REPUBLIC OF MOLDOVA

Ministry of Infrastructure and Regional Development

State Road Administration

Moldova Rural Connectivity Project (P180153)

ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

FOR C8.1&C8.2 (C8) CORRIDOR

(G88 ROAD)

(CORNESTI – M5-C8.3)

October 2023

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ACRONYMS AND ABBREVIATIONS

CERC	-	Contingent Emergency Response Component.
ESF	-	Environmental and Social Framework
ESHS	-	Environmental, Social, Health and Safety
ESMP	-	Environmental and Social Management Plan
ESIA	-	Environmental and Social Impact Assessment
ESS	-	Environmental and Social Standard
EU	-	European Union
FS	-	Feasibility Study
GBV	-	Gender Based Violence
GN	-	Guidance Note to ESS2
GRM	-	Grievance Redress Mechanism
IBRD	-	International Bank for Reconstruction and Development
LMP	-	Labor Management Procedure
M&E	-	Monitoring & Evaluation
NGO	-	Non Governmental organization
NMT	-	Non-Motorized Transport
OHS	-	Occupational Health and Safety
PAP	-	Project affected Person
PDO	-	Project Development Objective
PIU	-	Project Implementation Unit
PPE	-	Personal protective equipment
RAP	-	Resettlement Action Plan
RPF	-	Resettlement Policy Framework
SEP	-	Stakeholder Engagement Plan
SRA	-	State Road Administration
WB	-	World Bank

1. INTRODUCTION

1.1. Project background

Moldova's road network is strategically vital and is a critical component of the Solidarity Lanes intended to support Ukraine during and after war. The national road network in Moldova is 2,598 km in length. The secondary and local road network is over 7,000 km. About 80% of the transport of goods from the Republic of Moldova are transported by road. Relative to its territorial size, Moldova has a comparatively dense network of transport infrastructure. However, the Soviet-era stock of assets has suffered from underinvestment in renewal, modernization, and maintenance since transition. In 2020, 46.8% of Moldova's road network was assessed to be in poor condition. Investment gaps are clear when comparing Moldova to international peers. According to the 2019 Global Competitiveness Report, the quality of Moldova's road infrastructure is the worst in the entire Europe Central Asia (ECA) region and one of the worst in the world and was ranked 126 out of 140 countries considered. The war in Ukraine has significantly impacted Moldova's transport sector, due to the high number of refugees fleeing the war, the re-routing of freight transport as a result of the closure/destruction of specific routes on the territory of Ukraine and disruptions to Black Sea ports. Additionally, the Danube Solidarity Lane is currently used as an option for facilitating the export of Ukrainian grain aside from fully restoring Black Sea access, thus Moldova's transport network is likely to remain strategic while the war continues. Romanian and Republic of Moldova borders continue to experience significant pressure. For example, land routes to transport grain out of Ukraine operate through border crossing points in the two countries, resulting in lorry queues of up to 20 kilometers. Despite severe capacity constraints, Moldova's road Border Crossing Points have managed to increase throughput capacity throughout 2022 but will require additional investment to continue expanding support to Solidarity Lanes[1].

Project Development Objective

1.2. *The Project Development Objective (PDO) is to provide climate-resilient road connectivity to selected local communities; facilitate road transit through selected border crossings with Romania and provide effective response in case of an eligible emergency.* Key Performance Indicators

The key performance indicators are:

- Number of people living within 30 minutes' drive of the nearest market and high school (number)
- Roads upgraded with climate resilient design (km)

[1] For more detailed information about solidarity lanes, please follow the link: https://eu-solidarity-ukraine.ec.europa.eu/eu-assistance-ukraine/eu-ukraine-solidarity-lanes_en

- Reduced average waiting times at Moldova/Romania border crossing points (hours)

1.3.Project Components

The proposed Project's design consists of four components: (i) Component A will finance physical works needed to link local communities with public services and economic opportunities, building on the previous support to the Government's upgrade of a prioritized network of local and regional roads ; (ii) Component B will facilitate trade and expand Solidarity Lanes, by increasing capacities and modernizing the Ungheni, Leuseni and Giurgiulesti border crossing points (BCPs) and the access roads connecting them; (iii) Component C will finance interventions aimed at enhancing delivery capacity and supporting essential project management functions; and (iv) Component D will provide a standby Contingent Emergency Response capability should the need arise. Specific details for each component are provided below.

Component A: Linking local communities with economic opportunities

A.1: Upgrading local road links (IBRD US$ 69.49 million; US$ IDA 5.98 million): This subcomponent will finance the rehabilitation and upgrading of approximately 100 km of three priority local roads, to improve connectivity to markets, schools, health and other social and economic centers, and enhance climate resilience. An important part of the subcomponent is road safety works in the proximity of schools and on road sections within communities. All roads financed by the project will be maintained under maintenance contracts to ensure that investments made are sustained over time.

A.2: Community inclusion & accessibility: This subcomponent will finance: (i) interventions complementary to the road works in (A.1) including those requested by communities along the roads; and (ii) Non-Motorized Transport (NMT) infrastructure along and adjacent to Project Roads[2].

A.3: Safer roads for Moldova: This subcomponent will provide funding for two main purposes: (i) Remediation of road safety "black spots" at up to 6 priority locations. The aim is to pilot remediation of known risks of road safety "blackspots" as per best international practices tailored to the specific conditions. (ii) Road safety educational and informational campaigns. These campaigns will aim to raise awareness and educate the public about road safety measures and practices. The campaigns will be designed to target specific audiences and address key road safety issues relevant to the Moldovan context.

Component B: Facilitating trade and expanding Solidarity Lanes

The aim of this subcomponent is to enhance capacity and improve the functionality of the Border Crossing Points (BCPs) between Republic of Moldova and Romania. The works include a range of interventions at both the infrastructure level of the BCPs, coupled with equipment acquisition needed to enhance their functionality. These interventions are designed to increase the capacity, interoperability,

[2] The approach to consider community requested works will be linked to the Project's citizen engagement activities and Stakeholder Engagement Plan. Examples of community requested works could include: Additional sidewalks and others as will be indicated in the Project Operation Manual

and efficiency of the border crossing services in accordance with the existing regulations. Investments made under this Component will be matched by an EU grant facility - Connecting Europe Facility (CEF).

Investments on the Moldova side of the border will be complemented by simultaneous modernization investments on the Romania side. These investments on the Romania side will be implemented by the Romanian Government and co-financed by the CEF. Preparation/implementation on the Romanian side has advanced. A High-level working group and technical group between Moldova and Romanian Government have been set-up to coordinate the respective investments. The High-level working group consists of senior officials from both countries who are responsible for overseeing and guiding the overall progress of the modernization project. The technical group, on the other hand, comprises experts and specialists who work together to address technical aspects and ensure the smooth implementation of the investments.

B.1: Road access and modernization of Leuseni/Albita BCP: This subcomponent will finance the upgrade of the BCP at Leuseni and expansion of the access road to the BCP.

B.1.1 Modernization and upgrade of BCP at Leuseni: The BCP upgrade will be carried out in two stages to ensure adequate capacity, optimized traffic flow and custom processing are maintained: Stage 1 - full refurbishment of the existing freight entry facility and the passenger car exit facility that require urgent improvement; Stage 2 – construction of a new freight exit facility. The procurement of fixed and mobile customs equipment is included in this sub-component. The subcomponent also finances related consultancy services for feasibility studies, supervision and monitoring services.

B.1.2 Access Road to Leuseni BCP: The works involve upgrading the 1 km access road to the Leuseni BCP. The current 2-lane road will be expanded to 4 lanes, aligning it with the standards of a similar access road on the Romanian side. This upgrade is also in line with Romania's plan to replace the existing bridge over the Prut River at the Moldova/Romania border with a 4-lane standard bridge. The access road connects the BCP to the national road M1 (Leușeni – Chisinau – Dubasari - MD/UA boarder). The subcomponent also finances related consultancy services for feasibility studies, supervision and monitoring services.

B.2. Solidarity Lane customs facilitation & BCP upgrades (Giurgiulesti): This subcomponent will encompass the following activities: (i) traffic organization and implementation of an electronic queuing system at the Moldovan side of Giurgiulesti BCP. This will help streamline and improve the efficiency of border crossing procedures, reducing waiting times and congestion. Traffic congestion often leads to idling vehicles, which consume fuel inefficiently and produce more emissions. By reducing congestion and allowing smoother traffic flow, vehicles can operate more efficiently, consuming less fuel and emitting fewer greenhouse gases. (ii) Expansion of the capacity of the existing parking/waiting facility in Giurgiulesti area, along with the provision of basic services such as toilets and water supply points for truckers. This will enhance the facilities available to truck drivers, ensuring their comfort and convenience during waiting periods. (iii) Procurement and installation of scanning equipment and software at the BCP facility. This will enable efficient and effective scanning of goods and vehicles passing through the border, enhancing security measures and facilitating smoother border control processes. (iv)Supervision services are also included under this subcomponent, to ensure proper oversight and monitoring of the implementation of the activities.

B.3. Construction and Road access to BCPs (Ungheni): A new road BCP will be developed at Ungheni with modern customs processing, weighing facilities and truck terminal. The BCP will be connected through a 0.5 km access to the national road network, for which feasibility study is already available[3]. The subcomponent also finances related consultancy services for feasibility studies, supervision and monitoring services.

Component C: Building sustainability, delivery capacity and project management support (IBRD US$ 4.5 million)

C.1. Project audit and supervision (US$2.00 million): This subcomponent will finance: (i) annual project audits; and (ii) Monitoring consultants for the OPBRC contracts as well as Supervision Engineers for overseeing all civil works under Component A.1.

C.2: Output and Performance Based Roads Contracting (OPBRC) system; and Road Asset Management System (RAMS) (US$1.00 million): This subcomponent will finance consultancy services to support the development and implementation of OPBRC on a selected road under Component A.1. Specific activities to be financed include: (i) An assessment of political, legal, regulatory, and institutional constraints to adopting OPBRC in the road sector. This assessment will help identify any barriers or challenges that need to be addressed. Based on the assessment, a strategy and implementation plan will be developed to guide the adoption of OPBRC. (ii) Providing technical assistance to develop appropriate legal instruments, such as a draft bill and regulations, that are necessary for the implementation of OPBRC. It will also involve preparing or adopting standard OPBRC bidding documents, training, and institutional capacity building activities to ensure that relevant stakeholders are equipped with the necessary knowledge and skills to implement OPBRC effectively. Hands-on support will also be provided to the Government of Moldova (GoM) during the launch of OPBRC pilot contracts, which may be financed under the Project or other sources. The subcomponent also supports the full operationalization of the Road Asset Management System (RAMS), which includes technical assistance: (i) to complete the missing functionalities/modules in both the federal and regional versions of the current RAMS, (ii) to rolling out the RAMS to all rayons, (iii) training and capacity building of SRA and rayons in the full operationalization of the RAMS. The RAMS will include climate resilience and road safety parameters and shall be interlinked with other state digital systems such as the one for meteorological data. This will enhance climate resilience through evidence-based understanding of vulnerabilities of the road network which leads to risk-based climate-informed road maintenance planning and prioritization.

C.3. Design and implement a female internship program (US$0.20 million). This Sub-component will help promote women's employment in the transport sector, where they are underrepresented. The project will design and implement a female internship program will finance activities related to (i) setting up a collaboration (Memorandum of Understanding) between the line ministry and the Technical University of Moldova, (ii) designing the internship program (orientation, interns' tasks, expected outcomes, and end of the program evaluation), and (iii) providing onboarding training to 25 female interns with opportunity of full-time employment upon graduation.

[3] Simultaneously, Romania will construct a bridge across the Prut River with a new BCP and 0.5 km access road of the same standard as the Moldovan side access road to the BCP.

C.4. Incremental operating costs, project management, staff development (US$1.30 million): This subcomponent will include: (i) consultancy support to each PIU and (ii) incremental operating costs for each PIU; and (iii) consultancy support for enabling SRA's transition to a corporatized entity that operates under commercial principles (iv) the cost of female student's internship program in the transport sector.

Component D: Contingent emergency response (US$ 0 million):

Given the inherent uncertainty created by the ongoing war in Ukraine, this zero-dollar component is designed to provide swift response in the event of an emerging crisis or emergency. The Government of Moldova would be able to request the World Bank to reallocate Project funds to address an eligible crisis or emergency needs that may materialize. The activities financed by the CERC will be demand- and event-driven and will be detailed in a GoM Action Plan of Activities, which together with an official declaration of a specific emergency by the GOM represent the two obligatory conditions for triggering the component. The definition of an eligible emergency and a positive list of activities will be included in the project's legal documents, and the mechanics of the decision-making process and implementation of the will be reflected in the CERC Operational Manual, part of the overall POM

Component A of the project will require land acquisition for the expansion of BCPs and associated parking facilities. Component B of the project does not require land acquisition and envisaged physical works would be taking place on existing roads within existing rights of way, and with the primary aim of upgrading transport services. The project is not expected to require resettlement but is expected to contribute to economic displacement under Component A which will need to be mitigated through financial compensation to landowners. Significant or irreversible impacts on the natural environment are not envisaged.

1.4. Scope of ESMP

The Environmental and Social Management Plan (ESMP) contains measures and plans to reduce, mitigate and/or offset adverse risks and impacts, the costs of such measures, and information on the agency or agencies responsible for addressing project risks and impacts, in line with the Environment and Social Standard (ESS) 1 "Assessment and Management of Environmental and Social Risks and Impacts" as well as other applicable ESSes of the World Bank's Environment and Social Framework (ESF).

The ESMP will be integrated into the preparation and implementation stages of C8 road project. It must be complied through the entire project cycle from design, implementation, and operation/maintenance, to attain the above outlined purpose and objectives.

The required mitigation measures and issues to be addressed through ESMP instruments for the project activities are standard and widely used in construction practices. These include proper waste management and disposal of construction debris (including asbestos), proper wastewater treatment; heating and fuel system assembly, dust and noise control, sensitivity of designs to cultural settings, and cultural heritage/chance finds procedures.

In practice, these issues will be addressed through a series of local permits, through contractor site supervisor oversight, through the local authorities' requirements, and through the project implementation unit responsible for the construction.

The site-specific ESMP is prepared, publicly consulted and disclosed locally for already selected site before starting the procurement of the construction works for road rehabilitation. ESMP requirements will be included in the bidding and contract documents as integral part of both construction execution and technical supervision phases.

The ESMP is a 'living document' enabling revision, when and where necessary. Any unexpected situations and/or relevant changes in the design of C8 road project would be assessed and appropriate management measures would be incorporated by updating the ESMP. Revisions will be reviewed the World Bank.

1.5.Project Environmental and Social Assessment

The project will not finance construction of new roads or their major upgrading - the proposed activities are essentially road rehabilitation and maintenance within the "Right of Way" (ROW) areas. Thus expected environmental impacts related to air and water pollution, solid and hazardous wastes, labor security etc., are expected to be low, site specific and mostly temporarily. The impact on natural vegetation associated with operating the quarry and borrow areas, and constructing detour and access road to the borrow material pits and quarry sites, will not be applicable here – as there will be used the existing borrow/quarry sites.

Although the EIA Law does not mention an ESMP by name, there are no big discrepancies between the national EA requirements and WB ESF and Environmental and Social Standards (ESSs) with regard to preparation of such document as main parts of the ESMP should be prepared and included in the project documents (mitigation and monitoring activities, along with the necessary finanicing).

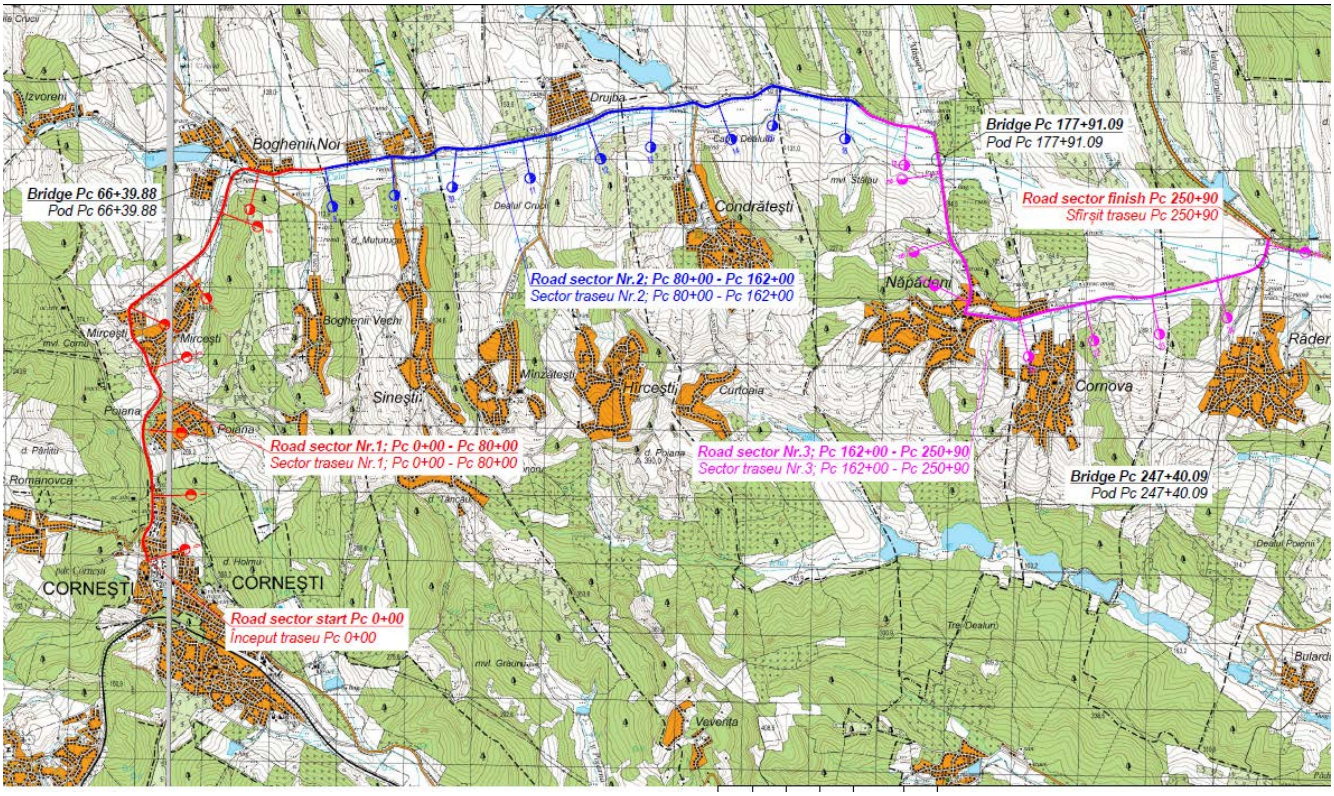
This ESMP was prepared based on conducted Detailed Design of the project to rehabilitate the C8 (Figure 1) and aims to:

- Comply with all the environmental requirements of the Government of Moldova as well as to the Law on Environmental Impact Assessment of 2014;
- Achieve sustainable and environmentally and socially acceptable development interventions for road development and rehabilitation;
- Inform the SRA and the contractors on environmental management strategies and activities while implementing the project;

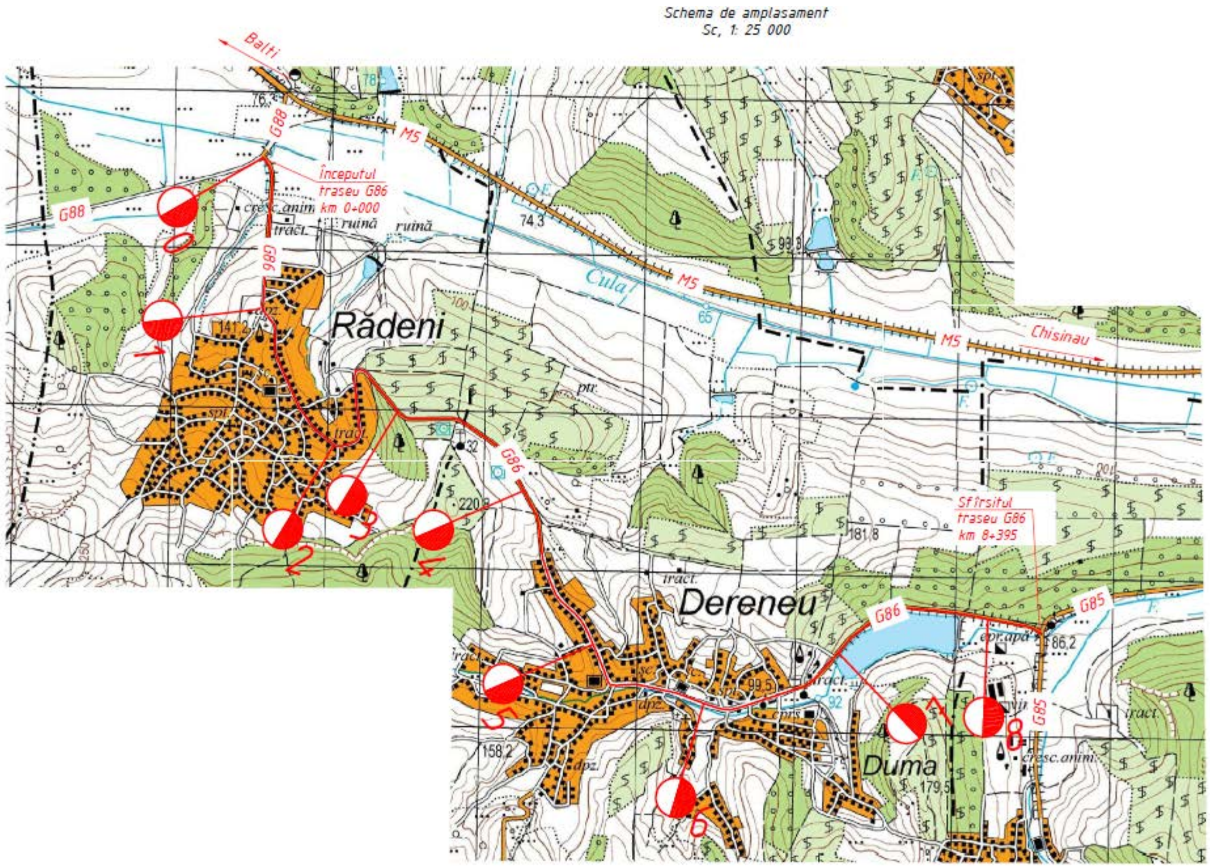
In order to achieve the above objectives, the following action has been taken in formulating the ESMP.

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

C8.1 Cornesti-Napadeni-Radeni-M5



C8.2 Radeni-Dereneu-C8.3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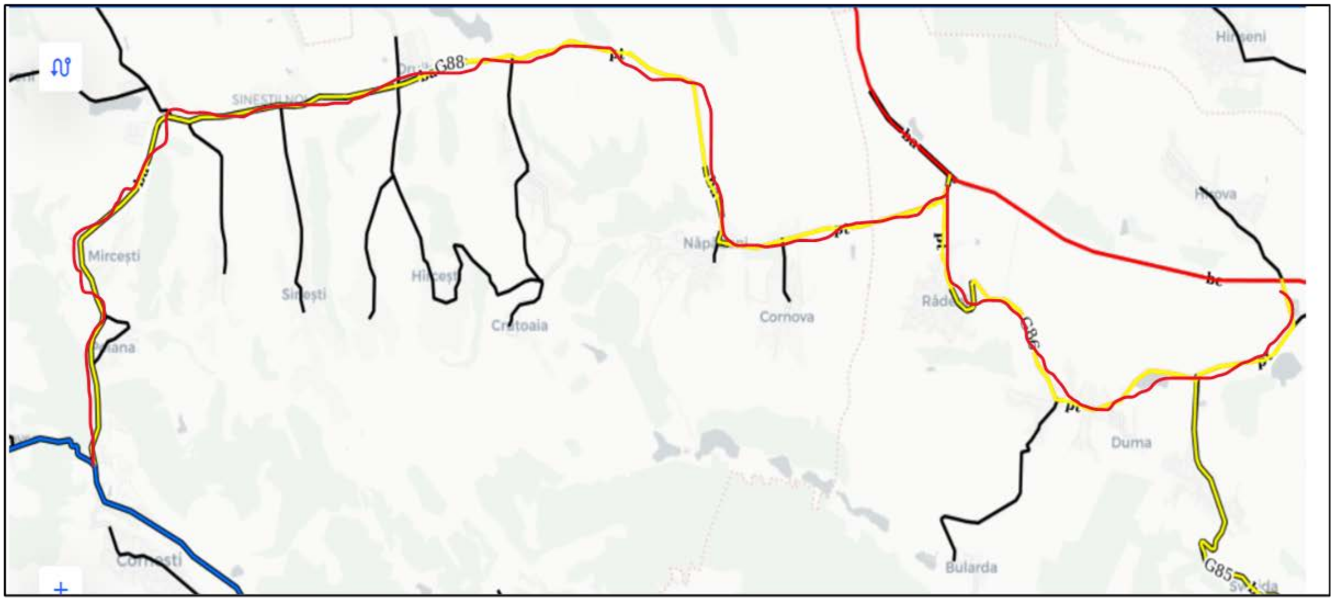
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2. LEGAL AND REGULATORY FRAMEWORK

Republic of Moldova Legislation and regulations pertaining to the environment and its protection have been analyzed herein to ascertain the country requirement for environmental assessment and approval of development projects, in general, and road development projects, in particular. Although the national requirement for environmental assessment of projects are provided mainly by the Law on Environment Impact Assessment of 2014, other laws and codes that could have a bearing on and facilitate environmental protection and road development are also discussed below and summarized in Table 1 bellow.

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

2.1 General environmental legislation related to roads

Name of Act	Last Amended	Description
Law No. 1515/1993 on environmental protection	11 Jan. 2023	The basic legal framework for the development of special regulatory acts and instructions of special issues, covering the field of environmental protection.
Law no. 86/2014 on environmental impact assessment	05 Sept. 2022[4]	Partially transposes Directive 2011/92/EU of the European Parliament and of the Council of 13 December 2011 on the assessment of the effects of certain public and private projects on the environment.
Law No. 98/2022 on atmospheric air quality	08 June 2023	This strengthens the institutional capacities for monitoring and assessing atmospheric air quality; to identify and implement effective measures to reduce air pollutant emissions to levels that minimise the harmful effects on human health and the environment.

[4] On 21st October 2023 the changes approved in Law 226/2022 will enter into force in order to harmonize with Directive 2011/92/EU of the European Parliament and of the Council of 13th December 2011 on the assessment of the effects of certain public and private projects on the environment and the provisions of art. 6 para. (3) and (4) of Council Directive 92/43/EEC of 21st May 1992 on the conservation of natural habitats and of wild fauna and flora.

Name of Act	Last Amended	Description
		This partially transposes Directive 2008/50/EC of the European Parliament and of the Council of 21 May 2008 on ambient air quality and cleaner air for Europe.
Law No. 227/2022 on industrial emissions	In force with effect from 21 Oct. 2024	The establishment of the regulatory framework regarding the prevention of pollution caused by industrial and economic activities, in order to reduce emissions to air, water and soil, including the generation of waste, as well as environmental control, the promotion and application of the best available techniques to achieve a high level of environmental protection. Partially transposes Directive 2010/75/EU of the European Parliament and of the Council of 24/11/2010 on industrial emissions.
Law No. 78/2017 for the ratification of the Paris Agreement	-	This agreement, contributing to the implementation of the convention, including its objective, aims to strengthen the global response to the threat posed by climate change, in the context of sustainable development and efforts to eradicate poverty.
Government Decision no. 1470/ 2016 regarding the approval of the Low Emission Development Strategy of the Republic of Moldova until 2030 and the Action Plan for its implementation	18 Dec. 2021	To ensure the implementation of the provisions of the United Nations Framework Convention on Climate Change, of the mechanisms and provisions of the Kyoto Protocol to the United Nations Framework Convention on Climate Change, to which the Republic of Moldova acceded through Law no. 29/2003, with subsequent amendments, as well as the Association Agreement between the Republic of Moldova, on the one hand, and the European Union and the European Atomic Energy Community and their member states.
Law No. 272/2011 on Water	22 Oct. 2022	Creation of a regulatory framework for the monitoring, assessment, management, protection and efficient use of surface water and underground water. The law is partially harmonised with directives no.

Name of Act	Last Amended	Description
		91/271/EEC, no. 91/676 EEC, no. 2000/60/EC, no. 2006/7/EC, no. 2007/60/EC and no. 2008/105/EC.
Law No. 1536/1998 on hydrometeor-ological activity	31 Jan. 2022	Regulates the hydrometeorological activity in the territory of the Republic of Moldova. It aims to provide hydrometeorological information concerning the needs of the population, economy and national defence, as well as of the public authorities.
Law No. 1102/1997 on natural resources	05 Sept. 2022	Regulates the relations in the field of use, protection and reproduction of the natural resources, in order to ensure the ecological security and sustainable development of the country.
Law No. 440/1995 on river and lake water protection areas and strips	04 June 2023	Regulates the way water protection areas and riparian water protection strips of rivers and water basins are created; and the regime for the use and protection activity thereof. All legal entities and individuals, including foreign ones, are covered by it.
Forest Code no. 887/1996	27 Oct. 2017	Regulates the sustainable management of the forest fund through rational use, regeneration, guarding and protection of forests, maintaining, preserving and improving forest biological diversity, ensuring with forest resources the current and future needs of society based on their multi-functionality.
Law No. 239/2007 on vegetal kingdom	11 Jan. 2023	Establishes the legal framework in the field of conservation, protection, restoration and use of objects of the plant kingdom, as well as the competences of public authorities at all levels and of scientific institutions in the field.
Law No. 1538/1998 on the fund of natural areas protected by the state	01 July 2022	Establishes the legal bases for the creation and operation of the funding for natural areas protected by the state; principles, mechanism and method of conservation thereof; as well as the attributions of central and local public authorities, non-governmental organisations and citizens in this field.

Name of Act	Last Amended	Description
Law no. 591/1999 on green spaces in urban and rural communities	04 June 2023	Regulates relations in the field of development and protection of green spaces of urban and rural localities in order to ensure the right of every person to a healthy and aesthetically pleasing environment.
Law no. 439/1995 on the animal kingdom	24 Mar. 2023	Regulates relations in the field of protection and use of wild animals, which live naturally on land, in water, in the atmosphere or in the soil , permanently or temporarily populating the territory of the republic.
Law no. 325/2005 on the Red Book of the Republic of Moldova	25 Apr. 2022	Restoration of extinct, critically endangered, endangered, vulnerable, rare and undetermined species of plants and animals, included in the Red Book of the Republic of Moldova, in order to prevent their disappearance and ensure the conservation of their genetic background, establishes the legal bases for keeping the Red Book, the attributions of public authorities at all levels and of scientific institutions in the field.
Law No. 209/2016 on waste	07 June 2023	It establishes the legal basis, the state policy and the necessary measures for the protection of the environment and the health of the population by preventing or reducing the adverse effects determined by the generation and management of waste and by reducing the general effects of the use of resources and increasing the efficiency of their use.
Law No. 10/2009 on state surveillance of public health	02 July 2023	Regulates the organisation of the state surveillance of public health, establishing general public health requirements, rights and obligations of natural and legal persons and way of organisation of the state surveillance system of public health.
Law no. 91/ 2007 on delimitation of public property	26 Dec. 2022	Consolidates the legal framework in order to delimit public property, ensure the right of ownership and the efficient use of the public property of the state, of the public property of the administrative-territorial units of the first and second level

2.2 Biodiversity Legislation

- Forest Code no. 887/1996
- Law no. 1515/1993 on environment protection
- Law on the animal kingdom no. 439/1995
- Law no. 1102/1997 on natural resources
- Law no. 1538/1998 on the funding of state protected natural areas
- Law no. 591/1999 on green spaces in urban and rural communities
- Law no. 1041/2000 on improving degraded lands by afforestation
- Law no. 325/2005 on the Red Book of the Republic of Moldova
- Law on vegetal kingdom no. 239/2007
- Law no. 94/2007 on the ecological network
- Law no. 91/ 2007 on land which is public property and its delimitation.

The **main strategic documents on biological diversity** are:

1. Environmental Strategy for 2014-2023 and the Action Plan to enforce it, approved by the Decree of the Government no. 301/2014;
2. National Forest Extension and Rehabilitation Programme for the period 2023-2032 and the Action Plan for its implementation for the period 2023-2027, approved by GD no. 55/2023;
3. National Strategy for Agricultural and Rural Development for the years 2023-2030, approved by GD no. 56/2023; and
4. Strategy for the sustainable development of the forestry in the Republic of Moldova, approved by the Decision of the Parliament no.350/2001.

The **National Forest Extension and Rehabilitation Program for the period 2023-2032**[5] could reach this figure and contribute to reducing emissions of pollutants in the atmosphere and greenhouse gases requested by the international community. The future vision is to create or rehabilitate forests in such a way as not to diminish the established indicators. Through the implementation of this Programme, it aims to obtain diversified forests, respecting the balance between the specific composition/structure and edaphic/climatic conditions, which will achieve favourable production indices (optimal biodiversity).

At **sustainable national policy level,** the following key documents are relevant.

[5] GD no. 55/2023: https://gov.md/sites/default/files/document/attachments/subiect-02-nu-1012-mm-2022_1.pdf

The water and sanitation policy is formulated in the **Water supply and sanitation strategy (2014 - 2030),** approved by Government Decision no. 199 of March 20, 2014 (with respective addendums). The general objective of the Strategy is to ensure the gradual access to safe water and adequate sanitation for all localities and population of the Republic of Moldova, contributing to the improvement of health, dignity and quality of life and economic development of the country. Based on the general objective, three specific objectives are formulated: a) improving the management of public water supply and sanitation services; b) planning and development of public water supply and sewerage systems in order to increase the level of population access to high quality services; c) harmonization of national legislation in the field of water supply and sanitation in accordance with EU standards and international commitments.

Water and health policy measures are provided by the **National Program for the implementation of the Protocol on Water and Health in the Republic of Moldova for the years 2016-2025,** that was approved by Governmental Decision no. 1063 of 16.09.2016. The overall objective of this Program is to improve the quality of life of the population and access to safe drinking water and improved sanitation by planning the necessary measures to ensure the achievement of the target indicators of the Water and Health Protocol. The specific objectives of the Program are the following: 1) ensuring by 2025 the distribution of safe drinking water in 100% institutions for children and reducing up to 20% of drinking water samples that do not comply with the basic chemical parameters and 5% with the microbiological parameters; 2) reduction by 20% by 2025 of the number of epidemic outbreaks of infectious diseases and the incidence of water-borne diseases; 3) ensuring the access to sustainable drinking water systems in 100% institutions for children and the access of the general population to aqueduct systems up to 75% by 2025; 4) ensuring by 2025 in proportion of 100% the population's access to improved sanitation systems, including up to 50% to sewerage systems; 5) increasing the performance levels of collective water supply, sanitation and other systems; 6) increasing the degree of application of recognized good practices in the field of integrated water management and water supply and sanitation; 7) reduction by 50% of discharges of untreated wastewater, as well as reduction of discharge of untreated rainwater into natural receptors; 8) improving the management of sludge and the quality of treated wastewater from centralized sewerage systems or other sanitation systems; 9) ensuring adequate management to improve the quality of water used as drinking water sources; 10) improving the closed water management generally available for bathing; 11) increasing the degree of identification and remediation of highly contaminated lands; 12) increasing up to 80% of the share of the population that possesses relevant knowledge on drinking water safety, hygiene and health.

The key policy document within the healthcare sector regulation is the **National Public Health Strategy for 2014-2020** (approved by the Government Decision no. 1032 from December 20, 2013) which is based on various international and national documents. The Framework Policy of the World Health Organization "Health 2020". with the purpose of supporting the interactions of the Government and the society in order to significantly improve the health and well-being of the population, reduction

of inequalities in the field of health, consolidation of public health. As a priority, the Strategy will pursue the implementation of the Post-2014 Action Program of the International Conference on Population and Development and the post-2015 Agenda for Sustainable Development.

National Environmental Strategy for 2014-2023 (GD no. 301of 24.04.2014) is the main document of long-term strategic planning which establishes the strategic framework on the environment protection, including protection of human health and the environment from adverse effects caused by pollutants. Under the Specific objective 6: Ensuring the rational use, protection, and conservation of natural resources, is indicated the point. A. Water resources management, water supply and sanitation infrastructure with relevant measures.

National Waste Management Strategy 2013-2027 (GD no 248 of 10.04.2013) establishes the strategic vision of waste management until 2027 as an integrated system, economically efficient and ensuring protection of human health and environment. Inter alia, the Strategy aims to promote separate waste collection and treatment for each type of waste, particularly toxic and hazardous waste. The strategy provides general information regarding with construction and demolishing waste and conditions of its management.

Development Strategy with reduced emissions of the Republic of Moldova until 2030 (Government Decision no. 1470 as of December 30, 2016) is a strategic document that allows the Republic of Moldova to orient towards a low carbon economy and to achieve the targets mentioned the document "Intentional determined national contribution" through green sustainable development, based on the socio-economic priorities of the country's development.

Also, this Strategy supports the achievement of sustainable development objectives, providing a national strategic context to the mitigation efforts for which the country receives international support. The specific objective 1 of the Strategy is to reduce, until 2030, the GHG emissions from the energy sector by 74% (unconditional) and up to 82% (conditioned) compared to 1990 level.

National Strategy on Energy Efficiency until 2030 (GD no. 102 din 05.02.2013) and **National Energy Efficiency Program** for 2011-2020 (GD no. 833 of 10.11.2011) are key policy documents that look at measures that country will take regarding these future CO2 emission limits. It is expected, that in the next decade, 2021-2030, carbon capture and storage technology will have to prove economically viable in order to be allowed to actively enter the market, thus substantially altering the structure, values, prices and costs, of fuel for the latest technologies. Between 2021-2030, smart grid technologies

and equipment will clearly prove to be economically viable and will become a de facto standard for the electricity industry. This type of structuring of the energy system will greatly change the existing approaches of the topologies, balancing, measurement, monitoring and energy mix of the system. All these changes will act in favor of the assimilation of increasing quotas of electricity from renewable sources.

Under the social and equal opportunities agenda, the Government developed the **National Strategy on Gender Equality 2017-2021** (GD no. 259 of 28.04.2017) **and a Strategy on Violence Against Women and in family 2018-2023** (GD no. 281 of 03.04.2018). The aim is to response to gender-based violence through improving quality of services for survivors and prevention of the violence.

In mean time, Government approved a **National Youth Development Strategy 2020 and a Youth Gap Index** tool for mainstreaming youth priorities, although there remain gaps in data and weaknesses in monitoring youth policies.

2.3 WB and international legislation

Out of ten ESS, only **seven apply to the Moldova Rural Connectivity Project** and establish the conditions that the Borrower and the project will meet throughout the project life cycle.

ESS 1 - Assessment and Management of Environmental and Social Risks and Impacts

ESS1 sets out the Client's responsibilities for assessing, managing and monitoring environmental and social risks and impacts associated with each stage of a project supported by the Bank through Investment Project Financing, in order to achieve environmental and social outcomes consistent with the Environmental and Social Standards (ESSs).

The environmental and social assessment will be based on current information, including a description and delineation of the project and any associated aspects, and environmental and social baseline data at an appropriate level of detail sufficient to inform characterization and identification of risks and impacts and mitigation measures. The assessment will evaluate the project's potential environmental and social risks and impacts, with a particular attention to those that may fall disproportionally on disadvantaged and/or vulnerable social groups; examine project alternatives; identify ways of improving project selection, sitting, planning, design and implementation in order to apply the mitigation hierarchy for

adverse environmental and social impacts and seek opportunities to enhance the positive impacts of the project.

Within ESS1, the Borrower is obliged to:

- Conduct an E&S assessment of the propose subproject, including stakeholder engagement,
- Based on the E&S assessment, prepare site-specific ESMPs for each subproject financed undere the MRCP.
- Undertake stakeholder engagement and disclose appropriate information in accordance with ESS10,
- Develop an Environmental and Social Commitment Plan (ESCP) and implement all measures and actions set out in the legal agreement including the ESCP,
- Conduct monitoring and reporting on the environmental and social performance of the project against the ESSs.

According to ESS1 the Client will manage environmental and social risks and impacts of the project throughout the project life cycle in a systematic manner, proportionate to the nature and scale of the project and the potential risks and impacts.

ESS 2 – Labor and Working Conditions

ESS2 recognizes the importance of employment creation and income generation in the pursuit of poverty reduction and inclusive economic growth. Borrowers can promote sound worker-management relationships and enhance the development benefits of a project by treating workers in the project fairly and providing safe and healthy working conditions. ESS2 applies to **project workers** including fulltime, part-time, temporary, seasonal and migrant workers.

The term “project worker” is related to:

a) people employed or engaged directly by the Borrower (including the project proponent and the project implementing agencies) to work specifically in relation to the project (direct workers);
b) people employed or engaged through third parties to perform work related to core functions of the project, regardless of location (contracted workers);
c) people employed or engaged by the Borrower’s primary suppliers (primary supply workers); and
d) people employed or engaged in providing community labor (community workers).

ESS2 objectives are:

- To promote safety and health at work.
- To promote the fair treatment, nondiscrimination and equal opportunity of project workers.

- To protect project workers, including vulnerable workers such as women, persons with disabilities, children (of working age, in accordance with this ESS) and migrant workers, contracted workers, community workers and primary supply workers.
- To prevent the use of all forms of forced labor and child labor.
- To support the principles of freedom of association and collective bargaining of project workers in a manner consistent with national law.
- To provide project workers with accessible means to raise workplace concerns.

The Borrower developed and will implement written labor management procedures (LMP) applicable to the project. These procedures will set out the way in which project workers will be managed, in accordance with the requirements of national law and this ESS. The procedures will address the way in which this ESS will apply to different categories of project workers including direct workers, and the way in which the Borrower will require third parties (contracted workers) to manage in accordance with ESS2. In addition, a Grievance Redress Mechanism for workers will be developed.

ESS 3 – Recourse and Efficiency, Pollution Prevention and Management

ESS3 recognizes that economic activity and urbanization often generate pollution to air, water, and land, and consume finite resources that may threaten people, ecosystem services and the environment at the local, regional, and global levels. The current and projected atmospheric concentration of greenhouse gases (GHG) threatens the welfare of current and future generations. At the same time, more efficient and effective resource use, pollution prevention and GHG emission avoidance, and mitigation technologies and practices have become more accessible and achievable. This ESS sets out the requirements to address resource efficiency and pollution prevention and management throughout the project life cycle.

ESS3 objectives are:

- To promote the sustainable use of resources, including energy, water and raw material.
- To avoid or minimize adverse impact on human health and the environment by avoiding or minimizing pollution from project activities.
- To avoid or minimize project-related emissions of short and long-lived climate pollutants.
- To avoid or minimize generation of hazardous and non-hazardous waste.
- To minimize and manage the risks and impacts associated with pesticide use.

Besides, the Borrower will avoid the release of pollutants or, when avoidance is not feasible, minimize and control the concentration and mass flow of their release using the performance levels and measures

specified in national law or the World Bank Group Environmental, Health and Safety Guidelines[6], whichever is most stringent. This applies to the release of pollutants to air, water and land due to routine, non-routine, and accidental circumstances, and with the potential for local, regional, and transboundary impacts. Pollution prevention and management includes management of:

- Air pollution
- Hazardous and non-hazardous waste
- Chemicals and hazardous material
- Pesticides

The Assessment of risks and impacts and proposed mitigation measures related to relevant requirements of ESS3, including raw materials, water use, air pollution, hazardous materials, and hazardous waste are included within scope of the Preliminary E&S assessment, and ESMPs as relevant.

ESS 4 – Community Health and Safety

ESS4 recognizes that project activities, equipment, and infrastructure can increase community exposure to risks and impacts. In addition, communities that are already subjected to impacts from climate change may also experience an acceleration or intensification of impacts due to project activities. ESS4 addresses the health, safety, and security risks and impacts on project-affected communities and the corresponding responsibility of Borrowers to avoid or minimize such risks and impacts, with particular attention to people who, because of their particular circumstances, may be vulnerable.

Objectives of ESS4 are the following:

- To anticipate and avoid adverse impacts on the health and safety of project-affected communities during the project life cycle from both routine and non-routine circumstances.
- To promote quality and safety, and considerations relating to climate change, in the design and construction of infrastructure, including dams.
- To avoid or minimize community exposure to project-related traffic and road safety risks, diseases and hazardous materials.
- To have in place effective measures to address emergency events.
- To ensure that the safeguarding of personnel and property is carried out in a manner that avoids or minimizes risks to the project-affected communities.

ESS 5 – Land Acquisition, Restriction on Land Use and Involuntary Resettlement

[6] World Bank Group Environmental, Health and Safety Guidelines (EHSG), available at: https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/EHS-Guidelines/

ESS5 requirements cover the preparation and implementation of a resettlement framework or plan which will set ground for:

- ⇒ general requirements such as eligibility classification, project design, compensation and benefits for affected persons, community engagement, grievance mechanism, planning and implementation;
- ⇒ physical and economic displacement;
- ⇒ collaboration with other responsible agencies or subnational jurisdictions; and
- ⇒ technical and financial assistance.

ESS 10 Stakeholder Engagement and Information Disclosure

This ESS recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice. Effective stakeholder engagement can improve the environmental and social sustainability of projects, enhance project acceptance, and make a significant contribution to successful project design and implementation.

The client will engage with stakeholders throughout the project life cycle, commencing such engagement as early as possible in the project development process and in a timeframe that enables meaningful consultations with stakeholders on project design. The nature, scope and frequency of stakeholder engagement will be proportionate to the nature and scale of the project and its potential risks and impacts.

Stakeholder engagement is an inclusive process conducted throughout the project life cycle. Where properly designed and implemented, it supports the development of strong, constructive and responsive relationships that are important for successful management of a project's environmental and social risks.

Stakeholder engagement is most effective when initiated at an early stage of the project development process and is an integral part of early project decisions and the assessment, management and monitoring of the project's environmental and social risks and impacts. In consultation with the Bank, the Borrower has developed a Stakeholder Engagement Plan (SEP) proportionate to the nature and scale of the project and its potential risks and impacts of the ESS triggered for this Project.

2.4 GAP analyses Moldova Legislation and WB ESS.

Environmental & Social risk	WB requirements	National legislation	Description	GAP in national legislation
a. Traffic flow disruption during construction	To develop measures in the TMP, ESMP. MAFP	Law No. 131 from 07-06-2007 On road safety	The TMP has to be coordinated with road police (National Public Security Inspectorate)	The focus is on scheme of diversion roads and installing the road temporary signs. There are no provisions related with pedestrian protection, public consultations, compensation procedures, etc.
b. Traffic accidents	To develop measures in the TMP, ESMP. MAFP, OHSP, ESIRT report (annex 7)	Law No. 131 from 07-06-2007 On road safety. Prosecutor Code Administrative Code	The TMP has to be coordinated with road police (National Public Security Inspectorate).	The prevention measures related with pedestrians are weakly described.
c. Disturbance to existing properties frontage, or public utilities	ESMP, MAFP	Law no. 163 of 09.07.2010 on authorization of construction works, Law 303, On Water supply services	As part of the construction of a water supply or sewerage project, there are likely to be impacts on existing property frontages or on public utilities such as electricity supplies. This types of impacts involve costs, whether to individuals or to the community.	Usually, the people have to informed about disturbance in advance and for the period of absence of services. Many time this is done just formally and there a delay in reconnections.

Environmental & Social risk	WB requirements	National legislation	Description	GAP in national legislation
d. Resettlement	RPF, RAP according to ESS5 requirements	The Law on Expropriation for Reasons of Public Use No. 488 of 7 August 1999 or Eminent Domain, Land Code No. 828-XII, 1991 with amendments	The basic principles of the Moldovan civil legislation are: recognition of equality among the parties to relationships regulated by it, inviolability of ownership, freedom of contract, prohibition to interfere with private affairs, free exercise of civil rights, guaranteed remedy of violated rights and judicial protection of the same	If the PAPs do not agree with the procedures and/or compensation packages the court procedures can take years till the final decision will be apply.

International environmental treaties to which the Republic of Moldova is a Party:

1. Convention on long-range transboundary air pollution (Geneva, November 13, 1979)

2. Convention for the Protection of the Ozone Layer (Vienna, March 22, 1985):

3. Convention regarding environmental impact assessment in a transboundary context (Espoo, February 25, 1991);

• Protocol on strategic environmental assessment (Kiev, May 21, 2003)

4. Convention on the Transboundary Effects of Industrial Accidents (Helsinki, March 17, 1992):

5. Convention on access to information, justice and public participation in environmental decision-making (Aarhus, June 25, 1998):

6. Basel Convention on the Control of Transboundary Transport of Hazardous Wastes and their Disposal (Basel, March 22, 1989)

7. Convention on Biological Diversity (Rio de Janeiro, June 5, 1992):

8. Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington, March 3, 1973)

9. Convention on the Conservation of Migratory Species of Wild Animals (Bonn, June 23, 1979)

• Agreement on the Conservation of African-Eurasian Migratory Water birds (The Hague, 16 June 1995)

10. Convention to Combat Desertification in Countries Severely Affected by Drought and/or Desertification (Paris, June 17, 1994)

11. Convention on the Prior Informed Consent Procedure Applicable to Certain Hazardous Chemicals and Pesticides in International Trade (Rotterdam, September 10, 1998)

12. Convention on Persistent Organic Pollutants (Stockholm, May 22, 2001)

13. Framework Convention on Climate Change (New York, May 9, 1992)

• Kyoto Protocol (December 11, 1997)

• The Paris Agreement (April 22, 2016)

14. Convention on the Conservation of Wild Life and Natural Habitats in Europe (Bern, September 19, 1979)

15. Convention on the European landscape (Florence, October 20, 2000)

16. Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Ramsar, February 2, 1971)

International and regional human rights treaties ratified by the Republic of Moldova:

• Universal Declaration of Human Rights (adopted in 1948)

• International Covenant on Civil and Political Rights (adopted in 1966, ratified by the Republic of Moldova in 1990)

• International Covenant on Economic, Social and Cultural Rights (adopted in 1976, ratified by the Republic of Moldova in 1990)

• International Convention on the Elimination of All Forms of Racial Discrimination (adopted in 1965, ratified by the Republic of Moldova in 1993)

• Convention on the elimination of all forms of discrimination against women (adopted in 1979, ratified by the Republic of Moldova in 1994)

• Convention on the Rights of the Child (adopted in 1989, ratified by the Republic of Moldova in 1993)

• UN Convention Against Torture (adopted in 1984, ratified by the Republic of Moldova in 1995)

• European Convention for the Protection of Human Rights and Fundamental Freedoms (adopted in 1950, ratified by the Republic of Moldova in 1997)

• Revised European Social Charter (adopted in 1966)

• Convention on the Rights of Persons with Disabilities (adopted in 2006, ratified by the Republic of Moldova in 2010)

3. SCOPE OF C8 ROAD REHABILITATION AND PROPOSED ACTIVITIES

Description of the existing road

The beginning of the route starts from the road R1 Chisinau - Ungheni - border with Romania, km 78+443. The C8 (mostly cover regional G88 road) road corridor crosses several localities in Calarasi and Ungheni districts:

The length of the designed road is 25,090 km.

The width of the existing road is 20-30m. Overhead power lines of 0.4 ÷ 10 kV and aqueducts are located along the road, which in turn intersect the existing road. To a large extent, the existing communications do not affect the performance of the works, with the exception of the overhead power lines of 0.4 - 10 kV, the relocation of which was foreseen in the project.

Sectors km 0+00 to km9+800, km19+800 ÷ km20+200 have asphalt road surface, and sectors km9+800 ÷ km19+800, km20+200 ÷ km 25+090 have crushed stone surface.

Until now, minor road maintenance works have been partially carried out on the G88 road.

The investigations of the road system were carried out on the main road G88, and consisted of the following:

- Evaluation of the state of degradation;
- Determination of the flatness of the running surface;

- Determination of the thicknesses of the existing road structure;
- Determination of the bearing capacity of the road system.

The thickness of the bituminous layers varies from 6 to 14 cm, and the broken stone layer from 8- 35 cm. The predominant degradations on the sectors with bituminous mixtures are: transverse and longitudinal cracks, subsidence, tiling. On the sectors with broken stone clothing there are pits, erosion from river waters, and the transverse slopes reach the size of 7-8%.

As a result of the investigations, it was found that the existing road system on most sectors is in a Bad or Very Bad state.

In order to determine the technical category of the road, as well as for the dimensioning of the road system, the annual average daily intensity of the traffic was calculated following the field study. Thus, the annual average daily intensity on various sectors varies from 425 to 844 veh/day, and the perspective intensity will be respectively 696 and 1383 veh/day with the annual increase of 3%.

Road embankment

The existing platform is 9-11m wide. The existing road embankment is constructed of sandy clay. In most of the route there is no groundwater.

No major deformations were detected on the slopes of embankments and embankments.

Slope deformation Pc 29+00 – Pc 30+75

At Pc 29+00 – Pc 30+75 the road crosses the valley of a suspended gully with steep asymmetric slopes. The road is built in embankment, the maximum recorded height is 9.4 m. The road surface, the bank and the right slope of the embankment are deformed with variable intensity over a length of ~ 80 m. There are cracks with deformations of different heights on the road side. There are pinched cracks on the side of the road, and on the slope there are elevations with deviations and deformed areas. In this area, deformations of variable intensity appear periodically, which are registered primarily on the hard surface of the road. On the slope on the right side, ruptures and bulging cracks of different opening widths and depths were recorded. On PC29+40 there is a concrete case. The integrity of the embankment along the edge is broken, the upper part is pushed to the side of the slope - the redistribution of the load and the displacement of soil masses. On Pc29+73 - Pc30+15 (wells 60-62) (see plan) the slope is damaged by landslide deformations. The failure wall has a height of 0.5-0.8 m, it passes along a metal protective fence (deformed). Lateral boundaries can be traced in the form of walls and protrusions. The tongue of the landslide can be seen through a convex well in steps, with a height of more than 0.5 m, in plan it protrudes a little beyond the base of the slope. The body of the slip is with cracks of various widths and opening depths. The head wall and the side walls are not covered with vegetation. The surface of the landslide body is sparsely covered with weeds. No pronounced deformations are observed in the areas of the slope adjacent to the landslide. But the upper and middle parts of the slope have a convex shape with convex cracks. The slope is covered with rare trees. The slope of tree growth is different.

Accessories for road traffic safety

There are not enough road signs on the route. The metal safety barriers, on the dangerous sectors, the directing terminals are missing. Road marking lines are missing. The 2x0.5 asphalt concrete framing strips are missing on the entire road sector.

In general, the technical condition of the road sector is unsatisfactory in all parameters and poses a danger to its users.

Route plan characteristics, longitudinal profile

The geometric elements of the route do not correspond to the technical requirements of the NCM highway design standard D.02.01:2015 for category IV with the following deviations:

- The geometric parameters in plan and longitudinal profile show horizontal and vertical curves with small radii and relatively large slopes between 5‰ and 135‰

The width of the carriageway varies from 5.0 ~7.0 m

Sectors with small convex curves:

- PC 100 + 59.0 (R= 80 0.0m)
- PC 157 +50.0 (R= 1100.0m)
- PC 191 + 8 0.0 (R= 6 00.0m)
- PC 75+50.0 (R=600.0m)

Sectors with large longitudinal slopes:

- PC 189 + 0 0.0 – PC 194 + 2 0.0 (between 90‰ and 1 0 0‰)

2.6. Bus stops

There are eight bus stops along the entire route, all of them set up with deviations from the rules in force, thus considerably increasing the degree of damage to the intersection, favoring cases of road accidents.

2.7. Parapets

On the studied route there are areas with metal parapets, but they are insufficient and in a state of advanced degradation.

PROJECTED WORKS

3.1. Plan and longitudinal profile

In accordance with the Beneficiary's requirements from the specifications, the route in the plan was designed taking into account the inclusion of the projected roadway part as faithfully as possible on the current location, with small improvements to the road's axis in the curves. The designed geometrical elements correspond to the design speeds of 40...80km/h.

The length of the designed route is 25,090 m. The sector includes 137 vertices of angles with minimum values of the radii in the plane of 60 m (outside the localities) In the radii of the circular curves, the overloading of the carriageway and turns was applied according to NCM D.02.01:2015,

The projected longitudinal profile follows, to a large extent, the allure of the current profile, in its design, the achievement of elevations resulting from the solution to strengthen the existing road structure was taken into account, as well as the connections with the required points - side roads, access to properties, bridges and walkways. However, in order to comply with the requirements described in NCM D.02.01:2015, and to improve visibility, the following corrections were made to the longitudinal profile:

Correction of slopes that exceed 80‰ outside the locality:

- Sector PC 187+00.0 – PC 195+00.0 -

On the Pc 189+50 – Pc 193+50 sector, a sinkhole with a depth of up to 6m is provided

Taking into account the not too long lengths of these sectors and the possibility of correcting the profile, and bringing it to the minimum limit allowed by the standard (70‰), without needing land expropriations and exaggerated earthworks

The width of the existing paved road section on the road sector Pc 0+00.0 – Pc 16+00.0 has a width that varies between 5.0~6.0m and does not meet the requirements of NCM D.02.01:2015 and requires widening. In order to bring the gauge of the road to the level required by the regulations in force, widening of the carriageway is necessary.

Road platform. The carriageway

The designed embankment is located within the limits of the existing embankment.

The transverse profile has the following parameters:

- platform width 9,0 m;

- the width of the carriageway 6,0 m;

- framing strips 2x0.5 m;

- the approaches 1.5m;

- the slope of the slopes 1:1.5-3;

- transverse slope in alignment – 2.0 %, in turns – 4.0 %.

By locality, the transverse pyrophile has the following parameters

- the width of the carriageway 6,0 m;

- width of sidewalks 1.5m.

The earthworks provide for the excavation, transportation and compaction of 147,000 m^3, which are brought from the deblee, the rest of the excavated soil volume 20596 m^3in the deblee will be transported to the warehouse.

For the discharge of surface water, the following are provided:

- reinforced trenches with monolithic concrete C3 0 /37 - 1618 m.l.
- quick gutters made of monolithic concrete C3 0 /37 - 4070 ml
- rectangular trenches reinforced with concrete C3 0 /37 - 405 m.l.

Road system

Within the project, 4 variants of the road system were examined:

In the project, option 1 was accepted as the one argued from a technical-economic point of view.

Option 1

- Ballast drainage layer optimal mix, 0-63 **SM EN 13242+A1** - 0.20 m

- Foundation layer from a mixture of aggregates stabilized with cement, C3/4,

according to **SM EN 14227-1 2015** - 0.15 m

- Bonding layer of asphalt concrete **BAD 22.4 50/70, SM EN 13108-1** - 0.06 m –

- Dense asphaltic concrete wear layer **BA16 50/70 SM EN 13108-1** - 0.04 m

Culverts

45 culverts are provided on the designed road. The project solutions for each bridge/culvert were established following the field examination of the technical condition and hydrological calculations .

Road construction

Side roads are designed on the road, including 38 culverts with ∅0.8 m;

For the safety of road traffic, according to the standards in force, the following has been provided:

- Installation of new traffic signs in the number of 567 pieces;
- Installation of metal parapets - 4,887 ml;
- Installation of routing terminals - 1 113 pcs;
- Installation of kilometer markers - 25 pcs.;
- Execution of road markings - 12 417 m^2

Measures for slope stability Pc 29+00 – Pc30+00

To ensure the long-term stability of the slope, the following measures were provided:

1. Deblee works with the reduction of the longitudinal slope
2. Redevelopment of the longitudinal drainage at Pc 27+20 – Pc 28+90
3. Arrangement of transverse drains at PC 29+00, 29+40, 29+80
4. Changing the inadequate soil with recompaction to a depth of 2.1m and laying the Megadrain geotextile 1240 layers, layer h 0.7m

Specific conditions for the execution of road rehabilitation works

In order to ensure minimum execution conditions on the sectors where existing bridges are being reconstructed, the arrangement of temporary bypass roads was not foreseen.

All works will be carried out on half way roads, provided that the existing traffic cannot be diverted to other roads. The execution of the works on these sectors will be done on sections of about 300m length, in order to direct the traffic alternatively. In order to facilitate road traffic on the opposite side of the works, it is proposed to bring the approaches to the level of the road, partially widen them and consolidate them with stone, in order to obtain a temporary traffic lane of at least 3.0m.

Traffic management will be carried out according to **: "Methodological norms regarding the conditions for closing traffic and establishing traffic restrictions in order to carry out works in the**

area of the public road and/or to protect the road. Directorate of the Road Police, MAI RM"Road Traffic Regulations of the Republic of Moldova" , the regulations in force in the Republic of Moldova.

In order to avoid traffic accidents, the Builder will have to strictly comply with the requirements of the above-mentioned regulations as well as **general labor protection norms and specific to road works.**

- The builder will perform the works without noise pollution, which he will perform during the night;
- The signaling of the work areas will be carried out according to the rules in force, the signaling operations and their cost are the responsibility of the contractor and must be included in the offer.
- The sections open for execution will be mandatorily illuminated and signaled accordingly, regardless of whether the work is carried out at night or not.

4. ENVIRONMENTAL AND SOCIAL BASELINE

The document includes baseline information social and economic conditions along with more detailed data on population, economy, social facilities, flora, fauna, sensitive ecosystems, and habitats, protected areas, hydrology, soils and landscape features. To collect these data the consultant has conducted a survey of the road and also received information from prevouse studies and actual detailed design, revised relevant national policies, strategies and legislation in the field of environment and stated the following concerns and conclusions which are listed below. Annex 1 at the end of the ESMP presents all the components of the environment and social found along C8 which could be affected by the road rehabilitation.

The population along C8 (C8.1&C8.2) is 14830 people according to 2014 census.

mayoralty	total	men	Women
Cornești town	**2 470**	1 211	1 259
Boghenii Noi	**1 447**	706	741
Condrătești	**1 098**	511	587
Cornova	**968**	505	463
Hârcești	**1 798**	912	886
Năpădeni	**861**	446	415
Sinești	**1 099**	541	558
Dereneu	**1 301**	644	657
Răciula	**2 269**	1 134	1 135

Rădeni	**1 519**	777	742
	14 830	**7 387**	**7 443**

The tendency of decrising of population number in Moldova is specific also for this region.

In many of the consulted villages people noted that lack of a paved road keeps people marginalized and remote from more developed towns, thus keeping people in poverty. Moldova faces a demographic decline, caused by a low birth rate of only 12.21 births per 1,000 people according to 2014 statistics (i.e. 1.56 children born per woman, which is below the positive replacement rate of 2.1). The death rate is as high as 12.6 deaths per 1.000 people. The negative trends in the birth rate and high rates of migration abroad caused a decrease in the number of population. No major businesses are placed along the road in project affected area, except agri-enterprises and local shops. The local jobs are: agriculture, wine turism, textile, weather-forecast services, road-maintenance, trade. Many people commute to work in Chisinau and Ungheni; Ungheni is a location which hosts the free economic zone and Lear Corporation employs people from many villages in the Center region of Moldova, including Cornesti. The population from Cornesti also works at other enterprises in Ungheni, such as the carpet factory, cannery, meat-processing plant, railway station, Telecom,. They also work as care-givers in hospitals in Chisinau and Ungheni, banks, security services, wineries, SRL Roman-Agro in village Romanovca. In Boghenii Noi village Chisinau and Ungheni are places of work for many people, who commute for jobs in railway-services or construction in Chisinau or textiles and services in Ungheni (Lear Corporation – automotive industry). Women are employed in agriculture, local school and kindergartens, mayor's office. There are 5 women in the local council out of 11 members. Many young people leave the village because of lack of infrastructure and low accessibility of services. The locally available jobs in Hircesti village are in school (31), kindergarten, community center (7), Mayor's office (11), house of culture. Most of the population in Hircesti village is involved in agriculture; the land-share is 1.13 ha.

The following environmental and social issues of general concern have to be mentioned, as follows:

- The project corridor crosses the region of plateaus with forests of Codrii. It is a forest-steppe zone which is situated in Moldova in the Northern and Central part and includes different forests (oak, beech, etc.), steppe and river meadow biotopes within a landscape dominated by plains and plateaus
- The forests are mainly beech (Fagus sp) an oak (Quercus petraea, Quercus robur), with herbaceous understory dominated by species typical of Central and east-Europe (Aegopodium, Dactylus and Carex)
- Endangered species which occur along the C8 corridor are European wildcat (Felis silvestris), Eagle Aquila pomarina, booted eagle (Hieraaetus pennatus), Honey buzzard (Pernis apivoris), Black Woodpecker Dryocopus martius, Pond turtle (Emys orbicularis), Common viper (Vipera berus) etc. The end of the road belongs to the corridor of animals migration within the ecological network of the Republic of Moldova

- At the beginning of C8 near Cornesti town, *the State Scientific Reserve „Plaiul Fagului"* is situated. Flora includes 909 species, 645 are vascular plants, 151 are mashrooms, 48 are lichens, 65 are muscles. There are 82 species of rare plants among which Dryopteris austriaca, Lunaria rediviva, Orthilia secunda, Pyrola rotundifolia, Padus avium and Telekia speciosa which could be found only in reservation. There are 49 of mammals, 142 species of birds, 8- reptiles, 12 – amphibines and 65 species of soil nevertebrates. Recently a noble deer and spotted deer appeared in the reservation. Rare species in the reservation include Honey Buzzard (Pernis apivorus), Lesser Spatted Eagle (Aquila pomarina), Black Woodpecker (Dryocopus martius), European Ground Squirrels (Citellus citellus), European Wildcat (Felis silvestris), Four-lined snake (Elaphe quatuorlineata) and Pond turtle (Emys orbicularis). 14 orders of birds prefer the reservation for vernal-autumnal pasage and for nesting. The region is a home to many rare species of fauna, this is why it is very important to respect norms related to noise conditions during the construction phase of the road rehabilitation but also it is important to place road signs during the construction phase, that there are wild animals in the region which could cross the road, also speed limits should be installed near the reservation.
- Beginning of C8 in Cornesti town is also a cross point of two ecological corridors included in the national ecological network of Moldova which assure the migration of wild animals.
    - Hydrographical network is well-developed in the region. Almost along the whole subproject R8.1, after Mircesti village, until crossing M5, Cula river or its tributaries are flowing near the road. Along the second part of the road, R8.2, in Dereneu there are tributaries of Cula river,

      Subproject C8.1: Răut (r. Cula)

  Cula river starts in Boghenii Noi village, the geographical relief of the basin is hilly, soils along the river are mostly gray, the surface basin is agricultural land mainly, only 6% of the basin surface is forested. On many segments of the river basin there are landslides.
    - **Subproject C8.2:** Răut (R. Cula and Ichel)

  Ichel river starts in Harcesti village, river basin is situated on Codrii Plateau. In the superior course of the river soils are gray, which are close to the corridor. The biggest part of the river basin is used for agricultural purposes – only 13 % are covered with forest vegetation.
- The following lakes are situated in the region:
    - **Subproject C8.1:**

  ✓ At a distance of 6,6 km from the beginning of the road, in Boghenii Noi village, Ungheni rayon, on the right side of the road, there is a lake, situated on the lands of Boghenii Noi village, Ungheni rayon, the lake surface is 21,2 ha (212040 m^2).

  ✓ At a distance of 13,3 km from the beginning of the road, after Drujba village, Hircesti commune, Ungheni rayon, on the left side of the road, at a distance of 0,3 km there is a lake, situated on the lands of Condratesti, Ungheni rayon, the lake surface is 36,2 ha (362370 m^2).

  ✓ At a distance of 19,7 km from the beginning of the road, at the entrance in Napadeni village, on the right side there is a lake, of small size, which is situated on the lands of Napadeni village, Ungheni rayon, the lake surface is 0,03 ha (350 m^2).

- **Subproject C8.2:**

✓ At a distance of 6,9 km from the beginning of the road, after Derineu village, Calarasi rayon, on the right side of the road there is a lake, which is situated along the road, on a distance of 1,0 km. The lake is situated on the lands of Derineu village, Calarasi rayon, the lake surface is 18,8 ha (188430 m^2).

- There are the following landslides and ravines along C8:
  - **Subproject C8.1:**

✓ At a distance of 2,8 km from the beginning of the road, after Cornesti town, Ungheni rayon, on the right side of the road there is a landslide extended on a surface of 5 ha. Landslides are close to the road.

✓ At a distance of 4,6 km from the beginning of the road, after Mircesti village, Boghenii Noi commune, Ungheni rayon, on the right side of the road there are several ravines, which are situated close to the road.

✓ At a distance of 7,8 km from the beginning of the road, after Boghenii Noi commune, Ungheni rayon, on the left side there is a landslide, on a small surface, but which is situated along the road.

✓ At a distance of 14,9 km from the beginning of the road, after Drujba village, Hircesti commune, Ungheni rayon, on the right and left side of the road there are landslides of small sizes, but close to the road.

✓ At a distance of 19,2 km from the road, before Napadeni village, Ungheni rayon, on the right side there are landslides on a surface of 20,2 ha. Landslides are situated perpendicular to the road, and are extended on a distance of 0,3 km along the road.

- **Subproject C8.2:**

✓ At a distance of 4,1 km from the beginning of the road, after Radeni village, Calarasi rayon, on the left side there are landslides situated on a surface of 2 ha, these are close to the road.

✓ At a distance of 7,3 km from the beginning of the road, after Dereneu village, Calarasi rayon, on the left side there are landslides with a surface of 4 ha, placed from the road on a distance of 0,1 km. There is a lake on the other side of the road.

- Soils found along C8 are the following: chernozems, gray soils, deteriorated, chernozemoid and alluvial, soils are strongly eroded at km 18,5 – 19,0; the C8 corridor is located within the "10 to 50 landslides per 100 km^2 zone" which means that the region is very much exposed to landslides, and the contractor needs to apply some measures to stop landslides and assure long exploitation of the road and further road deterioration.
- Quarries in the region could be used for construction of the roads, these include a clay and loess quarry in Ungheni town.
- A big percentage of lands is pastures, which could be found in Annex 1. These should be also protected during the road construction and no construction pits or storage of waste should be placed on pastures.
- Culverts were identified as either being undersized for the original design flow or as not providing adequate flow volume for high flood water due to structural damage or clogging with debris.

- No significant loss of trees would occur along the road, as rehabilitation works will be carried out on the exisiting road, without widening the road, however, many segments of the road do not have shelter belts, and it is recommended to restore/create shelter belts for the rehabilitated road from the native species such as walnuts, poplars, willow trees.
- Temporary occupation of lands might be required in order to have a temporary construction stockpiles, construction waste disposal areas, and contractor's working areas. Additonal information will be available after the appointment of the contractor.
- This project is proposing normal rehabilitation/maintenance works to be carried out within the exisiting right of way, without permanent land expropriation and/or building any new bridges.

Country Context

Population and demography. The provisional population residing in Moldova on 01 January 2023[7] was 2,512,800 people, down by 52,300 people (-2.0%) compared to the previous year. According to the 2023 estimates, the female population is dominant, constituting 1,325,200 people or 52.7% of the country's population. The male population was 1,187,600 people or 47.3% of the country's population. The average age of the population on 01 January 2023 increased by 0.4 years compared to the previous year (from 39.9 years to 40.3 years). The average age of the female population was 42.1 years, being 3.8 years higher than the average age of the male population (38.3 years).

As in previous years, the decline in population was largely driven by net emigration. This increased significantly in 2021 to 45,400 people, declining slightly to 43,000 people in 2022.

In terms of age groups in the resident population, the largest share at 8.2%, was of those in the age group 35-39 years. This represented a slight increase (0.2%) compared to the previous year.

Poverty profile. Despite strong poverty reduction since the late 1990s, Moldova remains one of poorest countries in Europe. Based on the most recent data available from 2012, included in the global Multidimensional Poverty Index (MPI), the Republic of Moldova has a value of 0.004. In terms of absolute poverty, the country has a rate of 24.5% as of 2021, with the majority of impoverished individuals residing in rural areas (32.8%) compared to urban areas (11.9%). In Moldova, women face a higher risk of poverty, with 26.3% of them living in absolute poverty, while the corresponding figure for men is 23.6%. The highest rate of absolute poverty is observed in households with three or more children, reaching 36.9%.[8]

Employment. The structure of the employed population by professional status reveals that the largest share belongs to employees (78.3% of total employment), followed by self-employed workers (17.1%)

[7] https://statistica.gov.md/ro/numarul-populatiei-cu-resedinta-obisnuita-pe-sexe-si-grupe-9578_60448.html

[8] https://www.undp.org/moldova/press-releases/25-countries-have-halved-multidimensional-poverty-within-15-years-11-billion-people-remain-poor-while-full-impact-covid-19

and unpaid family workers (4.1%). The vast majority of employees (87.9%) were employed for an indefinite period of time. In the labour force, the share of women (50.1%) was slightly higher compared to that of men (49.9%), and the share of economically active people from rural areas was higher than the share of those from urban areas (54.5% and 45.5% respectively). The share of economically active women in the employed population is slightly higher than for men (50.3%:49.7%). The share of employed people in rural areas was higher than that in urban environment (55.1%:44.9%).

Women make up the majority of people with family responsibilities, making up between 67.1% and 76.7% (in the 25-29 age group this is 81.4%); while men is over 2%. However, 16.6% of men aged 15-24 have a job abroad or intend work abroad, compared to just 2.8% for women. For men aged 15-29, this rises to 30.2%, compared to 3.9% for women; and 37.7% among 15-34 year old men and 3.1% among women. For men aged 30-34, this share is around 45 percent.

Gender Equality**.** Although international and national gender-related indices are showing that overall Moldova has made some progress during the last years to ensure gender equality, Moldova has regressed in several important socio-economic areas, including labour, health and access to resources. According to the Global Gender Gap Report 2023, Moldova **r**anks 19th out of 146 countries.[9] It ranked 16th out of 146 countries in 2022, while in 2021 the country ranked 28th out of 156 countries in the Gender Gap Index.[10] This is a significant improvement since 2018, when Moldova ranked 35th out of 149. The country has the highest score in the area of Health and Survival economic participation/opportunity, as well as health and survival. However, it lags behind in the areas of political empowerment and educational attainment. In the Human Development Index (HDI), the country ranks 80th out of 191 countries and territories for 2021 (most recent), which measures national progress in health, education, and standard of living. Moldova's HDI value for 2021 is 0.767, whilst its HDI loss due to inequality is 7.3 percent. The 2021 women HDI value is 0.771, compared to 0.763 for men.

Earnings. In the second quarter of 2023, the average gross monthly earnings in companies with 4 or more employees and all budgetary institutions amounted to 12,175.9 lei, increasing by 17,3% compared to the second quarter of 2022 and by 6.0% compared to the first quarter of 2023. Under-declaration of wages is widespread in Moldova: at least 21.3% of Moldova's employees received their salaries partially of fully in envelopes, according to an opinion poll conducted in 2018[11]. Trade unions, labour safety control institutions are not very effective in Moldova. Most employees choose to change jobs when they are dissatisfied with the working conditions, salary, etc., without taking their concerns to other institutions.

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[9] Global Gender Gap Report for 2023 and earlier years as cited in the text. https://www.weforum.org/reports/global-gender-gap-report-2023/economy-profiles-5932ef6d39?_gl=1*1o9xhyf*_up*MQ..&gclid=Cj0KCQjw2eilBhCCARIsAG0Pf8t6D_uDksF1ZOmj7D8W6QTdxZ6FZhD3L1-iC1zSqSYtYnUJqXla7h8aAs8tEALw_wcB

[10] World Economic Forum 2022: The Global Gender Gap Report 2022 https://www3.weforum.org/docs/WEF_GGGR_2022.pdf page 252

[11] CBS-AXA/IDIS, http://www.viitorul.org/ro/content/salariile-%C3%AEn-plic-prejudiciaz%C4%83-bugetul-public-na%C8%9Bional-cu-35-miliarde-anual

Distrust persists in state institutions and addressability is low due to bureaucratic procedures and the perception that justice will not be served. For this reason, workers of road rehabilitation contractors should be informed about the benefits of formal employment and encouraged to claim their rights when these are violated.

The Gross Domestic Product. The GDP in the first quarter of 2023 decreased in real terms by 2.4% compared to the first quarter of 2022. In seasonally adjusted terms, GDP in the first quarter of 2023 decreased by 2.2% compared to the first quarter of 2022 and increased by 1.1% compared to the fourth quarter of 2022[12].

Agriculture. Agriculture in Moldova is seriously affected by droughts, which are linked to climate change. In 2021, the largest increase in gross agricultural production in the last 30 years was registered, rising by 49.9% compared to 2020. The increase of the gross agricultural production was determined by the growth of the crop production by 75.5%. The global agricultural production between January and June 2023 compared to the previous year was 99.0%[13]. Moldova was hit by one of the most severe droughts experienced over the past two decades, causing a decline in agricultural production of almost 30 percent, with significant spill over effects throughout the economy. Significant reform is needed to build resilience and reduce the carbon footprint, especially in agriculture, transport, water and energy.

Ethnic and religious context. According to statistical data from 2014 Census (the most recent available), apart from the majority ethnic group, there are more than 40 ethnic minority groups / national minorities residing in the country. Among the most numerous national minorities are: Ukrainians (6.6%), Gagauz (4.6%), Russians (4.1%), Bulgarians (1.9%) and Roma (0.3). Currently, interethnic relations in the country are stable, harmonious and peaceful. In terms of religion, according to the 2014 census, 96.8% of Moldovans are Orthodox Christians, with a number of smaller Christian minorities including Evangelical Baptists (1%), Catholics (1%) and 6.9% not specifying their religion[14].

Country development challenges. Moldova is an upper-middle income country[15] in Eastern Europe firmly progressing in terms of economic and structural reforms in virtue of major challenges within the country and regionally. Moldova neighbours Ukraine, a country affected by war, and Romania an EU member-state. The country has six development regions, namely Chisinau municipality, North, Centre, South, autonomous territorial unit (ATU) Gagauzia. Moldova is one the most vulnerable countries in Europe in terms of security of energy supply and energy prices. Within Europe, in 2021 Moldova had the second lowest GDP per capita (after Ukraine), the second lowest total energy supply per capita (after Albania), the lowest electricity consumption per capita, one of the highest levels of the energy import

[12] https://statistica.gov.md/ro/produsul-intern-brut-in-trimestrul-i-2023-9497_60456.html

[13] National Bureau of Statistics, accessed on September 09, 2023 https://statistica.gov.md/ro/statistic_indicator_details/15

[14] https://rm.coe.int/5th-sr-moldova-en/168094d328 Fifth Periodic Report of the Republic of Moldova on the Implementation of the Framework Convention for the Protection of National Minorities

[15] https://datatopics.worldbank.org/world-development-indicators/the-world-by-income-and-region.html

dependency and the least diversified power generation mix, as well as the least developed energy (electricity and gas) market in the Eastern Europe.[16] Resulting primarily from the unprecedented rise in energy prices in the past year, last winter the country had the second highest inflation rate in Europe (after Türkiye)[17], reaching 34.6 percent in October 2022, and a negative GDP growth in 2022 compared to 2021. Although the inflation rate has recently decreased to 13.2 percent, this is the 4th highest level in Europe and year-on-year GDP growth is still negative.[18]

Vulnerabilities caused by the war in Ukraine. Moldova is one of the countries most affected by this war because of its physical proximity and its inherent vulnerabilities as a small, landlocked economy with close linkages to both Ukraine and Russia. The pandemic, the energy crisis, and the refugee crisis caused by the Russian invasion of Ukraine starkly exposed the vulnerabilities of Moldova growth to such shocks. The influx of refugees to Moldova has resulted in additional fiscal costs, squeezing resources from long-term development priorities. The large wave of refugees has also created a challenging socioeconomic environment in the medium term, especially if many recent migrants remain but fail to find employment opportunities. Heavy reliance on imports to meet food and energy needs has left Moldova vulnerable to disruptions in the supply of food, energy and commodity imports from Ukraine and Russia. Additionally, Moldova continues to be substantially reliant on natural gas imported from Russia, for powering its energy needs. Import disruptions are expected to further increase price pressures, in turn eroding the competitiveness of firms and household incomes, especially for the poor. (World Bank, April 2023).[19]

Violence against women is a significant social vulnerability. Social norms related to gender are an important underlying cause of DV & GBV. In Moldova today, the ideals of masculinity and femininity are based on male dominance. The man is considered the head of the family, the provider and his dominance is based on his sex, while women are defined as "housekeepers". The significant migration of women workers turning them into the main providers and men staying behind to take care of home and children, adds pressure and frustration in both men and women. This situation contributes to an increased level of psychological, verbal, physical and sexual violence in the family. According to an OSCE-led survey, around one-third of women (35.6 percent) and men (33.9 percent) believe that migration contributes to an increase in DV. At the same time, however, more than half of the women surveyed (51.8 percent) and approximately four in ten men surveyed (42.1 percent) indicate that the migration phenomenon has contributed to an increase in women who do not accept DV any longer.

Road safety as a critical issue. In 2020, Moldova recorded the 3rd highest road crash fatality rate in the EaP region and EU-27 at 9.24 fatalities per 100,000 inhabitants. Moldova's average fatality rate is higher

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16 Sources: WB (constant 2015 US$: https://data.worldbank.org/indicator), IEA (https://www.iea.org/data-and-statistics), Energy Community, National statistics, ACER (Market Monitoring Reports), EFET (Review of Gas Hub Assessment).

17 https://tradingeconomics.com/country-list/inflation-rate?continent=europe.

18 https://www.bnm.md/ and https://statistica.gov.md/ro/statistic_indicator_details/12

19 https://www.worldbank.org/en/country/moldova/overview

than the EaP and EU-27 at 10.4% and 54.5% respectively[20]. The actual fatality rate may be higher, due to under-reporting.

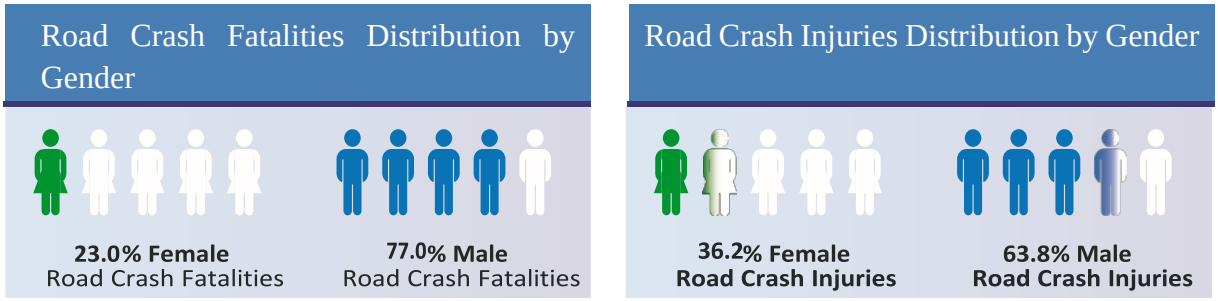
Table 25: Road Crash and Fatalities in Moldova

No. of Road Crashes	1,988
No. of Road Crash Fatalities:	244 Fatalities
Total No. of Road Crash Injuries:	2,248 Injuries
Cost of Road Crash Fatalities:	US$75.95 million
Cost of Road Crash Serious Injuries:	US$284.8 million (est.)
Cost of Road Crashes (% of GDP):	3.1 % of GDP

Source: Road Safety Country Profile Report 2021[21]

In 2020, Moldova registered an overall decrease of 30% in the number of road crashes and a decline of 13.5% in the number of road crash fatalities; and an overall reduction in the number of road crash injuries (34.8%), compared to 2019. It is notable that during 2020, the COVID-19 pandemic had a significant impact on transport and mobility across the globe, including the EaP region, bringing travel to a standstill. This lead to an overall reduction in the number of registered road crashes. However, the reduction in the registered road crash fatalities is not of the same magnitude, possibly due to an increase in recorded speeding caused by less traffic, leading to a higher proportion of fatalities for each road crash. The longer-term trend for road crash fatalities in Moldova is a decreasing one. Between 2010-2020, the road crash fatalities per 100 000 inhabitants in Moldova dropped by 43.9%.

Table 1. Road crashes fatalities and injuries by gender



Source: Road Safety Country Profile Report 2021[22]

The main funding sources for road safety in Moldova include the State Budget (the medium-term budgetary framework), the Road Fund and some ad-hoc external sources. Despite some positive elements

[20] Moldova ROAD SAFETY COUNTRY PROFILE 2021 https://www.roadsafetyfacility.org/ai_file_subscribe/file/664 j
[21] https://www.roadsafetyfacility.org/ai_file_subscribe/file/664
[22] https://www.roadsafetyfacility.org/ai_file_subscribe/file/664

of the current system, a key conclusion is that road safety funding in Moldova is currently insufficient and not sustainable. There is currently no dedicated funding allocated to road safety in Moldova, although in many countries different revenue streams are used to finance road safety through the budget or dedicated funding structure.

Legislation on Speed Limit and Drink Driving. Moldova has a National Speed Limit Law, which came into existence through Government decision no. 357/2009 for the approval of the Road Traffic Regulation. Local authorities in Moldova are allowed to modify the speed limits, and Local Authorities are responsible for road safety management in their localities. Comparing speed limits in Moldova to the recommended Safe System Speeds shows that on average the speed limits are 15 km/h higher than recommended. Moldova has an existing Drink Driving and Drug Driving Law (enacted in 2009), which applies to the general population, young/novice drivers and professional drivers. Enforcement of drink/drug driving laws is carried out by visual inspections at traffic controls. Moldova uses a graduated system of fines and demerit points for different levels of contraventions and repetition, ranging from 17,500 to 42,500 MDL (approximately €890 to €2,185), community service from 200 to 240 hours, withdrawal of driving license for 6 months to 3 years, and cancellation of driving license.

4.1.*Climate conditions*

Ungheni and Calarasi districts are located in the central part of the Republic of Moldova in the climatic zone III. The average annual temperature is + 9.5-10.0º C, the absolute winter minimum – -27-30º C, days with temperatures above 0 degrees – 279-289, the sum of positive temperatures – 3650-3850. The average depth of soil freezing – 30-45 cm, absolute depth – 55-85 cm. Passing over the average zero-degree spring temperature occurs on March 1, at the earliest - on January 18, at latest - on April 4. Passing to temperatures below zero degrees generally takes place on November 11th, at the earliest on November 2, at the latest on February 11th. Annual average precipitation -420-460 mm. Air humidity is equal to: in winter - 1.0, spring-autumn - 5.5-9.0, winter - 10.0-13.0. The predominant wind direction - northwest and north, average speed - 3.0-4.5 m/s, in the spring days up to 10-15 m/s and more.

The districts (rayons) is frequently affected by drought, a phenomenon characterized by the absence of precipitation for 14 consecutive days in the cold season of the year and 10 days in the hot season of the year. Droughts have 1-2 repetitions in 5 years. Specialists record an increase in the frequency and intensity of this phenomenon.

Another negative climatic phenomenon is torrential rains (rainfall) with the intensity of 0.5-2 mm/min, accompanied by lightning, storms and hail in the summer months. According to data from the last years, in the Republic of Moldova there is an increase in the frequency of these rains in the last decades, from 8.4 cases in the period 1966-1990 to 10.4 cases in the years 1991-2004.

The localities in the project are about 180-200 km away from Vrancea, the epicenter of earthquakes in south-eastern Europe, located in the seismic area of magnitude 7 degrees at the Richter scale. The average

periodicity of earthquakes of such intensity is reported once in 35-40 years. The last powerful earthquakes of such power were more frequent and occurred in 1977, 1986, slightly weaker - in 1990.

4.2.*Geomorphology and geology*

The relief of C8 corridor is hilly, fragmented by valleys and ravines. The average altitude is approximately 200 meters, in some places it reaches 300 or more. Predominant are sedimentary rocks of marine origin: limestone, sand, clay. The depth of deepwater layer - 120-140 meters.

Horizontal water erosion affected about 33% of the entire area, vertical erosion - 0.25%. Wind erosion is manifested in much smaller proportions; statistical data on this chapter are missing. The area of landslides represents about 0.5% of the entire territory of the district.

The river valleys, with the slopes heavily fragmented by valleys and ravines, are separated by water divides formed by almost parallel, narrow and elongated hills, mostly covered by forests.

The predominant soils are typical Alfisol and typical chernozems. Due to the high inclination of the territory and the deforestation of large wooded areas, most of the soils are affected by water erosion (about 56% of all agricultural land). The average depth of the deepwater layers is 160-180 meters.

4.3. *The quality of surface water, groundwater and deep water*

Most of the territory is situated in the hydrographical basin of the Cula River, a tributary of the Raut and respectively Nistru River. The average density of the hydrographic network in the area is 0.55 km/km2. The feeding of the river is mixed, predominantly the nival one. In the annual course of water level are well expressed the spring waters and the low waters invaded by the summer floods or the winter rains. There are no natural lakes in the middle part of the river, near the road are located two ponds intensively used for irrigation, fishing and recreation.

The ice bridge is installed in December, the ice thickness is 20-25 cm, maximum - 45 cm. The length of the stable ice bridge is about 35 days, in heavy winters - up to 112 days, and in mild winters is generally lacking. The river is free of ice at the end of February/early March.

During spring and rain floods, the river is covered with a 2-4 m water layer over a period of 2-5 days to 3-4 weeks.

The quality of the river water is of class III and IV (moderately polluted and heavily polluted). Dissolved oxygen (O2) deficiency as well as maximum variations in biochemical carbon dioxide (CBO5), mainly in summer months, are recorded. Throughout the year there are exceedances of copper compounds with maximum levels of 7 CMA. and high levels of oil pollution, where over 50% of samples exceed CMA values. Average phenol concentrations fluctuate within the range of 1.0-2.0 CMA. The main cause of high water pollution is the lack of adequate water management. Compared to the 1990s, water quality in rivers has recently improved, moving from Class IV to Class III. This is partly due to a reduction in the activity of industrial enterprises and the adoption of measures to reduce environmental pollution.

Groundwater is 30-40 percent microbiologically polluted and 75-80 percent chemical (in nitrate). The quality of deep water layers, at a depth of 120-140 meters, meets hygienic requirements for drinking water. The chemical composition of water in most wells is calcium-magnesium-sulphate.

A large proportion of the population consume water centralised systemps, from mine wells and partly from springs. From unpiped sources water are polluted with nitrates and pathogenic bacteria in the proportion of 75-80 percent, the main causes being the lack of sewerage networks in the presence of a large number of septic fountains without safe waterproofing, primitive village wc, inadequate management of animal and domestic waste, others. The most widespread are the diseases of the gastrointestinal system (gastritis, duodenitis), osteo-articular (osteocondrosis, radiculitis), genito-urinary (urinary lithium, nephritis, nephrosis), others related to poor water quality. Absence or excess of fluoride in the consumed water causes such diseases as dental caries and fluorosis, respectively. High concentrations of nitrates lead to the formation of methaemoglobin in the blood and cause tissue hypoxia, which is most common in children. The lack or deficiency of magnesium and calcium in water leads to increased cardiovascular disease, predominantly of ischemic cardiopathy.

4.4. *Organic and biotic resources*

Rich in biotic resources are forests, which occupy the area of about 10% of the territory of Moldova. Unghni and Calarasi area are better represented in forest that other rayons from south or north of the country. Here are the species of the common oak (Quercus robur) and the sessile oak (Qvercus petraea), the common ash (Fraxinus excelsior), the littleleaf linden (Tilia cordata), the wild cherry (Cerasus avium). The widespread species of shrubs are: the Cornelian cherry (Cornus mas), the black elder (Sambucus nigra), Euonymis verucosa, the common hazel (Corylus avellana), the European bladdernut (Staphylea pinnata), others.

The grassy layer of the forest is represented by the species: the wonder violet (Viola mirabilis), l'isopyre faux-pigamon (Isopyrum thalictroides), yellow anemone (Anemine ranunculoides), ramsons (Allium ursinum), others.

The steppe vegetation is represented by the genus: Festuca, Colilia or Nega (Stipa), Wild oat (Avena), Fir (Poa), Dandelion (Taraxacum), Salvia, Artemisia, others.

In the vicinity of the brooks, on the banks of the ponds, in the swamp areas, grow such plants as Phragmites australis, Thipha latifolia, Thipha angustifolia, the sedges (), the horsetail (Equisetum telmatea), the waterpot (Alisma plantago-aquatica).

The animal world is represented by the species: the fox (Vulpes vulpes), the brown hare (Lepus Europeaus), the Roe buck (Capreolus capreolus), the boar (Sus scrofa), the hedgehog (Erinaceus europeaus), the mole (Talpa europea), the lizard (Eremias arguta), the white stork (Ciconia ciconia), the pheasant (Phasanius coechius), others.

Among the endangered and strictly endangered plants included in the Red Book of the Republic of Moldova, which grow in the forests of the district, are: the snowdrop (Galantus nivalis), the white

helleborine (Sephalanthera damasonium), the white helleborine (Epipatus purpurata), the heart's tongue fern (Phyletis scolopendrium).

The species of wild animals that are endangered and strictly endangered, protected by law, living in the natural areas of the district, are: the European ground squirrel (Spermophilus citellus), the wild cat (Felis silvestris), the steppe polecat (Mustela eversmanni), the stoat (Mustela erminea), the great bustard (Otis tarda), the Northern goshawk (Accipiter gentilis), the smooth snake (Coronella austriaca), the European pond turtle (Emis orbicularis).

4.5.*The landscape*

The localities covered by the project are part of the Moldova hils and plato and forest vegetation area. Most of the territory are natural landscapes that cannot be seen anywhere. The dominant species are common oak, sessile oak, common ash (these species occupy about 42% of total forests), 9.1% are acacia forests, others are populated with other species (Linden tree, field maple, hornbeam tree, others).

In the localities there are small parks and groves of trees of decorative species planted in the last 20-30 years, their condition is good and satisfactory.

The practice of storing household, zootechnical, vegetal, construction waste, etc. in the unauthorized places (on the side of the roads, on the banks of rivers, ravines etc.) is widespread, which leads to the compromising of the aesthetic qualities of the natural and the agricultural landscapes.

4.6.*Air quality*

For the localities around the road the following main sources of atmospheric air pollution with gases and dust are:

- dust from transport due to lack of asphalt in many localities;
- emissions of pollutants from mobile and stationary sources;
- releases of gaseous substances and solid suspensions from the burning of household and vegetal waste;
- gas discharges from the decomposition of animal waste.

The first source is concentrated in localities and roads (unlike the other two that are dispersed), therefore there is the highest risk of pollution in those areas.

Research on atmospheric air quality in localities is not carried out, except for the annual environmental testing of cars and the investigation of air samples taken directly from the chimneys of the companies.

The environmental statistics show that about 20-25% of transport units exceed the ecological norms. It should be noted that, according to the World Health Organization, the whole territory of the Republic of Moldova is located in the moderate atmospheric air pollution area with dust and nitrogen oxide, which

is the result of cross-border transport effects of air masses. Excessive air pollution leads to increased population morbidity indications with respiratory, cardiac, blood, and other diseases.

4.7. *The noise*

Sources of noise pollution are transport units and industrial enterprises. At present, the traffic is the main source of noise pollution. According to the Ministry of Health, the noise level in the localities crossed by the motorways reaches 76-78 dBA, the permissible daily level is 70 dBA. Industrial enterprises produce noise within the range of 40-58-60 dBA, which is within the sanitary norms. Increased pollution leads to acute illnesses such as cardiovascular, neuro-psychic, otitis, and others.

4.8. *Soil properties*

In the area predominate common and typical chernozems, sometimes medium or poorly eroded. In forest areas predominate gray soil. The average degree of soil solvency in the district is 64 points (as a reference base for soil quality assessment serves the typical humerus chernozem, marked on the scale with 100 points). In the last few years, specialists have been witnessing the continuous reduction of soil fertility in the district. The main cause of their degradation is the loss of large quantities of humus and nutrients in the water erosion process as well as the large gap between the amount of nutrients (nitrogen, phosphorus, potassium) eliminated from the soil while harvesting the crops and the volume of fertilizers incorporated in the ground. In the district, the slopes occupy a large part of the land, which, in the absence of efficient anti-erosion measures, contributes to the gradual washing of the upper layer of soil. On the other hand, the amount of organic and mineral fertilizers incorporated into the soil decreased 15-20 times, compared to 20-30 years ago.

Sources of chemical pollution of soils have become less compared to the past. Some of the chemical storages were liquidated, toxic substances were removed. Agrochemical research shows that residual concentrations of pesticides and heavy metals do not exceed the sanitary standards in force.

The basic population is constituted of Moldovans, which are 98% of the inhabitants. As a result of migration abroad (in terms of job search), the number of inhabitants decreased considerably (to about 10-20%) compared to 15-20 years ago.

4.9. *Use of land and distribution of settlements.*

The basic preoccupation of the inhabitants of the villages is agriculture (phytotechny and zootechnics). The land is privatized, the basic structural unit is farms. There are also several certified farmers' associations.

They specialize in growing vegetables, including early ones (in greenhouses), field crops (wheat, barley, maize), technical (sunflower, rapeseed). There are numerous cattle herds and sheep. The agricultural areas of the area are occupied by orchards, vineyards. There is a wine factory with recreational area (crama) in Mircesti village included in the national wine turism circuit.

Some of the locals are working in the industrial enterprises, in the sphere of trade, providing other services in the towns of Chisinau, Cornesti, Ungheni, Calarasi.

5. PROJECT POTENTIAL ENVIRONMENTAL AND SOCIAL IMPACTS

Due to the nature of the activities to be implemented through this project, it is assessed that the impacts on environment will be a consequence of human presence and construction machines, and the nature of construction works at the location, which are limited to the location of works or its surrounding vicinity.

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

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

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

Road users will feel only positive impacts as a result of improved transport infrastructure. First of all, these are:

- increased safety and comfortable traffic conditions;

- fuel economy and reduced wear of a running gear of a vehicle due to driving on a modern road surface and the provided possibility to choose an optimum mode and speed of movement.

In addition, the design solutions provide for:

- construction of bus shelters;

- construction of ramp roads and junctions;

- installation of stationary artificial lighting;

- construction of sidewalks;

- design solutions allowing the accessibility of the facility for low mobility groups.

- handling of crosswalks;

Identification of Environmental and Social Risks/Impacts due to construction of project road is summarized in the table below:

Components	**Environmental and social Risks**	**Risk Type**
Construction Phase		
Topography & Geology	• Change in existing profile of the land due to earthwork and rock excavation. • Disturbance on geological setting due to hill side cutting/quarrying resulting in the accumulation of debris material.	Low risk
Soil	• Loosening of topsoil & loss of vegetative cover along the road due to excavation and back filling which will lead to enhanced soil erosion.	Low risk
Land Use	• Generation of debris waste in the form of excavated material/construction spoils from construction sites. • Changes in existing land use pattern of the ROW for construction of the road. • Roadside agricultural land will be affected by unauthorised debris disposal.	Moderate risk
Drainage	• Chances of filling of existing drainage courses during earth filling. • Scouring of land in the outfall locations of culverts.	Moderate risk
Water Use	• Impact on the local water sources due to its usage as construction water.	Low risk
Water Quality	• Increase of sediment load in the runoff from construction sites and increase in turbidity in receiving streams/water bodies. • Water pollution due to sewage from construction camps.	Moderate risk

Air Quality	• Deterioration of air quality due to fugitive dust emission from construction activities like excavation, backfilling & concreting, hauling & dumping of earth materials & construction spoils, and vehicular movement along unpaved roads. • Deterioration of air quality due to gaseous emissions from construction activities.	Low risk
Noise Level	• Increase in noise level due to construction activities like operation of construction equipment and vehicular traffic.	Low risk
Flora and Fauna	• Loss of flora & loss of habitat of fauna due to felling of trees along the ROW.	Low risk
Construction Camp	• Influx of construction work force and supplier who are likely to construct temporary sheds in the vicinity. • Likely sanitation and health hazards & other impacts on the surrounding environment due to inflow of construction labourers. • Health risks due to lack of health and sanitation conditions through disposal of sewage on open land which may cause mosquito nuisance, water borne diseases etc. Chances of spread of sexually transmittable diseases like AIDs.	Moderate risk
Occupational Health & Safety	• Contractor will prepare the OHS Plan, subject to SRA and Engineer approvals before works commencement. Health & safety related problems to construction workers due to inadequate health & safety measures. All contractors will be required to follow Project's LMP, including procedures to establish and maintain a safe working environment as per requirements of ESS2 and national legislation.	Moderate risk
Road Safety	• Increase on incidence of road accidents due to disruptions caused in existing traffic movements.	Moderate risk
Traffic safety	Heavy traffic of large cars and trucks to and from construction sites, as well as partial closures of the carriageway complicate the road situation and increase the risk of road accidents involving contractor's machinery, transit vehicles, pedestrians and cyclists from the local population.	Moderate risk

Access restrictions	The construction activities as part of civil works on the road may cause access restrictions to homes, land plots or other private or public facilities.	Moderate risk
Labour risks associated with contracted workers	All contractors will be required to have a written contract with their workers materially consistent with objective of ESS2, in particular with regard to child and forced labour.	Law risk
Community Health and safety risks	The use of large construction equipment, the location of the contractor's camp with places of residence for the workforce, the partial blockage of traffic on the road, the involvement of flammable materials in the process of work can be a risk to the health and safety of residents living nearby. Also conflicts between local population and Contractor`s work force could be happening.	Moderate risk
Sexual exploitation and gender-based violence (GBV)	Potential negative impacts related to women can include sexual exploitation and gender-based violence (GBV) through the establishment of temporary, community-based workers' accommodation during the implementation of roadworks.	Low risk
Impacts on vulnerable groups	The social risks of the Project may also affect aspects of social inclusion, especially related to vulnerable groups and disadvantaged communities and minorities. As per ESS 10, the stakeholder dialogues in the preparation of the SEP identified these vulnerable groups.	Moderate risk
Risk of spreading HIV / AIDS and viral diseases and Covid-19	The operation of long-term construction camps with permanent non-local labour increases the project risk associated with the spread of HIV / AIDS and viral diseases such as COVID-19.	Low risk
Operational Phase		
Land Use & Encroachment	• Change of land use by squatter/ encroachment within ROW and induced development outside the ROW.	Moderate risk

	• New spaces generated due to shift in alignment could be encroached by local people or other people.	
Drainage	• Environment degradation is due to improper maintenance of drainage.	Moderate risk
Air Quality	• Air pollution due to vehicular emission from road traffic.	Low risk
Noise Level	• Noise pollution due to increased traffic.	Low risk
Access	• Significant severance problem on pedestrian & animal crossing and cross traffic due to widening, partially access control & increase in traffic speed.	Low risk
Road Safety	• Impacts on human health due to accidents. • Damage of road due to wear and tear.	Low risk

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6. MITIGATION OF POTENTIAL PROJECT ENVIRONMENTAL AND SOCIAL IMPACTS

To minimize potential *construction-related negative environmental impacts*, a combination of preventive actions and monitoring activities should be applied. All these necessary measures are provided in the Environmental and Social Mitigation Plan – Annex 2. . Taking them into account the contract documents for construction/rehabilitation phase will incorporate all requirements to minimize disturbance from civil works, including proper management of construction waste; control measures for waste fuel, oil and lubricants, other hazardous substances; provisions for protection of vegetation and fauna, including migratory species (if applicable), actions to reduce noise and dust levels; soil erosion control, land stabilization and water quality protection, and rehabilitation of areas under construction camp, asphalt-concrete plants and tomporarry storage of building materials once the project is completed. The necessary mitigating measures would constitute integral part of the project implementation including the contracts binding the contractors to carry out the environmental obligations during road rehabilitation works.

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

All contracts should specify that (a) contractors should follow a set of environmental guidelines for contractors prescribed by the ESMP; and (b) contractors should submit, as part of their bid, a site-specific Contractor’s Environmental and Social Management Plan (C-ESMP based on this ESMP and Annex 3, with the detailed description of implementing arrangements) including organization of training for participating staff.

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

Operational impacts will be addressed by SRA in order to avoid deterioration of road conditions and associated safety problems. Among major issues to be addressed during the operation phase 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. 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 and social protection based on the guidelines.

According to the environmental and social screening no major environmental and social impacts are envisaged because the proposed road works will be carried out on the existing road alignments and within the ROW,

However, some minor impacts may occur during construction such as dust, noise, construction debris and short-term disturbance to the daily business activities of road-side households/businesses, which can be mitigated by applying good construction practices and close supervision. Some additional potential impacts are expected because of labor influx for construction (for instance, GBV) but there are also potential benefits expected, such as construction-related jobs and improved road condition (which will also improve dust levels in the medium and long-term). Most project impacts are expected during construction, though some may be relevant during the maintenance phase, and life, of the project, in particular road safety.

To manage these impacts, the Contractor shall implement a series of preventive actions and minimizationmeasures, as described in this section, to meet the requirements of national laws and the World Bank Environmental and Social Standards.

The environment and social impact mitigation and management measures required during pre-construction, construction & operation phases of the project road are described in this section and summarized in Annex 2-3

6.1.Soil.

The possible impact on land near the road in the improvement process is expressed by soil pollution that causes disturbances in its normal functioning as an environmental factor, especially by affecting the bioreproductive capacity of the soil.

The genesis and evolution of soil types are directly related to the geological substrate, climatic and vegetation conditions, the relief setting, the influence of groundwater, and human intervention.

The possible sources of pollution are as follows:

- Accidental fuel and lubricant leakage to machinery supply, repair work as well as unsatisfactory technical equipment;
- backfill for the construction of road infrastructure and utility networks;
- soil infiltration of pollutants and pollutant emissions, as well as chemical reactions in contact with water;
- solid household waste.

The most important aspect of the problem is the earth mass that will support various interventions. The statement refers to earthworks that lead to soil degradation in the work area. In affected areas, full restoration of vegetation lasts between 5 and 15 years.

The negative impact on the land is expressed by the excavation / elimination of the vegetal soil layer and the change of the morphological aspect through excavations and sloping.

The negative impact on land is expressed by:

- disturbance of soil horizons, soil elimination works consisting of excavation, evacuation and transportation of surplus land (usually fertile soil);
- damage to flora and microflora due to excavations, with natural geochemical modification of soil elements.

The main activities to reduce the impact that road reconstruction could have on the soil are:

- safe temporary storage of the soil so that it can be later re-used in the green rehabilitation works of the green areas.
- removal of contaminated soil when accidental spills of petroleum products or mineral oils are identified;
- Immediate removal of leakages by using absorbent materials, which should be stored in specially arranged places, it is proposed to make a storehouse between the localities of Vanţina and Parliţa

The excavations and the temporary storages of the excavated soil, as well as the construction works, replacement or repair of drainage structures, are potential negative impacts on drainages in the construction and surrounding areas, resulting in discomfort and dangerous road safety for all participants in road traffic and / or native population.

To prevent such situations, measures are proposed such as temporary drainage and timely information to the public on the location, type and schedule of planned activities. On the road sections of the route that pass through the villages, mud will be created during construction works and in order to minimize the discomfort, these sectors will be regularly cleaned, at certain intervals, as instructed by the Engineer-Supervisor.

6.2. Surface waters

During the works, the rivers and lakes can be unintentionally contaminated by spillages and accidental spills due to working techniques, improper waste management or storage during construction, or erosion during work performed near the surface water courses. Aquatic objectives may also be polluted by uncontrolled leakage of wastewater, household and construction waste from the camp (if any). In places of construction and rehabilitation of the culverts, it is possible to disturb the waters and its silting. During the rains, the construction materials, such as gravel, sand, the earth filler, could be washed and taken to the rivers and water courses.

In order to minimize such risks, the following rules will be met:

- execution of construction works, as much as possible, during the low water flow season in order to minimize the threat of water contamination;
- carrying out excavations, minimizing the storage of materials near the running waters;
- adequate protection to prevent the washing of the earth used as material.
- minimizing the cutting of riverain vegetation during the implementation of the works.
- not admitting the sediment discharges from washing the equipment directly into surface water,
- these being unloaded in sedimentary lagoons and tanks.
- installation in workplaces near the watercourses of mobile WCs, located firmly on land and at a suitable distance from rivers / small rivers, in accordance with the legislation in force, and their regular service.
- supplying drinking water for the office and workers camps will be performed from the centralized aqueduct and connection to wastewater networks.
- monitoring the water quality of rivers and lakes

6.3.Groundwater

These are represented by mine wells and springs located within the RoW (right of way) or near the RoW. During construction works, there is a risk of negative impacts (e.g. dust or other air pollution when these wells do not have a cover, or unorganized surface water leakage or leakage of harmful substances in the event of accidents). The risk of pollution remains in effect during operation due to the location of wells in the vicinity of the road. In order to know the initial quality of water from decentralized sources, it is recommended to provide a water quality test plan in all the wells located at a distance of about 5 m from the edge of the road, which corresponds approximately to the width of the road.

These tests will be done before starting the construction works in order to examine the current situation based on current national standards and the World Health Organization's guiding principles on drinking water quality. Water testing will be the responsibility of the Contractor, who will conclude a works contract with an accredited laboratory for these services.

Depending on the test results and the number of affected wells in the RoW, the SRA will examine the possibility of local alternative sources for water supply and will include in the project the related costs. For the wells with good water quality, it can be provided drainage arrangements for floods or permanent protection measures to minimize long-term risks due to the location alongside the road, these being described in consultation with Regional or local authorities. It is probable that some wells will be in the area where road improvement works will be carried out, in which case they will be demolished but with the consent of the population who benefits from that water supply.

To minimize the risks of pollution or damage to wells and springs, the following steps will be taken by the Contractor:

- adequate coverage of all phreatic wells in the potential area of influence, which are still unprotected;
- ensuring appropriate measures to effectively eliminate water floods.
- monitoring the water quality of wells and springs out of which the population drinks.

6.4.Water for construction work

During the implementation of the Project, water will be needed for various purposes (washing of equipment, spraying of temporary road surfaces, production areas, others). As a rule, the nearest source of water (river, pond, water tank) shall be identified. The use of water from this source can only take place with the permission of the owner / manager, with the consent of the local public authority, the District Environmental Inspectorate and, in some cases, the "Apele Moldovei" Agency. It is not recommended to use water from existing centralized systems as well as artesian wells for technological purposes.

6.5.Green areas around the road

In order to minimize potential deforestation, the ESMP includes provisions under which the Contractor is required to carry out carefully the operations on site, generally following the guiding principles described and illustrated below.

The negligence in the improvement works may be another cause of tree destruction, which may, in the worst case, cause them to dry out. In the context of the Project, such scenarios could happen during excavations, parking or driving cars or heavy machinery under or near the trees, or in case of storage of construction materials. In this regard, the most sensitive spot in the vicinity of the trees is the place under the crown of the tree till the drip line and the root system extension (radius: 1.5 m around the drip line) around the tree.

To minimize the damage to green areas at the edge of the road, the following conditions shall generally be met:

- Timely training, if necessary on a daily basis, of the personnel involved in the works near the tree alignments of the road;
- Not allowing the temporary storage of construction materials, excavated soil, inert waste and other materials in immediate vicinity to trees and shrubs (at least 1.5 meters).
- Prohibition of any excavation or compaction works near the trees without the permission of the competent institutions;

- Temporary fencing of work sites and storages around the green areas with fences (made of wood or other light material);
- Installation of tree protection signs at certain intervals. The indicators must contain the information, „Tree protection area; Respect the distance".

The Contractor shall be responsible for the tree clearance and accidental destruction, direct or indirect, unplanned due to the carried-out activities. In order to encourage the careful and proper execution of site works, the unintended / unplanned tree losses because of the Contractor will have to be compensated, at the Contractor's own expenses at the rate of 3:1.

The trees in the RoW is the property of the SRA, therefore, for any planned deforestation, the Contractor shall obtain the agreement from the local subdivision of the SRA and the Deforestation authorization of the District Ecological Inspectorate. The cut wood after deforestation will be taken to the local offices of the SRA.

Prior to commencing tree deforestation, the Contractor, in the presence of the owner and representative of the IER, shall clearly mark the trees to be cut and properly record the number and size of these trees (the diameter at breast height), to determine the species and the place of reference for subsequent replacement with other trees. Instead of the deforested trees, new plantations will be planted at a 2:1 rate in case of trees of DBH ≤30 cm or 3:1 rate in case of some trees taller than DBH.

To minimize the damage to bird nesting during the breeding period, their cutting will be restricted until the end of the breeding period (i.e. the limited period will be from September to mid-March).

Planting of trees and shrubs along the roads of the Project is usually carried out upon the completion of these works. But if the section is released for planting before the end of the works it is recommended to plant the trees in advance. Planting details, such as compensating species, the exact planting places, interval between newly planted trees, etc., will be established in a joint consultation between the Contractor, the Engineer, the SRA representatives and the District Environmental Inspectorate. Preferably, according to the Project, only aboriginal species adapted to the environmental conditions in the area should be used for planting.

6.6.Protected Areas

No any protected areas are in the RoW or immediate vicinity. According to Map of Institute of Geography and Ecology no any State Protected Areas are closer than 2 km from RoW. The river Cula is a part of Ecological Network of Moldova. Taken in consideration that most of the works will be in the proximity or not far from rivulet the protection measures have to be ensured.

The Contractor shall ensure that all the works are carried out in accordance with the legislation in force. The following issues will need to be strictly avoided:

- Pollution of environmental components (air, water, soil, vegetation);
- Extraction of construction materials;
- Throwing away the excavated land;

- Disposal or temporary storage of waste;
- Destruction of vegetation - trees, shrubs and herbaceous plants;
- Destruction of terrestrial animal habitats;
- Destruction or pollution of water sources.

6.7. *Atmospheric air protection*

Rehabilitation works are usually the cause of a temporary excess of air pollution caused by such pollutants as exhaust gases and dust, as well as pestilent odors, both on site and outside the site. Another cause of air pollution with a direct or indirect influence over a temporary period is pollutants generated during the transport, use and / or temporary storage of asphalt concrete, bitumen and other potentially hazardous materials. The main air pollutants are: dust, SO2, NOx, CO, benza-pyrene and carbohydrates. Negative impacts on air quality occur mainly in the vicinity of construction and demolition sites along the roads that lead to these sites. Careful planning and organization of work operations, the level of such impacts, and the discomfort created for natives can be reduced to an acceptable level.

Air pollution due to construction techniques and trucks for transportation of construction materials may be reduced, to a certain extent, using equipment that is in good working condition from the very beginning, maintained and serviced appropriately throughout the construction works. Establishing rules of conduct can still be a good practice of good performance - by achieving strict speed control (especially in villages) and strictly requiring workers to stop engines when it is not necessary for them to work.

In the process of construction works, under dry weather conditions, there is inevitably a high pollution with dust. This not only has an impact on health and creates discomfort for the affected local population but is also a negative safety factor for road users and construction teams. In order to minimize the risk of damage due to dust, the contract and the Environmental Plan will include provisions on regular road spraying, as necessary, during dry periods of time. When elaborating the dust suppression measures, water scarcity will be taken into account due to insufficient reserves and duly consideration will be given to the needs of local population in this respect (see below).

6.8.Combating noise and vibration

A road construction site is a mixed source of noise, consisting of separate point sources or spatial sources of permanent and temporary noise, which varies both within a separate day time and during the individual periods of construction. The noise intensity of road construction machinery depends on the type of machinery, equipment and vehicles used and on the distance between the respective construction activity and local residential developments and other sensitive receptors. The most elevated construction noise is caused by bulldozers, vibrators, compressors, excavators, and diesel trucks and also by cold recycling where milling machines will create temporarily elevated noise levels. The noise produced during such operations is short-term and localized, but can still create significant nuisance, especially where it occurs close to settlements or businesses and even more, when schools or health facilities are affected.

Elevated noise levels cannot be entirely avoided during construction, but can be controlled at source, e.g. by fitting and maintaining appropriate mufflers on earth-moving and other vehicles on the site; by enclosing noisy equipment; by providing noise attenuation screens, where appropriate. Workers shall be sensitized about minimizing noise while working inside of or near to settlements (e.g. avoid idling of vehicles, minimizing the use of horns etc.). Local communities shall receive timely information on construction taking place in the villages. Working hours – including material transport - inside the settlements shall be limited such as to minimize nuisance for the local communities. Should unavoidable out-of-hours work occur local residents shall be given timely notice.

Where heavy equipment is used close to man-made structures (houses, walls etc.) vibration may in unfavourable cases lead to physical damage. In villages where such risks cannot be avoided the The Contractor will establish the pre-construction status of any buildings that may be affected and provide compensation should damage occur as a result of construction.

6.9.Construction waste

During construction the Project will generate different types of waste, including but not limited to:

- Solid inert waste such as demolition materials, concrete, bricks, plastic, metals (e.g. empty barrels or other containers), bitumen, batteries and used tires etc.
- Waste oil and brake fluid;
- Vegetal waste from the clearance of the construction corridor (grass layers, tree branches, shrubbery, etc).
- Non-recyclable materials (e.g., resulting from the cleaning of ditches, others);
- Household solid waste and wastewater from the construction camps (if any).

To properly manage waste issues the Contractor shall prepare a comprehensive Waste Management Plan as part of his ESMP. This Plan will establish all types of wastes generated under the Project and identify their respective management along the mitigation hierarchy (avoid; recycle; dispose) in line with the applicable legislation.

6.10. Health protection of workers and labor safety

Road improvement works do not exclude health and safety risks, so all workers will need to be equipped with the necessary personal protective equipment, according to the standards in force and the relevant legal requirements for the risks at the individual workplace. The road constructions require the following equipment from the personal endowment, but not limited to:

- Protective footwear: Shoes with non-slip sole and cannot be pierced. Footwear with a protected toe to prevent crushing injuries to the toes (when working around equipment or heavy objects that can fall over the toes);
- Protective gloves: Workers should wear appropriate gloves depending on the work performed (e.g. rubber gloves for heavy duty concrete work, gloves for welding, insulated gloves and sleeves, when there is a risk of exposure to electric current);

- Protective helmets: Workers must wear helmets made of rigid material in case of objects falling over their heads, hitting the head of some fixed objects, or accidentally contacting the head with a dangerous place i.e. electrocution;
- Ear protection: In the event of a loud noise during the operation of a chain saw or heavy noisy technique, ear protectors / ear muffs shall be worn;
- Clearly visible clothing: All workers, including emergency response brigades in exceptional cases, which can occur at the roadside and are at risk from traffic, transport, or work equipment in the organization area temporary road traffic, shall always wear brightly colored clothing with reflective effect, visible during day and night.

The responsible person of the Contractor (EHSM) will organize for all the workers before starting the work, *basic training on risks at individual workplaces*.

For health and technical security purposes, Health conveniences on site (mobile WCs) shall be provided at appropriate locations after consultation with local authorities. Responsible for the service of these commodities will be a sub-contractor, who will take care of them at certain intervals and in accordance with the legislation in force. The places proposed for these conveniences will be determined by the Contractor / Manager of the Contractor responsible for the environment and technical security and will be approved by the Engineer-supervisor before starting the works.

In case of employment of a large number of not local workers that are accommodated on the site, a specific HIV/AIDS awareness campaign shall be organized, foreseen at an early stage of project construction works and repeated over appropriate intervals.

The Engineer-Supervisor's approval is required to select the location of the camp for office and containers for workers. . The SRA, however, encourages the Contractors to explicitly use the existing facilities for accommodating their staff and the existing industrial facilities in the area as they are at a distance close to the road site. The proposed environmental management mechanism will be described in the Contractor Specific Plan, developed and approved in the manner established by the Engineer, for the construction phase, detailing the approach and measures. If the Contractor decides to place his living quarters with all working facilities, accommodation of workers, kitchens and / or offices with all necessary hygienic facilities, shall be taken all necessary measures for an appropriate solid waste management system and sewer operation.

In the Contractor's ESMP shall be included measures to ensure safe storage and relocation of potentially hazardous materials, such as fuels, lubricants and other products, while minimizing the risk of accidental leakage and pollution soil or waste water. Also in this Contractor’s ESMP will be addressed the anti-incendiary requirements for the camp area and its territory.

6.11. Organization in exceptional emergency situations

In order to assure proper professional measures in case of accidents or injuries, a contingency plan should be prepared in exceptional emergency situations. On site shall be the elementary medical first aid equipment offered in the camps, taking into account, when elaborating the plan, the distance to the nearest

hospital. In order to maximize the efficiency of such organizational measures, it will be essential for workers to know and be aware of the established procedures and facilities available.

6.12. Road traffic and road safety

Construction activities inside the settlements and also outside these areas will have a temporary impact on local traffic and on road safety – for both motorized and non-motorized road users. This relates to the presence and movement of large construction vehicles on narrow rural roads, to construction taking place in small villages with restricted space and to the actual rehabilitation of the roadway itself. Ongoing construction sites do not only represent temporary obstacles but can also be dangerous for motorists or generally for users of the public space where construction takes place.

To effectively manage such issues the Contractor shall prepare a *Road Traffic and Safety Management Plan* identifying risks that may occur during the various stages of construction and that may affect road users / users of public space in villages. The Plan will describe efficient traffic and road safety management arrangements that will be implemented at the various stages of construction including specific provisions for drivers, cyclists, and pedestrians as appropriate. Proper securing of ongoing construction sites during construction and out of working hours (e.g. during the night and / or during weekends or public holidays) shall be specifically addressed. The Plan will require approval by the Traffic Police (National Police) as well as timely review and approval from the Engineer-Supervisor.

Road safety and road safety issues will be identified in this plan and temporary organizational measures will be presented, which will need to be provided at all stages of road rehabilitation and in all places where there are road safety issues and risks. Measures may include but not be limited to the provision of flagmen during the day, the use of various types of signalization, temporary detours, provision of temporary safety barriers, provision of appropriate measures and/or devices to secure road safety where construction sites may need to be left open during the night.

Appropriate training of all construction workers on the provisions of the Plan and strict enforcement thereof will help to maximize efficiency. Active communication with the local authorities, timely information of the public on construction schedules can help to increase awareness and preparedness of road users and to generally increase road safety conditions during construction.

6.13. Access to land and properties

Construction activities and especially the relocation of utilities and construction of drainage structures and pedestrian walks in the villages bear the risk to cause temporary disruption of access to land and properties. To minimize associated nuisance the Contractor shall envisage appropriate and timely provisions for alternative access and provide such local facilities as to ensure all time accessibility of relevant assets, including agricultural land. Early communication with the affected individuals will be important to increase the acceptance of such temporary inconveniences and to achieve a good relationship with the local population.

6.14. Operational Impacts and Their Mitigation Measures

Operational impacts mainly relate to the gradual deterioration of road conditions and drainage, due to inappropriate maintenance or a complete lack thereof, ultimately resulting in road safety problems. Typical maintenance aspects are: proper functioning of drainage facilities, landslide and erosion control; regular seasonal inspections of signage and replacement of worn-out materials and monitoring of roadside vegetation and tree or shrub plantations on landslide areas which require regular timely pruning / trimming to ensure healthy growth and longevity and to minimize risks from falling branches.

Improved rural roads often encourage unsafe driving behavior such as over-speeding, ultimately resulting in increased accident numbers. Such issues would be monitored by the Traffic Police which ensures the implementation of the legislation.

6.15. Positive Impacts

Upon completion, the Project will have positive long-term environmental and socio-economic impacts on people's welfare, road health and safety, and better conditions through reduced vehicle operating costs, reduced number of accidents; reduced emissions from vehicles thanks to smoother traffic without bumps on road surface after improvement, and will also reduce dust pollution.

Road access to settlements and markets will also improve, resulting in the development of new business opportunities, etc. The environment will benefit from reduced risk of soil pollution and erosion, from reduced water pollution due to improved, safe and cleaned road drainage systems, from the elimination of dust nuisance due to a paved road surface. A reduced risk of landslides, stable slopes through new plantations in sensitive sections will add to the overall improvements.

6.16. The social impact

The objectives related to social impact management are:

Ensure a minimum impact on public health, including the prevention of the spread of HIV/AIDS, STDs or potential trafficking in human beings, including young people and women.

Reducing the impact due to interruption during construction of utilities such as electricity, gas, running water and sewage.

6.17. Social Impact Monitoring Committee

The Social Impact Monitoring Committee (hereinafter SIMC) should will be established to provide community support in monitoring the social/environmental impact of the reconstruction of Corridor 8. The SIMC will be developed as a social, nongovernmental and non-political structure. It will be established on a project basis with members from sub-project affected localities with the aim to provide community inputs in monitoring of environmental/ social impact on the local communities that may arise in course of Project implementation.

The SIMC will strive to strengthen stakeholders' engagement, increase transparency and promote trust. In addition, the SIMC will facilitate communication between Project communities and Contractors with an aim to create mutual understanding between the interested parties and to create a friendly, cooperative, participatory atmosphere within the Project communities.

6.18. Social Mitigation measures

1. Mitigation measures of the social impact specifically related to resettlement must be respected. The objectives of the document, with reference to social issues, are:

Ensure that adverse effects on the affected population, other than resettlement, are avoided or attenuated.

Ensure that the benefits of road rehabilitation are proportionate to all affected persons, women and men, the elderly, the young and the disabled.

2. Recommended mitigation measures include:

Planning construction activities to avoid or reduce their impact on shops and businesses along the road and houses.

Preparing a Mobility and Accessibility Facilitating Plan (MAFP) in accordance with the construction plan in order to avoid or reduce the impact of road closure and of blocking the access to properties. This will be the responsibility of the contractor, with the support and approval of the Engineer.

Informing potentially affected people about the MAFP and about the plan of construction and road closure activities.

Public consultation during the design period on the expected social benefits, such as improving access to markets, bus stops, etc. which occurs with each affected community. The purpose of this activity was (1) to ensure that relations with the affected communities remain positive during the project construction process and during the exploitation period; (2) to treat the specific needs of the components of this document and (3) to ensure that the project has a specific policy for relations with third parties.

Development of a Mitigation Plan of Trafficking in Human Beings (THB), which may be part of the Occupational Health and Safety Plan or a separate Plan. This will be the responsibility of the contractor, with the support and approval of the Engineer.

Trafficking in human beings is defined as the recruitment, transportation, transfer, hosting or receiving of persons through threats or the use of force or other form of coercion, kidnapping, fraud or deception, abuse of power or due to a vulnerability position or by offering or receiving payments or benefits to obtain the consent of a person exercising control over another person for the purpose of exploitation. Exploitation includes at least exploitation of prostitution or other forms of sexual exploitation, forced labor or services, slavery or practices similar to slavery, slavery or organ harvesting.

Avoiding conflicts with local communities by providing the resources required for workers' needs in stores on the site camp and organizing site visits.

Potential avoidance of spreading vector diseases and communicable diseases such as STDs and HIV/AIDS through awareness programs and prevention activities among construction workers.

Preparing workers to avoid conflict situations through guidance and awareness programs.

Conduct awareness programs about HIV/AIDS prevention and STD for the affected population in the vicinity of the site camp areas.

Organizing awareness programs for workers on the subject of trafficking in human beings and zero tolerance policy.

Informing the public on the timing and duration of interruption of water, electricity, post, telecommunication or other services.

Avoiding damage to utilities by ensuring that vehicles and equipment are used by qualified personnel and this is adequately supervised.

Informing the affected community about the program when the utilities need to be relocated or services should be interrupted.

The THB mitigation plan should include, but is not limited to:

1. A signed declaration whereby the Contractor certifies that throughout the term of the contract he is not employed and does not facilitate or allow THB.
2. The contractor will ensure that THB is not tolerated by employees or contract workers and that engagement in the THB has as a consequence the suspension or termination of employment or the contract.
3. Raise awareness of employees, subcontractors and temporary workers on this topic, including the provision of information on risk areas and penalties for involvement in THB. Raising awareness will be ensured by organizing several training programs for contractor staff and subcontractors.

HIV/AIDS and STDs Prevention Measures:

- Launching awareness programs on HIV/AIDS and STDs prevention for PAP in the vicinity of the site camp
- Launching awareness programs on HIV / AIDS prevention and STDs for construction workers
- Introducing intervention clauses in the construction contracts for the prevention of HIV and STDs
- Discourage drug abuse (alcohol and narcotics). Taking into consideration local work force when hiring for construction and maintenance sites.
- Focus on transportation workers with high-risk behavior (including young workers), ensuring an education at their level.

- Conceiving general messages to the workforce as well as men and women.
- Use professional organizations such as NGOs and COs that deal with HIV prevention.
- Designing HIV prevention programs in communities along the road, adapted to specific needs, local language and traditional/preferred communication tools.
- Popularization and increase of condom acceptability through condom promotion campaigns and social marketing in communities along the road.
- Free distribution of condoms to men and women, construction workers, women working in the project area and young people.

Provide complete information on access to HIV and STDs services

- Educate communities and workers about how to avoid STDs, how to recognize the common symptoms of STDs, and how to seek treatment through confidential addressing systems.
- Provide information on voluntary testing and counseling services in the project area or anywhere near the project area
- Make public the existence of anonymous voluntary testing and counseling services (testing, pretesting and post-test counseling)

Provide information on access to opportunistic infections

- Educate people how to avoid opportunistic infections, how to recognize the common symptoms of these diseases, and how to seek treatment.

Study health care aids and services in transport organizations and evaluate worker involvement in receiving HIV and AIDS care.

A requirement and a reporting system to the SRA and the responsible government authorities, of suspicions or known THB incidents, as well as the relegation of potential victims to law enforcement agencies

Contractor's main environmental and social mitigation and management measures required during pre-construction, construction & operation phases of the road project

These are summarized below:

Pre-construction activities

- Procurement and mobilization of construction equipment / machinery such as crushers, hot mix plants, batching plants and other construction equipment and machinery
- Identification and selection of material sources (quarry and borrow material, water, sand etc.) and debris disposal locations

- Planning traffic diversions and detours, including arrangements for establishing campsites, workforce camps, material stack yards, crusher units, batch mix plants, hot mix plants, rented accommodation for supervisory staff. This activity includes identification of suitable lands, wherever required and obtaining requisite permissions or closing lease agreements
- Applying and obtaining of requisite permits/licenses, permissions for construction water sourcing, labour permission and similar other regulatory compliance requirements
- Preparation of C-ESMP which include, OHS plan, Water and Waste Management Plan, Influx management Plan, Worker's camp management plan, Traffic Management Plan, Quarry/borrow area management plan, establishment of GRM for workers, Site restoration Plan, among others in accordance with the national, WB and other international rules and guidelines. All such plans prepared by contractor will be reviewed and approved by the SRA, prior to commencement of construction works

Construction activities

- Implementation of site-specific mitigation/management measures
- Monitoring the environmental quality parameters along the road project operational sites and other sites like material stack yard, camp site offices, workforce camps, hot mix plants, crusher sites, batch mix plants
- Environmental monitoring parameters may include air, noise, water and soil
- Social issues which needs to be handled during construction phase include:
    - Loss of land due to land-slides resulting from hill cutting activities
    - Vibrations and cracks in structures or damage in buildings (of all types) adjacent to RoW due to construction works e.g., excavation activities within RoW
    - Drying up of seasons springs or streams due to excavation operations
    - Disruption to services such as water supply, power supply due to utility relocation and/or at times due to construction activities
    - Disruption to access to private houses/properties during construction activities, tESMPorarily;
    - Disruption to traffic movement leading to time delays;
    - Different impacts on vulnerable and disadvantaged population
    - Dust emissions during construction leading to impacts on community health, crops and trees
    - Likelihood of accidents due to road construction works;
    - Possibility of gender-based violence arising from influx of migrant construction workers;
    - Possibility of HIV/AIDS, other contagious diseases among construction workers and roadside community;
    - Contractor will monitor activities aimed at preventing sexual exploitation and abuse / sexual harassment (SEA / SH) and gender-based violence (GBV) incidents. Complaints related to SEA / SH and GBV cases and the related redress procedure are subject to monitoring. The monitoring results of sexual exploitation and abuse / sexual harassment

(SEA / SH) and gender-based violence (GBV) incidents will be sent to the SRA on a quarterly basis.

Opeation activities

The ESMP measures during operation phase largely include environmental and social monitoring, maintenance of nature-based bio-engineering solutions along project road. This shall be carried out by the contractor appointed by SRA for the maintenance of the project road.

Contractual aspects

The Environmental and Social Mitigation Plan as presented in Annex 2 together with the C-ESMP are the basis for environmental and social management when implementing the project.

The C-ESMP document shall be submitted within 30 days of the contract award and Preconstruction and Construction works can only commence once the C-ESMP is approved by the SRA and the Supervisor Engineer. C-ESMP preparation will start once the contract has been signed. For this purpose, the Contractor will need to appoint/hire qualified and experienced environmental and social expert, health & safety expert.

The construction contract prepared by SRA will clearly mention the following requirements/clauses:

- The cost of the required environmental and social mitigation measures shall be included in the Contractor's BoQ as a lump sum item, as well as the costs for water quality, air quality and noise level periodical analyses and measurements
- The Contractor shall be expected to carry out his environmental and social obligations in an organized and timely manner and to perform his duties meeting high standards for all activities addressed in the ESMP
- Construction materials such as gravel, stone, sand, etc. shall be supplied only from existing quarries and borrow pits with approved licenses, permits, and/or other official approvals
- All equipment used for construction works must meet internationally recognized environmental standards, and the site arrangements during construction must be such as to ensure the worker's health and safety as well as the health and safety of all road users at any time.

7. ENVIRONMENTAL AND SOCIAL MONITORING PROGRAMME

The monitoring and evaluation are critical activities in implementation of the project and involve periodic checking to ascertain whether activities are going according to plan or not. It provides the necessary feedback for project management to ensure that the project objectives are met and on schedule.

The reporting system is based on accountability to ensure that the environmental and social mitigation measures are implemented.

Environmental and social monitoring program has the underlying objective to ensure that the intended environmental and social mitigations activities are realized and these have as results the desired benefits to the target population causing minimal deterioration to the environmental and/or social parameters.

Such program targets proper implementation of the ESMP.

The broad objectives are:

• To evaluate the performance of mitigation measures proposed in the ESMP.

• To evaluate the adequacy of environmental and social assessment.

• To suggest ongoing improvements in management plan based on the monitoring and to define fresh monitoring based on the improved ESMP.

• To enhance environmental quality through proper implementation of suggested mitigation measures.

• To meet the requirements of the existing environmental and social regulatory framework and community obligations.

This section contains suggested monitoring activities summarized in the Environmental and Social Monitoring Plan (see Annex 3) for the implementation of the ESMP. For each of the Environmental and Social Conditions, the Monitoring Plan specifies the parameters to be monitored, location of the monitoring sites, frequency and duration of monitoring. The monitoring plan also specifies the applicable standards, implementation and supervising responsibilities. It includes the basic monitoring indicators, timeframe procedures and responsibilities for proposed monitoring activities. In addition to the monitoring of mitigation measures presented in Annex 2 (ESMP), the monitoring of environmental and social indicators and mitigation measures performance are part of the overall project monitoring. Monitoring of implementation of environmental and social mitigation measures established within this ESMP, will be the responsibility of: (a) construction Contractors; (b) SRA and project environmental & social specialist (with assistance from supervising engineer), and (c) Rayon ecological/social authorities inspectors.

Environmental and social monitoring involves regular checking of the environmentaland social management issues detailed in the ESMP and to ascertain whether the mitigation measures are achieving their objectives, according to the ESMP, with the progress of the works.

The findings of the relevant monitoring activities will be reflected in quarterly progress reports. The progress reports will cover the implementation of proposed by ESMP activities, as well as significant environmental and social impacts if any occurred. The site supervisors should also inspect construction sites, borrowing and dumping areas, and other potentially affected areas. Monitoring indicators shall be developed for both the construction and operation phases of the road project. The reporting system will start with the Construction Contractor who is the main executor of the implementation activities. The Contractor will report to the Construction Supervision Consultant, who in turn shall report to the SRA.

The monitoring reports will show the need for corrective actions, such as mandatory actions enforced by Moldovan environmental/social legislation, by World Bank ESS/EHS Guidelines and/or any mitigation measures imposed by agreements and permits in place, issued by relevant institutions.

For reducing the costs and necessary time for monitoring activities, the following approach is proposed:

- Establishing the most affected residential areas by the proposed activities especially regarding the air and noise pollution; Measurements of air pollutants concentrations, noise levels, soil and surface water pollution in the vicinity of the working sites;
- Comparison of the measurements results with the regulated limits such as:
  - Limit values
  - Alert thresholds for sensible utilities (residential areas)
  - Intervention thresholds for sensible utilities (residential areas).
- Proposal of corrective actions in order to mitigate the environmental/social issues identified on the working sites.
- Issuing a monitoring report

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

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

For each of the environmental and social conditions, the Environmental and Social Monitoring Plan specifies the parameters to be monitored, location of the monitoring sites, frequency and duration of monitoring. The monitoring plan also specifies the applicable standards, implementation and supervising responsibilities. The monitoring plan and details of monitoring locations for environmental condition indicators of the project during the construction and operation stage are presented in Annex 3

8. INSTITUTIONAL ARRANGEMENTS FOR ESMP IMPLEMENTATION

Institutional arrangements for implementation of ESMP have an objective to achieve environmentally as well as socially sustainable project activities and to meet the WB ESS (Environment and Social Standards), to comply with the GoM regulations during the pre-construction, construction and operational phases of the road project. The ESMP implementation arrangements will also ensure to comply with loan covenants as specified by the various conditions of loan agreement between the World Bank and the GoM.

Accordingly, details of institutional arrangements and the roals and responsibilities of various institutions in the implementation of ESMP are presented below.

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

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

State Road Administration. The proposed project will be implemented by the State Road Administration (SRA), being assisted by a Project Implementation Unit (PIU). 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 ESA as well as the civil works are implemented in accordance with the approved ESMPs. 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 years). It has in its staff an Environmental and Social Specialist (E&S), being responsible for coordination of all project safeguards issues. Similarly, the PIU will hire an E&S specialist which would be responsible for the ESS implementation. The WB team will continue closely monitor ESMP implementation, providing, when needed, relevant assistance.

SRA Environmental & Social (E&S) Specialist. The main responsibilities of the SRA E&S specialist would include coordination of all related to E&S activities and ensuring the ESS provisions are fully followed during the sub-projects implementation. The E&S specialist will be also responsible for relevant ESA capacity building activities as well as for integrating ESA issues into the project documents.
SRA E&S specialist specific duties: (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 ESMF/ESMPs requirements into project documents:* (i) inclusion of environmental requirements in the Project Operational Manual; (ii) inclusion of ESMPs 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 ESMF and approved ESMPs*: (i) conducting periodical and selective visits to the project sites and checking ESMPs 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 ESMPs 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 ESMP Checklist or other documentation for SEE; (b) *Preparing Environmental Impact Assessment report and/or ESMPs and organizing, if needed their State Ecological Expertise:* (i) ensuring that required environmental documentation (Environmental Impact Assessment report or ESMP 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 ESMP, 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 ESMP reports for selected sub-projects; (ii) to supervise independently or jointly with the State Ecological Inspectorate the mitigation and environmental protection measures stipulated in ESMP 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 ESMPs; (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.

SRA will employ also a **Project Management Consultant** (PMC) to assist in contract administration. SRA supported by the PMC will facilitate establishing best construction practice modality together with the Supervision Engineer and the Contractor, particularly in regard to environmental protection.

Monitoring and enforcement of the requirements are necessary aspects of the process. There will be a **Supervision Engineer** (SE) for each contract to ensure all works are in compliance with the contract requirements including the ESMP. The SE will periodically provide relevant reports to the SRA, including with regard to overall ESMPs implementation.

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

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

The Contractor will prepare quarterly reports and present those to Supervision Engineer, in case Contractor will identify pollution, reports will be presented within a week to SE and to SRA and correction measures will be immediately issues (within 1-2 days by SE) to rehabilitate the situation and diminish the caused pollution. Correction measures/actions will be sent also to SRA and monitored by SE in terms of their implementation by the Contractor. A monitoring report should be presented quarterly by SE to the SRA and PIU E&S Specialist. Competent Environmental Protection Authorities should be informed, if pollution cases occur. Any problem requiring immediate attention should be noted by the Contractor and brought IMMEDIATELY to the attention of SE who is responsible for ensuring that the Contractor complies with the contract. SE will use authorized laboratories from the State Ecological Inspectorate to carry out necessary tests and develop reports.

Grievance Redress Mechanism

Implementation Schedule

The project road construction and implementation schedule is about … months. Tentative implementation schedule of the project is listed below:

Procurement

Construction commencement

Project Completion … months (estimated date)

Defects Liability Period

Preparation of Site-specific C-ESMP by contractor based on ESMP e.g. Within one month after contractor's mobilization but prior to commencement of works on site

CONSULTATIONS AND STAKEHOLDER ENGAGEMENT

The WB standard on Stakeholder Engagement and Information Disclosure 10 ("ESS10") recognizes the importance of open and transparent engagement between the Borrower and project stakeholders as an essential element of good international practice.

The public consultations, prior to which the draft version of the updated ESMP was publicly disclosed on SRA website for a period of 30 days according to the Moldovan legislation, were organized and conductred by the SRA as per the project's Stakeholder Engagement Plan (SEP) at local level in the locations …… on …….. 2023,

The SEP seeks to ensure that project communities, as well as other project stakeholders, are informed and involved in all the stages of the project. The project recognizes the need to seek representative and inclusive feedback and the SEP looks to establish the role of women and vulnerable groups firmly within the consultation process. The project also recognizes the importance of ensuring affected people are involved in mitigation measures, road safety programs, as well as continuing monitoring of project activities.

The objectives of the SEP are:

- To identify all project stakeholders including their priorities and concerns, and ensure the project has ways to incorporate these;
- Identify strategies for information sharing and communication to stakeholders, including project information on social risks and impacts, as well as consultation of stakeholders in ways that are meaningful and accessible throughout the project cycle;
- To specify procedures and methodologies for stakeholder consultations, documentation of the proceedings and strategies for feedback;
- To establish an accessible, culturally appropriate and responsive grievance mechanism, and
- To develop a strategy for stakeholder participation in the monitoring of project impacts.

The SEP is a living document and will continue to be updated as the project progresses from pre-civil works to civil works and operation.

The following aspects were presented during the public consultation meeting:

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

The main aspects to be taken into consideration:

- The project consists of two subprojects R8.1and R8.2:
- The hydrographical network is very well-developed in the region:
  - *Subproject R8.1:* Cula stream (sub-basin of Raut river);
  - *Subproject R8.2:* Cula stream (sub-basin of Raut river) and sub-basin of Ichel river
- Almost along all the road of the subproject 8.1, starting in Mircesti village and lasting till the crossroad with M5, Cula stream flows with its tributaries.
- In the second part of the subproject 8.2, in Dereneu and Oniscani villages, there are tributaries of Cula stream.
- Along the road there are fertile soils (chernozems, gray soils) but also alluvial and mud soils, especially along the subproject 8.1, which goes parallel to Cula stream. This is why, the most of fields adjacent to R8.1 are used as pastures. During spring and autumn, but also during strong rains, these fields get flooded and swampy, being situated in Cula stream valley. Lands adjacent to subproject R8.2 are used predominantly as agricultural lands, orchards and vineyards.
- Also, there are degraded lands along C8, which transformed into landslides, ravines and terraces. Respectively, there are 11 such segments with various length, partially covered with vegetation, which need to be consolidated in order to prevent further erosion and deterioration of the road during operation phase
- There are 8 lakes along the road, being in private or public property

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

- Constructor should be responsible for covering shallow wells and artesian wells to prevent water pollution in and out of settlements
- In Boghenii Noi village there is water supply system built along the road, and sewage system is in the process of design documentation development.
- In Radeni village there is 2,5 km of water supply system built along the road, without sewage system. Water supply system was built without technical documentation. Existence of the water supply system should be taken into consideration during the construction phase. For sewage system, design documentation is in place, but sewage system is not built.
- In Dereneu village there are 2 artesian wells. Water supply system is crossing the road in 6 places, water supply system was built without technical documentation. The mayoralty should be consulted during the designing phase of the road rehabilitation
- Due to the fact, that there are no drainage systems between Radeni and Dereneu villages, water is gathered near the road and lands close to the road are transformed in swamps when there are strong rains
- After 2 km from Cornesti town, there is a drainage system which should be extended
- In Mircesti village there are landslides which need to be consolidated
- For construction sites there are lands in Boghenii Noi village. Previously those lands were also used to stock constructions materials during road rehabilitation.
- Another land for construction site exist in Raciula village

- Local public authorities will inform the population about the road rehabilitation and will identify alternative pastures for domestic animals which will be used during rehabilitation process
- The participants recommended to restore shelter belts of the road, where necessary, using for that walnut or poplar trees

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ANNEX 1. ENVIRONMENTAL SURVEY

Location/Land use	Components of the environment along the road													Description and remarks
	protected areas	fisheries/streams	cultivations	cultural resources	wetlands	school	heath unit	well	poor community	other	trees	houses	market/shops	
Subproject R8.1														
0,0 km - 1,2 km														Cornesti village
0,0 km - 0,2 km												x		Houses along road RT
0,0 km - 1,1 km												x		Houses along road LT
0,1 km								x						Well RT
0,2 km - 1,0 km											x			T Forest area LT
0,5 km								x						Artesian well RT
1,0 km -1,1 km												x		Houses along road RT
1,1 km - 1,2 km											x			Forest area RT
1,1 km - 1,6 km											x			Forest area LT
1,2 km - 1,5 km										x				Pasture RT
1,3 km - 1,5 km										x				Landslide LT
1,5 km - 2,2 km			x											Cultivated land RT
1,5 km				x								x		House; cross RT
1,5 km										x				Hydromet station LT
1,6 km - 2,0 km			x											Cultivated land LT
2,0 km - 2,2 km										x				Pasture along road LT
2,2 km										x				Landslide RT; Pasture RT
2,2 km - 2,5 km			x											Cultivated land LT

2,2 km - 2,7 km			x											Cultivated land RT
2,5 km - 3,7 km											x			Green area LT
2,7 km - 2,8 km										x				Landslide RT
2,9 km - 3,0 km											x	x		Houses; Trees along road RT
2,9 km		x												Stream crossing
3,0 km - 3,2 km											x			Grean area; Trees along road RT
3,2 km - 4,2 km														Mircesti village RT
3,2 km - 4,2 km												x		Houses along road RT
3,3 km										x				Landslide LT
3,3 km										x				Been farm LT
3,4 km		x		x				x						Well; Cross LT; Stream crossing
3,4 km										x				Landslide RT
3,7 km -3,9 km												x		Houses along road LT
3,9 km								x						Well LT
3,9 km - 5,2 km										x	x			Green area; Trees along road LT
4,2 km								x						Well RT
4,2 km												x		House LT
4,2 km - 5,2 km										x				Green area RT
4,6 km										x				Landslides RT
5,2 km		x												Stream crossing
5,2 km			x											Cultivated land RT
5,2 km - 6,2 km										x				Pasture RT
5,2 km - 6,0 km			x											Cultivated land LT
5,5 km		x												Springs RT
6,0 km		x											x	Lake; Springs; Gas station RT
6,0 km - 6,8 km										x				Pasture LT
6,2 km - 6,4 km			x											Cultivated land RT

6,3 km - 7,5 km														Boghenii Noi village
6,4 km - 10,0 km										x				Pasture RT
6,6 km		x												Stream crossing, Cula river; Lake at distance LT
6,6 km - 17,7 km		x												Stream along road RT
6,8 km - 7,5 km												x		Houses LT
7,2 km								x						Well LT
7,3 km								x						Well LT
7,4 km								x						Well LT
7,5 km - 7,7 km														Pasture LT
7,6 km		x												Stream crossing
7,7 km										x				Landslide LT
7,7 km - 8,4 km			x											Cultivated land LT
8,4 km - 9,6 km														Sinesti village
8,4 km - 8,7 km												x		Houses LT
8,4 km		x						x						Well RT; Stream crossing
8,7 km		x												Stream crossing
8,7 km - 8,9 km			x											Cultivated land LT
8,9 km								x						Well LT
8,9 km - 9,1 km												x		Houses LT
9,1 km - 9,3 km			x											Cultivated land LT
9,2 km												x		House LT
9,2 km				x				x						Well; Cross LT
9,3 km - 9,5 km										x				Pasture LT
9,3 km		x												Stream crossing
9,4 km		x												Stream crossing
9,5 km - 9,6 km												x		Houses LT
9,6 km								x						Well LT

9,6 km				x				x						Well; Cross LT
9,6 km - 11,4 km			x											Cultivated land LT
10,0 km - 10,7 km			x											Cultivated land RT
10,4 km		x												Stream crossing
10,7 km - 13,6 km										x				Pasture RT
11,1 km				x										Cross RT
11,2 km								x						Well RT
11,2 km		x						x						Well LT; Stream crossing
11,4 km - 12,1 km														Drujba village
11,4 km - 12,1 km			x									x		Houses; Cultivated land LT
11,8 km								x						Well RT
11,9 km				x				x						Well; Cross LT
12,1 km - 13,2 km			x											Cultivated land LT
13,2 km		x												Stream crossing
13,3 km		x												Lake at distance LT
13,2 km - 13,6 km										x				Pasture LT
13,6 km - 15,0 km			x											Cultivated land LT
13,6 km - 14,2 km			x											Cultivated land RT
13,6 km				x				x						Well; Cross RT
14,2 km - 18,0 km										x				Pasture RT
14,8 km		x								x				Landslide RT/LT; Stream crossing
15,0 km - 15,6 km										x	x			Forest; Pasture LT
15,3 km		x												Stream crossing
15,6 km - 17,1 km			x											Cultivated land LT
16,5 km		x												Stream crossing
17,1 km - 17,3 km										x				Pasture LT
17,2 km		x												Stream crossing

17,3 km - 17,6 km											x			Trees along road LT
17,6 km		x												Stream crossing
17,6 km - 18,3 km										x				Pasture LT
17,8 km		x												Stream crossing
17,9 km										x				Farm RT
17,9 km - 18,6 km			x											Cultivated land RT
18,3 km - 19,4 km											x			Forest/Green area LT
18,3 km								x						Spring RT
18,6 km - 18,9 km										x				Pasture RT
18,9 km - 19,0 km											x			Forest RT
19,0 km - 19,7 km										x				Pasture RT
19,3 km										x				Farm RT
19,5 km		x												Lake RT
19,6 km - 21,6 km														Napadeni village
19,6 km - 20,0 km												x		Houses along road LT
19,7 km		x												Lake RT
19,7 km - 20,0 km												x		Houses along road RT
20,0 km				x				x						Well; Cross RT
20,0 km - 21,6 km										x	x			Trees along road; Pasture RT
20,0 km - 20,7 km										x				Pasture LT
20,1 km										x				Gas station RT
20,1 km - 23,8 km		x												Stream along road RT
20,7 km - 21,6 km												x		Houses along road LT
21,2 km - 21,5 km														Cornova village
21,3 km		x												Stream crossing
21,6 km -22,6 km										x				Pasture LT
21,6 km - 23,1 km			x											Cultivated land RT

22,1 km								x						Well RT
22,6 km - 23,8 km			x											Cultivated land LT
22,8 km								x						Well LT
23,1 km - 24,9 km										x				Pasture RT
23,2 km		x												Stream crossing
23,5 km		x												Stream crossing
23,8 km - 24,9 km										x				Pasture LT
23,8 km		x												Stream crossing
24,0 km										x				Landfill RT
24,4 km					x									Wetland LT
24,6 km		x												Stream crossing; Cula river
Subproject R8.2														
0,0 km		x												Stream crossing
0,0 km - 0,4 km										x				Pasture RT
0,0 km - 0,4 km										x				Pasture LT
0,3 km								x						Well RT
0,3 km												x		House LT
0,4 km - 0,9 km			x											Cultivated land RT
0,4 km - 0,6 km			x											Cultivated land LT
0,6 km - 2,4 km														Radeni village
0,6 km - 2,4 km												x		Houses along road LT
0,9 km								x				x		House; Artesian well; Well RT
0,9 km - 1,1 km				x										Cemetery RT
1,1 km - 2,4 km											x			Houses along road RT
1,3 km				x				x						2 Crosses; Well RT
1,6 km				x				x						Well; Cross RT
1,7 km		x												Stream crossing

1,8 km								x						2 Wells RT/LT
1,9 km								x						Well RT
2,0 km		x												Stream crossing
2,1 km								x						Well LT
2,2 km								x						Well RT
2,4 km - 2,8 km			x											Cultivated land RT
2,4 km - 3,6 km			x											Cultivated land LT
2,5 km				x										Cross RT
2,8 km - 3,0 km											x			Forest RT
3,0 km - 4,4 km			x											Cultivated land RT
3,1 km								x						Well LT
3,2 km								x						Well RT
3,7 km								x						Well RT
3,6 km - 4,4 km										x				Greem area LT
3,7 km		x												Stream crossing
4,1 km										x				Landslide LT
4,4 km - 6,7 km														Derineu village
4,4 km - 6,3 km														Houses along road RT
4,4 km - 6,7 km														Houses along road LT
4,5 km								x						Well RT
4,6 km								x						2 Wells RT/LT
4,7 km								x						Well RT
4,8 km								x						Well RT
4,9 km								x						Well LT
5,0 km				x				x						Well; Cross RT
5,0 km		x												Stream crossing
5,1 km								x						2 Wells RT

5,2 km								x						2 Wells RT
5,2 km		x												Stream crossing
5,4 km		x						x						Well LT
5,4 km		x												Stream along road RT
6,0 km		x												Stream crossing
6,0 km								x						Well LT
6,1 km		x												Stream crossing
6,2 km					x									Wetland RT
6,3 km				x				x						Well; Cross LT
6,3 km - 6,7 km										x				Pasture RT
6,7 km - 7,6 km			x											Cultivated land LT
6,8 km - 7,7 km		x												Lake RT
6,8 km		x												Stream crossing
7,2 km		x												Stream crossing
7,2 km								x						Well LT
7,3 km										x				Landslide LT
7,6 km - 8,4 km										x				Green area LT
7,7 km - 8,5 km		x												Stream along road RT
7,7 km - 9,3 km										x				Pasture RT

ANNEX 2. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			Road rehabilitation works will involve various – yet unspecifiable – contractor activities requiring management of environment, health and safety issues	SRA	High	All Project locations	***Contractor to prepare a Contractor's Environmental and Social Management Plan (C-ESMP) and obtain approval thereof the SRA / SE prior to start of works. The following issues are to be addressed as a minimum:*** • Contractor's Environmental Management System; • Pre-construction planning (topsoil removal and temporary storage; temporary protection of roadside trees); • Health & Safety Management Plan; (including incident management, trainings, performance reporting, medical treatments, hazardous operations, emergency etc.); • Site and Camp establishment - if any – and operation (siting, topsoil clearing; camp establishment, effluent; waste management; fires; demobilisation);

[23] PC - **Pre-construction phase; C - Construction phase; O - Operations phase**

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							• Waste / hazardous waste management (general waste generation; Waste separation and transport; Waste storage, handling & disposal (incl. hazardous waste; disposal etc.); • Fire safety; • Oil and fuel & chemicals management; • Spill prevention and response; • Mobile asphalt plant if the case (site preparation; site management; operation; demobilisation); • Resource management (incl. energy, water, aggregates, living resources); • Sites proposed for material extraction*; material storage; • Materials (handling and transport; spill management; storage; traffic machinery and equipment accidents); • Logistics management (vehicle and machinery movement; road access; travelling speed; compliance with traffic safety principles); • Vehicle and equipment maintenance (vehicle washing; effluent handling methods statement; refuelling; fuel and lubricant handling); • Protection of roadside trees / tree plantations;

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							• Site rehabilitation; • GRM • Code of Conduct covering SEA/SH In developing the CESMP the CC will be responsible to ensure compliance of the proposed approaches with the applicable legislation and best practice. The plan will be updated periodically as appropriate.
			Preparatory works for the site locations	General public and traffic	High	All Project locations	• Signalling of the work area; • Verifying the existence and position of any utilities in the area or in its vicinity; • All measures will be taken for the safe execution of the works; • Plotting the works; • Ensuring water drainage from the site
			Siting, construction and operation of Contactor's yard / camp (e.g. with offices; workshop; material storage areas	General public	NA	NA	• ***CESMP to*** address the site-specific environmental and social management aspects such as siting, site preparation, design, temporary operation and rehabilitation of the site upon completion of construction; • Consult with local officials prior to site selection; • Site selection to observe relevant criteria to primarily protect the general public and sensitive environmental receptors;

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			and staff accommodation facilities - if any[24]) Creation of pollution & health and safety risks through inappropriate storage and handling of hazardous materials and waste; Risk of temporary nuisance or impact on public health and well-being; Site impact (vegetation loss, erosion, soil contamination, water pollution etc.)				• Obtain approval from SRA / SE and responsible local authorities.
			Construction materials Sourcing of materials	General public	Moderate	Borrow sites and quarries	Construction materials will be exclusively sourced from quarries and existing borrow sites that hold appropriate license under Moldavian legislation;
			Transportation of construction materials by heavy trucks has potential to cause nuisance through	General public	Moderate	Whole routes	Carefully select haul routes to minimize nuisance of local residents through noise and dust and to possibly minimize

[24] Note that the SRA explicitly encourages Contractors to accommodate the workforce in the local villages and to possibly use existing industrial facilities in the region.

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			noise and dust pollution and also to create road safety hazard				risks of road safety – especially when passing through villages
			Transportation of construction materials such as soil, bitumen, asphalt-concrete mixtures, concrete, cement-concrete slabs, gravel, etc. has potential to cause nuisance and soil and water contamination through accidental spillage	General public	Moderate	Whole route / Site location	• Carefully plan construction works to minimise pollution risk through accidental spillage or accidents; • Ensure proper condition of transport vehicles at all times; • Train workforce on proper management practices and safe handling and transport of materials; • Avoid overloading and / or effectively cover haul trucks; • Ensure prompt clean-up of any spills of construction materials.
			Construction water The need for construction water and water for dust management may cause ecological damage or create conflicts through competing interests with the needs of the local communities	General public	Low	Construction site; approved water abstract-tion point	Identify the most appropriate source of construction water and obtain approval from local authorities on location and quantities for abstraction prior to the start of operations
			Air quality impact through construction emissions and side activities Temporary impact on air quality through **i**ncreased emissions from	Local flora and fauna Residential and	Low	All Project locations	• CC to ensure that all construction equipment and vehicles will be in proper technical condition at all times; • Ensure regular maintenance and servicing of all construction machinery and haulage trucks throughout construction;

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			construction traffic and equipment, potentially affecting local residents, road users and the construction crew	commercial areas			• Strictly implement speed controls - especially within villages; • Strictly require workers to shut down engines that are not directly needed; • Transport tires must be cleaned when leaving work areas if they are used on public roads.
			Temporary generation of elevated levels of suspended dust through material transport and storage	Local flora and fauna Residential and commercial areas		All Project locations	• Cover all trucks carrying fine materials with tarpaulin to minimise dust generation; • Sprinkle construction site and haul routes as appropriate / as directed by the Engineer during dry periods or in case of complaints; • Ensure that only approved sources of water will be used for dust management; • Cover all fine material stockpiles materials or take other precautionary measures as appropriate or directed by the SE to minimise dust pollution effects;
			Combustion gases from automobile transport	Residential and commercial areas	Low	All locations with sensitive	• Air quality along the road section to be monitored at locations near the closest residential buildings for an initial period during operation; • Establishing speed limits in residential areas.

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
						receptors	
			Burning of construction waste		Low	All Project locations	Ensure no burning of waste is undertaken without the consent of the Engineer
			Damage to land / soils due to: • Site preparation works / earthworks; Impact on soil structure due to vehicle traffic and temporary storage of construction materials (cement-concrete slabs, gravel, etc.) in the immediate vicinity of road rehabilitation works; Land damage / soil pollution by bitumen, asphalt concrete mixtures during loading-unloading/ transport and laying.	Local soil	Moderate	All Project locations	• Removal and storage of top soil for subsequent site rehabilitation as required; • Implementation of other site management measures in compliance with provision s of the approved CESMP, including Emergency Preparedness and Response Plan.

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			Construction noise impact Temporarily elevated noise levels through the operation of heavy equipment; potential noise impact on specifically sensitive receptors Disturbance of local residents in village sections along the project route	Residential and commercial areas	Moderate	All locations with sensitive receptors	• In case were noisy construction activities are unavoidable and likely to affect communities or other sensitive receptors CC to provide timely information on the location and schedule to the local authorities; • Within settlements restrict noisy construction activities and material transport to the period Monday to Friday 8.m. – 6p.m.; on Saturdays 8 a.m. to 3 p.m.; • Suspend construction activities during Sunday and public holidays; • Separation of activities that generate a significant level of noise in different periods of time; • Fit and maintain appropriate mufflers on earth-moving and other vehicles on the site; • Noise levels to be monitored at locations near the closest residential buildings before construction and during construction; • Avoid idling of vehicles and minimize use of horns.
			Noise levels from automobile transport is expected to be reduced due to improved road surface but increase is also possible due to traffic levels growth.	Residential and commercial areas	Moderate	All locations	• Noise levels must be measured at least at representative receivers (residential areas) on the side of the road every six months for a period of 2 years after construction; • Performance evaluation of installed sound panels.

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
						with sensitive receptors	
			Vibration Use and work of transport vehicles and heavy machinery. Risks of physical damage to the residential buildings and other structures due to vibration impact.	Residential and commercial areas	Low	All locations with sensitive receptors	• Good construction practice. Standard mitigation measures; • Assessment of current conditions of affected buildings identified based on the consultations with local authorities and visual observations during the site visits for residential buildings located closer than 30 m from the road; • Instrumental observation of vibration level for the identified affected structures, development and implementation of vibration management and mitigation measures during construction, monitoring of potential damage.
			Impact on local water resources Pollution risk through contaminated runoff / erosion / accidental spillage / inadequate storage of construction materials	Local water resources	Moderate to Low	All Project locations	• Provision of appropriate drainage of all work sites throughout the construction period; • Cover storage areas for construction materials; • Ensure proper management of any solid or liquid construction waste throughout the construction period in

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			or unmanaged construction waste disposal				accordance with the approved CESMP on construction waste management and applicable national legislation; • Consult with local officials to identify possible areas for the temporary storage of waste; • Use only technical water for dust suppression; • Use of mobile ecological cabins (toilets) that can be emptied for site personnel; • The repair of vehicles and machinery will be carried out only in specially arranged spaces; • Baseline surface water studies to be performed before the start of construction works and used as a reference for surface water quality monitoring during major reconstruction activities near watercourses at the construction phase.
			Management of stormwater from torrential rains *Blockage of storm drains and drains*	Local water resources	Low	All Project locations	• Carrying out maintenance works to prevent the clogging/waiting of storm drains; • Development and implementation of action plans by local public authorities in order to clean and strengthen the Cula river that will prevent floods.
			Demolition of drainage structures; construction of new culverts may cause pollution of local streams / rivers	Local water resources	Low	Construc-tion sites of new	• As much as possible construction should be undertaken during the low flow season to minimize the threat of water contamination;

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
						drainage structures	• Excavation should be done such as to minimize stockpiling of materials near flowing water; • Appropriate protection should be provided to prevent soil materials to be washed away. • Cutting riparian vegetation shall be reduced to the minimum required to implement the works. • The discharge of sediment laden construction water directly into surface watercourses or ponds will be forbidden. • Sediment laden water will be discharged into settling lagoons and tanks prior to final discharge; • Where construction takes place close to surface streams mobile toilets shall be provided at the work site on stable ground and at appropriate distance from the river / stream in line with the applicable legislation and regular servicing ensured.
			Pollution risk for local groundwater wells Potential impact on local – partly uncovered - groundwater wells through dust and other air pollutant or through surface runoff; spillage	Local water resources	Low	Local wells along the Project route	• Provision of appropriate cover for all local groundwater wells in the potential area of influence that are yet unprotected; • Provision of appropriate storm water drainage arrangements; • Baseline groundwater studies to be performed before the start of construction works and used as a reference for

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			of harmful substances in case of accidents				ground water quality monitoring during major reconstruction activities near wells at the construction phase.
			Wastewater Generation of communal waste water. Potential risk of washing of working areas with storm waters.	Local area Local water resources	Low	All Project locations	• Mobile toilets must be regularly serviced and maintained; • Avoidance of storm water discharge in the proximity to the watercourses.
			Soil erosion Earth works and the utilization of heavy construction equipment entail the risk to cause soil erosion and indirectly destabilize adjacent areas	Local soil	Low	All Project locations	• The CC is responsible to ensure that erosion is contained by soil conservation and protection methods. The CC will: • Reduce the extent of excavations to minimize erosion risk; • Apply soil conservation and soil protection methodologies in sensitive areas to prevent / minimize storm water runoff carrying eroded materials offsite; • Avoid excavations and operating machinery in wet conditions.

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			Construction waste Demolition and construction and works will generate different types of waste incl. but not limited to: **Solid inert waste** such as demolition material, concrete, bricks, plastic, metals, bitumen and (shredded tyres) etc. **Waste oil**	Local area	Moderate to Low	All Project locations	As part of his CESMP the Contractor will prepare a comprehensive **Waste Management Plan**. This Plan will establish all types of wastes generated under the Project and identify their respective management along the mitigation hierarchy (avoid; recycle; dispose). As a minimum the following principles will be considered: 1. Whenever feasible viable materials will be recycled (except when containing asbestos). Removed asphalt will be reused on the Project through cold recycling processes; what cannot be recycled shall be managed as directed by the client for temporary storage and subsequent re-use at other road rehabilitation sites 2. Waste collection and disposal pathways and sites will be identified for all major waste types expected from excavation, demolition and construction activities. 3. Mineral construction and demolition wastes will be separated from general refuse, organic, liquid and chemical wastes by on-site sorting and temporarily stored in appropriate containers. 4. Construction waste will be collected and disposed properly in an approved registered landfill by licensed collectors

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							5. Waste oils must not be mixed with other kinds of waste but be separately collected and stored for either recycling/reuse in an environmentally sound manner or disposed of by a licensed contractor in line with the applicable legislation. 6. Records of waste disposal will be maintained as proof for proper management. 7. No temporary storage of waste in flood-prone areas. 8. Regular transportation of construction materials will be carried out without stockpiling of large batches of materials at construction sites.
			Vegetation clearance (trees; shrubs) Impact on bird nesting	Local area	Moderate to Low	Construction site	• Schedule / execute the clearance of trees and shrubs outside the bird nesting period, i.e. restrict clearance to the period from mid' August to mid-March • Temporary storage of cleared materials in heaps of manageable size in accordance with disposal or re-use requirements.
			Impact on existing roadside trees Unavoidable tree losses: 133 trees, Ø < 30cm	Local area	Moderate	Construction site	• Cutting trees only after obtaining the Deforestation Authorization • Compensation of tree losses: Upon completion of construction compensate all tree losses (planned and unintended) through new plantations within the road or in other plots approved by the owner/manager of the land with loss of trees;

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							• Records of unavoidable losses of roadside trees; • Unintended/accidental tree losses will be replaced at a ratio of 3:1 at the Contractor's own expense.
			Unintended damage of roadside trees *Construction and related activities may result in unintended direct or indirect damage and in the unfavourable case in the loss of roadside trees that grow close to the construction corridor (note that SRA considers a damaged tree to be 'lost' when 30% of the branches have been damaged!).*	Local area	Moderate	Construc-tion site Monitor compli-ance	Plan and adopt such operational strategies as appropriate to avoid accidental losses/damage to trees. Describe the proposed approaches in a separate Method Statement (or as part of the CESMP) for the protection of roadside trees and seek approval from the SE. The measures could include but may not be limited to the following • Temporary fencing of trees/groups of trees. for preservation Within a radius of 1.5m around the drip line of existing roadside trees Contractor to avoid or at least effectively minimize the following activities: o Relocation of utilities; o Driving; o Soil compaction; o Excavations; o Temporary storage of fuels, chemicals, construction materials/waste. During the application of bitumen trees and any other woody vegetation will be effectively protected from physical damage.

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							Timely protection of tree crowns: • Trimming of branches where required between late autumn or early spring / outside the breeding period; • Duly consider pivoting the range of large construction equipment that may need to be used in the vicinity of existing roadside trees and take appropriate protective measures (e.g. in the context of relocating utilities).
			Insignificant impact at the local level may be on the spontaneous vegetation that grows along the existing road. The impact at the local level will be brought to the population, who live in the project area and who had free access to the forests, which will be deforested.	Local area	Moderate	Construc-tion site Monitor compli-ance	Plan and adopt such operational strategies as appropriate to avoid accidental losses/damage to trees. Describe the proposed approaches in a separate Method Statement (or as part of the CESMP) for the protection of roadside trees and seek approval from the SE. The measures could include but may not be limited to the following • Temporary fencing of trees/groups of trees. for preservation Within a radius of 1.5m around the drip line of existing roadside trees Contractor to avoid or at least effectively minimize the following activities: o Relocation of utilities; o Driving; o Soil compaction; o Excavations;

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							o Temporary storage of fuels, chemicals, construction materials/waste. During the application of bitumen trees and any other woody vegetation will be effectively protected from physical damage. Provide free access for population in certain location for entrance/exit from main road/interchanges
			Disturbance of wild animal species in their usual breeding, feeding or resting places, as well as along migration routes, at the construction stage of the road, may lead to displacement and exclusion of some species as a result, to the loss or displacement of their habitat. Animal species usually avoid areas in and around the construction zone, for example, due to increased traffic, human presence, as well as noise, dust, pollution, artificial lighting or vibrations caused in during or after	Local	Moderate	Forest area	In order to avoid the potential impact on nature, in the pre-construction period, it is important that the construction company considers not only the main infrastructure itself, but also all related installations and facilities, such as temporary access roads, storage facilities and equipment, construction compounds, concrete foundations, temporarily installed cables, residues and spaces for depositing excavated earth, etc., to avoid as much as possible damage to the habitats of plants and animals, including birds. • An appropriate vegetation management plan shall be developed in order to minimize the trees cutting within the working land and to ensure a proper management of cutting trees

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			the completion of the construction work. Additional impact from the construction works can be the burrows of mammals, the breeding places of insects (bark of trees), the nests of birds and bees in old rotten/dry trees and other places, herbaceous plants are also affected, especially being watering places for reptiles, insects and small mammals.				• For loss of trees within the working land, adequate compensation shall be established, by planting the same trees species in locations agreed with relevant authorities; • The trees cutting will be outside the breeding and nesting period in the forests
			Site clean-up / stabilisation	Local soil	Moderate	All sites properly re-instated / recovered with top soil	Site clean-up in accordance with the approved CESMP / site-rehabilitation plan. As a minimum the following shall be undertaken: • Rehabilitate all areas disturbed by the work. Provide long-term surface stability by progressively re-vegetating discrete areas of each work site as they are completed. • The sites shall be revegetated by: - Raking or loosening any compacted ground surface areas identified for vegetation cover; - Re-spreading stockpiled top soil evenly across completed disturbed sites (including over any

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							permanent fill stockpiles) immediately following construction works. • Sites shall be cleaned up by removing all disabled machinery and construction debris from the works areas.
			Road safety and accessibility issues arising from inconsistent road design There are a number of road safety concerns associated with the existent design. Mobility of pedestrians and motor users and access to public and private properties will be restrained due to inconsistency with the local urban plans	Local communities Users of the road	Major	Project communities	Consultations and engagement, to ensure that sufficient access to community, businesses and all personal assets is retained. Implementation of Traffic Management Plan to maintain vehicle and pedestrian access, safe passage of vehicles and pedestrians, and provide clear warning and instructions to vehicles. Implementation of Mobility and Access Facilitation Plan with measures to ensure people are adequately informed of road closure and alternatives are provided for citizens to access their homes and private properties, as well as public services.
			Impacts on Community Health & Safety (CHS) during Construction *Construction Phase* Increased the risk of accidents to the public, largely through the	Local community	Minor	All Project locations	Contractor CESMP Plan, including Traffic Management Plan. Good site management, security, health & safety measures, warning signs etc. applied by the Contractor to minimise risks to an acceptable level.

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
			movement of plant and machinery and the delivery of materials. Risk of influx (albeit minor) from workers from outside the area which may give rise to certain risks to the communities.				Fencing and signage to discourage public from entering the works area. Appropriate siting of Workforce Accommodation (if any) and good community engagement mechanisms along with a grievance process.
			Risks to Worker Health & Safety *Construction Phase* The works will give rise to occupational, health and safety risks to workers, including those related to working with plant and machinery, formation of asphalt, use of cement, working near utilities. *Operations* Occupational health and safety risks to road maintenance workers	Onsite workers	Minor	All Project locations	Contractor's CESMP, including Health and Safety provisions, in accordance with the Employer's Requirements and the Law on the Safety and Health at Work. Good workforce management, implementation & enforcement of code of conduct, provision of health surveillance & healthcare access for workers. Occupational health and safety provisions in OESMP. Grievance mechanism for Workers established, disclosed and implemented.
			Risk factors that increase the potential for violence against women and sexual harassment during road construction works	Communities in the project area	Minor		Contractors ESMP and individual worker contracts to provide for preventive measures

Phase[23]			Environmental and Social Risks & Impacts, and Opportunities	Receptors / beneficiaries	Significance	Location	Mitigation measures
PC	C	O					
							Conduct awareness sessions and implement Code of Conduct
			Cultural Heritage *Construction phase* Risk (very minor) to hitherto unknown cultural heritage sites from excavations along the road corridor.	Local area	Minor	All Project locations	Chance Finds Procedure to be developed and implemented by the Contractor(s).
			Noise *Construction phase* Use and work of transport vehicles and heavy machinery *Operations* Noise levels from automobile transport is expected to be reduced due to improved road surface but increase is also possible due to traffic levels growth.	Residential and commercial areas	Moderate	All locations with sensitive receptors	Good construction practice. Standard mitigation measures. Noise levels to be monitored at locations near the closest residential buildings before construction, during construction and for an initial period during operation. Implementation of noise mitigation measures based on the results of monitoring and consultations with the affected parties (installation of noise protective shields).

ANNEX 3. ENVIRONMENTAL & SOCIAL MONITORING PLAN (E&SMP)

The following Environmental and Social Monitoring Plan (ESMP) distinguishes:

- Environmental monitoring based on lab analyses and site monitoring; and
- Environmental monitoring based on visual observations made during site checks.
- **Table 5. Summary Monitoring Plan**
-

Phase	***Issue/impact***	***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?)*	***Cost*** *(if not included in project budget)*	***Who*** *(Is responsible for monitoring?)*
Construction / rehabilitation	Organizational issues: Construction site	Check if design and project planning foresee diligent procedures All legally required permits and agreements are valid and in place; Civil works – No. of fines paid.	All project areas	Visually; Contractor's database	Before, during construction works, and after their completion	Covered by the SRA	SRA and PIU Environmental Specialist (ES); Supervising Engineer (SE)

Phase	***Issue/impact***	***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?)*	***Cost*** *(if not included in project budget)*	***Who*** *(Is responsible for monitoring?)*
	Soil	Volumes of excavated soil Area of polluted soil and total discharged hydrocarbons from oil products	Earthworks areas and temporary occupied areas; Most vulnerable areas to fuel discharges	Visually; Contractor's data Visually; Contractor's data	During the civil works once a month At the completion of works -//-	Work specifications	Contractor; SE PIU ES; SRA ES; (randomly); Rayon Environmental Inspector (possibly)
	Construction wastes	Availability of waste at disposal facilities; Areas of tESMPorary waste storage; Hazardous waste database, quality and volumes	Construction sites; Waste landfills.	Visual; Consultation of locals; Contractor's data. Visual, analytical if suspicious hazardous waste transported off site.	Before launch of construction Before approval to use hazardous materials; During construction works, monthly	Work Specifications; Contractor's financing for analytical works (if needed)	Contractor; SE PIU ES; SRA ES; (randomly); Rayon Environmental Inspector (possibly)

Phase	***Issue/impact***	***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?)*	***Cost*** *(if not included in project budget)*	***Who*** *(Is responsible for monitoring?)*
	Water resources and water quality	Runoff routes for wastewater and sings of waste water discharges pH, solid suspensions, Ca^{2+}, Mg2+, SO42+ (in the case of severe water pollution, based on visual observations)	Construction sites located near waterways; Most vulnerable areas to pollutant releases	Visually/ analytical if in doubt and in the case accidental spills	Daily / continuous	Work Specifications; Contractor's financing for analytical works (in the case of accidental pollution)	Contractor; SE PIU ES; SRA ES; (randomly); Rayon Environmental Inspector (possibly)
	Air quality	Dust; Smoke; NO_x, CO, SO_2, VOC, PM_{10} (in the case of doubts on the severe air pollution)	Construction sites and in particular located near and within residential areas Asphalt and concrete plants, borrow pits and dump sites;	Visual/ analytical if in doubt	Daily / continuous To be done by a specialized company if needed on monthly basis	Work Specifications; Contractor's financing for analytical works (in the case of accidental pollution)	Contractor; SE PIU ES; SRA ES; (randomly); Rayon Environmental Inspector (possibly)

Phase	***Issue/impact***	***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?)*	***Cost*** *(if not included in project budget)*	***Who*** *(Is responsible for monitoring?)*
	Nuisance noise	Noise levels – dB(A)	Project sites and residential areas; Asphalt and concrete plants,	Visual/ instrumentally if in doubt	Daily / continuous	Work Specifications; Contractor's financing for works (in the case of high level noise)	Contractor; SE PIU ES; SRA ES; (randomly); Rayon Environmental Inspector (possibly)
	Natural vegetation	All legally required permits and agreements are valid and in place Fulfilling specified in the ESMP requirements No. of trees/bushes cut; No. of complaints	All areas tESMPorary occupied during construction Borrow pits	Visual Contractor's database	Monthly	Within budget per works specifications	Contractor; SE PIU ES; SRA ES; (randomly); Rayon Environmental Inspector (possibly)
	Fauna	Migratory corridors;	All project sites	Visual;	Monthly	Within budget per works	Contractor; SE PIU ES;

Phase	***Issue/impact***	***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?)*	***Cost*** *(if not included in project budget)*	***Who*** *(Is responsible for monitoring?)*
		No. accidents with fauna species; Fulfilling obligations with regard to breeding season; Noise.		Contractor's database; Environmental inspectorate database		specifications	SRA ES; (randomly); Rayon Environmental Inspector (possibly)
	Borrow pits, quarries and waste dumps	Permits and agreements are valid and in place Working plan approved by Owner's Engineer Restoration plan approved by Owner's Engineer	Borrow pit sites and landfills	Visual; Borrow pits and landfills authorities database	Before the civil works	Within budget per works specifications	Contractor; SE PIU ES; SRA ES; (randomly); Rayon Environmental Inspector (possibly)
	Social disturbance by construction	Permits are valid and in place	All new construction areas	Visual	Before/during construction works	SRA budget	PIU ES; SE SRA ES; (randomly);

Phase	***Issue/impact***	***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?)*	***Cost*** *(if not included in project budget)*	***Who*** *(Is responsible for monitoring?)*
	Tempoorary loss of land	Legal contracts in place; Monitor involuntary resettlement issues; No. of complaints;	All areas permanently/tE SMPorary occupied during construction	Visual; Contractor's database	During construction works on permanent basis	SRA budget	PIU ES; SE SRA ES; (randomly);
	Impacts on cultural heritage sites /chance finding	Training on legal requirements; No. of findings	All new construction areas; Borrow pits	Visual; Contractor's database	During construction works on permanent basis	Within budget	Contractor; SE PIU ES; SRA ES; (randomly);
	Road safety/ Accidents during road construction period due to construction	Safety measures part of contract obligations; No. of complaints; No. of accidents.	All construction areas, including asphalt plants and adjacent roads	Visual; Contractor's database	Before/during construction works	Within budget	Contractor; SE PIU ES; SRA ES; (randomly);

Operational and maintenance	Construction wastes	Availability of waste disposal facilities Hazardous waste database, quality and volumes	Visually; Contractor's data	Visual; Consultation of locals; Visual, analytical if suspicious hazardous waste transported off site.	Before launch maintenance works Before approval to use materials; During works, monthly.	Work Specifications; Contractor's financing for analytical works (if needed)	Contractor; SRA ES; (randomly);
	Water resources and water quality	Runoff routes for wastewater pH, solid suspensions, Ca^{2+}, Mg2+, SO42+ (in the case of severe water pollution, based on visual observations)	Construction sites located near the road; Most vulnerable areas to pollutant releases	Visually/ analytical if in doubt	Daily / continuous	Work Specifications; Contractor's financing for analytical works (in the case of accidental pollution)	Contractor; SRA ES; (randomly);
	Air quality	Dust; Smoke NO_x, CO, SO_2, VOC, PM_{10} (in the case of	Construction sites and in particular located near and within residential areas	Visual/ analytical if in doubt	Daily / continuous To be done by a specialized	Work Specifications; Contractor's financing	Contractor; SRA ES; (randomly);

		doubts on the severe air pollution)	Asphalt and concrete plants,		company if needed	for analytical works (in the case of accidental pollution)	
	Nuisance noise	Noise levels – dB(A)	Project sites and residential areas; Asphalt and concrete plants,	Visual/ analytical if in doubt	Daily / continuous	Work Specifications; Contractor's financing for analytical works (in the case of high level of noise)	Contractor; SRA ES; (randomly);
	Natural vegetation	All legally required permits and agreements are valid and in place Fulfilling specified in the ESMP requirements No. of trees/bushes cut;	All areas tESMPorary occupied during construction Borrow pits	Visual Contractor's database	Monthly	Within budget per works specifications	Contractor; SRA ES; (randomly);

		No. of complaints					
	Fauna	Migratory corridors; No. accidents; Fulfilling obligations with regard to breeding season; Noise.	All project sites	Visual; Contractor's database; Environmental inspectorate database	Monthly	Within budget per works specifications	Contractor; SRA ES; (randomly); Rayon Environmental Inspector (possibly)
	Borrow pits, quarries and waste dumps	Permits and agreements are valid and in place Working plan approved by Owner's Engineer	Borrow pits and quarries; Landfills.	Visual; Borrow pits and landfills authorities database	Before the civil works;	Within budget per works specifications	Contractor; SRA ES; (randomly);
	Social disturbance by construction	Permits are valid and in place	All new construction areas	Visual	Before/during construction works	SRA budget	PIU ES; SRA ES; (randomly);
	temporary loss of land	Legal contracts in place; Monitor implementation and involuntary resettlement issues; No. of complaints;	All areas permanently/tESMPorary occupied during construction	Before/during construction works	During construction works on permanent basis	SRA budget	PIU ES; SRA ES; (randomly);

	Impacts on cultural heritage sites /chance finding	Training on legal requirements; No. of found places	All new construction areas; Borrow pits	Visual; Contractor's database	During construction works on permanent basis	Within budget	Contractor; SRA ES; (randomly);
	Road safety/ Accidents during road construction	Safety measures part of contract obligations; No. of complaints; No. of accidents.	All construction areas, including asphalt plants, borrow pits and adjacent roads	Visual; Contractor's database	Before/during construction works	Within budget	Contractor; PIU ES; SRA ES; (randomly);

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Environmental indicator / parameter	**Location**	**Frequency**	**Type of monitoring**	**Responsibility**	**Cost**
LAB ANALYSES / SITE MONITORING					
Soil contamination Hydrocarbons contaminations	Areas most vulnerable to the discharge of hydrocarbons	1 x prior to start of works; 1 x upon completion of construction – same sites	Accredited lab (sampling, lab analysis and data interpretation)	Contractor SE to approve sampling points and reports	Contractor costs
Ambient air emissions Ambient air quality during peak construction activities (CO, SO_2, NO_x, particulates PM10 and	Potentially most affected residential areas, houses	1 x prior to start of works	Accredited lab (sampling, lab analysis and data interpretation)	Contractor SE to approve sampling points and reports	Contractor costs

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
PM2.5, hydrocarbons, and benz(a)pyrene)	on roadside; pedestrian areas	1 x at the peak of construction inside each village affected by construction			
Ambient noise pollution Ambient noise levels during peak construction activities – compliance with maximum exposure limit of 70 dBA	Most affected residential areas along the Project route	Maximum noise impact period during construction in settlements; in case of complaint. If the results are unsatisfactory undertake weekly measurements	Handheld equipment (analyser) with application software	CS to approve sampling points and reports	Contractor costs
Vibration	Infrastructure (e.g. houses, walls, wells, etc.) in the immediate vicinity of construction sites or transport routes – especially where heavy equipment will be used.	Once prior to start of works and again upon completion of construction works in respective settlement	Inspection/documentation on the condition of relevant infrastructure (e.g. existing cracks on buildings or other physical damage)	Contractor with supervision engineer visual monitoring; photographic documentation	-

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
	Properties as indicated by owners				
Drinking water quality: Permanent risk of impact on local water resources due to the proximity of wells to the road edge The following physical-chemical parameters are to be monitored: pH, electroconductivity; suspended matter, BOD5, COD. The following specific pollutants are to be monitored: heavy metals, oil products; formaldehyde, E. coli, and total coliform.	Wells close to the road edge along C8 corridor.	1 x prior to start of works 1 x upon completion of construction (only at those wells where water was initially found to be suitable for drinking purposes)	Accredited lab (sampling, lab analysis and data interpretation)	Contractor SE to approve sampling points and reports	Contractor costs
VISUAL OBSERVATIONS MADE DURING SITE CHECKS					
Material supply					
Asphalt plant Possession of official permit / valid license	Asphalt plant	Prior to start of works	Inspection	SE	NA
Stone quarry Possession of official permit / valid license	Quarry	Prior to start of works / during construction	Inspection	SE	NA

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
Sand and gravel pit Possession of official permit / valid license	Sand and gravel borrow pit / separation	Prior to start of works / during construction	Inspection	Borrow pit or separation operator/ SE	NA
Soil for embankment construction Compliance with provision of license	Construction site	Prior to start of works / during construction	Inspection	Borrow pit or separation operator/ SE	NA
Material Transport					
Asphalt Truck load covered	Construction site	Unannounced inspections at least once weekly	Supervision	Contractor[25]/SE	NA
Stone Truck load covered	Construction site	Unannounced inspections at least once weekly	Supervision	Contractor/SE	NA
Sand & gravel Truck load covered	Construction site	Unannounced inspections at least once weekly	Supervision	Contractor/SE	NA
Soil Truck load covered	Construction site	Unannounced inspections at least once weekly	Supervision	Contractor/SE	NA
Transport routes Compliance with approved	Construction site	Unannounced inspections at least once weekly	Supervision	Contractor/SE	NA

[25] Here, CC means the CC's environmental manager / specialist

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
transport routes as per Contractor's Method Statement					
Construction Site – Construction Phase					
Noise level (neighbouring population; workers)	Most affected residential areas workplace	Maximum noise impact period during construction in settlements	Supervision	Contractor/SE	NA
Vibration Effects of vibration on properties	Properties as indicated by owners	Upon complaint	Visual inspection	Contractor/SE	NA
Dust impact (suspended particles)	At construction site and in particular in residential areas	Unannounced inspections during delivery of materials and during construction; upon complaint	Inspection / visual observation	Contractor/SE	NA
Traffic disruptions; problems	At and near construction site	Once per week at peak and non-peak hours	Visual inspections; observation	Contractor/SE	NA
Access to private property / land / public facilities	Construction site	Random checks minimum weekly during construction activities	Supervision	Contractor/SE	NA
Vehicle and pedestrian safety when there is no construction	At and near construction site	Random checks at least once weekly in the evening	Observation	Contractor/SE	NA

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
activity (Visibility; safety)					
Water and soil pollution from inappropriate material storage, management and use (Problems; compliance with approved site management plan)	Construction site; contractor's camp/yard	Unannounced inspections	Inspection; observation	Contractor/SE	NA
Tree plantations (Successful tree plantations / number of healthy trees growing. Replacement of any failed trees)	Along the project road	Towards the end of construction	Visual inspection	Contractor/SE	BOQ
Monitoring of implementation measures to cover temporary warehouses with construction materials, to avoid the risk to animals. Installation of warning signs regarding the risk of animals appearing on the roadway	Along the project road	Continuously	Visual	Contractor/Environment consultant	NA
Reinstating of disturbed areas to an acceptable state	Along the project road	On closure	Visual	Contractor	NA
Noise					
Monitoring of levels of environmental noise: equivalent	One time measurement	Standard referenced method (on-site	Contractor (via contract to accredited institution)		

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
noise levels and maximum noise levels during day and night times To be measured once prior to construction start to establish a Project baseline, on locations near the closest sensitive receptors identified by the Supervising Engineer, and in locations to establish background levels (e.g. at a distance of more than 300 m from the road)ș		analysis and data interpretation)			
Grievances – monitoring of implementation of Stakeholder Engagement Plan					
Monitoring of enforcement of compliance mechanism. Monitoring of stakeholder engagement activities prescribed by the SEP (implementation of actions, complaints received, response time, complaints satisfied) Monitoring of grievance redress process	Along the project road	Continuous	Stakeholder engagement	SRA	Implementation costs

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
Monitoring of social and environmental issues reported by the project communities	Along the project road	Continuous	Social and Environmental Impact Monitoring Committees	SRA	Implementation costs
Monitoring of social and environmental issues reported by the project communities	Along the project road	Continuous	Social and Environmental Impact Monitoring Committees	SRA	Implementation costs
Disruption of Access caused by inconsistent Road Design					
Consult the design documents with every affected community and improve the design to accommodate the issues raised by them	consultation	Before construction	consultation	SRA	
Cultural heritage					
Archaeological heritage in case of incidental archaeological discovery (chance find procedure)	Along the project road	As required (in a case of discovery)	Visual	Contractor	Contractor costs
Health and safety – monitoring of implementation of Construction OHS management plan, Community health and safety management plan and Emergency Response Plan					
Worker's health & safety (Appropriate PPE is worn by all workers; organization of bypassing traffic / securement of work site; availability of potable water and	Construction site	Unannounced inspections during work	Inspection	Contractor/SE	NA

Environmental indicator / parameter	Location	Frequency	Type of monitoring	Responsibility	Cost
mobile toilets for workers; incidences; accidents)					
Monitoring of enforcement of public safety procedures and operational health / safety during construction.	Construction site	Continuously	Inspection; observation	Contractor/SE	NA
Operations phase					
• Regular selection and collection of waste • Regular annual monitoring and control of storm water systems. • Regular maintenance of the storm water systems	Along the project road	Continuously	Visual inspection	SRA	NA

ANNEX 4. – Chance Finds Procedures

The chance finds procedure objectives are to identify and protect previously unrecorded cultural heritage sites, objects, or features from project-related damages. The protocol applies to potential cultural heritage objects, features or sites identified as a result of vegetation and topsoil removal and other ground disturbing construction activities. The procedure complements the other mitigation measures described in the LAW No. 218 of 09-17-2010 regarding the protection of the archaeological heritage. Published: 03-12-2010 in the Official Gazette No. 235-240.

Two types of chance finds are likely to be encountered during construction works: cultural and non-cultural heritage chance finds.

Non-cultural heritage chance finds may include modern objects and features as well as isolated artefacts. Individual artefacts, even out of their context, may be important indicators of the presence of nearby surface or subsurface cultural heritage sites.

Distinguishing between the two types of chance finds requires the expertise of an archaeologist.

The project's activities are related to repair and rehabilitation works for the exiting roads sectors and it is not expected to yield archaeological, paleontological or cultural findings of any significance because infrastructure works will occur in the existing road alignment and ROW.

However, there remains a possibility for (as yet undiscovered) sites of local cultural significance and archaeological sites to exist with project areas.

Bidding and contract documentation for Contractors will include a clause on chance find procedures and includes the following measures:

a) Stop all construction activities in the vicinity of the find until a solution is found for the preservation of these artefacts, or advice from the relevant authorities is obtained;

b) Delineate the discovered site or area; secure the site to prevent any damage or loss of removable objects;

c) Record details in Incident Report and take photos of the find

d) Notify the supervisory Engineer who, in turn, will notify the responsible local authorities;

e) Responsible local authorities would conduct a preliminary evaluation of the findings to be performed by archaeologists who will assess the significance and importance of the findings according to various criteria, including aesthetic, historic, scientific or research, social and economic values;

f) Decisions on how to handle the finding shall be taken by the responsible authorities which could result in changes in layout, conservation, preservation, restoration and salvage;

g) Implementation for the management of the finding communicated in writing; and

h) Construction work could resume only after permission is given from the responsible local authority concerning safeguard of the heritage.

Annex 5. Labor Management Procedures

Labor Management Procedures (LMP) are mandated by WB ESS2 to identify the main labor requirements and risks associated with a project and to determine the resources necessary to address project labor issues. The LMP is a living document to be reviewed and updated throughout development and implementation of the project. The LMP applies to all project workers, irrespective of contracts being full-time, part-time, temporary or casual.

The LMP can be found as a stand-alone document at www.asd.md

Annex **6**. - Guidelines For Storage, Handling And Disposal Of Hazardous and non-hazardous Waste,

Hazardous Waste

• For storing of hazardous waste (Used oil and waste oil, empty barrels/containers of oil, lubricant and grease, Contaminated cotton rags or other cleaning materials), the Contractor shall follow the guidelines while planning and designing the hazardous waste storage areas:

– The storage area should be provided with concrete floor;

– The storage area floor should be provided with secondary containment;

– Proper slopes as well as collection pit to be provided in the storage area to collect wash water and the leakages/spills etc.;

– Storage area should be provided with the flameproof electrical fittings;

– Automatic smoke, heat detection system should be provided in the sheds;

– Adequate fire fighting systems (ABC type fire extinguisher) should be provided for the storage area; and

– The Storage area shall be designed in such a way that the floor level is at least 150 mm above the maximum flood level.

Municipal Solid Waste

• The Contractor shall segregate and store bio-degradable and non-biodegradable municipal solid waste in two separate bins (primary collection point). The storage area should be provided with concrete floor;

• The Storage area shall be designed in such a way that the floor level is at least 150 mm above the maximum flood level.

• The storage area shall be enclosed, or the storage containers shall be covered to prevent vermis and scavengers from littering.

Construction and Demolition Waste

• The Contractor shall keep the construction and demolition waste within the premise or at a designated place for the collection of the C&D waste. The designated place shall be decided in consultation with the local body. The agreement with the local body shall essentially mention the end-use of the designated location. The designated site shall be away from:

– Located at least 1000 m away from sensitive locations; do not contaminate any water sources, rivers etc; and

– Lotal site has adequate capacity equal to the amount of debris generated;

– Public perception about the location of debris disposal site has to be obtained before finalizing the location;

– Productive lands are avoided; and available waste lands shall be given preference;

– Forest land shall be avoided.

• During the site clearance and disposal of debris, the contractor will take full care to ensure that the public or private properties are not damaged/affected and that the traffic is not interrupted.

• In the event of any spoil or debris from the sites being deposited on any adjacent land, the contractor will immediately remove all such spoil debris and restore the affected area to its original state to the satisfaction of the Authority Engineer.

• The contractor will at all times ensure that the existing water bodies and drains within and adjacent to the site are kept safe and free from any debris.

• In case the dumping operations are carried out in dry and windy condition Contractor will regulate the dumping operations so that the dust generation is minimised, or preferably carry out the operations in early morning when the environment is moist. The contractor may utilize effective water sprays during the delivery and handling of materials.

• Materials having the potential to produce dust will not be loaded to a level higher than the side and tail boards and will be covered with a tarpaulin in good condition.

• Any diversion required for traffic during disposal of debris shall be provided with traffic control signals and barriers after the discussion with local people and with the permission of Engineer.

• During the debris disposal, contractor will take care of surrounding features and avoid any damage to it.

While disposing debris / waste material, the contractor will take into account the wind direction and location of settlements to ensure against any dust problems. The contractor can also consider the use of dust screens to prevent dust pollution.

EMERGENCY SPILL CONTROL PROCEDURE

Should a spill occur, either though spillage or equipment failure, the applicable emergency spill procedure outlined below must followed.

Spill Procedure: In the case of a spill, overflow or release fluid into the stream waterway (whether water is flowing during the spill or not), any actions that is practical and safely possible to control the situation, shall be implemented.

• Stop the flow

- ✓ Stop the release into the stream waterway

- ✓ Shutdown equipment
- ✓ Close valves and pumps
- ✓ Plug hoses

• Remove Ignition Sources

Shut off vehicles and other engines

• Do not allow torches, mobile phone, vehicles, smoking or other sources of ignition near the area. Keep a fire extinguisher on hand but keep it a safe distance away from the potential ignition source (if a fire starts, the extinguisher must be easily accessible).

• Contact the environmental Officer and initiate Emergency Response

• Notify the site supervisor and the Contractor‘s Environmental Engineer and Health and Safety Officer as soon as possible

• The Environmental Engineer of the Contractor will review the situation and decide if Emergency Services like Fire Brigade are required

• Appropriate parties to be notified of the spill are The contractor‘s Project Manager, The Authority Engineer through his designated Environmental Officer, The PIU, Regulatory Agencies like Pollution Control Board, Municipal Authorities, as applicable.

Clean up and Disposal

• Identify nature and type of chemical/fuel spilled through information available onsite or from first responder.

• Refer to the MSDS for any special instruction

• Wear personal protective equipment (PPEs) viz. chemical resistant gloves, safety boots ,safety glasses etc. Reach for the spill kit placed at the Contractor Camp.

• In case of spill on land create a dyke on the spill and use readily available sand, saw dust to contain the spill. Use absorbent pads, to clean up the spill. In case of spill in a water channel which is dry use the above method.

• In case the spill occurs within a water body stop any agitation to the water body and place absorbent material to remove the spill.

• Recover the spill contaminated absorbent materials and use pads and store the same in hazardous Waste‖ containers and store it in the waste storage area for disposal.

• For spill on unpaved areas such as soil, remove the upper layer of soil in the contaminated area with a shovel and transfer it to the hazardous waste containers using a bucket.

• If any of your PPEs have been exposed to spill material dispose it off safely in hazardous waste containers

Reporting

• The Contractor‘s Environmental Officer will document the event and submit reports to the Authority Engineer. The Authority Engineer would send a report of the incident immediately with its observations to the PIU and Environmental Officer at the PMU.

• If required the Client would direct the Contractor to imitate the process of reporting to the regulatory agencies. like the Pollution Control Board.

Procedure Review

• The Environmental Office will review the report, determine if changes are required to procedures and recommend implementation of all required changes. He would also intimate the management of such incident.

Annex 7. Guidance Note on Site Clearance

Vegetation Clearance

• Vegetation clearance shall comprise uprooting of vegetation, grass, brushwood, shrubs, stumps, trees and saplings of girth up to 30 cm. measured at a height of one meter above the ground level. Clearing activities should be carried out outside of bird breeding /nesting periods. Where only clearance of grass is involved it shall be measured and paid for separately. The procedure/ steps involved for uprooting, skating and felling trees are described below.

Uprooting of Vegetation

• The roots of trees and saplings shall be removed to a depth of 60 cm. below ground level or 30 cm. below formation level or 15 cm below sub grade level, whichever is lower.

• All holes or hollows formed due to removal of roots shall be filled up with earth rammed and levelled.

• Trees, shrubs, poles, fences, signs, monuments, pipe lines, cables etc. within or adjacent to the area, which are not required to be disturbed during vegetation clearance shall be properly protected by the contractor at his own cost.

Staking and Disposal

• All useful materials obtained from clearing and grubbing operation shall be staked in the manner as directed by the Consultant.

• Trunks and branches of trees shall be cleared of limbs and tops stacked properly at the places indicated by the Consultant. These materials shall be the property of the Government.

• All unserviceable materials are disposed off in such a manner that there is no livelihood of getting mixed up with the materials meant for construction.

Felling Trees

• Marking of tress: Trees, above 30 cm girth (measured at a height of one meter above ground level) to be cut, shall be approved by the Consultant and then marked at the site.

• Felling of trees: Felling of trees shall include taking out roots up to 60 cm. below ground level or 30 cm. below formation level or 15 cm. below sub-grade level, whichever is lower.

• Filling: All excavations below general ground level arising out of removal of trees, stumps etc. shall be filled with suitable material in 20 cm. layers and compacted thoroughly so that the surface at these points conform to the surrounding area.

• Sizing: The trunks and branches of trees shall be cleared of limbs and tops and cut into suitable pieces as directed by the Consultant.

• Staking: The serviceable materials shall be staked in the manner as directed by the Environmental specialist of Supervision Consultant.

Disposal: The material, which cannot be used or auctioned shall be removed from the area and disposed off as per the directions of the Consultant. Unsuitable waste materials should not get mixed with construction material during disposal.

Annex 8. OHS Guidelines

The objective of this guideline is to provide guidance on the:

- Key principles involved in ensuring the health and safety of workers is protected;
- Preparation of Health and Safety plans

The key reference document for this Guideline is the World Bank Group's *Environmental, Health, and Safety (EHS) Guidelines* and the World Bank's ESS 4.

1. Principles

Employers must take all reasonably practicable steps to protect the health and safety of workers and provide and maintain a safe and healthy working environment. The following key principles are relevant to maintaining worker health and safety:

1.1 Identification and assessment of hazards

Each Employer must establish and maintain effective methods for:

- Systematically identifying existing and potential hazards to Employees;
- Systematically identifying, at the earliest practicable time, new hazards to Employees;
- Regularly assessing the extent to which a hazard poses a risk to Employees.

1.2 Management of identified hazards

Each Employer must apply prevention and control measures to control hazards which are identified and assessed as posing a threat to the safety, health or welfare of Employees, and where practicable, the hazard shall he eliminated. The following preventive and protective measures must be implemented order of priority:

- Eliminating the hazard by removing the activity from the work process;
- Controlling the hazard at its source through engineering controls;
- Minimizing the hazard through design of safe work systems;
- Providing appropriate personal protective equipment (PPE).

The application of prevention and control measures to occupational hazards should be based on comprehensive job safety analyses (JSA). The results of these analyses should be prioritized as part of an action plan based on the likelihood and severity of the consequence of exposure to the identified hazards.

1.3 Training and supervision

Each Employer must take all reasonably practicable steps to provide to Employees (in appropriate languages) the necessary information, instruction, training and supervision to protect each Employee's health and to manage emergencies that might reasonably be expected to arise in the course of work. Training and supervision includes the correct use of PPE and providing Employees with appropriate incentives to use PPE.

1.4 General duty of Employees

Each Employee shall:

- Take all reasonable care to protect their own and fellow workers health and safety at the workplace and, as appropriate, other persons in the vicinity of the workplace;
- Use PPE and other safety equipment supplied as required; and Not use PPE or other safety equipment for any purpose not directly related to the work for which it is provided.

1.5 Protective clothing and equipment

Each Employer shall:

- Provide, maintain and make accessible to Employees the PPE necessary to avoid injury and damage to their health;
- Take all reasonably practicable steps to ensure that Employees use that PPE in the circumstances for which it is provided; and
- Make provision at the workplace for PPE to be cleaned and securely stored without risk of damage when not required.

2. Design

Effective management of health and safety issues requires the inclusion of health and safety considerations during design processes in an organized, hierarchical manner that includes the following steps:

- Identifying project health and safety hazards and associated risks as early as possible in the project cycle including the incorporation of health and safety considerations into the worksite selection process and construction methodologies;
- Involving health and safety professionals who have the experience, competence, and training necessary to assess and manage health and safety risks;
- Understanding the likelihood and magnitude of health and safety risks, based on:
    - The nature of the project activities, such as whether the project will involve hazardous materials or processes;
    - The potential consequences to workers if hazards are not adequately managed;
- Designing and implementing risk management strategies with the objective of reducing the risk to human health;

- Prioritising strategies that eliminate the cause of the hazard at its source by selecting less hazardous materials or processes that avoid the need for health and safety controls;
- When impact avoidance is not feasible, incorporating engineering and management controls to reduce or minimize the possibility and magnitude of undesired consequences;
- Preparing workers and nearby communities to respond to accidents, including providing technical resources to effectively and safely control such events, in particular relating to traffic;
- Improving health and safety performance through a combination of ongoing monitoring of facility performance and effective accountability.

3. Documentation

A Health and Safety Plan must be prepared and approved prior to any works commencing on site. The H&S Plan must demonstrate the Contractor's understanding of how to manage safety and a commitment to providing a workplace that enables all work activities to be carried out safely. The H&S Plan must detail reasonably practicable measures to eliminate or minimise risks to the health, safety and welfare of workers, contractors, visitors, and anyone else who may be affected by the operations. The H&S Plan must be prepared in accordance with the World Bank's EH&S Guidelines and the relevant country health and safety legislation.

4. Training and Awareness

Provisions should be made to provide health and safety orientation training to all new Employees to ensure they are apprised of the basic site rules of work at / on the site and of personal protection and preventing injury to fellow Employees. Training should consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disaster, as appropriate. Training should also include HIV/AIDS awareness training.

Visitors are not permitted to access to areas where hazardous conditions or substances may be present, unless appropriately inducted.

5. Personal Protective Equipment (PPE)

Personal Protective Equipment (PPE) provides additional protection to workers exposed to workplace hazards in conjunction with other facility controls and safety systems. PPE is considered to be a last resort that is above and beyond the other facility controls and provides the worker with an extra level of personal protection. The table below presents general examples of occupational hazards and types of PPE available for different purposes. Recommended measures for use of PPE in the workplace include:

- Active use of PPE if alternative technologies, work plans or procedures cannot eliminate, or sufficiently reduce, a hazard or exposure;
- Identification and provision of appropriate PPE that offers adequate protection to the worker, co-workers, and occasional visitors, without incurring unnecessary inconvenience to the individual;
- Proper maintenance of PPE, including cleaning when dirty and replacement when damaged or worn out. Proper use of PPE should be part of the recurrent training programs for Employees

- Selection of PPE should be based on the hazard and risk ranking described earlier in this section, and selected according to criteria on performance and testing established

4. Monitoring

Occupational health and safety monitoring programs should verify the effectiveness of prevention and control strategies. The selected indicators should be representative of the most significant occupational, health, and safety hazards, and the implementation of prevention and control strategies. The occupational health and safety monitoring program should include:

- Safety inspection, testing and calibration: This should include regular inspection and testing of all safety features and hazard control measures focusing on engineering and personal protective features, work procedures, places of work, installations, equipment, and tools used. The inspection should verify that issued PPE continues to provide adequate protection and is being worn as required.
- Surveillance of the working environment: Employers should document compliance using an appropriate combination of portable and stationary sampling and monitoring instruments. Monitoring and analyses should be conducted according to internationally recognized methods and standards.
- Surveillance of workers health: When extraordinary protective measures are required (for example, against hazardous compounds), workers should be provided appropriate and relevant health surveillance prior to first exposure, and at regular intervals thereafter.
- Training: Training activities for Employees and visitors should be adequately monitored and documented (curriculum, duration, and participants). Emergency exercises, including fire drills, should be documented adequately.
- Accidents and Diseases monitoring. The Employer should establish procedures and systems for reporting and recording:
    - Occupational accidents and diseases
    - Dangerous occurrences and incidents

These systems should enable workers to report immediately to their immediate supervisor any situation they believe presents a serious danger to life or health. Each month, the contractor shall supply data on trainings delivered, safety incidents prevented and any accidents to the Client's Consulting Engineer for reporting to the MPWT. These data are to also include incidents related to any sub-contractors working directly, or indirectly, for the Contractor.

The SRA and World Bank shall be notified of any incident in accordance with the standards below:

All Class 1 and Class 2 health and safety incidents must be formally investigated and reported to the SRA and World Bank through an investigation report. This report shall be based on a sufficient level of investigation by the Contractor so that all the essential factors are recorded. Lessons learnt must be identified and communicated promptly. All findings must have substantive documentation. As a minimum the investigation report must include:

- Date and location of incident;
- Summary of events;
- Immediate cause of incident;
- Underlying cause of incident;
- Root cause of incident;
- Immediate action taken;
- Human factors;
- Outcome of incident, e.g. severity of harm caused, injury, damage;
- Corrective actions with clearly defined timelines and people responsible for implementation;
- Recommendations for further improvement.

ANNEX 9. MINUTES OF ESMP PUBLIC CONSULTATIONS