



OEC Engineering and Construction

Environmental and Social Impact Assessment for the Proposed Luena-Saurimo Railway Line (260 km), Angola

ESIA Report – Executive Summary

2720234-R02-04

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RSK GENERAL NOTES

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0 EXECUTIVE SUMMARY

This Executive Summary provides a high-level overview of the project and highlights the key findings, potential impacts and management measures.

Background and rationale of the Project

Angola's Ministry of Transport plans to modernise national transport by building a 260 km railway between Luena and Saurimo, linking the Benguela Railway with the future Luanda Railway and improving passenger and goods movement across Moxico and Lunda Sul Provinces (see Figure 0-1). As the railway Project seeks international funding, it follows Angolan regulations and international standards mainly the IFC Performance Standards Equator Principles and World Bank EHS Guidelines. This Project represents a significant infrastructure investment to support Angola's National Transport and Road Infrastructure Master Plan, aligning with the government's goals for sustainable development and economic diversification, as well as benefits that include job creation, skills development, economic growth, and improved access between towns for local communities.

The Ministry of Transport (MINTRANS) is the Project proponent, with OECI S.A./Bento Pedroso Construções S.A. as design-build contractors. Key government bodies, lenders, and regulators will oversee compliance with all applicable requirements.

Governance framework and Lenders' standards

The Luena–Saurimo railway project's ESIA complies with Angolan regulatory requirements, including all necessary environmental and social permits, licences, and authorisations. The Project ESIA approach also aligns with key Lender Appraisal Standards, including the IFC Performance Standards (1–8), World Bank EHS Guidelines, Equator Principles IV, and OECD Common Approaches. The ESIA further integrates guidance on greenhouse gas emissions, climate change risk, the UN Guiding Principles on Business and Human Rights, relevant international treaties, and corporate governance practices, including OEC's Standard Operating Procedures. It also outlines the institutional framework and the roles of the key implementing agencies.

Based on list of activities in Annex II of the Angola's Presidential Decree No. 117/20 of 22 April 2020 that guides ESIA and permitting process, the proposed Project is classified as Category B and the relevant activity identified is activity (I) Railway lines with a length equal to or greater than 5 km. However, as per IFC and OECD (Legal Instruments - OECD/LEGAL/0393, 2025) categorisation, the proposed Project is classified as Category A based on the nature, scale and potential environmental and social risks and impacts of Project. Regardless of project category assigned, the proposed Project is committed to implementing highest standards of environmental and social sustainability throughout all phases of the Project.

Project infrastructure and facilities

The Project is located within two Provinces of Moxico and Lunda Sul; and traverses four municipalities (Moxico, Camanongue, Dala and Saurimo) and approximately 33 Project-Affected Communities (PACs) along the proposed railway line. The 260 km Luena-Saurimo railway line will have a 30 m right of way both ways from centre line; it will be a single line track platform narrow metric gauge (1,067 mm) using concrete sleepers and maximum speed of 100 km/h and 80 km/h for passenger and freight trains respectively. The trains will be diesel-powered locomotive and operates during day time only at the moment. The railway line runs almost parallel to the existing EN250 from Luena town to chainage KM4+500 where the alignment curves north across Lumeje river. The alignment continues almost parallel to the existing EN 180 road from KM21+500 to KM233+00 where it diverts north-easterly and ends east of the Saurimo airport. The railway corridor is divided into 11 sections whereby each section has its main facilities and infrastructure.

Construction is scheduled to commence in 2026 lasting for approximately 60 months, with a 100-year operational design lifespan. The Project facilities and infrastructure are summarised below:

- construction camp sites: two main camps (Ndongue and Caiaza) and three support camp sites (Luena, Luele and Saurimo)
- concrete works/batching plants: two plants
- passenger stations: eight stations (Luena, Ndongue, Camanongue, Dala, Luele, Caiaza, Saquembue and Saurimo). Saurimo will be the only major station
- bridges and culverts: 11 composite deck bridges across 11 rivers; and 45 main culverts
- sidings: two locations with passing loops
- crossings: potential livestock, pedestrian, and road crossings: nature, type, design and specific locations of the crossings to be determined during detailed design. At least 100 crossings of different types (e.g. pedestrians, gravel roads, earth roads, livestock, community access) exists across the proposed railway line
- signalling and telecommunications (vertical signage 260km, control centres, fibre optic and access chambers)
- sleeper production and storage facilities: the current plan is to have a sleeper plant near Dala. OEC are also analysing an option of importing sleepers from South Africa
- abstraction of water: five boreholes, one at each camp
- spoil dumpsites: 11 locations i.e. one in each section
- waste management facilities: one collection point/centre at each camp
- waste water management facilities: one at each camp
- perimeter fencing: the whole alignment will not be fenced to allow continued community access. Fence at the major station only (Saurimo)
- rock quarries and rock crushers: four existing quarries along the corridor have been identified for potential use
- access roads: construction and operation/maintenance traffic movements will use both a 5 m length strip on each side of the railway alignment. In alternative, the EN 180 road will be also used
- workers accommodation: to be provided at the Camps, and in line with EBRD Guidance
- borrow pits: none will be required for the Project
- tunnels: none will be required/constructed for the Project
- marshalling yard: none will be required/constructed for the Project.

Further, demining of the entire corridor has been completed successfully. As per IFC and OEC standards, there are no Associated Facilities connected to the Project.

The Project construction and operation and maintenance activities will require different materials and resources at different quantities such as land (1,560 ha permanent acquisition), water (252,000 m³), energy (137,200,350 kWh and 51,596,762 litres of diesel for construction), track materials (15,000 tons of steel, 532 km rails, 396,000 sleepers, concrete 120,000 m³, and aggregate 850,000 m³), workforce (1,000 employees at peak), and subsequent waste generation. However, the Project's preliminary design endeavoured to embed various resource efficiency measures and principles to optimise the use of natural resources involved in the Project process. The resource use efficiency is an ongoing process which will be further incorporated during detailed design iterative process whereby the Project shall adopt best practices in sustainability, energy efficiency, and occupational health, consistent with the OEC policies and procedures, Angolan legislative requirements and international standards.

The Project's primary supply chain encompasses a range of specialized materials, equipment, engineering systems, and high-value components sourced both internationally (UK, Poland, South Africa and Netherlands) and within Angola. The Project will promote responsible sourcing practices through established supply chain sustainability commitments.

Alternatives considered

The Luena-Saurimo railway Project considered several technically, sustainability and financially feasible alternatives during planning and preliminary design stage through to detailed design phases to ensure a balanced and cost-effective options with minimal environmental and social impacts. Key alternatives assessed included:

- no-go alternative: not viable, as it would prevent the needed linkage between Angola's railway networks
- design and alignment alternatives: several options and iterative adjustments were made to avoid involuntary resettlement especially physical displacement, large wetlands and settlements
- drainage infrastructure including river crossings, bridge and culvert basic designs were adapted to maintain natural drainage
- stations and camps design and reconfiguration alternatives to minimise resettlement, environmental impacts and maintain community convenient access to stations
- road/community crossings alternatives for continued community access throughout Project phases
- energy source alternatives including combination of various renewable sources
- water source alternatives: considerations of new boreholes at each camp, supplying water for camps and stations
- waste management alternatives based on waste hierarchy
- resource and materials alternatives: Use of existing quarries and licensed suppliers
- locomotive options considerations (diesel powered, electrical, hydrogen fuel-cell, hybrid).



Extensive, inclusive, transparent and culturally-appropriate engagement activities have been undertaken along the railway corridor covering all PACs at varying levels in compliance with IFC, EP4 and Angolan legislative requirements. A Stakeholder Engagement Plan (SEP) including a Grievance Redress Mechanism was prepared. Stakeholder engagement rounds/phases are highlighted below:

- first phase during Scoping Stage (September 2023 and March – April 2024), the team held public meetings with 29 communities/settlements/neighbourhoods at 18 locations along the proposed railway corridor
- second phase during detailed baseline assessments for ESIA (May – June 2024), the team held focus group discussions with six communities at six locations (Table 5-7 and Table 5-8)
- third phase - Resettlement Policy Framework (RPF) fieldwork engagements undertaken in Dec.2025 with Provincial Governments (Moxico and Lunda Sul), Municipal Authorities, and Traditional Authorities (local leaders – Sobas) in all 33 PACs along the railway line. These engagements focused solely on resettlement issues. The RPF engagements are dealt with separately in a separate RPF Report
- fourth phase engagement will be undertaken as public disclosure of the ESIA Report package in compliance with IFC PS1 and EP4 requirements
- further, additional consultations at each PAC will be conducted during development of the Resettlement Action Plan (RAP) and Livelihood Restoration Plan (LRP) along with detailed design stage before commencement of construction works. Consultations shall continue throughout all phases of the Project.

- community is ready and willingly accepts development of the railway because of anticipated positive socio-economic impacts
- improved mobility of goods and services between the two Provinces

- improved livelihoods and reliable means of transport
- opportunities for local economy development and expanded investments in the two Provinces
- expectation on reduced prices of goods and services especially in Lunda Sul after connectivity to Benguela railway
- generation of local employment opportunities during construction
- community crossings and access to the farms and water sources mainly rivers after railway construction
- potential involuntary physical displacement and impacts on crops/farms to be compensated as a result of Project
- impacts on graves and associated relocation if railway line will cross graveyards
- potential impact on local medicinal trees (Mussivi) if cleared for construction
- biodiversity impacts on local flora and fauna
- proposed stations locations closer to the communities
- regular updates on details on project design especially project schedule, timing, exact alignment of the railway track and station's locations
- continued stakeholder engagements at all levels and feedback mechanism throughout the Project to enhance sustainability

Baseline context

The Luena – Saurimo railway project area is characterised by a distinct socio-economic, cultural, and environmental landscape. The project Area of Influence (AoI) has been defined for various disciplines to guide the baseline and ESIA assessment process.

The proposed railway line traverses 33 project affected communities. Most communities centres are located nearby rivers that will be crossed by the railway line. These communities along the railway corridor largely rely on subsistence farming, livestock keeping and informal economies, with significant disparities in literacy and access to education and healthcare. Traditional leadership structures, such as Sobas, play a critical role in decision-making and land allocation. The study also highlighted human rights and gender dynamics, emphasising the need for inclusive community engagement. Human Rights Risk Assessment identifies salient human rights risks and opportunities, aligned with the Universal Declaration of Human Rights (UDHR). Further, there are no indigenous peoples or communities identified or exist within the project corridor and its area of influence at present.

The baseline cultural heritage for the Luena-Saurimo railway project identified both tangible and intangible cultural assets within the Project AoI. Key findings highlight the cultural richness of the region, such as traditional dances, rituals, medicinal plant usage, and significant historical artifacts like masks, monuments, cemeteries, and sacred sites. The Project's design has prioritised the avoidance of graves and cemeteries to prevent relocation and associated community concerns.

The project area lies within the Eastern Plateau, characterised by wet and dry seasons, annual rainfall of about 1,070 mm, and temperatures between 11°C and 34°C. The landscape includes flat-topped hills and plateaus with significant hydrological features like wetlands, rivers, and seep zones.

The baseline noise environment reflects a typical rural soundscape, with natural sounds (wind, insects, birds), livestock, human activities, and vehicle noise, especially near access roads and the EN180 highway, as well as farming and school-related noise.

Air quality is mainly influenced by outdoor fossil-fuel cooking and waste burning. PM10 and PM2.5 levels vary, with some locations exceeding WHO guidelines, though monitoring durations were short. Ozone (O₃) exceeded WHO peak-season guidelines, typical for remote dry areas, while CO remained within acceptable limits.

Soil types range from well-drained to poorly drained, and apart from eroded soils in limited parts of the Project area, there is no evidence of geological hazards within 50km of the Project corridor. Hydrological studies highlighted sensitive areas such as wetlands and floodplains within the Congo and Zambezi basins. The railway line crosses 11 major rivers. The project area contains multiple floodplain wetlands and rivers, generally maintaining water quality suitable for aquatic life, though some parameters may affect sensitive species. Floodplain wetlands and rivers supporting community activities such as fishing and agriculture are classified as high-sensitivity zones.

Ecologically, the railway corridor traverses Angolan Miombo woodlands and the Kasai and Zambezian Headwaters freshwater ecoregions, areas of high biodiversity value that provide key ecosystem services such as water regulation, soil stability, carbon sequestration and cultural benefits. The corridor includes natural, agricultural and modified habitats, with IHAS results indicating adequate to good habitat conditions supporting diverse macroinvertebrates. Six vegetation/habitat units were identified, including woodlands, forests and aquatic areas, all important for ecosystem services and biodiversity support. There are no critical habitats identified within the Project area. The nearest protected area, Cameia National Park, lies over 50 km away, outside the project's direct AoI, with no overlap with Endemic Bird Areas. The wider region maintains significant ecological value.

Key impacts of concern and assessment

The overall negative impacts identified for the construction and operational phase were found to have a pre-mitigation impact risk rating of Major and Moderate. During these phases, several major positive socio-economic impacts were also identified. For all negative potential impacts, corresponding mitigation and monitoring measures have been developed. These measures are designed to manage the impacts satisfactorily, reducing their risk rating to Minor, Negligible, or No Effect and ensuring no residual significant impacts remain. These potential impacts are broadly grouped into positives and negatives.

Key benefits from the Project includes:

- direct local employment opportunities during construction and operation phases
- indirect employment opportunities
- technology transfer and skills development
- income generation and benefits to local suppliers
- improved community mobility and accessibility, flow of goods and services
- local economy and livelihoods improvement

Key negative impacts of concern includes:

- involuntary resettlement related impacts from land acquisition
- severance and community accessibility to farms, rivers and connectivity
- potential for localised flooding/inundation and sedimentation in some parts of the alignment
- local drainage alteration
- community health and safety during construction and operation phases
- population influx and associated impacts
- occupational health and safety risks during construction and operation
- habitats fragmentation/loss and ecological disturbances

- potential for waste generation and associated contaminations
- deterioration/disturbance of cultural heritage aspects and social fabric
- short term elevated noise and air emissions during construction

Cumulative impacts

Cumulative impacts from the Luena–Saurimo railway were assessed in relation to existing and planned developments in the area, including the 220 kV transmission corridor, EN180 road rehabilitation, Saurimo Ring Road, a clay mine, the Sonangol fuel depot, University Lueji a’Nkonde, the Saurimo Industrial Complex, and water treatment plants in Saurimo and Dala. These combined activities contribute to overlapping environmental, social, and cultural pressures during both construction and operation.

The assessment identified cumulative effects on the physical environment (higher dust and exhaust emissions, noise, reduced water levels and quality, and increased runoff), the biological environment (vegetation loss, invasive species, wildlife mortality), and the socio-economic environment (employment benefits but also inflation, strain on services, disease burden, social tensions, and road accidents). Cultural heritage may experience restricted access, noise interference during events, and loss of native medicinal plants.

Management measures and plans

The Luena–Saurimo Project incorporates comprehensive environmental and social management through topic-specific recommended mitigation measures and sub-plans aligned with national and international requirements. These are consolidated into a stand-alone Environmental and Social Management Plan (ESMP), which details measures to avoid, minimise, or mitigate all identified risks and impacts. The Project is committed to the development and executing of a site-specific Construction ESMP along with the proposed sub-plans throughout all phases. For the operational phase, an Environmental and Social Management System (ESMS) will be established to integrate all measures, define roles, and ensure long-term monitoring, reporting, and compliance.

Conclusion

The ESIA concludes that the proposed project preliminary design has already prioritised avoiding and minimising adverse impacts and integrated safety measures into the design plans. The Project will follow strict adherence to construction and operational management plans and mitigation measures to enable the reduction and offsets of the identified potential impacts and will therefore have no anticipated significant residual impacts. The mitigation measures will enable the long-term sustainability of ecological systems and enhance the socio-economic benefits while addressing community vulnerabilities.

In summary, the nature and the physical footprint of the project, as well as the scale will potentially give rise to negative impacts in both the construction and operational phases. However, through mitigating the majority of impacts can be mitigated to Minor, No effect or Negligible.