REPUBLIC OF MOLDOVA

MINISTRY OF TRANSPORT AND ROAD INDUSTRY

State Road Administration

Local Roads Improvement Project

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK

June, 2015

MOLDOVA
Chisinau

ABBREVIATIONS AND ACRONYMS

EA	Environmental Assessment
ESMF	Environmental Management Framework
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EU	European Union
GoM	Government of Moldova
IDA	International Development Association
ME	Ministry of Environment
MTRI	Ministry of Transport and Road Industry
NGO	Non-governmental organization
OP/ BP/ GP	Operational Policies, Bank Procedures and Good Practices
SEA	Sectoral Environmental Assessment
SEE	State Ecological Expertise
SEIA	Statement on the Environmental Impact Assessment
SEI	Sate Ecological Inspectorate
SRA	State Road Administration
WB	World Bank

Content

Executive summary

Project Development Objective: The Project Development Objective (PDO) is to: (i) improve access to basic social services (education, health and access to markets), (ii) increase road safety, (iii) improve the management of routine maintenance on the selected local roads, and, (iv) enhance the capacity of national and local authorities to manage the local road network.

Project description. This local roads program will put more emphasis on building the management capacity of local roads both at the central and local levels. The proposed project would consist of two components totaling US$ 25 million.

Component 1: Improvement of Regional and Local Roads (about US$ 20.0 million). This component will finance (i) the rehabilitation of local roads, approximately 250 km, (ii) routine maintenance pilot in selected raions using a micro-enterprise approach. This component will include a training activity targeted to the selected Raions/ Municipalities on micro-enterprise contract management. This component will finance the detailed design of the remaining project work program (the detailed design of around 75-100 km out of 250 km of the selected local roads will be completed during the project appraisal stage) and the supervision activities for all road rehabilitation and maintenance works. This component will also finance independent technical audits of civil works. The component will finance the development of standards for road safety works in the proximity of schools and health facilities. The key objective will be to provide safe access to schools for children who have been affected by the school consolidation program. This includes transportation to/from schools, and safe access to schools and bus stops.

Component 2: Capacity Building and Advisory Services to the newly established local roads Unit within the State Road Administration (about US$ 5.0 million) and to Raions or Regional Development Agencies. The aim of this component is to consolidate the previous condition survey carried out by the SRA on the core local road network, integrate this in the database and develop a priority road rehabilitation/maintenance program for the core local road network. The component will also finance baseline survey and impact studies on project beneficiaries. Through the collection of quantitative and qualitative data (practical surveys instruments before and after project completion), the proposed assessments will document potential income and social impacts.

Project category. In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 Environmental Assessment, the project is placed into the Bank's *Category B*. As at this stage are not yet identified the subprojects to be financed, the Bank requires that client will screen all proposed subprojects and ensures that subproject beneficiaries carry out appropriate Environmental Assessment for each subproject. For this purpose the client has to prepare an Environment Management Framework (ESMF) which will specify rules and procedures for subprojects Environmental Assessment (EA).

Potential environmental impacts. 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.

As stated in the ESMF there will be no potential impacts of the project activities upon natural habitats and forests, as well as on cultural, religious and historical sites and/or it is expected no such sites will be directly impacted by road rehabilitation and/or maintenance works. With regard to social issues, since all works will be conducted on the existing roads, there will be no temporary or permanent loss of agricultural or grazing lands. In addition, the project activities will not trigger involuntary resettlement or land-taking.

Triggered WB OPs. 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 some environmental and social impacts. The borrower confirmed the project will not support activities and sub-projects that might result in resettlement. Furthermore, as is stated in the ESMF prepared, the OP/BP4.04 on Natural Habitats also would not be triggered as the project will not support any activities which might involve conversion of natural areas and forests or impacts on them as all project activities will be implemented on ROW. Similarly, there will be no impact on physical cultural resources as all proposed activities will be implemented on existing local roads and no expansion of them will be financed.

Environment Management Framework (ESMF). To address specified above potential impacts the project beneficiary 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 EMP Checklist for roads rehabilitation subprojects; possible mitigation measures for different types of sub-projects; requirements for monitoring and supervision of implementing of EMPs; implementing arrangements.

Integration of the ESMF into project design and implementation. The ESMF will be integrated into the Project's Operational Manual and will be used as part of all contracts involving selected subprojects. The subproject EMPs will be also integrated into the contracts for approved activities, both into specifications and bills of quantities and the Contractors will be required to include the cost in their financial bids and grant proposals.

Institutional arrangements and capacity. The proposed Project will be implemented by the State Road Administration (SRA). SRA has extensive experience in successfully implementing World Bank and other IFIs projects (e.g. WB, EBRD, EIB implemented and/or roads rehabilitation projects in the country during last 7 years). The SRA has a in its staff an Environmental Specialist, being responsible for project safeguards issues. Up to now her environmental and social performances have been qualified as adequate. The WB team will continue closely monitor ESMF implementation, providing, if needed, relevant assistance. The ESMF and subprojects EMPs implementation will remain under the direct responsibility of the SRA, including responsibilities for supervision and monitoring of road rehabilitation activities. Compliance with the ESMF and EMPs and monitoring of the impact during the project implementation phase will be undertaken by the SRA Environmental Specialist as part of his contract supervisory duties.

ESMF disclosure and consultation. The SRA has disseminated the draft summary ESMF to the Ministry of Transportation and Road Industry, of Environment and of Health and other relevant agencies for their review and comments. The full document in English and its Executive Summary and main supporting tables in Romanian have been posted on December 1 and 8, 2014 on SRA website (www.sra.md)for its access to wide public. On December 18, 2014, the SRA

organized a consultation on the draft ESMF (see the results of the consultation meeting in the Annex 4). After the consultation, draft document was revised considering inputs from consulted parties. The final ESMF will be posted on the website of the SRA and disclosed in the World Bank Infoshop.

1. Project background

Project Development Objective: The Project Development Objective (PDO) is to: (i) improve access to basic social services (education, health and access to markets), (ii) increase road safety, (iii) improve the management of routine maintenance on the selected local roads, and, (iv) enhance the capacity of national and local authorities to manage the local road network.

Project description. This local roads program will put more emphasis on building the management capacity of local roads both at the central and local levels. The proposed project would consist of two components totaling US$ 25 million.

Component 1: Improvement of Regional and Local Roads (about US$ 20.0 million). This component will finance (i) the rehabilitation of local roads, approximately 250 km, (ii) routine maintenance pilot in selected raions using a micro-enterprise approach. This component will include a training activity targeted to the selected Raions/ Municipalities on micro-enterprise contract management. This component will finance the detailed design of the remaining project work program (the detailed design of around 75-100 km out of 250 km of the selected local roads will be completed during the project appraisal stage) and the supervision activities for all road rehabilitation and maintenance works. This component will also finance independent technical audits of civil works. The component will finance the development of standards for road safety works in the proximity of schools and health facilities. The key objective will be to provide safe access to schools for children who have been affected by the school consolidation program. This includes transportation to/from schools, and safe access to schools and bus stops.

Component 2: Capacity Building and Advisory Services to the newly established local roads Unit within the State Road Administration (about US$ 5.0 million) and to Raions or Regional Development Agencies. The aim of this component is to consolidate the previous condition survey carried out by the SRA on the core local road network, integrate this in the database and develop a priority road rehabilitation/maintenance program for the core local road network. The component will also finance baseline survey and impact studies on project beneficiaries. Through the collection of quantitative and qualitative data (practical surveys instruments before and after project completion), the proposed assessments will document potential income and social impacts.

Potential environmental impacts. 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. As stated in the ESMF there will be no potential impacts of the project activities upon cultural, religious and historical sites and/or it is expected no such sites will be directly impacted by road rehabilitation and/or maintenance works. With regard to social issues, since all works will be conducted on the existing roads, there will be no temporary or permanent loss of agricultural or grazing lands. In addition, the project activities will not trigger involuntary resettlement or land-taking.

Project category. In accordance with the Bank's safeguard policies and procedures, including OP/BP/GP 4.01 Environmental Assessment, taking into account the nature of proposed activities and scale of potential impacts, the project is placed into the Bank's *Category B.* As at this stage are not yet identified the subprojects to be financed, the Bank requires that client will screen all proposed subprojects and ensures that subproject beneficiaries carry out appropriate Environmental Assessment for each subproject. For this purpose the client has to prepare an Environment Management Framework (ESMF) which will specify rules and procedures for subprojects Environmental Assessment (EA).

ESMF goals and objectives. The main goal of the ESMF was to determine and estimate the future potential environmental and social impacts of the activities to be undertaken under the project, and to specify the rules and procedures for EA, defining the mitigation, monitoring and the institutional measures to be undertaken during the implementation of the project.

Environment Management Framework (ESMF) structure. To address specified above potential impacts the project beneficiary 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 EMP Checklist for roads rehabilitation subprojects; guidance for mitigation of environmental impacts during different stages of project development and implementation; requirements for monitoring and supervision of implementing of EIA/EMPs; and implementing arrangements. The ESMF is based on the Sector Environmental Assessment (SEA) which represents the EA framework document that was prepared for the previous WB road rehabilitation project in Moldova. The SEA was updated accordingly, taking into account the peculiarities of the current project and last developments of the country's EA policy, legal and institutional framework.

2. Policy, legal and regulatory framework for environmental protection and road construction sector

2.1. *National Environmental and road construction regulatory framework*

During the last 20 years Moldova has fully renewed its environmental legislation. Currently are in place more than 30 environmental laws which regulate practically all most important environmental protection areas. The most important provisions of the main environmental laws are presented below.

Law on Environmental Protection, 1993, amended in 1997. It is a basic law that provides general framework for the environmental protection in Moldova and options for sustainable development. It established a legal foundation for developing normative acts and regulations applicable to different environmental media in order to *inter alia* protect land, underground resources, water and air from chemical, physical and other pollution, and also from other impacts. The law sets the basic principles of environmental protection, including the priority of environmental goals, mandatory environmental compliance, environmental liability, prohibition of implementation of any programs and projects without a positive conclusion of the state ecological expertise and concurrence by population in the area of impacts, payments for use of natural resources and charges for non-compliance with environmental protection requirements. According to the Law the projects related to construction, re-construction and modernisation of public facilities are subjects of ecological expertise procedures. The Law also stipulates that

irrespective of type of ownership, economic agents are obliged to obtain permit from ecological expertise for use of natural resources and extend it in a fix term; take measures toward prevention of landslides, soil erosion and compaction, introduce low-wasting and resources-saving technologies.

Water Code, 1993, revised and amended in 2003. The Code contains provisions to ensure sustainable water use, protect water resources from pollution, contamination and depletion as well as prevent negative impacts of polluted waters on human health. It established that sitting, design, construction and launching into operation of any new or reconstructed facilities and other objects is permitted only after completion of a state sanitary-epidemiological expertise and only when such facilities have water purification and pollution prevention devices.

Land Code, 1991 revised in 1993, 1996, 1997, 1998, 1999, 2000. It is one of the basic law regulates land relations in the Republic of Moldova. It proclaims protection of land to have higher priority than other types of land use activity. The Law stipulates that the State shall financially and administratively support inter alia development of various types of effective land management and use, including those aimed at reducing land pollution by waste, and research regarding interrelationships between environmental and land protection. The Law requires routine coordination with a national environmental authority regarding any plans for land development and construction, instructing all industrial, communal and other land users and owners to prevent any negative impacts of agricultural lands. The Code establishes different types of land based on the purpose of their use and mandates respective protection regimes and stipulate that land protection measure shall be elaborated and implemented at planning, design, construction and operation or various facilities and technologies. The Code prohibits launching into operation any facilities and technologies that do not protect land and also stipulates that in order to protect land quality, environment and health of people, maximum permissible concentrations of chemical, biological and other active substances in soil shall be elaborated and approved by separate legislation. The Law stipulates that while designing, siting, constructing and putting into operation new and re-constructed objects as well as installing of new technologies affecting land conditions, actions directed at land protection must be considered and taken. Put into operation objects and use of technologies that do not ensure land protection against degradation and damage are prohibited.

Code on Subsoil (1993/2009). It regulates the exploitation of mineral resources in the country, the roles and responsibilities of different involved parties in this process. On February 2, 2009 the Parliament has approved the new version of Code of Subsoil. Per its stipulations in September 2009 the Government has approved three Regulations on the following issues: (a) on the modalities for attributing areas with mineral resources; (b) on tendering for mineral resources exploitation; and (c) on delimitation of areas with mineral resources. Taking into account these documents all decisions related to the exploitation of mineral resources are currently done in a transparent way, based on open competitions and overall in accordance with the law provisions. Furthermore, the state control in the area was officially transferred to the National Agency for Geology and Mineral Resources (Governmental Decision No 485 from 08/12/2009) and has improved considerably.

Forest Code, 1996. The Code is one of the basic legal act focusing on creation of legal grounds for different aspects of forests management and included: provisions for management of forest and hunting funds, use of forest lands, rights and obligation of forest managers and forest users,

forest production, taxes, charges, financing and economic stimulus, reproduction of forests; protection of forest fund, state register, cadastre, monitoring, etc. The Law stipulates that design, placing, constructing and putting into operation new and re-constructed objects that may adversely affect forest conditions and rehabilitation, activities aiming at forest protection should be compulsory envisaged and implemented in coordination with central forest protection and environment protection agencies. Such projects are implemented only on the basis of requirements provided by the Law on ecological expertise and environmental impact assessment.

Law on Air Protection, 1997. The main objectives of the Law are maintenance of clean air, improvement of air quality, prevention and mitigation of harmful physical, chemical, biological and radiological impacts on air quality, and accordingly protection of human health and environment. The law establishes competence of various ministries and departments in the field of air protection; participation of juridical and physical persons in actions directed at air pollution prevention; normative (standards) of air quality; regulation of measures to be undertaken toward protection of air against pollution, etc.

The Law on Regime of Harmful Products and Substances, 1997, amended in 2002. The Law establishes role and responsibilities of the Government, Ministry of Healthcare, Ministry of Agriculture, Ministry of Ecology and Natural Resources, State Emergency Department and other ministries and local authorities, and describes the regime of harmful products and substances (licensing, production, storing, transportation, use, registration, neutralization, import and export).

Law on Wastes of Production and Consumption, 1997. The Law provides basic principles in the field of waste management. In conformity with the Law on Environmental Protection this Law regulates management of wastes generated during the process of production and consumption, and aims to reduce and prevent environmental pollution.

Law on Quality in Construction, 1996. The Law determines juridical, technical, economic and institutional aspects related to the construction activities by juridical and physical persons, their obligations and rights related to the quality in construction. The Law stipulates that construction, modernisation, strengthening, repair/ renovation are implemented only in accordance with project documentation worked out by physical and juridical persons authorised for such kinds of works and verified by authorised specialists in the field; design and construction of buildings/ and production used in constructional material is implemented by physical and juridical persons licensed for activity in the field; formal acceptance of facilities is implemented by investor in a presence of designer and executor of the work and/or appointed representatives of above specialists in conformity with a law. As interference into construction are considered actions on rehabilitation, strengthening, re-construction, enlargement, partial destruction and repair which are implemented only on the basis of a special project which was elaborated in the established order and co-ordinated with initial project designer or according to resolution of a technical expertise carried out by authorised expert.

Law on Roads, 1995. The Law stipulates that design of roads and carrying out the road works are implemented in accordance with norms and technical rules elaborated and approved in established order and while designing of roads their functional indications, technical category; economic, social and defence factors of the country; conditions of rational use of land and environment protection, town-planning issues and territorial development are considered. The Law also stipulates that alienation of lands for road construction as well as order of

compensation for damage to allotments owners is implemented in accordance with a law.

Law on Transport, 1997. The Law stipulates that that transport enterprises and facilities shall ensure sustainable use of land, prevent water-logging, reduction of land quality and soil contamination, prevent erosion and landslides and comply with environmental legislation. It instructs transport enterprises to protect the environment from negative impacts of transport activities, ensure compliance with environmental legislation, standards, and labor norms as well as certify transport activities and facilities in accordance with applicable international standards. The Law prohibits sitting of transport facilities, which handle explosives, flammables, radioactive, poisonous and toxic substances, close to residential areas and protected natural territories. Appropriate minimum distance shall be approved by special legislation and norms.

Code of Motor Transport, 1998. The goal of the Code is regulation activities in the field of motor transport and determination of rights, obligations and responsibilities of transport entities (agents), providing motor transportation services, as well as physical and juridical persons used such services.

Based on mentioned above laws, the GoM and relevant Ministries and State Agencies have adopted a series of bylaws which regulate various aspects of environmental protection roads and construction activities and in particular:

Governmental Decision on Approval and Introducing of the State Sanitary-Epidemiological Rules and Standards for enterprises producing asphalt-concrete mixtures, 2006. The Rules aims at improvement of sanitary-epidemiological control over this activity. Requirements towards enterprises making asphalt and concrete production and are obligatory for execution by all economic agents irrespective of administrative submission, ownership and way of managing and cover stages of designing, construction, reconstruction and operation are established.

Governmental Decision on increasing of exploitation safety of buildings and constructions, installations and pipe-lines which are sources of a heightened risk, 1996. In relation to the field may be mentioned next items: continuous supervision over technical conditions of economic objects that are sources of a heightened risk during their operation/ exploitation must be ensured; central bodies and local public authorities under supervision of which are economic objects perform control over their technical conditions during their operation/ exploitation; works on expertise, design and rehabilitation of objects of a heightened risk are financed at the expense of economic objects funds. The risk category enterprises are defined and include – entity that may have accidental chemical pollution risk, entities that have explosion or flammable substances, deposits of oil, liquid and solid combustible substances, etc.

Governmental Decision on verifying of projects and executing of construction works, technical expertise of projects and constructions, 1996. While projects verifying, it is compulsory to ensure minimum level of quality foreseen in normative document requirements in force. In the contract investor may establish higher level of quality that it was implied in normative documents. Projects of all capital and temporary constructions shall be a subject of verification in dependence on their importance; projects on modernisation, changes, re-construction, strengthening, repair and engineering also are subject of verifying. Works on repair of non-supporting or decorating constructions of any degree of importance (roads, paths etc.) in case they do not deteriorate conditions of construction and do not affect on resistance are not a subject of verification.

Governmental Decision on state sanitary-epidemiological supervision in the Republic of Moldova, 1995, provides sanitary-epidemiological supervision over implementation of activities and observance sanitary-hygienic norms and rules.

Sanitary Rules on atmospheric air pollution prevention in localities, 1998, prohibits sitting, constructing and putting into operation objects that are sources of air pollution on the territories where the already registered level of air pollution exceeds admissible values.

State Standard GOST 17.2.3.01-86. Nature protection. Atmosphere. Air quality control regulations for populated areas are provided the rules for air quality monitoring in localities. The number of monitoring sides is defined in view of a population number, the area of locality and also a network of roads with intensive transport movement as well as their arrangement on territory of towns. The standard includes also the program and terms of supervision, a rule of sampling and the characteristic of pollution of an atmosphere.

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.

2.2. National requirements for Environmental Assessment

Moldova has its own relatively well developed legal and institutional framework for EA. The major provisions are included in the *Law on the Environmental Protection, 1993, amended in 1997***.** This framework Law introduces the concept of state ecological review (literally, state ecological "expertise" - SEE) which seeks to examine the compliance of proposed activities and projects with the requirements of environmental legislation and standards and ecological safety. The law stipulates the mandatory cross-sectoral nature of SEE, which shall be scientifically justified, comprehensive, and objective and which shall lead to conclusions in accordance with the law. SEE precedes decision-making about activities that may have a negative impact on the environment and is compulsory for all economic activities which may have likely negative impact on environment regardless of their destination, property, investments, placing, source of financing, etc. Financing of programs and projects is allowed only after a positive SEE decision has been issued. According to the Law timeframe of conducting of ecological expertise for simple objects may reach 45 days, for complicated ones –3 months.

In 1996, the Parliament approved a special *Law on Environmental Expertise and Environment Impact Assessment.* This law covers all aspects of conducting EA for all planned development

projects, which are subdivided into ones to be a subject of State Ecological Expertise (SEE) and ones to be a subject of Environment Impact Assessment (EIA) The Law established the specific procedure for planned activities that may have significant environmental impacts. In 2014 the parliament of the country has adopted a *new law on Environmental Impact Assessment* which will enter into force in 2015. In the fact this law specifies necessary EA procedures for the large and complex projects included in the Annex 1 and 2 being fully harmonized with the EU Directive. No new provisions are described comparatively with the previous SEE and EIA law but on major stipulation - the EIA procedure will be applied for the large projects while the procedure of the SEE will be applied for the project not specified in the EIA law Annexes.

According to both Laws, all projects fall under three main categories:

- First category – projects require full EIA before designing and can be further developed (detailed design) with only positive approval of EIA findings by the SEE;
- Second category – projects require ecological substantiation of project activities and a special environmental chapter to be included in the project design documents and respectively positive approval from SEE before construction, and
- Third category - the rest projects do not need to be passed through formal procedures of EIA and SEE.

As mentioned above the EIA procedures are only applicable to complex and potentially dangerous (to the environment) projects which could lead to significant impacts. Among others, these include:

- construction of auto highways and high-speed roads (however, any specific criteria as length and type of roads, traffic intensity, etc were not established), and
- building of stationary asphalt-concrete plants (however, any specific criteria like plant capacity, etc. were not established)

The Ministry of Environment may require EIA for other types and scales of projects on the case-by-case screening, but criteria and procedures for this decision are not specifically stipulated in the Law.

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.

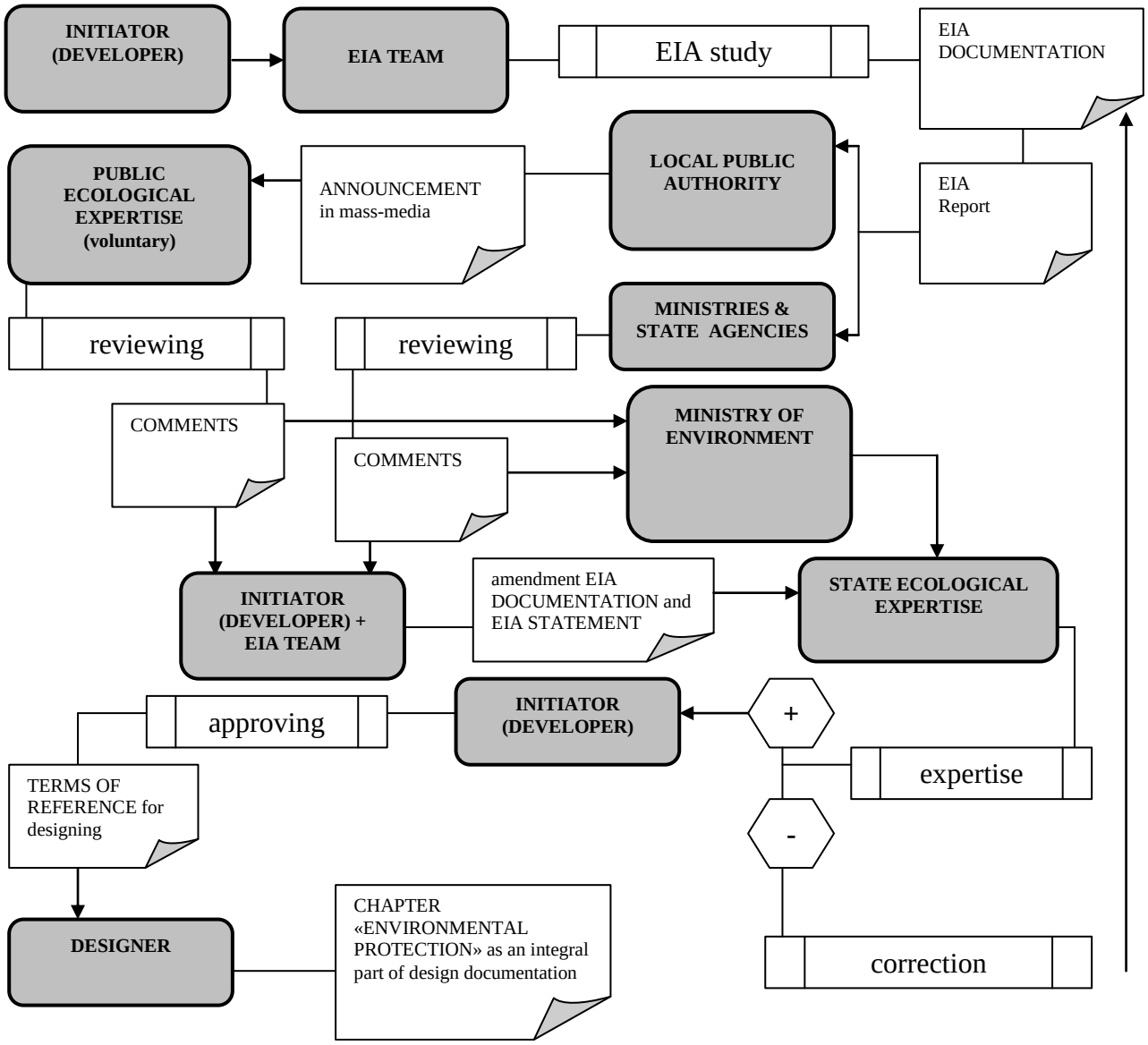
The basic requirements for EIA study and documentation are stipulated in EIA Regulation, as well as requirements for EIA report. The first requirement is that alternatives to the project and mitigation measures should be covered. As mentioned above, all alternatives of the project or any of its components 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 ministerial 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 (conducted by the Division for Pollution Reduction). 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 (Division for Pollution Reduction), 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.

The EIA procedure is generally a complex one. The steps to be followed for submission and approval of EIA are illustrated in figure below. The developer (initiator of the planned activity) is responsible for organization of EIA study, conducting of consultations and public hearings, presentation of EIA documentation and EIA report to the SEE, including financing.



Taking into account the national EA requirements it is clear the current project and its subprojects that will be financed are not subject to full EIA review as it will not include construction of new roads or major rehabilitation or reconstruction of roads. Even in cases if some road sections are to be upgraded, rehabilitated, changed in trajectory, all these construction works may be carried out in bounds of existing road designated lands (so called road protection zones), and therefore these projects do not require full EIA study. The subprojects to be supported under the project will require a simplified EIA procedure and preparing an EMP which should subject to the SEE before civil works begin. Procedures for conducting SEE are stipulated in upgraded *Instruction on Order of Organization and Conduction of the State Ecological Expertise, 2003,* which replaced previous *Instruction on the Organisation and Conduction of Ecological Expertise, 1996.*

Among general provisions of the instruction should be mentioned next: state ecological expertise is based upon laws, norms and ecological standards and fully determines ecological, economic, and social factors which affect environment before taking decision on economic and other

activities. Basic principles of ecological expertise are: comprehensive examination of technical, ecological, social and economic parameters presented in documentation on planned economic activity with considering of regional characteristics, ecosystem conditions and their sustainability to planned impact, perspective of socio-economic development of the region; Priority goals of ecological expertise are maintenance of ecological balance, conservation of genetic fund and biological diversity, creation of favourable conditions for living, etc. Sections "Environment Protection" and "Environment Protection during Construction" in the project documentation should be developed only by specialists in these fields. Technical solutions, reflected in the submitted for SEE technical documentation have to be sufficiently substantiated in relation to reduction/ mitigation of impact on environment. The instruction is accompanied by a series of annexes, which describe in details (i) requirements for project documentation submitted to SEE; (ii) nominate subdivisions of ME responsible for SEE in relation to the various types and scales of projects; (iii) requirements for every chapter or volume of project documentation, etc.

It should be pointed out that SEE of design documentation may be required for some of sub-projects which may relate to reconstruction of badly deteriorated roads or where modification of roads trajectory or significant rehabilitation works are to be carried out. All issues related to new deposits for constructional materials (if needed) and asphalt-concrete plants may raise requirements for SEE process to be applied. All these aspects should be clarified during feasibility study when all specific information is available.

The list of basic requirements to volume and content of relevant to the field project and design documentation and materials submitted to the SEE is presented in the table below.

Table 1. The requirements for EA reports to be presented to the SEE

N/n	*List of documentation*	*Industrial enterprises (e.g. asphalt plant) & stockpiles*	*Motor (regardless of type)*
1	*Project documentation:*		
1.1	Explanatory note, including:		
	• baseline information, needed for project and explanation for selection of site (or corridor)	√	√
	• Water supply and wastewater	√	
	• Ventilation & heating	√	
	• Storm sewage	√	√
	• Description of technology	√	
1.2	Design Documentation Chapter "Environmental Protection" with sub-chapters:		
	a. Air protection	√	
	b. Water resources protection	√	√
	c. Soil protection	√	√
	d. Flora & fauna protection	√	√
	e. Economic efficiency of environmental protection measures	√	
1.3	Construction Documentation with sub-chapter	√	√

N/n	*List of documentation*	*Industrial enterprises (e.g. asphalt plant) & stockpiles*	*Motor (regardless of type)*
	"Environment Protection during Construction phase"		
1.4	Combined budget-financial report	√	√
1.5	Register of equipment certification	√	
1.6.	Materials on preliminary approved land acquisition for construction	√	√
1.7	Engineering-geological & hydro-geological research	√	√
1.8	Materials on soil research/characteristics of top-soil	√	√
1.9	Drawings (general plan, situation plan, site off engineering network and installations, etc.)	√	√
1.10	Materials on engineering protection (drainage, anti-erosion, etc.)	√	√
1.11	Design proposals (project) on observation regime wells	√	√
1.12	Design proposals (project) of irrigated lands	√	
1.13	Copies of technical conditions for engineering provision for:		
	• Water supply and canalization	√	
	• Heating supply	√	
	• Storm sewage	√	√
	• Gas supply	√	
1.14	Conditions for special water use	√	
1.15	Design proposals (projects) on environmental rehabilitation of quarries and land sites (corridors) impaired by construction	√	√
1.16	Measures (or design proposals) on use of excavated top-soil	√	√
2	*Documents on coordination of Project documentation with:*		
2.1	Territorial (specialized) design institute	√	
2.2	Local public administration	√	√
2.3	Urban/ raion architectural authorities	√	√
2.4	Raion ecological agencies/ inspections	√	√
2.5	Organs of state supervision, including coordination for:		
	• Sanitary protection strips of enterprises	√	√
	• Classification of wastes and methods of their utilization	√	√
	• Placing & designing of rakeouts	√	
2.6	State Geological Agency AGeoM	√	√
2.7	State Concern Apele Moldovei / ACVA	√	
2.8	State Hydrometeorological Service for:		
	• Background pollution concentrations	√	

N/n	*List of documentation*	*Industrial enterprises (e.g. asphalt plant) & stockpiles*	*Motor (regardless of type)*
	• Climatic conditions	√	
2.9	Fish inspectorate	√	√
2.11	Land Cadastre	√	√
2.13	Documentary acknowledgement from owner of polygon on potentiality to receive, stockpile and dispose wastes	√	
2.14	Documentary acknowledgement from owners of quarry/ borrow on potentiality of use of mineral priming needed for equalizing bed on construction ground	√	√
2.15	Documentary acknowledgement and characteristics of type of fuel used in boiler-room	√	
2.16	Document on results of conducted ecological expertise of new technologies and installations/ equipment (at least one from listed below):	√	
	• Conclusion of the Institute of Ecology		
	• Conclusion of leading (sectoral) scientific-research institute		
	• Acknowledgement from foreign company on ecological safety of technology and installation/ equipment or on exclusion of negative impact on environment		
2.17	Documentary acknowledge of efficiency of gas- and dust-catching installation/ equipment	√	
2.18	Permit for emissions of hazardous substances into air	√	
2.19	Fishery-biological basis of damage to fish resources from water intake and other installations	√	
2.21	Results of discussions with local people in regard to projected activities in the area of (for complicated objects)	√	√
3	*List of mandatory documents and materials included in project design package, including*		
3.1	Effective activities to prevent soil and underground water pollution as a result of object exploitation (collection, clean-up and use of surface runoff, settling of drainage systems, establishment of observation wells network, etc.)	√	√
3.2	Balance of raw materials, materials and outcome of finished products with considering of technological drains and production wastes including catched and emitted into air ones	√	
3.3	Solutions on wastes storing, disposal and utilization with considering of their volume and classification in	√	√

N/n	*List of documentation*	*Industrial enterprises (e.g. asphalt plant) & stockpiles*	*Motor (regardless of type)*
	conformity with toxicity degree. Documents on coordination of these solutions with organs of state supervision and waste polygon owner		
3.4	Activities to be taken to mitigate impacts of hazardous emissions into air on physic-chemical and biological characteristics of soil, water bodies, flora and fauna	√	√
3.5	Activities to be taken to reduce specific water consumption for communal and industrial needs	√	
3.6	Natural water balance and water use balance in alignment of water intake site	√	
3.8	Activities to be taken on establishing and maintaining of water protection strip along rivers and water bodies and carrying out of economic activities within its bounds	√	√
3.10	Results of analysis and prognosis of chemicals content in underground water and water supply source on adjacent to the object territories and settlements	√	
3.13	Activities to be taken towards prevention of likely accidents and elimination of their negative consequences	√	√

The sub-projects related to light rehabilitation of roads, routine and periodic road maintenance, small repair/improvement of roads and relevant roadside works (Category C) do not require SEE.

1.3 National roads and environmental protection institutional framework

Road sector. The national competent authority for the road sector in Moldova is Ministry of Transportation and Road Industry (MTRI) which is the main state agency of executive authority dealing with development of state policy and normative-legal regulations in the field of railway, motor, water and road management. The SRA is subordinated to the MTRI body which is responsible for planning and assignment of road construction and maintenance works. It prepares tender documents for new construction and major rehabilitation works. For a short time in 2001, the road administration existed as an autonomous and financially independent public road authority, which would obtain its revenues directly from the road users through a newly established "second generation" Road Fund. But after a few months of its activity, by Governmental Decision the public authority was transformed into a State Enterprise, subordinated to the MTRI[1].

[1] Moldova: Transport Strategy Update with Emphasis on the Road Sector, December 2002, World Bank

In the past the responsibilities for all design and engineering studies was made for the State Road Design Institute. Recently this institution was divided into a number of small private design agencies with reduced staff number (lack of qualified specialists) and lower practical experience since last decade there were a little road design studies conducted in Moldova.

At the same time there are no any environment departments or staff in charge within MTRI and State Road Administration. There is also lack of environmental specialists among permanent staff of the State Road Design Institute, which actually is in the process of reorganization towards several small private design companies.

Environment protection. The principal competent authority in the field of environmental protection and management is Ministry of Environment (ME). The State Ecological Inspectorate (SEI), subordinated to ME, deals with environmental issues both at central and rayon level. The competent EA authority in Moldova is the State Ecological Expertise (SEE) an institution created within the SEI.

2.4 World Bank EA rules and procedures

Per the WB safeguards policies the Environmental Assessment (EA) is a process of the pre-implementation stage which evaluates a project's potential environmental risks and impacts in its area of influence; examines project alternatives; identifies ways of improving project selection, sitting, planning, design, and implementation by preventing, minimizing, mitigating, or compensating for adverse environmental impacts and enhancing positive impacts; and includes the process of mitigating and managing adverse environmental impacts throughout project implementation.

EA is mandatory for projects, which may potentially have negative impacts. Furthermore, a well-organized public participation is mandatory in all the stages of the process. Depending on the project, a range of instruments can be used to satisfy the Bank's EA requirements: Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), regional or sectorial EA, environmental audit, hazard or risk assessment and/or Environmental Management Plan (EMP).

In the case when the projects activities to be financed are not identified at the design stage, the Bank applies an Environmental Management Framework (ESMF) which should: provide details on procedures, criteria and responsibilities for subproject screening, preparing, implementing and monitoring of subproject specific EIAs. The ESMF should also include Environmental Guidelines for proposed subprojects, containing an assessment of potential impacts and generic mitigation measures to be undertaken for identified subprojects in all stages – from identification and selection, through the design and implementation phase, to the monitoring and evaluation of results. EA applies one or more of these instruments, or elements of them, as appropriate. When the project is likely to have sectorial or regional impacts, EA is required to cover sensitive sectors or regions.

The Bank undertakes environmental screening of each proposed project to determine the appropriate extent and type of EA. The Bank classifies the proposed project into one of four categories, depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts. The Bank's OP/BP/GP 4.01 provides for the following environmental categories of projects:

Category A: A proposed project is classified as Category A if it is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. EA for a Category A project requires a full EIA Assessment. *Within this project such subprojects are not expected and will be not financed.*

Category B: A proposed project is classified as Category B if its potential adverse environmental impacts on human populations or environmentally important areas - including wetlands, forests, grasslands, and other natural habitats – are less adverse than those of Category A projects. These impacts are site-specific; few if any of them are irreversible; and in most cases mitigatory measures can be designed more readily than for Category A projects. The EA for a Category B projects examines the project's potential negative and positive environmental impacts and recommends specific measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. The findings and results of Category B EA are described in the project documentation (Project Appraisal Document and Project Information Document). *Most of the selected subprojects would have this environmental Category, although their impacts will be not at large scale and unofficially can be qualified as "low Category B" projects.*

Category C: A proposed project is classified as Category C if it is likely to have minimal or no adverse environmental impacts. Beyond screening, no further EA action is required for a Category C project. *Such types of project may include only those which are related to light rehabilitation of local roads.*

FI Category: Finally, there is a special case of Category FI, when investment of Bank funds is made through a financial intermediary (FI), of subprojects that may result in adverse environmental impacts.

Based on the results of the study the following WB OPs will be triggered by the projects (see Table 2 below):

Table 2. World Bank's Safeguard Policies and their relevance to the project

Safeguard Policies	*Relevance*
Environmental Assessment (OP/BP 4.01) This Policy aims to ensure that projects proposed for Bank financing are environmentally and socially sound and sustainable; to inform decision makers of the nature of environmental and social risks; to increase transparency and participation of stakeholders in the decision-making process	Yes (refer to the description below)
Natural Habitats (OP/BP 4.04) This Policy aims to safeguard natural habitats and their biodiversity; avoid significant conversion or degradation of critical natural habitats, and to ensure sustainability of services and products which natural habitats provide to human society	No – The borrower confirmed that there will be no subprojects involving conversion of areas which are important wildlife habitat and/or would have impacts on them.
Forestry (OP/BP 4.36) This Policy is to ensure that forests are managed	No – The borrower confirmed that there will be no subprojects that would have impacts

Safeguard Policies	*Relevance*
in a sustainable manner; significant areas of forest are not encroached upon; the rights of communities to use their traditional forest areas in a sustainable manner are not compromised	on forests.
Pest Management (OP 4.09). This policy is to ensure pest management activities follow an Integrated Pest Management (IPM) approach, to minimize environmental and health hazards due to pesticide use, and to contribute to developing national capacity to implement IPM, and to regulate and monitor the distribution and use of pesticides	N/A
Physical Cultural Resources (OP/BP 4.11) This policy is to ensure that: Physical Cultural Resources (PCR) are identified and protected in World Bank financed projects; national laws governing the protection of physical cultural property are complied with; PCR includes archaeological and historical sites, historic urban areas, sacred sites, graveyards, burial sites, unique natural values; implemented as an element of the Environmental Assessment	No. The project will not finance any road subprojects that might have impacts on such resources. Also the "chance finds" provisions will be included in all contracts.
Indigenous Peoples (OP/BP 4.10) IP – distinct, vulnerable, social and cultural group attached to geographically distinct habitats or historical territories, with separate culture than the project area, and usually different language. The Policy aims to foster full respect for human rights, economies, and cultures of IP, and to avoid adverse effects on IP during the project development.	No. This Policy is not applicable for Moldova
Involuntary Resettlement (OP/BP 4.12) This policy aims to minimize displacement; treat resettlement as a development program; provide affected people with opportunities for participation; assist displaced persons in their efforts to improve their incomes and standards of living, or at least to restore them; assist displaced people regardless of legality of tenure; pay compensation for affected assets at replacement cost; the OP Annexes include descriptions of Resettlement Plans and Resettlement Policy Frameworks	No. The borrower confirmed the project will not support any activities and sub-projects that might result in resettlement. There will be no need for land-taking and temporary or permanent loss of agricultural or grazing lands.
Safety of Dams (OP/BP 4.37) This Policy is to ensure due consideration is given to the safety of dams in projects involving construction of new dams, or that may be affected	N/A

Safeguard Policies	*Relevance*
by the safety or performance of an existing dam or dams under construction; important considerations are dam height & reservoir capacity	
Projects on International Waterways (OP/BP 7.50) The Policy aims to ensure that projects will neither affect the efficient utilization and protection of international waterways, nor adversely affect relations between the Bank and its Borrowers and between riparian states	No. The project activities will not results in adversely change the quality or quantity of water flows to the other riparians.
Disputed Areas (OP/BP 7.60) The Bank may support a project in a disputed area if governments concerned agree that, pending the settlement of the dispute, the project proposed for one country should go forward without prejudice to the claims of the other country	No project activities in disputed areas.
Disclosure Policy (BP 17.50) supports decision making by the borrower and Bank by allowing the public access to information on environmental and social aspects of projects and has specific requirements for disclosure	Yes. The ESMF will be disclosed and consulted in the country before project appraisal and will be also disclosed in the WB Infoshop.

2.5 Assessment of adequacy of National EA requirements to the WB rules and procedures

While the basic provisions of the National EA rules and procedures are similar to the WB requirements, there are several important differences. These differences are related primarily to the following: (a) project environmental screening categories; (b) Environmental Management Plan; (c) EA disclosure and public consultation; and (d) EA reviewing process.

Differences in screening categories. In Moldova the EIA system is based on the SEE developed in Soviet times. As specified above, the national EA system recognizes three project Categories. The third category which relates to the project with reduced or small scale impacts do not require the EA review, while per WB classification they should be qualified as Category B. In this case it is necessary to state where World Bank and national categorization/EA requirements differ, the more stringent requirement will apply. This refers mostly in the case of deciding about Category C subprojects (including for the roads rehabilitation sector) - the national EA legislation doesn't refer to small scale activities, including construction and rehabilitation of various roads.

Differences concerning EMP. While the national legislation requires for all projects with potential environmental impacts relevant mitigation measures, it doesn't require a special EMP which should specify, along with the proposed mitigation activities a monitoring plan and reporting requirements, institutional arrangements for EMPs implementation as well as doesn't require needed capacity building activities and necessary expenses in this regard. However, for sub-projects that are financed under the component I, EMPs will be required to be prepared by the borrower to comply with World Bank requirements.

Differences with regard to disclosure and public consultation. Conducted analysis shows there is no harmonization between World Bank and national requirements in this regard. According to national legislation, the EA disclosure and public consultation is mandatory only for category I projects which require a full EIA study. At the same time, according to the SEE law the public environmental review can be carried out on the initiative of NGOs and citizens in any field and for all types of project categories, which needs to be environmentally justified. Public environmental review can be carried out regardless of the state ecological expertise. Conclusion of public environmental review has recommendatory nature. In the case of World Bank EA policy, the Sub-borrower is responsible for conducting at least one public consultation for all Category B projects to discuss the issues to be addressed in the EMP or to discuss the draft EMP itself. Therefore, for all selected sub-projects, the SRA will review any documentation of the public consultation conducted in the preparation of any EA documentation to determine if it is consistent with the World Bank requirements. If no public consultation was conducted or the SRA determines that the conducted public consultation documentation is not adequate, the Sub-borrower will be required to perform at least one public consultation to discuss the environmental issues of concern to the locally affected communities and include these issues in the content of the EMP.

Applicable Environmental Standards: Sub-projects requiring an EMP will include mitigating actions to assure compliance with environmental standards of performance. If both National and World Bank standards exist for a particular mitigating measure, the stricter of the two standards will apply. For example, if the environmental issue of concern is ―noise and the World Bank noise standard is stricter than the National one, the mitigating measure selected should meet the stricter World Bank standard[2].

3. Potential Environmental impacts

The nature and scale of impacts are determined by the type of interventions within the proposed project, which mostly focuses on rehabilitation of existing roads through resurfacing, provision of drainage, and routine road maintenance.

Generally, no major project environmental impacts are expected. Most environmental impacts will be temporary and local, mostly during the construction phase and will cause only minor, localized and short-term negative effects. Most of them will be mainly linked with light 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.

[2]World Bank Group environmental standards are found in the Environmental, Health and Safety Guidelines, updated in April 2007.

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.

Using as a reference the guidelines provided in World Bank's Handbook on the Roads and Environment a general list of potential impacts during construction/rehabilitation; operational and maintenance phases (see Annex 1) has been prepared that lists vide range of possible environmental and social impacts that could be anticipated from a project of this nature.

As shown in Annex 1, Table 1, outlined environmental and social impacts for road rehabilitation phase, resurfacing of existing roads, that the project mostly would consist of, have a small number temporary local on-site environmental impacts. Significant disturbances to land, interference to soil stability and hydrology in the area will not take place. Impacts on air quality and noise levels will depend on the projected increase of traffic flow and anticipated reduction of traffic congestion - both due to improved road conditions. Presumably, the net effect on air quality and noise levels will have a positive effect as the roads considered for rehabilitation are the national roads which are generally used permanently even in cases where the road conditions have deteriorated significantly and/or an alternative route with better conditions are available. Most of the negative environmental impacts triggered under this project will be seen off-site where road-building material would be sourced. If not managed properly, quarry and borrow sites can have substantial impacts on the surrounding environment as well as intrusion on the aesthetic quality of the sites. Considering this it was decided that the project will specify contract provisions governing the sources of constructional materials (e.g. asphalt, stone, sand, etc.) would be supplied only from sources with approved licenses, permits, and/or approvals for environment and worker safety. Contractors will be required to produce relevant licenses for quarries and borrow sites where constructional material will be excavated.

In addition to main impacts identified above, one should also consider temporary disturbances to the environment that might occur during the road rehabilitation phase. Waste water runoff from construction camps, spills of substances used in equipment/machinery operation and maintenance, traffic congestions caused by improperly planned detours and closures can cause localized impacts, which can be temporary quite significant and hence need to be carefully considered.

Annex 1, Table 2, outlined potential environment and socio-economic impacts during the road operation phase which are mostly linked with combustion gases emissions, contaminated surface run-off and at the same time, reduced vehicles operating costs and reduced emissions into air as compared to previous road conditions.

Annex 1, Table 3 reflects the environmental and social impacts during the road maintenance phase mostly linked with light road repair works.

These annexes identify in details road project implementation activities, potential positive and negative impacts caused by these activities and suggested measures to be taken towards impacts mitigation.

Relevant information from this section should be applied when specific environmental analysis is conducted (it is expected during feasibility study) to determine the type of impacts and extent of severity linked with further identified sub-projects.

4. Sub-projects Environmental Assessment process

Before the project appraisal there details of specific sub-projects and roads sites will be not know and hence site-specific EAs cannot be conducted. Considering this, this ESMF identifies main steps for road rehabilitation and maintenance EA which usually will involve following steps[3]:

Step 1: *Road sub-project screening*
Step 2: *Preparing an EMP Checklist*
Step 3: *EMP Disclosure and Public Consultation*
Step 4: *Environmental Review and Approval*
Step 5: *Implementation*
Step 6: *Supervision and Reporting*

Further the details for each step are elucidated.

Step 1: Road sub-project screening.

The screening process ensures that proper mitigation measures are proposed, included in design documentation and undertaken appropriately to avoid adverse impacts on affected population, natural environment and cultural heritage. In the case of this project most of the subprojects will be qualified as Category B, with an exception when the subprojects would support only minimal civil works as light maintenance activities and road resurfacing. *If sub-projects (or parts of roads or supporting infrastructures) are located in the protected areas or other critical habitats or cultural heritage or will have impact on physical cultural resources, such sub-project will not be included for project financing*.

In the case of Category C subprojects no specific environmental action is required. In dependence on scale of road activities, the design company has to elaborate a set of simple mitigation measures during the civil works to be carried out and which have to be describe in the contracts signed by road civil works Contractors. Most of these measures are very simple and based mostly on avoidance approach.

In the case the sub-project is assessed as Category B it is necessary to prepare an EMP Checklist which should describe relevant environmental concerns and suggest mitigation and monitoring measures. In some cases, a limited additional environmental assessment study may be required before the EMP is complied.

The table 3 below shows types of road rehabilitation sub-projects and suggested environmental Category.

[3] Depending on the nature of the subproject and readiness of the proposal, the steps 1, 2, and 3 may be combined into one single review and clearance step.

Project activity	*Objectives*	*Project category*	*Environmental Protection Rules*
Minimum Maintenance	The minimum maintenance standard reflects the current practice in the absence of major maintenance works. These include the following: Patching: Repair of road covering by potholing, wide structural cracking and gravelling. It is carried out annually. Crack Sealing: This technique treats transverse thermal cracking and even wide structural cracking when area is limited. It is carried out annually. Routine Works: Routine works include all works that do not affect pavement performance. These works include shoulder repairs and various routine works such as vegetation control, road sign repairs and replacement, road striping, guardrail repair and replacement, etc… Routine works are carried out annually. Winter Maintenance: Winter maintenance includes all works carried out as part of winter maintenance such as salt spreading; snow removal, etc. An annual cost is specified for each road class. It applies to all roads.	C	*WB:* Simple mitigation measures should be considered in the design and incorporated into the contracts for construction Contractors. *National:* For the activities, classified as rebuilding and reconditioning, the construction permit is not required if road improvement works are carried out within the Right of Way of such a road. No need for SEE
Surface Treatment (Single or Double)	To preserve the integrity of the pavement by sealing the carriageway in order to delay major intervention and renewal of the skid resistance.	B	*WB:* An environmental management plan checklist (EMP) is required and needs to be cleared by national reviewing authorities *National:* SEE should be performed for all subprojects. Construction permit is required if road improvement works exceed the right of way of such a road.
Surface Treatment With Shape Correction	To preserve the integrity of the pavement by sealing the carriageway in order to delay major intervention, improving roughness and renewal of the skid resistance.	B	
Resurfacing by Overlay	To renew surface characteristics including skid resistance, to improve roughness and to contribute towards the overall pavement strength. Overlay by surfacing included thickness between 30 and 50 mm and were applied over a roughness values varying from 3 to 5 IRI and low rutting level.	B	
Strengthening by Overlay	To strengthen pavements, which have reached or soon to reach the critical stage (poor or fair roughness condition), improve roughness and renew surface characteristics. Strengthening by overlay concerned the application of multi-layer overlays (two or three layers) varying from a thickness of 80 to 270 mm applied over a range of roughness values varying from 4 to 9 IRI.	B	
Strengthening by Mill and Replace	To strengthen pavements, which have reached or soon to reach the critical stage (poor or fair rutting condition), improve roughness and renew surface characteristics. It is achieved by removing the distressed top asphalt layer (s) and replacing it (them) with a new (or recycled) asphalt of similar thickness but with better structural characteristics. This standard was applied over a range of rutting varying from 10 to 35 mm.	B	

Project activity	*Objectives*	*Project category*	*Environmental Protection Rules*
Strengthening by Reconstruction	To reconstruct pavements, which have reached the failure stage (poor roughness condition). Reconstruction is achieved through removal of the old pavement structure down to the sub-base course and replacing it with a new (or recycled) pavement structure with high strength. Pavement structures varied according to road class and were applied over a range of roughness values carrying from 8 to 11 IRI	B	
Widening to 7 m	To increase the narrow roads to a minimum standard road width of 7 meters. This standard is applicable to Main roads with 6 meter or less width.	B	

Step 2: Preparing EMP Checklist. In case of *category B* sub-projects, for each of them (or parts of roads or supporting infrastructures, if it is a case) is required a simple EMP, containing basic mitigation measures for the roads rehabilitation and maintenance activities as well as monitoring and supervision measures. The main civil works will be limited by activities typically defined as routine and periodic maintenance (resurfacing and bridge small repairs; flood repairs or emergency maintenance; regular upkeep of safety features and road signs, etc.) and small rehabilitation works to strengthen the road, repair structural defects, restore the road to its initial condition, make small changes or improvements to alignment, and cleaning of drainage and footpaths. The works will be carried out within the existing right of way and will not involve relocation and land acquisition. In such cases an EMP Checklist, complied by the selected design company (see its template in the Annex 2), will be necessary and environmental/monitoring requirements for design/construction contractors included in their contracts will be sufficient to guide mitigation and monitoring during the project implementation.

Step 3: Consultation. For *category C of sub-projects,* although no need for a special public hearing the project beneficiary should provide information to all interested parties about the construction by installing a notice plate placed at the site of the subproject. All subproject specific information related to the EMM will be also publicly available on-line on the project website.

For *category B* of sub-projects, the design company jointly with the SRA Environmental Specialist and Local Council will organize a hearing for consultation with and comments from project-affected groups and local non-governmental organizations during the environmental assessment process (at the time when draft EMP is ready) and consider their opinions before making a decision on financing of proposed project. The SRA should provide relevant materials (process descriptions, maps, permits, building plans, etc.) to participants in a timely manner and in a form and language that are understandable to consulted groups.

Step 4: Environmental Review and Approval. For *category C* of sub-projects, environmental review and approval will be responsibility of SRA environmental specialist. He/she should check whether design/ construction contracts include environmental items/clauses. To ensure that all environmental requirements are in place, the construction works can be preceded only if SRA environmental specialist issues his/her approval.

For *category B***,** the project documentation will be also reviewed and approved by the SEE. The SEE will specifically look for the implementation capacity and monitoring arrangements for the proposed mitigation measures and ensure that the costs of environmental management are

considered in the project's cost. The SRA environmental specialist will control whether all documentation prepared by the Design Company and contractors is appropriately complied and relevant for SEE submission.

Step 5. Implementation. For both *category C and category B* sub-projects, the SRA (on the base of the SRA environmental specialist conclusion) incorporate the environmental requirements into bidding/contract document for design/construction and ensures compliance of the contractors during the bidding process. The construction Contractors should appoint an officer dealing with environmental issues who will be responsible for implementation of mitigation measures, for holding of Contractor's monitoring plan, and for liaison with SRA (via SRA environmental specialist). This responsible officer should inform SRA and relevant environmental authority (rayon or national) prior to proceeding of construction works (at least 10 days before planned commencement of works) in order they would be prepared to make relevant inspections during the whole construction period. SRA environmental specialist will closely monitor the contractor performance and document this in the supervision/progress report. Useful recommendations towards increasing efficiency of the mitigation plan should be provided, as well. Progress reports to SRA provided by the Contractors, should contain relevant environmental information and should be evaluated by the SRA environmental specialist.

Step 6: Supervision and Reporting. Once project implementation starts, the SRA environmental specialist, preferably jointly with representative of relevant environmental authority (who should be informed in advance), supervise randomly the implementation of the mitigation measures for *category C* of sub-projects and application of EMP for *category B* of sub-projects through the course of construction and operation and specify corrective measures, as necessary. On annual basis the SRA will provide World Bank with a summary of financed sub-projects and their environmental impacts in order to assess and prevent any cumulative effects of similar investments. The SRA will make all environmental assessments and environmental management plans prepared for financed sub-projects available to the World Bank project supervision missions. The SRA will periodically review the supervision reports, periodically inspect the contractor performance, communicate to public, and prepare a semi-annual report to be submitted to the Bank. The overall responsibility for environmental supervision and reporting is a responsibility of the SRA environmental specialist

4. Environmental requirements and mitigation measures during different stages of project development

4.1 Guidelines for mitigation of environmental impacts during designing/planning phase

The adequate planning and design of environmental protection activities and mitigation measures will be required to minimize potential environmental impacts. Contract documents for design will incorporate all requirements to minimize effects on environment that may result from planned activities, as well as to avoid social and health impacts. All contractors will be required to use environmentally acceptable technical standards for design and comply with environmental, health and safety regulations stipulated by national legislation and World Bank requirements. The associated costs and compliance of all procedures with SEE will be full responsibility of contractor for designing works.

Incorporation of mitigation measures in the design documentation will be monitored by the SRA supervision engineer, jointly with the SRA environmental specialist to ensure compliance with the contract.

4.2 Guidelines for mitigation of environmental impacts during construction/rehabilitation phase

Mitigation measures during this phase will be required to minimize potential environmental impacts as well as any inconveniences to the public. To minimize potential construction-related negative environmental impacts, a combination of preventive actions and monitoring should be applied. Adverse construction activities will be reduced through the adoption of a set of mitigation activities, and adopted and applied to all sub-projects.

Contract documents for construction will incorporate all requirements to minimize disturbance from construction activities, 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. If contractors decided to include in their submitted proposals the construction of permanently or temporary supporting facilities (e.g. warehouses, asphalt-concrete plants, etc.) the costs for their design, mitigation and SEE procedures should be clearly presented, and this should be a full responsibility of contractors. Several samples of clauses with regard to different environmental requirements are presented below in the Annex 3.

Thus, all contractors will be required to use environmentally acceptable technical standards and procedures during carrying out of works. Additionally, 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, each 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 should be associated with compliance failure but with overall coverage by the contractors. Many mitigating measures should be included as separate items in the contracts' breakdown cost if it is a unit price contract. An identified extra fund will ensure that the contractor having known that there is a budget for this and will clearly identify any extra costs associated with environmental measures.

Elucidating of all potential effects and mitigating measures should also be included in all training courses, or general guidelines prepared for contracts supervisors. Contract specifications concerning contractors' responsibilities during carrying out of civil works and taking mitigation measures should be reflected in engineering designs and bid documents for each sub-project. The EMPs should also specify contract provisions governing the sources of constructional materials and vehicles. Materials (e.g. asphalt, stone, sand, etc.) will 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. The EMPs should also include provisions for spill prevention and cleanup in case of accidental spills, dust and noise control, and appropriate traffic management during construction, safety enhancement, construction sites cleanup and rehabilitation, etc. Further, the Bank will review the initial contracts for roads rehabilitation works in each sub-project to ensure that these clauses and measures are incorporated, as proposed.

To ensure that contractors understand the actions to be taken and the cost implications of environmental management, and that required actions and measures are priced in bid proposals, short-listed contractors will be informed about environmental protection requirements (for *category C* of sub-projects) and EMP (for *category B* of sub-projects) at the Pre-Bid Meetings. It is also proposed, that shortly after their appointment, contractors jointly with MTRI supervisors and SRA project personnel will attend a seminar on environmental management dedicated to environmental impact prevention/mitigation, explanation of EMP included in their contracts and provisions for environmental management monitoring to be carried out. The training seminar will be guided by the SRA environmental specialist. During construction the contractors' compliance with the provisions specified in the bid documents will be supervised by the SRA environmental specialist, SRA supervising engineer and State Ecological Inspectorate.

Some preventive and mitigation measures should be envisaged in all sub-projects. In particular, it relates to:

(a) construction contracts should comply with environmental, health and safety regulations stipulated by national legislation and WB procedures;
(b) contractors should follow a set of environmental guidelines for contractors prescribed by the EMP.
(c) contractors should be required to submit, as part of their bid, a site-specific environmental management plan including organization of training for participating staff. The scope of the plan and training requirements should depend on the scale of proposed activities.

To ensure compliance with the contract, implementation of mitigation measures will be monitored by the SRA supervision engineer, jointly with full-time SRA environmental specialist.

4.3 Guidelines for mitigation of adverse environmental impacts during operational phase

Operational impacts will be addressed in order to avoid deterioration of road conditions and associated safety problems. 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.

4.4 Guidelines for mitigation of adverse environmental impacts during maintenance phase

Safeguards measures for road maintenance shall be 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 of environmental performance will be carried out on the site by the SRA supervising engineer jointly with the SRA environmental specialist. Periodic audits will also be carried out during regular Bank supervision missions. The SRA will also prepare periodic (semi-annual) reports on adherence to environmental requirements under the project.

5. Monitoring activities

This section contains suggested monitoring activities on implementation of the EMP Checklist for selected roads subprojects (see Annex 2 part 4). 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 above, 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 specific EMPs, 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 semi-annual progress reports. The progress reports will cover the implementation of proposed by EMP, activities, as well as extent of environmental impacts (if any). The site supervisors should be trained to be able to inspect construction sites, borrowing and dumping areas, and other potentially affected areas. Specific aspects to be monitored include: (a) Carrying out of monitoring during construction; (b) Monitoring of significant impacts during the operation of roads.

Monitoring indicators shall be developed for both the construction and operation phases of each road sub-project. Monitoring of construction activities will have to ensure that mitigation measures of construction impacts are being implemented properly, while the monitoring of operation is to ensure that no unforeseen negative impacts are arising. Periodic monitoring of roads will be conducted by SRA environmental specialist to ensure compliance with submitted monitoring plan. The functions of SRA environmental specialist be to: (i) review and approve environmental management plans (EMP) of roads to be funded under the program; (ii) monitor compliance with EMP by the various players involved in the implementation of the project; and (iii) collect data to document that the environmental and social procedures are being met.

SRA will supervise and monitor the overall activities and prepare a semi-annual report on the application of environmental guidelines and other frameworks and action plans during the planning, design and construction phase of the project. SRA with assistance from SRA environmental specialist will also develop the reporting requirements and procedures to ensure compliance of the contractors, conduct public consultation and implement public awareness programs, and hold periodic training for field engineers and contractors, as appropriate.

6. Implementing Arrangements

The project will be implemented under the general supervision and responsibility of the Ministry of Transport and Road Industry. MTRI will execute the project through the *State Road Administration* (SRA*)* as the direct implementing agency.

State Road Administration. The proposed Project will be implemented by the State Road Administration (SRA), being assisted by a Project Implementation Unit. Its responsibilities

would include: procurement, financial management, contract management, project and program monitoring and evaluation, and reporting, as well as ensuring that all subprojects are subject to the EA as well as the civil works are implemented in accordance with the approved EMPs. SRA has extensive experience in successfully implementing World Bank and other IFIs projects (e.g. WB, EBRD, EIB implemented and/or roads rehabilitation projects in the country during last decade). It has in its staff an Environmental Specialist (ES), being responsible for coordination of all project safeguards issues. Similarly, the PIU will hire an ES which would be responsible for the EMF implementation. The WB team will continue closely monitor EMF implementation, providing, when needed, relevant assistance.

SRA Safeguards Specialist. The main responsibilities of the SRA ES would include coordination of all related to EA activities and ensuring the EMF provisions are fully followed during the sub-projects EA and their implementation. The ES will be also responsible for relevant EA capacity building activities as well as for integrating EA issues into the project documents. The ES may be trained through visiting of similar WB projects abroad in order to gain and improve relevant experience and skills or by participating at Regional Safeguards workshops periodically organized by the WB.

SRA ES concrete duties. Among ES main duties are the following: (a) *Institutional Capacity Building and environmental information dissemination*: (i) finalize and publish environmental guiding documents and regulations for the road sector and in particular: Practical Code for roads architectural design; Guide: environmental protection requirements within roads construction and rehabilitation; Practical Code in Construction: environmental protection regulation for roads design, construction, rehabilitation and maintenance; Operational Manual: Roads and Environment; (ii) organize workshops and dissemination of the published environmental guiding documents for specialists from the sector and for other interested parties; organize on annual basis national workshops on the project environmental matters; (b) *Integration of the EMF/EMPs requirements into project documents:* (i) inclusion of environmental requirements in the Project Operational Manual; (ii) inclusion of EMPs or their major provisions into construction contracts, both into specifications and bills of quantities; (c) *Ensuring the high quality of EA for selected subprojects:* (i) selectively reviewing the subproject EA documents and if needed, providing comments and recommendations; (ii) keeping contacts with and ensuring subproject EA approval by the State Ecological Expertise; (iii) organizing jointly with the PIU ES all subproject EA documents disclosure and public consultation in the participating local councils; (d) *Ensuring compliance of the construction/rehabilitation activities with the EMF and approved EMPs*: (i) conducting periodical and selective visits to the project sites and checking EMPs implementation; (ii) reviewing the contractors and PIU progress reports; and (iii) interacting, when needed with the environmental and construction inspectors on the ground.

The PIU Environmental Specialist. The day to day EA activities will be the main responsibilities of the PIU ES, including the compliance with the EMF and EMPs and monitoring of the impact during the project implementation phase. His/her duties will include the following: (a) *Environmental Screening and identification of required types for Environmental Assessments:* (i) screening of road sub-projects' and approving environmental category and specification of details for environmental assessment; (ii) coordinating, when needed, the findings of screening and project environmental categorization with State Ecological Expertise (SEE) with respective divisions of ME and clarification of needs for preparation of Environmental Impact Assessment report or EMP Checklist or other documentation for SEE; (b) *Preparing Environmental Impact Assessment report and/or EMPs and organizing, if needed their State Ecological Expertise:* (i)

ensuring that required environmental documentation (Environmental Impact Assessment report or EMP Checklist or other documentation for SEE) for each selected sub-project (or parts of roads) for rehabilitation is prepared. (ii) reviewing the draft EA documents and making sure they are prepared in conformity with EMF requirements; (iii) ensuring that implementation of mitigation measures and carrying out of monitoring are included in the financial plan for road sub-projects; and (iv) ensuring that Environmental Impact Assessment report or EMP, when needed, are presented to SEE for its review and approval in conformity with national requirements; (c) *Integration of environmental requirements in contracts issued for carrying out of rehabilitation works:* (i) to present at the pre-qualification meetings of contractors the full set of environmental requirements to be followed by the contractors with use of general framework for sub-project evaluation and management; (ii) to exam contractors proposals (in the light of environmental protection requirements) and identify the gaps not covered by the proposed measures or budget; (iii) to prepare the environmental clauses which will be included in the contractor's contracts for implementation of road sub-projects; (iv) to ensure that sub-contracts proposed by the contractors are prepared for agencies which provide goods and services (particularly, for those providing and producing constructional materials – borrow materials, asphalt plants etc.) and have respective valid licenses and environmental permits in conformity with national environmental requirements; (d) *Supervision and monitoring:* (i) to organize and ensure that public participates in discussion on EMP reports for selected sub-projects; (ii) to supervise independently or jointly with the State Ecological Inspectorate the mitigation and environmental protection measures stipulated in EMP for each sub-project selected for rehabilitation of roads; and (iv) to ensure implementation of the monitoring plan of sub-projects as well as establishing of baseline for sub-projects and efficiency of mitigation measures; (e) *Reporting:* (i) to prepare semi-annual reports on the progress of implementation of measures proposed by the EMPs; (ii) to prepare outline and requirements for contractors reports related to the implementation of mitigation and environmental protection measures and to analyze completed reports; and (iii) to present the effects of mitigation and environmental protection measures applied for overall public by specific publication or/and by annual seminars.

The PIU Environmental Specialist must have an advanced degree in Environmental Science or related field should have at least five years working experience related to environmental management, designing and engineering projects (preferably in the road sector). He/ he should be familiar with procedures for environmental assessments and monitoring, road construction, maintenance and operational environmental management issues, national and international environmental standards and requirements for road management, and should have significant experience in working on environmental issues and coordination of public consultations in the Republic of Moldova. The Environmental Specialist should have demonstrated proficiency in English, Romanian and/or Russian and should be computer literate and familiar with all relevant packages.

7. Integration of the EMP into project documents

The ESMF provisions would be used for the following: (a) inclusion of the EMP Checklist requirements in the Project Operational Manual; (b) inclusion of EMPs or their major provisions into construction contracts for individual subprojects, both into specifications and bills of quantities, and the Contractors will be required to include the cost in their financial bids; (c) highlighting of EMP Checklists follow-up responsibility within the SRA; (d) specifying mitigation and avoidance measures during the implementation of the proposed activities; and (e)

monitoring and evaluation of mitigation/avoidance measures identified in the site-specific review and in the EMP Checklist.

8. Approving, publishing and disseminating EA regulatory documents for the road sector

Within the initial road project in Moldova there were prepared a series of EA regulatory documents and in particular:

- Practical Code for roads architectural design;
- Guide: environmental protection requirements within roads construction and rehabilitation;
- Practical Code in Construction: environmental protection regulation for roads design, construction, rehabilitation and maintenance;
- Operational Manual: Roads and Environment;

All these documents are in draft format, being initially approved by the Ministry of Environment and of Transport and Road Industry. The Practical Code has also to be approved by the Ministry of Construction which is expected to be done during next calendar year. To finalize this document it would be necessary to hire a local Consultant which will be in touch with the Ministry of Construction, adjusting when needed its text. Furthermore, all specified documents have to be published and broadly disseminated among all interested parties – practitioners, sector design institutes, universities and environmental authorities and NGOs. The documents have to be also presented at one practical seminar with all involved stakeholders. Additionally, it is proposed to translate and publish as a guiding document the recently published WB document "Improving Environmental Sustainability in Road Projects" which would help in enhancing environmental policy in the road sector and in ensuring its environmental sustainability. For all these activities it would be necessary to allocate about USD 60.000

9. **ESMF Public consultation.**

The SRA has disseminated the draft summary ESMF to the Ministry of Transportation and Road Industry, of Environment and of Health and other relevant agencies for their review and comments. The full document in English and its Executive Summary and main supporting tables in Romanian have been posted on December 1 and 8, 2014 on SRA website (www.asd.md)for its access to wide public. On December 18, 2014, the SRA organized a consultation on Draft ESMF (see the results of the consultation meeting in the Annex 4). After the consultation, draft document was revised considering inputs from consulted parties. The final ESMF will be posted on the website of the SRA and disclosed in the World Bank Infoshop.

Annex 1.

Table 1. Environmental and Social Impacts for Road Rehabilitation Phase

Environmental and social 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
		Negative:
		• Damage to land due to:
		  • land reclamation for siting of mobile asphalt plant, if needed/ reduced land use options
		  • site preparation works/ earthworks
		  • excavation of constructional materials
		  • 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
			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

	• 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 • Constructional materials stockpiling • Construction waste disposals • Construction/ rehabilitation of sidewalks in settlements • Establishment of construction camp/ accommodation facilities (sewage facilities, waste disposals, etc.)	• Formation of gullies along drainage channels • Soil contamination due to improperly arranged temporary accommodation facilitates **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 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 • 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	**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	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

	• 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-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	• 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		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) • 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

	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	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/ water spaying twice a day during construction to avoid dust • Watering of access roads to minimize dust formation, if applicable • Vehicles delivering materials

		Positive: • Decreased risk of air pollution due to reduction of combustion gases emissions into the air	Permanent/ Local	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 sand or fenced if they are going to left opened over nigh • 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
Human health / settlements	• Road rehabilitation works: ○ excavations and other earthworks ○ leveling/patching/priming ○ pavement ○ crushing and	**Negative:** • Road accidents due to disruption of traffic flows due to road maintenance works • Health impact on construction workers due to work with toxic and hazardous materials (damage to respiration system, skin, eyes, etc) aggravated by unfavorable weather conditions (strong wind, rain, etc.) • Impact on human health due to:	Temporary/ Local	• To train personnel on occupational safety and measures towards compliance with occupational safety requirements • Appropriately experienced contractor, good supervision, careful planning and scheduling of work activities

	screening of materials ○ heating of bitumen ○ repair of aggregates ○ construction & reconstruction of drainage channels; etc. • Hazardous, toxic and inflammable materials loading-unloading, transportation and disposal • asphalt plant operation • traffic of construction vehicles • Constructional materials stockpiling • Construction waste disposals	○ Polluted by combustion gases and dust air along the roads ○ Polluted surface run-off into adjacent agricultural lands and agricultural plants contamination ○ Noise pollution and vibrations from construction works, traffic of vehicles and operating machinery/ equipment • Fire and explosion hazards due to accidents during road construction works • Construction vehicles road accidents • Accidents during road rehabilitation works (spills, blasts, etc.) • Accidents due to disruption of traffic flows due to road construction works • Pressure on local water supply sources		• Incorporation of safety and environmental requirements in contract documents/ providing of workers with uniform, glasses, gloves, etc. • Foreseeing compensations in case of health damage • Fencing of dangerous areas (stockpiling of hazardous materials) • Excavated potholes should be either covered with crushed stone or sand or fenced if they are going to left opened over nigh • Avoid work during unfavorable weather conditions to minimize risk of accidents/ bitumen should be not applied during strong winds or heavy rains • Proper establishment of construction camp/ temporary accommodation • To ensure accident prevention for population in residential areas/ to plan carefully construction works to minimize impact on local residents • Restrict transportation of hazardous/ explosive materials in residential areas/ comply with regulation on transportation of hazardous materials • Restrict construction vehicle speed limits, especially in residential areas • Careful timing of works to minimize disturbance especially during night time

				• Ideally, to design acoustic barriers along the roads in residential areas • To construct/ rehabilitate sidewalks in residential areas/ the required width of the sidewalk corresponds to the intensity of pedestrian's traffic (final determination of the location shall be arranged with local stakeholders) • Road warning signs posting to warn road users about rehabilitation works/ warn road users about traffic diversion • Provide advice to the public on shorter alternative routes/bypasses • To ensure proper constructional materials stockpiling/ construction waste disposals • Stone crushing plants; asphalt plants should be fitted with approved dust control devices and operate in accordance with environmental protection requirements and manufacturer' specifications • To ensure regular watering of roads under rehabilitation to minimize formation of dust • Ideally, to install speed calming devices, e.g. humps, in residential areas • To ensure emergency medical service/ to provide telephone communication • To ensure proper sanitary-

		Positive: • Decreased risk of car and local residents accidents due to improved road conditions • Decreased risk to health damage due to reduction of air pollution by combustion gases • Decreased risk to health damage due to lessening of polluted surface runoff to agricultural lands	Permanent/ Local	hygienic facilities (sewage disposal)/ appropriate waste disposal • Water for road construction works should be obtained from such sources and such amount that would not affect appropriate domestic water supply in the area of concern
Social/ Economic	Road rehabilitation	**Positive:** • Creation of job opportunities/ recruitment of the labor force among local population/ temporary decrease of unemployment in residential areas along the road • Development of relevant work skills at local residents • reduction of vehicles operating cost; • less fuel consuming, • safe driving and riding; • better transportation conditions/ less time for transportation of passengers, goods, livestock, etc. • opportunity to create new work places along the road: filling station, shops bars, parking facilities • improved communication opportunities between settlements/ local residents etc.	Permanent / local	

Annex 1.

Table 2. Environmental and Social Impacts for Road Operation Phase

Environmental and social components	*Project activity*	*Potential Negative and PositiveImpacts*	*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	**Negative:** • Continuous damage to land/ erosion and landslide potential/ formation of gullies on slopes along drainage channels • Soil pollution due to contaminated by fuel and its compounds (esp. heavy metals) surface runoff • Soil pollution due to run-off/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.) **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 • Decreased risk of landslides due to slope stabilization	Permanent/ Local 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/ parking facilities • To undertake continuous measures towards prevention and minimization of erosion
Water Resources	Existence of the road Traffic of vehicles Surface runoff from the road Passenger/ goods transportation Road associated infrastructure	**Negative:** Pollution of groundwater by contaminated surface runoff from the road: o compounds of fuel (esp. heavy metals) o petroleum hydrocarbons 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, sanitary facilities, filling stations, shops, bars, etc.).	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/ sedimentation of waterways/direct runoff to waterways/

		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 • Decreased siltation of waterways (if any) due to lower erosion potential as compared to previous road condition • Decreased turbidity of waterways (if nay)/ decreased fine-grained sediment run-off to surface waters as compared to previous road condition	Permanent/ Local	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.)
Air/ Acoustic	Traffic of vehicles Emission from vehicles	**Negative:** • Air pollution by components of combustion gases (CO_2 , NOx). • Noise pollution/ vibration from traffic of vehicles (esp. tracks) in residential areas **Positive:** • Reduction of emissions into the air / reduction of air pollution by combustion gases as compared to previous road conditions	Permanent/ 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
Fauna and flora/ habitats	Existence of the road Traffic of vehicles Road associated infrastructure	**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 • Changes of aquatic eco-systems due to sedimentation potential in waterways • 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 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)
Landscape/ Aesthetic	Existence of the road Road associated infrastructure	**Negative:** • Loss of vegetation/ poor vegetation • Impaired lands/ loss of some land uses along the roads • Garbage/ waste disposals along the roads **Positive:** • Improved visual effects/ improved conditions of surroundings/ manmade landscape	Permanent/ Local 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 operation of road associated infrastructure
Human health / settlements	Existence of the road Traffic of vehicles Road crossing by humans and domestic animals Road crossing by cars from country roads Passenger/ goods transportation	**Negative:** • Car accidents • Killed and injured humans due to road accidents • Domestic animals accidents • Damage to health due air pollution by combustion gases and dust (esp. in settlements) • Damage to health due to consumption of agricultural products drown up on adjacent agricultural lands affected by contaminated surface run-off • Noise pollution/ vibrations from vehicles traffic (esp. tracks) • Disturbance to overnight sleep in settlements	Permanent/ Local	• To provide regular road quality control and maintenance • To provide highway stripping • To provide emergency strips along the road, where appropriate • To provide outside stone, wire or other suitable types of barriers in dangerous sites on the road, if any, to minimize risk of road accidents • To provide parking facilities for accidental drive in and drive out along the road, where appropriate • Road police and ecological

		Positive: • Decreased number of car accidents due to improved road conditions/ safe driving and riding • Decrease number of killed and injured people due to improved road	Permanent/ Local	authorities to check regularly vehicles quality and their compliance with air, noise and technical standards quality • Restrict vehicle speed limits, esp. at the entrance and in the residential areas in order to minimize the risk of pedestrian's injury • The passage through the village shall be speed controlled in combination with measures for the improvement of visibility: 30 km/h, 50 km/h • Provide pedestrian's sidewalk in the residential areas (esp. in village centers, schools, outside of curves, etc.) • Road police to properly control vehicles traffic to minimize risk of road accidents • Road signs posting with indication of speed limits along the road out of settlements in dependence of type of landscape - flat, hilly; road geometry (curved turnings), etc. • To plant trees along the roads (at allowed distance) to prevent excessive air pollution especially along residential areas • To provide telephone and other communication facilities along the road to immediately inform about accident, if any • To provide road traffic sings with indication of distance to medical centers/ rest facilities/ name of settlements • To organize properly public transport stops to exclude risk of humans accidents. Asphalted bus station shall be organized offside the main road, probably at a side road • Install warning for drivers about

		conditions • Lower damage to health due to reduction of air pollution by combustion gases as compared to previous road conditions • Lower damage to health due to decreased polluted surface runoff to agricultural lands as compared to previous road conditions • Improved communication opportunities between settlements/ local residents		pedestrians on the road/ provide facilitates (road traffic signs, regulated traffic lights) for pedestrians to cross the road • Install speed control devices along the road, especially at the entrance to settlements, near rural school, schools, if any
Social/ Economic		**Positive:** • Reduced vehicles operating cost as compared to previous road conditions • Improved access to settlements • Improved access to labor, goods, livestock and other markets • Reduced transportation cost to markets • Improved opportunities for business activities • Development of employment and business opportunities associated with road operation (road associated infrastructure - shops, bars, restaurants; selling of homemade articles and household agricultural products, etc.) • Increase of household income • Reduced time needed to reach destination point • Improved access to hospitals/ health centers and educational institutions for rural population • Improved access to recreation sites in rural area • More opportunities for tourism business development (easier access to cultural, natural and other heritage sites) etc.	Permanent/ Local	

Annex 1.

Table 3. Environmental and Social Impacts for Road Maintenance Phase

Environmental and social components	*Project activity*	*Potential Negative and Positive Impacts*	*Scale of the impact*	*Suggested Mitigation Measures*
Soils and land	• Periodical & Routine maintenance: • light - & medium –scale grading • Culvert repair ▪ Clearance of drainage 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	**Negative:** • Land damage and soil pollution along the road due to disposal of constructional materials, leaks from road maintenance machinery and equipment • Soil pollution due to surface run-off contaminated by petroleum hydrocarbons/ engine oil, lubricants/ compounds of fuel (esp. heavy metals) • 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 risk of soil pollution, soil erosion and landslides resulting from maintenance of drainage system • Decreased risk of land degradation potentials/ gullies formation	Temporary/ Local Permanent/ Local	• 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	• Periodical & Routine maintenance: • light - & medium –scale	**Negative:** Groundwater pollution due to surface run-off contaminated by petroleum hydrocarbons/ engine oil, lubricants/ compounds of fuel (esp. heavy metals)	Temporary/ Local	• To plan carefully maintenance works to minimize surface area under the impact from roan maintenance activities

	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	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:** • Decreased risk of water pollution/ sedimentation/ turbidity of waterways resulting from maintenance of drainage systems • Decreased risk of under-flooding resulting from maintenance of drainage system	Permanent/ Local	• 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	• Periodical & Routine maintenance: ▪ Rood repair works • Culvert repair/ replacement/ clearance of drainage channels ▪ Winter maintenance • Traffic of construction vehicles	**Negative:** • Emissions into the air/ air pollution by components of combustion gases (CO_2 , NOx) • Local impairment of air quality during mixing of raw materials • Noise pollution/ vibration from traffic of construction vehicles and operating machinery and equipment	Temporary/ Local	• 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/

	• Operation of machinery and equipment	**Positive:** • 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	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	• Periodical & Routine maintenance: • Repair of pavement • Culvert repair/ replacement/ clearance of drainage channels • Care of vegetation 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	**Negative:** • Disturbance to habitats • Disturbance to wild animals passages, local migration routes and patterns • Death of wild animals due to road accidents • 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	Temporary/ Local Permanent/ Local	• 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 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	• Road repair works • Stockpile of constructional materials/ construction waste disposals	**Negative:** • Littering of territory adjacent to the road • Damage to landscape due to waste & excavated materials disposals/ stockpiling of constructional materials **Positive:** • Improved manmade landscape	Temporary/ Local Permanent/ Local	• 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
Human health / settlements	• Road repair works • Traffic of construction vehicles • Operation of road repair machinery/equipment • Stockpile of constructional materials/ construction waste disposals • Short-term accommodation facilities for road workers	**Negative:** • Road accidents due to disruption of traffic flows due to maintenance works • Impact on human health due to: o Polluted by combustion gases and dust air along the roads o Polluted surface run-off into adjacent agricultural lands o Noise pollution/ vibrations from hauling tracks/ moving vehicles and working equipment • Fire and explosion hazards due to accidents during road maintenance works • Health impact on road workers due to work with hazardous materials • Pressure on local water supply sources	Temporary/ Local	• To train road workers on occupational safety • Restrict vehicle speed limits, esp. at the entrance and in the residential areas in order to minimize the risk of humans injury • Warning signs posting and advice for drivers to use alternative roads to avoid delays due to road maintenance works • Road signs posting with indication of speed limits • To control vehicles traffic during road maintenance works • To provide telephone and other communication facilities to immediately inform about accident, if any • Excavated potholes should be either covered with crushed stone or sand or fenced if they are going to left opened over nigh to avoid humans injury • Excavate cutoff ditch around stockpiles to prevent materials being washed away by surface runoff to minimize risk of soil and water pollution • Stockpiles materials should be covered with fabric or other materials;

		Positive: • Decreased risk of car and local residents accidents due to properly maintained road conditions • Decreased risk to health damage due to reduction of air pollution by combustion gases as a result of properly maintained road conditions • Decreased risk to health damage due to lessening of polluted surface runoff to agricultural lands as a result of properly maintained road conditions	Permanent/ Local	• Avoid stockpiling near waterways (if any) or on slopes • Proper stockpiling of constructional materials and construction wastes disposals • 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 • To ensure proper accommodation facilities for road workers to minimize possible health impact
Social/ Economic	• Road maintenance works	**Positive:** • Job opportunities for local people/ giving preferences to local communities in awarding road maintenance labor contracts • Development of relevant work skills • etc. (for details refer to Table 1)	Temporary/ Permanent/ Local	

Annex 2. Environmental Management Plan (EMP) Checklist for small scale road rehabilitation projects

General Guidelines for use of EMP checklist:

For low-risk construction projects, such as minor roads rehabilitation works or the construction of bicycle paths, the ECA (Europe and Central Asia) safeguards team developed an alternative EMP (environmental management plan) format to provide an opportunity for a more streamlined approach to mainstreaming the World Bank's environmental safeguards requirements into projects which (a) are small in scale or by the nature of the planned activities have a low potential environmental impact, (b) are located in countries with well-functioning country systems for environmental assessment and management. The checklist-type format has been developed to ensure that basic good practice measures are recognized and implemented, while designed to be both user friendly and compatible with the World Bank's safeguards requirements.

The EMP checklist-type format attempts to cover typical key mitigation measures to civil works contracts with small, localized impacts or of a simple, low risk nature. This format provides the key elements of an EMP to meet the minimum World Bank Environmental Assessment requirements for Category B projects under OP 4.01. The intention of this checklist is that it offers practical, concrete and implementable guidance to Contractors and supervising Engineers for simple civil works contracts. It should be completed during the final design phase and, either freestanding or in combination with any environmental documentation produced under national law (e.g. EIA reports), constitute an integral part of the bidding documents and eventually the works contracts.

The checklist EMP has the following sections:

Part 1 includes a descriptive part that characterizes the project, specifies institutional and regulatory aspects, describes technical project content, outlines any potential need for capacity building and briefly characterizes the public consultation process. This section should indicatively be up to two pages long. Attachments for additional information may be supplemented as needed.
Part 2 includes a screening checklist of potential environmental and social impacts, where activities and potential environmental issues can be checked in a simple Yes/No format. If any given activity/issue is triggered by checking "yes", a reference to the appropriate section in the table in the subsequent Part 3 can be followed, which contains clearly formulated environmental and social management and mitigation measures.
Part 3 represents the environmental mitigation plan to follow up proper implementation of the measures triggered under Part 2. It has the same format as required for MPs produced under standard safeguards requirements for Category B projects.
Part 4 contains a simple monitoring plan to enable both the Contractor as well as authorities and the World Bank specialists to monitoring due implementation of environmental management and protection measures and detect deviations and shortcomings in a timely manner.

Part 2 and 3 have been structured in a way to provide concrete and enforceable environmental and social measures, which are understandable to non-specialists (such as Contractor's site managers) and are easy to check and enforce. The EMP should be included in the BoQ (bill of quantities) and the implementation priced by the bidders. Part 4 has also been designed intentionally simple to enable monitoring of key parameters with simple means and non-specialist staff.

The Checklist EMP will be completed separately for each individual investment, based on site-specific conditions.

CONTENTS

PART 1: GENERAL PROJECT AND SITE INFORMATION

INSTITUTIONAL & ADMINISTRATIVE				
Country				
Project title				
Scope of project and activity				
Institutional arrangements (Name and contacts)	WB (Project Team Leader)	Project Management	Local Counterpart and/or Recipient	
Implementation arrangements (Name and contacts)	Safeguard Supervision	Local Counterpart Supervision	Local Inspectorate Supervision	Contactor
SITE DESCRIPTION				
Name of site				
Describe site location			Attachment 1: Site Map [ ]Y [ ] N	
Who owns the land?				
Description of geographic, physical, biological, geological, hydrographic and socio-economic context				
Locations and distance for material sourcing, especially aggregates, water, stones?				
LEGISLATION				
Identify national & local legislation & permits that apply to project activity				
PUBLIC CONSULTATION				
Identify when / where the public consultation process took place				
INSTITUTIONAL CAPACITY BUILDING				

Will there be any capacity building?	[ ] N or [ ]Y if Yes, Attachment 2 includes the capacity building program

PART 2: SAFEGUARDS SCREENING AND TRIGGERS

ENVIRONMENTAL /SOCIAL SCREENING FOR SAFEGUARDS TRIGGERS			
	Activity/Issue	**Status**	**Triggered Actions**
Will the site activity include/involve any of the following??	Roads rehabilitation	[ ] Yes [ ] No	If "Yes", see Section **A** below
	New construction of small traffic infrastructure	[ ] Yes [ ] No	If "Yes", see Section **A** below
	Impacts on surface drainage system	[ ] Yes [ ] No	If "Yes", see Section **B** below
	Historic building(s) and districts	[ ] Yes [ ] No	If "Yes", see Section **C** below
	Acquisition of land[4]	[ ] Yes [ ] No	If "Yes", see Section **D** below
	Hazardous or toxic materials[5]	[ ] Yes [ ] No	If "Yes", see Section **E** below
	Impacts on forests and/or protected areas	[ ] Yes [ ] No	If "Yes", see Section **F** below
	Risk of unexploded ordinance (UXO)	[ ] Yes [ ] No	If "Yes", see Section **G** below
	Traffic and Pedestrian Safety	[ ] Yes [ ] No	If "Yes", see Section **H** below

[4] Land acquisitions includes displacement of people, change of livelihood encroachment on private property this is to land that is purchased/transferred and affects people who are living and/or squatters and/or operate a business (kiosks) on land that is being acquired.

[5] Toxic / hazardous material includes but is not limited to asbestos, toxic paints, noxious solvents, removal of lead paint, etc.

PART 3: MITIGATION MEASURES

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
0. General Conditions	Notification and Worker Safety	The local construction and environment inspectorates and communities have been notified of upcoming activities The public has been notified of the works through appropriate notification in the media and/or at publicly accessible sites (including the site of the works) All legally required permits have been acquired for construction and/or rehabilitation The Contractor formally agrees that all work will be carried out in a safe and disciplined manner designed to minimize impacts on neighboring residents and environment. Workers' PPE will comply with international good practice (always hardhats, as needed masks and safety glasses, harnesses and safety boots) Appropriate signposting of the sites will inform workers of key rules and regulations to follow.
A. General Rehabilitation and /or Construction Activities	Air Quality	During excavation works dust control measures shall be employed, e.g. by spraying and moistening the ground Demolition debris, excavated soil and aggregates shall be kept in controlled area and sprayed with water mist to reduce debris dust During pneumatic drilling or breaking of pavement and foundations dust shall be suppressed by ongoing water spraying and/or installing dust screen enclosures at site The surrounding environment (side-walks, roads) shall be kept free of soil and debris to minimize dust There will be no open burning of construction / waste material at the site All machinery will comply with Polish emission regulations, shall well maintained and serviced and there will be no excessive idling of construction vehicles at sites
	Noise	Construction noise will be limited to restricted times agreed to in the permit During operations the engine covers of generators, air compressors and other powered mechanical equipment shall be closed, and equipment placed as far away from residential areas as possible
	Water Quality	The site will establish appropriate erosion and sediment control measures such as e.g. hay

		bales and / or silt fences to prevent sediment from moving off site and causing excessive turbidity in canalization and nearby streams and rivers
	Waste management	Waste collection and disposal pathways and sites will be identified for all major waste types expected from excavation, demolition and construction activities. Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and stored in appropriate containers. Construction waste will be collected and disposed properly by licensed collectors The records of waste disposal will be maintained as proof for proper management as designed. Whenever feasible Contractor will reuse and recycle appropriate and viable materials (except when containing asbestos)
B. Impacts on surface drainage system	Water Quality	There will be no unregulated extraction of groundwater, nor uncontrolled discharge of process waters, cement slurries, or any other contaminated waters into the ground or adjacent streams or rivers; the Contractor will obtain all necessary licenses and permits for water extraction and regulated discharge into the public wastewater system. There will be proper storm water drainage systems installed and care taken not to silt, pollute, block or otherwise negatively impact natural streams, rivers, ponds and lakes by construction activities There will be procedures for prevention of and response to accidental spills of fuels, lubricants and other toxic or noxious substances Construction vehicles and machinery will be washed only in designated areas where runoff will not pollute natural surface water bodies

ACTIVITY	PARAMETER	MITIGATION MEASURES CHECKLIST
C. Historic building(s)	Cultural Heritage	If construction works take place close to a designated historic structure, or are located in a designated historic district, notification shall be made and approvals/permits be obtained from local authorities and all construction activities planned and carried out in line with local and national legislation. It shall be ensured that provisions are put in place so that artifacts or other possible "chance finds" encountered in excavation or construction are noted and registered, responsible officials contacted, and works activities delayed or modified to account for such finds.
D. Acquisition of land	Land Acquisition Plan/Framework	If expropriation of land was not expected but is required, or if loss of access to income of legal or illegal users of land was not expected but may occur, that the Bank's Task Team Leader shall be immediately consulted. The approved Land Acquisition Plan/Framework (if required by the project) will be implemented
E. Toxic materials	Asbestos management	If asbestos is located on the project site, it shall be marked clearly as hazardous material When possible the asbestos will be appropriately contained and sealed to minimize exposure The asbestos prior to removal (if removal is necessary) will be treated with a wetting agent to minimize asbestos dust Asbestos will be handled and disposed by skilled & experienced professionals If asbestos material is be stored temporarily, the wastes should be securely enclosed inside closed containments and marked appropriately. Security measures will be taken against unauthorized removal from the site. The removed asbestos will not be reused
	Toxic / hazardous waste management	Temporarily storage on site of all hazardous or toxic substances will be in safe containers labeled with details of composition, properties and handling information The containers of hazardous substances shall be placed in an leak-proof container to

		prevent spillage The wastes shall be transported by specially licensed carriers and disposed in a licensed facility. Paints with toxic ingredients or solvents or lead-based paints will not be used
F. Affected forests, wetlands and/or protected areas	Ecosystem protection	All recognized natural habitats, wetlands and protected areas in the immediate vicinity of the activity will not be damaged or exploited, all staff will be strictly prohibited from hunting, foraging, logging or other damaging activities. A survey and an inventory shall be made of large trees in the vicinity of the construction activity, large trees shall be marked and cordoned off with fencing, their root system protected, and any damage to the trees avoided Adjacent wetlands and streams shall be protected from construction site run-off with appropriate erosion and sediment control feature to include by not limited to hay bales and silt fences There will be no unlicensed borrow pits, quarries or waste dumps in adjacent areas, especially not in protected areas.
G. Risk of unexploded ordinance (UXO)	Hazard to human health and safety	Before start of any excavation works the Contractor will verify that the construction area has been checked and cleared regarding UXO by the appropriate authorities
H Traffic and pedestrian safety	Direct or indirect hazards to public traffic and pedestrians by construction activities	In compliance with national regulations the Contractor will insure that the construction site is properly secured and construction related traffic regulated. This includes but is not limited to Signposting, warning signs, barriers and traffic diversions: site will be clearly visible and the public warned of all potential hazards Traffic management system and staff training, especially for site access and near-site heavy traffic. Provision of safe passages and crossings for pedestrians where construction traffic interferes. Adjustment of working hours to local traffic patterns, e.g. avoiding major transport activities during rush hours or times of livestock movement If required, active traffic management by trained and visible staff at the site for safe passage for the public

		Ensuring safe and continuous access to all adjacent office facilities, shops and residences during construction

PART 4: MONITORING PLAN (EXEMPLARY, TO BE EXPANDED AS NEEDED)

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 marginal, within budget; (prepare special account for analyses at PMU)	Contractor, Engineer
During activity **supervision**	dust generation noise	on site and in immediate neighborhood, close to	visual consultation of locals	daily daily	avoidance of public nuisance	marginal, within budget	Contractor, Engineer

	emissions waste and wastewater types, quality and volumes surface drainage soundness	potential impacted residents at discharge points or in storage facilities	visual, analytical if suspicious count of waste transports off site, check flow rates and runoff routes for wastewater	daily / continuous daily / continuous	avoidance of negative impacts on ground/ surface waters ensuring proper waste management and disposal		

Annex 3. Example[6] of the environmental clauses for contract documents in construction

General

- Notwithstanding other obligations, if, in the opinion of the Engineer, damage is being done to the environment by the Works under construction the SRA environmental specialist or SRA supervising engineer may instruct the Contractor to cease work immediately, or change the approach or method of work.
- The Provisional sum, item ____ in the Bill of Quantities, is for any work deemed to be required by the Engineer to remedy any unexpected environmental problems, or potential environmental problems, which may arise as a result of the Works. The Engineer may instruct either the Contractor, or a nominated Subcontractor, to carry out the work.
- The Contractor shall ensure that full consideration is given to the control of environmental aspects, and that all provisions of the design and specification requirements relating to pollution of the environment, and protection of adjacent land and waterways, are complied with.

Road works

- Mobilization of heavy equipment to and from the site shall be carried out at time of lowest traffic on the routes used.
- The Contractor shall use selected routes, as advised by the Engineer, and appropriately sized vehicles suitable to the class of road, and shall restrict loads to prevent damage to roads and bridges used for transportation purposes to the project site. The Contractor shall be held responsible for any damage caused to the roads and bridges due to the transportation of excessive loads, and shall be required to make good such damage to the approval of the engineer.
- The Contractor shall not use any vehicles, either on or off road, whose exhaust or noise emissions are grossly excessive, and in any built up areas noise mufflers shall be installed and maintained in good condition on all motorized equipment under the control of the Contractor.
- The Contractor shall limit construction works to between 6am and 10pm if it is to be carried out in or near residential areas. The Contractor shall also avoid the use of heavy or noisy equipment in specified areas late at night, or in sensitive areas such as near a hospital.
- To prevent dust pollution during dry periods the Contractor shall carry out regular watering of earth and gravel haul roads and shall cover soil haulage trucks with tarpaulins if the soil is dry.
- Adequate traffic control measures shall be maintained by the Contractor throughout the duration of the Contract, and prior to any restriction being applied to two way traffic movement written permission must be obtained from the Engineer for the proposed traffic control measures to be used and for the length of time the restriction is proposed to be in place.

[6] Taken from "Environmental Guidelines for reducing the environmental effects of road projects in Lao People's Democratic Republic, 1995" and should be used as example only. It should be carefully adapted to the specific sub-project activities, related potential effects identified and mitigation measures proposed.

- The Contractor shall recruit locally as large a proportion of the workforce as is possible, and shall provide appropriate training where necessary.
- The Contractor shall install and maintain a temporary septic tank system for any residential labor camp established and ensure that this does not cause any pollution of nearby watercourses. The contractor shall also make the system inoperative and safe on completion of the contract and the removal of the camp.
- The Contractor shall establish a method and system for storing and disposing of all solid wastes generated by the labor camp and/or the base camp.
- The Contractor shall not allow the use of fuel-wood for heating or cooking in any labor or base camp but shall provide alternate facilities using other fuels.
- The Contractor shall ensure that site offices, depots, asphalt plants and workshops are located in appropriate areas, as approved by the Engineer, and not within 500 metres of existing residential settlements, and asphalt plans not within 1000 metres.
- The Contractor shall also ensure that site offices, depots and particularly storage areas for diesel fuel and bitumen, and asphalt plants, are not located within 500 metres of watercourses, and are operated so that no pollutants enter watercourses, either overland or through groundwater seepage, especially during periods of heavy rain. This will require lubricants to be recycled and a ditch to be constructed around the area with an approved settling pond/oil trap at the outlet.
- The contractor shall not use fuel-wood as a means of heating during the processing or preparation of any materials forming part of the Works.

Earthworks-General

- The Contractor shall not carry out any earthworks during the rainy season unless specific permission is obtained in writing from the Engineer or his representative for properly controlled earthworks at specific locations.
- The Contractor shall maintain stable cut and fill slopes at all times and shall cause the minimum possible disturbance to areas outside the prescribed limits of the work.
- The Contractor shall complete cut and fill operations to final cross-sections at any one location as soon as possible and preferably in one continuous operation and not leave partly completed earthworks, especially during the rainy season.
- The Contractor shall ensure that any cut or fill slopes are planted in grass or other plant cover as soon as possible to protect them from erosion.
- To prevent erosion cut off drains and toe-drains shall be provided at the top and bottom of slopes as shown on the drawings or as directed by the Engineer.

Governing the sources of constructional materials and equipment

- Materials (e.g. asphalt, stone, etc.) will be supplied only from sources with approved licenses, permits, and/or approvals to ensure environmental and workers safety;
- The material extraction from operating quarry and borrow sits (and disposal) to be used should be (i) properly licensed and (ii) operating in compliance with the license requirements;
- Any equipment to be used during construction should meet internationally recognized standards for environmental health and workers safety.

Earthworks - Disposal of Surplus Material

- Any spoil cut to waste, or material removed from drains, shall be disposed of to designated stable tipping areas as directed b) the Engineer, and separate items are included in the Bill of Quantities to allow for this.
- Side tipping of surplus excavated material shall only be permitted where specifically allowed by the Engineer.
- Before starting any earth-moving operation at any location the Contractor shall obtain the Engineer's approval of the areas he proposes to use as waste dumps.
- Locations for waste dumps are not to be sites where they will cause future slides, interfere with agricultural land or any other properties or cause soil from the dump to be wasted into any watercourse. During may need to be dug within and around the waste dumps as directed by the Engineer and this, together with the proper placement of the spoil, should be allowed for in the cut to waste item in the Schedule of Quantities. The only item in the Schedule of Quantities paid for separately is the haul distance (m^3 times kms) to the waste dump directed by the Engineer.

Drainage Works

- The Contractor may need to construct temporary drains and particularly temporary sedimentation basins and brushwood barriers to avoid excessive sedimentation entering local streams river or lakes. These works will be carried out by the Contract when instructed to by the Engineer but no separate payment will be made for the work. The onus is therefore on the Contractor to carry out all works in such a manner so as to avoid erosion and the subsequent of sedimentation.

Annex 4. Report on Consultation on the Draft Environmental Management Framework with interested parties

Date: December 18, 2014, 3.00 PM
Venue: Chisinau, State Road Administration

Location/ venue	**Objective**	**Invitees**	**Participants**	**Summary, conclusions and comments**
Mun. Chişinău, str. Bucuriei, 12 A MD 2004 Republica Moldova	To describe the project , including ESMF and solicit feedback	The SRA has posted announcement with the invitation to the public briefing on its website on December 1, 2014, inviting for that all interested parties. Additionally the SRA has sent official invitations to the key stakeholders: Ministry of Environment; State Ecological Inspectorate; Ministry of Health; and Ministry of Transportation.	1. Vladicescu Elena, State Road Administration, Environmental Specialist; 2. Aurel Cozan, IUCN, Environmenmtal Consultant 3. Arcadii Capcelea, World Bank 4. Dumitru Arion, NGO „Viitorul Verde” 5. Garaba Vladimis, Moldovan Ecological Movemnmt, Chisinau branch 6. Gavriluța Roman, NGO „EcoZon Recea” 7. Pătrașcu Veaceslav, State Ecological Inspectorate 8. Polișciuc Serghei, State Road Administration, Division Chief 9. Gheorghe Gîrbu, State Road Administration, SApecialist	At the meeting, there were made presentations on: Project goal and objective; and Environmental Management Framework for the project. The attendees actively participated in discussions which were mainly focused on the following issues: (a) environmental protection issues related to use of borrow pits; (b) status of environmental standards and normatives for the rod sector, proposing their revising, with further official approvals and their large dissemination to all interested parties. For that it is recommended to conduct national workshop(s); (c) need to consider green belts along the local roads and decide what would be the best composition; (d) need for special studies on the level of air pollution along the roads within the urban localities with a set of recommendations to the traffic police which might regulate the traffic in the extreme cases. Overall he participants endorsed the draft ESMF and concluded it satisfactorily address the

				environmental issues under the project.