

Environmental and Social Data Sheet

Overview

Project Name:	BHOPAL METRO RAIL PROJECT PHASE 1
Project Number:	2017-0403
Country:	India
Project Description:	The project concerns the construction of two lines of metro totaling 31 km with 30 stations and purchase of a related fleet of metro cars in Bhopal, Madhya Pradesh, Central India.
EIA required:	No
Project included in Carbon Footprint Exercise ¹ :	yes

(details for projects included are provided in section: "EIB Carbon Footprint Exercise")

Environmental and Social Assessment

Environmental Assessment

The project is consistent with the Comprehensive City Development Plan to 2041 for Bhopal, that was subject to consultation of stakeholders and the Comprehensive Mobility Plan, 2008, that was also subject to consultation incl. public workshops. The latter is currently being revised.

If located in the EU, the project would fall under Annex II of EIA Directive 2011/92/EU, in which case it would be subject to screening by the Competent Authority which would decide whether an EIA procedure is required or not. As per provisions of the Indian EIA Notification dated September 2006, any new project or the expansion or modernization of any existing industry or project listed in Schedule I of the notification shall submit an application for clearance to the Ministry of Environment and Forests (MOEF), Government of India. Since metro rail projects are not included in Schedule I of the Notification, the project does not require an environmental clearance certificate from the MOEF nor a related EIA procedure.

Nevertheless, on request of EIB, the Promoter has voluntarily carried out an Environmental Impact Assessment (EIA) in line with EIB standards and prepared an EIA report consistent with the requirements of the EIA Notification, 2006. The EIA report has been approved by the Promoter and disclosed locally and on the EIB website.

The EIA covers all elements of the project, which is a major element of the first phase of the staged construction of a longer network of metro lines in the city. The project concerns the construction of two new metro lines (the North-South corridor and the East-West corridor),

¹ Only projects that meet the scope of the Carbon Footprint Exercise, as defined in the EIB Carbon Footprint Methodologies, are included, provided estimated emissions exceed the methodology thresholds: 20,000 tonnes CO₂e/year absolute (gross) or 20,000 tonnes CO₂e/year relative (net) – both increases and savings.

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together with the necessary metro fleet. Roughly 3 km of the line and 2 stations will be underground and the balance 28 km of the line and 28 stations are elevated. A maintenance depot is to be constructed near Subhash Nagar of area about 26.4 hectares approx., which land has already been acquired.

During the earlier planning stages of the project, the relevant local authorities based on traffic and engineering studies considered the feasibility of several metro corridors. The criteria for selecting the now proposed corridors included: traffic demand/ridership, accessibility and integration with existing public transport nodes, available right of way within major roads, ground conditions, capital and operating costs, availability of land for the depots and stations as well as minimum disturbance/avoidance of heritage structures. The selected alignment follows mostly the central median of a major road artery in the north and east-west corridor of the city whilst in the most densely populated central area the alignment is underground. Station locations have been selected to maximise ridership and ease intermodal connections.

The main residual negative environmental impacts of the project include: (i) permanent conversion of open land to depot; (ii) cutting down of about 2 200 trees; (iii) finite use of scarce, sometimes carbon intensive, materials, such as cement; and (iv) noise, vibration and visual intrusion for properties adjacent to the alignment. Other negative impacts are temporary and localised. According to the ESIA, the project does not impact any nature conservation areas or national parks.

The main mitigants proposed are as follows: (i) compensatory reforestation in line with national legislation; (ii) various energy saving measures such as regenerative braking and use of solar panels; (iii) noise reduction measures (i.e. rubber dampers on the rails and use of a U girder for the elevated part of the alignment which acts in part as a noise barrier); and (iv) reuse of excavated material where feasible and disposal to waste in a regulated manner.

Environmental measures are documented in an Environmental Management Plan (EMP) and as appropriate, have been and will be included as part of the works contract conditions. Potential settlement of buildings situated above the tunnels will be monitored and adequate insurance cover put in place to compensate or address potential damage, if any.

The main positive environmental impacts of the project, resulting from reduced private vehicle use include: reduction in local polluting air emissions, road noise and vibration; road safety improvements; and a modest reduction in greenhouse gas emissions compared to a situation without building the metro.

The project has low climate risk, as there are no major natural hazards due to climate change foreseen that might affect the project. It is envisaged that the climatic conditions prevailing at Bhopal with respect to precipitation, floods, temperature, humidity, winds etc., would not pose any major risk to the proposed metro system, which is mostly elevated built on viaducts. For the underground portion of the metro alignment, necessary measures would be in place during extreme rainfall events or flood situations.

EIB Carbon Footprint Exercise

With the project, the annual emissions in a standard year of operation were estimated at 45.5 kT CO₂ equivalent per year (absolute emissions). Without the project, namely with the current mode split between private vehicles and buses, the annual emissions were estimated at 51.9 kT CO₂ equivalent per year (baseline emissions).

Therefore, the emissions savings for the project in a standard year of operation were estimated to be approximately (-) 6.3 kT of CO₂ equivalent per year, a reduction of 12%.

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These calculations are based on the current country grid². As the carbon footprint of the Indian grid will improve, it is expected that so will the CO₂ performance of the metro. In addition, the Promoter is planning to source its traction and auxiliary power from a new solar farm installation planned to be functional in 2021 and install solar panels on the depot and stations roof, which could further reduce the carbon footprint of the project.

For the annual accounting purposes of the EIB Carbon Footprint, the project emissions will be prorated according to the EIB lending amount signed in that year, as a proportion of project cost.

Social Assessment

The main adverse social impact is related to involuntary resettlement. Assessment indicates that the project shall require permanent acquisition/transfer of the total land of 15.1 hectares (ha), of which 12.37 ha is government land (excluding of Government Land for Depot) and 2.73 ha is private land impacting around 954 households. A complete assessment of land acquisition and resettlement will be known once the design and census of affected households for all sections is completed. All attempts will be made during the final execution of the project to minimize land acquisition, resettlement and adverse impacts on people in the project area through careful localised engineering design.

The promoter is finalizing a Resettlement Policy Framework (RPF) consistent with EIB requirements. A draft RPF has been subject to consultation with Project Affected Persons. A final RPF will be disclosed before contract signature. To avoid any disproportionate negative environmental and/or livelihood impacts on vulnerable groups, identified vulnerable households will receive additional financial and in-kind assistance.

A Resettlement Action Plan (RAP) is under preparation consistent with EIB requirements. This RAP is being prepared in consultation with all project-affected persons and will be disclosed on the website of the Promoter and EIB. The RAP for the East-West and North South corridor, consistent with the RPF, is being developed concurrently with the detailed designs. The RAP is to be implemented in a manner consistent with the handover of site to works contractors.

In North-South corridor the project passed by a slum near All India Institute of Medical Sciences (AIIMS). This slum is currently being resettled through comprehensive slum rehabilitation programme in Bhopal. This resettlement is therefore not due to the project and is not covered under the project RAP.

This slum rehabilitation program is led by the Government of Madhya Pradesh to address all basic needs such as health, education, roads, sanitation and drainage infrastructure. The strategies for slum improvement are focused on making Bhopal a 'Slumless City'. This is planned to be achieved by providing sustainable and economical housing options to the slum dwellers under various relocation and rehabilitation programs. The housing strategies for the urban poor are focused on facilitating the proper land use, providing a marketable and legal title to the landowner and providing all infrastructural services for an environmentally sustainable living place.

In addition to private commercial and residential buildings, there are some common property assets such as religious structures and local utilities that may be affected due to the proposed alignment – approximately 81 in all. The unavoidable loss of such assets will be compensated through replacement elsewhere or a suitable financial mechanism.

² EIB Methodologies for the Assessment of Project GHG Emissions and Emission Variations, Table A1.3 Country Specific Emissions Factors, December 2018

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Other potential social risks arising due to the project are: (i) poor application of relevant labour standards related to employee working conditions during construction and operation; and (ii) poor occupational and community health and safety during construction. These will be addressed primarily through the inclusion of contractual obligations for the first tier suppliers and contractors, which will be enforced by the Promoter's supervision team and external supervision in environmental, health & safety and social matters.

Public Consultation and Stakeholder Engagement

The promoter has performed several rounds of administrative consultation as well as several rounds of public consultation during the preparation of the various design and EIA reports in 2018. The draft RPF was subject to consultation in 2019. The issues raised by the public focused on resettlement and construction management aspects which are being addressed by the Promoter.

The EIA report, along with a non-technical summary, have been made public on the website of the Promoter and EIB.

Furthermore, prior first disbursement the promoter will prepare a Stakeholder Management Plan where it will define the needs for further consultation.

Other Environmental and Social Aspects

The Promoter will be responsible for overseeing and ensuring implementation of the EMP and RAP(s). The Promoter and the General Consultant have sufficient qualified environmental and social staff within their organisations with gained experience working with MDBs on other metro projects in India. An independent monitoring and evaluation consultant will be commissioned, who will periodically monitor and report on delivery of the EMP and RAP as well as perform a mid and end of term evaluation of RAP implementation.

Gender impact

The Promoter has agreed to establish a quantitative target for employment of women during project construction and implementation (in other metros, it has been foreseen for example that a significant proportion of metro drivers are women). In addition, the project is expected to have a strong positive impact for female travellers in terms of security and safety and therefore encourage ridership among female travellers. This can be seen as being especially beneficial for poorer travellers, for whom other more expensive means of transport are less accessible, and for whom the metro therefore opens new opportunities in terms of access to education and employment.

Conclusions and Recommendations

The EIB will condition its loan disbursements on:

1. Before signature, the promoter will provide to the satisfaction of the Bank a copy of final RPF.
2. Before first disbursement, the promoter will provide to the satisfaction of the Bank a copy of the North-South (Purple Line) and East West (Red Line) corridor RAP.
3. Before first disbursement, the promoter will provide to the satisfaction of the Bank a copy of Stakeholder Engagement Plan.

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4. Before any disbursement: the promoter will ensure that the project implementation team includes environmental and social experts to implement the EMP and RAP.

In addition, the Bank will seek commitments from the Promoter to: (i) ensure that the EMP and relevant Bank's social and environmental standards are included in the tender documents of the main work contracts; (ii) implement the project in accordance with the agreed EMP, RPF and RAP; (iii) report regularly on the status of RAP and EMP implementation; (iv) ensure that no eviction happens before the entitlement matrix is approved and PAPs compensated in accordance to the approved matrix; (v) comply with Bank's social and environmental standards and will monitor and report on its implementation regularly, to the Bank's satisfaction; and (vi) present mid and end of term evaluation of RAP(s) implementation prepared by a third party.

Subject to the above mentioned environmental and social conditions being met, the overall residual environmental and social impacts of the Project are expected to be acceptable.