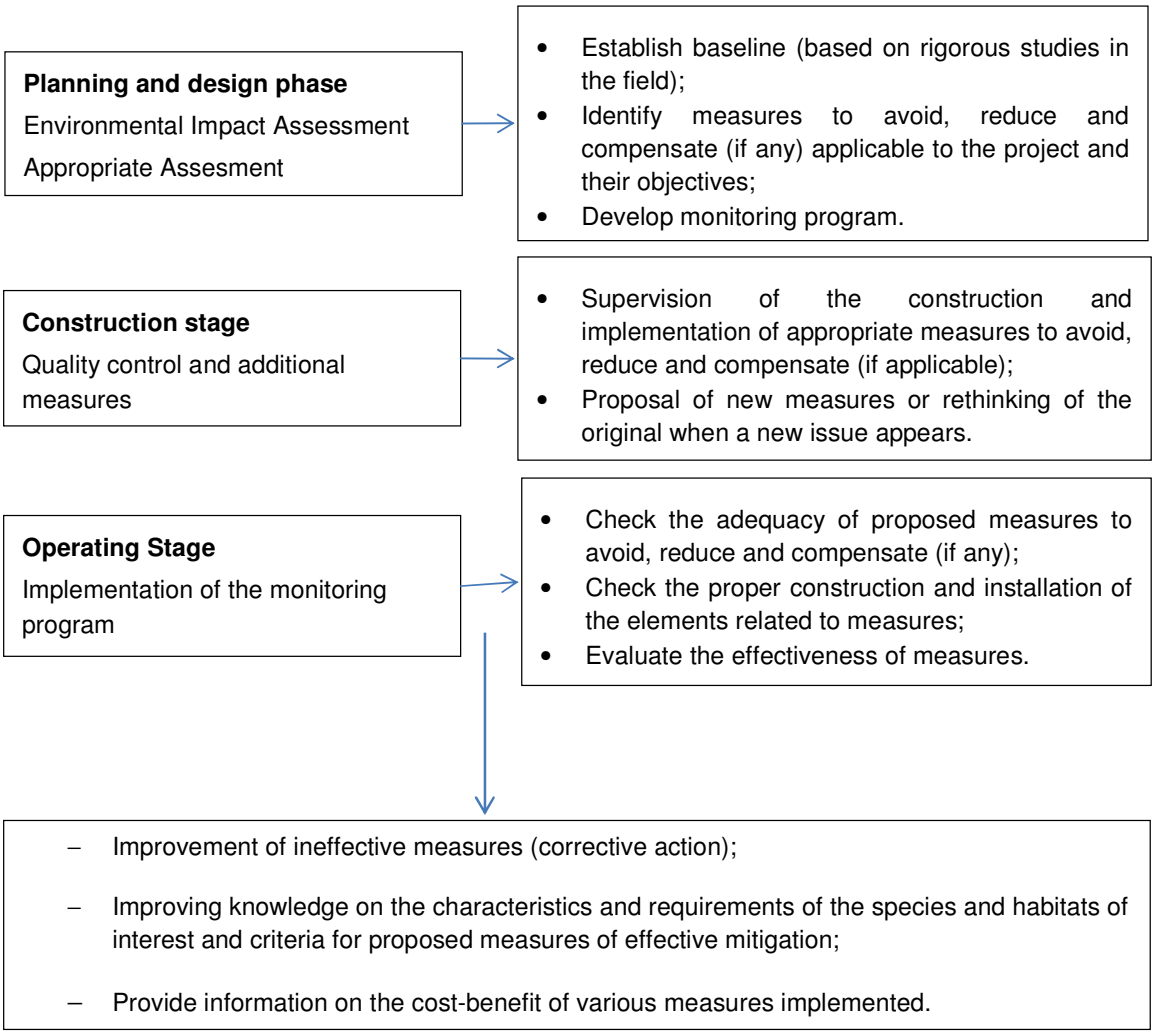


Figure no. 5-3 The main phases of an infrastructure project, the design and planning of the monitoring program (after Iuell et al., 2003)

In the case of infrastructure projects that may adversely affect Natura 2000 sites, the monitoring program should include frequent comments on the conservation status of habitats and species protection sites which have been designated, to confirm that they were not affected by the implementation of the project and that proposed measures of avoidance / mitigation / compensation were effective in order to avoid any deterioration of the conservation status of species and habitats targeted. The monitoring program can identify unforeseen problems that could not be anticipated in the planning stages of a project. The monitoring program must

include procedures to allow implementation of corrective action or adaptive to respond to unforeseen problems.

The purpose, objectives, timing and detail degree of the monitoring program depend on the type and complexity of the project and site characteristics / Natura 2000 sites affected by the project. They should be established during the planning phase of the project and re-assessed at regular time pewriods. Ideally, for major transport infrastructure projects (eg. New highways, new railway lines, waterways) that may affect Natura 2000 sites, the monitoring during operation phase should be carried out for a period of 3 years. The monitoring programs should be implemented also for projects related to rehabilitation/modernization of existing transport infrastructure.

The main steps for developing a monitoring program at the project level are shown in Figure no. 5-4.

It is recommended that for each category of transport infrastructure projects which are subject to the General Transport Master Plan, to be develop detailed procedures to ensure that the results of the monitoring of the various projects are comparable.

Monitoring programs should include two main components:

1. Monitoring measures (routine monitoring): This type of monitoring focuses on the verification and control measures by measuring the efficiency of local variables (eg. Number of fish fauna using an ecoduct, number of mortalities / km of infrastructure). Construction standards are tested and evaluated in order to observe if they fulfill their scope. When recording non-conformances, corrective measures can be applied to solve the problems identified. Examples of activities that may be included in this type of monitoring: identifying how the fauna passages are used by the species of interest and frequency of use; registration death number and location of "hot spots" where there is a high number of victims; check the effectiveness of noise reduction sound-absorbing panels; checking whether a new habitat that was proposed as a measure of compensation is used by species / target species.
2. Monitoring of measures on habitats and species of interest (ecological monitoring): This type of monitoring focuses on the ecological effects of measures of avoidance / mitigation / compensation proposed. Monitoring must identify the changes generated in the habitats, the distribution of species of interest, population dynamics, genetic diversity, etc. Characteristics of habitats and species of interest and natural processes recorded after the construction of an infrastructure project will be compared with baseline.This type of monitoring requires long-term approach and on a larger scale, taking into account all the measures proposed for a project and synergistic effects that may occur when new substructure items are added to the existing infrastructure. Examples of this type of monitoring aspects: incidence of the mortality generated on roads and railways and effects on population dynamics of the target species; assess the effect of barrier of the network infrastructure taking into account not only the proportion fauna specimens that are hit tring to cross, but the proportion of specimens trying to cross and are discouraged because of disturbances (noise, lights, etc.); changes in species behavior from disruption; changes in the distribution, composition and quality of habitats adjacent to road and rail infrastructure due to pollutants generated; changes in the migration of aquatic species.

I. **The analysis of** the transportation project, **the analysis of the initial conditions** (habitat, species) and proposing measures for the avoidance / mitigation / compensation (if any).

This information must be produced in the planning phase of the project, mainly in procedures for environmental impact assessment and appropriate assessment.

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II. **Selection and description of measures** to be monitored and evaluated.

Selecting measures should be based on clear criteria and include all those measures whose effectiveness can not be clearly established from the beginning.

↓

III. **Identification of specific monitoring** needs when are affected species and habitats of community Importance or priority endangered species.

↓

IV. **Detailed description of the monitoring activities:**

- The objectives to be achieved for each proposed measure. Proposal of clear and measurable indicators and targets will allow assess whether the objectives have been met;
- Species and habitats of interest;
- The methods to be applied, frequency and duration. Monitoring protocols will be different depending on the components monitored. Monitoring period during operation of major projects should cover at least 3 years. For projects regarding rehabilitation / modernization of existing transport infrastructure will determine the minimum duration from case to case. Evaluation of the efficiency measures can not be based on results obtained immediately after the start of operation of infrastructure project (eg. Native fauna require a period of adjustment to changes);
- Methods and procedures for storing and analyzing information.

↓

V. Defining **the frame content of monitoring reports**.

The monitoring reports shall contain at least: a description of measures whose effects were monitored and methods that have been applied, interpretation and detailed presentation of results; identify measures that were not effective and the reasons that led to their failure; identify new measures to be implemented to improve the efficiency of existing ones; identify additional measures to be implemented to reduce the impact of the project on species and habitats of community Importance.

↓

VI. Establishing an appropriate system for dissemination, so as to ensure the availability of data for all stakeholders.

Figure no. 5-4 The main steps for developing a monitoring program at the project level (after Iuell et al., 2003)

In the General Transport Master Plan can not be propose a detailed program to monitor the effects of projects on Natura 2000 sites. It is proposed a relevant set of monitoring indicators of the Master Plan, which will be calculated based on the results of individual monitoring programs

at the level of every project. The necessary data will be provided by the holders of individual projects as well as custodians / administrators Natura 2000 sites and environmental protection authorities.

1) Table no. 5-2 Monitoring indicators proposed for the General Transport Master Plan

No. crt.	Indicator	Traget
1.	Habitat surfaces within the Natura 2000 sites of community Importance , lost as a result of implementing transport projects in GTMP.	Values lower than estimated in this report.
2.	Habitat surfaces within the Natura 2000 sites of community reversibly affected by construction works related to transport projects in GTMP.	
3.	Areas of the fauna habitats of community Importance within Natura 2000 sites affected by one or more disturbance factors (eg. Human presence, noise) as a result of implementing transport projects proposed by GTMP.	
4.	Mortality of the fauna of community Importance within Natura 2000 sites, generated by the operation of infrastructure projects proposed by GTMP.	Mortality “0”
5.	Use degree of built structures to ensure permeability of infrastructure of works proposed by GTMP.	As close as possible to the situation found in analyzes of the initial conditions.

6. The methods used to collect information on species and habitats of community importance that are potentially affected

6.1 General considerations and limitations

Given the analyzed territorial expansion plan, strategic level assessment approach and the fact that most projects can be located, is in an incipient stage of development (indicative trails), the following critical issues were considered:

1. To ensure a consistent approach of the assessment, the analysis was realized at the national level and not by an approach "site to site";
2. Given the national spatial extent, the study could not involve field work to collect data and information, relying mainly on GIS analysis;
3. The analysis included only those resources geospatial uniform and fully covering the national territory (eg boundaries of protected areas, land use - CLC, etc.);
4. Given the unavailability of the Management Plans for the most part of Natura 2000 Sites, the analysis did not include the use of existing information in the plans approved so far;
5. All information on the presence of herds, identified pressures, were drawn exclusively from the Natura 2000 standard forms, taking into consideration the assumption that the data contained therein (updated in 2011) are complete, current and sufficient for carrying out the assessment;
6. Assessing the impact, came mainly based on GIS analysis and quantifying areas within the immediate vicinity of Natura 2000 sites that could be affected by the proposed projects;
7. Distances and areas of impact were calculated in plan, without taking into account the Digital Terrain Model.

The appropriate assessment study was conducted with good faith, using the best practices that can be applied to this strategic level. Our desire was to try a more accurate quantification of the main potential impacts. At this level of analysis and on the resources and information available, such a target may be considered too ambitious given the multitude of assumptions and hypotheses considered.

Please note that the findings should be interpreted cautiously, as they represent only a "first overview" on the impact of transport projects on Natura 2000 network and not a detailed assessment of the impact on habitat types and species of community importance. The main limitations of the study are:

1. Inability to locate the exact spatial habitat types and species of community importance (process mapping and inventory of habitats and species Natura 2000 is currently underway and will still take a number of years);
2. The project lines are only indicative alinments, most of them can suffer in the next period, significant changes;
3. In the analysis performed could not take into account the temporal dynamics of impacts because at this time there is no exact timetable for the GTMP project implementation;

4. Assessment of Natura 2000 sites territories sensitivity was achieved by considering the percentage of habitats and species present in each type of land use, compared to the total number of habitats and species of community importance in each site. The method chosen, represents the best approach used to provide a more extensive image on the impacts of subsequent GTMP project implementation on the national network of Natura 2000 sites, **but can not capture the importance of the territories of sites for each habitat type and species of community importance**. In other words, as provided by the methodology used, we considered that an affected site on an area of 5% will corresponds to an insignificant impact, without knowing whether within those 5% within the site, could not be found the entire territory of a habitat or of a species and thus the impact will be significant. Such analysis can be achieved only at a site level or project level;
5. Conventional spatial location of habitats and species (depending on the type of land use) is a precautionary approach (ie not taken into account the spatial extent of habitats indicated in the standard considering such that any grassland habitat can be found in all areas of grassland in the site), but ineffective in accurately locating areas really critical to maintaining the habitats and species for which the site was designated;
6. GIS analysis was based on the use of standard sizes of the projects (eg all motorways were considered to have the same width) and the impact distances (eg for all road projects was considered that noise affects an area of 700 m calculated from the center of the road). It is obvious that such an approach can, in some cases, cause overestimation and, in other cases, g underestimation of the impact.

Above limitations make it impossible to estimate the impact on each type of habitat and species of community importance. However, at this level of analysis, the study can not propose alternative for the projects analysed, but may suggest areas where we must intervene at project level to avoid the apperance of significant impacts.

6.2 Determination of the sensitivity of Natura 2000 sites

To determine the impact of proposed projects by the 2 scenarios on Natura 2000 network, was aimed obtaining a method that can be used both for sites of community importance (SCI) and for special protection areas (SPA). It is also important to note that the validity of the results is closely related to the quality of data entered in the Natura 2000 standard forms and available information on the biology / ecology / distribution of species and habitat distribution in Romania.

Since the magnitude of the analyzed subject does not allow field investigations to assess the potential impact, finally was chosen to determine the sensitive areas, specifically those types of land use that have the potential to accommodate a large number of species / habitats Natura 2000.

The first step to determine the sensitivity of each category of land use and get a map of sensitive areas was to create a geospatial database with land use in Romania. This was achieved by filling the available internal land use categories available on the European Environment Agency (http://www.eea.europa.eu). Subsequent, the land use database was cut to reflect the critical situation only within sites of community importance (SCI) and special protection areas (SPA).

Next, using data on habitats and species of community importance present in Romania, available in the database of the European Union (http://www.eea.europa.eu), experts analyzed

the suitability of the 32 categories of land use for each habitat and species of community importance. It is important to note that the categories of land use suitability was analysed considering the possibility that the kind of use to host habitats of community Importance (if habitats) or to be used in the most important phase of the seasonal work (breeding, feeding, hibernation) by species of community importance.

In the next step, the data on species of community importance were merged with data on species present in each Natura 2000 site in Romania. Finally, data on each type of habitat suitability were converted into percentages taking into account the total number of species existing in the site, thereby eliminating discrepancies and the different number of species in each site. Sensitivity areas was described as based on the percentage of species hosted by each Natura 2000 site and divided into 5 classes: 0% - **Areas with no sensitivity** (those categories of land use is unlikely to have populations of species or habitats of community Importance); 1% - 25% - **Areas with low sensitivity** (those categories of land use which can accommodate up to ¼ of the species / habitats of the site); 26% - 50% - **Areas with moderate sensitivity** (those categories of land use which can accommodate up to half of the species / habitats of the site); 51% - 75% - **Areas with high sensitivity** (the respective categories of land use which can accommodate up to ¾ of the species / habitats of the site); 76% - 100% **- Areas with very high sensitivity** (these land use categories which can accommodate all species of community importance of the site).

7. Conclusions

The analysis in this present study allows us to formulate the following conclusions:

- ✓ General Transport Master Plan does not generate a significant impact on the national network of Natura 2000 sites as a whole, given the reduced spatial extent of the proposed projects.
- ✓ The study presents a maximum variation of scenarios included in the General Transport Master Plan (En. "Worst-case scenario") considering that it is not possible that all projects included in the 4 scenarios to be implemented in the proposed time period.
- ✓ The main limitations of this study were presented in Section 6.1. It is important to note that for a significant part of the projects, the routes available are only indicative alingments, and significant changes can appear during the design phase. Location of the projects (for which were not provided data in vector format by developer of the GTMP) developed in this study, on the basis of the projects titles, are approximate location, in this case significant changes may occur when implementing the individual projects.
  - ✓ "Do Minimum" Scenario contains a list of 106 distinct projects of which 7 projects does not include construction, 31 projects including construction work could not be located spatially, and 68 projects including construction works are located spatially and were used in impact evaluation.
  - ✓ Development Scenario (ES / EES) contains 119 different projects including construction works and were used for impact assessment.
  - ✓ CTT Scenario contains 66 distinct projects, includes construction works and was used for imapct assesemnt.
  - ✓ "Do Minimum" Scenario includes 30 projects which are intersecting sites of community importance (SCI) of the Natura 2000 network, of which 2 naval projects, 5 railway projects and 23 road projects. In case of the special protection areas (SPA), 20 projects overlap with this sites, respectively 2 naval projects and, 4 railway projects and 14 road projects. Air infrastructure projects included in this scenario does not affect Natura 2000 sites.
  - ✓ In the development scenario (ES / EES), 64 projects intersect sites of community importance (SCI) of the Natura 2000 network, of which 6 naval projects, 15 railway projects and 43 road projects. In case of the Special Protection Area sites (SPA), 54 projects overlap with the sites, repsectively 5 naval projects, 14 railway projects and 35 road projects. Air and intermodal infrastructure projects included in this scenario does not affect Natura 2000 sites.
  - ✓ In development scenario CTT, 30 projects intersect Sites of Community Importance (SCI) of the Natura 2000 network, of which 6 naval projects, 15 railway projects and 9 road projects. In case of the Special protection areas (SPA), 28 projects overlap with sites, respectively 5 naval projects, 14 railway projects and 9 road projects. Air and

intermodal infrastructure projects included in this scenario does not affect Natura 2000 sites.

- ✓ For the “Do Minimum” scenario, from the total of 48 SCI intersected, 21 contains priority habitats and 16 priority species. In the development scenario (ES / EES), out of 131 SCI intersected, 63 contains priority habitats and 41 contain priority species, while for the CTT scenario, priority habitats are found in 48 SCI and priority species are found in 21 sites out of 91 intersected.SCIs.
- ✓ For “Do Minimum” scenario, a number of 7 habitats, 2 of priority, are found only in SCIs crossed by the proposed projects. In case of development scenarios (ES / EES) and CTT, three priority habitats are found in the SCIs intersected.
- ✓ In case of Do minimum scenario, a number of 7 habitats, of which 2 priority, are found only in the SCIs crossed by the proposed projects. In case of the development scenarios (ES / EES) and CTT, 3 priority habitats are found in the intersected SCIs.
- ✓ In case of SPAs network, it protects a total of 310 taxa of avifauna, from which, the sites crossed by the projects afferent to “Do Minimum” Scenario are hosting 240 species, and for the development scenario (ES/EES), 276 species are located in the limit of the sites crossed by the projects. For CTT scenario, the number of protected birds species, afferent to the crossed areas by the projects, is 264.
- ✓ For “Do Minimum” scenario, at least 3 projects are at a distance less than 1 km from the boundary of SCIs (2 projects from the rifrom the railway sector and 1 project from the road sector), while within the development scenario (ES / EES), 9 projects are in the same situation (3 related to naval sector, 5 to road sector and 1 to intermodal sector). In the CTT scenario, a number of 5 projects are at a distance less than 1 km from the Sites of Community Importance which are part of Natura 2000 network. Related to Special Protection Areas, for “Do Minimum” Scenario, 7 projects are located a a distance less than1 km from the boundary of the sites (4 railway projects and 3 road projects), while for the development scenario (ES / EES) 16 projects are at a distance less than 1 km from the SPAs (9 road projects, 5 naval projects, 1 rail project and 1 intermodal project), respectively for CTT scenario, 8 projects (1 road project, 5 naval projects, 1 rail project and 1 intermodal project).
- ✓ For “Do Minimum” Scenario, from the total SCIs located in an area within 1 km from the nearest projects limits, 2 contain habitats. For the development scenarios ES / EES and CTT, out of SCIs which are located in an area within 1km to the nearest projects, 3 areas contain priority habitats and 2 contain priority species.
- ✓ Total areas potentially-affected by the projects included in “Do Minimum” Scenario represents 0.78% of the total surface of Sites of community Importance (SCIs), respectively 0.67% of the total area of special protection areas (SPAs).
- ✓ Total areas potentially-affected by the implementation of projects proposed in the development scenario (ES / EES) represents 8.7% of Sites of community Importance and 8.75% of the Special Protection Areas.

- ✓ Total areas potentially-affected by the implementation of projects proposed in the scenario CTT represents 5.5% of sites of community Importance (SCIs) and 5.8% of special protection areas (SPAs).
- ✓ By implementing "Do Minimum" Scenario may be affected 51 SCIs and may significantly be affected 6 sites. Reported to the entire network of Sites of community Importance in Romania, about 13% of sites are affected by the implementation of this scenario, while for 1.5% there is a highly possibility to be significantly affected.
- ✓ By implementing the (ES / EES) development scenario can be affected 162 SCIs and may be significantly affect 11 sites. The 11 sites which may be significantly affected are: *ROSCI0063 Defileul Jiului, ROSCI0082 Fâneţele seculare Ponoare, ROSCI0101 Larion, ROSCI0147 Padurea de stejar pufos de la Mirăslău, ROSCI0160 Pădurea Icuşeni, ROSCI0170 Pădurea si mlaştinile eutrofe de la Prejmer, ROSCI0197 Plaja submersă Eforie Nord - Eforie Sud, ROSCI0232 Someşul Mare Superior, ROSCI0284 Cheile Teregovei, ROSCI0368 Râul Mureş între Deda and Reghin, ROSCI0369 Râul Mureş betwen Iernuţeni si Periş*. Reported to the entire network of Sites of community Importance in Romania, about 42.3% of the sites may be affected by the implementation of this scenario, while for to 2.9% there is a high probability to be significantly affected.
- ✓ The implementation of the CTT scenario may affected 107 SCIs and may significantly affect 7sites. Projects that intersect these sites and have the potential to significantly affect them are *ROSCI0082 Fâneţele seculare Ponoare, ROSCI0101 Larion, ROSCI0147 Padurea de stejar pufos de la Mirăslău, ROSCI0160 Pădurea Icuşeni, ROSCI0232 Someşul Mare Superior, ROSCI0284 Cheile Teregovei* şi *ROSCI0368 Râul Mureş între Deda şi Reghin*. Reported to the entire network of Sites of community Importance in Romania, about 27.9% of the sites may be affected by the implementation of this scenario, while for 1.8% there is a high probability to be significantly affected.
- ✓ By implementing "Do Minimum" scenario may be affected 25 sites for Special Protection Areas and may significantly affect 2 sites. Reported to the entire network of special protection areas of Romania, about 17% of the sites may be affected by the implementation of this scenario, while 1% are highly likely to be significantly affected.
- ✓ By implementing (ES / EES) development scenario, 89 special protection areas may be affected by the proposed projects development and there is a high probability of significantly affecting 5 sites, respectively *ROSPA0030 Defileul Mureşului Superior, ROSPA0048 Ianca - Plopu – Sărat, ROSPA0062 Lacurile de acumulare de pe Argeş, ROSPA0064 Lacurile Fălticeni* şi *ROSPA0067 Lunca Barcaului*. Reported to the entire network of Special protection areas, about 60.1% of the sites may be affected by the implementation of this scenario, while 3.37% are highly likely to be significantly affected.
- ✓ By implementing the CTT scenario, 64 sites of Special protection areas may be affected by the proposed projects development and there is a high probability of significantly affecting 2 sites, respectively ROSPA0030 Defileul Mureşului Superior and ROSPA0064 Lacurile Fălticeni. Reported to the entire network of Special protection areas of

Romania, about 43.24% of the sites may be affected by the implementation of this scenario, while 1.35% are highly likely to be significantly affected.

- ✓ In this phase can not be assessed the potential areas of natural ecological corridor, this assessment is required to take place within the individual studies when the proposed projects will start. High probability of ecological corridors crossing occurs, if the projects are located in the vicinity of Natura 2000 sites or corsses the surface of the istes and when projects cross many natural habitats.
- ✓ Most of the potential significant impacts can be avoided by reconsidering alignments of the projects and their positioning outside of the boundaries of Natura 2000 sites (preferred option for sites with small surfaces) or, where applicable, outside the occupied areas of habitats and species of interest Community (option required for sites which occupy large areas and already incorporates a considerable presence anthropogenic).
- ✓ To avoid critical situations where the crossing of Natura 2000 sites or protected areas is not possible it is necessary to consider possible measures to reduce and, where appropriate, to compensate significant impacts.
- ✓ It is estimated that the current configuration of the projects proposed by the (ES / EES) and CTT development scenario, some areas Natura 2000 (SCI / SPA overlapping) should be subject to measures to avoid or reduce and prevent significant impacts.
- ✓ Measures to reduce negative impacts should focus on increasing the permeability of transport infrastructure (mainly for road and rail sectors) and reducing noise levels. These concerns should also cover new projects proposed and the existing infrastructure.
- ✓ Compensation measures should be considered for all projects that will lead to loss of habitats Natura 2000 habitats or critical habitat of the species of community importance within Natura 2000 sites.
- ✓ Impact assessment and measures to avoid, reduce and compensate, must be based on the project level and be based on rigorous studies that include significant components of field investigations. It is recommended that appropriate assessment studies will be developed for all projects GTMP proposing construction work within, or in close proximity (<1 km) Natura 2000 sites.
- ✓ Transport projects can generate impactson long distance and therefore monitoring their effects and the success of measures to reduce and compensate is needed to ensure a level as low residual impact.
- ✓ It is recommended to minimize the service spaces (parks, fuel stations, accommodation and food, etc.) along the proposed road projects and in the immediate vicinity (1 km) of the Natura 2000 sites and to avoid their proposal within the sensitive areas (Natura 2000 habitats, critical areas for protected species).
- ✓ Environmental assessment of each project proposed will also consider areas outside sites, but which are important for the species of community importance (feeding areas, areas of migration, breeding areas, etc.). In accordance with national legislation, species of conservation interest benefits from protection both inside and outside the protected

natural areas. For this reason, concern related to identification of the potential conflicts with species of conservation interest and their habitats must be present in all stages of design and in the whole complexity of these projects. Attention should be focused predominately on identifying and protecting areas of migration / displacement of wildlife conservation interest outside Natura 2000 sites which can be intersected by transport projects but this concern should not be neglected for small projects where rehabilitation of a raiway station can affect nesting areas of some species of birds or bats hibernacule.

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