PROJECT: PROJECT TO DEVELOP CORRIDORS AND FACILITATE TRADE
COUNTRY: MADAGASCAR

ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT (ESIA) SUMMARY

<table>
<thead>
<tr>
<th>Project Team</th>
<th>Team Leader</th>
<th>Team Members</th>
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<tr>
<td></td>
<td>Mr. J.J. NYIRUBUTAMA, Chief Transport Economist RDGS.1</td>
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<td>P.H. SANON, Senior Socio-Economist, RDGN.4</td>
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<td></td>
<td>E. RAZANASAMY, Procurements Officer, MGFO</td>
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<td>Y. HATIRA, Senior Environmentalist, RDGS.4</td>
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<td>S. RATOVOSON, Disbursement Officer, COMG</td>
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<td>T. MKANDAWIRE, Transition States, RDGS.0</td>
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Director General OIC : Mrs J. NGURE
Acting Division Manager : Mr. E.F. KANONDA
ENVIRONMENTAL AND SOCIAL IMPACT ASSESSMENT SUMMARY

Project Name : Project to Develop Corridors and Facilitate Trade between Madagascar and COMESA and Indian Ocean Countries

Country : Madagascar

Project Reference Number : P-MG-DB0-017

Project Category : Category 1

Department/Division : RDGS/RDGS.2

1. INTRODUCTION

This document is the Environmental and Social Impact Assessment (ESIA) summary of the Project to Develop Corridors and Facilitate Trade between Madagascar and COMESA and Indian Ocean countries. In accordance with the African Development Bank’s Integrated Safeguard System (ISS) and national requirements, this project is classified under Category 1. The project was the subject of two ESIs: that of RN9 Road (Phase II) which was prepared in January 2017 and an Environmental Permit granted on 12 December 2017 by the National Environment Authority (ONE); and that of RN 12A which was prepared in October 2017 and an Environmental Permit granted on 20 November 2017. A Resettlement Action Plan (RAP) was prepared for each of the two components. The two RAPs have distinct summaries. The two ESIs were prepared pursuant to Madagascar’s relevant national regulations and reflect the demands and expectations of the population concerned by the project, gathered during public consultation meetings. This summary of both ESIs was prepared pursuant to Bank guidelines and procedures of environmental and social assessment, applicable to Category 1 projects.

2. STRATEGIC, LEGAL AND ADMINISTRATIVE FRAMEWORK

2.1 National Legal Framework

Since the promulgation of MECIE Decree No. 09016 of 20 July 1990, all infrastructure investment projects in Madagascar are subject to an Environmental Impact Assessment (EIA). The legal and regulatory EIA-related framework applicable to the project comprises:

- Law No. 90-033 of 21 December 1990 on the Malagasy Environment Charter, as amended and supplemented by Laws No. 97-012 of 6 June 1997 and No. 2004-015 of 19 August 2004: To better implement a sustainable national environment policy, this law requires that a conclusive Environmental Impact Assessment (EIA) be performed for public or private investment projects of any nature, carried out on the Malagasy territory and that might to hurt the environment. Such is the case with the project, the subject of these EIAs.
• Law No. 94-029 of 25 August 1995 instituting the Labour Code. Hygiene and safety at the work place are mentioned in Section 208 of the Code. These two aspects will be considered under measures related to the human component.

• Law No. 98-025 of 20/01/99 instituting the Water Code: Section 10 stipulates that no work can be carried out on surface waters, whether or not it modifies their flow, or public waters deviated in whatever manner and for whatever purpose, by momentarily or definitively turning them off their course, without authorisation. This law also governs hydraulic works undertaken to protect water resources against pollution. This will be reflected under impacts of project activities and water management, in particular for administrative authorisations to be obtained.

• Law No. 99-022 of 19 August 1999 instituting the Mining Code, as amended by Law No. 2005-021 of 17 October 2005: Section 12 thereof defines *inter alia* quarry substances as any mineral substance meant for the production of aggregates (rubble, paving stone, hand stone, gravel, pea gravel and sand). Quarry substances are exploited using the open cast or subterranean method. Section 14 (new) of this law stipulates that quarries are deemed to espouse the properties of the soil and follow its regime. The management and administrative surveillance of quarry activities is the responsibility of the commune with territorial jurisdiction, which issues the authorisation to open the quarry and notifies the Mining Registry services and Inter-Regional Directorate of the Ministry in charge of Mines, as well as the competent authority of the Region concerned, tasked with monitoring and technical inspection of quarry activities. Authorisation to open quarry operation sites is subject to the competent environment authority’s prior approval and a plan outlining environmental protection measures prepared by the operator. For all mining/quarry operations, the mining permit holder is required to comply with the rules of hygiene, public sanitation, safety at work, radioprotection, individual/collective ownership rights, worship or cultural edifices, pursuant to the instruments in force (Section 109). These provisions are respected as far as project quarry operation and administrative authorisations to be obtained are concerned.

• Law No. 2006-031 of 24 November 2006 on the legal regime of ownership of untitled land, puts an end to the presumption of State ownership of unregistered, un-surveyed land whose occupation is ascertained in both urban and rural areas (Sections 1 and 2). Expropriation procedures treat the properties of persons affected by the project (PAPs) in the same way whether such properties are titled/surveyed or untitled/un-surveyed.

• Ordinance No. 60-106 du 30/10/1960, creating a reserve right-of-way along national and provincial roads. This ordinance defines reserve right-of-way as a strip of land coaxial to the road, 30m wide for national roads and 20m for provincial roads, intended for future road widening works. It imposes easements inside the reserve right-of-way and forbids encroachment through construction or farming. However, the Ministry in charge of Public Works can authorise temporary occupation for seasonal farming, rescindable at any time without compensation except for the value of the authorised crops. This reserve right-of-way will be
respected when demarcating the right-of-way of roads and for measures to be taken to avoid wild backfilling around infrastructure.

- Ordinance No. 62-023 of 19 September 1962 on expropriation in the public interest, the amicable acquisition of immovable property by the State or secondary public authorities and land value gains. The project will have to comply with its provisions in conducting expropriations necessary for its implementation.

- Decree No. 63-030 of 16 January 1963 laying down conditions for implementing Ordinance No. 62-023 of 19 September 1962 on expropriation in the public interest, the amicable acquisition of immovable property by the State or secondary public authorities and land value gains.

- Decree No. 99-954 of 15 December 1999, as amended by Decree No. 2004-167 of 3 February 2004 on the compatibility of Investments with the Environment (MECIE). Pursuant to Article 10 of the Madagascar Environment Charter, the MECIE Decree sets forth the rules and procedures to be followed in conducting an EIA. It defines inter alia the contents of environmental assessment and public participation in such assessment. Road construction features explicitly in Annex I of projects subject to EIA, excavation/backfill of over 20,000 m³, and mechanized quarry operation if the volume collected exceeds 20,000 m³.

- Order No. 6830/2001 sets forth conditions and procedures of public participation in environmental assessment. The project is required to hold public consultations organised with the local authorities.

### 2.2 National Administrative and Institutional Framework

The following table lists the main tasks and responsibilities of each entity involved in the project environmental and social management:
**Table No. 1: Tasks and responsibilities of each entity involved in project E&S management**

<table>
<thead>
<tr>
<th>Entities concerned</th>
<th>Tasks and responsibilities</th>
</tr>
</thead>
</table>
| Minister of the Environment, Ecology and Forestry (MEEF) | • Takes decisions on the level of environmental assessment to be applied  
  • Verifies compliance with Environmental Specifications (CCE)  
  • As chairperson of the Technical Assessment Committee (CTE), reviews ESIA |
| DREEF | • Issues authorisations  
  • Monitors compliance with ESMP for sensitive areas |
| National Environment Authority (ONE) | • Drafts guidelines on ESIA conduct according to MECIE Decree  
  • Takes decisions on the level of environmental assessment to be applied  
  • Review the ESIA  
  • Manages the CTE secretariat  
  • Issues environmental clearance  
  • Prepares the CCE based on the ESMP  
  • Undertakes supervision, monitoring and control |
| Control Mission (MDC) | • Supervises the implementation of measures at the environmental and social levels  
  • Approves the Contractor’s environmental management documents |
| Madagascar Road Authority (ARM) | • Supervises Control Mission’s tasks  
  • Verifies how far project environmental and social management complies with national and international social and environmental safeguard policies  
  • Approves environmental management documents |
| Contractor | • Implements the ESMP |
| Local Authorities | • Monitors ESMP implementation  
  • Acts as direct interlocutor of MDC |

**2.3 AfDB Safeguard Measures**

In addition to these national regulations, the AfDB will ensure the application of its Integrated Safeguards System (ISS) during project planning and implementation. The ISS, designed to foster project outcome sustainability by protecting the environment and persons against possible negative impacts, consists of four independent components: (i) Integrated safeguards policy declaration; (ii) Five operational safeguards; (iii) Environmental and social assessment procedures (ESAP); and (iv) Guidelines for integrated assessment of environmental and social impacts.

The five operational safeguards (OS) are triggered during project activities namely:

- **OS1: Environmental and Social Assessment** triggered by the scale of the project and hence subject to environmental and social assessment. Detailed environmental and social impact assessments were therefore prepared to better assess these impacts and identify appropriate mitigation measures;

- **OS 2: Involuntary Resettlement** triggered by the fact that the project will affect over 200 persons who are property owners. A Resettlement Plan was prepared for that purpose;

- **OS 3: Biodiversity, Renewable Resources and Ecosystem Services** triggered by the biodiversity present in the project right-of-way and the closeness of the project area;
• OS 4: Pollution Prevention and Control, Greenhouse Gases, Hazardous Materials and Efficient Resource Use triggered by the risks of water and soil pollution during the project’s works and operational phase;

• OS 5: Working Conditions, Health and Safety triggered by the fact that the nature of works implies risks for the health and safety of workers. Working conditions compliant with the laws and international health and safety standards will be instituted to minimize or eliminate potential health and safety risks.

Other relevant policies and guidelines remain applicable once triggered under ISS. The main ones include: (i) the Bank’s Gender Policy (2001); (ii) the Framework of Enhanced Engagement with Civil Society Organisations (2012); (iii) the Disclosure and Access to Information Policy (2012); (iv) the Handbook on Stakeholder Consultation and Participation in Bank Operations (2001); (v) the Policy on Population and Strategy for Implementation (2002); and (vi) the Environmental and Social Assessment for Bank operations (2015).

2.4 International Agreements

The agreements listed in the following table are applicable to this project and were ratified by Madagascar.

<table>
<thead>
<tr>
<th>Agreement</th>
<th>Place</th>
<th>Themes</th>
<th>Signature Date</th>
<th>Ratification Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>CDB</td>
<td>Rio</td>
<td>Convention on biological diversity</td>
<td>08/06/92</td>
<td>08/95</td>
</tr>
<tr>
<td>CACNR</td>
<td>Algiers</td>
<td>Conservation of ecosystems and animals</td>
<td>09/68</td>
<td>06/70</td>
</tr>
<tr>
<td>RAMSAR</td>
<td>Iran</td>
<td>Conservation and rational use of wetlands</td>
<td>02/71</td>
<td>02/98</td>
</tr>
<tr>
<td>UNESCO</td>
<td>Paris</td>
<td>Heritage</td>
<td>1972</td>
<td>07/83</td>
</tr>
<tr>
<td>Kyoto</td>
<td>Japan</td>
<td>Polluting gases</td>
<td>11/12/97</td>
<td>27/09/02</td>
</tr>
</tbody>
</table>

3. PROJECT DESCRIPTION AND RATIONALE

3.1 Project Description

The Project to Develop Corridors and Facilitate Trade between Madagascar and COMESA and Indian Ocean countries mainly comprises two road corridors, one in the South-West of Madagascar and the other in the South-East of Madagascar. The two road corridors involved are: the RN9 in the South-West from Tulear to Manja and TNR 12A in the South-East, from Fort Dauphin to Vangaindrano. The RN9 had already been improved from PK 0 (Tulear town) to PK 107 (Analamisampy). This second phase concerns the complementary development of the corridor over a distance of about 165 km including 880 m from the bridge on River Mangoky. The RNT12A section is from Fort Daupin to Vangaindrano on a linear distance of 232 km. Both corridors are linked to the Tulear Port facilities for RN9 and Ehoala for RNT12A.

The partially developed RN9 crosses Atsimo Andrefana and Menabe Provinces and links Tulear Port in the North to Manja, then to RN35, leading to Morondava Port. This road links the country’s South-West to the town of Antananarivo but also to the Mozambique Channel via Tulear Port. For its part, RNT 12A links Anosy Region with Atsimo Antsinanana Region to the North and Ehoala.
Port in Fort Dauphin. It is the sole entry point to all remote communes downstream (Ebakika, Manambato, Esama, Befasy, Masainaka and Vangaindrano). Due to the poor state of RNT 12A today, almost all heavy traffic from the rest of the country transits through RN13, also in a bad state but not as degraded as RNT12A. All the authorities met recognise the importance of this road. Designed as a trade facilitation corridor, it offers an inescapable alternative for transporting the abundant agricultural and mining products of South-East Madagascar.

The project impact area (PIA) of these roads is mainly agricultural and several development partners including the European Union and World Bank already operate there, in the case of RNT12A. Therefore, the development and asphalting of both corridors will complement these TFPs’ actions and enable the local population to more easily transport their goods to consumption centres, get to basic social services and develop export-oriented agricultural value chains for inclusive growth.

The overall Corridors Development and Trade Facilitation programme aims mainly to develop two road sections: R9 to be co-financed by the AfDB, OFID, BADEA and Arab Fund. The last two donors will finance the 880-metre Mangoky Bridge. In the South-East, the R12A corridor stretch will be co-financed by the AfDB and the European Union through AfIF under the terms and conditions of the PAGODA approach, but also benefit from a parallel World Bank financing. The EU has already carried out LI works between Ebakika and Esama (PK 45 to PK 94).

Figure 1 below presents the location of the project’s two components.
In light of the foregoing, the Bank-financed project has four components: (i) Road works; (ii) Related works; (iii) Trade facilitation and institutional support; and (iv) Project management and monitoring. The project structure and content are shown in the following table.

**Table No. 3: Project components**

<table>
<thead>
<tr>
<th>Component</th>
<th>Cost (UAM)</th>
<th>Detailed Description of Sub-Components</th>
</tr>
</thead>
<tbody>
<tr>
<td>ROAD WORKS</td>
<td>99.86</td>
<td>A.1- Development and asphalting of RN9 section: (i) Development and asphalting of section 2 of RN9 between Analamisampy and Bevoay (Mangoky Bridge), from PK 107 to 187+840 including the Ankililoaka platform; (ii) Development and asphalting of section 3 of RN9 between the Mangoky Bridge exit and Manja, from PK 202 to PK 274+844; (iii) Development and asphalting of the urban section at the start of RN 9 (PK 0+00 and PK 1+400); (iv) Construction of Ranozaza bridge and its access points at PK 71 on RN9; (v) Construction of RNT9 works.</td>
</tr>
<tr>
<td>RELATED WORKS</td>
<td>2.65</td>
<td>B.2-RN 9 road section: (i) Construction of Antanimieva market; (ii) Improvement of the Befandriana Trades Centre; (iii) Rehabilitation of the Ankiliabo Health Centre; (iv) Construction and equipment of the Ankiliabo, Ankatsakatsa and Befandriana Gendarmerie stations; (v) Construction of the Manja Socio-cultural Centre; (vi) Construction of boreholes for rural water supply; (vii) Supply of school furniture; (viii) Supply of agricultural equipment kits to women’s associations; and (ix) Control and supervision of related works.</td>
</tr>
<tr>
<td>TRADE FACILITATION AND INSTITUTIONAL SUPPORT</td>
<td>7.66</td>
<td>C.1- Trade facilitation: Trade facilitation activities include support for the implementation of the National Trade Facilitation Committee’s action plan, setting up a national product certification system, designing and implementing an incubation programme for export-oriented enterprises, and support for farmers’ cooperatives and agricultural SMEs;</td>
</tr>
<tr>
<td>PROJECT MANAGEMENT AND MONITORING</td>
<td>4.68</td>
<td>D.1- Accounts and financial audit;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D.2- Road security audit;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D.3- Monitoring-evaluation of project impacts;</td>
</tr>
<tr>
<td></td>
<td></td>
<td>D.4- Operation of the Project Implementation Unit.</td>
</tr>
</tbody>
</table>

*NB: UA rate as in May 2018: UA 1 = USD 1.44*

All gender, road prevention, HIV/AIDS-control and environmental protection issues will be mainstreamed transversally in all these components. Concrete actions are planned to ensure that the needs of women and youth are taken into consideration so as to strengthen social inclusion and their entrepreneurial capacity and thus minimize the risk of further impoverishing the most
vulnerable. The approach adopted recognises the legal rights of women and the poor to have access to productive resources and basic social services through fostering their empowerment and promoting their rights.

Works to be executed also include negative environmental impact mitigation measures. Two recognised consulting firms (each per road, RN9 and RN12 A) with solid experience in the control and supervision of road and civil engineering works will control and supervise these works. There are also plans to bring in an NGO to sensitisize the population on road safety, environmental protection, STI/HIV/AIDS and family planning.

3.2 Project Rationale

The general objective of the Project to Develop Corridors and Facilitate Trade with COMESA and Indian Ocean countries is to contribute to accessibility and the improvement of road transport infrastructure in Madagascar, and promote commercial exchanges to and from the South of Madagascar. The specific objectives are to: (i) improve the conditions of accessibility in the South of Madagascar; (ii) improve the access conditions to production zones through ancillary works; (iii) promote trade and investment by facilitating export and investment procedures to enhance the value of products that are typical to the South of Madagascar, especially agriculture, mining and tourism.

The construction of RN9 and RNT12A will contribute to open up rural and agricultural areas. By linking them to Tulear and Fort Dauphin port facilities, opportunities for increased commercial exchanges with COMESA and Indian Ocean countries will be created. The project area is situated in the South region, characterised by a poverty rate of 82.1%, one of the highest among the country’s 22 regions, and chronic exposure to natural disasters. Yet, the region has a rich and diversified natural heritage coupled with great agriculture, fishery, tourism and mining potentials. The two road sections, RN 9 and RNT12A, are the backbone of this region. Upgrading them to paved roads is crucial for commercial exchanges with other zones of the country but also with the COMESA and Indian Ocean regions. This will help to create a solid basis for poverty reduction and inclusive growth.

4. DESCRIPTION OF PROJECT ENVIRONMENT

4.1 Physical Environment

Administratively and socio-economically, the project impact area (PIA) for RN9 is in the South-West or in Atsimo Andrefana region and part of Menabe Region, and for RNT12A, in two districts, Taolagnaro (Anosy Region) and Vangaindrano (Atsimo Antsinanana Region), served by the road.

Climate

Atsimo Andrefana Region is characterised by a semi-arid tropical climate characterised by annual rainfall below 1,000 mm (462 mm) and an annual water scarcity of above 700 mm. With rainfall scarcity in 11 out of 12 months, this is the most arid climatic zone in Madagascar. Menabe Region has the ecological characteristics of the low-lying Western zones with altitudes ranging between 0 – 800 m and a hot sub-humid bio-climate. Rainfall ranges between 500 and 1,600 mm. The climate in both regions is marked by high temperatures all year round with a daily mean that never falls
below 20°C. Although experiencing few cyclonic activities unlike coastal areas, this zone is still exposed to their impacts.

Generally, the tropical climate of Taolagnaro and Vangaindrano Districts is characterised by two distinct alternating seasons: the hot season (October-April) and a cold season (May–September). The mean rainfall is 1,640 mm in Taolagnaro District and 2,302 mm in Vangaindrano District while mean temperatures are 22.6°C in Taolagnaro District and 23.3°C in Vangaindrano District.

**Soil**

On Atsimo Andrefana region’s valley slopes whose poor soil quality has not prevented man from building terraces for rice cultivation, loamy soil predominates with variable mixtures of sand, quartzite, clay and even quartz pebbles. The gentle slope of the network of dense flats fosters the formation of dark fertile alluvial soil called “Baiboho” and frequent flooding in poorly drained areas. Generally, the soil type is the tropical ferruginous variety with degraded facies for Menabe Region.

There are five soil types in Taolagnaro and Vangaindrano Districts: the yellow/red ferralitic soil; a mix of red ferralitic/volcanic soil, red ferralitic soil, poorly evolved alluvial soil and tropical poorly evolved ferruginous soil.

**Relief**

The RN9 is located in an area characterised by vast expanses of fertile coastal plains conducive for irrigation agriculture (rice) and rain-fed agriculture (cassava, beans, butter beans, maize, onion, etc.) and agro-pastoral plateaus devastated every year by bush fires.

Different categories of geological formations are found in the direct PIA of RNT12A: the continental pliocene and androyen system in Anosy Region, and cretaceous volcanism in Atsimo Antsinanana Region. Mantle rocks like sand and alluvium are common to both regions.

**Hydrography**

Atsomo Andrefana Region has a significant surface and groundwater potential – the Northern part to the north of River Mangoky being wetter than the Southern part. The area is dominated by a very significant hydrographic network, evidenced by River Mangoky which follows the road alignment around Bevoay. A complete study was conducted in that regard for the hydraulic sizing of the bridge to be constructed on River Mangoky. Numerous water courses that are virtually dry in summer but have a torrential flow in the rainy season are found on the itinerary of RN9.

In all, 13 major rivers cross the RNT12A: the Manambilina, Onilahy, Manambondro, Isandra, Masianaka, Manampanihy, Ebakiky, Vatomirindry, Laboakoho, Manambato, Esama, Maroroy and Manara. Atsimo Atsinanana Region has a very dense hydrographic network. In contrast, Anosy Region is characterised by a fresh-water circuit mixed with the marine system.
4.2 Biological Environment

Flora

The PIA of RN9 has significant floristic wealth. Since the thin plant cover no longer offers proper protection for the soil, erosion is significant and particularly devastating. The predominantly pastoral Northern part comprises extensive pastureland at Aristida and Phillipia, which is set on fire every year. The vegetation comprises dry sparse forests and semi-arid grass savannahs. The flora in the area is dominated by diverse forests: ripicolous forest, gallery forest, dry dense deciduous forest and savannahs.

The main primary forest ecosystem in the direct PIA of RNT12A is the evergreen rain forest. The primary edaphic ecosystems therein are: gallery forests, marshy vegetation and coastal forests, which are not located near the road right-of-way. In contrast, the anthropized ecosystems mostly represented in the direct PIA are: savannah, steppes, and reforestation. The main xerophytic thicket species are: Hernandia Voyronii (Hazomalany), Dalbergetia (dolfwood), Dyospiros (Hazomainty or ebony), and Brachylaena (Merana). For their part, the dominant savannah species are: Flacourtia indica (Lamoty), Celastrus linearis (Tsingilofilo), Stenotaphrum, Exonepus, and Aristida.

Fauna

Several faunal species are found in the RN9 project area. These include endemic species such as birds, batrachians, reptiles and mammals.

The Atsimo Atsinanana and Anosy Regions harbour very rich and highly endemic faunal species. A case in point is the Anosyennes chain rain forest which is home to very rich and diverse wildlife, with 223 vertebrate species. Wildlife species in the two regions include reptiles, birds and mammals.

Sensitive Areas

The Mikea Forest, covering an area of 371,339 ha, is found in the South-Western part of Madagascar, between River Manombo, to the South, and River Mangoky to the North. It is bounded to the East by RN9 linking Tulear to Manja and to the West by the coastal zone. The ecosystems in Mikea region represent a great diversity of unique habitats and are home to many local endemic species which are important for biodiversity conservation. The RN9 does not affect any of the Mikea Forest’s protected and management areas. The road follows the alignment of the existing road and there will be no new creation or clearing except in the North Ankantsakantsa area where the new bridge will be built across River Mangoky. Here, the road crosses an area of open savannah and follows the existing carter tracks.

The 5-km strip of land on both sides of RNT12A contains protected areas managed by QMM, such as the Ambatoatsinananana-Sainte Luce and Mandena protected areas. Other newly-created ones are also found within this strip of land such as the Tsitongambarika Forest and NAP Kibory at Ialakaboho managed by Asity. Given the steady degradation of the primary forest cover caused by anthropic pressure (deforestation for firewood and construction timber, wild fires, etc.), protected areas have continued to be extended.
4.3 Human Environment

Population

The RB9 to be rehabilitated crosses the two districts of Atsimo Andrefana Region – Toliary II and Morombe District – and the Manja District, attached to Menabe Region. These districts are among the least populated in the country, with average population density below the national average (between 0-5 inhabitants/km² except in towns or farming areas) and a total population estimated at 456,651 people (in 2013). Growing at about 1.2%, the population as a whole is young and 84% is made up of those aged below 45 years. Males slightly exceed females and the household size ranges from 4.3 to 4.6 in the two districts. The average age of the population therein is below 22 years. The labour force (that is, from 15 to 64 years) makes up 50.4% to 54.7% of the whole population.

The population of the Districts of Taolagnaro and Vangaindrano is 294,496 (2016) and 329,596 inhabitants (2013) respectively, with average densities estimated at 49.51 inhabitants/km² in 2016 (Taolagnaro) and 43.2 inhabitants/km² in 2013 (Vangaindrano). Vangaindrano is the most populated district, while Taolagnaro is the most densely populated. The population growth rate in Anosy Region is estimated at 2.9% while for Atsimo Atsinanana Region, it is 2.7%. By 2030, the population of Anosy Region will be slightly over one million. Household size in Anosy Region is 4.6 and in Atsimo Atsinanana Region 5.5. The average household size in both regions is higher than the national value.

Ethnic Composition

Atsimo Andrefana Region comprises three main population groups: (i) the natives composed of the Masikoro, Bara, Vezo and Mahafaly ethnic groups. These majority tribes make up 60% of the Region’s total population; (ii) the non-native ethnic groups are the Antanosys and Antandroys, who make up 30% of the total population; and (iii) recent immigrants: the Antaisakas, Antaisays, Betsileo, Merinas, Sakalavas, and Koraos (people from the South-East) who are in the minority in the Region. These groups also include other migrants comprising Europeans (French, Italians, etc.), Indo-Pakistanis and other Asians. The Sakalavas are the dominant tribe in Menabe Region.

In Anosy Region, the Antanosys and Antandroys are the majority tribes followed by the Tavaratras, Merinas and Betsileo while in Atsimo Atsinanana Region, the Antesakas are the main ethnic group followed by the Antefasys, Sahafiras, Merinas, Betsileo and Baras.

Economic Activities

The Atsimo Andrefana Region’s economy is currently based on agriculture, stockbreeding, fishing and mining resources. Eighty-two percent of the labour force is in rural areas and their livelihood generally depends on agriculture and stockbreeding. Irrigated crops are very speculative but also very limited in space. Irrigation agriculture focuses mainly around watercourses like River Mangoky and River Manombo. Flood recession crops called baiboho are the oldest and limited only to permanent river valleys. The most widespread traditional rain-fed crops use dry season rainwater to the full. Cultivated land accounts for only 1.60% of the region’s land area. Most plantations belong to the traditional sector. Farmers use only spades (angady), but animal-drawn cultivation is developing, especially for cotton cultivation. Stockbreeding plays an important role
in the socio-economic life of the population of the South-West region. The key stockbreeding regions are Masikoro and the Mahafaly peneplain, great pastureland, where cattle, pigs, sheep, goats and poultry are reared. Fishing is the main activity in the coastal villages of Toliara, especially in Toliara II. Due to limited opportunities in agriculture and stockbreeding, limited marine resource potential and drought in the region, people are turning towards fishing. In most cases, this activity is still practised at the traditional or family level.

In general, the agricultural sector occupies most workers in Anosy and Atsimo Antsinanana Regions and the rate of agricultural practice therein is higher (81.85%) than the national value (72.7%). The techniques adopted are generally traditional and the equipment used (spade, angady, plow) are very simple. Over 60% of cultivated parcels are irrigated using traditional methods (through canals and collection of rainwater) which applies only to small irrigation schemes. The use of fertilizer is still very limited and concerns only 5% of parcels. And when used, manure is generally in the form of organic fertilizer. The same applies to the use of phytosanitary products and improved seeds/plants, which concern less than 1% of parcels. Stockbreeding is a widespread activity in terms of both the size of herds and the variety and types of livestock (cattle, pigs, sheep, goats and poultry). The area is mostly characterised by semi-intensive stockbreeding of small ruminants (goats and sheep) as well as cattle. Anosy and Atsimo Antsinanana Regions have significant fishery resources. Traditional fishing is carried out both at sea and in the brackish or fresh waters. Anosy Region is reputed for its rich fishery resources and for the structured exploitation of such marine products with high market value as spiny lobsters, crayfish, tunas, crabs, fishes, shark fin, and mussels. For its part, Atsimo Antsinanana Region mostly practices river and maritime fishing. Both regions have huge mineral resources, and industrial ores like fine stones: ilmenite, bauxite, zircon, mica, gold, sapphire, beryl, garnet, amethyst and crystals. The high level of labour market integration therein (67.4%) compared to the national value (60.6%) explains why there are many key investment projects in this sector, inside or near the zone.

Social Infrastructure

Drinking water supply in Atsimo Andrefana Region is insufficient. Available information shows that only 23.8% of communes have public standpipes, which is often compounded by poor quality water. In terms of level of education, 55% of children are classified as “without education” in Atsimo Andrefana Region. Data culled from the 2009 statistical enquiry monograph shows that all communes in Atsimo Andrefana Region have at least one public primary school (PPS), but without sufficient classrooms (pupils outnumber the available places). Barely 50.9% of communes in the region have secondary schools, which is below the national average. The districts in the region have a fair distribution of Government high schools but access to basic social services is virtually non-existent in almost all urban centres and villages. Health still depends on traditional medicine. Malaria, respiratory-track infections and sexually transmitted diseases are the most preponderant diseases in the project area.

Although low, the net primary enrolment rates in Anosy (41.6%) and Atsimo Antsinanana (53.4%) regions are even lower than the national value. The PIA’s lack of sufficient school facilities and teaching staff is compounded by the population’s strong attachment to culture.

According to the local population, introducing new knowledge through school education can hamper the preservation of cultural practices. The number of uneducated persons aged over 15
years in these regions is deemed very high. With its 76.5%, Atsimo Atsinanana Region has the highest rate of uneducated persons aged over 15 years in the entire country.

Unprotected springs as well as unprotected wells without pumps are the main sources of drinking water in the two regions. Compared to the national value (27.7%), the access rate to improved drinking water supply sources in Atsimo Atsinanana Region (8.9%) is very low but higher in Anosy Region (29.2%). This low rate of access is attributable to aging drinking water supply infrastructure, the under-exploitation of already constructed infrastructure, rapid population growth and inadequate monitoring and evaluation of water sector actors’ activities.

5. PROJECT ALTERNATIVE SOLUTIONS

For the RN9, the “without project” option cannot be considered, given the socio-economic conditions of the population concerned. All the national and local stakeholders reject it outright as they see the project as a means of reviving an inaccessible region and whose impoverishment accelerated with the degradation of its natural capital. As far as possible, the project’s alignment with the existing RN9 Road will be maintained precisely to avoid problems of acquiring new land if the alignment shifts. However, alternatives were considered for the road alignment at the level of PK257 and for the new Mangoky Bridge location. Environmental and social concerns strongly guided the choice of the Mangoky Bridge location option, namely: (i) locating the bridge so as to avoid disrupting the operation of the new water intake at Bevoay, for example, the increased risk of silting of the intake structure; (ii) finding a location where the river is widest and where its relatively parallel alignment to the banks is deemed more stable; and (iii) choosing an alignment that minimizes environmental and social impacts of new constructions on existing facilities and the local population.

The same arguments against the “without project” option for RN9 also apply to RNT12A. A number of development variants were proposed, by comparing the original versus new alignments. Based on this comparative analysis and considering all economic, environmental and social aspects, the original route was selected since it requires the acquisition of less land and destruction of less vegetation compared to the new alignment.
6. POTENTIAL IMPACTS AND MITIGATION AND ENHANCEMENT MEASURES

6.1 Positive Impacts and Enhancement Measures

The following table summarizes the positive impacts of RN9 and RNT12A and the optimization measures identified. The project has socio-economic works (see Components B and C under sub-section 3.1 above). This is a response to the other development needs the stakeholders identified in the project area. See RAP summary for the resettlement component.

Table No. 4: Summary of positive impacts of RN9 and RNT12A and optimization measures

<table>
<thead>
<tr>
<th>Positive impacts</th>
<th>Optimization measures</th>
<th>Responsible entity</th>
<th>Implementation schedule</th>
</tr>
</thead>
</table>
| 1. Creation of local jobs and increase in the population’s income                | • Consider local manpower in the recruitment and prioritization of local manpower, especially PAPs who have lost their sources of livelihood  
 • Prepare service contracts for local suppliers and encourage PAPs to launch income generating activities  
 • Assign female workers to physically less strenuous tasks | Contractor | P | C | O |
| 2. Better transportation of local products                                       | • Promote cooperatives to enable farmers themselves to prospect the market  
 • Develop commercial infrastructure | Bodies involved in rural development and marketing | P | C | O |
| 3. Value added through the increase in agricultural products sold                | • Increase agricultural production/ output  
 • Promote cooperatives to enable farmers fix a fair selling price  
 • Develop agricultural infrastructure | Bodies involved in rural development and marketing | P | C | O |
| 4. Added value of commune’s dividends on agricultural produce                     | • Improve the dividends collection system | Commune | P | C | O |
| 5. Reduction of vehicle operating expenses                                        | • Promote recent low-consuming cars | Ministry of Public Works | P | C | O |
| 6. Shorter travel time                                                           | • Ensure car maintenance | Owners of vehicles  
 Technical inspection centre | P | C | O |
| 7. Improvement of the population’s access to socio-collective facilities (health centres, schools, administrative structures) especially for gender | • Improve service quality | Ministries concerned (education, health, etc.) | P | C | O |
| 8. Improvement of traffic conditions on the road (comfort during travelling)     | • Improve service quality | Rural transporters’ cooperatives | P | C | O |

NB: P – Preparatory phase; C – Construction phase; O – Operational phase
### 6.2 Main Negative Impacts and Mitigation Measures

The following tables summarizes the negative impacts of RN9 and RNT12A and the mitigation measures identified per project phase.

*Table No. 5: Summary of identified negative impacts of RN9 and RNT12A and mitigation measures (Preparatory phase)*

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Affected milieu</th>
<th>Measures</th>
<th>Responsible entity(ies)</th>
<th>Implementation schedule</th>
</tr>
</thead>
</table>
| Population’s concern about the project                                 | Human           | • Organise information meetings (public consultation): Information before technical operations likely to affect the population in order to dispel doubt and fears often linked to ignorance of the subject  
• Set up a complaints management mechanism                              | ARM Contractor   | P  C  O                                                                 |
| Disruption of traders’ economic activity along the road and losses of goods/income | Human           | • Comply with the works implementation schedule to avoid prolonging the disturbance  
• Pay compensation under RAP                                            | ARM Contractor   | P  C  O                                                                 |
| Shrunken plant cover due to clearing/felling of trees in the right-of-way and opening of related sites (quarries/deposits) | Flora           | • Minimize clearing to the minimum necessary  
• Request authorisation to fell trees from the competent authority  
• Prepare a road itinerary avoiding the feet of baobabs in place  
• Conservation top soil for the restoration of sites  
• Implement the ESPP                                                     | Contractor       | P  C  O                                                                 |
| Denudation, erosion and washout of solid particles by runoff due to worksite facilities, stockpiling sites and storage areas for materials | Soil            | • Limit clearing to the barest minimum  
• Implement the ESPP                                                     | Contractor       | P  C  O                                                                 |
| Loss of people’s properties (fence, land, houses, stalls, crops, etc.) due to the freeing of the right-of-way | Human           | • Prepare RAP and compensation  
RN9: ~159 households/731 affected persons;  
RN RNT12A: ~1421 households/6,395 affected persons  
• Set up a complaints management mechanism                                | ARM Contractor   | P  C  O                                                                 |
| Social conflicts due to the freeing of right-of-way (including non-respect of customs and profanation of cultural sites) | Human           | • Identify beforehand the worship or cultural sites in the project area  
• Organise public consultations and establish contracts with persons concerned,  
• Establish a complaints management mechanism  
• Sensitise staff  
• Prioritize local recruitment                                            | ARM Contractor   | P  C  O                                                                 |
| Risk of spreading of STI/AIDS                                           | Human           | • Ensure that condoms are regularly available free of charge for all workers until completion of works  
• Foster behaviour change towards STI/HIV/AIDS among staff and local     | ARM Contractor   | P  C  O                                                                 |
| Inconvenience to users caused by interruption of water, electricity, telephone networks and/or internet due to the displacement of existing networks | Human | • Announce beforehand any disturbance caused by works via the mass media covering the area  
• Comply with the works implementation schedule so as not to prolong the duration of disruption  
• Repair damages caused by the Contractor as soon as possible  
• Set up a complaints management mechanism | Contractor Entity concerned (e.g. Telma) |
| Degradation of sensitive zones due to clearing/felling of trees in the right-of-way | Flora | • Maintain a minimum distance of 500 m between protected areas and the route | ARM Contractor |
| Degree of remoteness from commune headquarters and access to the Bevoay intake facilities due to the location of the new Mangoky Bridge (RN9 specifically) | Human | • Rehabilitate the road crossing Ankatsakatsa village up to the Bevoay water intake facility | ARM Contractor |
**Table No. 6: Summary of identified negative impacts of RN9 and RNT12A and mitigation measures (Construction phase)**

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Affected Milieu</th>
<th>Measures</th>
<th>Responsible Entity(ies)</th>
<th>Implementation Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loss of people’s properties and nuisance due to the operation of quarries/laying of detours/access roads</td>
<td>Human</td>
<td>• Choice of deposits: Avoid quarries found on inhabited or cultivated land&lt;br&gt;• Where applicable, sign contracts with the affected persons&lt;br&gt;• Set up a complaints management mechanism</td>
<td>Contractor</td>
<td>P C O</td>
</tr>
<tr>
<td>Water and soil pollution through possible discharge of waste water, used oil and hydrocarbons and solid wastes (base camp, vehicle parking areas, storage/transport areas)</td>
<td>Water Soil</td>
<td>• Choose related sites located at over 500 m from watercourses&lt;br&gt;• Construct sumps/ditches and place garbage cans at the level of base camp and other related sites&lt;br&gt;• Apply concrete on the floor inside storage, maintenance and machine washing areas&lt;br&gt;• Channel waste water and used oil coming from maintenance and washing bays to a recovery sump&lt;br&gt;• Separate water from pollutants before evacuation&lt;br&gt;• Clean up in case of an accidental spill from an absorbent material on a permeable surface&lt;br&gt;• Build a berm or protective wall, one-third the height of installations&lt;br&gt;• Recycle and store used oils in leak-proof containers for conveyance to specialized treatment services&lt;br&gt;• Implement ESPP</td>
<td>Contractor</td>
<td>P C O</td>
</tr>
<tr>
<td>Risk of accidents during extraction of rocky materials and transportation of materials</td>
<td>Human</td>
<td>• Establish a risk and dangers management plan&lt;br&gt;• Ensure compulsory wearing of IPE by staff&lt;br&gt;• Prepare a movement plan&lt;br&gt;• Put up worksite road signs&lt;br&gt;• Comply with working hours (no night work)&lt;br&gt;• Comply with instructions for driving equipment&lt;br&gt;• Encourage behaviour change among users on road safety</td>
<td>Contractor</td>
<td>P C O</td>
</tr>
<tr>
<td>Risk of traffic accident</td>
<td>Human</td>
<td>• Limit travelling speed&lt;br&gt;• Erect sign posts for the attention of the local population and users&lt;br&gt;• Comply with working hours (no night work)&lt;br&gt;• Comply with instructions for driving equipment&lt;br&gt;• Implement the risks and accidents management plan&lt;br&gt;• Promote behaviour change on road safety among users</td>
<td>Contractor</td>
<td>P C O</td>
</tr>
<tr>
<td>Erosion of unprotected soil caused by runoff and/or the exploitation of quarry</td>
<td>Soil</td>
<td>• Operate at maximum heights of 10 m during extraction of materials&lt;br&gt;• Stabilise earth banks by putting in place appropriate anti-erosion measures</td>
<td>Contractor</td>
<td>P C O</td>
</tr>
<tr>
<td>Issue</td>
<td>Action</td>
<td>Responsible Party</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------------------------------</td>
<td>------------------------------------------------------------------------------------------</td>
<td>-------------------</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| Deposits; instability of earth banks due to stripping | - Build interceptor ditches at the level of deposits  
- Purge the working face if doubtful portions are detected at the level of quarries * | Contractor         |
| Shrinking of plant cover caused by:       | **Flora**  
- the opening of access to/operation of quarries,  
- the installation of related sites (base camp, vehicle pool, etc.),  
- the harvesting of timber by the contractor and construction of bridges,  
- the creation of detours,  
- Choice of quarries and related sites: Avoid already afforested quarries and related sites  
- Limit clearing (including cutting the tree vegetation) to the minimum necessary  
- Use worksite waste wood or gather dead wood in the vicinity to satisfy the energy needs of the base camp.  
- Re-vegetation by salvaging topsoil (first 20 cm), protected against runoff and fostering local species.  
- If felling large-diameter standing trees is inevitable, request for felling authorisation from the competent authority and organise reforestation campaigns with the stakeholders  
- Buy timber for all works  
- Limit clearing (including cutting the tree vegetation) to the minimum necessary  
- Use worksite waste wood or gather dead wood in the vicinity to satisfy the energy needs of the base camp.  
- Re-vegetation by salvaging topsoil (first 20 cm), protected against runoff and fostering local species.  
- If felling large-diameter standing trees is inevitable, request for felling authorisation from the competent authority and organise reforestation campaigns with the stakeholders  
- Buy timber for all works  
- Limit the stripping of vegetation. For the riparian vegetation, the maximum limit is 20 m on both sides of structures (if necessary) | Contractor         |
| Disturbance of ecosystems near the selected quarries and/or crossing works to be rehabilitated during works/laying of access/detours | **Flora**  
- Choice of quarries: avoid operating quarries in zones with endangered species  
- Limit the stripping of vegetation. For the riparian vegetation, the maximum limit is 20 m on both sides of structures (if necessary) | Contractor         |
| Modification of the natural flow of water induced by rehabilitation works on crossing structures and/or worksite water supply and/or the development of access roads/detours | **Water**  
- Systematically clean up the worksite to minimize runoff and avoid deviating water  
- Request for authorisation from the competent authority in case of water collection at a rate above 1 m³/h | Contractor         |
| Deterioration of air quality caused by earthworks, the incessant back-and-forth movement of construction equipment and vehicles, and the operation of quarries and the crushing station | **Air**  
- Observe the frequency of technical inspections of vehicles and equipment  
- Sprinkle the roadway with dust control liquids  
- Dampen the site during quarry and crushing operations  
- Limit vehicle speed at 40 km/h  
- Install crushing stations under the wind and as far as possible for houses  
- Cover materials with tarpaulin when transporting them  
- Ensure that staff wear IPE | Contractor         |
| Unsightly landscape caused by excavations at quarry sites, the scattering and piling up of scarification products/rubble and ordinary wastes | **Human**  
- Systematically arrange and clean up the worksite and cart away wastes to a dumping ground approved by the Control Mission  
- Plant fresh vegetation at quarry sites concerned  
- Re-use recyclable wastes | Contractor         |
| Formation of stagnant water at quarries | **Water**  
- Set up a system for draining stagnant water | Contractor         |
| Inconvenience for users due to:  
- Possible road closures (cars, | **Human**  
- Announce beforehand any disturbance caused by works through the mass media common in the area | Contractor         |
<table>
<thead>
<tr>
<th>Pedestrians, etc.)</th>
<th>Human</th>
<th>Contractor</th>
</tr>
</thead>
</table>
| • Interruptions in electricity and/or telephone networks and internet during works  
• Silting of their farm lands  
• Creation of detours / access roads | • Arrange and clean up the worksite to avoid congestion  
• Comply with the works implementation schedule so as to not prolong the period of disturbance  
• Define working hours while avoiding peak hours in urban centres  
• Post agents carrying visible flags to facilitate the movement of vehicles  
• Set up adequate sign-boards 150 m from the worksite  
• Repair damages as quickly as possible based on the contract with Telma  
• Set up a complaints management mechanism |  |

<table>
<thead>
<tr>
<th>Disturbance of users’ access to drinking water caused by damaged pipes and/or the reduced available of water resources caused by the contractor’s needs</th>
<th>Human</th>
<th>Contractor</th>
</tr>
</thead>
</table>
| • Repair damage caused by the contractor as quickly as possible  
• Request for authorisation from the competent authority in case of taking out water at a rate above 1 m³/h  
• Pump only in watercourses whose flow rate is above 1 m³/h in the period of low-water level  
• Do not pump more than 50% of the daily rate  
• Set up a complaints management mechanism  
• Consult the local population beforehand for the choice of water collection points and methods |  |  |

<table>
<thead>
<tr>
<th>Degradation, even loss, of the cultural value of the area</th>
<th>Human</th>
<th>Contractor</th>
</tr>
</thead>
</table>
| • Choice of quarry sites/haulage ways/detours: avoid sites having a cultural value  
• Displace by common agreement cultural/ritual sites found in the right-of-way/ detours/access roads and document same in a negotiation report  
• Set up a complaints management mechanism |  |  |

<table>
<thead>
<tr>
<th>Social conflicts due to (i) the non-respect of local customs; (ii) the infringement of deposits/access thereto with the property of the population/mining areas; and (iii) the availability of water resources lessened by the contractor’s needs</th>
<th>Human</th>
<th>Contractor</th>
</tr>
</thead>
</table>
| • Familiarize with local cultural prohibitions beforehand  
• Choice of deposit sites: Avoid sites within mining areas/having a cultural value  
• If applicable, sign contracts with persons concerned  
• If applicable, agreed displacement/rituals of cultural sites inside deposit sites, documented in a negotiation report  
• Set up a complaints management mechanism  
• Contractor’s prior consultation with local population to choose water collection points and methods |  |  |

<table>
<thead>
<tr>
<th>Disturbance of the local population’s access to cleaning (dishwashing, bathing and laundering etc.) and fishing activities during works at the level of crossing structures</th>
<th>Human</th>
<th>Contractor</th>
</tr>
</thead>
</table>
| • Comply with works implementation timeframes so as to not prolong the duration of disturbance  
• Set up a complaints management mechanism  
• Ensure that ferries remain functional until complete construction of bridges |  |  |
Table No.7: Summary of identified negative impacts of RN9 and RNT12A and mitigation measures (Operational phase)

<table>
<thead>
<tr>
<th>Impacts</th>
<th>Affected Milieu</th>
<th>Measures</th>
<th>Responsible Entity(ies)</th>
<th>Implementation Schedule</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presence of residual wastes on sites (base camp, parking areas, machines, etc.)</td>
<td>Soil Water</td>
<td>• Implement liquid/solid wastes management plan</td>
<td>Contractor ARM</td>
<td></td>
</tr>
<tr>
<td>Completion of works and end of local manpower recruitment: loss of jobs for ferry employees</td>
<td>Human</td>
<td>• Build capacity and guidance of the local population</td>
<td>ARM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Current employees of ferries will be treated as per the Labour Code in force when road construction ends</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Early deterioration of infrastructure and works due to lack of maintenance, theft and use of metal-wheeled carts</td>
<td>Human</td>
<td>• Sensitise and empower the population to protect public infrastructure</td>
<td>ARM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ensure periodic maintenance of the road once rehabilitated</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Establish base plates/signs to limit bridge loads</td>
<td>Commune ARM</td>
<td></td>
</tr>
<tr>
<td>Risk of road accidents due to increased traffic and over-speeding</td>
<td>Human</td>
<td>• Set up road equipment such as exhaust brakes and road signs</td>
<td>ARM</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Raise the population’s awareness on road safety</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Increase in all types of trafficking (drugs, precious wood, protected/forbidden species, prostitution, etc.)</td>
<td>Human</td>
<td>• Strengthen control and surveillance in the zone</td>
<td>Road safety, DREEF, etc.</td>
<td></td>
</tr>
</tbody>
</table>

6.3 Residual Negative Impacts

No negative residual impact of average or strong significance is expected after the application of mitigation measures. Since negative residual impacts are minor, no particular measures are planned.
6.4 Cumulative Impacts

Cumulative impacts will be recorded due to the simultaneous implementation of projects in the same locality such as the irrigations schemes in the plains (RN9) or QIT Madagascar Minerals (RNT12A). These impacts will be seen in the increased risk of degradation and disruptions of existing activities. But mostly, a new dynamic will emerge and all kinds of activities will be deployed due to the strong impetus lent to the movement of persons and goods. The methods of harnessing agricultural commercial resources especially will be amplified. The cost of living will increase even more for the population, buoyed by the new impetus business operators and entrepreneurs give to agricultural and fishing activities. Lastly, the human development of the locality will be enhanced through manpower development.

7. CLIMATE CHANGE

The project area is classified as “a high cyclone risk zone”, which is subject to the effects of climate change. Although cyclones are now less frequent, they have become more violent in their intensity, wind velocity and the quantity of rain they bring. Rains especially in the Island’s South region are less frequent than before but more intense. These phenomena will exacerbate landsides and ‘lavaka’, that is, erosion and the formation of these gaps that are characteristic of lateritic hillsides, as well as silting of rivers, changes in major river beds, bank erosion and rising water levels.

Climate change-related risks were assessed during the study to calibrate the design of the works and structure of the roadway to be rehabilitated for works on both RN9 and a RNT 12a.

With regard to adaptation, there are plans to construct appropriate structures (submersible honeycombed aprons) in the passage zones of violent floods. Therefore, the BD will indicate the necessary works for mitigating all negative climate change-related impacts. The project design will also capture: (i) the need for the roads to be rehabilitated to be above water; (ii) the construction of ditches to prevent erosion; (iii) the sizing of water structures taking into consideration the fifty-year return interval of major floods in the South of Madagascar. The dimensions of the Mangoky Bridge will take into account the one hundred-year return interval of high-water level of the river.

8. MONITORING PROGRAMME AND INSTITUTIONAL RESPONSIBILITIES

Environmental monitoring will be instituted to ensure the effectiveness of proposed mitigation measures. The project developer, ARM, will be responsible for monitoring the project in collaboration and partnership with actors and stakeholders. Monitoring will be done periodically through the preparation of environmental monitoring reports. The following periodic reports must be produced by the Contractor and approved by the MDC:

- Environmental report at the end of the worksite installation period but before commencement of works;
- Quarterly implementation report of the Environmental Management Plan;
- Environmental report at the end of works and before provisional acceptance
- Final report after final acceptance of works.

The following structures are responsible for environmental and social monitoring and surveillance of the two project components through their respective environmentalists:
• the National Environment Board (ONE), the Technical Evaluation Committee (CTE) and the Technical Environmental Monitoring Committee (CSE)

• the Madagascar Road Authority (ARM)

• the Control Mission (MDC)

• the Contractor.

CTE and CSE are instituted by MECIE Decree on the compatibility of Investments with the Environment. The membership of CTE depends on each project’s key stakes. For a road project, for instance, its members generally are representatives of departments in charge of Agriculture, Water, Mines, the Population, the Environment and Forestry of decentralized technical services and local authorities. Monitoring works are jointly undertaken by the Ministry in charge of the Environment, the supervisory Ministry of the activity concerned and ONE. The actions of CTE and CSE are coordinated by the National Environment Authority.

To monitor the Contractor’s commitment to apply required measures, the above-mentioned structures must carry out environmental and social surveillance, which helps to assess the level of implementation of required mitigation measures and the effectiveness of each measure already taken. The Contractor’s and MDC’s officer in charge of the environmental component must be recruited as full-time staff in addition to the ad hoc intervention of an Environment Expert for MDC, given the environmental sensitivity that characterises this particular region.

9. PUBLIC CONSULTATIONS AND DISSEMINATION

9.1 Public Consultations

Public consultations were held at the preparatory stage to collect the wishes and grievances of the population about the project. They were conducted in two stages: the first served to prepare the ESIA and guide proposals of social support measures while the second, during formal assessment of ESIA by the competent national-level environmental authorities was taken into account during the preparation of the RAP. The public consultation strategy systematically comprises two distinct stages: (i) a phase of information on the project and its stakes, hence on the purpose and ultimate aim of identifying properties in the statutory right-of-way; and (ii) a phase of collection of all stakeholders’ concerns and recommendations.

For RN9, the first series of consultations with the population and NGOs, jointly with local authorities, always served to guide project managers’ deliberations and field investigations. The aim of meetings held at the start of the first half of 2015, continued during the January to May 2016 period, then in February 2017 with the parties concerned, was to inform them about the project components and to listen to them to in order to identify the environmental and social specificities of their milieu in order for the related concerns to be captured during design of the ESIA. The concerns expressed by the population were mainly linked to handing the road right-of-way to the State, optimizing the width to be freed up so that as few people and houses as possible are affected, the compensation methods and the principles to be defined and applied to guarantee transparency and total fairness during the compensation phase. Preliminary consultations held at the level of Fokontany revealed that, generally, the population is not opposed to involuntary resettlement to free up the road right-of-way in order to prevent any obstacle to the complete implantation and construction of this national road. However, an amicable settlement that respects the interests of the Government and the population must be found on a case-by-case basis.
For RNT12A, the stakeholder consultations initiated in May 2015 were continued during preparation of the ESIA and RAP, from June to July 2016. They helped to collect data that was missing in documents consulted. Observations and interviews with competent authorities (Deputy District Heads, Mayors, etc.) and local population were conducted. Public plenary sessions were also organised to inform the population about the project and gather their views. The results of these consultations are listed below:

- the presence of representatives of PAPs in various price assessment and disputes management bodies;
- the recruitment of local youth during rehabilitation and asphalting works;
- the assurance that no demolition will be done so long as compensation for properties has not been effectively paid;
- prior information of PAPs on the date of commencement of compensation payment operations and communication of the compensation amount to be collected by each PAP in a discreet and individual manner (for security reasons);
- prior notice to PAPs on the date of demolition of their property in the right-of-way;
- non-selection of Chinese enterprises to implement the project;
- commencement of works this year;
- reduction of the right-of-way in town;
- increase of the right-of-way outside urban settings;
- compensation of untitled land without land certificate; and
- flexible choice of the road itinerary.

Consultations were also held during the environmental review conducted by ONE to assess the application for the issuance of the environmental permit for projects (in October 2017 for RN9 and mid-2017 for RNT 12A).

9.2 Future Consultations and Complaints Management System

The participatory approach and the two-level consultation process (meetings with local authorities and plenary sessions) will continue during the implementation and operational phase to consolidate a process of consensual decision-making on all operations that might affect the population. A project stakeholder consultation plan has to be prepared.

The complaints collection/management system to mitigate identified impacts will be in the form of complaint registers opened and to be filled at the level of the headquarters concerned. The Control Mission’s monitoring reports will indicate how far registered complaints are being processed.

9.3 Public Disclosure

The ESIA results were disclosed in the project area pursuant to national regulatory requirements for impact assessments. In accordance with the Bank’s consultation requirements and ISS, this summary will be published on the Bank’s website for a period of 120 days before being submitted to the Board of Directors.
10. ENVIRONMENTAL AND SOCIAL MANAGEMENT PLAN (ESMP)

10.1 ESMP

Regulations governing road works require that Environmental Specifications be adopted and rolled out. This Environmental and Social Management Plan corresponds to these specifications and the environmental monitoring programme that will enable the responsible entities and any citizen to gain knowledge of the activities implemented by the developer to protect the social and natural environment.

This ESMP is an integral part of the worksite programme of activities. It indicates: (i) the implementation schedule of the management plan, the stakeholders and their responsibilities; and (ii) the summary of proposed impact mitigation measures along with the monitoring method, indicators and schedule and the responsible actors.

*Table No. 8: Summary of environmental and social Stakes with the related corrective measures, monitoring indicators, and implementation and (Monitoring schedule)*

<table>
<thead>
<tr>
<th>Significant/major impacts</th>
<th>Impact mitigation measures</th>
<th>Indicators</th>
<th>Means of verification</th>
<th>Schedule</th>
<th>Responsible actors</th>
<th>Budget estimates (MGA)</th>
</tr>
</thead>
</table>
| 1. Expropriations, doubt on the effectiveness of indemnification, and loss of properties/income | • Prepare RAP, indemnification/compensation  
• Set up a complaints management mechanism | • Rate of PAPs compensated  
• Number of land complaints or disputes | RAP implementation report  
Before works | Measure: MTP/ARM  
Monitoring: ONE | p.m.  
(to be defined in the RAP) |
| 2. Risk of social conflict due to right-of-way encroachment by people’s properties and non-respect of traditional practices and customs, Desecration of worship sites | • Organise public consultations  
• Identify worship and cultural sites beforehand in the project area  
• Raise staff awareness  
• Set up a complaints management mechanism | • Number of meetings organised  
• Statistics of complaints  
• Percentage of workers sensitised | Meeting minutes  
Periodic report  
Start of works | Measure: Contractor  
Monitoring: MDC  
Control: ARM | Standard rules included in the contract price |
| 3. Degradation of sensitive zones due to clearing/felling of trees in the right-of-way | • Maintain a minimum distance of 500m between protected areas and the alignment | • Distance between protected areas and the alignment | Observations  
Before and during works | Measure: Contractor  
Monitoring: MDC  
Control: ARM | Standard rules included in the contract price |
<table>
<thead>
<tr>
<th>Significant/major impacts</th>
<th>Impact mitigation measures</th>
<th>Indicators</th>
<th>Means of verification</th>
<th>Schedule</th>
<th>Responsible actors</th>
<th>Budget estimates (MGA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Erosion of talus slopes, washout of solid particles by runoff</td>
<td>• Stabilise earth banks to limit the washout of solid particles by runoff</td>
<td>• Demolition rubble and excavation products stored in approved areas</td>
<td>Site inspection report</td>
<td>During works and at completion</td>
<td>Measure: Contractor</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Earth banks stabilised</td>
<td>Monitoring reports</td>
<td></td>
<td>Monitoring: MDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Site(s) rehabilitated</td>
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<td>Control: ARM</td>
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<tr>
<td>5. Erosion of talus slopes through roadway embankment construction Increase in the volume of slough</td>
<td>• Stabilise talus slopes to limit washout of solid particles by runoff</td>
<td>• Talus slope stabilised</td>
<td>Periodic report</td>
<td>During works</td>
<td>Measure: Contractor</td>
<td>Standard rules included in the contract price</td>
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<tr>
<td></td>
<td>• Plant local species to reduce the risks of erosion</td>
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<td></td>
<td>Monitoring: MDC</td>
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<td>Control: ARM</td>
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<tr>
<td>6. Water and soil pollution by possible discharges of waste water, used oil and hydrocarbons (base camp, equipment park, storage and transport areas)</td>
<td>• Prepare/implement the ESPP</td>
<td>• Number of pollution cases identified</td>
<td>Periodic report</td>
<td>During works</td>
<td>Measure : Entreprise</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td></td>
<td>• Choose the location of related sites over 500m away from watercourses</td>
<td>• Distance between watercourses and related sites</td>
<td></td>
<td></td>
<td>Suivi : MDC</td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Ensure that the worksite area is controlled for depositing /storing materials and products used during construction.</td>
<td>• Existence and implementatio n of ESPP</td>
<td></td>
<td></td>
<td>Contrôlé : ARM</td>
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<tr>
<td></td>
<td>• Create a retention tank to collect hydrocarbons and other pollutants</td>
<td>• Presence/absence of retention tank, etc.</td>
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<td></td>
<td>• Establish sumps/ditches and garbage cans/trenches in the base camp and other related sites</td>
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<tr>
<td>7. Risk of spread of STIs/AIDS</td>
<td>• Ensure that condoms are available regularly and free of charge to all workers until works completion</td>
<td>• Staff regularly provided with condoms</td>
<td>Periodic report</td>
<td>During works</td>
<td>Measure: Contractor</td>
<td>Standard rules included in the contract price</td>
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<td></td>
<td>Monitoring: MDC</td>
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<td>Control: ARM</td>
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</tbody>
</table>

*MG* (MG): Means of verification.
<table>
<thead>
<tr>
<th>Significant/major impacts</th>
<th>Impact mitigation measures</th>
<th>Indicators</th>
<th>Means of verification</th>
<th>Schedule</th>
<th>Responsible actors</th>
<th>Budget estimates (MGA)</th>
</tr>
</thead>
<tbody>
<tr>
<td>8. Risk of accidents sustained by construction workers during their work and by the population</td>
<td>• Implement a risks and dangers management plan and an emergency plan;</td>
<td>• Rate of workers wearing IPEs</td>
<td>Worksite logbook Site inspection report</td>
<td>During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td></td>
<td>• Ensure the compulsory wearing of IPE by staff</td>
<td>• Number of worksite accidents</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>• Implement a movement plan</td>
<td>• Rate of workers catered for in case of industrial accidents</td>
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<td></td>
<td>• Install worksite signs</td>
<td>• Number of employees punished</td>
<td></td>
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<td></td>
<td>• Respect working hours (night work)</td>
<td>• Plans implemented</td>
<td></td>
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<td></td>
<td>• Respect instruction on how to drive equipment</td>
<td>• Signage implemented</td>
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<td></td>
<td>• Control access by a barrier at the level of quarries</td>
<td>• Instructions given on the driving equipment</td>
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<td></td>
<td>• Ensure movement under adequate safety conditions especially at the crossings of frequented areas</td>
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<tr>
<td>9. Disruption of movement and access for local inhabitants</td>
<td>• Provide information via the media</td>
<td>• Number of radio and TV announcement s</td>
<td>Announcements aired Pictures of signs</td>
<td>During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td></td>
<td>• Install road signs</td>
<td></td>
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<tr>
<td>Significant/major impacts</td>
<td>Impact mitigation measures</td>
<td>Indicators</td>
<td>Means of verification</td>
<td>Schedule</td>
<td>Responsible actors</td>
<td>Budget estimates (MGA)</td>
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<tr>
<td>10. Risk of road accidents due to the increased traffic and vehicle speed on the asphalted road during the construction and operational phase</td>
<td>• Put in place road equipment such as traffic calming devices, road signs and speed limits at the entrance to frequented areas (headquarters, schools, etc.)&lt;br&gt;• Raise the awareness of the population on road safety</td>
<td>• Number of signs put in place&lt;br&gt;• Road accident statistics&lt;br&gt;• Number of awareness sessions in communes</td>
<td>Periodic report&lt;br&gt;Neighbourhood survey&lt;br&gt;Local authorities surveys</td>
<td>Start of works&lt;br&gt;During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM Sensitisation – Measure: ARM Monitoring: ONE</td>
<td>Standard rules included in the contract price&lt;br&gt;See: Budget for complementary initiatives for sensitisation</td>
</tr>
<tr>
<td>11. Deterioration of structures caused by inhabitants, acts of vandalism</td>
<td>• Foster ownership of works among the local population and users</td>
<td>• Number of awareness sessions in communes</td>
<td>Progress report&lt;br&gt;During works</td>
<td>Measure: ARM Monitoring: ONE</td>
<td>See: Budget for complementary initiatives</td>
<td></td>
</tr>
<tr>
<td>12. Modification of the natural flow of water induced by rehabilitation works on crossings and/or water supply on the construction site</td>
<td>• Systematically clean up the worksite to ensure minimum runoff and avoid deviating water&lt;br&gt;• Request authorisation from the competent authority if it becomes necessary to collect water at a rate above 1 m³/h</td>
<td>• Degree of scattering of worksite wastes&lt;br&gt;• Degree of orderliness of the site&lt;br&gt;• Presence/absence of letters of application for authorisation</td>
<td>Periodic report&lt;br&gt;Observations</td>
<td>Before and during works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td>13. Risk of water pollution through accidental spillage of soil, increase of volume of the slough</td>
<td>• Implement the ESPP&lt;br&gt;• Put in place a protection system to limit spillage of solid particles in watercourses</td>
<td>• Water turbidity&lt;br&gt;• Number of complaints about water quality</td>
<td>Visual control of water quality&lt;br&gt;Survey targeting the local population&lt;br&gt;Periodic report</td>
<td>During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td>Significant/major impacts</td>
<td>Impact mitigation measures</td>
<td>Indicators</td>
<td>Means of verification</td>
<td>Schedule</td>
<td>Responsible actors</td>
<td>Budget estimates (MGA)</td>
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<tr>
<td>14. Formation of pools of standing water at the level of deposits</td>
<td>• Put in place a system for draining standing water</td>
<td>• Presence/absence of system for draining standing water</td>
<td>Periodic report Observations</td>
<td>During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td>15. Unsightly landscape caused by excavations at the level of quarries, scattering and piling up of scarification products / rubble and ordinary wastes</td>
<td>• Arrange and systematically clean up the worksite and evacuate wastes towards a site approved by the Control Mission</td>
<td>• Presence/absence of re-use of worksite wastes</td>
<td>Observations Interview with the contractor</td>
<td>During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td>16. Risk of explosion or fire where hydrocarbons are stored</td>
<td>• Install anti-fire equipment at the level of risky posts</td>
<td>• Absence of accident</td>
<td>Neighbourhood survey Periodic report</td>
<td>During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td>17. Noise and risk of air pollution by coating and crushing stations</td>
<td>• Ensure that staff wear IPEs</td>
<td>• Percentage of workers equipped with IPE</td>
<td>Monitoring reports</td>
<td>During works</td>
<td>Measure: Contractor Monitoring: MDC Control: ARM</td>
<td>Standard rules included in the contract price</td>
</tr>
<tr>
<td></td>
<td>• Choose the emplacement of crushers and coating station at a considerable distance from residential areas</td>
<td>• Number of complaints recorded</td>
<td></td>
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</tr>
<tr>
<td></td>
<td>• Dampen materials at crushing</td>
<td></td>
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<tr>
<td></td>
<td>• Undertake localized sprinkling of the roadway</td>
<td></td>
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<td></td>
<td>• Respect instructions for driving equipment</td>
<td></td>
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</tr>
<tr>
<td>18. The degree of remoteness from the commune headquarters and access to the water intake of Bevoay via the new RN9 alignment</td>
<td>• Rehabilitate the road crossing Ankatsakatsa village up to the water intake of Bevoay</td>
<td>• Number of complaints recorded</td>
<td>Periodic report</td>
<td>During works</td>
<td>Measure: MTP / ARM Monitoring: ONE</td>
<td>Standard rules included in the contract price</td>
</tr>
</tbody>
</table>
10.2 Summary ESMP Costs

The project’s impact mitigation measures stem from compliance with standard rules and are included both in the definition of the prices of standard worksite operations and in the design of various management plans such as measures to rehabilitate related sites and the risks/dangers management plan. Therefore, measures linked to the operation and rehabilitation of related sites such as quarries, coating station, base camp, storage areas and equipment parks are factored into the cost of installing and dismantling the worksite. The estimated cost of control and monitoring of ESMP implementation, support measures and RAP (or IRP) implementation is given below.

Table No. 9: Summary costs of ESMP measures of the RN9

<table>
<thead>
<tr>
<th>Item</th>
<th>10⁶ MGA</th>
<th>10⁶ USD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Implementation of the Involuntary Resettlement Plan</td>
<td>1,900</td>
<td>0.59</td>
</tr>
<tr>
<td>Communication and awareness campaign</td>
<td>1,035</td>
<td>0.23</td>
</tr>
<tr>
<td>Support for local development</td>
<td>21,401</td>
<td>6.65</td>
</tr>
<tr>
<td>Cost of related works</td>
<td>2,943</td>
<td>0.65</td>
</tr>
<tr>
<td>Cost of capacity building for ESMP actors</td>
<td>1,656</td>
<td>0.36</td>
</tr>
<tr>
<td>Costs of ESMP monitoring/environmental audit</td>
<td>1,770</td>
<td>0.38</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>30,704</strong></td>
<td><strong>8.860</strong></td>
</tr>
</tbody>
</table>

NB: 1 USD = MGA 3,219 (value as at January 2016)

Table No. 10: Summary costs of ESMP measures of RNT12A

<table>
<thead>
<tr>
<th>Item</th>
<th>10⁶ MGA</th>
<th>10⁶ EUR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Environmental management (preparation of environmental documents, implementation of measures, monitoring)</td>
<td>3,804.9</td>
<td>1.2</td>
</tr>
<tr>
<td>Social support (Communication/Awareness)</td>
<td>60.7</td>
<td>0.02</td>
</tr>
<tr>
<td>Involuntary Resettlement Plan (Compensation/Indemnification, operation of stakeholders, monitoring and implementation)</td>
<td>7,862.2</td>
<td>2.4</td>
</tr>
<tr>
<td><strong>GRAND TOTAL</strong></td>
<td><strong>11,727.9</strong></td>
<td><strong>3.6</strong></td>
</tr>
</tbody>
</table>

NB: Budgeting based on Euro parity at MGA 3,283 for 1 EUR
10.3 ESMP Implementation

The ESMPs of RN9 and RNT12A were used by ONE to prepare Environmental Specifications (ES). The ESIA reports (including ESMPs) already approved by ONE, will be appended to Bidding Documents (BD) for the recruitments of the Contractor and the Control Mission. In choosing the providers, the Contracting Authority is required to impose selective criteria to favour those whose services will be the most environment-friendly.

The selected Contractor will be bound to implement ES through the interventions of its Environmentalist, and under MDC surveillance and ARM supervision. Before works commence, the Environmentalist will be required to produce the following independent working documents:

- **Environmental and Social Management Plan (ESMP):** The Contractor’s Environmentalist will replicate therein the significant project impacts and the ESMP of ESIs.

- **Hygiene and Safety Plan (HSP):** All measures advocating respect for hygiene and safety in this report will be reiterated in the HSP with greater details on implementation.

- **Legislative and regulatory framework:** Each law and instrument in the ESIs will be quoted with the most relevant excerpts.

- **Environmental Protection Plan of Related Sites (ESPP):** It is noteworthy that no related site operation will commence so long as the related ESPP has not been approved by MDC.

- **Sites Rehabilitation Plan:** The site rehabilitation plan must contain all the relevant environmental and social measures identified in the ESIs together with an implementation schedule.

As its name implies, the MDC controls compliance with regulatory and legal provisions on environmental protection. As such, it should have a full-time environmental officer in situ to verify that the required contractual documents are produced on time, that the implementation of mitigation measures is effective, that the environmental monitoring programme outcomes are acceptable and that mitigation measures are efficient. Where applicable, it takes measures to apply penalties listed under the contract. The Control Mission reports on its work to the management body, in this case, the Contracting Authority, ARM and MTP. During the road operational phase, the MTP and ARM will ensure, in partnership with the Regional Directorate in charge of the environment and local authorities, the application of planned mitigation and enhancement measures.

11. INSTITUTIONAL CAPACITY BUILDING PLAN

To implement this ESMP, it is important for the relevant staff of the main institutional entities involved to be trained and to familiarize themselves with its contents and provisions. The bodies concerned with ESMP implementation are the following:

- the Ministry of Public Works (MTP)
- the Madagascar Road Authority (ARM), the project developer
- the main works contractor and its sub-contractors
- the Control Mission (MDC).
In addition, there are the grassroots authorities whose involvement and collaboration in ESMP monitoring and RAP monitoring should be strengthened.

The proposed capacity building actions targeting these entities consist in a two-day in-depth seminar at the regional level comprising a detailed presentation of ESMP and breakout workshops on the different aspects of ESMP and complementary initiatives envisaged: mapping of stakeholders’ responsibilities, implementation, monitoring, public consultation, complaints management system, and punishment for environmental lapses. Annual feedback workshops on environmental and social management and assessment of the state of liability will complete the initial seminar. These seminars and workshops will initially be supervised by two international experts assisted by two national consultants. Allocating them minimum equipment is deemed indispensable for the discharge of their respective missions.

12. CONCLUSION

It follows from the ESIA, which is the subject of this summary, that the project will not cause irreversible environmental impacts both in its direct and wider impact areas. The identified impacts will be mitigated by rolling out appropriate mitigation measures or, if applicable, compensation measures as described in the ESMP. On the other hand, significant spinoffs are expected at the sub-regional, national and regional levels. Under these conditions, the project is deemed environmentally and socially acceptable.

13. REFERENCES AND CONTACTS

The documents consulted during preparation of this summary note are:

- Decree No. 99-954 of 15 December 1999, as amended by Decree No. 2004-167 of 3 February 2004 making Investments Compatible with the Environment (MECIE)

The contacts at the Madagascar Road Authority (ARM) linked to the Project to Develop RN9 (Phase II) and RNT12A are:

- Mr. Ramanamisata Jean Pascal, Director General of ARM, PASCAL.R-MISATA@ARM.MG
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