REPUBLIC OF MOLDOVA

MINISTRY OF TRANSPORT AND ROAD INDUSTRY

State Road Administration

Local Roads Improvement Project

ENVIRONMENTAL MANAGEMENT PLAN FOR C13 ROAD (SELISTE - PIRLITA)

July 2015

MOLDOVA

Chisinau

Contents

INTRODUCTION

1.1. Project background

This Local Roads Improvement Project project has been included in the Country Partnership Strategy between the World Bank and the Government of Moldova which supports Moldova's agenda for better access to social services in rural areas, mainly education and health, and improving access by farmers to markets and export opportunities. As the Government continues to embark on the health and education reforms, there is a need to guarantee good quality all weather roads access so that local populations can travel to education and health facilities in a timely and safe manner. Also as Moldova is an agriculturally based economy therefore good access to the main network through the regional and local roads network is key to further development of the sector and increased benefits.

The management of the local roads system in Moldova is in transition. Currently, the State Roads Administration (SRA) is responsible for the network of national and local roads. Communal mayors are responsible for communal roads and municipal streets. Some local roads are in the process of being identified as "regional roads": these are roads connecting at least four communities. The SRA have indicated that about half of the current length of local roads may be designated as regional roads. With decentralization9, the regional roads will remain the responsibility of SRA. The management of the remaining local roads will be decentralized to Local Public Authorities (LPAs, Level 2) i.e. raions. The communal roads and municipal streets will remain the responsibility of the commune mayors.

Most local roads were constructed more than 30 or 40 years ago, and were neglected for many years after Moldova gained independence and consequently many local roads are in poor condition. Rural sections are mainly gravel and need to be sealed. Village asphalt sections need to be repaired, drainage improved, footpaths constructed and safety measures implemented especially near schools.

1.2. Project Development Objective

The development objective of the project is to reduce travel costs and improve access to markets, off-farm economic opportunities, and social services for rural communities in the 18 participating raions in Central Development Region by:

- Increasing the number of communities connected to the national highway network with improved all weather roads;
- Improving rural road conditions through better management and maintenance of the network; and
- Strengthening the capacity within government and the private sector to plan, implement and maintain improvements in the rural transport network

1.3. Key Performance Indicators

The key performance indicators are:

- Increased level of rural accessibility in Moldova as defined by the percentage of people living within 2 km of an all-weather road and reduced number of communes lacking year-round basic access;
- Reduced transport times to the nearest markets, schools and health facilities;
- Increased percentage of households living in villages with access to motorized transport services for hire;

- Increased levels of road maintenance expenditure and corresponding improvements in the condition of the Local Roads network;
- Increased capacity of local road administrations as evidenced by the existence of prioritized, budget constrained plans and basic road condition data.

1.4. Project Components

The above objective will be attained through the following three components:

Component A: Rehabilitation of Local Roads Network (*US$ 75 million).*
This component will finance the rehabilitation and upgrading of about 300 km of Local Roads in the Development Region Centre. In line with the GoM strategy, the focus will be to provide road connections between villages and the national road network, including upgrading economically justified roads to a paved standard. The focus will be on developing cost-effective, coherent networks with maximum connectivity. IDA financing will be coordinated with GoM funding of State and Local Roads improvement programmes, and other donors which have expressed their intentions to fund improvements in Local Roads in other Development Regions in Moldova. This component includes civil works, detailed engineering design and construction supervision.

Component B: Institutional and Capacity Building Program for SRA, LPAs and Private Sector *(US$ 5 million).*
The institutional strengthening component recognises the redesignation of roads in Moldova, with some local roads being upgraded and designated as "regional roads" and other local roads retaining the designation "local roads". This component aims to increase efficiencies and effectiveness in the management of regional and local roads commensurate with the human, physical and financial resources available to the subsector at central and decentralised levels. The component comprises six components: (1) project management services for planning and implementing Component A, (2) strengthening administration of regional and local roads, (3) development of design and construction manual suitable for local roads, (4) strengthening of local road asset management and expenditures, (5) introduction of performance-based maintenance contracts on local roads and (6) conducting a road safety eduction and public awareness program on local roads.

1.5. Prioritization of Local Roads

The Modernization of Local Public Services being carried out by the Ministry of Regional Development and Construction (MRDC) with assistance from GIZ has formulated a Regional Sector Program (RSP) in each of the three Development Regions: North, Centre and South (DRN, DRC, DRS). The objective of the RSP is to provide sustainable, safe and cost-effective year-round road connectivity in the regions in order to support their development and increase the welfare of the population.

The RSP has conducted an extensive local road assessment and consultation exercise which has resulted in the identification of 26 priority Regional and Local Road (RLR) corridors linking villages to the state road network. Considerable research of social, economic and demographic conditions in the raions and villages has gone into creating these 28 corridors and the RSP is in the process of obtaining approval from MRDC and the regional consultative committees of these corridors. The 28 corridors have a total length of 1131 km out of a total Regional and Local Road length of approximately 6000 km.

During project preparation MRDC and SRA selected four priority corridors in DRC for evaluation and appraisal. From these corridors approximately 50 km of road for detailed design and preparation of bid

documents were selected to be ready for procurement at Loan Negotiations in July 2015. The four corridors selected by MRDC and SRA are listed in Table 1.

Table 1. Priority Roads Identified by MRDC and SRA

No.	Location	Length, km
C8	R1 – Cornești – Sinești – Cornova – Onișcani – Răciula – R21	41.9
C11	M2 – Peresecina – Hîrtopul Mare – Izbiște – Ohrincea – R23	23.6
C12	R1 – Bucovăț – Negrești – Codreanca – M14 – Lupa Recea – R20 – Mălăiești – M2	35.8
C13	R1 – Pîrlița – Bălănești – Seliște – R25	41.8
	Sub-Total	143.1
	Remaining corridors in DRC: 9, 10, 14, 16, 17 plus two new corridors added by MRDC	309.2

Source: MRDC and GIZ

1.6. Project Environmental Assessment

The project will not finance construction of new roads or their major upgrading - the proposed activities are essentially road rehabilitation and maintenance within the "Right of Way" (ROW) areas. Thus expected environmental impacts related to air and water pollution, solid and hazardous wastes, labor security etc., are expected to be low, site specific and mostly temporarily. The impact on natural vegetation associated with operating the quarry and borrow areas, and constructing detour and access road to the borrow material pits and quarry sites, will not be applicable here – as there will be used the existing borrow/quarry sites. The project triggers only one WB OPs and specifically OP 4.01 on Environmental Assessment as the project will support a series of activities which will generate specified environmental and social impacts. To address these potential impacts the SRA prepared an ESMF which specifies the EA rules and procedures and environmental requirements for the subprojects to be financed. This document covers the following: national and WB EA rules and procedures; procedures for environmental screening; guidance for preparing subprojects EMPs for roads rehabilitation subprojects; possible mitigation measures for different types of sub-projects; requirements for monitoring and supervision of implementing of EMPs; implementing arrangements.

The Law of the Republic of Moldova on Ecological Expertise stipulates that Environmental Impact Assessment should contain a description of planned actions of forestalling, liquidation, minimization, and compensation of the impact on the environment.

Although the Law does not mention an EMP by name, there are no discrepancies between the national EA requirements and WB Operational Policies with regard to preparation of such document as main parts of the EMP should be prepared and included in the project documents to be presented to the State Ecological Expertise (mitigation and monitoring activities, along with the necessary finanicing)

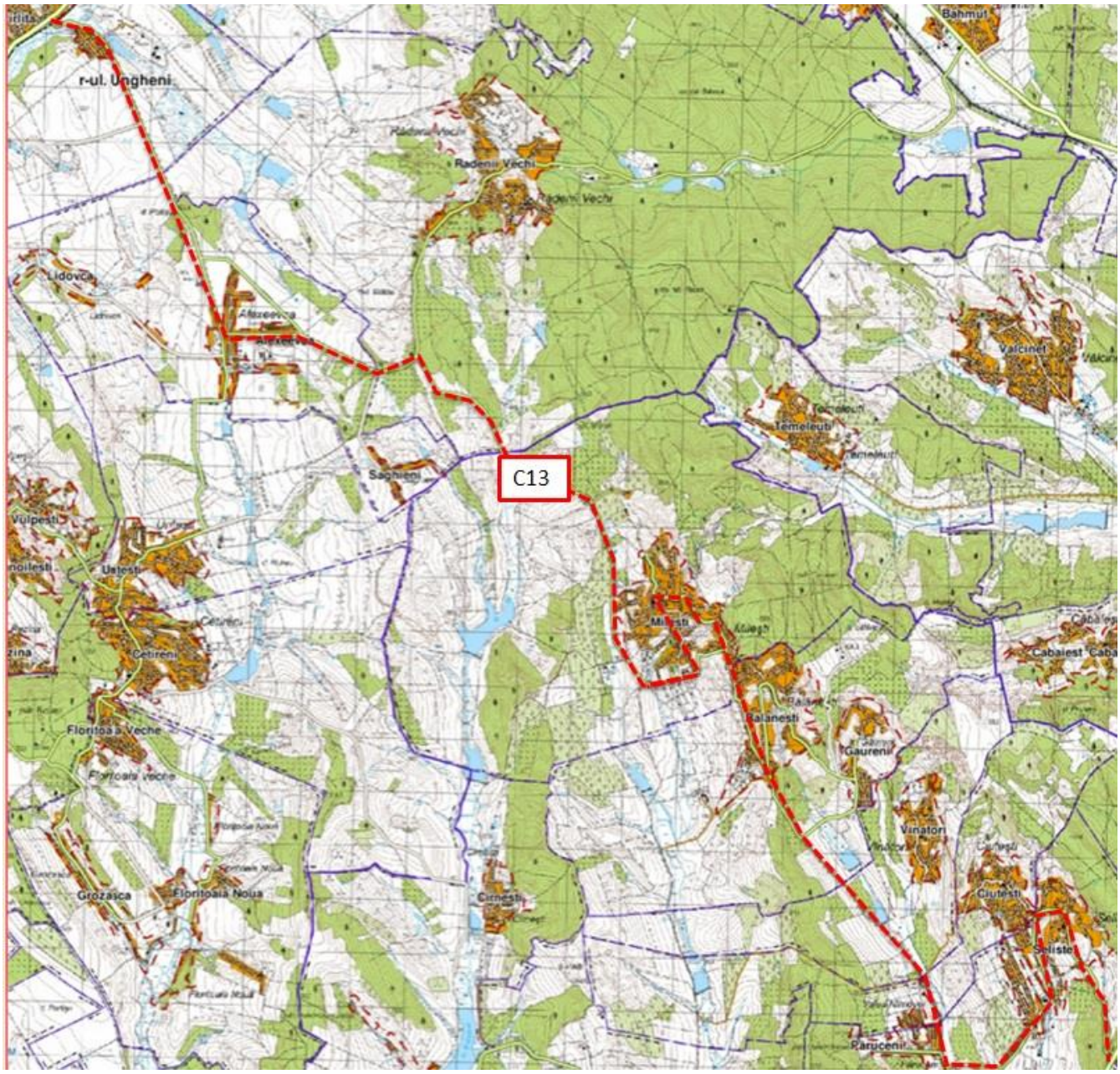
This EMP was prepared based on conducted Environmental Impact Assessment of the project to rehabilitate the C13 (Figure 1) and aims to:

- Comply with all the environmental requirements of the Government of Moldova, including, but not limited to, the Law on Ecological Expertise and Environmental Impact Assessment of 1996 and its regulations as well as to the Law on Environmental Impact Assessment of 2014;
- Achieve sustainable and environmentally and socially acceptable development interventions for road development and rehabilitation;
- Inform the SRA and the contractors on environmental management strategies while implementing the project;

In order to achieve the above objectives the following action has been taken in formulating the EMP.

- Outlining measures to be adopted in project planning and design to avoid or minimize adverse impacts on the environment and affected communities;
- Formulating specific mitigation measures to avoid or minimize the adverse impacts of preconstruction, construction, and post-construction phases of the road development;
- Preparing a plan to monitor the implementation of the mitigation measures and their effectiveness in combating the adverse impacts;
- Establishing an institutional mechanism for EMP implementation, monitoring, and reporting.

Figure 1. Corridor 13: R1-Pirlita-Milesti-Seliste-R25



POLICY, LEGAL AND REGULATORY FRAMEWORK FOR ENVIRONMENTAL PROTECTION AND ROAD CONSTRUCTION SECTOR

Republic of Moldova Legislation and regulations pertaining to the environment and its protection have been analyzed herein to ascertain the country requirement for environmental protection and approval of development projects, in general, and road development projects, in particular. Although the national requirement for environmental assessment of projects are provided mainly by the Law on Ecological Expertise of 1996 and Law on Environment Impact Assessment of 2014, other laws and codes that could have a bearing on and facilitate environmental protection and road development are also discussed below and summarized in Table 2.

Republic of Moldova Legislation represents a large framework of legislative, normative, and organic acts. Often, these acts are incomplete or incorrectly harmonized and sometimes this leads to legislative deficiency. A series of international acts and conventions to which Moldova is a signatory are not applied in practice neither at a ministerial nor at local level.

Table 2. Summary of Republic of Moldova Laws and Relevance to the Project

Law/Code	Year	Relevancy to the Project
Law on Ecological Expertise	1996	Provides for environmental assessment of the project
Law on Environmental Protection	1993	Stipulates that construction, re-construction, and modernization of public facilities are subject to ecological expertise procedures and that certain activities, some of which are envisaged under the project, require permits
Law on Atmospheric Air Protection	1997	Requires maintaining standards of air quality and regulation of measures for air pollution management
The Law on Regime of Harmful Products and Substances	1997	Addresses licensing, production, storage, transportation, and use of harmful substances that may be used in road construction works
Law on Production and Domestic Wastes	1997	Regulates management of wastes, including waste generated from road works
Law on State Land-Tenure Regulations, State Land Survey and Land Monitoring	1992	Deals with land tenure and land-use regulations – this law may become relevant in land acquisition
Law on the Payment for Pollution of the Environment	1998	Provides a system of economic activity that makes it unprofitable to inflict any damage to the environment, therefore minimizing volumes of pollutant emissions and discharges into environment
Law on Natural Resources	1997	Providing for protection of natural resources – this law will be relevant in land clearing
Law on Technological and Households Waste	1997	Provides for reducing production and promoting maximum recycling of waste, including construction waste
Law on Roads	1995	Provides for specific conditions to be adhered to in road design
Law on Transport	1997	Stipulates that transport enterprises comply with environmental legislation
Water Law	2011	Ensures sustainable water use and protects water resources from pollution and contamination for construction of new facilities
Land Code	1991	Stipulates that in designing, siting, constructing, and implementing new and re-constructed objects, land protection must be considered and implemented
Forest Code	1996	Stipulates that in designing, constructing, and implementing new and re-constructed objects, rehabilitation and forest protection must be planned and implemented
Motor Transport Code	1998	Regulates activities in the field of motor transport and

		determination of rights, obligations, and responsibilities of transport entities and provision of motor transportation services
Law on Environmental Impact Assessment	2014	This law initiates a framework of environmental impact assessment of certain private and public projects or certain planned activities, this framework assures prevention and diminishing at initial stages of environmental impact and impact on the population health.

Specified in this table legislation provide with great details all EA requirements to be followed while designing and implementing the project. Based on the national EA requirements the EIA should be conducted at an early stage of the project, before designing stage. The EIA should be conducted by national certified experts (design institutes) following the defined methodology, report structure and documentation requirements.

The basic requirements for EIA study and documentation are stipulated in EIA Regulation, as well as requirements for EIA report. The first requirement is that alternatives to the project and mitigation measures should be covered. All alternatives of the project or any of its components should be comparatively analyzed, and the best option should be selected. The regulation requires that the "zero-option" or "do-nothing option" should be considered, as well. Measures that would exclude or mitigate the negative impact of the project, as well as those that would increase its positive impact should also be addressed. In fact, national legislation requires adopting measures towards mitigation environmental impacts and rational use of natural resources.

The Environmental Impact Assessment report should be a subject of public and Ministry of Environment revisions. Corrected EIA and other EIA documentations (additional reports, results of specific investigations, tables, maps, models, etc.) should be presented to ME for revision as a part of SEE process. The principal objective of the SEE is to check if all environmental standards/ principles are adhered, and environmental protection measures are addressed. A positive decision of SEE on the EIA report provides the official basis to initiate detail design of the project.

Once the technical and economic evaluation (feasibility study) and detailed design are prepared, it is again a subject of reviewing by SEE. The EIA findings including listing of mitigation measures and environmental management plan should be incorporated in the chapter "Protection of Environment" of the Design Report. At this stage SEE can be conducted either by the central office of the ME, or by the central headquarter of the State Ecological Inspectorate (both situated in Chisinau) or by the Rayonal Ecological Inspections in dependence on the scale of the project and its economic significance. In addition to compulsory SEE, so called "ministerial" and/ or "public" expertise can be voluntarily applied.

Besides the legal framework in the country have been designed and approved a series of bylaws specifically regulating the relationships between roads and the environment and in particular:

Temporal Construction Norms 9-79. Guide for environment and land tenure protection measures for reconstruction of automobile roads in Moldova, 1979. The Guide include: (i) general provisions, (ii) methods of reconstruction of roads in the plan and a longitudinal structure; (iii) reconstruction of sites of roads within settlements; (iv) methods of hydro-meteorological substantiation and road water drain, (v) actions on protection against noise originated after transport traffic, (vi) maintenance of stability of slopes and landslide sites, (vii) requirements for feasibility report on reconstruction of roads, (viii) method of estimation of natural environment losses (stripping out soils from agricultural circle), (ix) feature of a substantiation of roads elements during reconstruction, (x) methods for assessment of

noise impacts; (xi) calculation of harmful components of gases in air; and (xii) an estimation of transport security in cities.

Construction Rules D.02.01-96. Road and bridges: Requirements for environmental protection during design, construction, rehabilitation, repairing and maintaining of roads and bridges, 1996. Document was elaborated by MTRI. It is intended for use during designing, construction, repair and maintenance of roads. Some requirements are recommended, other requirements are obligatory. The document includes: (i) general provisions, (ii) protection of ground resources, (iii) coordination of roads pathways with a landscape, (iv) protection against transport noise, (v) protection against pollution, (vi) protection of geological conditions, (vii) fauna and flora preservation, (viii) account of hydro-meteorological factors, (ix) liquidation of consequences of emergency pollution.

Temporary Construction Norms 18-74. Instructions on architectural and landscape design of roads, 1975. Architectural and landscape designing of automobile roads dearly represents a complex of requirements and recommendations which should be taken into account at all stages of design, construction, maintenance and repair of automobile roads. Four main indicators should be considered: (i) spatial tracing, providing smoothness and clearness for the driver with a view of convenience and traffic safety; (ii) visual orientation, providing visual reference points allowing drivers to expect at a great distance changes of a road trajectory and conditions; (iii) incorporation of roads in a landscape for improvement of movement convenience, disclosing of beauty of a local landscape; (iv) improvements of a landscape by gardening, installation of road's equipment.

Construction Norms and Rules 2.05.02-85. Motor roads. The document applies for designing of new and reconstruction of existent automobile roads. The document includes: (i) general requirements, (ii) organization and movement safety, (iii) protection of the environment, (iv) basic technical norms and transport and exploitation parameters, (v) crossings and adjunctions, (vi) an earthen cloth, (vii) road clothes, (viii) bridges for pipe and tunnels, (ix) arrangement of road protection constructions, (x) buildings and constructions of road and motor transportation services.

The section of environmental protection obliges to take into account during design a degree of impact from road on environment both during construction and operation, and also combination of road within landscape, preferring decisions which render minimum impact on environment. On roads within the limits of water protection zones it is necessary to provide organized water discharge from the roadway surface with its subsequent clearing or removal in the places excluding pollution of sources of water supply. For places of unstable and especially sensitive ecological systems (inundated zones, a landslide slopes, etc.) it is necessary to provide measures for maintaining of minimal ecological balance and prevent disruption. It is necessary to elaborate special measures for provision of safe and free animal's movement on the roads. In case of excess of transport noise on constructed adjoining territory, it is necessary to provide special anti-noise actions (shaft, barriers and planting of special green trees).

Construction Norms and Rules 3.06.03-85. Motor roads. The document is applying for physical construction works of new roads and reconstruction of existent automobile roads. It describes requirements for all technical parameters for covering surface of roads. The main points are: (i) organization of road-building works, (ii) cleanup activities, (iii) constructions of an earthen cloth, (iv) arrangement of additional layers of the bases and intermediates, (v) arrangement of asphalt-concrete coverings and the bases, (vi) arrangement of conditions of roads, (viii) quality assurance and acceptance of executed works. The document is supporting by the set of materials includes in three manuals: (a) The manual on the arrangement of superficial processing on roads; (b) The manual on application of asphalt-concrete covering and bases for roads; (c) The manual on construction of coverings and bases for roads from soils, consolidated by binding materials.

ENVIRONMENTAL AND SOCIAL BASELINE

The population along C13 is 8747 people, out of which present are 5383. In many of the consulted villages people noted that lack of a paved road keeps people marginalized and remote from more developed towns, thus keeping people in poverty. Moldova faces a demographic decline, caused by a low birth rate of only 12.21 births per 1,000 people according to 2014 statistics (i.e. 1.56 children born per woman, which is below the replacement rate of 2.1). The death rate is as high as 12.6 deaths per 1.000 people. The negative trends in the birth rate and high rates of migration abroad caused a decrease in the number of population within 1997-2006 with 76.800 persons, while the urban population decreased with 46.100 persons and rural - 30.700 persons. The share of the population aged 0-14 years old decreased from 25.6% as of 01.01.1997 to 18.1% as of 01.01.2007 and registered a decrease with 283.400 persons, while the share of population over 65 years increased from 9.3% to 10.2%, i.e. an increase with 29500 persons. No major businesses are placed along the road in project command area, except agri-enterprises and local shops.

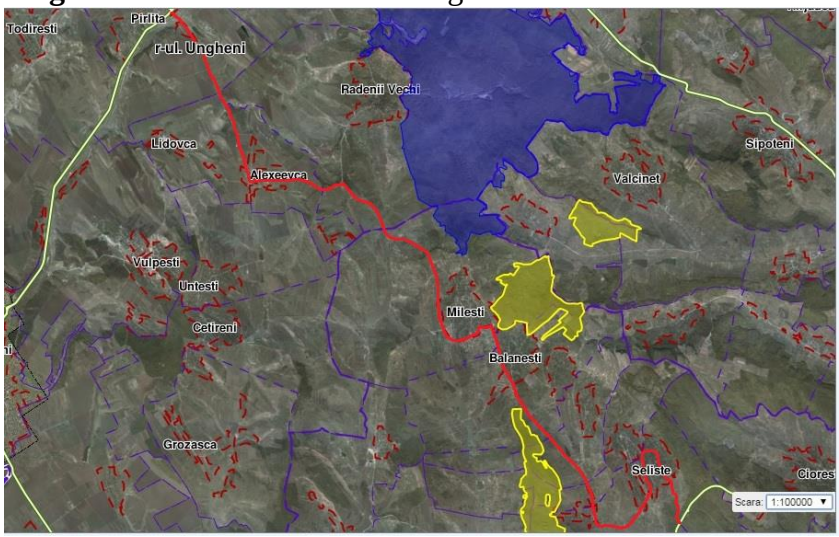
The EA includes baseline information on flora, fauna, sensitive ecosystems, and habitats, protected areas, hydrology, soils and landscape features. The baseline data has generally been selected to refer specifically to C13 Project area. To collect these data the EA team has conducted a survey of the road, revised relevant national policies, strategies and legislation in the field of environment and stated the following concerns and conclusions which are listed below. Annex 1 at the end of the EMP presents all the components of the environment found along C13 which could be affected by the road rehabilitation. The road is situated in Nisporeni and Ungheni districts.

Hereby, the following environmental issues have to be mentioned, as follows:

- the project corridor crosses the following natural regions: region of plateaus and plains with meadows of Balti steppe and region of plateaus with forests of Codrii. The forests are mainly formed from beech (Fagus sp) an oak (Quercus petraea, Quercus robur). The endangered species of plants in the region are versicolored meadow saffron (Bulbocodium versicolor), Oblong cephalanthera (Cephalanthera longifolia), Purple epicactis (Epicactis purpurata), Linear-leared flax (Linum linearifolium), Herb paris (paris quadrifolia), Winter-flowered sternbergia (Sternbergia colchiciflora).
- Endangered species which occur in the Plaiul Fagului scientific reserve are common marten (Martes martes), European wildcat (Felis silvestris), Eagles Aquila clanga and Aquila pomarina, booted eagle (Hieraaetus pennatus), Honey buzzard (Pernis apivoris), Pond turtle (Emys orbicularis), Common viper (Vipera berus), Smooth snake (Coronella austriaca) etc. The end of the road belongs to the corridor of animals migration within the national ecological network of the Republic of Moldova. The network components of European importance include "Plaiul Fagului" State Scientific Reserve which is situated close to the road.
- There are 3 natural protected areas: *State Scientific Reserve „Plaiul Fagului", State Natural Protected Area "Seliste-Leu" and State Natural Protected Area "Cazimir - Milesti"* (Figure 2). They all are situated at a distance of 0.5 km – several km from the road and are home to many endangered species of plants and animals. The last two protected areas are also part of the national ecological network, more than that the areas are situated to the left and to the right of the road which means that the animals could migrate in the region, thus it is important to follow mitigation measures it terms of diminishing pollution, noise and installing signs on the road for operation phase, so drivers will be aware of the existence of the animals in the region and will drive safely.

- Location of geologic deposits, available for local building materials may influence selection of different sites temporarily required for the road rehabilitation, a decision in this sense should be produced by the Contractor. All deposits should have in place all the necessary licences and permissions issued by the Ministry of Environment. Local quarries include a sand quarry in Pirlita village and clay and loess quarry in Ungheni town which have authorizations issued.

Figure 2. Protected areas occuring near the C13 corridor



Source www.geoportal.md

- There are two river basins in the road area: Nirnova and Delia Rivers. Nirnova stream begins near Vinatori village and flows into Prut river near Leuseni village. The tributary of Nirnova stream flows along the road from Vinatori till Balanesti villages. The stream crosses the road in Paruceni village (Valea Nirnovei village, a part of Paruceni village), it flows along the road from 7,5 km of the road till 10,6 km of the road till Balanesti village, flows on the right side of the road, close to the road. River length is 49 km in total. Delia stream starts in Romanovca village and flows into Prut river in Ungheni town. The developed hydrographical network of tributaries could be found in Pirlita village, where the road finishes, and there are bridges across the stream, it is a region of Delia stream valley, swampy plateau with pastures on both sides of the road, from 38, 9th km till 40th km of the road. Local surface waters (ponds, reservoirs, small rivers) are strongly affected by soil eroson, contaminiated runoff from the earth surface, waste water discharges and unauthorized waste dumps. No sensitive surface water related issues as well as no critical contaminiation of waters and sediments was reported along the analyzed routes.
- There are 14 ponds in the vicinity of the road which were built for irrigation and aquaculture mostly:
  - ✓ At a distance of 10,6 km from the beginning of the road (direction Seliste village – Pirlita village), after Valea Nirnovei village, on the right side of the road, there is a lake, which is situated on Vinatori village lands, Nisporeni rayon, the surface os 7,1 ha (70972 m^2).
  - ✓ On the 12th km of the road, between Valea Nirnovei Balanesti villages, on the right side there is a lake which is situated on the Balanesti village lands, Nisporeni rayon, the surface is 8,6 ha (86015 m^2). The lake is a property of local administration, cadastre number is 60102080582.

- ✓ On the 21,2 km of the road, after Milesti village, on the right side of the road there is a lake situated on Milesti village lands, Nisporeni rayon, the surface is 0,05 ha (520 m^2).
- ✓ On the 21,4 km from the beginning of the road, after Milesti village, on the left side there are 3 lakes. The lakes are situated on the Milesti villages, lands, Nisporeni rayon, lakes' surface is 0,17 ha (1684 m^2), 0,08 ha (800 m^2), 0,25 (2473 m^2).
- ✓ On the 22,9 km of the road, after Milesti village, on the right side of the road there is a lake situated on Milesti village lands, Nisporeni rayon, the surface is 0,15 ha (1535 m^2).
- ✓ On the 23,6 km, after Milesti village, on the right side there is a lake situated on the Milesti village lands, Nisporeni rayon, the surface of it is 0,15 ha (1532 m^2).
- ✓ On the 23,9 km, after Milesti village, on the right side there is a lake situated on the Milesti village lands, Nisporeni rayon, the surface of it is 0,05 ha (500 m^2).
- ✓ On the 25,7 km, after Milesti village, on the right side there is a lake situated on the Milesti village lands, Nisporeni rayon, the surface of it is 0,05 ha (570 m^2).
- ✓ On the 32,7 km, in Alexeevca village, on the right side there is a lake divided by the road, it is situated on the Alexeevca village lands, Ungheni rayon, the surface of it is 0,08 ha (776 m^2).
- ✓ On the 32,7 km, in Alexeevca village, on the left side there is a lake, it is situated on the Alexeevca village lands, Ungheni rayon, the surface of it is 0,1 ha (1025 m^2).
- ✓ On the 38,5 km, in Pirlita village, on the right side there is a lake, it is situated on the Pirlita village lands, Ungheni rayon, the surface of it is 8,66 ha (86645 m^2).
- ✓ On the 38,5 km, in Pirlita village, on the left side there is a lake, it is situated on the Pirlita village lands, Ungheni rayon, the surface of it is 0,16 ha (1570 m^2).

- Shallow droundwater is a major source of drinking water for rural population: about 70 % of the rural population relies on shallow well water which is highly vulnerable to anthropogenic impacts and sources of water contamination are mainly linked with rural areas. While no tests were carried out, the existing information from the health authorities determines us to consider that the range of natural and man-induced present contaminants include nitrates and microbiological indicators. There are also arthesian wells situated along the road, thus it is important to keep those covered during construction process as well as shallow wells along the road. Arthesian wells are a source of deep underground water, thus no pollution should be allowed around the well. Shallow wells are included in Annex 1.
- No critically polluted areas where soil, water or air would be highly polluted are noted along the considered road.
- The good condition of the soil is crucial for agriculture and is a basis for development of a productive export-oriented agriculture and food-processing industry. For the Corridor no 13 subproject R13: R25 - Seliste - Balanesti - Pirlita - R1 there are the following types of soils: deteriorated, gray, chernozem, alluvial swampy, alluvial, chernoziomoid, marsh, divided on sub-types of soils: active landslides, typical gray soil, southern chernozem, levigated chernozem, typical chernozem, alluvial swampy, valley gray soil, alluvial mollic soil, alluvial laminated soil, typical chernoziomoid soil, typical marsh. Still, it is important to mention that the % of fertile soils - chernozems and gray soils is high and these should be protected. A swampy area is found at the tail of the lak of 8,66 ha near Pirlita village. Ravines and landslides

should be strengthened by vegetation in order to protect the rehabilitated road in the future. These could be found as follows along the road:

- ✓ At a distance of 0,7 km from the beginning of the road, on the right side of the road, there is eroded soil, with landslides, on a segment of cca 100 m. It is slightly covered with vegetation. It needs to be consolidated.
- ✓ At a distance of 1,6 km form the beginning of the road, on the right side of the road there is eroded soil with landslides. It is slightly covered with vegetation and needs to be consolidated.
- ✓ At a distance of 17,1 km from the beginning of the road, on the lands of Milesti village, on the left side of the road there are landslides, slightly covered with vegetation which need to be consolidated.
- ✓ At a distance of 19,7 km form the beginning of the road, on the lands of Milesti village, on the right side there are landslides, slightly covered with vegetation, need to be consolidated.
- ✓ At a distance of 20,9 from the beginning of the road, after Milesti village, on the left side of the road there are landslides, slightly covered with vegetation, need to be consolidated.
- ✓ At a distance of 21,1 km from the beginning of the road, after Milesti village, on the left side, there are landslides, slightly covered with vegetation, need to be consolidated.
- ✓ At a distance of 21,3 km from the beginning of the road, after Milesti village, on the right side, there are landslides, slightly covered with vegetation, need to be consolidated, it is extended on a segment of 0,5 km.
- ✓ At a distance of 21,7 km from the beginning of the road, after Milesti village, on the left side, there are landslides, is not covered with vegetation, need to be consolidated.
- ✓ At a distance of 22,1 km from the beginning of the road, after Milesti village, on the right side, there are landslides, is not covered with vegetation, need to be consolidated.
- ✓ At a distance of 27,8 km from the beginning of the road, after Milesti village, on the left side, there are landslides, is not covered with vegetation, need to be consolidated.

- A big percentage of lands is pastures, which could be found in Annex 1. These should be also protected during the road construction and no construction pits or storage of waste should be placed on pastures.
- 22 culverts and one bridge were identified as either being undersized for the original design flow or as not providing adequate flow volume for high flood water due to structural damage or clogging with debris. One additional area was also identified as not having any structure in place, thereby allowing the road to act as a dam to water flow.
- No significant loss of trees would occur along the road, as rehabilitation works will be carried out on the exisiting road, without widening the road, however, many segments of the road do not have shelter belts, and it is recommended to restore/create shelter belts for the rehabilitated road from the native species such as walnuts, poplars, willow trees.

PROJECT POTENTIAL IMPACTS

Generally, no major project environmental impacts are expected. Most of them will be temporary and local, mostly during the construction phase and will cause only minor, localized and short-term negative effects. Most of these impacts will be mainly linked with the rehabilitation works such as leveling, grading, potholes patching, cracks priming, surfacing, quarrying, use of hazardous materials, such as combustive-lubricating ones, bitumen, etc., traffic of construction vehicles/ hauling of road-building materials, building materials stockpiling and use of waste disposals. These impacts are common in road rehabilitation works and can be mitigated by existing management techniques.

Impacts originated from use of asphalt-concrete mixtures, bitumen and other hazardous materials, and their hauling from sites where they are produced to the sites where they are applied had been considered, as well. All these impacts are also common for such kind of works and can be easily mitigated through application of existing techniques and measures.

After completion, the project will have positive indirect impacts on human welfare, safety, health and socio-economic environment through reduced vehicles operating cost, decreased number of accidents; reduced air pollution resulted from vehicles emissions on rehabilitated road sections; cleaning up of roadside drains; reduced risk of soil pollution and erosion, and water pollution resulting from rehabilitation of drainage system, reduced risk of landslides due to slope stabilization, better access to settlements and markets, development of new business opportunities, etc.

The general list of potential impacts during construction/rehabilitation; operational and maintenance phases along with the necessary mitigation measures are presented in the table 3 and 4 below.

Table 3. Mitigation Plan for Road Rehabilitation Phase

Environmental components	*Project activity*	*Potential Impact*	*Scale of the impact*	*Suggested Mitigation Measures*
Soils and land	• Transportation, siting and operation of mobile asphalt plant/ or operation of statutory asphalt plant • Construction works linked with asphalt plant siting (construction of seat/ temporary haul roads, etc.) • Grading • Leveling • Potholes patching/ cracks priming • Pavement / Carriageway surfacing (laying of asphalt-concrete mixtures, laying cement-concrete slabs, etc.) • Use of hazardous materials, such as combustive-lubricating ones, bitumen, etc./ heating and spraying of bitumen • Heavy machinery and equipment operation • Traffic of construction vehicles • Hauling of constructional materials such as bitumen, borrow materials, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc.) • Rehabilitation of road drainage system (drainage channels, chutes, etc.) • Quarrying	**Negative:** • Damage to land due to: o land reclamation for siting of mobile asphalt plant, if needed/ reduced land use options o site preparation works/ earthworks o excavation of constructional materials o haul roads • Damage to soil structure due to traffic of vehicles and storage of constructional materials (cement-concrete slabs, gravel, et.) in the immediate vicinity of road rehabilitation works • Accident soil pollution by petroleum hydrocarbons and other hazardous and toxic materials in the area of mobile asphalt plant operation • Land damage/ soil pollution by bitumen, asphalt concrete mixtures during loading-unloading/ transportation and laying • Soil pollution due to leaks of lubricants • Temporary uncontrolled surface run-off due to construction / rehabilitation of drainage channels • Soil pollution by components of combustion gases emitted by construction vehicles (esp. heavy metals) • Soil contamination due to constructional materials/ construction wastes disposals • Soil pollution due to contaminated surface runoff from the road under rehabilitation • Soil erosion caused by re-channelization of waterways • Formation of gullies along drainage channels • Soil contamination due to improperly arranged temporary accommodation facilitates	Temporary/ local	• To plan carefully construction works to minimize land affected and ensure soil pollution prevention • To minimize construction site's size/ to minimize land affected/ to ensure soil pollution prevention • To select proper site for placing of mobile asphalt plant, if appropriate to minimize impact on land/soil • To ensure accuracy of road rehabilitation works/ to avoid spills, leaks, etc. • To provide proper haul roads to minimize impact on the land • To avoid loss of vegetation along the roads • To rehabilitate borrow areas, quarries and temporary haul /access roads by planting grass and trees and other measures • Proper design and installation drainage and retaining structures/ civil engineering structures/ clean up drainage channels/ culverts to minimize the risk of erosion and landslides on downlands • To avoid road rehabilitation works during heavy rains/ to mitigate velocity and volume of polluted surface run-off • Carry out landslides prevention activities/ physical stabilization of slopes (retaining walls, piles, etc.), if needed • To provide proper construction waste disposals

	• Constructional materials stockpiling • Construction waste disposals • Construction/ rehabilitation of sidewalks in settlements • Establishment of construction camp/ accommodation facilities (sewage facilities, waste disposals, etc.)	**Positive:** • Slopes stabilization towards landslides prevention/ reduced risk of landslides • Decreased risk of soil pollution, soil erosion and landslides resulting from rehabilitation of drainage system • Decreased risk of land degradation potentials/ gullies formation	Permanent/ local	• To provide proper stockpiling of constructional materials • Planting / re-habilitation of vegetation (buffer strips) along the roads to minimize spreading of combustion gases/ particulates/ dust, if appropriate • Backfilling and restoration of eroded channels to natural conditions/ re-vegetation, if appropriate • Organize properly temporary sewage facilities • Clean up of the work site/ restoration of damaged areas after rehabilitation works are finished
Water Resources	• Transportation, siting and operation of mobile asphalt plant/ or operation of statutory asphalt plant • Construction works linked with asphalt plant siting (construction of seat/ haul roads, etc.) • Road leveling • Potholes patching/ cracks priming • Pavement / Carriageway surfacing (laying of asphalt-concrete mixtures, laying cement-concrete slabs, etc.) • Use of hazardous materials, such as combustive-lubricating ones, bitumen, etc./ spraying of bitumen • Heavy machinery and equipment operation • Traffic of construction vehicles, machinery, etc./ • hauling of constructional materials such as bitumen, borrow materials, asphalt-	**Negative:** • Groundwater pollution due to surface runoff from operating asphalt plant ground • Groundwater pollution due to contaminated surface runoff/ migration of spills/leaks from improperly stored lubricants and construction wastes • Groundwater pollution due to leaks from hauling vehicles during transportation/ loading-unloading • Groundwater pollution by bitumen spills • Increased siltation potential/ sediment runoff into downland waterways (if any) due to modifications of drainage patterns • Groundwater pollution by spills from road accidents of vehicles used for construction works • Disturbance to underground water table due to use of heavy machinery • Increased pressure on water resources due to additional water use for road maintenance works • Groundwater pollution by compounds of wastes produced by infrastructure connected with accommodation facilities during road rehabilitation/ improper sewage facilitates	Temporary/ Local	• To plan carefully construction works to minimize impact on water resources • Minimize collection of water and mud, where possible, to execute road rehabilitation works during dry season • Mitigate run-off velocities and volumes/ design outfalls properly • To prevent leaks/spills during transportation/ loading-unloading of constructional materials • Stockpiles of constructional materials should be covered with fabric or other materials to prevent/ mitigate contaminated runoff • To provide proper stockpiling of constructional materials and disposals of hazardous wastes/ avoid stockpiling on the slopes or near waterways, if any/ • contaminated run-off from stockpiles should be drained into ditches with oil traps facilities • Ideally, excavate cutoff ditches around stockpiles to prevent materials from being washed away by surface runoff/ arrange interception ditches to prevent muddy water to reach waterways (if any)

	concrete mixtures, concrete, cement-concrete slabs, gravel, etc.) • Rehabilitation of road drainage system (drainage channels, chutes, etc.) • Quarrying/ removal and placing borrow materials • Heating and spraying of bitumen • Constructional materials stockpiling • Construction waste disposals • Establishment of construction camp/ • accommodation facilities (sewage facilities, waste disposals, etc.)	**Positive:** • Decreased risk of water pollution resulting from rehabilitation of drainage systems as compared to previous road condition • Decreased risk of under-flooding resulting from rehabilitation of drainage system as compared to previous road condition • Decreased risk of sedimentation/ turbidity of waterways (if any) resulting from expected lower erosion potential	Permanent/ local	• All lubricants and engine oils should be collected and recycled or disposed offsite • Design drainage system to ensure soil stability/ soil erosion prevention and thus to avoid surface water pollution by suspended solids • Where possible, maintain natural drainage • Water for road construction works should be obtained from such sources and used in such amount that would not affect appropriate domestic water supply in the settlements • To avoid loss of vegetation during road rehabilitation works • Re-vegetation or physical stabilization of eroded slopes along the road • Restoration of damaged lands, planting of grass and trees • To organize properly accommodation/ sanitary facilities for workers • To clean up the area after the construction work is completed
Air/ Acoustic	• Asphalt plant operation • Traffic of vehicles used for road/ hauling of constructional materials and construction wastes • Heating of bitumen • Crushing and screening of materials	**Negative:** • Emissions from mobile/ statutory operating asphalt plant • Air pollution by components of combustion gases (CO_2 , NOx). • Air pollution by volatile hydrocarbons aggravated by unfavorable weather conditions (wind, hot, etc.) • Local impairment of air quality during crushing and mixing of raw materials • Noise pollution and vibrations from hauling vehicles, operating machinery and equipment	Temporary/ Local	• To plan carefully construction works to minimize air and acoustic pollution • Control construction methods and used machinery and equipment • Careful timing of works in residential areas)/ restrict construction to certain hours • To avoid laud beep signals in settlements/ to minimize disturbance to residents • Restrictions speed of construction vehicles, especially in residential areas • Either use of sprinkling-machines “inhaling” dust… • or control by water or other means/

		Positive: • Decreased risk of air pollution due to reduction of combustion gases emissions into the air	Permanent/ Local	water spaying twice a day during construction to avoid dust • Watering of access roads to minimize dust formation, if applicable • Vehicles delivering materials should be well maintained and covered to prevent/ reduce spills, emissions and dispersion
Fauna and flora/ habitats	• Construction and operation of asphalt plant • Road rehabilitation works (leveling/ potholes patching/ cracks priming/ pavement) • Use of hazardous materials, such as combustive-lubricating ones, bitumen/ heating and spraying of bitumen • Heavy machinery and equipment operation • Traffic of construction vehicles, machinery, etc. • Hauling of constructional materials • Rehabilitation of road drainage system (drainage channels, chutes, etc.) • Constructional materials stockpiling • Construction waste disposals	**Negative:** • Soil and water pollution due to operation of asphalt plant • Soil and water pollution by hazardous and toxic substances • Impact on biota due to contaminated environmental media (air, water, soil) • Noise pollution/ vibration due to operation machinery/ equipment • Noise pollution due to traffic of construction vehicles • Disturbance to habitats/ loss of fauna and flora species during road rehabilitation works • Disruption of wildlife passages, local migration routes and patterns causing increased road kills, etc. • Changes to aquatic eco-systems due to increased sediment runoff into waterways due to construction/ modification of drainage patterns	Temporary/ local	• To plan carefully construction works to minimize impact on flora, fauna, habitats/ careful siting, alignment, design of associated infrastructure to minimize impacts (especially in sensitive arias, if appropriate) • Careful timing of works • and work seasonally, as appropriate/ no construction during breeding season • Trees and other vegetation should be protected during bitumen spraying • To avoid excessive/ to minimize loss of vegetation during road rehabilitation works • Big potholes should be either covered or fenced if they are going to be left opened over night • To avoid loud beep signals from vehicles and machinery in the areas where wild animals inhabit • Ideally, to provide passages through the road for animals/ wire fence in sites where wild animals inhabit • Careful selection of sites to be used for constructional materials stockpiles/ construction wastes disposals • Use of appropriate construction methods • Clean-up of construction sites • Rehabilitate work sites/ asphalt plant operation sites quarries/ borrow areas, access roads by planting grass and trees and other relevant measures

Landscape/ Aesthetic	• Siting of mobile asphalt plant, if appropriate/ relevant construction works • Construction of detours/ access routes/ haul roads • Earthworks/ quarrying/ removal and placing borrow materials • Traffic of construction vehicles/ heavy machinery and equipment operation • Construction/ rehabilitation of road drainage system • Constructional materials stockpiling • Construction waste disposals • Establishment of construction camp/ accommodation facilities	**Negative:** • Local visual impacts/ marred landscape • Damage to vegetation along the roads • Damage to or degradation to some natural and manmade landscape valuable sites, if any, due to easier access • Loss of trees and other vegetation • Dust, waste, debris etc. during road rehabilitation works **Positive:** • Improved manmade landscape	Temporary/ Local Permanent/ Local	• To minimize construction site's size to minimize impact on landscape/ careful planning, siting and design of works • Screening/ fencing of intrusive items • Careful de-commissioning of construction areas/ waste disposal sites// clean up construction sites after road rehabilitation works are finished/ re-vegetation of work area, etc. • Excavated materials, if any, should be used for backfilling of borrows and gravel pits

Table 4. Mitigation Plan for Road Operation & Maintenance Phase

Environmental components	*Project activity*	*Potential Negative and Positive Impacts*	*Scale of the impact*	*Suggested Mitigation Measures*
Soils and land	• Existence of the road • Surface runoff from the road • Vehicles traffic • Passenger/ goods transportation • Road associated infrastructure • Periodical & Routine maintenance: o light - & medium – scale grading o Culvert repair o Clearance of drainage	**Negative:** • Continuous damage to land/erosion and landslide potential/ formation of gullies on slopes along drainage channels • Land damage and soil pollution along the road due to disposal of constructional materials • Soil pollution due to surface runoff contaminated by petroleum hydrocarbons/ engine oil, lubricants/ compounds of fuel (esp. heavy metals) • Soil pollution due to runoff/migration of spills/leaks from vehicles • Soil pollution by wastes produced by infrastructure connected with services located along the road (parking, food facilities, filling stations, restaurants, bars, shops, etc.)	Permanent/ Local	• Planting of trees and bushes along the roads (on an appropriate distance) • To provide roadways/ protection strips along the roads, if appropriate • Proper construction of road drainage system • Road police and ecological authorities to check regularly vehicles quality and their compliance with standards quality • Road police to properly control traffic of vehicles to minimize risk of accidents • To control properly development and operating of road associated infrastructure/ food, sanitary/car filling/

	channels ○ Leveling of roadsides ○ Potholes patching ○ Cracks priming ○ Winter maintenance (snow removal, dusting by sand-salt mixture) • Operation of machinery and equipment • Traffic of construction vehicles • Constructional materials stockpiling • Construction wastes disposals • Short-term accommodation facilities for road workers	• Soil pollution by spills due to vehicles accidents and broken equipment, vehicles and machinery used for road maintenance works (engine oil, lubricants) • Soil pollution due to improperly arranged constructional materials and wastes disposals • Soil pollution due to improperly arranged accommodation facilities for workers (sewage system, etc.) **Positive:** • Decreased land degradation potentials/gullies formation as compared to previous road conditions • Reduced soil pollution, soil erosion and landslides resulted from rehabilitated drainage system and maintenance of it • Decreased risk of landslides due to slope stabilization	Temporary/ Local Temporary/ Local	parking facilities • To undertake continuous measures towards prevention and minimization of erosion • To plan carefully maintenance works to minimize surface area under the impact from road maintenance activities/ to ensure construction work accuracy • Excavated materials should be appropriately stockpiles and covered so that they will be not washed away into downland watercourses • Form offshoots to split flow in the drain to minimize risk of soil erosion • Ideally, to construct ditches, soak pits to prevent waste water being discharged into agricultural land and homesteads to minimize risk of soil pollution • To ensure accuracy of machinery and equipment used for maintenance works to minimize risk of accidental spills • To ensure appropriate stockpiling of constructional materials • To ensure proper construction waste disposal sites • To organize properly short-term accommodation facilities to prevent soil pollution and damage to land • Ideally, to fence repair area to restrict damage of surrounding lands • To clean up the work area after repair works are completed
Water Resources	• Existence of the road • Traffic of vehicles • Surface runoff from the road • Passenger/ goods transportation • Road associated infrastructure • Periodical & Routine	**Negative:** • Accidental pollution of groundwater by spills during road accidents • Reduction in groundwater recharge due to installed road drainage system • Potential for interrupting or lasting lowering of underground water table due to road operation • Groundwater pollution by wastes produced by road associated infrastructure associated (parking, food,	Permanent/ Local	• Road police and ecological authorities to check regularly vehicles quality and their compliance with technical standards quality • Road police to properly control vehicles conditions to minimize risk of accidents/ accidental spills • To control properly road drainage system to avoid soil erosion/

	maintenance: ○ light - & medium – scale grading ○ Culvert repair/ replacement ○ Clearance of drainage channels ○ Levelling of roadsides ○ Potholes patching ○ Cracks priming ○ Winter maintenance (snow removal, dusting by sand-salt mixture) • Operation of machinery and equipment • Traffic of construction vehicles • Constructional materials stockpiling • Construction wastes disposals Short-term accommodation facilities for road workers	sanitary facilities, filling stations, shops, bars, etc.) • Groundwater pollution due to surface run-off contaminated by petroleum hydrocarbons/ engine oil, lubricants/ compounds of fuel (esp. heavy metals) • Groundwater pollution by spills due to vehicles accidents and broken equipment, vehicles and machinery used for road maintenance works (engine oil, lubricants) • Groundwater pollution due to improperly arranged constructional materials and construction wastes disposals • Groundwater pollution by wastes produced by infrastructure connected with temporary workers' camps (improperly arranged toilet facilities, etc.) • Groundwater pollution due to improperly arranged accommodation facilities for workers (sewage system, etc.) • Increased siltation potential/ sediment runoff into downland waterways (if any) due to repair/ clearance of drainage channels/ culvers • Increased turbidity of downland waterways (if any) • Increased pressure on water resources due to additional water use for road maintenance works **Positive:** • Reduced water pollution resulted from rehabilitated drainage systems as compared to previous road condition • Decrease risk of under-flooding due to rehabilitated drainage system as compared to previous road condition and maintenance of it • Decreased siltation of waterways (if any) due to lower erosion potential as compared to previous road condition • Decreased turbidity of waterways (if any)/ decreased fine-grained sediment runoff to surface waters as compared to previous road condition • Decreased risk of water pollution/ sedimentation/ turbidity of waterways resulting from maintenance of drainage systems	Temporary/ Local Permanent/ Local	sedimentation of waterways/direct runoff to waterways/ turbidity of waterways • To plant trees and bushes to prevent surface erosion and landslides • To control properly development and operation of road associated infrastructure along the roads (food and parking facilities, filling stations, recreation stops, etc.) • To plan carefully maintenance works to minimize surface area under the impact from road maintenance activities • To ensure accuracy of road maintenance works/ machinery and equipment used for repair work • To provide proper stockpiling of constructional materials • To provide proper constructional materials waste disposals • Excavated materials should be used properly stockpiled and covered to prevent their washing away • To arrange interception ditches, to prevent muddy water to reach waterways (if any) • To provide infiltration ditches/ soak pits to prevent direct contaminated water discharge • All lubricants and engine oils should be collected and recycled or disposed off site • To organize properly short-term accommodation facilities for workers • To clean up the work area after repair works are completed • Water for road maintenance works should be obtained from such sources and such amount that would not affect appropriate domestic water supply in the area of concern

Air/ Acoustic	• Traffic of vehicles
	• Emission from vehicles
	• Periodical & Routine maintenance:
	  ○ Rood repair works
	  ○ Culvert repair/ replacement/ clearance of drainage channels
	  ○ Winter maintenance
	• Traffic of construction vehicles
	• Operation of machinery and equipment
		Negative:
		• Air pollution by components of combustion gases (CO2 , NOx).
		• Noise pollution/ vibration from traffic of vehicles (esp. tracks) in residential areas and from traffic of construction vehicles and operating machinery and equipment
		• Local impairment of air quality during mixing of raw materials
		
		Positive:
		• Reduction of emissions into the air / reduction of air pollution by combustion gases as compared to previous road conditions
		• Decreased risk of air pollution due to reduction of combustion gases emissions into the air as a result of proper maintenance of the road
			Permanent/ Local
			
			Temporary/ Local
			
			Permanent/ Local
				• Designing and planting vegetation (buffer strips) along the roads to minimize spreading of combustion gases
				• To avoid laud beep signals in settlements/ to minimize disturbance to residents
				• Ideally, to construct noise prevention barriers in residential areas
				• Restrictions on vehicles speed, especially along residential areas
				• Vehicles to comply with engine brake norms, especially in residential areas
				• To plan carefully maintenance works to minimize air and acoustic pollution
				• Control road maintenance methods and of works (to avoid maintenance works in residential areas over night)
				• To minimize disturbance/ restrict road maintenance works to certain hours/ timing of works
				• Either use of sprinkling-machines "inhaling" dust or control by water or other means/ water spaying twice a day during construction to avoid dust
				• Speed restrictions of vehicles used for road maintenance, especially in residential areas
				Vehicles transported materials for road maintenance (e.g., sand) should be covered to avoid extra dusting

Fauna and flora/ habitats	• Existence of the road
	• Traffic of vehicles
	• Road associated infrastructure
	• Periodical & Routine maintenance:
	  ○ Repair of pavement
	  ○ Culvert repair/ replacement/ clearance of drainage channels
	  ○ Care of vegetation
		Negative:
		• Continuous damage to biodiversity
		• Continuous damage/ disturbance to habitats
		• Death of wild animals due to road accidents
		• Disturbance to wild animal passages/ local migration routes and patterns
		• Secondary contamination of biota due to pollution potential of soil and water in the area of road operation/ pollution of vegetation along the roads by emitted combustion gases and their compounds (esp. heavy metals)
			Permanent/ Local	• Traffic signs posting along the roads (indication of speed limits, warning about valuable habitats and animals inhabited in the area, etc)
				• To ensure stricter control to conserve biodiversity/ poaching and illegal cutting prevention
				• To provide appropriately designed rest stops to minimize impact on environment
				• To undertake continuous measures

	along the road ○ Winter maintenance • Operation of machinery and equipment • Traffic of construction vehicles • Constructional materials stockpiling • Construction wastes disposals Short-term accommodation facilities for road workers	• Pollution of vegetation along the roads by heated emitted combustion gases and their compounds (esp. heavy metals) and other hazardous substance • Pollution of environmental media (soil, water, air) • Noise pollution/ vibration due to operation machinery/ equipment • Noise pollution due to traffic of construction vehicles • Disruption of wildlife passages, local migration routes and patterns causing increased road kills, etc. • Changes to aquatic eco-systems due to increased sediment runoff into waterways due to repair/ replacement of drainage system **Positive:** Care of green plantations along the roads	Permanent/ Local	towards prevention and minimization of erosion • Continuous vegetation/ re-vegetation along the roads • To ensure compliance of vehicles conditions with technical standards to minimize risk of environmental pollution (air, soil, water) • Ideally, to provide facilities for wildlife to cross the road, e.g. tunnels • Ideally, to ensure protection measures to avoid danger to animal species due to road accidents (e.g., fences along the roads, where acceptable and possible) • To plan carefully road maintenance works to minimize disturbance to habitats/ animal species inhabited in the area • Careful timing of works and work seasonally, as appropriate/ no construction during breeding season • Trees, vegetation should be protected during bitumen spraying • Proper arrangement of constructional material stockpiles and construction waste disposals to minimize environmental pollution • Excavated potholes should be either covered with crushed stone/sand or fenced if they are going to be left opened during certain period of time • To arrange properly accommodation facilities to minimize environmental pollution • Clean-up the site after work maintenance works are finished
Landscape/ Aesthetic	• Existence of the road • Road associated infrastructure • Road repair works • Stockpile of	**Negative:** • Loss of vegetation/ poor vegetation • Impaired lands/ loss of some land uses along the roads • Garbage/ waste disposals along the roads	Permanent/ Local	• Planting of trees (at allowed distance) and bushes to improve the landscape • Planting of trees to stabilize the slops/ prevent soil erosion and landslides • To control properly development and

	constructional materials/ construction waste disposals	• Damage to landscape due to waste & excavated materials disposals/ stockpiling of constructional materials **Positive:** • Improved visual effects/ improved conditions of surroundings/ manmade landscape	Permanent/ Local	operation of road associated infrastructure • To plan carefully maintenance works to minimize impact on landscape • Clean-up the site after work maintenance works are finished • Excavated materials, if any should be used for backfilling of borrows and gravel pits • To arrange properly accommodation facilities

MITIGATION OF POTENTIAL PROJECT IMPACTS

To minimize potential *construction-related negative environmental impacts*, a combination of preventive actions and monitoring activities should be applied. All these necessary measures are provided with great details in the last column of the table 3. Taking them into account the contract documents for construction/rehabilitation phase will incorporate all requirements to minimize disturbance from civil works, including proper management of construction waste; control measures for waste fuel, oil and lubricants, other hazardous substances; provisions for protection of vegetation and fauna, including migratory species (if applicable), actions to reduce noise and dust levels; soil erosion control and water quality protection, and rehabilitation of areas under construction camp, asphalt-concrete plants and temporarily storage of building materials once the project is completed. The necessary mitigating measures would constitute integral part of the project implementation including the contracts binding the contractors to carry out the environmental obligations during road rehabilitation works.

The contract clauses shall include requirements towards compliance with all national construction, health protection, safeguard laws and rules as well as on environmental protection as well as the "chance finds" provisions. Furthermore, the contractor will identify officers responsible for implementation of on environmental protection activities in conformity with instructions received from the design engineer, SRA environmental specialist or relevant environmental protection agency/agencies. Financial penalties will be associated with compliance failure but with overall coverage by the contractors. Materials (e.g. asphalt, stone, sand, etc.) should be supplied only from sources with approved licenses, permits, and/or approvals to ensure environmental and workers safety, and any equipment to be used during construction should meet internationally recognized standards for environmental health and workers safety.

All contracts should specify that (a) contractors should follow a set of environmental guidelines for contractors prescribed by the EMP; and (b) contractors should submit, as part of their bid, a site-specific environmental management plan (based on this EMP with the detailed description of implementing arrangements) including organization of training for participating staff.

The implementation of mitigation measures will be monitored by the SRA supervision engineer, jointly with the SRA environmental specialist.

Operational impacts will be addressed in order to avoid deterioration of road conditions and associated safety problems (see table 4 last column). Among major issues to be addressed during operation are: proper functioning of drainage facilities, landslide and erosion control. During this phase, the potential negative impacts will result also from civil works to be executed as part of the regular maintenance. To minimize potential operation-related negative environmental impacts, some preventive measures should be taken during the design phase, and then a combination of sound operational activities and monitoring should be carried out. This has to be a part of the bidding documents.

Lastly, safeguards *measures for road maintenance* presented in the table 4, shall be also included in technical specifications for contractors. The guidelines form the basis of contractual obligations that are to be fulfilled by road maintenance contractors. Contracts for maintenance will include specific clauses for environmental protection based on the guidelines.

SUPERVISION AND MONITORING ACTIVITIES

This section contains suggested monitoring activities on implementation of the EMP (see table 5 below). It includes the basic monitoring indicators, timeframe procedures and responsibilities for proposed monitoring activities. In addition to the monitoring of mitigation measures shown in the table 4, the monitoring of environmental indicators and mitigation measures performance will be a part of the overall project monitoring. Monitoring of implementation of environmental mitigation measures established within this EMP, will be the responsibility of: (a) construction Contractors; (b) SRA environmental specialist (with assistance from SRA supervising engineer), and (c) Rayon ecological inspectors.

The findings of the relevant monitoring activities will be reflected in quarterly progress reports. The progress reports will cover the implementation of proposed by EMP activities, as well as environmental impacts if any occured. The site supervisors should also inspect construction sites, borrowing and dumping areas, and other potentially affected areas. Monitoring indicators shall be developed for both the construction and operation phases of each road sub-project.

It is proposed that the monitoring activities will be performed monthly, based on a predefined scheme. This approach will reveal the maximum values and the exceptions, as the results will be presented with diagrams compared and with the background and limit values. The monitoring reports will show the need for corrective actions, such as mandatory actions enforced by Moldovan environmental legislation, by World Bank EHS Guidelines and/or any mitigation measures imposed by agreements and permits in place, issued by relevant stakeholders.

For reducing the costs and necessary time for study elaboration, the following approach is proposed:

- Establishing the most affected residential areas by the working sites, regarding the air and noise pollution;Listing the Moldovan regulations (presented in Environmental Management Framework) that impose limit values for the mentioned pollutants, in ambient air, water, residential areas and soil;
- Measurements of air pollutants concentrations, noise levels, soil and surface water contaminations in the vicinity of the working sites;
- Comparison of the measurements results with the regulated limits such as:
  - Limit values
  - Alert thresholds for sensible utilities (residential areas)
  - Intervention thresholds for sensible utilities (residential areas).
- Proposal of corrective actions in order to mitigate the environmental issues identified on the working sites.
- Issuing a hard copy report

A monitoring report should be produced on a quarterly basis. The proposed structure is:

- General data
- Methodology
- Investigations over environmental media (noise, air, soil, water, vegetation)
- Assessment criteria
- Results of the site investigation.
- Management of construction materials, of harmful substances and of waste
- Conclusions and recommendations

- Corrective actions required to mitigate the environmental issues

During construction phase monitoring of the following environmental indicators are recommended to be completed by the Contractor and/or an independent company that will be contracted on its behalf.

Table 5. Suggested monitoring activities

Phase	**What** (Is the parameter to be monitored?)	**Where** (Is the parameter to be monitored?)	**How** (Is the parameter to be monitored?)	**When** (Define the frequency / or continuous?)	**Why** (Is the parameter being monitored?)	**Cost** (if not included in project budget)	**Who** (Is responsible for monitoring?)
During activity **preparation**	site access traffic management availability of waste disposal facilities hazardous waste inventory (asbestos) construction material quality control (eg. paints / solvents)	at the site at the site in site vicinity on site Contractor's store / building yard	check if design and project planning foresee diligent procedures visual / analytical if in doubt visual / research in toxic materials databases	before launch of construction before start of rehabilitation works before approval to use materials	safety of general public timely detection of waste disposal bottlenecks public and workplace health and safety	marginal, within budget	Contractor, Engineer
During activity **supervision**	dust generation noise emissions waste and wastewater types, quality and volumes surface drainage soundness	on site and in immediate neighborhood, close to potential impacted residents at discharge points or in storage facilities	visual consultation of locals visual, analytical if suspicious count of waste transports off site, check flow rates and runoff routes for wastewater	daily daily daily / continuous daily / continuous	avoidance of public nuisance avoidance of negative impacts on ground/ surface waters ensuring proper waste management and disposal	marginal, within budget	Contractor, Engineer

INSTITUTIONAL ARRANGEMENTS

Well defined roles and responsibilities and adequate institutional arrangements are central to the effective implementation of the environmental safeguard measures outlined in the foregoing EMP. Accordingly, details of institutional arrangements and the roals and responsibilities of various institutions in the implementation of EMP are presented below.

The key agencies with major roles in the implementation of EMP are:

- SRA (with Environmental Specialist)
- Project Management Consultant
- Contractor (with Environmental, Health and Safety Officer)
- Supervision Engineer
- Local Ecological Inspections (which will inspect compliance with environmental legislation)
- Local Centres for Public Health (which aslo will inspect compliance with the national legislation)

SRA is the project executing authority. SRA also has responsibility for ensuring that the EMP is properly implemented. SRA will employ a **Project Management Consultant** (PMC) to assist in contract administration. SRA supported by the PMC will facilitate establishing best construction practice modality together with the Supervision Engineer and the Contractor, particularly in regard to environmental protection.

The **Contractor** is responsible for implementing the EMP in accordance with the conditions in the contract documents. The Contractor will prepare a Quality Assurance Plan which will include implementation of the EMP, and appoint an Environmental, Health and Safety officer with relevant training and experience in the field. The Contractor shall provide to all employees general environmental awareness training, as part of their standard environmental, health & safety. Adherence by the Contractor and construction workers to environmental requirements is a major aspect of environmental protection in road projects. This adherence is best achieved through training and contract stipulations, as outlined in contract documents.

Monitoring and enforcement of the requirements are necessary aspects of the process. There will be a **Supervision Engineer** (SE) for each contract to ensure all works are in compliance with the contract requirements including the EMP. The SE will contain a domestic Environmental Specialist to monitor and report implementation of EMPs. The main responsibility for monitoring and reporting on the implementation of EMP lies with SE who will be responsible for regular supervision and reporting on EMP implementation by the Contractor.

The Contractor's internal communication should include reporting of any incident involving environmental contamination and/or damage presented to the Contractor's Environmental, Health & Safety Officer. The Contractor shall immediately determine corrective action and inform the SRA Project Manager.

The Contractor will prepare quarterly reports and present those to Supervision Engineer, in case Contractor will identify pollution, reports will be presented within a week to SE and to SRA and correction measures will be immediately issues (within 1-2 days by SE) to rehabilitate the situation and diminish the caused pollution. Correction measures/actions will be sent also to SRA and monitored by SE in terms of their implementation by the Contractor. A monitoring report should be presented quarterly by SE to the SRA Environmental Specialist. Competent Environmental Protection Authorities should be informed, if pollution cases occur. Any problem requiring immediate attention should be

noted by the Contractor and brought IMMEDIATELY to the attention of SE who is responsible for ensuring that the Contractor complies with the contract. SE will use authorized laboratories from the State Ecological Inspectorate, Academy of Sciences of Moldova or other laboratories to carry out necessary tests and develop reports.

EMP PUBLIC CONSULTATIONS

Public consultations on this Environmental Management Plan were held in the meeting room of the Milesti Mayoralty, Nisporeni rayon on the 27th of May 2015.

Representatives of all the villages situated along corridor C13 were invied to the meeting: Seliste, Paruceni, Balanesti, Milesti villages from Nisporeni rayon and Alexeevca and Pirlita villages from Ungheni rayon.

The following aspects were presented during the meeting:

- Objectives of local roads rehabilitation project,
- Corridors selected for the first phase of the project,
- Period of works execution,
- Necessity to develop and the goal of the Environmental Management Plan
- Methodology to collect data to develop EMP
- Presentation of draft EMP

The main aspects presented and which are to be taken into consideration by EMP are:

- The first segment of the road starting with Seliste village is determined by a hilly landscape, with abrupt hills
- The second part of the road, near Alexeevca village, Ungheni rayon is identified by a plateau landscape
- There are three state protected areas in the region:
  - ✓ *State Scientific Reserve „Plaiul Fagului"* was created on 12th March 1992 to conserve, regenerate and study one of the most picturesque and representaive environmental forest ecosystems in Codrii zone. The total surface of the reservation is 5642 ha, out of which forests occupy 4639 ha. Rare species include Honey Buzzard (Pernis apivorus), Lesser Spatted Eagle (Aquila pomarina), Black Woodpecker (Dryocopus martius), European Ground Squirrels (Citellus citellus), European Wildcat (Felis silvestris), Four-lined snake (Elaphe quatuorlineata) and Pond turtle (Emys orbicularis). 14 orders of birds prefer the reservation for vernal-autumnal pasage and for nesting.
  - ✓ *State Natural Protected Area "Seliste-Leu"* includes hilly forested areas with various species of oak tree and also forest-steppe areas with oaks on dark ash soils and uncarbonatic chernozems. 7 types of forests are identified, the majority of which are composed of various types of oak trees. Soils of the protected area are agro-alluvial chernozems, light grey color, dark grey color. The surface of the reservation is 315 ha, it is placed in Nisporeni rayon. It is managed by Nisporeni State Forestry Enterprise.
  - ✓ *State Natural Protected Area "Cazimir - Milesti"* is composed of oaks and ashes on hilly landscapes, hornbeam, also with willow and reed in the valleys. It is situated in Nisporeni rayon, between the villages of Milesti, Balanesti, Gaureni, forestry area Paruceni, Cazimir – Milesti.
- Protected areas are situated at a distance of 0,1 km-1 km from corridor C13, these are a part of the national ecological network. Natural reservation "Seliste-Leu" and landscape reservation „Cazimir-Milesti" are core zones of local importance of the national ecological network while the scientific reservation "Plaiul Fagului" – of national importance.

- Hydrographical network is very wel developed, also due to a very good coverage with forests of the region. Corridor C13 passes 4 stream basins: Nirnova, Bratuleanca, Varsava and Delia. There are segmenets of these rivers which flow along the road. The last part of the road in Pirlita village, Ungheni district is placed in the valley of Delia stream, with swampy soils, flooded during spring and autumn.
- Due to hilly landscape and well-developed hydrographical network, rehabilitation of the segment of the road R25 - Seliste – Balanesti – Milesti – Alexeevca needs to be attentively designed to allow the free flow of the water in the streams, especially during stronger precipitations or floods, in order to protect the road during the exploatation period.
- There are 14 lakes along the road, being private or public property. Soils are predominantly fertile soils (chernozems and gray), which are used to raise agricultural products, including orchards and vineyards. At the same time there are degraded lands (slightly, moderately or highly eroded), which are characterized by ravines and landslides. These need to be consolidated by vegetation in order to prevent further deterioration and protection of the road during exploatation period. 10 segments of eroded lands were identified along C13.

Suggestions and comments addressed by the participants at public consultations are:

- In Seliste, Balanesti and Milesti villages there are road segments where culverts were not designed previously for water drainage, this situation led to a rapid road deterioration. These should be taken into consideration while designing the road rehabilitation activities.
- A feasibility study was developed for R25 - Seliste – Milesti,which identified all the culverts which need to be built for a qualitative surface water drainage. Thus, in Milesti village there need to be built culverts on a segment of 4,5 km;
- Local public authorities will inform the population about the road rehabilitation and will identify alternative pastures for domestic animals which will be used during rehabiliation process;
- Mayor of Seliste village recommended to build adjacent narrow roads in the villages where domestic animals will be going to pastures and returning back in order to prevent traffic blockages;
- Local public authorities will take care of the public shallow wells during the rehabilitation process, will cover them to prevent water pollution;
- The participants recommended to restore shelter belts of the road, where necessary, using for that walnut trees.

The list of public consultation participants is presented in Annex 2.

ANNEX 1. ENVIRONMENTAL SURVEY

Location/Land use	Components of the environment along the road													Description
	protected areas	fisheries/streams	cultivations	cultural resources	wetlands	school	heath unit	well	poor community	other	trees	houses	market/shops	
0 km - 0,9 km											x			Forrest area RT/LT; Trees along road
0,3 km LT				x										Cross LT
0,4 km														Stream crossing
0,7 km														Soil erosion RT
0,9 km - 1,3 km											x			Green area; Trees along road
1,3 km - 1,7 km														Cultivated land LT
1,5 km														Pasture; Landfill RT
1,6 km														Large soil erosion RT
1,7 km								x						Well LT
1,8 km - 6,5 km														Seliste village; landscape are hills with forests; platforms for waste collection established
1,8 km - 2,1 km												x		Houses along road RT/LT
1,8 km				x										Croos RT
2,0 km		x		x				x						Cross RT; spring RT continues with stream along row
2,1 km - 2,3 km											x			Forrest area LT; Trees along row LT
2,1 km		x												Stream crossing
2,3 km - 3,2 km												x		Houses along road LT
2,3 km- 2,4 km			x							x				Cultivated land; Pasture RT
2,4 km - 6,5 km												x		Houses alog road RT
2,5 km		x						x						Well LT; stream crossing
2,6 km		x												Stream crossing

2,7 km				x			x							Health unit; cross LT
2,8 km		x						x						Well RT; stream crossing
2,9 km		x		x				x						Spring with stream crossing (need drainage under road); cross RT
3,1 km		x												Stream crossing
3,2 km														Sheppfold LT
3,4 km - 3,8 km														Green area LT
3,4 km		x												Stream crossing (need drainage under road)
3,5 km				x				x						Well; cross RT; indicator for beginning of Ciutesti village
3,6 km								x						Well LT
3,8 km - 5,2 km												x		Houses alog road LT
3,8 km				x										Cross LT
3,8 km								x						Well RT
4,0 km				x				x						Spring; cross RT
5,1 km		x		x				x		x				2 Wells RT; stream along road; Mayoralty; cross
5,2 km										x				School RT
5,2 km - 5,3 km				x							x			Park; Trees along road; Monument LT
5,3 km		x												Stream crossing
5,3 km RT				x				x						Well; cross RT
5,3 km - 6,0 km												x		Houses along road LT
5,4 km								x						Well RT
5,6 km								x						Well LT
5,7 km				x				x		x				Well; cross; buss station LT
6,0 km - 7,7 km														Cultivated land along road LT
6,1 km				x						x				Cross; buss station LT
6,2 km								x						Well LT
6,5 km - 8,5 km														Cultivated land along road RT
7,2 km										x				Landfill RT
7,5 km		x												Stream crossing
7,7 km - 8,5 km												x		Paruceni village; Houses along road LT

7,7 km								x						Well LT
7,7 km - 8,0		x												Stream along road RT
7,8 km														Cross RT
7,9 km										x				Gas station; buss station LT
8,0 km		x												Stream crossing
8,0 km								x						Well LT
8,0 km - 9,7 km		x												Stream along road RT
8,1 km				x				x						Well; Cross LT
8,3 km								x						Well LT
8,5 km - 9,2 km														Trees alog road; Cultivated land LT
8,5 km - 9,4 km										x	x			Trees along road; Pasture RT
9,1 km										x				Abandoned construction (farm) LT
9,2 km								x				x		Artesian well; houses LT
9,3 km				x				x						Well RT; cross LT
9,4 km - 10,7 km														Cultivated land RT
9,4 km - 12,6 km														Cultivated land RT
10,1 km		x												stream crossing
10,1 km								x						Well LT
10,2 km		x												stream along road LT
10,6 km		x												Pond RT
10,7 km								x						Well RT
10,6 km - 12,0 km														Cultivated land RT
12,0 km		x												Pond at distance RT
12,2 km - 12,7 km														Cultivated land RT
12,6 km - 13,4 km														Green area LT
12,7 km								x						Well LT
12,7 km				x										2 Crosses LT/RT
12,7 km										x				Buss station RT
12,7 km - 13,4 km														Green area RT
13,4 km - 13,7 km											x			Trees along road; Forest I.S. "Nisporeni Silva"
13,4 km - 13,9 km														Cultivated land LT

13,6 km Landfill										x				Landfill LT
13,7 km - 16,2 km														Balanesti village; platforms for waste collection established
13,9 km - 20,1 km												x		Houses along road RT
13,9 km - 15,1 km												x		Houses along road LT
14,0 km								x		x				Artesian well; school RT
14,0 km								x						Well LT
14,3 km										x				Buss station RT
15,1 km - 15,9 km														Pasture LT
15,6 km				x				x						Well; cross LT
15,9 km - 16,4 km			x											Cultivated land LT
16,2 km								x						Artesian well RT
16,2 km - 20,8 km														Milesti village; platforms for waste collection established
16,4 km - 18 km														Houses along road LT
16,5 km											x			Forest area at some distance RT
16,7 km		x						x						Well; stream along road RT
16,8 km								x						Well LT
17,1 km		x												Big soil erosion LT; stream crossing
17,2 km				x				x						Well; cross RT
17,5 km								x						Spring RT
17,6 km		x						x						Well; stream along road LT
17,9 km		x						x						Well RT; stream crossing
18 km - 18,2 km											x			Green area LT
18 km				x				x						Well; cross RT
18,3 km								x		x				Artesian well; school RT
18,3 km				x				x						Well; cross LT
18,2 km - 20,3 km												x		Houses along road LT
18,6 km										x				Kindergarden RT
18,6 km				x				x						Well; cross LT
18,8 km		x												Stream crossing

18,8 km								x						2 Well LT
19,1 km								x						Well RT
19,2 km				x				x						Spring; cross LT
19,3 km										x				Mayoralty of Milesti village LT
19,4 km								x						Well RT
19,5 km								x						Well (artesian maybe) LT; well RT
19,6 km				x				x						Well; cross LT
19,7 km		x									x			Green area LT; soil erosion RT; stream crossing
19,8 km								x						2 Wells LT
19,9 km								x						Well RT
20,0 km								x						Well RT
20,1 km - 20,3 km											x			Park RT; Trees along road
20,2 km								x						Well RT
20,3 km													x	Gas station LT
20,5 km - 21,0 km			x											Cultivated land LT
20,5 km - 20,8 km														Cultivated land RT
20,7 km								x						Well LT
20,8 km - 21,0 km											x			Forest area; Trees along road RT
20,9 km		x												Soil erosion LT; stream crossing
21,0 km		x												Stream crossing
21,0 km - 21,3 km										x				Pasture LT
21,0 km - 21,1 km												x		Houses along road RT
21,1 km										x				Soil erosion LT
21,1 km - 21,5 km			x											Cultivated land RT
21,2 km		x												Pond RT
21,3 km - 21,8 km										x				Soil erosion RT
21,3 km - 21,6 km			x											Cultivated land LT
21,4 km		x												3 Ponds LT
21,6 km		x												Stream crossing
21,6 km - 21,8 km										x				Pasture LT
21,7 km										x				Soil erosion LT

21,8 km - 22,7 km														Cultivated land RT
21,8 km - 25,7 km			x											Cultivated land LT
22,1 km - 22,9 km		x												Stream along road LT
22,1 km										x				Soil erosion RT
22,3 km				x										Cross LT
22,7 km								x				x		Well; house RT
22,7 km		x												Confluence of 3 streams, stream crossing
22,7 km - 22,9 km		x												Stream along road RT
22,7 km - 22,9 km										x				Pasture RT
22,9 km		x			x									Pond RT
22,9 km - 25,9 km		x			x									Stream along road RT
22,9 km - 23,6 km			x									x		Cultivated land; several houses RT
23,3 km		x			x									Streams confluence RT
23,6 km		x									x			Forest area; Pond; stream RT
23,9 km		x												Pond RT
23,9 km - 25,2 km			x											Cultivated land RT
24,9 km								x						Well LT
25,2 km - 28 km										x				Pasture RT
25,7 km		x						x						Well; Pond; stream along road RT
25,7 km - 26,2 km										x				Pasture LT
25,9 km		x												Stream crossing
26,2 km		x												Drainage chanals going to stream along road on 1km distance LT
26,2 km - 27 km			x											Cultivated land LT
26,6 km		x												Stream crossing
27 km - 28,5 km											x			Trees along road LT
27,4 km				x										Monument RT
27,5 km		x												Stream crossing
27,8 km										x				Soil erosion LT
28 km - 28,8 km			x											Cultivated land RT
28,4 km		x												Stream along road

28,5 km - 29,5 km			x											Cultivated land LT
28,8 km - 30, 0 km											x	x		Forest area;Trees along road; house RT
29,5 km - 30,0 km											x			Forest area; Trees along road LT
30,0 km - 31,7 km			x											Cultivated land LT
30,0 km - 31,7 km			x											Cultivated land RT
30,1 km				x				x		x				Well; cross; buss station LT
31,6 km - 33,6 km														Alexeevca village
31,7 km - 33,4 km												x		Houses along road RT
31,7 km - 33,6 km												x		Houses along road LT
31,9 km								x						Well RT
32,0 km								x						Well RT
32,1 km				x				x						2 Wells; cross RT
32,2 km								x						Well RT
32,2 km				x				x						Well; Church LT
32,5 km				x				x						Well; stadium LT
32,5 km										x				Bus station RT
32,7 km		x												Stream crossing road between 2 Ponds RT
32,7 km		x												Pond LT
32,7 km								x						Well LT
32,9 km		x												Stream crossing
33,1 km				x										Cross RT
33,1 km								x						Well LT
33,4 km - 35,1 km			x											Cultivated land RT
33,6 km - 35,4 km			x											Cultivated land LT
34,1 km												x		Abandoned buildings LT
35,1 km - 35,6 km											x			Green area; Trees along road LT
35,4 km - 36,7 km											x			Green area; Trees along road LT
35,6 km - 38,6 km			x											Cultivated land RT
35,7 km - 38,6 km			x											Cultivated land LT
37,1 km								x						Well LT
38,5 km		x		x										Pond; cross RT

38,5 km		x												Pond LT
38,6 km - 40,0 km														Pirlita village
38,6 km				x										Cemetery RT
38,6 km - Houses												x		Houses along road LT
38,8 km		x								x				Stream along road; landfill RT
38,9 km - 40,0 km					x									Stream valley; wetland RT/LT
38,9 km		x												Stream along road LT
38,9 km										x				Bus station RT
39 km				x				x						Well; cross RT
39,4 km		x												Big stream crossing
39,6 km		x												Stream along road RT
39,9 km										x				Gas point LT; railway corssing
40,0 km		x												Stream crossing

ANNEX 2. LIST OF EMP PUBLIC CONSULTATION PARTICIPANTS:

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