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## D9.3 – MADAGASCAR case study

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## Abbreviations and Acronyms

Acronym	Description
AERP	Autorisation Exclusive de Réserve de Périmètre Exclusive Perimeter Reservation Authorization
AGOA	African Growth and Opportunity Act
ANOr	Agence Nationale de la filière Or/ National Agency for the Gold Sector
BCMM	Bureau du Cadastre Minier de Madagascar/ Madagascar Mining Cadastre Office
BD	Board of Directors (Conseil d'Administration)
CAC	Commissaire aux comptes/ External auditors
CB	Chairman of the Board (Président du Conseil d'Administration)
CDI	Code des Impôts/ Malagasy Tax Code
CENI	Commission Electorale Nationale Indépendante Independent National Electoral Commission
CGIM	Commission sur les Grands Investissements Miniers Commission on Large Mining Investments
CIRDI	Centre International pour le Règlement des Différends relatifs aux Investissements / International Centre for Settlement of Investment Disputes
CNAPS	Caisse Nationale de Prévoyance Sociale / National Social Insurance Fund
COI	Commission de l'Océan Indien/ Indian Ocean Commission
COMESA	Common Market for Eastern and Southern Africa
CPF	Code des Procédures Fiscales/ Tax Procedures Code
CPI	Consumer Price Index
CSR	Corporate Social Responsibility
DBA	Disc Based Association
ECRM	Extended Critical Raw Materials
EIE	Etude d'Impact Environnemental/ Environmental Impact Study
EITI	Extractive Industries Transparency Initiative
ESG	Environmental, social and governance
ESPA	Ecole Supérieure Polytechnique d'Antananarivo
FINEX	Service de la Finance Extérieure/External Finance Department
FMFP	Fonds Malgache pour la Formation Professionnelle / Madagascar Fund for Professional Training
FSE	social and environmental fund
GDP	Gross Domestic Product
GPS	Politique Générale de l'Etat/ General Policy of the State
HCC	Haute Cour Constitutionnelle / High Constitutional Court
IEM	Initiative for the Emergence of Madagascar
IMF	International Monetary Funds
ILO	International Labour Organization
IOC	Indian Ocean Commission
IWRM	Integrated Water Resources Management



JIRAMA	Jiro sy Rano Malagasy (National Water and Electricity Company)
IPPA	Investment Protection and Promotion Accord
IRNR	Impôt sur les Revenus des non-résidents/ Withholding tax on Non Resident Income
LGIM	Loi sur les Grands Investissements Miniers dans le secteur minier Malgache/ Law establishing regime for major investments in the Malagasy mining sector
LLC	Limited Liability Company (Société à responsabilité limitée)
LPI	Logistics Performance Index
MAF	Mining administration fees (Frais d'administration manière)
MECIE	Mise en compatibilité des investissements avec l'environnement/ Making investments compatible with the environment
MEDD	Ministère de l'Environnement et du Développement Durable/ Ministry of the Environment and Sustainable Development
MD	Managing Director / Directeur général
MMRS	Ministère des Mines et des Ressources Stratégiques Ministry of Mines and Strategic Resources
NGOs	Non-Governmental Organizations
OMNIS	Office of National Mines and Strategic Industries
ONE	National Office for the Environment
PEM	Plan Emergence Madagascar
PPG	Public and Publicly Guaranteed
QMM	QIT Madagascar Minerals
RF	Random Forest
SADC	Southern African Development Community
UNCTAD	United Nations Convention on Trade and Development
WTO	World Trade Organization

## Wording

**Mineral prospectivity:** “Mineral potential mapping is concerned with quantifying and mapping the likelihood that mineral deposits are present in a study area. It is synonymous to mineral prospectivity mapping, which is concerned with quantifying and mapping the likelihood that mineral deposits may be found by exploration in a study area.”

## Keywords

ECRM, Mineral potential, Ore processing, Refining capacities, Recycling units, Value chain, Primary raw material, Secondary raw material, Bottlenecks, Finance, Investment, Sustainability, ESG, Land-use, Taxation, Mining regulation, Mining policies, Child labour, Responsible extraction, Madagascar, Pan-African.



## Executive Summary

This report provides the reader with an overview of the key aspects regarding mineral resources, supporting regulations and institutions, as well as any related provisions in the prospecting of Critical Raw Materials (CRMs) in Madagascar. The report is an integral part of the larger AfricaMaVal project and, in that context, provides this country overview specifically aimed at European Union (EU) investors and decision-makers.

AfricaMaVal is focusing on the minerals and metals present in the fourth list of CRMs for the EU as well as on Copper (Cu), Nickel (Ni), Tin (Sn) and Manganese (Mn) that are particularly pertinent considering Africa's geological potential and their critical status in the digital and energy twin transitions. Madagascar is host most of the ECRM as well as Li, Mn, Graphite, Cu, Sn, Nb, Al and Ti thus the intended work will look at the availability of these elements. Madagascar is also known to have significant mining potential, with a variety of minerals being commercially exploited. One of the most prominent minerals mined in Madagascar is graphite. The country has the world's third-largest known graphite reserves, with deposits mostly found in the south-eastern region.

The assessment will also include value chain for these critical minerals therefore activities such as exploration, extraction, processing, and recycling will be evaluated. Fiscal regulation as well as the macroeconomic and political context will be scanned to give an overview of the country regime. ESG regulations and challenges will be depicted for the investors to better understand the background and questions to address when it comes to launch activities on the ground. A list of downstream to upstream actors related to the mining sector will assist deciders to build their Business to Business network. This country profile will try to address the needs of the EU green deal according to the country strategies and planning.

Eventually, this report will underline some project opportunities or recommendations.

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- WR Consulting for their assistance regarding the actors of the ECRMs whole chain and institutions dedicated to the mining sector;
- Control Risk for providing the overview on the political context;





# 1. Extended Critical Raw Materials (ECRM) supply potential of Madagascar

## 1.1. Inventory of the ECRM

### 1.1.1 Geological setting

Two thirds of eastern Madagascar are underlain by Precambrian rocks, sometimes intruded by Cretaceous to Neogene volcanics (basalts and rhyolites), whereas the western third is composed of two large basins of mid-Palaeozoic to Recent sedimentary rocks.

The Precambrian basement can be subdivided into six major geological domains (Antongil/Masora - Antananarivo - Ikalamavony - Androyen-Anosy - Bemarivo and Vohibory; Figure 2). Three distinctive magmatic suites intrude the domains including the Dabolava suite (ca. 1 Ga), the Imorona-Itsindro suite (820-760 Ma), and the Ambalavao-Kiangara-Maevarano suite (570-520 Ma).

The central part of the island is represented by the Archaean formations of the Antongil/Masora Domain (in the east) and the Antananarivo Domain. The Antongil/Masora Domain is interpreted as a fragment of the Dharwar Craton in India.

The adjacent Antananarivo Domain is characterized by the presence of four units of mafic-ultramafic gneisses known as the "Tsaratanana Complex," and interpreted as metamorphosed greenstone belts. The "Tsaratanana Complex" and the granitic-gneissic Antananarivo Domain are deduced as juxtaposed during the Late Archaean. It is clear that the Antananarivo Domain and the "Tsaratanana Complex" are very similar to the eastern domain of the Dharwar Craton, where similar structural, geochronological, and metallogenic characteristics have been identified.



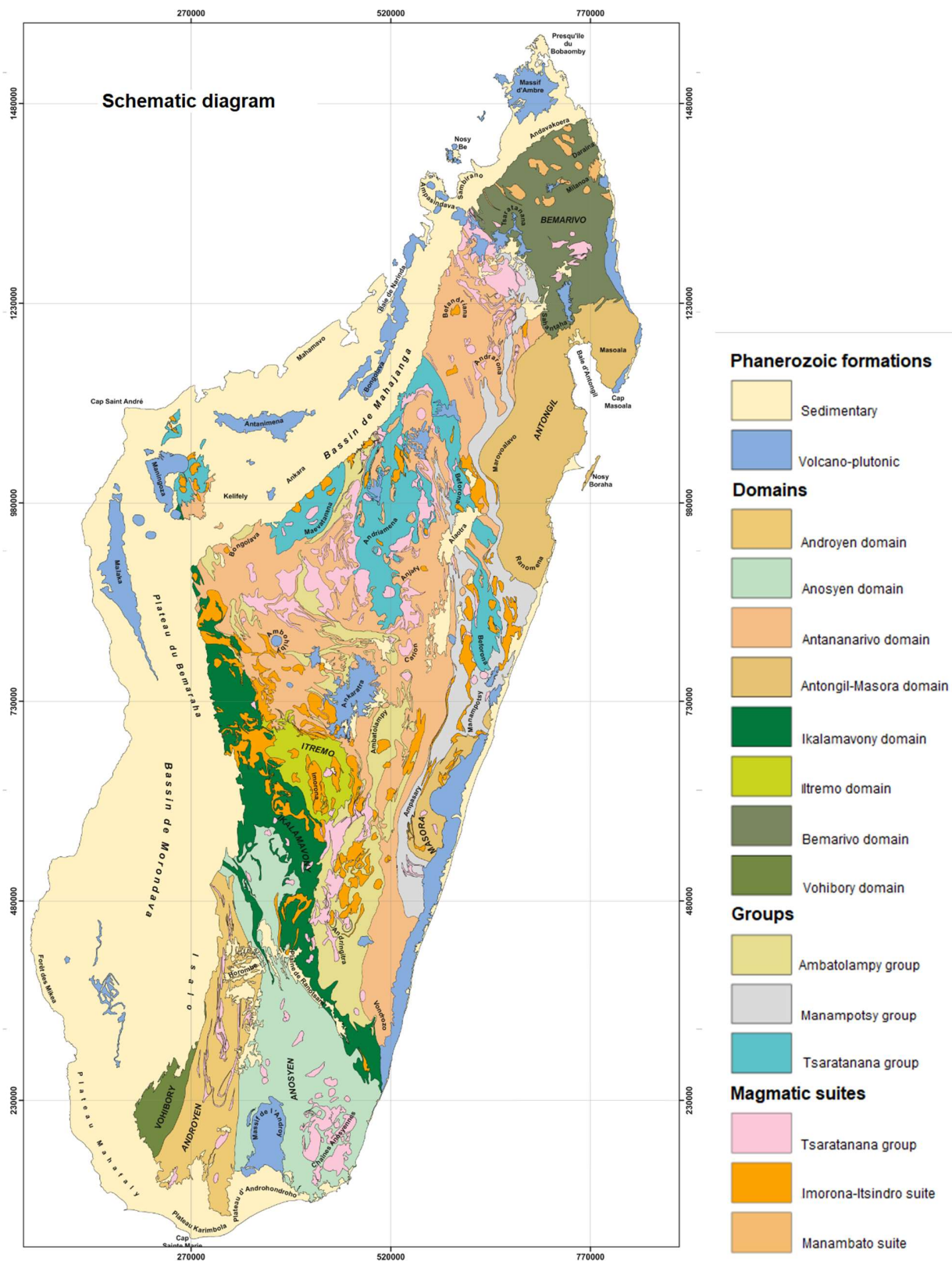


Figure 1: Madagascar geological Domains and sub-domains and magmatic suites



In the Antongil/Masora Domain, recent studies have allowed to: i) extending the period of juvenile accretion for the Archaean crust up to 3.32 Ga; ii) defining a new volcano-sedimentary assemblage deposited around 3.18 Ga and metamorphosed at 2.55 Ga; iii) specifying the deposition age of other supracrustal formations between 3.2 and 2.5 Ga, a period characterized, worldwide, by the emplacement of komatiites; iv) highlighting the same episode of anatexis and high-grade metamorphism at 2.5 Ga in the Antananarivo Domain and the "Tsaratana Complex," west of the purported suture. Then, the Antongil/Masora and Antananarivo domains are interpreted as two blocks accreted from late Archaean to early Palaeoproterozoic.

The Antongil Domain is crosscut by Palaeoproterozoic magmatism represented by mafic dykes and tonalitic to dioritic orthogneisses.

On a Gondwana scale, the architecture and lithological nature of the Archaean blocks in Madagascar are very similar to those in India. Thus, the Antongil/Masora Domain and the western part of the Dharwar Craton are two fragments of a single Mesoarchaeo-aged assemblage. The Neoproterozoic Antananarivo Domain, including the "Tsaratana Complex," is highly similar to the eastern part of the Eastern Dharwar Craton. Therefore, the Neoproterozoic terrains of the Eastern Dharwar Craton and the Antananarivo Domain are symmetrically arranged around a Mesoarchaeo-aged nucleus formed by the Western Dharwar Craton and the Antongil/Masora Domain resulting in "Greater Dharwar Craton" model.

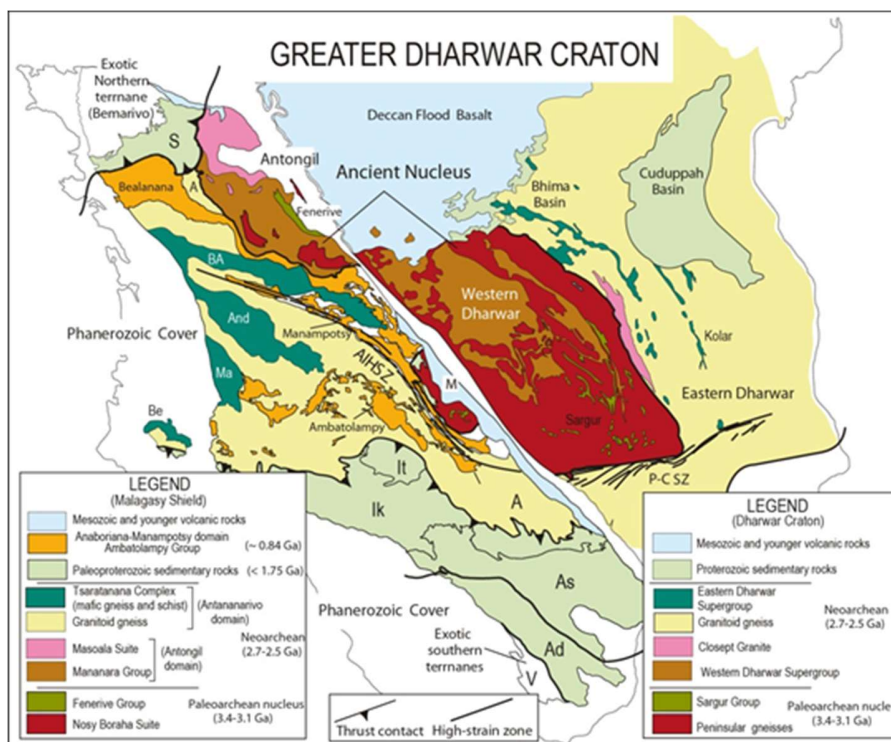


Figure 2: The "Greater Dharwar Craton"<sup>1</sup>

The southernmost domains (Androyen and Anosyen) consist of a Palaeoproterozoic substratum (2.0-1.8 Ga) and a cover sequence deposited before late Neoproterozoic intersected by the "intra-domain" shear zone.

<sup>1</sup> According to Tucker et al., (2011) showing the symmetry of the juvenile Neoproterozoic crust (c. 2.7-2.5 Ga) around the central Palaeo-Mesoarchaeo nucleus (> 3.2 Ga) (Western Dharwar and Antongil-Masora Domain)

The Ikalamavony Domain is characterized by the presence of volcano-sedimentary formations deposited between 1.03 and 0.98 Ga and a magmatic suite dated at ca. 1 Ga (Dabolava Suite). The formations of the Ikalamavony Domain and the Anosyen sub-domain are involved in a complex folding deformation described as a "flower structure." This structure results from the extrusion of the Anosyen-Androyen Domain in response to oblique convergence between East Gondwana and West Gondwana. The Ikalamavony Domain is located at the boundary between the Antananarivo Domain and the Anosyen-Androyen Domain.

The Dabolava Suite, intrusive in the Ikalamavony Domain, has also been identified in the Anosyen sub-domain implying that they were already juxtaposed before 1000 Ma.

By discovering a Palaeoproterozoic crust in the Anosyen Domain and the accretion of this domain to the Archaean Antananarivo Block during the Mesoproterozoic (1000 Ma), it is proposed that the detrital signatures, especially the 2.0-1.8 Ga population in Palaeoproterozoic metasedimentary formations, originate from the terrains of southern Madagascar related to the "Wanni and Highland Complexes" in Sri Lanka, and the "Rayner Complex" in Antarctica.

The Antananarivo Domain forms the substratum of two sedimentary basins formed during a period of intracontinental extension. The sediments would have been deposited slightly before or synchronously with the magmatism of the Imorona-Itsindro Suite, during the Mesoproterozoic between 820 and 760 Ma.

To the north of the Antananarivo Domain, the Bemarivo Domain crops out. It consists of a Cryogenian magmatic arc (ca. 750-740 Ma), thrust over the Palaeoproterozoic metasedimentary formations, with the entire assemblage subsequently thrust over the Antananarivo and Antongil domains.

Finally, the extreme southwest of Madagascar is composed of the Vohibory Domain, interpreted as an intra-oceanic island arc accreted to the Androyen-Anosyen Domain during the Ediacaran (ca. 630 Ma). The juvenile rocks of the Vohibory Domain share lithologically and geochemically similarities with the upper nappes of the Mozambique Belt (i.e., Cabo Delgado Nappes in Mozambique). The resemblances in rocks compositions, ages inferred from protoliths, and metamorphic ages between these regions suggest that the Vohibory Domain represents an exotic block formed in the palaeo-Mozambique Ocean and subsequently sutured to Madagascar during early Ediacaran.

The last event of Madagascar geodynamic evolution corresponds to the magmatism of the Ambalavao-Kiangara-Maevarano Suite (late Neoproterozoic to early Cambrian). This magmatism is characterized by the emplacement of plutons and "stratoid" massifs of granites and syenogranites throughout the Malagasy shield, except in the Vohibory Domain and the Antongil sub-domain. This late-stage magmatism and the associated numerous pegmatitic veins are directly related to some gemstone deposits and, uranium, niobium-tantalum, as well as REEs (Rare Earth Elements) occurrences.

### 1.1.2 Known Ore deposits and occurrences

Mineral potential of Madagascar covers a very large set of mineral commodity occurrences and deposits.

#### Mined ECRMs

- Ambatovy lateritic Ni-Co deposit (Sumitomo-Komir);
- QIT heavy mineral sands deposit containing Ti-Zr-REE (QMM-RioTinto);
- Advanced exploration projects and small-scale exploitation: Toliara heavy mineral sands deposit, graphite deposits (Molo, Maniry, Graphmada, Sahamamy, Vatomina), and vanadium deposit;



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- Artisanal and small-scale mining: Nb-Ta, REE, and Li.

### ECRM occurrences

Occurrences of nearly all ECRM have been described in Madagascar. The only exception is borate even if some boron-bearing minerals have been identified as danburite (chemically close to datolite mined in Russia). It is noteworthy that there is no “real” occurrences of germanium, gallium, indium and hafnium owing to these elements are always mined as by-products. The possible lack of chemical analyses of various base metals ores impede the identification of Ge, Ga, In and Hf. For example, germanium is associated with zinc, gallium with zinc or aluminium/bauxite, indium with zinc or tin and hafnium with zirconium.

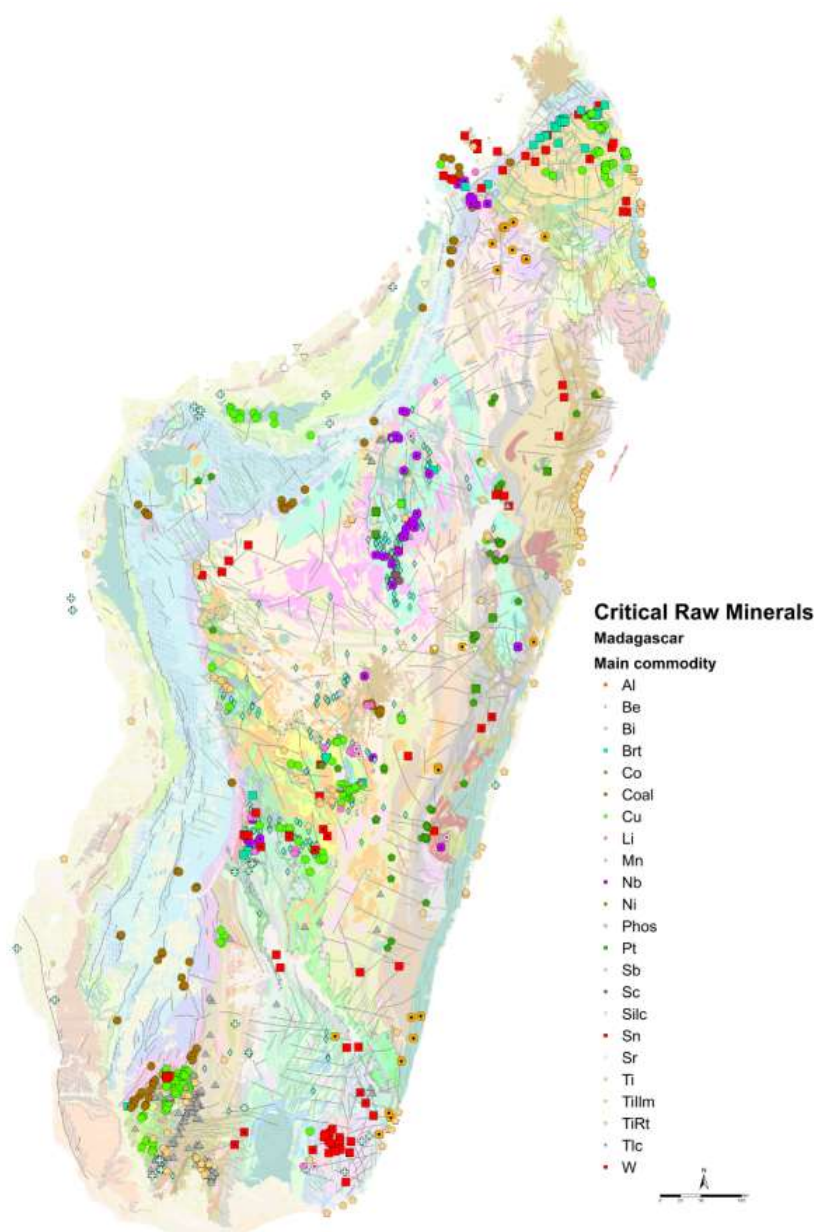


Figure 3: Main CRM occurrences in Madagascar<sup>2</sup>

<sup>2</sup> SigAfrique 1 :2,000,000 scale (Geology) and SigAfrique DB (occurrences)



## 1.2. Prospectivity and mineral high potential mapping

### 1.2.1 Selection of the ECRM for mineral prospectivity

On the basis of the extended list of ECRMs, most of them have been described in Madagascar, a country with an exceptional and promising geological potential. Borate deposits are the only exception. Neither are germanium, indium and gallium, but by taking into account that these metals are extracted exclusively as by-products of tin, zinc and bauxite/aluminium mining, their presence can be assumed with a high level of confidence.

Following discussion with the MMRS (Ministère des Mines et des Ressources Stratégiques / Ministry of Mines and Strategic Resources), **3 critical raw materials** have only been selected for their high discovery potential and investment attractiveness: **graphite, lithium and manganese**. The exploration potential for pegmatites and graphite in the country had previously been cartographically highlighted by Roig *et al.* (2012). The areas selected for prospectivity mapping are:

- The central part of the island centred on Antsirabe town is located at the south west of Antananarivo and covering numerous Li-bearing pegmatite vein fields (Ambatofinandrahana – Amborompotsy – Ikalamavony) and covers ca. 85,000 sq. km. The main issue is to segregate the different types of pegmatite (LCT and NYF), since NYF-type pegmatites have no interest for lithium.
- The extreme south of the country, nearby Ampanihy town where encompasses more than 100 manganese occurrences, and covers ca. 20,000 sq. km.
- As far as graphite potential is concerned, it was initially decided to analyse the Toamasina area. However, owing to the promising results, it was finally decided to carry out predictivity modelling all over the country.

The prospectivity methodology is based on “Disc Based Association” (DBA) followed by the machine learning classification “Random Forest” (RF) developed by Vella (2022). The main dataset associated with the predictivity mapping exercise is the geological map of Madagascar at 1:1,000,000-scale (Roig *et al.*, 2012) and the “©SIG Afrique” BRGM occurrences and deposits database.

The DBA grid for predictive modelling is mainly defined by **five parameters**:

- Size of cell –  $d$ ;
- Search radius for lithologies –  $R$ ;
- $R/d$  ratio;
- Search radius for mineral occurrences –  $R_1$ . It can be null, in this case the search radius will be restricted to the cell size ( $d$ );
- Search radius for faults –  $R_2$ . It can be null, in this case the search radius will be restricted to the cell size ( $d$ ) or it can take into account the cumulative length of faults present in the cell size ( $d$ ) or the distance to the nearest fault;
- In order to maximize the grid resolution while minimizing overlaps and cells with only one lithology, the parameters of DBA grid for **Mn and Li** in this study are:  $d = \text{ca. } 1000 \text{ m}$ ,  $R = 3000 \text{ m}$ ,  $R/d = 3$ ,  $R_1 = 3000 \text{ m}$ ,  $R_2 = \text{distance (distance to the nearest fault)}$ ;
- The parameters of DBA grid for **graphite** used in this study are:  $d = \text{ca. } 1666 \text{ m}$ ,  $R = 5000 \text{ m}$ ,  $R/d = 3$ ,  $R_1 = 5000 \text{ m}$ ,  $R_2 = \text{distance (distance to the nearest fault)}$ ;

### 1.2.2 Mineral high potential areas

Mineral high potential areas were highlighted for the four studied ECRMs in Madagascar. The criteria allowing the assessment of DBA-RF modelling can be found in the table below. All the favourability maps can be found in the **Appendix 1.2 MPM MADAGASCAR**



	TN	FN	FP	TP	TPR	FPR	PPA (%)	Precision (%)	Accuracy (%)	J-score	Threshold
<b>Graphite</b>	22 240	-	6 194	355	1.000	0.218	22.75%	5.4%	78.5%	0.833	0.644
<b>Graphite</b>	182 100	77	31 540	1 783	0.959	0.148	15.46%	5.4%	85.3%	0.813	0.505
<b>Li</b>	67 708	1 332	13 508	3 231	0.708	0.166	19.51%	19.3%	82.7%	0.571	0.440
<b>Mn</b>	15 931	412	2 082	1 312	0.761	0.116	17.20%	38.7%	87.4%	0.720	0.381

**Notes:** True Positive (TP) and True Negative (TN) correspond to the number of grid cells which are correctly predicted by the RF model (i.e. mineralized and non-mineralized cells, respectively). Inversely, False Positive (FP) and False Negative (FN) correspond to the number of grid cells which are incorrectly predicted by the RF model (i.e. mineralized instead of non-mineralized cells and non-mineralized instead of mineralized cells, respectively). **FP could correspond to mineral high potential areas.** True positive rate (TPR), also called "Recall", correspond to  $TP/(TP+FN)$ , False positive rate (FPR) correspond to  $FP/(FP+TN)$ , Percentage of prospective area (PPA) correspond to  $(TP+FP)/All$ , Precision correspond to  $TP/(TP+FP)$ , Accuracy correspond to  $(TP+TN)/All$  and J-score correspond to  $TPR - FPR$ .

**Lithium (Li):** the predictivity map covers a large area of the central part of the island. It shows three main areas of high prospectivity, located around Anbatofinandrahana, west of Ikalamavony and east of Miandrivazo. Cartographically, the lithological associations that characterise these areas are different. Near Anbatofinandrahana, the pegmatites are mainly associated with three units: "psammitic schists and gneisses" (It2 label), "quartzite and meta-arkose" (It3 label) and "granite and acidic orthogneiss" (II1 label). While the other two groups are linked to mafic paragneiss and amphibolite (Ik5 label) and/or quartzo-feldspathic gneiss (Ik3 label). In all cases, the distance from faults seems to play a role, but probably less important than the surrounding lithologies. These different associations of pegmatite swarms are difficult to understand; the clusters are likely to be of different origin or genetically linked to underlying rocks that outcrop less or not at all in the region. The model reveals that 15.8% of studied area can be prospected for lithium.

**Manganese (Mn):** the favourability map over south Madagascar shows that there is a strong association between manganese occurrences/deposits and "Graphitic paragneiss with biotite - sillimanite" (Ad6 label), anorthosite (Ad1 label) and faults. The correlation between manganese mineralisation and faults is particularly unsurprising in this area since a major shear zone is occurring at the transition between Vohibory and Androyan domains. There is very few information about manganese occurrences in this area and seem to be atypical: gossaneous materials developed at top of rhodonite lodes. The association of manganese with anorthosite is difficult to interpret. Indeed, it is likely that there is no genetic association between them and that they are only correlated with the major Ampanihy shear zone. This shear zone could play a major role as a preferred path for anorthosite magma ascension and also fluids circulation (responsible of rhodonite veins development). The model reveals that 10.6% of the studied area can be prospected for manganese.

**Graphite:** on the island-wide scale, the graphite occurrences and deposits are widely correlated to faults and shear zones. From a lithological point of view, many different units host mineralisations: "Schist and graphitic paragneiss of Andasibe" (At4 label), "Micaschist and migmatitic aluminous gneiss bearing sillimanite, graphite, marble, calcium silicate gneiss" (At1 label), "Basic migmatitic quartzo-feldspathic paragneiss with numerous intercalations of magnetite bearing quartzite and amphibolite" (At13 label), "Garnet-bearing quartzo-feldspathic gneiss" (Ad5 label), "Brickaville migmatitic orthogneiss with hornblende-garnet" (II3 label) and "Quartzo-feldspathic orthogneiss with garnet ± cordierite ± spinel" (An5 label). Unsurprisingly, most geological units hosting graphite are medium/high grade metamorphic. In some of them, graphite is even described in the paragenesis, supposing high concentration. The model reveals that 14.6% of Madagascar's surface can be prospected for graphite.



The results of this preliminary study are particularly interesting and have already highlighted some very promising new areas. However, these initial results are constrained by the quality and quantity of the data. There are many ways to improve the process so as to obtain more accurate predictivity maps.

The main limitation of this work is the scale of the geological map (currently 1:1,000,000), so undertaking further geological mapping campaigns could be of great benefit. Another possibility would be to reinterpret and vectorise older maps already existing in some areas.

Predictive tools could also benefit from the integration of high-resolution geophysical data. This is particularly the case for mineral deposits such as pegmatites, which are often linked to blind granitic intrusions which can have specific geophysical signature (magnetism, gravity etc.). It could also be used counterbalance the uncertainty inherent to geological mapping.

Another way of refining our results could be to carry out a field check of mineral occurrences before incorporating them into the model. The case of lithium occurrences/deposits is a good example as in Madagascar they are linked to one family of pegmatites, the LCT type (for lithium-cesium-tantalum). Unfortunately, the other family of pegmatites known as NYF (for niobium-yttrium-fluorine) do not carry lithium. It is noteworthy that the distinction is rarely made in the occurrences database between NYF and LCT types. The accuracy of the location of occurrences could also be improved to avoid misplaced points and to be more consistent with improved geological mapping.

### 1.3. Ore processing, refining and recycling capacities

Apart from Law 99.021 of August 19, 1999 regarding the management and the control of industrial pollution, there is no specific legislation articles about “recycling activities”. Not even as part of the mining legislation. Same issues with processing or refining capacities which are very limited with only one plant dedicated to nickel and cobalt processing as shown hereafter:

Name processing entity	Processing Facility	Status	ECRM	Owner	Operator	Technology / Process	Feedstock	Products	Capacity	Energy used
Ambatovy refinery	Refinery	Active	Cobalt (Co)	JV Sumitomo [54%], KOMIR [46%]	Sherritt until 2024	HPAL	Ni laterites from the “Ambatovy Deposit” and the “Analamay Deposit”	Co briquettes	5600 t/y Co	Coal
Ambatovy refinery	Refinery	Active	Nickel (Ni)	JV Sumitomo [54%], KOMIR [46%]	Sherritt until 2024	HPAL	Ni laterites from the “Ambatovy Deposit” and the “Analamay Deposit”	Ni briquettes	60,000 t/y Ni	Coal

**Table 1: Main processing units.**

With regard to graphite deposits, some are already being exploited on a semi-industrial scale or have been the subject of short-term pilot operations which are now awaiting further investment to ramp up production.





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These operations are mainly focused on the extraction and production of a purified mineral concentrate, which is then shipped abroad for refining or manufacturing (e.g. production of graphite anodes in China).

The situation is very similar for ASM, where small-scale mining operations produce various mineral concentrates such as lithium-rich micas or small volumes of Nb-Ta concentrates (which are frequently hand sorted). These concentrates are then shipped directly abroad with no added value for the country.



## 2. Assessment of the ECRM value chain

### 2.1. Characterisation of the value chain for primary and secondary raw materials

The minerals industry value chain is a series of industrial processing steps that add value, both in terms of economy and usability from the discovery of valuable minerals to delivery to market as final products. These steps include mineral exploration, first-stage mineral processing, advanced stage mineral processing, product manufacturing, product marketing, and product end-of-life recycling. Each stage represents a value-add on the previous and there are opportunities to invest at each of the major stages. The mineral industry value chain is dynamic and shifts according to commodity market, which is influenced by supply and demand, price fluctuations, changing market structures, jurisdiction, and environmental concerns. An understanding of the mineral industry value chain is important for the effective management and optimization of each stage of the value chain ensuring the smooth flow of materials, maximizing resource use, and meeting market demand efficiently.

#### 2.1.1 List of the mining, processing and recycling projects

Despite the richness of the mining context in Madagascar, large-scale mines are underdeveloped, processing units are rare and recycling activities are non-existent.

No	ECRM	Name of Deposit / Mine	Development Stage
1	Cobalt (Lateritic)	AMBATOVY	Mining Concession
		Several other occurrences	Geological occurrences
2	Ni (Lateritic)	AMBATOVY	Mining Concession
		Several other occurrences	Geological occurrences
3	Vanadium	GREEN GIANT Project - Nextsource Materials (ex- ERG Madagascar)	Exploration / Research Licence
		Several other occurrences	Geological occurrences
4	Lithium (spodumene)	MILLIE'S REWARD Greenwing resources (ex Base metals Ltd)	Exploration / Research Licence
		Several ASM	ASM
		Several other occurrences	Geological occurrences
5	REEs	AMBANJA Harena Resources	Exploration / Research Licence
6	Graphite	GRAPHMADA - Greenwing resource (ex Base metals Ltd)	Mining Concession
6	Graphite	TIRUPATI: Sahamamy & Vatomina projects	Exploration / Research Licence
		MOLO project - Nextsource Materials (ex-ERG Madagascar)	Exploration / Research Licence
		MANIRY Project- EVION group (former BlackEarth Minerals)	Exploration / Research Licence
		Several other occurrences	Geological occurrences



7	Titanium (HMS)	Rio Tinto - QMM SA	Mining Concession
		BASE TOLIARA (Ranobe deposit) – Base Resources	Mining Concession
		Several other occurrences	Geological occurrences

**Table 2: List of the main mining activities.**

The **Ambatovy Project** includes:

- The Ambatovy mine;
- The pipeline which carries the laterite pulp from Ambatovy to the Toamasina plant;
- The Toamasina leaching plant which includes several related units: power plant, steam generating plant, water treatment plant, hydrogen plant, hydrogen sulphide plant, sulphuric acid plant, and others.

Toamasina Leaching Plant: the laterite ore pulp from the Ambatovy plant arrives through the pulp pipeline. This pulp is partially dewatered/thickened in an ore thickener before being sent to the high-pressure acid leaching circuit. The water recovered by the thickener will be collected in a recovery pond or basin to be used as process water.

The high-pressure acid leaching (HPAL) has five parallel circuits, each consisting of a feed tank, a pulp heater, an autoclave, expansion tanks, and associated pumps. In the HPAL operation, the laterite ore is heated with steam in a series of direct heaters. The heated pulp is pumped into the autoclave, where it reacts with concentrated sulphuric acid. In the autoclaves, nickel, cobalt, copper, zinc, manganese, magnesium, and some aluminium are leached from the ore in the form of soluble sulphates. The majority of the iron, chromium, and titanium in the ore, as well as the remaining aluminium, are part of the solid residue consisting of stable oxides and hydroxides. The autoclave pulp is then brought back to atmospheric pressure and cooled by steam generation in three expansion tanks. The steam from the expansion tanks is used in pulp heaters and in other areas of the plant to optimize heat recovery.

This plant produces various types of waste, including calcium sulphate (gypsum) resulting from the neutralization of free acid with lime. The resulting gypsum pulp is thickened, and some of the underflow pulp from the gypsum thickener is recycled to the neutralization tanks to act as a seed for improving the sedimentation characteristics of solids; the rest of the pulp is pumped and sent to the residue storage area.

Condensates are also recycled. A portion of the ash from the coal burners (85,000 t/year) is used for runway maintenance. The remainder is disposed of in the residue storage area. In brief, recycling is rather limited.

The **Rio Tinto / QMM Ilmenite Project** and its recycling of the process water: the company uses a lot of process water for its ore separation system.



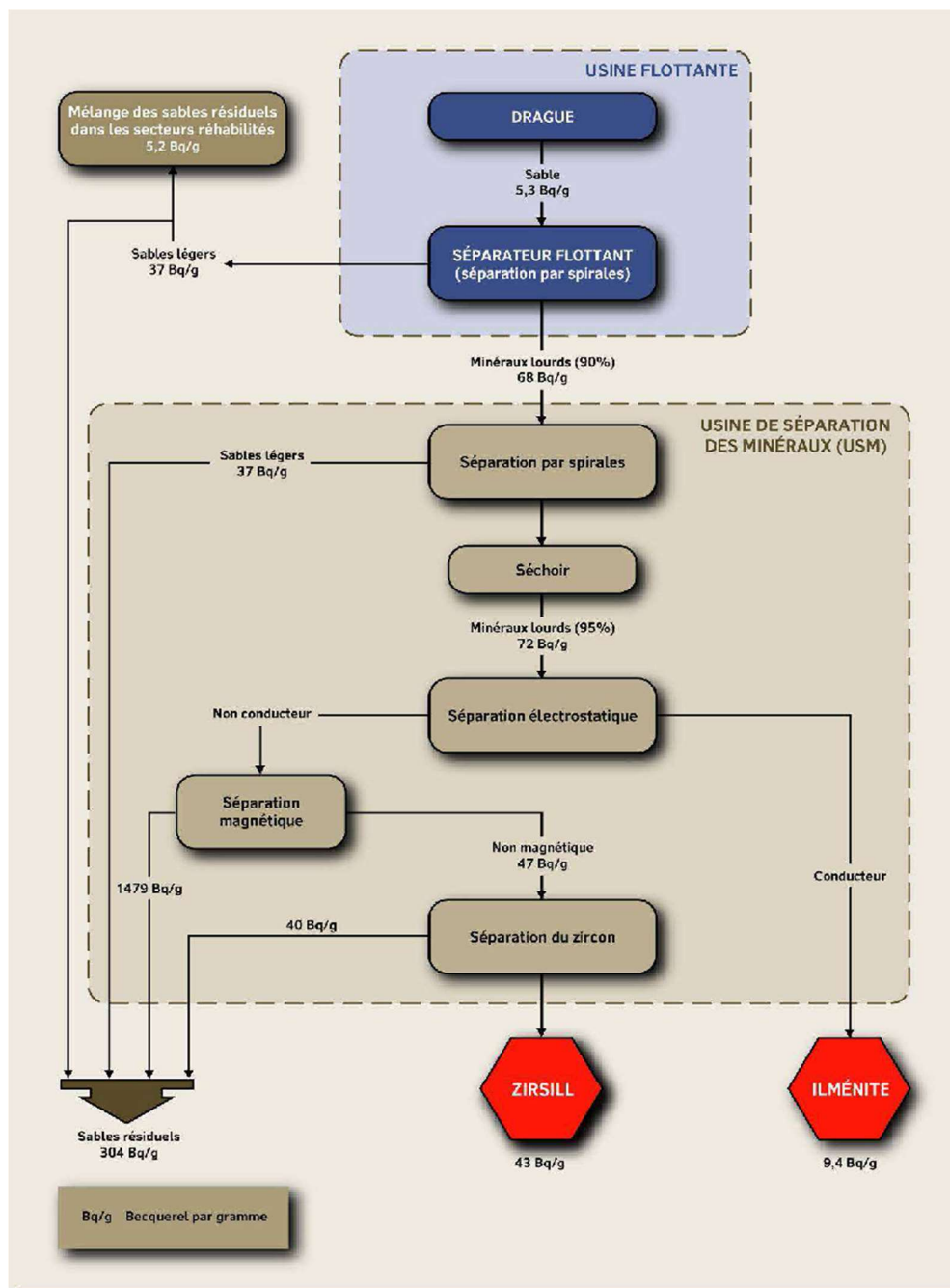


Figure 4: The floating plant and MSU separation circuits.

In this context, the water flow required to operate the MSU (Mineral Separation Unit) is approximately 14,120 m<sup>3</sup>/day. Out of this quantity, 1400 m<sup>3</sup>/day is directed to the wet circuit of Zirsill (Zircon - Sillimanite) and the ore preparation plant to supply water to the spirals. Additionally, 1000 m<sup>3</sup>/day is allocated for general cleaning of the plant. Almost all of the water used is recycled after being collected in sedimentation basins and directed to the MSU's supply basin.

Using two pumps, the water from the basin is transported to a reservoir topped with two curved screens that prevent fine particles or contaminants from entering the process water. From this reservoir, eight pumps are used to distribute the water to various users within the MSU plant.

### **Rio Tinto / QMM Ilmenite Project** and its by-products recycling: **Mineralogical composition of the deposit**

The total heavy mineral content measured in the deposit ranges from 4 to 12%. Minerals of economic interest – ilmenite, rutile and zircon – make up about 85% of the total heavy mineral concentration, with the remainder mainly composed of sillimanite, alumino-magnesian spinel, hercynite, monazite and garnet in traces. For the rest, the deposit contains 88 to 95% quartz sand (silica), with 1 to 2% clay. During mining, the majority of these minerals, unused, are put back into place after the extraction of economic minerals.

**Radioactive minerals:** the ore extracted from the QMM mining area contains low concentrations of radioactive minerals. The mechanisms of erosion and weathering of rocks formed, over time, mineralized sands which are transported by rivers to the sea, then deposited on beaches. All mineralized sands in the Mandena area come from these mountains and, as in the majority of such deposits in the world, contain small quantities of monazite and zircon.

The monazite (0.1% of the deposit) is a rare earth oxide phosphate containing 7 to 10% thorium oxide and less than 1% uranium oxide. Zircon (0.2% of the deposit) is a zirconium silicate containing less than 0.1% thorium oxide and uranium. All the measurements recorded inside the area show an average level of gamma radiation of 61  $\mu\text{R}/\text{h}^3$ , with values varying from less than 1  $\mu\text{R}/\text{h}$  up to 83  $\mu\text{R}/\text{h}$ .

During the first ten years of operation, the monazite market was saturated due to increased production in China. It followed that monazite, which could not be made profitable, was therefore one of the mining by-products with no commercial value. However, since 2017, due to the increasingly growing global market, monazite, which was formerly a by-product, is on the market.

**ASM recycling activities:** substances that were previously discarded in tailings, due to their current critical and strategic nature, are now regaining interest. This is the case, for example, at the Andilana Avaratra site, known for its high-quality blue beryl, and currently reopened to extract beryllium, coltan, and mica. The Ibity site, famous for its gemstone-rich pegmatite fields, is now converted into mica and spodumene mines.

### 2.1.2 Existing ESG indicators

So far, no Malagasy company is ESG certified. However, major mining companies like Ambatovy SA and Rio Tinto/QMM SA are incorporating the ESG indicators into their decision-making processes.

Example of Ambatovy Nickel (Cobalt Project): Since 2018, the Ambatovy Project is publishing an "ESG Communication Book." The company has integrated a Director of ESG into its organizational structure. The reports includes the following sections:

- Sustainability policy;
- Environmental aspects;
- Social aspects, including labour management;
- Governance (taking into account the international situation);
- ESG quantitative data;
- Independent evaluation;
- Information dissemination.

### What about ESG as part of the ASM activities?

In Madagascar, very few artisanal mining companies practice Corporate Social Responsibility (CSR) and even fewer the concept of ESG which is completely unknown to them. For CRM, exclusively exploited by ASM such as mica and manganese as well as beryllium, spodumene and malachite, actions to improve the social situation are mainly initiated under pressure of the consumers and governments concerned about the origin of the raw

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<sup>3</sup>  $\mu\text{R}/\text{h}$  : Microrentgen / hour



materials, or by manufacturers motivated by responsible attitudes. ESG intervention are mainly education, health and safety, protection of biodiversity, and governance.

### Operating system of organizations launching social and environmental initiatives:

**1- Actions initiated and carried out by the operator:** permittees, collectors, exporters of mining substances for the exclusive benefit of the stakeholders directly affected or concerned by these activities. Several artisanal mining operators have reported that they finance or directly contribute to social development plans for their employees and the communities affected by their activities.

Individual operators contribute financially or materially to:

- Basic infrastructure, including the rehabilitation of municipal roads, construction/rehabilitation of primary schools, community health centres, child nurseries;
- Establishment of a safety net during lean times or natural disasters (famine and bad weather) or during festivities, including National holidays and End-of-Year festivities.

**2- Agreement between suppliers-client-consumers** as conditions of **partnership**. Interested parties might finance social actions. The funds collected are managed by Non-Governmental Organizations (NGOs) or associations with a social vocation and/or non-profit goals. Large luxury jewelry companies allocate part of their profits to finance local associations in order to rehabilitate exhausted or abandoned mining sites, to diversify miners' income, to add value to mining products. This form of agreement mainly concerns gold and precious stones sector and is financed by world-renowned luxury jewelry companies. The financing of the projects is mainly, if not exclusively, granted by the latter and only its suppliers of stones and gold benefit from it, which gives it a good image and credibility with its customers.

**3- Sectoral manufacturers** come together and contribute to create a **common fund**. This common fund is intended to support a previously defined cause or concepts such as the eradication of child labor in mines, the fight against all forms of transactions to finance conflicts. These funds are managed by NGOs or non-profit associations to support social initiatives in the country or along the supply chain. The funds can be used to train state agents and other stakeholders in the fight against corruption and the establishment of dialogue between all ASM stakeholders in Madagascar.

For the ERCM, the eradication of poverty, the protection and the fight against child labor are part of the long-term initiatives initiated jointly by international NGOs and the government with the support of international partners including automobile and aeronautical manufacturers and other industries using strategic minerals. The Association of Industrial Product Operators (AEPI), based and operating in the South of Madagascar, is building child nurseries in order to fight against child labor and offer better working conditions for women mica sorters. This project mobilizes the members of the association and is supported by initiatives for the improvement of the Mica sector in Madagascar and around the world. Hundreds of women mica sorters and their offspring benefit from this project.

### 2.1.3 Status of economic links between the formal and informal sectors

The ASM sector plays a significant role in the economy of Madagascar, and although ASM actors operate informally, it is estimated that the sector is the second-largest source of employment after agriculture. ASM producers have traditionally focused on the extraction of gold, coloured gemstones, and mica. The recent increased demand of lithium and favourable market prices, especially between 2021 and 2022, has led many ASM actors to shift to the production on lithium-bearing minerals (except miners involved in gold mining). Trading mainly involves Indian and Chinese traders, who export unprocessed and low concentrations of lithium ores. In addition to lithium-bearing minerals, the ASM sector has also been producing manganese, which like lithium is mainly sold to Asian traders.

A comprehensive overview on the ore deposits and production parameters of ECRMS currently recovered by artisanal and small-scale mining in Africa is already available as part of the deliverable 1.4. While a more



detailed analysis of the ASM sector role in the production of ECRMs in Madagascar, including major challenges and investment opportunities on production, social, governance and environmental impacts and value chain, will be available as part of deliverable 7.2.

## 2.2. Identification of the bottlenecks along the value chain

Despite the recent boom in ECRM commodity demand, Madagascar’s mineral value addition remains low, rendering a poor attainment of a substantive value chain state in this country. The mining value chain in Madagascar, like in many other countries, consists of various stages, from exploration and extraction to processing and export. Along this value chain, there are several bottlenecks and interdependencies that can affect the efficiency and productivity of the mining sector.

### 2.2.1 List of the main bottlenecks and the links between them

Madagascar is not covered by any recent Fraser Institute studies “Annual Survey of Mining Companies”. The analysis of the bottlenecks will, therefore, mainly rely on the Logistics Performance Index (LPI) from the World Bank. The LPI is the weighted average of the country scores on the six key dimensions:

- Efficiency of the clearance process (i.e., speed, simplicity and predictability of formalities) by border control agencies, including customs;
- Quality of trade and transport related infrastructure (e.g., ports, railroads, roads, information technology);
- Ease of arranging competitively priced shipments;
- Competence and quality of logistics services (e.g., transport operators, customs brokers);
- Ability to track and trace consignments;
- Timeliness of shipments in reaching destination within the scheduled or expected delivery time.

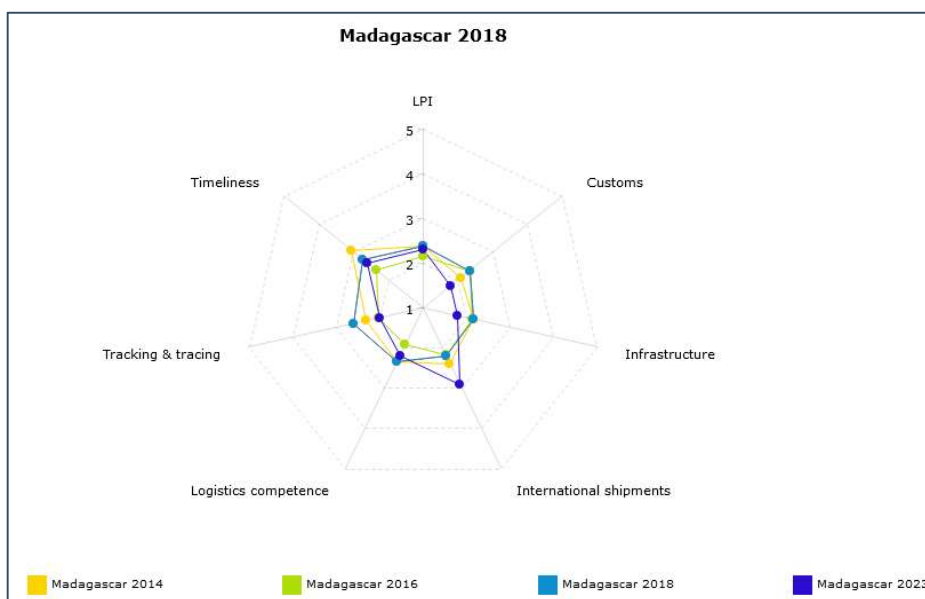


Figure 5: Logistics Performance Index (LPI) of Madagascar from 2014 to 2023<sup>4</sup>

The **Worldwide Governance Indicators (WGI)** from the World Bank aggregate data from more than 30 think tanks, international organizations, nongovernmental organizations, and private firms across the world selected on the basis of three key criteria: i) they are produced by credible organizations; ii) they provide

<sup>4</sup><https://lpi.worldbank.org/international/scorecard/radar/C/MDG/2018/C+MDG+2014+C+MDG+2016+C+MDG+2018+C+MDG+2023>

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comparable cross-country data; and iii) they are regularly updated. The data reflect the diverse views on governance of many stakeholders worldwide, including tens of thousands of survey respondents and experts.

- Government Effectiveness: 14.62/100;
- Political Stability – No Violence: 25.94/100;
- Regulatory quality: 20.75/100;
- Rule of law: 18.40/100;
- Control of Corruption: 17.92/100.

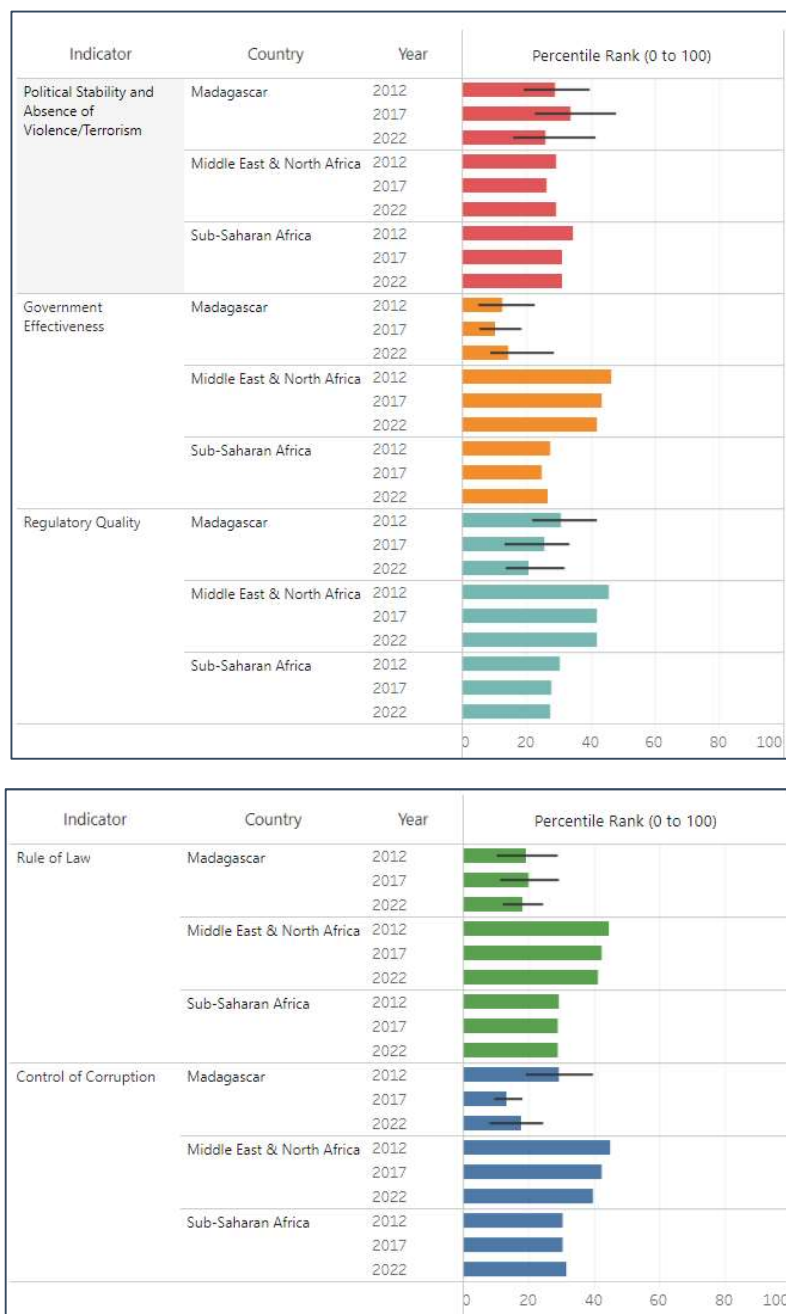


Figure 6: Worldwide Governance Indicators (WGI) of Madagascar from 2012 to 2022<sup>5</sup>

<sup>5</sup> <http://info.worldbank.org/governance/wgi/Home/Reports>





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The Ibrahim Index of African Governance (IIAG): published since 2007, the IIAG assesses governance performance in 54 African countries over the latest available 10-year period. It provides a framework and dashboard for any interested audience to assess the delivery of public goods and services and public policy outcomes in African countries. The IIAG constitutes the most comprehensive dataset measuring African governance, providing specific scores and trends at African continental, regional, and national level, on a whole spectrum of thematic governance dimensions, from security to justice to rights and economic opportunity to health.

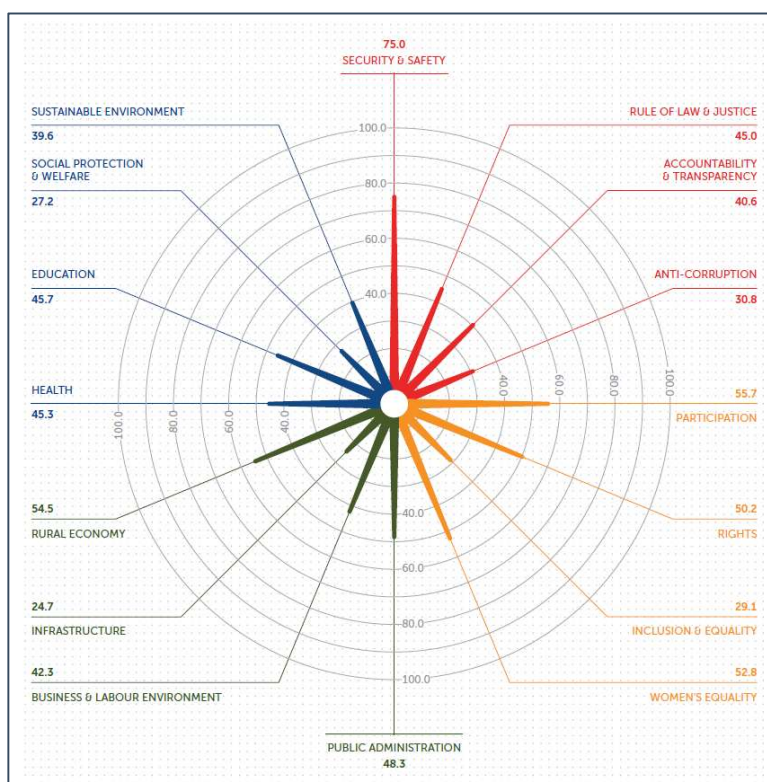
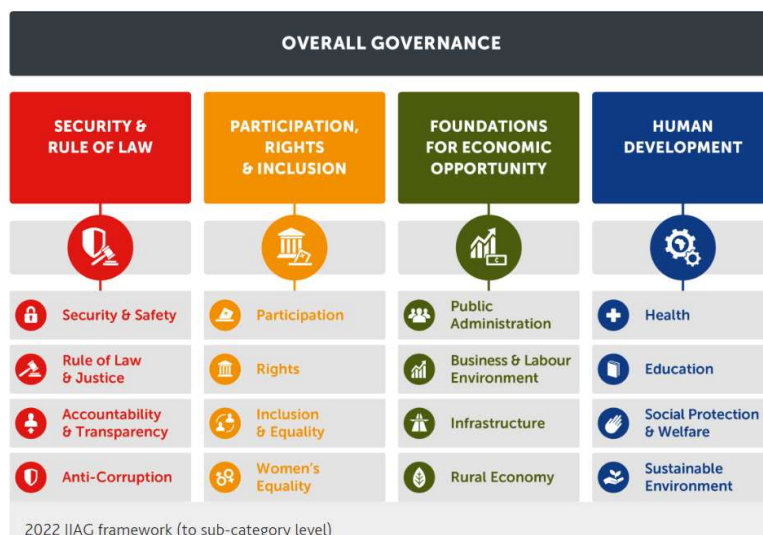


Figure 7: Ibrahim Index of African Governance (IIAG) for Madagascar in 2022<sup>6</sup>

<sup>6</sup> <https://iiag.online/fr/>



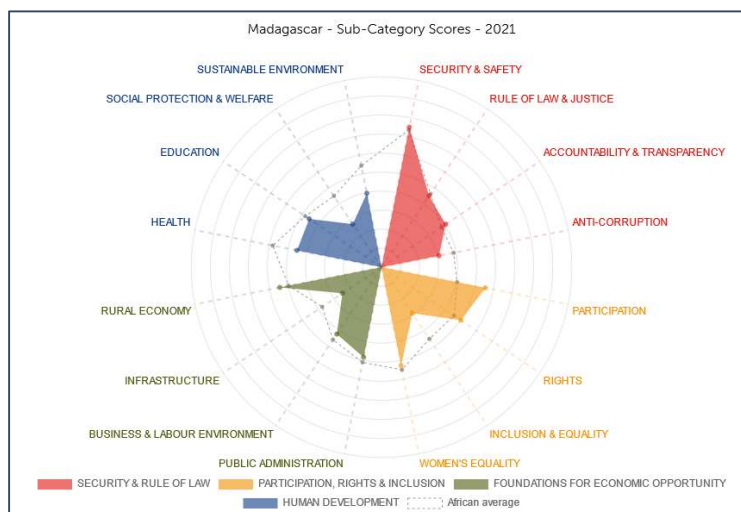


Figure 8: Ibrahim Index of African Governance (IIAG) for Madagascar in 2021<sup>7</sup>

### Water and energy infrastructure

"Traditional" energies, firewood and charcoal, represent more than 80% of the total energy consumed in the country. Supplies of "modern" energies (17% of consumption) are characterized by a heavy reliance on the oil bill, which weighs heavily on the National Water and Electricity Company (JIRAMA), and therefore on public finances.

In 2015, the Malagasy Government launched its **New Energy Policy 2015-2030** (NPE 2015-2030), aiming for electrification of at least 70% of households by 2030 (including 15% thermal, 0.5% wind, 5% solar, and 75% hydroelectric). According to the World Bank, this objective could only be achieved to the extent of 25% through the extension of large networks and 75% through mini-grid solutions (20%) or individual systems.

**Electricity production has been liberalized since 1999**, promoting free competition in the production sector and establishing a regulator. However, for multiple reasons (insufficient available power, distance from energy production centres, energy independence, among others), mining companies ensure their own production. The exercise of Production, Transport, and Distribution activities is subject, depending on the installed capacities, to one of the following permitting regimes:

#### Declaration regime:

Hydroelectricity	$P \leq 500 \text{ kW}$
Wind farm	$P \leq 250 \text{ kW}$
PV solar farm	$P \leq 150 \text{ kW}$

#### Authorization regime:

Thermal	:	$P \leq 500 \text{ kW}$
Hydroelectricity	:	$500 \text{ kW} < P \leq 5 \text{ MW}$

<sup>7</sup> <https://iiag.online/locations/mg.html>



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Wind	:	250 kW < P ≤ 5 MW
Solar Thermal	:	P ≤ 5 MW
Solar Photovoltaic	:	150 kW ≤ P ≤ 5 MW
Biomass	:	P ≤ 5 MW
Geothermal and marine energy	:	P ≤ 10 MW
Waste	:	P ≤ 5 MW

**Concession regime:** Beyond the powers indicated above, it is the Concession Regime which applies.

In Madagascar, given the limited extension of interconnected networks and independent networks that often only supply district capitals, a significant portion of the population still lacks access to electrical services. The electricity access rate in Madagascar was 25.8% nationwide in 2018 (approximately 70% in urban areas) and decreased to 13.2% in rural areas by 2020.

In addition to JIRAMA, the Rural Electrification Agency (ADER) was established in 2002 to implement rural electrification policy. ADER is responsible for processing authorization and/or concession requests from private operators, granting them, and overseeing, in coordination with the regulator, compliance by operators in rural areas with applicable obligations.

At the forefront of renewable energies is hydroelectricity, as the country has an estimated hydroelectric potential of 7800 MW, with less than 3% currently exploited. This aspect is reinforced by the promotion of solar and wind energy: an annual estimate of nearly 2 800 hours of sunlight and a wind energy potential evaluated at 2000 MW.

JIRAMA has implemented rolling blackouts for over twenty years. Electricity is regularly cut for one or more hours per day and, in some cases, for several days.

For the mining industry in Madagascar, areas with potential mineral resources are generally located far from JIRAMA distribution centres. Most mining operations either have their own hydroelectric plants or thermal power plants. JIRAMA has stated that its production capacity is insufficient to meet demand. Therefore, all future mining units should equip themselves or build their own electricity-generating plants, as well as water pumping and treatment facilities. Regarding fuel, mining exploration companies source their supply from petroleum distributors present in the territory through a supply contract. There is no major issue in procuring fuel.

**“Energy” projects:** With the support of financial and technical partners, as well as the private sector, various projects are currently under study or development, including:

- DECIM Project (World Bank): Aims to expand access to renewable energies and digital services to enhance inclusion. There is synergy between the Ministry of Energy and Hydrocarbons (MEH) and the Ministry responsible for Digital Development (MNDPT). This project addresses a strong demand from the rural population;
- Rural Electrification Program (in collaboration with the ADER-AFD program);
- LEAD Project - Low-Cost Electricity Sector Development Project - DEMOS (World Bank): Follows the Project for Improving Governance and Operations in the Electricity Sector (PAGOSE), which was closed in December 2021;
- Mandraka III (hydroelectricity);
- Volobe (hydroelectricity);



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- Namorona downstream (hydroelectricity);
- Sahofika (hydroelectricity);
- PRIITEM Project - Project for Interconnection and Strengthening of Electricity Transmission Networks in Madagascar (African Development Bank);
- Mahitsy Hydro downstream (hydroelectricity).

### Road infrastructure

4,598 kilometres of national roads, all in an advanced state of degradation. The overall penetration of the road network is low. Apart from national roads and a few regional routes, access to certain even inhabited areas is only possible through pedestrian paths or tracks for ox-cart carriages. Several localities in Madagascar are isolated from the rest of the country during the cyclone season. Generally, to ensure a continuous circulation possibility, the extractive industry must, at the very least, rehabilitate or even reconstruct existing roads, and sometimes, it must build a new road.

The above legal categorization allows identifying the Project Owner. Any access road, even those opened through private initiative and funding, must be made available to the public, except for their portions within enclosed private spaces.

Several road projects are currently underway:

- Madagascar Road Network Modernization Project: Since 2021, rehabilitation of RN 6 over 234 kilometers between Ambanja and the port of Antsiranana; and RN 13 over 114 kilometres between Ambovombe and the port of Taolagnaro (EU financing - €235.5 million).
- Road Infrastructure Development Project: Rehabilitation of the Toliara – Morondava road over 105 km (RN 9). Construction of a bridge over the Befandriana River. Rehabilitation of the Pomay bridge on RN 35 (Ivato south of Ambositra on RN 7 and Morondava). Co-financed by the African Development Fund, OPEC Fund for International Development (OFID), OPEC (Organization of the Petroleum Exporting Countries), and the Republic of Madagascar - 60.47 million UC.

In May 2023, the World Bank announced a tripling of its interventions in road projects until 2024 with the "objective of increasing access to rural roads from the current 11.4% to 30%."

Ultimately, if all road rehabilitation projects are completed, access to various ports will be easier.

### Port infrastructure and maritime navigation

Madagascar is an island with 4,828 kilometres of coastline. Unfortunately, it has only 22 ports, of which only 6 can accommodate ships of a certain tonnage. These are:

- **Toamasina Port:** It is the best-equipped with modern facilities for both transit/customs operations and loading/unloading. 80% of Madagascar's international maritime traffic is handled by this port, accounting for approximately 1,600,000 tons of cargo and 18,900 TEUs (Twenty-foot Equivalent Units). It allows berthing of ships with a draft of 15 metres and weighing over 70,000 tons. Bulk carriers and general cargo ships can dock there. Its current capacities and logistics are largely the result of its modernization and expansion initiated in 2018 (65%, or USD 635 million via the Japan International Cooperation Agency, and 35%, or USD 228 million via the Malagasy Government). In 2026, the Port of Toamasina will rank 5<sup>th</sup> among African ports and 279<sup>th</sup> globally.
- **Ehoala Port** (since 2009): Built as part of the Fort-Dauphin Ilmenite Project, Ehoala Port resulted from a mutually beneficial solution for the Malagasy government and Rio Tinto QMM. Both parties funded its construction with Rio Tinto QMM contributing USD 240 million and the Malagasy government USD 35 million through the Integrated Growth Poles of Anosy (PIC) Project, financed by the World Bank.



Ehoala Port serves the public interest (the main dock used by Rio Tinto QMM approximately one week per month) and can accommodate ships with a draft of 15.75 metres.

- **Antsiranana Port:** With a depth of 8 metres at the mooring point.
- **Toliary Port:** Capable of receiving ships with a draft of 7.5 metres.
- **Mahajanga Port:** Primarily a transshipment port, it only accommodates ships with a draft of less than 5 meters.
- **Sainte Marie Port** (Nosy Boraha): Can only accommodate small vessels weighing less than 250 tons and with a shallow draft (less than 5 metres).

### Other waterways

Apart from the Canal des Pangalanes, no developments have been made on Madagascar's various waterways. With the perspective of intensive transportation (regular and heavy-duty) and the fact that no appropriate adjustments have been made to their channels, none of Madagascar's rivers is navigable. The Canal des Pangalanes was built in the 20<sup>th</sup> century. It stretches 665 kilometres between Toamasina and Farafangana. It can be navigated by shallow-draft boats, subject to repeated dredging. It could be an ideal solution for transporting heavy loads (potentially including ores) to the port of Toamasina.

### Rail infrastructure

The Malagasy railway network consists of four lines:

- Antananarivo – Toamasina via Moramanga ("Tananarive – Côte Est" or TCE): 372 km.
- Moramanga – Ambatosoratra ("Moramanga – Lac Alaotra" or MLA): 167 km.
- Antananarivo – Antsirabe ("TA"): 171 kilometres.
- Fianarantsoa – Manakara ("Fianarantsoa – Côte Est" or FCE): 163 km.

Before 1992, railway transportation was managed by the State company "Réseau National des Chemins de Fer Malagasy - RNCFM." In 1992, railways were abandoned in favour of road transport. In 2002, a 25-year management concession was granted to the company Madarail, which operates the TCE, MLA, and TA lines. The FCE line remains under the management of the Ministry of Transport. The main operation occurs between Toamasina and Antananarivo for the transportation of goods, fuel, and, until the closure of the chromite mines in Andriamena (2019), concentrated chromite to the Port of Toamasina. Railways are globally recognized as one of the most cost-effective means of transportation. This was the case in Madagascar before 1992.

### Telecommunication

The telecommunications sector experienced strong growth of 8.5% in 2013. Then, a sharp slowdown in 2014 (-6 points), and growth of 4% from 2015 to 2017. Madagascar hopes to achieve Internet coverage of 90% of its territory in 2038, to meet the country's objectives in terms of digital transformation. In isolated places and far from coverage and, subject to conclusive results of a market study by an operator, the best way is to agree with them the installation of a relay pylon.



## 3. Investment/financing prospects for ECRM projects in Madagascar

### 3.1. Fiscal, legislative and regulatory context for in-country financings

This section of the report was prepared in May 2023, based on the practices and regulations in force in Madagascar at the date of this report. We are not responsible for any changes that may occur as a result of subsequent amendments to legislation, regulations or practice.

It should be noted that the current regulations provide for various types of regimes (legal, foreign exchange, fiscal, and customs) applicable to investors and operators in the mining sector<sup>8</sup>:

- The **common law regime**, governed by the Mining code and general regulations;
- The **stability regime**, also provided for by the Mining code, for mining investors with investments ranging from 500,000,000 MGA to 50,000,000,000 MGA<sup>9</sup>, who choose the stability guarantee (art. 154 to 163 of the Mining Code);
- The **regime for large mining investments**, regulated by Law n°2001-031 of October 8, 2002, which establishes a special regime for major investments in the Malagasy mining sector (LGIM). This law was modified by Law n° 2005-022 of October 17, 2005; for investments exceeding 50,000,000,000 MGA in value as of April 30, 2005<sup>10</sup>, implemented in Madagascar under an approved Investment Plan, and provided that the debt-to-equity ratio does not exceed 75:25 (art. 4 of LGIM). This regime is applicable to investors, license holders, transformation entities, and subcontractors (art.27 and subsequent articles of LGIM).

A mining operator can also benefit from a specific regime provided by an Establishment convention with the Malagasy State, which is promulgated as law and applicable solely to the operator that is a party to the convention. To date, the only Establishment convention in force is between the Malagasy State and QMM-Rio Tinto<sup>11</sup>.

As the QMM-Rio Tinto's Establishment convention is only applicable to this operator, we will only consider the first three regimes in the following sections.

#### Legal form of different types of activities to the exploitation of mineral raw materials

The legal forms provided by Law n°2003-036 on commercial companies as amended, are as follows:

- **Branch** or commercial or industrial or service provision establishment, belonging to a company or individual and endowed with a certain degree of management autonomy (art. 101 and following)
- **General Partnership**, where all partners are traders and have joint several liability for the company's debts (art. 285 and following)
- **Limited Partnership**, in which one or more partners have unlimited joint and several liability for the company's debts, known as « general partners », and one or more partners have liability for their

<sup>8</sup> Malagasy legislation also provides for a regime called Zones and Free Zone Enterprises (ZEF), but mining operations are not eligible under this regime (Art. 8 of Decree n° 2015-1096).

<sup>9</sup> Or between 105,347.87€ and 10,534,787.97€ based on the exchange rate of 05/15/2023 (1€=4,746.18 MGA).

<sup>10</sup> This investment threshold should be updated annually by indexation to the value of the International Monetary Funds (IMF)'s Special Drawing Right (SDR). However, the most recent update dates back to 2015 (Order n° 18701/2015), which provides an eligible investment threshold of 106,161,682,882.36 MGA in value as at June 3, 2015.

<sup>11</sup> Establishment agreement between Malagasy State, represented by OMNIS and QMM Rio Tinto



contributions, known as « limited partners » or « silent partners », and the capital is divided into partnership units (art. 308 and following)

- **Limited Liability Company (LLC)** where partners are only liable for company debts up to the amount of their contributions, and their rights are represented by shares. It can be formed by an individual or a legal entity, or between two or more individuals or legal entities (art. 325 and following)
- **Public Limited Company (PLC)**, which means a company in which shareholders are only liable for company debts up to the amount of their contributions, and their rights are represented by shares. A PLC can have a single shareholders (art. 407 and following)
- **Partnership Limited by Shares**, in which the capital is divided into shares and formed between:
  - One or more general partners, who are traders and have unlimited joint and several liability for company debts.
  - Limited partners who are shareholders and only bear losses up to the amount of their contributions. The number of limited partners must not be less than three (art. 876 and following)
- **Partnership** in which partners agree that it will not be registered with the Commercial and Companies Registry and will not have legal personality. It is not subject to publicity. The existence of the partnership can be proven by any means. (art. 892 and following)
- **De Facto partnership**, which occurs when two or more individuals or legal entities act as partners without having established one of the companies (art. 902 and following)
- **Economic Interest Grouping**, whose exclusive purpose is to implement, for a determined duration, all means to facilitate or develop the economic activity of its members and improve or increase the results of that activity. Its activity must be essentially related to the economic activity of its members and can only have an auxiliary character in relation to it. (art. 907 and following)

The most common legal forms, including in the mining sector, are presented in the following table:



Topics	Limited Liability Company (LLC)	Public Limited Company (PLC)	Branch
Minimum capital	Free	10,000,000 MGA and if single shareholders 2,000,000 MGA	None
Social rights	Ownership units	Shares (Art. 407 of Law n° 2003-036)	At the holding company level
Number of shareholders	1 min and 50 max	1 to over 50	At the holding company level
Liability of partners/shareholders	Limited to their contributions	Limited to their contributions	At the holding company level
Nature of contributions	<b>In cash and in kind: full payment of funds when the company is registered</b>	In cash: 1- At least one-quarter must be paid up before the company is incorporated, with the remainder to be paid up within 3 years of registration 2- The funds arising from the payment of the shares are deposited immediately by the founder in the bank, against a receipt, in an account opened in the name of the company being formed, or in the office of a notary In Kind: 1- Absolute liberation upon company establishment.	None
Auditing by an external auditor	<b>Required if:</b> - share capital exceeds 20,000,000 MGA - the company meets one of these 2 conditions: 1- annual turnover exceeding 200,000,000 MGA 2- more than 50 permanent employees	<b>Required:</b> - 2 external auditor for PLC making public offerings - 1 external auditor for PLC not making public offerings	Depends on the legal form of the holding company
Directors	Manager(s): one or more individuals, who could be partners or not.	<b>PLC with Board of Directors (BD)</b> 1- or by a Chief Executive Officer, 2- or by a Chairman of the Board and a general manager.  <b>PLC with Managing Director (MG)</b> mandatory if number of shareholders is three or less and if one- person company	- Representative and Resident Representative if the holding is a foreign company - Appointed by minutes of the holding company
Term of office	Term of 4 years and eligible for re-election, unless otherwise specified in the bylaws.	<b>Board member:</b> Duration freely determined by the arts of association, not exceeding 6 years in the event of appointment during the company's existence, and 2 years in the case of appointment by the bylaws or the inaugural general assembly.	Determined by minutes of the holding company





		<p><b>Chairman of the Board (CB):</b> do not exceed his term of office as Board member</p> <p><b>General manager:</b> Freely determined by the Board directors</p> <p><b>Managing director:</b>                      1- First Managing Director: maximum 2 years.                      2- During corporate life: maximum 6 years</p>	
<b>Annual General Meeting</b>	<p><b>Ordinary General Meeting:</b> questions do not require an amendment to the bylaws-annual approval of financial statements and financial reports-regulated agreements</p> <p><b>Extraordinary General Meeting:</b> Matters related to the amendment of the bylaws</p>	<p><b>Ordinary General Meeting:</b> questions do not require an amendment to the bylaws-annual approval of financial statements and financial reports-regulated agreements</p> <p><b>Extraordinary General Meeting:</b> Matters related to the amendment of the bylaws</p>	At the holding company level
<b>Rule for reconstituting shareholders' equity in the event of a loss</b>	<ul style="list-style-type: none"> <li>- If shareholders' equity is less than half the share capital, the manager or external auditors is obliged to consult the partners within 4 months of the decision to dissolve the company early</li> <li>- If this hypothesis is not accepted, the company is obliged, within 2 years of the end of the loss-making financial year, to reconstitute its shareholders' equity until it is equal to at least half of the share capital.</li> </ul> <p>Failing this, it must reduce its capital by an amount at least equal to that of the losses.</p> <ul style="list-style-type: none"> <li>- If the managers or the statutory auditor fail to bring about a decision, or if the partners are unable to deliberate validly, any interested party may ask the Commercial Court to dissolve the company.</li> </ul>	<ul style="list-style-type: none"> <li>- If shareholders' equity falls below half the share capital, the Board of Directors or General meeting must, within 4 months of approving the financial statements, convene an Extraordinary General Meeting to decide whether to dissolve the company.</li> <li>- If dissolution is not chosen, the company is obliged to reduce its share capital by an amount at least equal to the losses that could not be charged to reserves, no later than the close of the second financial year following the recognition of the losses if it has not been able to reconstitute shareholders' equity to a value equal to half the share capital.</li> <li>- In the event of failure to convene a shareholders' meeting, or if the meeting is unable to deliberate validly on final notice, any interested party may apply to the courts</li> </ul>	At the holding company level

**Table 3: Overview of most common legal forms<sup>12</sup>**

The legal form does not determine the applicable tax regime for individuals fiscally registered in Madagascar (tax residents). For entities subject to common law, the tax regime varies depending on the activities undertaken and/or the annual turnover achieved. The tax regime is included in the regulations defining the exceptions and adjustments applicable to specific regimes.

<sup>12</sup> Source: Law n°2003-036 as amended and subsequent texts



### Rules and practices regarding foreign exchanges

**Condition for authorizing loan contracts with foreign entities** : depending on the regime to which the operator is subject, the obligations concerning financial transactions with a foreign entity are as follows

	General law	Guaranteed stability of the Mining code	LGIM
<b>Financial operations</b>	Prior authorization (before arrival of funds) from the Ministry of Finance	In accordance with regulations in force at the date of option or favourable measures adopted after that date.	Notification of the control and monitoring body within the Ministry of Mines by the submission of 02 certified copies of any loan agreement concluded to implement the Investment Plan.
			<b>Declaration approved by the head of department of the control and monitoring body within the Ministry in charge of Mines</b> for the repayment of current account advances from associates/shareholders, and for the repatriation by investors of the proceeds from the sale of their shares/business assets or compensation for expropriation, and monetary compensation from arbitration awards
			Favourable measures in accordance with regulations applicable between December 31, 1999 and the LGIM certification date for other cases.

**Table 4: Obligations relating to cross-border financial transactions<sup>13</sup>**

In practice, prior authorization from the Ministry of Finance is requested from the External Finance Department (FINEX), by submitting the documents listed below, subject to any additional documents required:

Documents	Type	Number
Application on plain paper addressed to the chief of the External Finance Department	Original	1
Loan/current account/credit/cash flow agreement specifying purpose and financial conditions	Copy	1
Extract from the kbis of the contributor/lender or certificate of existence	Original	1
By-laws of the beneficiary company	Original	1
If the beneficiary is a public limited company, a document proving that the lender is a shareholder	Copy	1

**Table 5: List of documents to be submitted to FINEX for prior authorization**

**Local currency convertibility and transfer of funds abroad**: the exchange rate system is based on the floating national currency, whose rate is freely determined by the foreign exchange market or Interbank Foreign Exchange Market (MID). The operation of the Foreign Exchange Market Interbank (MID) is governed by the Market Convention and the Code of Conduct for the Foreign Exchange Market (art. 14 and 15 of Decree n° 2009-048 implementing the Foreign Exchange Code).

The conversion of local currency into foreign currency is provided for in the:

- **foreign fund transfers:**

<sup>13</sup> Source: Foreign Exchange code and subsequent texts, Mining code, LGIM



	General law	Guaranteed stability <i>of the Mining code</i>	LGIM
<b>Payments for current operations</b>	<b>Free-</b> Current operations are payments due in respect of foreign trade, including services, as well as normal short-term banking and credit facilities; payments due in respect of interest on loans or net income from other investments; moderate payments for amortization of loans or depreciation of direct investments; remittances for family expenses	In accordance with regulations in force at the date of option or favourable measures adopted after that date	<b>Declaration to the authorized intermediary -</b> The eligible routine operations are those directly related to the project, including the purchase of goods and services from foreign suppliers; the acquisition or leasing of imported equipment; payment of fees to individuals residing abroad for services rendered; payment of royalties for rights granted to the Holder or the Transformation Entity by foreign third parties; the cost of expatriate employees and training of Malagasy employees abroad; and funds corresponding to duly and legally declared dividends intended to be distributed to foreign shareholders of the Holder or the Transformation Entity.
<b>Capital and financial transactions</b>	<b>Declaration to the Ministry of Finance</b> , for sales of shares, business assets, liquidation bonuses and expropriation indemnities for foreign investors		<b>Notification of the control and monitoring body within the Ministry of Mines</b> by submitting 02 certified copies of any loan agreement concluded to implement the Investment Plan
	<b>Prior authorization from the Ministry of Finance</b> , for other capital and financial transactions		<b>Declaration approved in advance by the head of department of the control and monitoring body within the Ministry of Mines</b> , for the repayment of current account advances from associates/shareholders, and for the repatriation by investors of proceeds from the sale of their shares/business assets or compensation for expropriation, and monetary compensation from arbitration awards
			Favorable measures in accordance with regulations applicable between December 31,1999 and the LGIM certification date for other cases

**Table 6: Obligations relating to transfers of funds abroad<sup>14</sup>**

- **Imports of goods originating from abroad** (art. 10 of Decree n° 2009-048 and Order n°13312/2015-MFB/SG/DGT/DOF/SSOC dated April 2, 2015)

These operations are considered routine transactions. However, unless expressly exempted, they must be subject to the requirement of domiciliation, which means opening a file containing all the documents related to the importation through an authorized intermediary. Domiciliation must be done prior to customs clearance of the goods and remains valid for 12 months before such clearance.

<sup>14</sup> Source: Foreign Exchange Code and subsequent texts, Mining Code, LGIM and implementing decree



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- **Travel allowances** (Circular n° 755-2018 of August 30, 2018, on foreign currency allowances): These allocations are also considered routine transactions and are not subject to limitations. However, the transportation of currency equal to or exceeding €7500 must be declared to the Customs Services at the borders.

Payments to foreign countries and the purchase of foreign currency must be made through an authorized intermediary, such as primary banks or authorized post offices. The nature of the transaction must be indicated to them (art. 9 of Decree n° 2009-048 implementing the Foreign Exchange Law).

In practice, requests for prior authorization and declarations to the Ministry of Finance are submitted to FINEX. The documentation typically consists of a request on plain paper accompanied by the necessary supporting documents.

Regarding authorized intermediaries, the required documents and fees for funds transfers or currency purchases may vary.

**Obligation to repatriate funds and transfer currency:** residents are required to repatriate all claims held abroad or on a non-resident that arise from the export of goods, remuneration for services, and, in general, all income and proceeds arising from financial transactions with foreign entities or non-residents in Madagascar, related to their activities in Madagascar (art. 11 of Decree n° 2009-048, modified by Decree n° 2022-1183).

The obligation to repatriate and transfer currency is as follows, depending on the regime to which the operator is subject:

	General law	Guaranteed stability of the Mining code	LGI
<b>Exporting and providing services</b>	Obligation to transfer 70% of export receipts/advances and pre-financing to the MID as soon as repatriation takes place, without exceeding the 30-day time limit.	In accordance with regulations in force at the date of option or favourable measures adopted after that date.	Exemption from repatriation is granted on the condition that a resident maintains a minimum balance in their foreign currency accounts in Madagascar equivalent to three months' worth of local expenses payable in Malagasy francs. If this requirement is not met, there is an obligation to repatriate the proceeds from the sales of exported mining products within 90 days, except for the amount of funds authorized to be kept in foreign currency accounts abroad for servicing external debt.

**Table 7: Currency repatriation and transfer obligations<sup>15</sup>**

Exports of goods are also subject to the domiciliation requirement, unless exempted or the value is less than or equal to MGA 3 million. Domiciliation is carried out with an approved intermediary and is valid for 6 months from the date of opening.

Offshore and onshore foreign currency accounts: the opening of a foreign currency account is organized as follows, depending on the operator concerned:

<sup>15</sup> Source: Foreign Exchange Code and subsequent texts, Mining code and LGIM



	General law	Guaranteed stability of Mining	LGIM
<b>Foreign account</b>	Prior authorization from the Minister of Finance	In accordance with regulations in force at the date of option or favourable measures adopted after that date.	CGIM notification within 5 days of opening: - Mandatory with a foreign bank of international repute- correspondent of its bank in Madagascar to receive export earnings; - Authorized with foreign banks of international repute for the management of its external debt servicing.
<b>Foreign currency account with a local bank</b>	Free for: - exporters of goods and services, including international online sellers, non-residents, financial institutions, and foreign exchange bureaus; - importers, exclusively for staggered purchases of foreign currency as part of the procedures and obligations relating to the domiciliation and payment of goods import operations (to be closed within 12 months of payment) - Non-profit institutions whose activities are carried out within the framework of with foreign partners for  Prior authorization from the Minister of Finance for commercial companies or public bodies whose bylaws and activities and activities justify the need for them.	In accordance with regulations in force at the date of option or favourable measures adopted after that date.	Free

Table 8: Opening a foreign currency account<sup>16</sup>

Prior authorization from the Minister of Finance is requested from FINEX, by means of a request on plain paper, specifying the reason for and context of the account opening; the bank opening the account; the operations envisaged (debit and credit); and the currency of the account.

### Tax treatment of investment

- **Interest and dividends:** taxation of interest on current account advances from associates/shareholders and dividends is shown in the table below:

	General law	Guaranteed stability of the Mining Code	LGIM
<b>Interest</b>	20%		Exempted

<sup>16</sup> Source: Foreign Exchange code, Mining code, LGIM and subsequent texts



<b>Dividends</b>	10% for foreign partners/shareholders	In accordance with regulations in force at the date of option or favourable measures adopted after that date.	10% (dividends and other distributions)
	Exemption for resident individuals		
	Exemption of dividends received from subsidiaries for Malagasy companies that have opted for the "parent company-daughter regime": but subject to an obligation to add back to the income tax base the expenses of the parent company equivalent to 5% of the amount of dividends received.)		

**Table 9: Taxation of interests and dividends<sup>17</sup>**

Madagascar has signed double taxation agreements with France, Mauritius, Canada, and Morocco. Where shareholders/partners are resident in these countries, the taxation of interest and dividends is summarized below:

	<b>France</b>	<b>Mauritius</b>	<b>Canada</b>	<b>Morocco</b>
<b>Interests</b>	Taxable in Madagascar at a maximum of 15%	Taxable in Madagascar, If the person receiving the interest is the beneficial owner, the rate applied may not exceed 10%.	Taxable in Madagascar at a maximum of 10%	Taxable in Madagascar at a maximum of 10%
<b>Dividends</b>	Taxable in Madagascar, but not exceeding: - 15% if the beneficial owner is a company (other than a partnership) which directly holds at least 25% of the share capital - 25% in all other cases	Taxable in Madagascar, If the person receiving the dividends is the beneficial owner, the rate applied may not exceed: -5% if the distributing company is eligible under the investment Code / venture capital company - 10% in all other cases	Taxable in Madagascar, but not exceeding: - 15% if the beneficial owner is a company that directly or indirectly controls 25% of the voting rights - 25% in all other cases	Taxable in Madagascar at a maximum of 10%

**Table 10: Taxation rules for interest and dividends under double taxation agreements<sup>18</sup>**

The tax is withheld by the local company and paid on a declaration filed with the operational unit managing the company's file by the 15<sup>th</sup> of the month following the month of payment (art. I-27 of the Tax Procedures Code (CPF) 2023).

**Thin capitalization rules:** The limit on the deductibility of interest paid to partners/shareholders from the income tax base varies according to the regime to which the local company is subject:

<sup>17</sup> Source: CDI 2023, Mining code, LGIM and subsequent texts

<sup>18</sup> Source: Double taxation agreements concluded by Madagascar



	General law	Guaranteed stability of the Mining Code	LGIM
Thin capitalization rules	Deductible interest limited to that corresponding to the remuneration of a sum not exceeding double shareholders' equity at a rate not exceeding that granted by Banky Foiben'i Madagasikara increased by 2 points	In accordance with regulations in force at the date of option or favourable measures adopted after that date.	Interest deductible only if the interest rate and other borrowing conditions are as favourable or better favourable or better than those of non-affiliated lessors.
	Deductible interest limited to a total debt to equity ratio of 3 to 1 if the company is approved under the Industrial Development Act.		

Table 11: Thin capitalization rules<sup>19</sup>

### Overview of tax regimes applicable to the mining sector in Madagascar

**Main taxes applicable:** the guarantee of stability provided for by the Mining code provides for the tax regime, the application of the regulations in force on the date of the option and the possibility of requesting the application of favorable measures applicable after that date. The table below attempts to summarize the main taxes and duties applicable to companies subject to the ordinary law regime (according to the Malagasy Tax Code (CDI) according to the initial finance law for 2023) and the LGIM.

Taxes	General law	LGIM
<b>INCOME TAX</b>	Applicable rate: 20% of net profit Threshold is subject: MGA 200 million	Applicable rate: 25% for the Data Controller and its subcontractors Applicable rate: 10% for the Processing Entity and its subcontractors When the historical results of the processing entity and the holder taken
	MGA of annual turnover – or option for the regime of the real (even if annual turnover not reached)	together reach an after-tax internal rate of return of 20%, the applicable income tax rate is 35%. This rate rises to 40% when the after-tax internal rate of return reaches 25% or more. Specific reliefs including exemptions, depreciation deductions and reductions are also provided.
<b>FLAT-RATE TRANSFER TAX (TFT) / NON- RESIDENT INCOME TAX (IRNR)</b>	Applicable rate: 10% of the amount paid to the no-resident person	Applicable rate: 15% of 45% of the amount paid to the non-resident for services rendered Exemption from transfers relating to external loans and insurance.
<b>SYNTHETIC TAX</b>	Applicable rate: 5% of gross income Threshold of liability: less than	N/A
<b>TAX ON INCOME FROM MOVABLE CAPITAL</b>	Applicable rate: 20% of income and 10% for dividends paid to non-residents.	Applicable rate: 10% for dividends and other distributions to shareholders and exemption from interest on external loans (subject to conditions).

<sup>19</sup> Source: CDI 2023, Mining code, LGIM and subsequent texts



<b>TAX ON REAL ESTATE CAPITAL GAINS</b>	Applicable rate: 20% of the capital gain.	Rate in accordance with the general law.
<b>VALUE ADDED TAX (VAT)</b>	Applicable rate: 20% of the value or amount of taxable business and 0% if export Threshold for liability: turnover greater than or equal to MGA 400 million	Applicable rate: 20% and 0% if export (including sale between Holder and processing entity) Exemption of loans in the investment plan and imports of personal effects of expatriate employees Possibility of refund of VAT Credit
<b>REGISTRATION FEES FOR ACTS AND TRANSFERS</b>	Applicable rate: (variable according to the nature of the act to be registered)	Reduced rates
	<ul style="list-style-type: none"> <li>• 2% for commercial leases</li> </ul>	<ul style="list-style-type: none"> <li>• 4% Emphyteutic leases</li> </ul>
	<ul style="list-style-type: none"> <li>• 0.5% for acts of formation and extension of company</li> </ul>	<ul style="list-style-type: none"> <li>• Duty for acts of formation or extension of company and Capital duty: from 0% to 2% depending on the capital tranche</li> </ul>
<b>LAND TAX</b>	Applicable rate: 1% market value of the land	Applicable rate: 1% limited to MGA 200 million per year
<b>PROPERTY TAX ON BUILDING</b>	Applicable rate: 5 to 10% of rental value	Applicable rate: 1%. limited to MGA 200 million per year and exempt for 5 years
<b>TAX ON INSURANCE CONTRACTS (risks)</b>	Applicable rate: 4% of sums stipulated for the benefit of the insurer and accessories	Applicable rate: 4 %

**Table 12: Main taxes applicable<sup>20</sup>**

**Tax breaks specific to the mining sector:** The adjustments considered in this section are those specifically granted by the CDI 2023 and which could benefit taxpayers involved in the mining sector. They apply only when ordinary law is applicable, in other words when the taxpayer is subject to the common law regime, and when the texts on the specific regime refer tacitly or explicitly to common law.

<b>Taxes and levies</b>	<b>Arrangements</b>
<b>INCOME TAX</b>	Tax deductibility: - expenses on donations and corporate social responsibility, provided for in mandatory specifications signed with a government body; - expenses incurred for site security, as well as labor-intensive work, subject to supporting documentation, and which are not excessive in relation to the services rendered. The corresponding sums paid must have been subject to withholding tax and to payment of intermittent corporation tax.
<b>VAT</b>	Eligibility for VAT credit refunds for export professionals and all VAT-registered companies making investments in tangible fixed assets, for a monthly amount more than MGA 100 million and generating VAT of at least 20,000,000 MGA.
<b>PROPERTY TAX ON BUILDING</b>	Exemption for new buildings, rebuilds and additions to existing buildings for 5 years from the year of completion.

**Table 13: List of tax arrangements specific to the mining sector<sup>21</sup>**

<sup>20</sup> Source: CDI 2023, Mining code, LGIM and subsequent texts

<sup>21</sup> Source: CDI 2023





**Specific taxes applicable:** sectoral taxes applicable to companies in the mining sector are detailed in the following table. As with the main taxes, the stability guarantee provided for in the Mining Code applies to parafiscal levies, in addition to the above, the employee is entitled to apply the regulations in force at the date of the option, and to request the application of favorable measures applicable after that date. As a result, the table below shows only the general law regime and the LGIM regime

Taxes by sector	General law	LGIM
<b>MINING ROYALTIES</b>	Applicable rate: 0.6% royalties and 1.4% rebates, applicable on the price of mining products at first sale.	Applicable rate: 2% (0.6% royalty and 1.4% rebate) applicable on a basis corresponding to 50% of the processing entity's selling price for processed products.
<b>MINING ADMINISTRATION FEES (MAF)</b>	Amount set annually by the BCMM	Amount set annually by the BCMM

**Table 14: Taxes by sector<sup>22</sup>**

### Immigration rules and taxation for expatriates in Madagascar

**Determination of the employee's tax residence:** an employee is a tax resident of a given country if the wages and salaries he or she receives in respect of his or her employment are taxable in that country. Thus, the definition of tax residence implies the determination of the rules for taxing the salaries of an employee. The table below sets out these rules under ordinary law.

	CDI	Tax treaties
<b>Taxable income in Madagascar</b>	Income from employment in Madagascar	Salaries of a resident of a country having a tax treaty with Madagascar, from employment in Madagascar (stay of more than 183 days during the tax year in question, remuneration paid by an employer or on behalf of an employer resident in Madagascar and the cost of remuneration borne by a permanent establishment or fixed base of the employer in Madagascar)
	Income received from an employer in Madagascar	
	All Malagasy-source income received by persons not resident in Madagascar	
	Income from all sources earned by individuals resident in Madagascar	
<b>Tax resident</b>	Persons receiving salaried income from Malagasy sources	Employees working in Madagascar
	Employees with their usual place of residence in Madagascar	

**Table 15: Tax residence of employees<sup>23</sup>**

For operators subject to the stability guarantee provided for in the Mining code and the LGIM, reference should be made either to the wage taxation rules in force at the date of option or to favorable measures after that date (Stability guarantee in accordance with the Mining Code); or the most favorable payroll income tax rules in accordance with the regulations applicable between December 31, 1999, and the date of LGIM certification.

Tax and social security obligations for expatriate workers: expatriate workers taxable in Madagascar are subject to the payroll tax and social security contributions listed below:

<sup>22</sup> Source: CDI 2023, Mining code, LGIM and subsequent texts

<sup>23</sup> Source: CDI 2023, Tax treaties with France, Mauritius, Canada, and Morocco



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Tax and social security obligations	General law		Guaranteed stability of the Mining Code	LGIM	
<b>Tax on salaried and similar income</b>	Applicable rate <ul style="list-style-type: none"> <li>• 20% of the portion exceeding MGA 600,000 of salaries, accessories, and benefits in kind</li> <li>• 15% of the income bracket from MGA 500,001 to MGA 600,000;</li> <li>• 10% of the income bracket from 400,001 MGA to 500,000 MGA</li> <li>• 5% of the income bracket from MGA 350,001 to MGA 400,000</li> <li>• 0% for salaries below MGA 350,000</li> </ul>		In accordance with regulations in force at the date of option or favourable measures adopted after that date.		
<b>SOCIAL SECURITY CONTRIBUTIONS</b>	<b>Employer</b>	<b>Employee</b>			Under General Law
<b>Caisse Nationale de Prévoyance Sociale (CNAPS)</b>	13%	1%			
<b>Service Médicale Inter-entreprise (SMIE)</b>	5%	1%			
<b>Fond Malgache pour la Formation Professionnelle (FMFP)</b>	1%	N/A			

**Table 16: Employment-related taxes and contributions<sup>24</sup>**

### Export and import rules and practices

**Rules governing the export of mining products:** in general, the export of mining products is subject to prior declaration to the customs authorities. Depending on the regime applicable to the mining operator, export is subject to the following formalities:

Type of export	General law	Guaranteed stability of the Mining Code	LGIM
Export of non-prohibited mine products and fossils for non-commercial purposes	Subject to prior declaration to the Mining Administration and in limited quantities  Export on production of regulatory pass	In accordance with regulations in force at the date of option or favourable measures adopted after that date.	Submission to the declaration formality provided for by the Mining Code "in force on the Investment Eligibility Certification Date".
Export of mining products, quarry substances and fossils for commercial purposes	Submitted: <ul style="list-style-type: none"> <li>- prior declaration to the Mining Administration</li> <li>- checking the conformity of the declaration submitted by the mining administration</li> <li>- quality control by a mining analysis laboratory before shipment</li> </ul> Declaration file: declaration, quality analysis certificate, duly completed regulatory passes for substances to be exported, or related purchase invoices.		

<sup>24</sup> Source : CDI, Labour Code, Social Security Code, Mining Code, LGIM and subsequent texts



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<p>Large-scale export of mining products for industrial use and of mining products processed by local industries</p>	<p>Submitted:</p> <ul style="list-style-type: none"> <li>- prior declaration to the Interregional Department of the Ministry of Mines responsible for the area concerned</li> <li>- conformity checks on samples of said products</li> <li>- to be deposited with the export declaration, against receipt, at the office of the aforementioned Directorate</li> <li>- quality control by a mining analysis laboratory before shipment</li> </ul> <p>Declaration file: the declaration, the categories, and quantities of samples to be deposited, and the duly completed Pass corresponding to all the products to be exported, or the relevant purchase invoices, as the case may be.</p> <p>Certificate of conformity issued by the Directorate is the single administrative act required for exit from the Territory.</p>		
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**Table 17: Export formalities for mining products<sup>25</sup>**

It should be noted that export is subject to proof of payment of rebates and royalties, and the obligation to repatriate foreign currency.

**Customs regime:** as with the tax regime, the customs regime for operators opting for the stability guarantee provided by the Mining Code is that in force on the date of the option, with the possibility of requesting the application of favorable measures applicable after that date. The General law and LGIM customs procedures are summarized below:

Customs transactions	General law <sup>26</sup>	LGIM <sup>27</sup>
Export of mining products	Customs and excise duties vary according to the nature of the mining products.	Export free of any customs duty, export tax, customs stamp or other fiscal charge levied on leaving the National Territory
	Exit duty at a rate of 15% for mining products other than precious and industrial stones and 20% for these products	
	2% export income tax instalment	
Imports of materials and equipment	<ul style="list-style-type: none"> <li>- Customs and excise duties vary according to imported items</li> <li>- 2% import income tax instalment</li> <li>- Import VAT at 20%, unless exempted</li> </ul>	<p>0% VAT on exports, unless exempted</p> <p>For materials, items, equipment and other merchandise on approved lists:</p> <ul style="list-style-type: none"> <li>- Excise duty exemption</li> <li>- Research phase/ Project development and construction phase: Temporary admission under suspension of duties and taxes and definitive admission free of customs duties and import taxes, but stamp duty of 1% of the declared value is levied on removal.</li> <li>- Project operation phase: <ul style="list-style-type: none"> <li>. Applicable duties and taxes paid annually on rental value for the rental year in question</li> <li>. For the Holder: application of customs duties and import tax at a cumulative rate of 5%, and exemption from customs stamp duty.</li> <li>. For the Processing Entity: exemption from customs duties import tax and customs stamp duty of 1% of the declared value</li> </ul> </li> </ul>

<sup>25</sup> Source: Mining code, LGIM and subsequent texts

<sup>26</sup> Mining companies can apply for customs warehousing status. (art.157, 157 bis, 157 Ter Customs Code) ; or the factory system (art. 216 à 224 Customs Code)

<sup>27</sup> Personal effects belonging to expatriate personnel employed by the Licensee the Processing Entity and Subcontractors under the Project are exempt from all import and export duties and taxes, as well as customs stamps (art. 78 LGIM)



		Application of the common law regime for materials, items, equipment, and other merchandise not included in the approved lists
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**Table 18: Customs treatment of imports and exports<sup>28</sup>**

### Conditions for the transfer of the investment

**Forms of transfer:** for the transfer of investment, the Law n° 2003-036 as amended provides:

- The transfer of shares: The shares are transferable, and the actions are transferable or negotiable (art. 43 to 51). Depending on the case, this transfer may be subject to the consent or approval of the shareholders/partners or directors by law (depending on the form of the company security and the company) or by the company's articles of bylaws.
- The merger, division, or partial contribution of assets, which are decided by the companies concerned. A declaration presenting the acts carried out to carry it out must be filed with the Trade and Companies Register (art. 204 to 212).
- The succession or transmission by death which is free or subject to the approval of the other shareholders/partners, depending on the form of the company and the provisions of the articles of association.

Local regulations also provide:

- the transfer of business, by private deed, authentic deed or act authenticated and published in a journal of legal announcements and in the Trade and Companies Register (Law n° 2003-038 as amended)
- the assignment of receivables to be established in writing (Law n° 2003-041 about the security act).

For operators subject to the LGIM, prior approval, by decree taken in the Council of the Government is necessary to maintain the certification of the eligibility of the Investment:

- when the transfer of the rights of the Initial Investors screw to screw the Holder, the Processing Entity implies a modification of the investment plan, or
- in case of transfer of the certification of the eligibility of the Investment to a purchaser of the Mining Permits of the Project before the realization of the Investment Plan (art. 24 LGIM).

Prior approval is not required for the transfer of rights of investors not amending the approved investment plan and the transfer of the certification of eligibility to mortgage investor. However, the latter must be notified to the control and monitoring body of the Ministry of Mines. (art. 23 LGIM)

**Transferability of mining permits:** The Mining Code provides for the movement of mining permit, the transmission or transfer, the partnership, the pledge, and the leasing. These movements are freely approved by the holder of a mining permit, for the benefit of any person eligible to hold a mining permit. However, these must be registered with the BCMM.

Tax implications: to the extent that the investment transfers in question relate to property located in Madagascar, they should be taxable in Madagascar, irrespective of the residence of the parties, as below

<sup>28</sup> Source: Custom Code, CDI 2023, LGIM and subsequent texts



Operations	General law	Guaranteed stability of the Mining code	LGIM
Transfer of actions/shares The merger, division, or partial contribution of assets	- Capital gains tax on disposal 20% <sup>29</sup> - Registration fee (RF) 0,5% - RF 0,5% (if merger, exempt if products intended for export) - Right to assume liabilities:	According to the regulations	Favorable measures according to
	10,000 MGA	in force on the date of the option or favourable measures after that date	the regulations applicable between 31 December 1999 and the date of certification to the LGIM
Succession (by death)	- RF 10,000 MGA to 40,000 MGA according to the degree of kinship		
Disposal of business	- RF 5%		
Transmission of mining permit	- RF 5%		
Assignment of receivables	- RF 0,5%		

Table 19: Taxes applicable to investment transfers<sup>30</sup>

### Investment guarantees

#### Guarantees applicable to investments in Madagascar:

Law n° 2007-036 of January 14, 2008, on Investments in Madagascar guaranteed for national and foreign investments:

- The freedom of investment, in other words. the freedom to invest and settle in the national territory, in compliance with the laws and regulations in force, subject to the provisions applicable to certain sectors of activity that are subject to specific regulations.
- Equal treatment of foreign investors and investors of Malagasy nationality, subject to the more extensive rights and benefits to which the investor is entitled under agreements or treaties concluded between the Republic of Madagascar and other partner countries.
- The protection of individual or collective property rights, against any measure of nationalization, expropriation, or requisition, except for reasons of public utility legally provided for, which shall be the subject of fair and prior compensation in accordance with the laws and regulations applicable in the matter.
- Freedom for foreign investors to transfer all payments relating to current operations (after-tax profits, dividends, salary income, compensation, and savings for expatriate employees), and freedom to transfer capital and financial transactions such as sales of shares, corporate units, goodwill or assets, liquidation bonuses and expropriation compensation, subject to declaration to the Ministry of Finance.

<sup>29</sup> Taxable in Madagascar according to the tax treaties with France, Mauritius, Canada, and Morocco (art. 13.2)

<sup>30</sup> Source: CDI 2023, Mining code and LGIM



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### - Stability by:

- Maintaining a simple, fair, and growth-friendly tax system for investors to carry out investment projects;
- Enjoyment of any new, more advantageous legislative or regulatory measures adopted subsequently;
- Enjoyment of the advantages provided for under the Investment Act, notwithstanding any new legislative or regulatory measures subsequently adopted to abolish or attenuate these advantages.

Investments governed by an Investment Protection and Promotion Agreement (IPPA) concluded by Madagascar with other countries, benefit from more extensive guarantees and protection and more favorable treatment. The IPPA in force in Madagascar<sup>31</sup> are those concluded with Germany (21 March 1966), Switzerland (31 March 1966), Sweden (23 June 1967), Denmark (26 July 1967), Norway (28 September 1967), Mauritius (29 December 2005), France (14 January 2005), Belgium-Luxembourg (24 November 2008), China (24 November 2006), Germany (27 July 2007), South Africa (27 July 2007). Recently, the setting up of an IPPA between Madagascar and Italy was discussed by high-level officials<sup>32</sup>.

**Specific guarantees granted under mining legislation:** To ensure the stability of investments in the mining sector, the mining regulations provide the following guarantees for eligible mining operators opting for the specific regimes:

	Guaranteed stability of the Mining code	LGIM
Stability of the tax, customs and exchange regime applied	Application of regulations in force at the date of the option or favourable measures after that date	Application of favourable measures in accordance with regulations applicable between December 31, 1999, and the date of certification to the LGIM and the provisions of the LGIM and its subsequent texts.
Stability of the legal system		Application of the constitutional, legislative, and regulatory provisions in force on the Eligibility Certification Date, as modified by the provisions of the LGIM and its subsequent texts.
		Right and freedom to own, manage, use, enjoy and dispose of all their property, rights, titles and interests, and compensation by the State in the event of requisition or measures depriving them of these rights and freedoms.
		Guarantee not to expropriate or nationalize and compensation in the event of expropriation for public use.

**Table 20: Investment guarantees specific to the mining sector<sup>33</sup>**

### Legal rules governing disputes

**Definition of applicable law:** the general rules of jurisdiction in the event of conflict of laws are set out below:

Object	Applicable Law
Applicable foreign law declares itself incompetent	Any other foreign law that accepts jurisdiction or, failing that, Malagasy law
Policies and securities law	Territorial law
Status and capacity of persons	National law (also applicable to stateless persons domiciled in Madagascar)
Properties/buildings (including real estate inheritance)	Law of the place where they are located
Contractual or quasi-contractual obligations	Law under which the parties intend to operate

<sup>31</sup> Base de données relative aux traités bilatéraux d'investissement | CIRD (worldbank.org) and CNLegis

<sup>32</sup> Madagascar - Italie : Un Accord de protection et de promotion des investissements soucieux du développement durable en vue (orange.mg)

<sup>33</sup> Source: Mining code and LGIM



Obligations in tort or quasi-delict	Tort or quasi-crime law
Donations	Law of the donor
Estates	Deceased status law

**Table 21: Jurisdictional rules of the law - Source: Ordinance n° 62-041 of September 19, 1962**

The Mining code does not specifically provide for the law applicable in the event of disputes, so the above rules should apply whether the mining operator opts for the Mining code's stability guarantee.

Disputes between foreign investors and the Malagasy government are governed by the following rules:

- For the general law regime: the regulations in force at the time of the dispute, in other words, Law n° 2007-036 of January 14, 2008, on Investments in Madagascar.
- For the stability guarantee under the Mining code: the regulations in force on the date of the option or favorable measures after that date.
- For the LGIM: the regulations in force on the date of certification of eligibility for the LGIM for the LGIM and the provisions of the LGIM and its subsequent texts. Under the LGIM, it is specifically stipulated that the law applicable by the international arbitral tribunal in the event of a dispute with the Malagasy state is Malagasy law (art 139).

**Arbitration:** arbitration is an agreement between the parties to a contract (arbitration clause) or the parties to a dispute that has already arisen (arbitration agreement) to submit the settlement of a dispute to one or more arbitrators (art. 439 of the Code of Civil Procedure) instead of a court or tribunal settlement. It is the preferred method of dispute resolution for foreign investments and for investments in the mining sector. Indeed, under Law n° 2007-036 of January 14, 2008, on Investments in Madagascar, disputes between the State and a foreign investor are settled in accordance with:

- Jurisdictional or arbitration proceedings arising from agreements and treaties relating to the protection of investments concluded between the Malagasy State and the State of which the foreign investor concerned is a national, or failing that, from the International Convention for the Settlement of Investment Disputes (CRDI) between States and Nationals of Other States, signed in Washington in 1965 and ratified by the Malagasy State under Law n° 66-011 of July 1966.
- The competent Malagasy courts if the foreign investor is the claimant.

During the period of guaranteed stability, the Mining Code provides for the submission to arbitration of disputes between the licensee and the Malagasy State (art.163 Mining code and 426 of the Mining Code implementing decree). And the LGIM provides for recourse to binding international arbitration in accordance with the CIRDI for unresolved disputes with the Malagasy government. This international arbitration is agreed by the State in the decree certifying eligibility (art. 137).

### 3.2. Macroeconomic context for in-country financings

#### Gross Domestic Product (GDP) analysis (World Bank, 2022)

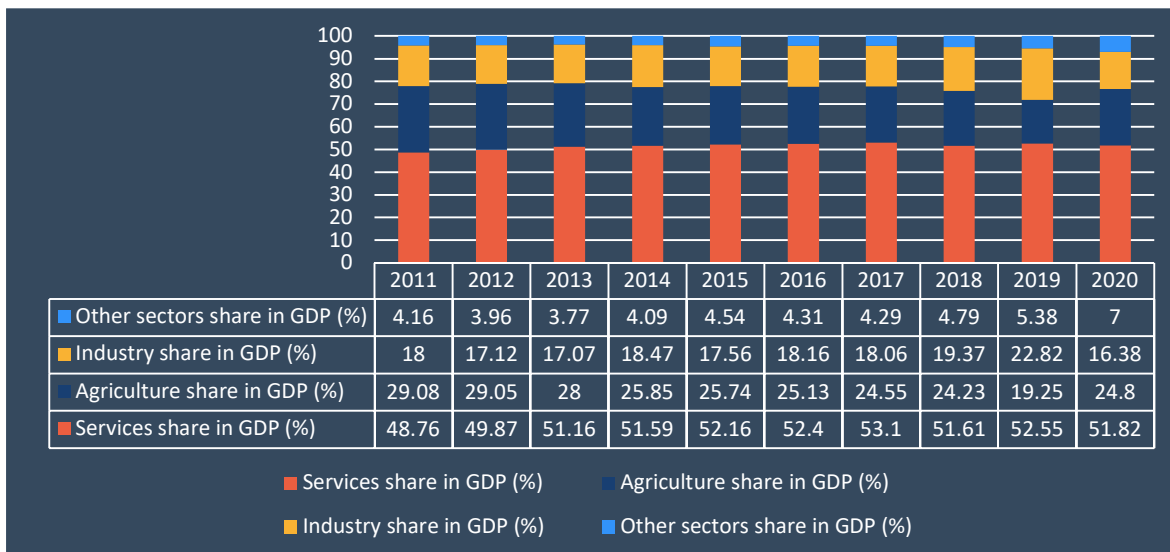
Madagascar is the world's fifth largest island, situated in the Indian Ocean off the coast of southern Africa. Despite considerable natural resources, however, its population of about 28 million (2020) has one of the world's highest poverty rates.

The collapse of tourism and mining production as well as the moderation of private demand resulting from the containment have contributed to a GDP contraction estimated at 7.1% of GDP in 2020. Since mid-2021, a

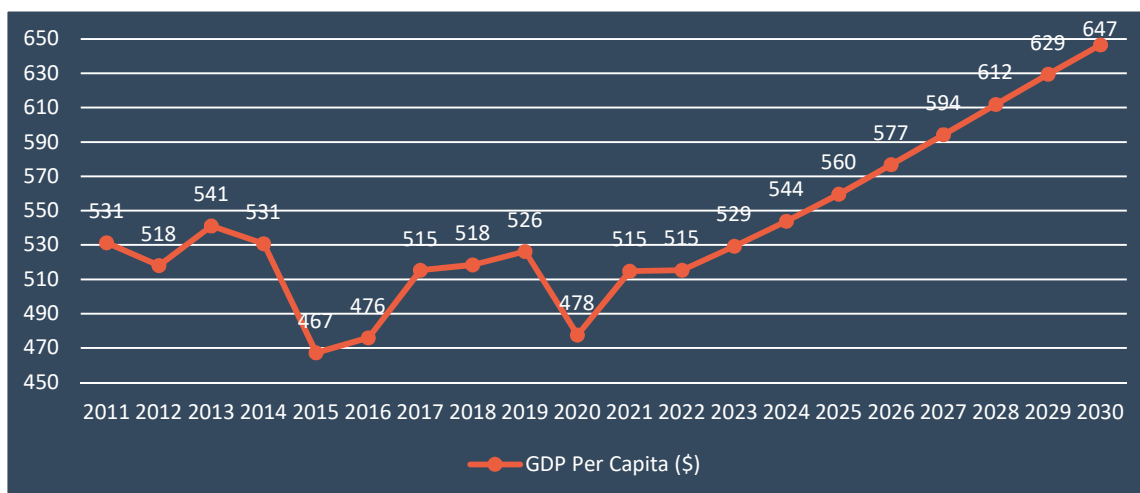


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slow recovery in activity has been observed, supported by exports of textiles and mining products but limited by the delayed reopening of the economy.



**Figure 9: Madagascar - Distribution of gross domestic product (GDP) across economic sectors from 2011 to 2020 [%]** (Source: Statista)



**Figure 10: Madagascar - Historical gross domestic product (GDP) per capita from 2011 to 2021 & projected estimations from 2022 to 2030** (Sources: World Data Bank, S&P)





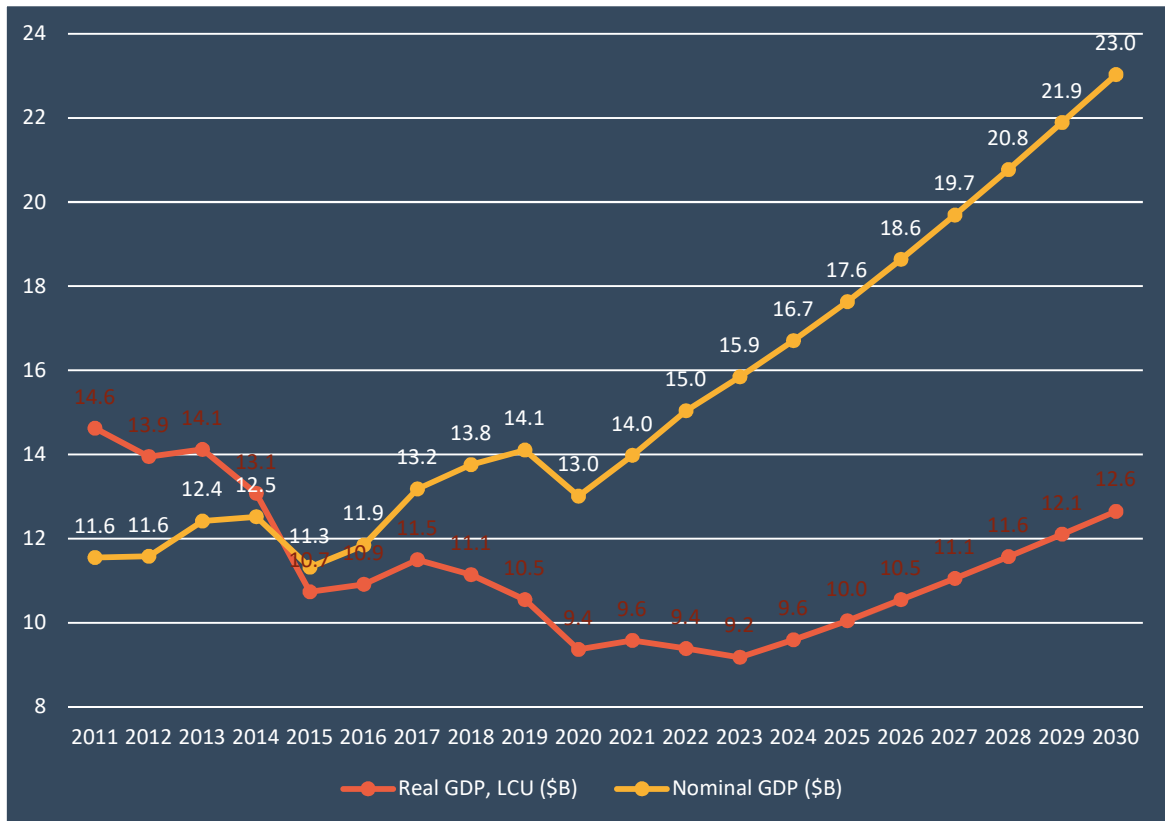


Figure 11: Madagascar – Historical and projected nominal GDP and real GDP growth (Sources: S&P)

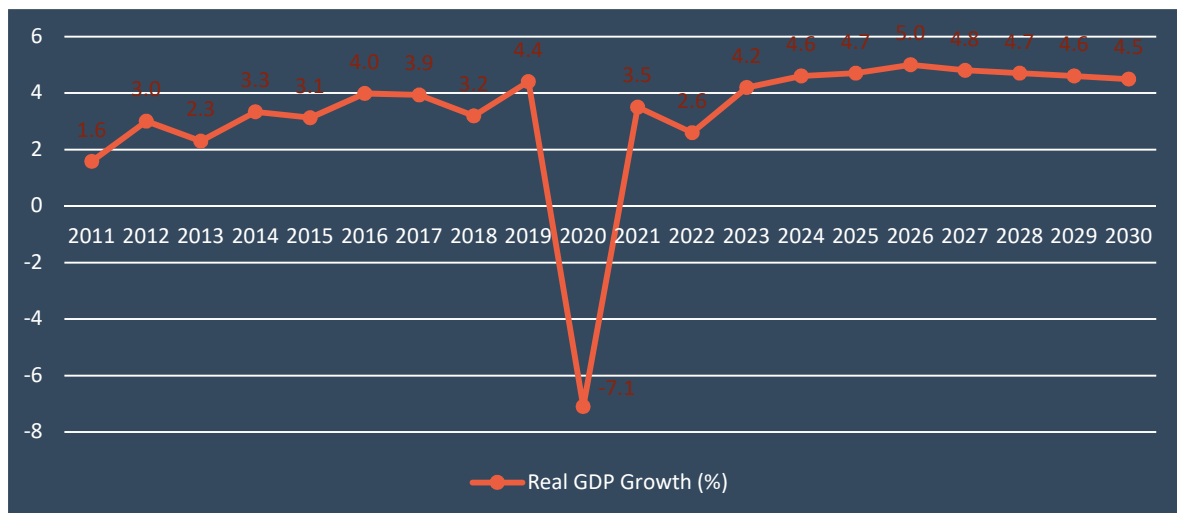


Figure 12: Madagascar – Historical and projected real GDP growth [%]

### Madagascar continues to suffer the serious consequences of the COVID-19 pandemic

Actually, growth averaged about 3.5% a year in the years between the country’s return to constitutional order in 2013 and the onset of the COVID-19 pandemic in 2020. However, it was followed by a recession about three times deeper than in most of the rest of Sub-Saharan Africa, with the sharp contraction of minus 7.1% in the economy due to the economic impact of pandemic closures on Madagascar’s mining, tourism, transport, and service sectors, and to the impact of drought and livestock disease on agriculture in the South. As a result, the



COVID-19 crisis reversed more than a decade of gains in income per capita and pushed the poverty rate to a new record high of 81% (measured against the international poverty line of \$2.15/capita/day). The crisis was compounded in the South of Madagascar by historic droughts that led to widespread crop failure, growing food insecurity, and internal migration.

### The consequences of Ukraine war negatively impact Madagascar through its commercial partnerships

Growth had started to recover in 2021 but was interrupted again in 2022 by a third wave of the pandemic followed by a sequence of severe weather events and the adverse effects of the war in Ukraine. This latter is expected to have important repercussions, as it will negatively impact economic prospects in the European Union, Madagascar's main trading partner.

### Prospective overview, a slow economic recover

Growth projections for 2022 were downgraded to 2.6% (from 5.4%), meaning GDP per capita will stagnate and remain about 8.5 % age points below pre-crisis levels. Growth is expected to pick up to 4.2% in 2023 and 4.6% in 2024, with structural constraints and slowing external demand preventing a faster rebound. The country will continue to benefit from high prices for nickel, cobalt, cloves and vanilla, and consumption is expected to strengthen after being impacted by the COVID-19 crisis and weather episodes. Furthermore, growth is expected to be driven by increased capital spending. The construction of new road infrastructure, the development of water supply, and investments in the energy and mining sectors should be carried out within the framework of the Plan Emergence Madagascar (PEM), financed by both public actors, primarily international partners, and private entities

### Foreign direct investment (FDI) analysis

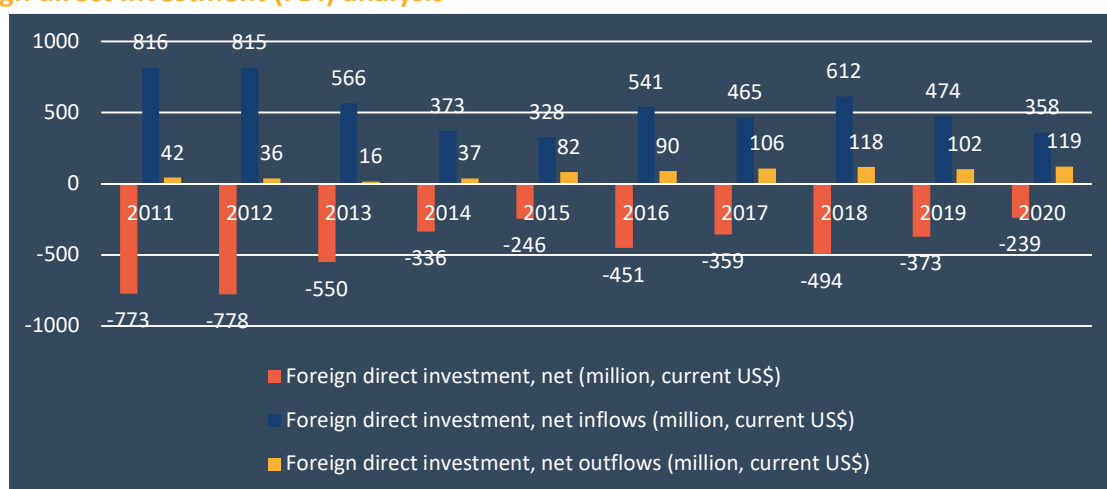


Figure 13: Madagascar - Foreign direct investment net, net inflows, net outflows from 2011 to 2020 (Source: World Data Bank)

### Historical overview

The balance between FDI inflows and FDI outflows has been in favor of FDI inflows in recent years, but between 2018 and 2020 FDI inflows decreased by a third (from USD 612 million to USD 358 million) while FDI outflows remained relatively constant just over USD 100 million since 2017.

### Policies Towards Foreign Direct Investment (U.S. Department of States, 2019)

The President of Madagascar is emphasizing the need to attract foreign direct investment (FDI) for economic development. The government is reviewing regulations and laws, including those related to public-private



partnerships, industrial development, mining, oil, and special economic zones, to streamline processes. However, concerns have arisen among energy and mining investors regarding potential changes to existing contracts and codes.

While Madagascar welcomes foreign investment, it faces significant challenges such as a weak judicial system, issues in the banking sector, unreliable electricity with high costs, pervasive corruption, and limited infrastructure. Although air and sea transportation options have expanded, the cost of air travel remains relatively high compared to other regions.

Madagascar's legislative framework for investment is non-discriminatory, allowing both domestic and foreign investors equal treatment in all sectors. There is no discrimination against foreign investors during or after the investment process, such as through special tax treatment, licensing, approvals, or procurement access

### **FDI outflows**

The Malagasy Government has established an economic section within the Ministry of Foreign Affairs to promote local business growth and boost exports by registered companies in Madagascar. However, there are no government incentives for outward investment, and reports suggest that wealthy individuals have invested significant funds in offshore tax havens, as revealed in leaked documents. While there are no capital controls, the requirement to repatriate foreign currency from international trade serves as an indirect restriction on foreign investments.

### **FDI inflows (Export Entreprises, 2022)**

Foreign direct investment (FDI) in Madagascar had been decreasing due to political instability, with FDI inflows dropping from USD 474 million in 2019 to USD 358 million in 2020 amid the global economic crisis caused by COVID-19. However, President Andry Rajoelina's reforms are expected to reverse this trend. The total stock of FDI reached USD 8.3 billion in 2020. While global FDI flows rebounded in 2021, African countries (excluding South Africa) saw only moderate increases.

The Malagasy government has implemented reforms to improve the business climate and attract investors, particularly in areas like company creation, construction permits, and trans-border trade. Special economic zones, however, have not attracted sustainable and quality investments. France, Mauritius, China, and the United States are the primary investors in Madagascar. In 2018, a significant agreement was signed between the Malagasy Economic Development and Business Development Agency (AMDP) and the Chinese consortium Taihe Century Investments Developments, with a USD 2.7 billion investment over ten years targeting various projects, including fishing, aquaculture, combating illegal fishing, shipyards, and recreational centers.

### **Forex (FX) and inflation**

#### **Exchange rate**

Madagascar's real effective exchange rate has shown relative stability, but the COVID-19 pandemic has weakened the country's external position. The current account deficit increased to 5.4% of GDP in 2020 and 5.5% in 2021, primarily due to decreased exports of travel services, minerals, and vanilla, although imports of fuels and equipment decreased. The Malagasy currency initially stabilized against the US dollar but has since faced a downward trajectory, mainly due to a shortage of foreign currencies resulting from weak export earnings.



Monetary policy has focused on managing bank liquidity and stabilizing exchange rate volatility. The central bank injected liquidity into the banking system in 2020 and 2021, but exceptional support measures for the financial sector were withdrawn in 2021. In response to recent inflationary pressures, the central bank raised the deposit facility rate in late 2021 and early 2022.

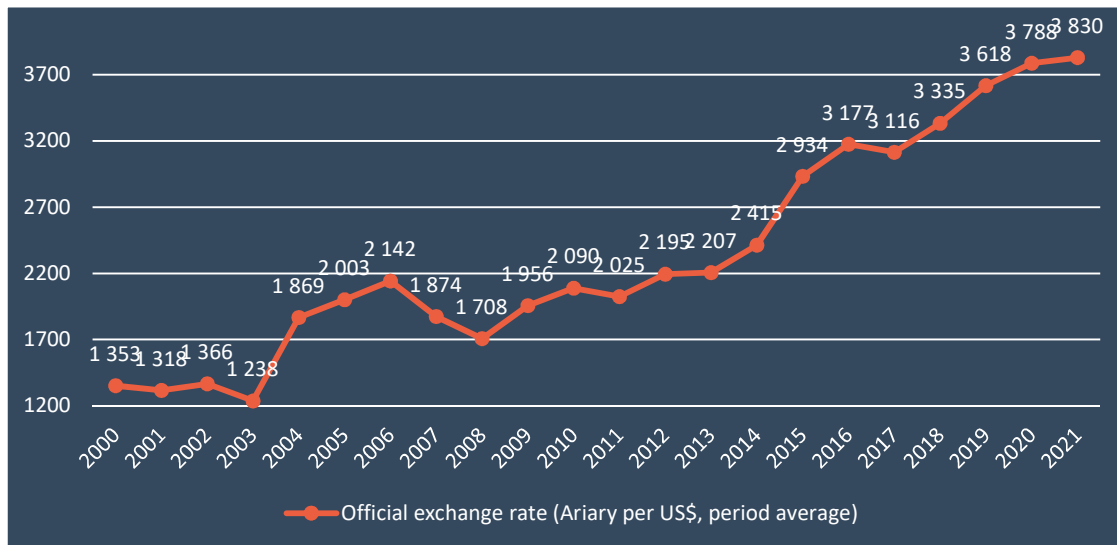


Figure 14: Madagascar - Historical official exchange rate (Ariary per USD, period average)

Currency depreciation in 2020 led to interventions in the foreign exchange market, with official reserves covering six months of imports by the end of 2020, aided by financial assistance from the IMF and other partners totaling USD 446 million. As of December 2021, reserves remained sufficient at 1,633 million SDRs, equivalent to six months of imports.

**Inflation (IMF- International Monetary Fund, 2022)**

Historical and prospective overview

First, Consumer Price Index (CPI) is based on the prices of goods and services consumers buy from a fixed basket of goods. On the other hand, the GDP deflator covers all domestic products and services produced in an economy. CPI includes foreign or imported goods, while the GDP deflator is exclusively for domestically produced goods. This is why the evolutions of these two indicators are different.

Inflation fell to 4.2% in 2020 but stood at 6.2% year-on-year in December 2021 with higher food and health care prices. Ukraine war has actually already led to significant upward pressure on global energy and food prices. In July 2022, the government raised the fuel price at the pump by an average 34%. Consumer price inflation increased in 2021 to reach 7.41% in 2022 but it is expected to steadily decrease over time and reach 4.6% in 2030.

Indeed, monetary policy still aims to contain inflation below 10% through interventions in the money market and the foreign exchange market and to maintain sufficient foreign exchange reserves. Therefore, inflation should be contained at around 6% in short term



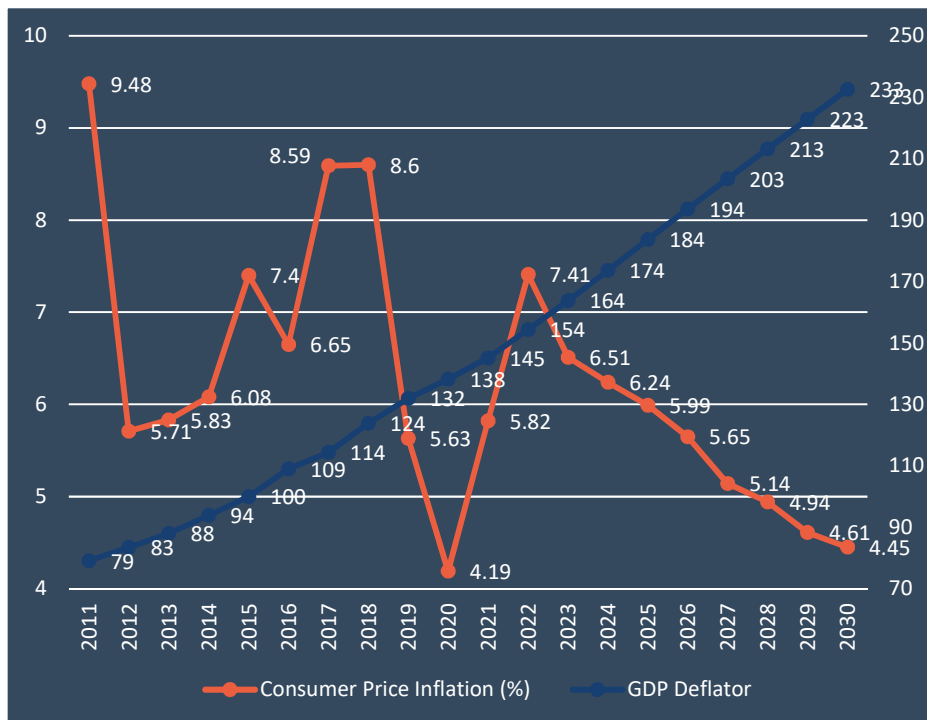


Figure 15: Madagascar - Historical and projected data on inflation indicators (S&P Global, 2022)

**Focus on 2022 (Coface, 2022)**

Although direct trade links with Russia and Ukraine are limited (around 0.6% of Madagascar's trade), the war in Ukraine will continue to weigh on the country, as the import bill will continue to be burdened by high energy and food prices, the recovery of the tourism sector hampered by international uncertainties, and demand for exports - particularly textiles - weakened by the slowdown in external demand, especially from the European Union, which receives 32% of Madagascar's exports. In this context, inflation, which reached a record level in 2022 due to the rise in energy and food prices, is expected to remain high and to continue to weigh on the purchasing power of households. Although the central bank has raised its key rate several times since 2021, bringing it to 8.9% at the beginning of August 2022, potential persistent inflation could lead to further increases, weighing on private investment. Moreover, a second-round effect linked to the rise in real wages in the public sector (which should average 17% in 2022) could be felt. However, inflation should remain below its 2022 level, as the government has shown its willingness to contain consumer prices, notably by capping prices on certain essential goods (rice, sugar, flour). The economy remains very dependent on the evolution of COVID-19, as the vaccination rate is still very low, and on the occurrence of new climatic episodes.



Sovereign debt<sup>34</sup>

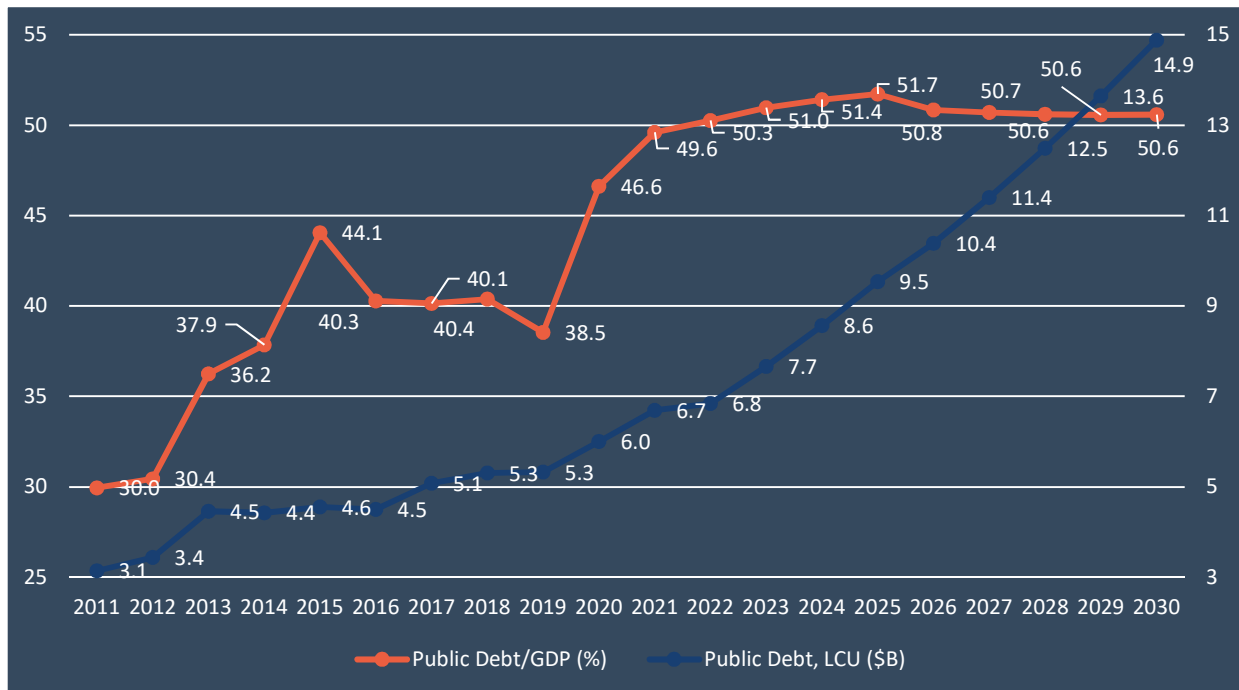


Figure 16: Madagascar - Historical and projected data public debt and debt/GDP (S&P Global, 2022)

Recent debt developments

The 2020 public and publicly guaranteed (PPG) debt ratio is projected to have reached 47%, up over 9% of GDP relative to 2019. The increase is owed to a large extent to an increase in the primary deficit and a decline in GDP growth due to the COVID-19 pandemic, occurring on the back of relative stability in this ratio since 2014. Domestic and external public debt have increased by 0.8 and 9.7% of GDP, respectively. External sources continue to account for almost three-quarters of PPG debt, with almost 60 % of external debt owed to multilateral sources including the World Bank, African Development Bank, and IMF.

Fiscal policy was able to play a stabilizing role during the crisis, as the government ramped up public spending, but as a result, public debt increased significantly, reaching a projected 53.8% of GDP in 2021. Debt distress risks are currently assessed to be moderate, assuming ambitious efforts to boost revenue mobilization and prudent management of public debt and contingent liabilities take place.

Overview

Madagascar, classified as having a medium debt carrying capacity, is still assessed at moderate risk of external debt distress with some space to absorb shocks and moderate risk of overall (external plus domestic) debt distress, in line with the assessment at the time of the program request. While no external public and publicly guaranteed (PPG) debt ratios breach their thresholds under the baseline, the present value (PV) of the debt-to-exports ratio, as well as both debt service ratios, breach their thresholds under an exports shock. Overall risk of debt distress remains moderate because of the moderate external PPG debt rating and possible materialization of liquidity pressures. The debt-service-to-revenue ratio could rise to 77 % within the medium term under the baseline. The government has some space to scale-up investment, assuming ongoing efforts to improve domestic resource mobilization, continued and disproportionate reliance on concessional external

<sup>34</sup> IMF - International Monetary Fund, 2022



financing, and progress in developing domestic bond markets and in the implementation of the governance reform agenda. The current assessment reflects an SDR allocation partly ceded by the central bank to the government as well as debt relief under the Debt Service Suspension Initiative (DSSI), supported by the G-20 and Paris Club, and the IMF's Catastrophe Containment and Relief Trust (CCRT). Updates with respect to the economic impact of COVID-19 (both domestically and externally) and policy response are rapidly evolving and risks remain tilted to the downside, including the heightened risk of a materialization of contingent liabilities, which could lead to a faster than expected deterioration in external and public debt indicators. However, the distance to risk thresholds under current baseline projections suggests some space to absorb additional shocks.

### **The outlook remains highly uncertain with risks tilted to the downside**

The main risks pertain to reoccurring COVID-19 outbreaks linked to the arrival of new variants in a context of insufficient vaccination, negatively impacting trade and delaying the recovery in tourism; rising oil prices amid a recovery in some trading partners with bouts of volatility weighing on government transfers; disruptions in supply chain; and natural disasters (mainly cyclones for the north and droughts for the south), resulting in losses in lives, livelihoods, and physical capital. Protracted weak budget execution in health and education spending and reversals in the governance reform agenda could also result in social and political volatility especially ahead of the 2023 presidential elections, while weak investment implementation capacity could curtail growth. All downside risks would have negative implications for the debt sustainability of the country. Upside potential includes the unlocking of large-scale projects in the energy sector and extractive industry, which could improve the growth potential and attract additional investment.

### **Regional economic alliances/uniform regulatory, accounting, legal frameworks as these may facilitate trade and foster a business-friendly environment<sup>35</sup>**

#### **Overview**

Countries that partner with Madagascar in preferential trading blocs such as the Interim Economic Partnership Agreement with the European Union (APEi), Southern African Development Community (SADC), the Indian Ocean Commission (IOC), and the Common Market for Eastern and Southern Africa (COMESA) can export their goods into Madagascar without paying customs duties.

The United States became Madagascar's biggest single national export market in 2018, but COVID-19 related trade disruptions caused Madagascar's exports to the United States to fall by 17 % from USD 533.6 million in 2019 to USD 439.3 million in 2020. Vanilla, cloves, essential oils, textiles, nickel, and cobalt comprise the bulk of Madagascar's exports to the United States and represent about 20 % of Madagascar's total exports. Prior to the reinstatement of AGOA (African Growth and Opportunity Act) benefits in late 2014, only 8.6 % of Malagasy exports went to the United States, whereas today the number is 37.3 %. While Madagascar's exports to the United States have improved significantly in the last five years, imports from the United States have lagged, stalling at around 2.4 % of total Malagasy imports in 2020 and in the first six months of 2021. The United States is only the twelfth largest exporter to Madagascar, notably behind countries like China, India, France, and UAE in 2020.

#### **Trade agreements**

- 1964: United Nations Convention on Trade and Development (UNCTAD);

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<sup>35</sup> International Trade Administration, 2022



- 1968: GSP – Madagascar among the developing countries benefiting from the Generalized System of Preferences (GSP) for a wider range of products, as well as greater tariff reductions. Several countries have granted Madagascar GSP privileges including the United States and India;
- 1992: IOC – Indian Ocean Committee: Since 1998, there are no tariffs on goods originating from the IOC countries. It is an inter-governmental organization uniting some countries of the Indian Ocean, created in 1984 by the Victoria Agreement. The Comoros, France (La Réunion island), Madagascar, Mauritius, and the Seychelles are member countries of the IOC;
- 1993: COMESA – Free Trade Area since 2000. It is a 19-member regional organization for East Africa;
- 1995: World Trade Organization (WTO);
- 2000: Cotonou Agreement;
- 2005: SADC – Madagascar became a member of SADC in 2005 but the trade agreement came into force in 2008. SADC offers numerous commercial advantages including access to a market of more than 200 million consumers and preferential tariff treatment amongst members;
- 2009: APEi – Interim Economic Partnership Agreement with the European Union. The cooperation agreement between the European Union and African, Caribbean, and Pacific Ocean countries, has been in existence for over half a century;
- 2014: China – Two commercial and technical cooperation agreements provide Special Preferential Tariff (SPT) treatment for items exported under these agreements;
- 2014: AGOA – The U.S. government restored Madagascar’s AGOA eligibility in December 2014 after a five-year gap. Nearly 7000 items are eligible for exemption from import duties when exported from eligible African countries to the U.S. market.

### Restrictions on imports/exports<sup>36</sup>

#### Overview

Most imports into Madagascar do not require an import license, except for a limited group of strategic items, which are specially regulated by the Malagasy government. The importation of radioactive waste from nuclear power stations, pornographic materials, counterfeit products, pirated goods, and those with false labels of origin are prohibited. The imports of products such as arms, explosives, and drugs need prior authorization as do diamonds, gemstones, gold/ platinum jewelry, and vanilla. Madagascar also has special rules for the imports of tobacco leaf and requires import licenses for lubricants. In addition, Madagascar applies the same restrictions and/or concessions as required under the multilateral environmental agreements to which it is party.

Madagascar is a member of the World Customs Organization (WCO). Since November 2000, the Malagasy customs authorities have implemented the “transactional value” definition of the WCO. Customs duties are valued based on Cargo, Insurance and Freight (CIF) for all imports.

#### Trade barriers

Like many developing countries, Madagascar collects a significant share of government revenue through customs duties and value-added tax (VAT) on imports.

Customs duties range from five to 20% and are modified annually when the budget is developed. For further details, please visit <http://www.douanes.gov.mg/tarifs-des-douanes/>. The VAT on imports has held steady

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<sup>36</sup> International Trade Administration, 2022





at 20% for several years. While Madagascar does not have significant formal non-tariff barriers to trade, its higher-than-average customs duties (in comparison with other developing countries) constitute an indirect tariff barrier. About 40% of imports are subject to a 20% customs duty, with beverages, fisheries, flora and fauna, and textiles being among the most protected products. During the COVID-19 pandemic, the government exempted medical equipment and accessories from import duties. Key sectors as mining and textiles receive fiscal benefits under industrial promotion schemes, including the waivers of customs import duties and VAT.

### 3.3. Political context for in-country financings

#### Introduction

Madagascar boasts a significant mining sector, particularly in graphite, nickel, and cobalt production, contributing significantly to its economy. Foreign investment has been on the rise, yet political instability stemming from weak democratic institutions and fragmented security forces remains a limiting factor. President Andry Rajoelina has managed to navigate these challenges through strategic alliances, but maintaining this balance is becoming increasingly difficult due to growing tensions with key allies and rising socio-economic pressures. While he's likely to secure another term in the November elections, asserting authority will remain a challenge in the polarized political landscape, risking destabilization attempts.

In the mining sector, foreign businesses face a challenging regulatory environment due to institutional weaknesses and political instability. Despite reform attempts, the sector remains largely informal. Authorities make ad-hoc changes to promote some formality in specific projects but regulatory risks persist, including political interference, erratic regulation changes. Large mining operators can mitigate these risks through negotiations, leveraging their contributions to government revenue for bargaining power.

#### Political environment

##### Background

Madagascar has faced chronic political instability due to a young, disenfranchised population, weak democratic institutions, and fractured security forces. Ethnic tensions, particularly between Merina elites and coastal communities, have exacerbated polarization. Frequent protests, coups d'état, and impeachments have ousted many post-independence presidents, with little progress in democratic reforms, judicial independence, or corruption control. President Andry Rajoelina's 2019 inauguration marked a rare transition between different candidates in a democratic election, only the third such occurrence since independence in 1960.

##### Current dynamics

Andry Rajoelina, who previously led the controversial High Transitional Authority (HTA) from 2009 to 2014, returned to power as president after winning the late 2018 elections. Despite attempting to distance himself from his authoritarian reputation, he has made limited efforts to strengthen Madagascar's democratic institutions, maintaining informality in government. Rajoelina has also exploited institutional weaknesses, such as reducing the number of senators and gaining power to appoint them, consolidating control over critical state institutions like the High Constitutional Court (HCC) and effectively centralizing power.

While Rajoelina's control over state institutions offers protection from external challenges, his power remains limited due to political polarization within his IRD coalition and other parties. To maintain alliances and counterbalance this, he frequently employs patronage, resulting in frequent and disruptive cabinet reshuffles and leadership changes in state institutions that hinder policymaking. Rajoelina has cultivated close ties with



influential business figures, who play a pivotal role in financing political activities and influencing policy decisions. These businessmen exert considerable control over governance and policymaking by leveraging their connections with political leaders to serve their commercial interests.

Rajoelina has prioritized maintaining support from military generals, despite the military's overall weakness. He has cultivated these relationships since his time with the HTA and strategically placed trusted allies in key military positions to strengthen his control over the armed forces.

### **Political stability**

The president's ability to maintain authority by balancing military, business, and IRD interests has waned due to recent challenges. Severe drought and cyclones in 2021 and 2022 worsened socio-economic issues, leading to increased frustration and allegations of corruption. In response, former presidents Ravalomanana and Hery Rajaonarimampianina have engaged in talks for a potential election agreement since June 2022.

President Rajoelina's efforts to protect the interests of his business allies are becoming more challenging. Initially resisting reforms demanded by multilateral financial institutions, he can no longer delay these changes due to economic issues and the upcoming 2023 elections. To reassure his allies, he's taking actions like dismissing corrupt officials and cracking down on illicit mining networks, but this is causing concern within the business community.

Growing political challenges, defections within his IRD party, and recent coup and assassination attempts have left President Rajoelina in a precarious and increasingly paranoid position.

### **Stability outlook**

To prevent destabilization attempts, President Rajoelina plans to solidify his allies by distributing patronage and appointing close associates to strategic positions, often at the expense of some allies. Frequent cabinet reshuffles aim to weaken potential rivals and minimize military support for any coup attempts. Rajoelina's relatively good relations with Western partners and the fear of losing donor funding may discourage prominent opposition leaders from unconstitutional ousting attempts.

The removal of influential figures from the government may lead to discontent among the IRD and business allies, potentially prompting some to collaborate with the opposition or create new political parties, raising the possibility of future coup attempts or actions by military elites to oust the president. President's vulnerability to destabilization attempts will persist due to opposition capitalizing on socio-economic challenges. While mass protests may be limited in the short term, the approaching elections could bring increased political instability over the next 1-2 years.

### **Civil War**

Madagascar has a history of political instability but has never experienced a civil war. The closest it came was after the 2001 elections, with armed clashes between supporters of presidential candidates Didier Ratsiraka and Marc Ravalomanana. Although security forces are fragmented, there have been sporadic clashes, like a 2021 exchange of gunfire between army and gendarmerie members in Antananarivo.

Rajoelina's efforts to consolidate power over the military may worsen internal divisions within security forces, leading to clashes between units competing for presidential support. While these conflicts are likely in the capital, they won't escalate to a civil war. Rajoelina's influence in security agencies and the lack of political backing for any potential insurgency reduce the risk, and internal divisions don't mirror broader societal divides.



### Attitudes towards foreign investment in the mining sector

While the government is friendly to foreign investment in mining, it hasn't actively sought it due to political instability. Officials' job insecurity drives them to focus on existing investors, who hold significant bargaining power. However, the government's failure to improve the regulatory environment has led to ongoing issues for investors, and socio-economic conditions for local communities remain neglected.

President Rajoelina, aiming to appeal to the population and multilateral institutions, introduced The Plan Emergence Madagascar (PEM) in 2018, envisioning accelerated economic growth and increased benefits from foreign investment for local communities. Despite concerns from the IMF and World Bank about the ambitious targets, they support PEM's economic and structural reforms, including those enhancing the government's negotiating power and mining sector regulations. Rajoelina's shift towards these policies reflects his efforts to address socio-economic issues and attract international investment. The PEM has faced delays primarily due to a lack of political will, but President Rajoelina has rekindled the project before the 2022 elections. Collaboration with the IMF and World Bank may help its implementation, driven by the need to accelerate investment, but political polarization will likely hinder progress, leading to a slow reform process.

### Civil society

Local civil society groups in Madagascar monitor the mining sector due to concerns about mismanagement and illicit dealings between mining companies and governments. Supported by organizations like the Extractive Industries Transparency Initiative (EITI), they operate with some independence from the government, conducting investigations and advocating for regulatory reforms. While the government has occasionally responded to civil society concerns, it varies depending on the issue, public pressure, and the political climate. Civil society also focuses on protecting the interests of local communities affected by mining, particularly in areas where issues like corruption and human rights abuses are prevalent in resettlement and compensation schemes.

Despite concerns, local civil society groups in Madagascar are open to collaborating with foreign mining companies and investors on development and reform initiatives. They recognize the potential for sustainable mining sector development to drive economic growth and alleviate poverty, emphasizing the importance of partnerships to address institutional and regulatory challenges.

### Labour issues

Shortages of skilled labor outside the capital, Antananarivo, are a challenge for commercial operations in Madagascar. While there are no strict local content requirements, prioritizing local nationals for mining jobs is encouraged, but it depends on skill availability. Failure to employ locals can lead to tensions and protests against mining operations. Trade unions in Madagascar are weak and stratified, with sporadic strikes mainly related to salary and working condition issues, although they often do not involve the entire workforce and tend to be short-lived.

### Regulatory environment

Mismanagement in various sectors, including mining, stems from the ruling elite's distribution of patronage based on political allegiance rather than competence. Even technically skilled officials prioritize politics over sound policies in mining regulation. Fiscal challenges and underfunding of regulatory institutions like the Ministry of Mining exacerbate capacity constraints, hindering effective regulation enforcement. Political interference and capacity limitations have led to weak governance of the mining sector, with reform efforts mostly failing. Governments often sustain informality and use sporadic reforms to solidify control over illicit



networks. The suspension of mining licenses in 2011, ostensibly for reform, exemplifies this, with permits still awarded under opaque circumstances, benefiting government officials.

In Madagascar, most mining activities operate informally through opaque and often illicit dealings between companies and officials, legitimized during the HTA government with limited oversight. However, authorities sometimes make ad-hoc changes to the mining framework to encourage formal governance in specific projects, aiming to retain large investors by aligning them with international mining standards. There are thus three mining regulatory regimes:

- The 2005 Mining code which sets generic mining regulations;
- The Large Mining Investment Act (LGIM), which sets a preferential regulatory regime for mining projects worth at least MGA 50 billion (USD 10.7 million);
- The authorities also sign special agreements (“framework agreements”) with mining companies that set out special regulatory regimes for certain projects.

Special regulatory regimes for large mining investors provide some stability but contribute to sector dysfunction and conflicts among different regimes. Political transitions pose a risk of reviewing these special arrangements, potentially causing disruption and reputational risks for large projects as new politicians may pressure them into informal arrangements.

### Reforms

President Rajoelina has used concerns about the mining sector's informality to strengthen his control over patronage networks and pursue aggressive revenue mobilization. Despite institutional weaknesses, his 2019 mining code reforms have been erratic, often bypassing formal processes, and some have been reversed due to pressure from multilateral financial institutions.

### New mining code

In April 2019, President Rajoelina made changes to the mining code, increasing government royalties and introducing a minimum government stake. After initial concerns, the World Bank pressured the government to consult with the private sector. The code review process stalled for over two years due to various factors but has recently accelerated, driven by the need to boost the president's reform record before the elections and meet IMF and World Bank conditions for budgetary support. The National Assembly and Senate approved the new mining code in May and June 2023. This paved the way for the HCC and the President to endorse the law in late July.

The implementation of Madagascar's new mining code is expected to face delays due to political resistance against provisions aimed at improving governance and transparency. Fear of backlash from the IMF and World Bank may prompt President Rajoelina to prioritize some provisions but progress will be slow. Lobbying by international organizations has already influenced the code's content, with the removal of the 3% bonus, reduction of the compulsory government stake to 10%, and easing of production-sharing provisions. The new code will give the government more leverage in negotiations with existing investors, but calls to end special regulatory regimes may not be granted to preserve operations, although amendments will be pursued to increase revenue mobilization.

### Contract cancellation

Madagascar's weak mining regulatory system can jeopardize contractual stability, as some operators rely on informal agreements with influential officials to bypass administrative processes for licenses and permits. Authorities exploit this to challenge permit validity, potentially altering contract terms or increasing taxes



during license renewals. New governments often review previous contracts, like Rajaonarimampianina's administration did with HTA-issued mining licenses, although none were canceled. During his previous presidency (2009-2014), Rajoelina used quasi-legal justifications to threaten the licenses of major foreign investors, such as Madagascar Oil and the Ambatovy project, aiming to extract additional revenue or push for changes in fiscal terms without resorting to arbitrary expropriation, to safeguard investor confidence.

Since returning to the presidency in 2019, Rajoelina has employed similar tactics, such as suspending operations at the Base Toliara ilmenite mine. The suspension, driven by alleged community opposition and unfavorable fiscal terms, has led to ongoing discussions between Base Resources and the government, motivated by economic urgency and Rajoelina's desire to demonstrate his investment track record.

### Local content and ownership requirements

The government heavily relies on the mining sector for revenue, making them generally inclined to facilitate mining operations. Limited socio-economic development hinders local capital mobilization for mining projects, leading the government to avoid ownership restrictions on mining permits. While the new mining code encourages local participation, strict enforcement is unlikely, and large mining companies will likely have room to negotiate favorable arrangements.

### Expropriation

In Madagascar, there's generally a low risk of outright expropriation of commercial assets, especially for large-scale projects, including those in the mining sector. The government lacks the expertise and capital to run such enterprises, and it values its relationships with international partners like the World Bank and IMF. While past leaders like Ravalomanana faced criticism for land seizures from local communities, successive governments recognize the risks of targeting foreign investors for expropriation. President Rajoelina has used threats and license withholding to pressure companies but has avoided direct expropriation, opting for negotiation tactics in various projects.

### External environment

Andry Rajoelina's 2009 coup led to international isolation, but his successor, Hery Rajaonarimampianina, worked to rebuild ties with the IMF, World Bank, and bilateral donors, leading to resumed financial support. Rajoelina, since taking office, has focused on strengthening relations with these institutions to maintain access to multilateral financing.

### World Bank and IMF influence

The World Bank and IMF have become influential partners for the government, using budgetary support to push for economic and political reforms, including mining sector changes. Their significant funding role gives them substantial influence over policy development and implementation, while bilateral partners also leverage these institutions to advocate for policy changes in Madagascar.

### International regulations, such as EITI and the ILO

Madagascar is a signatory to international labor protection conventions, with domestic labor laws recognizing international labor rights. However, enforcement is limited in the substantial informal sector, leading to common violations of minimum wage and safety standards. Child labor is prevalent in various industries, including agriculture, mining, tourism, and domestic work. While workers in the public and private sectors can establish unions, separate labor codes apply to civil servants and maritime workers, while the police, military, and firefighters cannot form unions. Madagascar is also a member of EITI, with its influence increasing due to



IMF and World Bank support, despite occasional political hindrances. EITI plays a significant role in monitoring the mining sector's management.

### **2023 Elections**

Madagascar is preparing for upcoming presidential elections in November and December 2023. Concerns over logistical challenges, financial difficulties, and Rajoelina's failure to institute political reforms have raised doubts and worries among both the population and international partners. To address concerns and secure international support, Rajoelina is expected to make symbolic concessions, but logistical delays may still undermine public trust in the polls. While Rajoelina is likely to win re-election, maintaining political stability in his second term may prove challenging.



## 4. Assessment of social, environmental, and governance challenges

### 4.1. Country-level assessment and context

#### 4.1.1. Context

##### Overview of the mining Sector

Madagascar has significant mining potential. However, the development of the sector has been slowed down by successive political crises (the most recent of these being in 2009).

The key institution governing the mining sector of Madagascar is the Ministry of Mines and Strategic Resources<sup>37</sup>. Through the Mining General Management Office, the Ministry of Mines and Strategic Resources is responsible for the management, supervision and control of mining activities. In addition, the Ministry of Mines and Strategic Resources, the Bureau du Cadastre Minier de Madagascar/ Madagascar Mining Cadastre Office (BCMM) is the other key government stakeholder in the management of the mining sector. The BCMM is responsible for the management and control of mining permits and the mining registry, including the preparation and documentation of the grant, renewal, transformation, transfer and cancellation of mining permits

##### Governance

The governance of the mining sector has been deeply disrupted following numerous crises that the country has experienced periodically from 1972-2009. However, the government of Madagascar has collaborated with various partners in acting to reverse this trend. The Africa Development Bank's country strategy paper 2005-2009, assessed Madagascar's governance profile according to the main elements of governance identified in the Bank Group policy adopted in 1999<sup>38</sup>. These elements are accountability, transparency, stakeholder participation, anti-corruption and the legal and judicial framework. This assessment showed that the Republic of Madagascar has made progress in promoting good governance in recent years. This progress was attributed, in particular, to:

- The creation of new institutions responsible for promoting good governance;
- The improvement of the legal framework in several areas;
- The preparation of development strategies integrating the promotion of good governance among the priorities of the country.

This assessment also found that, in general, and despite this progress, much remains to be done to establish good governance in all aspects of the country's management. The 2022-2026 Country strategic document highlighted that: previous strategies contributed to addressing the challenges of governance and fragility<sup>39</sup>. To this end, the strategy considers reforms aimed at improving the mobilization of domestic resources and building capacities to combat corruption. In addition to improving sector governance in the two (2) priority areas, the Bank's support through budget support and institutional support will also support reforms in order to promote enabling environment to attract private sector investment. As part of the political dialogue in synergy with the other partners, emphasis will be placed on strengthening budget transparency and the effectiveness of public expenditure management.

<sup>37</sup> <https://mmrs.gov.mg/>

<sup>38</sup> African Development Bank Group, 2005-2009- Madagascar Country Strategy Paper, <https://www.afdb.org/en/documents/document/2005-2009-madagascar-country-strategy-paper-13007>

<sup>39</sup> African Development Bank Group, 2022-2026, Madagascar Country Strategy Paper, <https://www.afdb.org/en/documents/madagascar-country-strategy-paper-2022-2026>



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In general, and despite this progress, much remains to be done to establish good governance in all aspects of the country's management. Furthermore, the Mining Code of 2005 does not include any transparency measures. However, Madagascar joined the EITI in 2008 and has made meaningful progress (EITI, 2020). On 30 March 2023, The Council of Ministers adopted the decree governing the granting of legal status to Extractive Industries Transparency Initiative - Madagascar (EITI Madagascar). EITI Madagascar is responsible for compliance with international standards to be applied by all EITI member countries in the oil and mining sectors.

### Legal Framework

The table below lists the main texts governing the mining sector.

Law n° 99-022 of July 30, 1999, on the mining code, as amended by Law n° 2005-021 of July 27, 2005
Law n°2001-031 of October 8, 2002, establishing a special regime for major investments in the Malagasy mining sector (LGIM), amended by Law n°2005-022 of October 17, 2005
<b>Decree n° 2023-334 of March 30, 2023, on the Gold Regime</b>
Decree n° 2022-293 of March 09, 2022, on the provisional allocation of financial resources from the Provinces to the Communes and Regions
Decree n°2019-1909 of October 02, 2019, establishing the powers, organization and operation of the provincial committees and the national mining committee
Decree n°2015-663 of April 14, 2015, creating and establishing the statutes of the National Agency for the Gold Sector (ANOR)
Decree n° 2010-023 of January 25, 2010, amending certain amendments to Decree n° 2006-910 of December 19, 2006, setting out the application of the mining code
Decree n°2006-910 of December 19, 2006, setting the terms and conditions for application of amended Law n°99-022 of August 19, 1999, amended by Decree n° 2020-1000 of August 20, 2020, on the distribution of administrative fees, royalties and mining rebates
Decree n°2003-784 of July 08, 2003, implementing the law on major mining investments
Decree n° 2001-688 of August 03, 2001, setting the conditions for application of certain provisions of law n°99-022 of August 19, 1999 on the mining code.
Decree n° 2000-308 of October 02, 2000, creating and establishing the statutes of the <b>Madagascar Mining Cadastre Office (BCMM)</b> , supplemented by Decree n° 2017-175 of March 16, 2017, annexing Decree n° 2000-308 of May 10, 2000 establishing the statutes of the <b>Madagascar Mining Cadastre Office (BCMM)</b> .
Order n° 1455/2016 defining the procedures for granting approval to gold comptoirs and model specifications
Interministerial Order n°1454/ 2015 of January 20, 2016, defining the model for the various documents relating to collection activities
Order n°1453/2016 of January 20, 2016, defining authorized equipment and the model for the various documents relating to gold panning
Order n° 2015/28066 of September 07, 2015, declaring gold stocks held by private individuals
Order n° 8887/2014 of February 21, 2014, defining the terms and conditions for the distribution and use of mining rebates from certain mining projects.
Order n° 9874/2013 amending certain provisions of Interministerial Order n° 52005/2010 of December 20, 2010, amending Interministerial Mine-Forests Order n° 18633/2008 of October 17, 2008 placing sites covered by order n° 17914/2006 of October 18, 2006 under temporary global protection and lifting the suspension of the granting of mining and forestry permit for certain sites.
Order n° 7902/2013 of April 9, 2013, establishing the technical specifications of operating procedures, as well as the authorized tools, equipment, and materials for small-scale mining activities.
Order n° 7903/2013 of April 9, 2013, establishing the standard statutes for small-scale mining associations and artisanal gold mining associations
Order n° 7904 of April 9, 2013, regarding the activities of collecting mining products
Order n° 14519/2013 of July 5, 2013, establishing the methods for calculating transaction amounts for mining offenses
Order n° 28088/2012 of October 19, 2012, establishing the procedures and conditions for the accreditation of laboratories and private experts for the certification of quality of mining substances and marking
Order n° 5470/2012 March, 30, 2012 fixing the activity report template for each type of mining permit.
Interministerial Order n°14-421/2008 fixing transitional collection procedures for royalties and rebates on mining substances intended for exploitation
Order n° 8186/2008 April, 09, 2008 modifying the calculation of the duration of validity of mining permits.
Order n° 10901/2007 of July 4, 2007, establishing the fixed fees collected by the BCMM for each registration of an operation affecting the rights granted in mining permits.





Interministerial Order n° 21,985/2007, establishing the procedures for the collection of mining royalties and dividends

Order n° 4851/2001 of April 18, 2001, determining the basis for mining royalties for certain mining products

Table X: List of main texts governing the mining sector - Source: EITI Madagascar 2019 and 2020 relaxed report and CNLegis

### 4.1.2. Mineral/mining policies, industry policies

The Malagasy legal framework relating to the mining sector comprises the following statutes:

- Law 005-022 dated 17 October 2005 amending Law 2001-031 dated 8 October 2002 establishing a special regime for large-scale investments in the Malagasy mining sector (LGIM);
- Law 99-022 dated 19 August 1999 on the Mining Code, amended by Law 2005-021 dated 17 October 2005 relating to the Mining Code;
- Decree 2006-910 dated 19 December 2006 implementing the Mining Code amended by Decree 2010-023 dated 25 January 2010;
- Decree 2003-784 dated 8 January 2003 implementing the LGIM; and
- Inter-ministerial Order 12032/2000 dated 6 November 2000 regulating the protection of the environment in the mining sector.

The draft of the Mining Code under review was validated by the Council of Ministers on April 12, 2023 and was presented to the Parliament in May 2023. It was adopted on second reading by the national assembly on 7 June 2023 with the senate's amendments. The major changes concerns were:

- The halving of permit area and duration of mining permits;
- The mining taxation (significant increase in mining royalties and rebates which are now set at 5% of the FOB (Free On Board) value;
- The creation of the mining fund for social and community investment;
- The constitution of mineral substances;
- The introduction of a quarry regime;
- The establishment of a central agency (Centrale de l'or de Madagascar "COM") for the sale and purchase of gold;
- The establishment of precious gems counters;
- introduction of special measures concerning governance, respect for human rights, gender and environmental protection;

The following in the Draft Mining Code is also highlighted:

- At the Institutional Level, the draft law affirms the authority of the mining minister and establishes a structure of state bodies to oversee and administer different aspects of the country's mining activity.
  - The law gives the CNM (National Mining Committee -Comité National des Mines), which was created under the existing legislation, a more active role by insisting on its synergising powers to ensure that central and local government and the private sector work together effectively to develop the country's mining sector;
  - The law also introduces a newly named Mining Brigade (Brigade minière) responsible for policing mining activities, including uncovering and recording mining offences. The bill proposes some new structures, too.
    - The Geology Bureau of Madagascar (Bureau de Géologie de Madagascar) is tasked with managing geological data relating to the country's mining potential.
    - A National Mining Fund (Fonds Minier National) is created for the purpose of channelling part of the State's revenue from mining activities into national and local development programmes.
    - The law also establishes a special body to represent the State in transactions relating to the sale and processing of gold.



The draft law also identifies Strategic Mining Substances (SMS) as all substances that, depending on the national and international economic situation at the time, are of particular interest to the Nation with regard to their critical nature and the geostrategic context. The list of strategic substances is fixed by regulation, after consultation with the CNM or, failing that, the groups of mining operators. The holder of a permit containing strategic mining substances is authorised to sell on the national market or to export its production at the market price. However, the State reserves the right to determine the production quota that the holder must sell to domestic industry, based on actual needs.

### 4.1.3. Mining regulations

In regulating the mining sector, the Ministry of Mines and Strategic Resources and the BCMM have paid special attention to the following points:

- Maximization of state revenues;
- Community development;
- Proper management and rehabilitation of the environment;
- Promotion of the use of local goods and services;
- Creation of jobs and valorisation of national skills;
- Proper governance of the mining sector;
- A policy of first come, first served with respect to the grant of mining permits.

The granting, renewal, transfer and other related activities, suspended since 2010, have been lifted by the Council of Ministers on 30 March 2023. This was done in order to concretise the President of Madagascar Solemn Promise (velirano number 10), which relates to the sustainable management of natural resources in Madagascar. The Board approved the gradual review of mining permit applications that are pending at the BCMM.

Standard permits are issued by the Minister in charge of Mines. According Article 42 of the Mining Code, the Minister can delegate his power. The permits for Small Operators (“PRE”) are granted by the Interregional Director of the Ministry in charge of Mines. Any request for a mining permit is written on a form to be obtained from the Mining Cadastre office. After correctly completing the form, the applicant submits the application to the said office against receipt indicating the day, hour and minute of deposit, which are authentic (Article 43, Mining Code).

Only Malagasy registered entities can own mining rights. No restrictions apply regarding foreign ownership of mining companies. However, this may change depending on the outcome of the ongoing revisions to the Mining Code.

The Ministry of Mines and Strategic Resources plan to establish a Priority Plan. With the Priority Plan, the renewal of permits for small operators (PRE) will be examined first, followed by mining permits for research or (PR) and finally operating permits for large industries or (PE). The renewal of the PREAs are prioritised because these permits are the majority. Furthermore, the plan to clean up the Mining Cadastre will be implemented.

According to the Law 99-022 dated 19 August 1999 of the Mining Code, amended by Law 2005-021 dated 17 October 2005 relating to the Mining Code, the following mining permits may be allocated: Exploration Permit, Research Permit and Exploitation Permit. These permits are defined below and summarised in **Erreur ! Source du renvoi introuvable.**



### **The Exploration Permit (“PR” licence):**

- This permit gives the holder the exclusive right to carry out prospecting and research activities within a defined area.
- Does not vary depending on the type of mineral or the location of the activity. The main principle set out by the Mining Code is the ‘first come, first served’ approach. In addition to this, the following requirements should be satisfied:
  - Only Malagasy registered entities can acquire exploration permits (justified by the certificate of incorporation and memorandum and articles of association).
  - The applicant must provide proof of its capacity to carry out the activities (e.g., that it is not subject to any ban).
    - The applicant must pay the annual mining administration fees corresponding to the requested squares metres 25% of the fees as a processing fee upon filing the application dossier;
    - 56% of the fees 20 days after filing the application; and
    - 19% of the fees within five days of the BCMM decision to grant the permit (failure to pay results in cancellation of the granting decision).
  - The requested square metres must be confirmed as available (subject to a BCMM check based on the exact location of the squares provided by the applicant).
  - The limits on the number of squares the applicant can request must be observed (i.e., an entity can own several R permits, but the R permits cannot cover more than 10,000 square kilometres or 25,600 squares).
  - The references of the permits held by the applicant must be confirmed.
  - An investment plan and exploration programme, duly signed by the applicant, must be submitted.
  - An environmental commitment letter must be submitted confirming that the applicant will not commence activities until it has obtained the necessary environmental authorisation.
- The Exploration Permit covering a defined area will be granted by order of the Minister of Mines or his representative, within 30 working days, to the first eligible person to submit an application dossier that fulfils all requirements.
- The Exploration Permit may be transferred. The transfer agreement is signed and filed together with any relevant paperwork (e.g., corporate authorisations) at the BCMM, which then passes the transfer file to Ministry of Mines. In theory, approval is granted within 35 days.

### **The Exploitation Permit (“PE” licence):**

- Covers the minerals mentioned in the permit that exist within the permit area for which it is granted. However, if the permit holder discovers a new mineral that was not initially mentioned in the exploration permit, they may request an extension of the permit to cover the discovery.
- Gives the holder the exclusive right to undertake exploitation and exploration within the defined perimeter.
  - Any application for an E permit for which an environmental impact study is required must be accompanied by a letter of commitment not to start any mining activity before obtaining the environmental permit, after approval of the environmental impact



assessment document prepared by the applicant in accordance with the environmental regulations in force.

- Is issued within 30 working days of submission of the application to the BCMM.

**The Research licence and Operating licence**

This permit confers on the holder, within the limits of its perimeter and for the period of its validity, a right of priority to apply for an **Exploitation Permit** or ‘E’ permit covering all or part of the perimeter covered by the R permit.

Licence Type or Authorisation	Description	Duration	Renewable	Restriction
Exclusive authorisation for Perimeter(AERPs)	Exclusive prospecting right maximum Area 15 000 Km <sup>2</sup> equivalent 38 400 square	3 months	Not Renewable	
Exploration licence « R »	Exclusive right of prospecting and research. Maximum Area: 1 000Km <sup>2</sup> equivalent to 2 560 square	5 years	renewable two (2) times for a period of three (3) years each renewal	
Exploitation licence « E »	Exclusive right of prospecting, research and mining. Maximum Area: 10 000Km <sup>2</sup> equivalent to 25 600 square	40 years	renewable one or more times for a period of twenty (20) years for each renewal	
Research and Operating licence for Small Operator “PRE”	Exclusive right of prospecting, research and mining Maximum Area: 100 Km <sup>2</sup> equivalent to 256 square	8 years	Renewable one or more times for a period of four (4) years for each renewal.	

Table 22: Licence, permit, authorisations for the mining sector in Madagascar

Types of permits	Rights	Maximum area per holder	Validity period
AERP	<ul style="list-style-type: none"> <li>- Exclusive rights to prospect and subsequently apply for a PRE, PR, or PE on the first perimeter covered by the authorization.</li> <li>- Marketing of mining products prohibited</li> </ul>	-	Maximum duration of 3 months and non-renewable
PRE	<ul style="list-style-type: none"> <li>- Exclusively for small-scale operators using artisanal techniques:</li> <li>- Rights to undertake both prospecting, exploration, and exploitation of the substance(s) for which the permit has been issued within the delimited perimeter</li> <li>- Rights to construct temporary or permanent infrastructure and utilize the forests and water resources within the perimeter in accordance with the applicable laws and regulations, subject to prior consent from the landowner.</li> <li>- Convertible into a PR and PE</li> <li>- Free trade of substances covered by the permit, subject to compliance with relevant regulations.</li> </ul>	100 squares kilometres, equivalent to 256 squares	A maximal duration of 8 years, renewable one or more times for a period of 4 years each time
PR	<ul style="list-style-type: none"> <li>- Rights to undertake both prospecting and exploitation of the substance(s) for which the permit has been issued within the delimited perimeter</li> <li>- Rights to dispose of the extracted mineral substances for laboratory analysis, prospecting for markets, or industrial testing purposes, within the authorized quantities in case of exportation for analysis, sampling, or industrial testing.</li> <li>- Rights to construct temporary or permanent infrastructure and utilize the forests and water resources within the perimeter in accordance with the applicable laws and regulations, subject to prior consent from the landowner</li> <li>- Priority rights to apply a PE</li> <li>- Marketing of mining products prohibited</li> </ul>	10,000 square kilometres, equivalent 25,600 squares	A maximum duration of 5 years, renewable 2 times for a period of 4 years each time



PE	<ul style="list-style-type: none"> <li>- Exclusive rights to undertake the exploitation, prospecting, and exploration of the substance(s) covered by the permit within the delimited perimeter</li> <li>- Rights to construct temporary or permanent infrastructure and utilize the forests and water resources within the perimeter in accordance with the applicable laws and regulations, subject to prior consent from the landowner. For companies whose scope of business extends from extraction to commercialization and operate in an integrated manner:</li> <li>- Authorization to transport or have transported, within the project's perimeter, the mineral substances covered by the permit, their concentrates or primary derivatives, as well as metals an alloy of these substances to storage, processing, or loading location, dispose of them in domestic and foreign negotiated prices, and export them.</li> <li>- Permission to establish concentration, conditioning, treatment, refining, and transformation facilities for the mineral substances covered by the permit on national territory, subject to compliance with current legal and regulatory provisions.</li> <li>- Free trade of substances covered by the permit, subject to compliance with relevant regulations</li> </ul>	<p>1000 squares kilometres, equivalent 2560 squares</p>	<p>A maximum duration of 40 years, renewable one or more times for a period of 20 years each time.</p>
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Table 23: Types of mining authorization and permits - Source: Mining code

#### 4.1.4. Taxation and royalties

On the fiscal front, the draft Mining Code stipulate that mining operators are subject to the ordinary tax regime as shown in the table below

Tax Type	Tax Rate
Income Tax	20% of the net profit
Non-Income Tax	20% of the net profit
Non-Resident Income Tax	Withholding tax of 10% of any income realised in Madagascar by a non-resident
Tax on dividends	10% with respect to dividends paid to non-resident shareholders
Salary Income Tax	20% of the salary
Tax on income from movable capital (Impôt sur les revenus des capitaux mobiliers)	20% on loan proceeds
Value-Added Tax	20%
Registration fees	From 0.5 to 5%, depending on the nature of the transaction

Table 24 : Tax regime

#### Mining Royalty

Mining royalties are payable on the sale of the mineral and differ according to metal or mineral type as shown in the table below:

Mineral/Metal	Royalty Rate (%) -2005 Mining Code
Industrial Stones (cut)	3
Industrial Stones (uncut)	6
Precious Stones (cut)	4
Precious Stones (uncut)	8
Minerals such as Nickel & cobalt	4



Precious Metals	4
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**Table 25: Mining royalties**

Mining royalties are a tax levied on operators' Gross profit, levied on the first invoicing of mining transactions and the rate of which is 2% according to Article 117 of the mining code. They are divided into mining royalties (0.60%) collected on behalf of various administrations and other central organisations, and in the rest rebate (1.40%) collected for the benefit of the Autonomous Provinces, Regions and Communes. The rates of distribution of revenue from mining royalties are set as follows:

- 10% for the Mining Cadastre office
- 15% for the Gold Agency;
- 10% for the National Mines Committee;
- 65% for the general budget on behalf of the Central Department in charge of Mines, the Interregional Directorate in charge of Mines concerned and the entity in charge of the Mining.

Taxes to be paid by foreigners engaged in the marketing or export of stones precious stones are levied at the rate of 6% and are distributed as follows by DSTM:

- 2% mining royalty;
- 2% entering from the General Budget and
- The remaining 2% is intended for the Ministries concerned, in particular the Ministry of Energy.

In addition to the two categories of taxes, there is a specific internal taxation which governs especially in the mining sector. These are the Excise Duty (DA) and the Special Duty on Mining Transactions (DSTM). This DA is a duty levied on harvested products, extracted, manufactured or imported in Madagascar. In the case of mineral substances, this duty applies to precious stones and semi-precious stones, precious metals, i.e. luxury products, as well as certain industrial stones necessary for the high-tech industry. The DSTM is a fee withheld in advance and non-refundable and often qualified as a mining parafiscal tax.

Following the granting of an operating permit, the BCMM charges a fee corresponding to the category and the number of years of possession of the permit. The value of this levy is fixed by interministerial order while its recovery is effected by the antennas of BCMM in provincial capitals. Hence, this central management holds 60% of these values and is distributed between the decentralised territorial community and the general budget.

### **Tax Incentive**

Law 005-022 dated 17 October 2005 amending Law 2001-031 dated 8 October 2002 establishing a special regime for large-scale investments in the Malagasy mining sector (LGIM) introduced a specific incentive regime for large-scale investment projects involving an investment of more than MGA 50 billion<sup>40</sup>, once certification has been granted by way of government decree. The LGIM regime mainly consists of a legal, financial and tax stability guarantee; the possibility to take advantage of any more favourable measures; and certain tax and financial exemptions, under certain conditions.

The draft law includes some provisions particularly relevant to companies. Any company holding a permit will be obliged to notify the land registry of any changes to its by-laws within thirty days of such changes being made, and any failure to do so will be treated as an infringement of the permit's specifications. Also,

<sup>40</sup> 1 ariary (MGA) = 0,00021 € on 15.05.23



registration duties will be payable in the event that rights accorded under mining permits are passed on through negotiation or transmission. The duty will be 5% of the amount of an investment in the case of the sale or purchase of a company or company shares, changes to a company's name or its shareholders, or transfers by inheritance; and 10% of the value of the right affected in the case of farm-outs, pledges, and partnering operations.

### 4.1.5. Land-use and mineral rights

All deposits of mineral substances located in surface, underground, waters and seabed of the National Territory are state properties (Article 3. Mining law), but the mining permit holder must enter into a lease agreement with the landowner with respect to:

- The use of land;
- The right to establish all constructions and infrastructure that may be necessary to conduct the exploration/exploitation activities; and
- The right to remove trees and other assets on the land.

The operator must maintain good neighbour relations with the landowner. Thus, the operator must:

- Inform the landowner of its right to occupy the land parcel covered by the mining permit;
- Obtain the landowner's authorisation before starting work on the land; and
- Enter into a lease agreement or any other form of contract with the landowner to cover all compensation for the use of the land and any damage caused to the property as a result of the mining activities.

If the landowner refuses to enter into an agreement with the permit holder, the latter may submit a request to the Ministry of Mines in order to arrange for the project to be declared a public utility project and to initiate an expropriation procedure. Expropriation is a detailed and time-consuming process that can last for a year or even more.

The concept of native title is broadly recognised. In this regard, even occupants without formal land titles must be considered by the permit holder. In principle, local communities must always be consulted whenever their land may be affected by a given project. Under these circumstances, their consent is generally required before any project can proceed. Consent is required regardless of the type of activity (exploration or exploitation).

In addition, the Ministry of Mines and Strategic Resources, the Bureau du Cadastre Minier de Madagascar/ Madagascar Mining Cadastre Office (BCMM) is the other key government stakeholder in the management of the mining sector. The BCMM is responsible for the management and control of mining permits and the mining registry, including the preparation and documentation of the grant, renewal, transformation, transfer and cancellation of mining permits.

### 4.1.6. Environment

The Ministry in charge of Mines and the Ministry in charge of the Environment to ensure compliance with the rules aimed at the environmental protection by the holders of mining permits (Article 98, Mining Code)

Any natural or legal person who carries out mining activities has the obligation to take the necessary protective measures to minimise and repair any damage that may result from the work conducted in the course of its activity. This person is responsible for any degradation of the environment as a result of its



work. This liability is limited only to the extent that the person concerned exercises in compliance with the laws and regulations governing mining activities as well as those aimed at protecting the environment. Any execution of work related to mining activities, including the construction and maintenance of infrastructure necessary for this purpose, is made in accordance with the commitments in the environmental plan or the study of its impact on the environment previously elaborated according to the methods provided for by the relevant legal and regulatory provisions. (Articles 99 and 100).

### Environmental Regulations

Any request for an operating licence is accompanied by a letter of commitment to start no mining activity before obtaining an environmental authorisation after approval of the Environmental Impact Assessment (EIA) document established by the applicant.

This authorisation or environmental permit is issued by the National Office for the Environment (ONE), after a favourable assessment in the EIA. Basis is the technical opinions of the CTE following the evaluation of the EIA of the project and the results of a public consultation (Article 6 of the Mecie Decree). This environmental permit must be included in any request for authorisation, approval or approval of work, works and developments projected (art 27 of the Mecie decree). The PRE licence request is also subject to an environmental commitment plan. The National Office was created in 1990, and is governed by Decree No. 2008-600 of June 23, 2008.

According to Chapter 2 of the Mining Code, 2005, a mining permit must be always be accompanied by an environmental licence to motivate the establishment and the start of the operating work of the project. The environmental licence, forms part of the prerequisites for the commencement of a mining activity. established in the Mining Code for constituting an authorisation or approval by the competent and mandated public power, conditions the beginning or not of any work. The environmental licence is issued by a competent and mandated public power.

The environmental impact assessment study report approved by the National Office for Environment sets out the environmental specifications of the project.

	Environmental authorization	Environmental permit
<b>Scope</b>	<ul style="list-style-type: none"> <li>- PRE</li> <li>- PR</li> </ul>	<ul style="list-style-type: none"> <li>-PE</li> <li>-PRE in case of concentration of applications for PRE in a specific area</li> <li>-PR based on a threshold of research progress</li> </ul>
<b>Obligation of the holder/ project proponent</b>	Preparation of a PEE	Preparation of an Environmental Impact Study (EIE)
<b>Granting procedure</b>	<ul style="list-style-type: none"> <li>- Submission of the PEE to the environmental unit</li> <li>- Evaluation of the PEE by the environmental unit</li> <li>- Granting of the authorization by the Provincial Director of the Ministry responsible for Mines or by the Minister responsible for the Environment (in sensitive area) or by the Minister responsible for Mines (in areas with a concentration of mining operation)</li> </ul>	<ul style="list-style-type: none"> <li>- Submission of EIE to ONE by the holder<sup>16</sup></li> <li>- Evaluation of the EIE by the environmental unit</li> <li>- Granting of permit by ONE</li> </ul>

Table 26: Types of environmental permit - Source: Mining code and Decree MECIE





### Mine Closure

Prior to commencing any mine closure works, the holder of an E permit must submit the following documents to the regional department of the Ministry of Mines:

- A topographical map of the mine works to be closed;
- A plan of the underground galleries and the drilled holes to be closed;
- The techniques to be adopted for undertaking the closing works;
- The techniques to be adopted to mitigate environmental impacts.

The regional department of the ministry must issue its approval or refusal within 15 days of submission of the above documents. A refusal must be explained and the permit holder will be given the opportunity to adjust the relevant document(s) accordingly.

Furthermore, the environmental impact study also must detail plans for the eventual closure and rehabilitation. The environmental impact study report sets out the environmental specifications of the project and includes:

- All environmental measures that must be completed by the permit holder during the life of the project until the definitive closure of the mine, including all works;
- The financing and budget for mitigation and restoration measures; and provision for the mitigation and rehabilitation works, along with any security or guarantee in favour of the state. This could take the form of funds deposited in a bank account in Madagascar in order to finance the rehabilitation works. Use of the funds will be subject to certain conditions, such as the following:
  - The funds must be used exclusively for the rehabilitation works;
  - Further deposits must be made if necessary to cover any changes to the rehabilitation works/measures; and
  - The funds will be under the control of the Ministry of Mines, the Ministry of Environment and the National Office for Environment, which can use the funds to finance any rehabilitation works as and when needed.

Before the effective closure of the mine, the permit holder must recruit an independent auditor duly approved by the National Office for Environment in order to conduct an audit of the performance and completion of all mitigation and rehabilitation works foreseen in the environmental specifications. The audit report is subject to the approval of the National Office for Environment, which will issue the definitive environmental clearance (*quitus environnemental*) that releases the permit holder from all its environmental obligations.

### Water

According to the USAID 2021 report on the Water for the World Act High Priority Areas<sup>41</sup>, Madagascar is water abundant and is not considered water-stressed at a national scale; however, there are regional water availability and water quality challenges. According to this report, the total annual renewable water resources endowment per person is just over 13,000 m<sup>3</sup>, approximately eight times higher than the Falkenmark Water Stress Index threshold for water stress. Similarly, the total volume of freshwater withdrawn by major economic sectors amounts to only 11% of its total resource endowment. However,

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<sup>41</sup> Madagascar Water Resources Profile Overview, USAID, 2021. [https://winrock.org/wp-content/uploads/2021/08/Madagascar\\_Country\\_Profile-Final.pdf](https://winrock.org/wp-content/uploads/2021/08/Madagascar_Country_Profile-Final.pdf)



the south is considerably drier, and more water-stressed than northern and central Madagascar. Most rivers in southern Madagascar disappear during the dry season and alternative groundwater sources are not always viable. The climate change-induced droughts also increase water-stress.

Deforestation in the Central Highlands from slash and burn agriculture, logging, animal husbandry, and firewood collection contribute to some of the highest levels of erosion in the world as well as extreme flooding. Naturally high precipitation rates, especially on the northern half of the island, and the presence of steep gullies called lavakas throughout the western central plateau compound these risks and impact surface water quality and biodiversity.

Inadequate municipal sanitation systems, including in Antananarivo, have resulted in fecal contamination of groundwater. Additionally, small-scale gold and gemstone mining, and larger nickel, chromium, and cobalt mines have contributed to chemical contamination of groundwater.

More intense cyclones and rising sea levels caused by climate change directly threaten coastal communities and intensify flooding and erosion in coastal areas. Further, rising sea levels are contributing to increased saline intrusion in low-lying coastal alluvial aquifers.

Surface and groundwater quality and hydrometric data are not comprehensive or routinely collected, which impedes decision-making for Integrated Water Resources Management (IWRM), particularly at the “commune” level.

Water resources management is decentralised; however, key IWRM decisions are still taken by the central government due to funding and human resources constraints within sub-national institutions. Water resources management is decentralised; however, key IWRM decisions are still taken by the central government due to funding and human resources constraints within sub-national institutions.

### 4.1.7. Societal and community aspects, cultural heritage

The local populations inside the perimeter of the object of the mining permit are the land owners. The permit holder must identify the owner of the plot in the first place. In cases where the permit holder cannot identify or locate the owner, the municipality concerned launches the official identification and research process. The identification and research process involve:

- communication to the chiefs and officials of the village and the municipality,
- by the display of the research notice at the Office of the Commune and its insertion into the newspapers with wide dissemination,
- by the development of a document noting the rights claimed and reported the evidence offered during the research period and finally by publication and display of the list of persons claiming a right.

The main law from which these persons benefit is the right to be compensated due to the use of the soil by the operator. However, this right is subject to the traditional occupant and the beneficial owner at the conclusion of a good and due form with the operator. They must also clearly identify themselves during the identification procedure, provide proof of the rights invoked, constitute themselves in association of their choice and designates their representatives who will deal with the mining permit holder.

The draft Mining law is in favour of the promotion of human rights, children's rights and gender equality; the elimination of all discrimination based on race, sex, origin, religion, trade union membership and political opinions in matters of employment and profession and the appointment of social leaders and other stakeholders; respect for equal treatment of all personnel: employee, corporate officer and other



stakeholders in accordance with the spirit of "equal work, equal pay", regardless of the physical abilities, disability, age or sex of the employees and respect for human rights throughout the value chain.

Any mining operator, at the time of issuing his PREA and/or PE, contributes to a Mining Fund for Social and Community Investment (FMISC). The contribution received for the benefit of the said Fund is: For PREAs: a lump sum set by regulation; For PEs: a rate of 3% of the amount of direct investment provided for in the pre-feasibility study submitted with the permit application for the development and initial equipment of the mine.

Following the granting of an operating permit, the BCMM charges a fee corresponding to the category and the number of years of possession of the permit. The value of this levy is fixed by inter-ministerial order while its recovery is effected by the antennas of BCMM in provincial capitals. Hence, this central management holds 60% of these values and is distributed between the decentralised territorial community and the general budget. The draft Mining Code also requires that an once-off payment towards national development be paid by permit holders on being granted their permits (MGA 2 billion for exploitation permits and MGA 200 million for exploration permits, revisable upwards depending on the substance mined, environmental factors, and the size of the investment).

### Tangible and Intangible Cultural Heritage

The Mining Code does not mention tangible and intangible heritage, but specific laws and regulations govern the tangible and intangible heritage of Madagascar:

- Law No. 82-030 of December 9, 1982 ratifying Ordinance No. 82-029 of November 6, 1982 relating to the Safeguarding, Protection, and Conservation of National Heritage;
- Ordinance No. 82-029 of November 6, 1982 relating to the Safeguarding, Protection, and Conservation of National Heritage;
- Decree No. 83-116 of March 31, 1983 setting the terms of applying Ordinance No. 82-029 of 06 November 1982 on the safeguarding, protection and conservation of the National Heritage;
- Decree No. 91-017 of January 15, 1991 amending and supplementing certain provisions of Decree No. 83-116 of March 31, 1983 setting the terms of application of Ordinance No. 82-029 of 06 November 1982 on the safeguarding, protection and conservation of national heritage;
- Decree No. 2014-001 of January 7, 2014 creating, organisation and functioning of the National Heritage Office (ONP) and amending and supplementing certain provisions of Decree No. 2003-1041 of October 14, 2003 on the creation, organisation and operation of the Fund for the protection and development of Malagasy culture called "RAVAKA". On the proposal of the Minister of Culture and Heritage; In Council of the Government;

The Ministry of Communication, Culture and National Heritage Office (ONP) are responsible for the implementation of the national cultural heritage policy.

### 4.1.8. Public health and safety

The Ministry of Public Health and the Ministry of Labour, Civil Service and Social Laws are responsible for the enforcement of health and safety obligations. The ministries and their departments play an active role in regulating the mining sector from a health and safety perspective. This may involve anything from simple inspections to the application of sanctions where required.



### Operational Health and Safety (OHS) and Labour Regulations

Workers' law is provided for in articles 108 to 111 of the 2005 Mining Code. It is particularly about security relating to safety, hygiene, protection against accidents of work. Paragraph 2 of article 108 provides that "for the conduct of mines or quarries, to ensure surface security and environmental protection, safety and the hygiene of the personnel employed, as well as the conservation of the mine or the neighbouring mines.

The following requirements apply to operators to establish and maintain healthcare systems and health facilities, taking into account:

- Preventive measures for the health of workers and their families;
- First aid care in case of illness affecting workers;
- Primary healthcare for workers and their families;
- Water treatment and regular supplies of drinking water to workers and their families; and
- Arrangements for medical evacuation, where necessary;
  - To establish periodically revised hygiene and health rules and set up a hygiene and health service;
  - To establish suitable medical centres;
  - To ensure adequate supplies of equipment, medical products and medicines and the presence of medical staff;
  - To conduct periodic medical examinations and provide reports on the state of health of the workers and their families;
  - To create individual record sheets, including medical information on each worker.

The operator must report any accident at the mine, within 10 days of its occurrence, to the Ministry of Mines, the Ministry of Labour and Ministry of Public Health, as well as to the territorially competent *gendarmerie*. This report must detail the circumstances and consequences of the accident, including the date, the damage and relief measures undertaken. Breach of these requirements is punishable by the temporary and immediate suspension of work, after formal notice by the Ministry of Mines. The permit/authorisation may also be suspended. The company may also incur civil liability and the managers and directors civil and criminal liability, depending on the nature of the breach.

Madagascar law does not prevent mining companies from implementing any available health and safety standards, as long as these do not constitute a breach of the national legislation.

## 4.2. Mining practices vs. Environmental, Social and Governance (ESG) goals

Madagascar is one of the most fragile countries in the world, showing socioeconomic indicators similar to those of areas facing protracted conflicts. It is a land endowed with abundant natural resources that, if managed responsibly, could generate sustainable growth and development. However, lack of transparency, high levels of corruption, land disputes, and human rights violations affect the extractive sector. The mining industry of Madagascar has the potential to grow. Therefore, mining is the key pillar in Madagascar development strategy. Furthermore, as part of the Madagascar Vision 2030/2040/2063, governance issues are widely considered in the medium, short and long-term strategic orientations.



### 4.2.1 Environmental challenges

The environmental management of the mining sector in Madagascar is based on precise principles and rules. In addition, Madagascar has developed an Integrated Environmental Management System (SIGE) at the Ministry of Mine with ramifications in the Regions and in connection with the Office National de l'Environnement, it makes it possible to monitor the environmental obligations of mining projects.

Despite this regulatory framework and existing systems, examples of conflicts between Mines and the Environment are not lacking. The mining cadastre grants mining titles according to legal and regulatory procedures, by fixed coordinates, and in a transparent manner. On the other hand, there is no similar precise delimitation for protected areas. It therefore remains difficult to identify possible overlaps.

### 4.2.2 Socio-economic issues

The allocation of mining royalties requires at the very least a clear, pragmatic, and official distribution. The Malagasy mining sector suffers from the lack of skilled manpower, insufficient training infrastructure, and inadequate higher education programmes.

Many social issues were raised such as land grabbing, child labour with more than 500,000 small informal miners, Dutch Syndrome (Inflation, local migration and unemployment), political harassment, impunity, lack of public consultation, popular uprisings, the energy crisis/climate crisis/poverty, etc.

### 4.2.3 Governance

Texts concerning the mining sector are generally adequate, but there are often shortcomings in their application. The granting of mining titles is ensured by the Mining Cadastre, but some consider the prices irregular, excessive practices in the sale of cadastral data have affected its reputation in recent years and undermined its credibility. In addition, it is important for investors to know in advance the "rules of the game" and to ensure that they will not change during project since its viability depends on it.

The allocation of mining royalties requires, at the very least, a clear, pragmatic, and official distribution. Currently, the collection of taxes and royalties presents a double challenge that varies according to the type of mining project: i) to improve practices in the artisanal sector, which is largely informal; and ii) to develop a close partnership between the tax administrations and the major mining projects so as to monitor and anticipate their tax payments. The latter will involve coordination between the administrations concerned, with regard to the royalty.

The Ministry of Mines is responsible for setting the level of taxation while the Ministry of Finance is responsible for the recovery. This duality requires real collaboration and capacity building between the services concerned. The representatives from the Ministry of Mines stated that the Ministry is challenged with insufficient human and financial resources to monitor and evaluate the activities in the field. The challenges include ageing of managers and that the Ministry was not able to recruit new staff for decades now.

The 2005 Mining law is in revision and Government with the new mining Code in preparation need to find balance between social, economic and environmental interests to better manage future projects and reframe current projects. The 2005 mining code has been suspended since 2010. However the new



government has been revising the draft of the new Mining Code which has been validated by Ministers' council of 12 April 2023.

### 4.2.4 What would be the best practices for a responsible mining?

ESG (Environmental, Social and Governance) practices are increasingly expected by stakeholders, including investors, customers, civil society, etc. In Madagascar, there are initiatives and projects that illustrate good ESG practices in the mining sector. Examples include the Ambatovy project, the QIT Madagascar Minerals (QMM) project and the Toliara Sands project.

The Ambatovy project is a nickel and cobalt mining project in the east of the country. It is the biggest project in Madagascar's history and one of the largest foreign direct investments in the country. The site is located near the town of Moramanga. The Ambatovy project is committed to complying with international environmental, social and governance (ESG) standards, in particular those of the World Bank, the European Investment Bank and the Extractive Industries Transparency Initiative. The site is recognised for its advances in ESG best practices:

- Ambatovy has drawn up specific Environmental Management Plans (EMPs) to reduce the environmental impact of its activities, such as deforestation, water pollution and greenhouse gas emissions. Other measures include restoring natural habitats, conserving biodiversity, managing wastewater and solid waste, reducing greenhouse gas emissions, promoting local employment, building the capacity of local stakeholders and supporting community development initiatives. These plans are regularly updated and approved by Malagasy Office National pour l'Environnement (ONE). Ambatovy also undertakes biodiversity conservation initiatives, in particular by supporting the creation and management of protected areas, funding research programmes on endemic fauna and flora, and raising awareness among local communities of the importance of preserving their environment. In addition, Ambatovy has developed a multi-faceted compensation programme comprising several sites and associated activities. This approach was deemed necessary given the scale of the operations, some of which are located in sensitive areas with high biodiversity.
- From a social perspective, Ambatovy strives to create economic and social opportunities for local populations by promoting local employment, vocational training, the development of infrastructure and social services, and capacity building for civil society organisations. Ambatovy also respects the human and land rights of communities affected by the project, by conducting public consultations, setting up complaints and conflict resolution mechanisms, and fairly compensating people displaced or affected by the project. The development of livelihoods has also helped to improve the living conditions of local communities. This programme aims to strengthen food security and increase the source of income for these communities. This involves capacity building, organisational support, the provision of agricultural inputs and opportunities for networking and market access. On health and safety, the company is committed to complying with all national and local health and safety regulations, tries to meet the expectations of neighbouring communities and commitments and regularly works with local stakeholders on health and safety risk awareness and emergency preparedness. Cultural Ambatovy is committed to ensuring that any cultural heritage sites, archaeological artefacts or remains are treated with



respect and in accordance with local customs, scientific procedures and the International Finance Corporation's cultural heritage performance standards.

- Finally, in terms of governance, Ambatovy complies with national and international laws and regulations relating to the mining sector, particularly in terms of tax, customs, environmental and social matters. Ambatovy regularly publishes reports on its ESG performance, its economic contributions to the country and its payments to the Malagasy government. Ambatovy also participates in dialogue with project stakeholders, such as public authorities, lenders, non-governmental organisations, the media and local communities.

QIT Madagascar Minerals project (Rio Tinto), which mines mineral sands with a high ilmenite content in the south-east of the country. The project claims to have adopted a participatory and inclusive approach to the sustainable development of the area in which it operates. In particular, it has set up a social and environmental fund (FSE) to finance projects run by civil society organisations in the fields of education, health, agriculture, fishing and environmental protection. However, the project has been heavily criticised by some stakeholders for its negative impact on the region's biodiversity and population. Some have questioned the real economic impact of the project, as well as its transparency and social and environmental responsibility. Some have also denounced the human rights violations, land disputes, corruption and damage to local culture associated with the project.

The Toliara Sands project, which aims to mine zircon in the Atsimo-Andrefana region, has drawn up an Environmental and Social Impact Assessment (ESIA) that identifies the risks and opportunities associated with its activity. The project is committed to complying with international standards in terms of human rights, environmental protection, health and safety at work, and stakeholder engagement. The project has also set up a complaints and conflict resolution mechanism to encourage dialogue with the populations affected.



## 5. Business network between the European Union and “country”

### 5.1. Assessment of the upstream and downstream business ecosystem

#### 5.1.1 Context, formal and informal players

The Malagasy’s mining sector encompasses both formal and informal players across the upstream and downstream segments of the business ecosystem. The following presents an overview of these players. Formal upstream players first of all include Government Ministries such as:

Organization	Missions	Website
<b>Ministry</b>		
Ministry of Mines and Strategic Resources (MMRS)	<ul style="list-style-type: none"> <li>- Planning, implementation, and regulation of mining activities</li> <li>- Development of mining policies</li> <li>- Granting of mining titles</li> <li>- Managing relations with foreign investors in the mining sector</li> </ul>	<a href="http://mmrs.gov.mg">Ministère des Mines et des Ressources Stratégiques (mmrs.gov.mg)</a>
Ministry of the Environment and Sustainable Development (MEDD)	<ul style="list-style-type: none"> <li>- Establish reserved zones under the conditions specified by the Mining Code, authorize work within the protection zones, determine additional protection zones and inform the environmental authorities.</li> <li>- Approval or refusal of environmental permits on the advice of the ad hoc assessment unit or committee</li> <li>- Issuance to PR holders and, in some cases, to PRE permit holders, of environmental authorizations for PEE operations</li> </ul>	<a href="http://www.medd.gov.mg">Ministère de l'Environnement et du Développement Durable   République de Madagascar</a>
<b>Public Establishment</b>		
Madagascar Mining Cadastre Office (BCMM)	<ul style="list-style-type: none"> <li>- Management of mining permits and authorizations</li> <li>- Recovery of mining administration Fees (MAF) and distribution of quotas to beneficiaries</li> <li>- Public access to information on the mining cadastre and procedures for obtaining mining permit</li> <li>- Promoting the mining sector</li> </ul>	<a href="#">Présentation - BCMM</a>
National Agency for the Gold Sector (ANOr)	<ul style="list-style-type: none"> <li>- Implementing policy for the gold sector</li> <li>- Administration, management, formalization of the gold sector</li> </ul>	<a href="#">Agence Nationale de la filière OR Madagascar - ANOR   Antananarivo   Facebook</a>
Office of National Mines and Strategic Industries (OMNIS)	<ul style="list-style-type: none"> <li>- Enhancing basic geological data</li> <li>- Mining Promotion Office</li> </ul>	<a href="#">Home - OMNIS - Office des Mines Nationales et des Industries Stratégiques</a>
National Office for the Environment (ONE)	<ul style="list-style-type: none"> <li>- Implementation of the Decree on the environmental compatibility of investments (MECIE)</li> <li>- Environmental risk prevention</li> <li>- Promotion of Strategic Environmental Assessment (SEA)</li> <li>- Management of the environmental information system</li> </ul>	<a href="http://pnae.mg">Office National pour l'Environnement - Madagascar (pnae.mg)</a>

**Table 27: List of the main authorities involved in the mining sector. Source: Mining code and websites of each organization**

The **Ministry** is responsible for Madagascar's extractive sector. It interacts with stakeholders in the sector through several bodies:





- The **Direction des Études Géologiques et de la Promotion Minière** (DEGPM) for geology, prospecting and documentation;
- The **Direction Générale des Mines** (DGM) and the **Direction Générale des Ressources Stratégiques** (DGRS) provide administrative and technical assistance to operators and promoters;

The DEGPM, DGM and DGRS, as well as all the other MMRS departments, are represented in the regions by the "DRMRS" or "DIRMRS" Directions Régionales ou Interrégionales des Mines et des Ressources Stratégiques, which also assist operators and promoters in their relations with local communities. DRMRS and DIRMRS receive annual activity reports;

- The **Bureau du Cadastre Minier de Madagascar** (BCMM) and the Bureaux Inter-Régionaux du Cadastre for cadastral. The BCMM receives all applications and other requests from operators and investors on all matters relating to mining permits. The BCMM confirms the admissibility or otherwise of a file submitted to it, examines it and sends it to the Minister's office, together with its reasoned opinion, on the basis of which the Minister acts on the request (issuing an Order granting or notifying refusal). All operations relating to standard permits (operating permits and research permits): granting, conversion, transfer, renunciation, etc., are thus the responsibility of the MMRS, which decides by Ministerial Order. The same procedures are carried out for PREs by the Regional or Interregional Directorates of Mines and Strategic Resources, on the basis of a reasoned opinion from the DIRs of the Land Registry Office.

- The **National Mining Council** (CNM): a body for dialogue, facilitation, consultation and conciliation between the Mining Administration and the private mining sector.

-The CNM is consulted to give its reasoned opinion on any draft law, and where necessary, any draft decree regulating mining activities.

-The CNM supports the Mining Administration in the periodic determination of the local market value of mining substances.

- The CNM is also responsible for monitoring large-scale mining activities and facilitating the obtaining of sectoral authorizations for mining operators.

- When expropriation in the public interest affects a mining permit, the CNM is a member of the administrative commission set up as part of the expropriation procedure, and participates in its missions.

-The CNM is not yet operational.

- The **Madagascar Geology and Gemology Office** (BGGM): the government has decided to create a geology and gemmology office. This new structure will take on all the missions of the former Institut de Gemmologie de Madagascar (IGM), from promoting the fine and precious stone sector to gemmology training. But it will also be responsible for the equivalent of the Geological Survey, including the processing of Madagascar's geological data. To date, this office is not operational.

- The "**Office des Mines Nationales et des Industries Stratégiques**" (OMNIS) is a necessary step if the substances being prospected or mined are of a radioactive nature. In this case, the operator must sign an agreement with OMNIS to prevent any negative fallout from radiation. OMNIS was created in 1976 under the name "Office Militaire National pour les Industries Stratégiques" (National Military Office for Strategic Industries). From its inception to the present day, OMNIS's mission has been to promote subsoil substances, and it has always been made up of two operational Directorates:



- The Hydrocarbons Division. Its remit, on behalf of the Malagasy State, is to promote the upstream petroleum sector and relations with operators in this sector. It has a team of engineers (notably geologists) and prospectors;
- The Mining Resources Division (Direction des Ressources Minières - DRM).

OMNIS's involvement in the mining industry has evolved over time:

- In its early days, OMNIS only targeted radioactive minerals such as uranium ores and bastnaesite;
- Within the framework of cooperation between Madagascar, represented by OMNIS, and the Commonwealth of Independent States with Zarubezh Geologia as its operational representative), the agreed substances were rare metals, rare earths and quartz.

OMNIS has acquired and consolidated considerable expertise in the exploration of subsoil resources, and has also built up a wealth of know-how and exceptional experience. All this makes OMNIS a reliable partner.

Informal upstream players first of all include ASM engaged in manual or semi-mechanised mining activities, but most of them are dedicated to gemstones.

### 5.1.2 Relationships at local or regional levels

Madagascar's membership of regional and international: specifically for the extractive sector, Madagascar has been committed to implementing the EITI Standard, a global standard on transparency and good governance in extractive activities, since 2007. As part of this commitment, the country regularly publishes a report on the context and situation of extractive operations in the country and is periodically assessed on this basis.

At regional and international level, Madagascar is a member of several international and regional organizations, including:

- **The Indian Ocean Commission (COI)**, whose aim is to ensure cooperation in sustainable development for its 5 member states, including: Madagascar, the Union of the Comoros and France on behalf of La Réunion, Mauritius and the Seychelles;
- The **Southern African Development Community (SADC)**, which aims to boost the economy, ensure a better quality of life for the peoples of its 16 member states and reduce poverty;
- **The African Union**, a pan-African organization of 55 states, whose vision is "an integrated, prosperous and peaceful Africa, led by its own citizens and representing a dynamic force on the international stage";
- The **World Trade Organization (WTO)** which aims to ensure smooth, predictable, and free trade between its 160 members;
- The **Common Market for Eastern and Southern Africa (COMESA)** which aims to overcome the various economic and trade obstacles encountered by member states.

## 5.2. Building new B2B relations

The BRGM, in charge of the Madagascar case study might organize a One-Day-Mining-Forum in March or April 2024. This event will be built around a half day technical meetings with officials (ministries, European Delegation, Embassies, chamber of mines, and the CRM whole chain actors) and a half day exhibition with stakeholders and local CRM actors / players.



### Strengthening African mining clusters

**Alternative Financing** as “private funding”: Private funding takes the form of donations and sponsorships. They are managed by associations. Locally-represented banks or foreign banks such as KfW contribute to associative funds for development and nature conservation. Private financing is by mutual agreement between the parties involved. In the case of artisanal miners, financing takes the form of partnerships between foreign investors and local operators. In certain circumstances, foreign private operators finance mining operations directly with local artisanal miners. Activities financed include the collection, extraction and export of mineral substances. Some of these transactions can unfortunately fall foul of money laundering and natural resource trafficking.

**Responsible finance programs** exist, such as SUNREF Madagascar and the Green Bonds initiative. SUNREF is the Agence Française de Développement (AFD) green finance label. Under certain conditions, it enables businesses, associations, energy service companies and private individuals to benefit from loans on attractive terms to finance green growth and sustainable development projects. For SUNREF Madagascar in particular, investments in Renewable Energies (RE) and Energy Efficiency (EE) are on the program's priority list. Projects eligible for a SUNREF loan include energy production: solar photovoltaic, wind, hydroelectric and biomass mini-power stations, for the company's own needs and/or for resale.

The "**Green bonds**" market, created in 2007 and also known as "responsible finance", encompasses operations designed to promote the Energy and Ecological Transition (TEE), combat global warming and prevent environmental damage resulting from economic activities. It is a financial product or service initiative, or a financial and fiscal regulation designed to protect the environment. The "green bond" is the principal tool of responsible finance, based on a loan issued on the market by a company or public entity to investors deemed responsible, with the aim of financing initiatives specifically linked to the environment. A "green bond" is characterized by the use of the funds raised for the purpose of carrying out investment projects favourable to TEE, provided that the issuer ensures that the funds are earmarked for green projects. SUNREF is deployed by the financial institution Solidis.

### 5.3. Promoting local content and enabling mining cluster actors

To improve the framework conditions for European and African companies and organisations to co-create new value, businesses, products and services by transforming the ways they interact, hereafter, the list of relevant institution and academia:

**Relevant institutions for the development of an Africa-focused critical minerals network** (considering the technological, environmental, economic and social dimensions) bringing together research, academia, industry and governmental stakeholders, to facilitate international collaboration:

- The **Extractive Industries Transparency Initiative (EITI)**, In line with the standards and materiality threshold of the Extractive Industries Transparency Initiative (EITI), the new Mining Code requires all mining permit holders to comply with the principles and requirements of transparency and good governance, in particular with regard to information on payments to the State, and to make public information on beneficial ownership, contracts and licenses.
- The **private sector** is organized into private-sector employers' associations (GEM, FIVPAMA, GEFP, SIM), and workers' unions (SEKRIMA, FISEMARE, FISEMA, SEREMA, TM).



In the mining sector, industrial mining operators are represented by the **Madagascar Chamber of Mines**. The Chamber is the most important organization in Madagascar's private mining sector, comprising the country's most emblematic mining companies involved in exploration, production and processing. It plays a decisive role as a counterweight to the public authorities in the governance and structuring of the legal framework of the mining sector.

In addition to the Chamber of Mines, **associations and cooperatives of artisanal mining operators** - mainly sole proprietorships and small and medium-sized enterprises - are grouped together in various not-for-profit associations as listed hereafter:

- Fédération des opérateurs miniers de Madagascar (FOMM),
- Fédération des opérateurs miniers de Vakinankaratra (Fedominvak),
- The Grandidierite association,
- Groupement des exportateurs des Produits Miniers (GEPM),
- Association des Exportateurs de Pierres Industrielles (AEPI) based in Taolagnaro,
- Groupement des opérateurs miniers (GOM) based in Vakinankaratra.

These groups are eligible to benefit from local support zones. These support zones are the first step in the initiative to formalize and professionalize artisanal miners. Legal associations and cooperatives can also benefit from various advantages, such as consultation by public authorities when preparing laws and regulations for the sector, training and sectoral support programs. For example, only representatives of associations and cooperatives have benefited from IGM training grants. Associations are also much in demand at consultative events for social and environmental policy purposes for the sector.

- **Chambers of commerce:** Madagascar has developed trade agreements with countries and regions around the world, some of which have set up chambers of commerce to facilitate trade. These include

- **Chambre de Commerce et d'Industrie d'Antananarivo (CCIA)** - a public professional body, under the technical supervision of the Ministry of Commerce and the financial supervision of the Ministry of Finance - provides technical assistance and support to SMEs, professional networking and mentoring programs to promote local industry;
- **Chambre du Commerce et de l'Industrie France-Madagascar (CCIFM)** aims to develop trade relations between Madagascar and France. Members and contributors to the CCIFM benefit from various privileges, including support in conquering new European markets, and promoting cultural and commercial exchanges between French and Madagascan industrialists;
- The **American Chamber of Commerce (AmCham)** is a non-profit association of mainly American and Malagasy companies and businessmen. AmCham Madagascar was created in 2008 and aims to strengthen commercial ties between the United States and Madagascar, maintain the highest standards of business practice, and support the expansion of an English-speaking business community in Madagascar;
- **Canadian Chamber of Commerce (CanCham)**, founded in 2016 has a mission to develop exchanges and promote bilateral economic and cultural relations between Canada and Madagascar. Cancham regularly organizes economic missions to Canada with the aim of promoting Madagascar's private sector.

- **Civil society organizations and affiliates:** Civil society plays a key role in Madagascar's mining sector. Civil society organizations are regularly consulted at various events relating to the mining sector, and form part of the sector's overall landscape. The Platform of Civil Society Organizations on Extractive Industries (OSCIE) was created in 2016. It is a confederation of twelve Civil Society Organizations "CSOs" that have



united their skills, their respective experiences to achieve a common goal which is good governance of the extractive sector (mining and oil). OSCIE uses communication as its greatest working tool (need for reliable information, knowledge sharing). The member CSOs are:

- **Alliance Voahary Gasy "AVG"**: Platform created in 2009. It brings together 30 CSOs working in the environmental field;
- **Blue Ventures for the reconstruction of the sea**; assistance, modernization and equipment for artisanal sea fishing; the fight against industrial overfishing;
- **KMF CNOE**: popular education, observation of public life and election observation;
- **SAF / FJKM**: created in 1974. It is related to the FJKM Protestant Church and has as its objectives the promotion and development of Man in his social and economic domains. Its areas of intervention are education, health and hygiene, environmental management and natural risk management;
- **Taratra**: water drilling and assistance to rural communities in their efforts to equip themselves;
- **TI-IM** (Transparency International - Initiative Madagascar): achieving Transparency International's objectives in Madagascar;
- **WWF Madagascar**: implementation of WWF principles and guidelines in Madagascar.
- **Rohy Movement**: a group of civil society organizations working to mobilize citizens against corruption and for transparency, good governance and respect for human rights;
- **SIF** (Sehatra lombonana ho an'ny Fananantany) works in the land sector (land reform);
- **Tafo Mihaavo** (network of Fokontany natural resource managers): works for the sustainable development of communities.

- **International non-governmental organizations** (NGOs) present in Madagascar are mainly involved in activities with a direct or indirect impact, with the main focus on social activities and good governance. NGOs are active in setting up and financing initiatives to promote good governance, regulations, modernization of practices, the fight against child labor and formalization, access to healthcare, gender promotion and adult literacy. Among the international NGOs present in Madagascar in relation to the mining sector and related activities are:

- World Wide Fund For Nature (WWF),
- Extractive Industries Transparency Initiative (EITI),
- Responsible Mica Initiative (RMI),
- Transparency International (TI),
- Publish what you Pay (PWYP),
- Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ),
- Terre des Hommes,
- Alliance for Responsible Mining,
- PACT.

These NGOs have autonomous budgets and intervene in development activities with sustainable development and stakeholder inclusion as their main interests.

The two main players with influence on the mica sector: **PACT and RMI**.

- **PACT** works through the Madagascar shine project to combat child labour in mica-producing communities in Madagascar, particularly in the Anôsy region. PACT's efforts increase the immediate and long-term resilience of vulnerable households by connecting children with educational services and adults with support to improve their livelihoods. The project supports



civil society organizations and the media in raising public awareness of the issue of child labor in mining, and in building the capacity of government officials to coordinate child protection measures in the mica supply chain, including establishing a code of conduct in mica mining.

- The **Responsible Mica Initiative (RMI)** is a non-governmental organization created to establish fair, responsible and sustainable mica supply chains and eradicate child labor and unacceptable working conditions. This approach is unique in that it involves all players in the supply chain in creating the conditions for change, from the mine to the international buyer. RMI's multi-stakeholder, holistic and action-oriented approach revolves around the implementation of responsible labor standards, the establishment of a decent income, the empowerment of communities and the establishment of legal frameworks for the mica sector. RMI's members are drawn from industries associated with the mica supply chain, in partnership with civil society organizations and local stakeholders. It is an association, established in accordance with the French law of 1901 concerning non-profit organizations.

- **Professional associations:** A number of associations bring together students and professionals in the mining sector. Most of these associations are legally registered with the Ministry of the Interior as non-profit associations, in accordance with Ordinance N°60-133 of October 3, 1960. In the mining sector, the AIMIMA association of mining students and engineers and the Coalition des Ingénieurs Géologues (CIGN) are the exception.

- The **Coalition des Ingénieurs Géologues Malagasy or CIGN** was created in March 2022 with the vision of "an extractive sector (mining, oil and gas) at the service of the country's development". It campaigns for tangible social and economic benefits for the Malagasy population, while respecting the environment. The CIGN works to ensure that national graduates are given priority in all mining sector projects. To achieve these objectives, the CIGN is working to involve geological engineers in the development of legal and regulatory frameworks relating to the extractive sector in Madagascar, and in the promotion of associated projects.
- **A3Mada**, or the **Alumni Australia Awards Association**, brings together professionals who have benefited from long or short-term training scholarships in Australia. The not-for-profit association has several hundred members, including lawyers, doctors, mining engineers and geologists. Partly subsidized by the Australian government, the association is involved in development projects for its members and the Malagasy community in general.

- **Other associations:** Other associations worth mentioning include the **Association of Women in Mining Africa (AWIMA)**, a structure focused exclusively on promoting gender equality in the mining sector.

AWIMA was created as a network of women in mining, oil and gas associations that empowers all women in the African extractive sector. The association was established in 2015 and has 40 member countries including AWIM Madagascar with a common vision of "A strong, responsible and more inclusive African mining industry for women". AWIMA has developed partnerships with stakeholders to mobilize resources to carry out gender-focused activities and is called upon in the development of mining sector policy in Africa. AWIM Madagascar is in partnership with the AfricaMaVal project through AWIMA, but also with AFAI Consulting for mining sector development projects in general. These associations are financially autonomous, but are supported financially and technically by international institutions such as the African Development Bank, French Development Agency (AFD), CARE and the African Union.



- **Transit agencies and logistics companies:** these companies are well established in Madagascar. Madagascar's regulations require the intervention of an Authorized Customs Broker, more specifically a freight forwarder, for all customs operations.

The most active large-scale companies are:

- VELOGIC/UPS offers air and sea freight services, customs clearance, transport, warehousing and handling, as well as insurance, project management and maritime consolidation;
- “Bolloré Transport & Logistique” Madagascar offers air and sea logistics solutions and is present in the country's main ports and airports;
- CELERO is a Mauritian logistics group with operations in Madagascar and the Indian Ocean islands, specializing in overland transport, air and sea freight, express courier and logistics, and is an ISO 9001-certified freight forwarder.
- CMA CGM is well known as a professional in logistics, sea freight and air freight, in partnership with Air France KLM.

### Geoscience/mining related accredited education and training programmes in the country

The training of people who can serve in the extractive sector has suffered something of a setback.

**Prospector training: From 1955 to 1965,** the Geological Survey of Madagascar trained and then recruited Geological Assistants, who were first required to take two-level courses. Candidates for second-level courses had to pass the Certificat d'Etude du Premier Degré. Learners who chose to remain in the first degree, or who were not authorized to enter the second degree courses, served in the Geological Survey as “Prospecteur” at the rank of “Agent Technique”. Graduates of the Second Degree courses served in the Geological Survey as “Geological Assistants” at the rank of Technical Assistant.

Theoretical and practical courses were taught by French geologists from the Geological Survey and BRGM. From 1967 to 1985, Earth Sciences Technical Assistants were trained at the **Lycée Technique du Génie Civil d'Antananarivo** in the Geology and Mining department. Teachers of specific subjects were Geologists from the Geology Department.

**Since 1985,** no structure has provided training for Earth Sciences Technical Assistants. Nowadays, mining companies could only recruit baccalaureate holders from the scientific departments of general secondary education, and train their prospectors in-house.

When a prospector was trained in the Geological Survey, its main mission was to cover the entire country with 1:100,000 scale maps. Some of the Technical Assistants in particular demonstrated uncommon technical and organizational skills, filling in for the Geologists. Currently, if you are looking for an intermediate-capacity technicians, you have to recruit people with a **scientific baccalaureate (C and D) and train them in-house.** Madagascar's geosciences and mining sectors are currently lacking personnel at this intermediate level.

**Professional training:** A network of **technical high schools** has existed in Madagascar for several decades. These schools trained students in industry skills and award diplomas such as the “brevet” and “baccalauréat”.

When the Geological Service stopped training technical assistants, the **Lycée Technique du Génie Civil (LTGC)** took over. Students could choose between two trainings: **Geology or Mining.** When training at LTGC **came to an end,** there was no longer any training for technical assistants in either geology or mining.



At the LTGC and the Geology Department, technical subjects were taught by geologists from the Geology Department. By this time, the trainees had received solid theoretical and practical training. They were efficient, and some of them were assigned to geological brigades.

Based on a public-private partnership, the **Fonds Malgache de Formation Professionnelle (FMFP)** was set up to fill the structural gap between the needs and availability of technical personnel for industry. The FMFP receives substantial technical and financial support from the “Agence Française de Développement”. In addition, the FMFP has a permanent funding mechanism represented by a compulsory contribution from companies of 1% of their payroll. The technical and vocational training needs of mining companies are eligible for financing by the Fund.

### Training about Construction / Strategic resources

Fonds Malgache de Formation Professionnelle  
Enceinte Materauto Ankorondrano, Antananarivo 101  
Website : <https://www.fmfp.mg/>

**Higher Education** : “**University of Antananarivo**”, through the **Ecole Supérieure Polytechnique d'Antananarivo (ESPA)** and the **Faculty of Science**, trains **Techniciens Supérieurs des Sciences de la Terre (TSST)**. The training prepares them for the practical aspects of mining exploration, and they have sufficient knowledge to transpose geological models into operational terms. The absence of people specially trained to be prospectors (Technical Assistants and Technical Agents) forces mining operators to make a choice between assigning prospecting duties to senior technicians, at the risk of either overloading them, or neglecting their actual duties and overloading the engineers. In practice, it has been observed that operators adopt both options simultaneously.

In 1973, the **Établissement d'Enseignement Supérieur Polytechnique (EESP)**, now known as the **Ecole Supérieure Polytechnique d'Antananarivo (ESPA)**, was created at the University of Antananarivo. The school's mission was to train engineers in various industrial disciplines, including Earth Sciences, with two training curriculums: **Geology and Mining**. These two curriculums have evolved respectively into the **Geology Department and the Mining Department**, which have now evolved into three specializations applied geosciences:

- The **Geological Engineering** specialization, which trains geological engineers;
- The **Mining Engineering** specialization, which trains mining engineers;
- The **Petroleum Engineering** specialization trains engineers specializing in the exploitation of fossil hydrocarbons.

Admission to ESPA is conditional on passing a **national entrance exam**, which is open annually to holders of a general scientific baccalaureate (series C or D) or a technical baccalaureate (Industrial or Civil Engineering). Those who have opted for the earth sciences option compete for admission to a core curriculum called "Mention Sciences de la Terre". At the end of the bachelor's degree cycle (L3), students are fully enrolled in one of the three above-mentioned majors. During the first two years of the bachelor's cycle, they are essentially taught mathematics, physical and chemical sciences, as well as the common scientific bases of the geosciences, such as general geology, petrography, mineralogy, etc. In L3, and depending on the major, they are taught the basic scientific specialties, such as:

- Elementary geochemistry in the Geological Engineering specialization;
- Mineralurgy in the Mining Engineering specialisation;





- Petroleum geology in the Petroleum Engineering specialization.

The courses offered are world-class. This is borne out by the fact that ESPA Master's graduates who go on to postgraduate studies in Europe have no particular problems, and have successfully defended their doctoral theses.

Despite the quality of the theoretical training given to future engineers, students are woefully lacking in practical experience due to the low investment and equipment capacity of the University of Antananarivo and ESPA in particular. This gap is filled by new graduates during their first few years on the job, when they prepare their Master's degree dissertations. The engineers trained at ESPA are much appreciated by both national and international operators. Some have been recruited to work abroad in international operations.

ESPA students can choose between "academic" and "vocational" training. Vocational training is much more practically oriented. Academic training is more scientific and theoretical. Vocational training is fee-paying.

Ecole Supérieure Polytechnique d'Antananarivo (ESPA)  
Campus Universitaire Ankatso  
Bâtiment Médecine au Rez de Chaussée  
Website: <https://www.polytechnique.mg/>

When the **University of Madagascar** was founded in 1960, the Biology-Geology Department was opened, and evolved into the Natural Sciences Department of the Faculty of Sciences in 1972. The Geology Department integrated the Geology Laboratory, the Paleontology Laboratory and the Geochemistry Laboratory.

The **Geology Department** was subsequently **split** into two Departments:

- Anthropology and Sustainable Development Department
- Earth and Environmental Sciences Department.

Website: <http://www.univ-antananarivo.mg/>

**Universities of Mahajanga and Toliara** also have teaching and research departments in the natural sciences, including geology. Students in these Faculties of Science will become researchers and/or teachers in secondary and higher education. They are trained in two cycles:

- The Bachelor's degree cycle: basic knowledge of nature (animal biology, plant biology, geology, pharmacology, etc.);
- The Master degree where they join either the Earth and Environmental Sciences curriculum or the Anthropology and Sustainable Development curriculum;

Websites: <https://www.univ-toliara.mg/> & <https://www.univ-mahajanga.edu.mg/>

Up to Master's level, teaching in science faculties is of a theoretical scientific way. Learners have not been introduced to geosciences in mining exploration. However, armed with their scientific knowledge, they can be retrained on the job in mining exploration, provided they receive sustained support during their first few years of practice.

The **Athénée Saint Joseph d'Antsirabe "ASJA"** trains engineers in Earth Sciences. The Earth Sciences department is made up of two courses: "**Mining Geology**" and "**Hydrogeology**". ASJA describes its training



in mining geology as training students for careers as prospecting mining geologists, research and mining, teaching, industry or administration in the various fields of earth sciences. With the agreement of the teaching staff, students can opt for a research or professional orientation, by choosing optional teaching units and the thesis internship program. Students are trained in general geosciences. ASJA mining geologists are generalists, unlike the ESPA training profile.

Website: <https://www.asja.mg/>

In comparison, a mining geologist graduating from ASJA will be less skilled than one graduating from ESPA, and will take a long time to reach the same level.

Two **research institutes** attached to the University of Antananarivo also train top-level executives in sectors contributing to the development of subsoil mineral resources:

- **Institut National des Sciences et Techniques Nucléaires (INSTN)**
- **Institut et Observatoire de Géophysique Appliquée (IOGA).**

INSTN trains researchers in the application of nuclear physics and in the safety of radionuclides in relation to the dangers, they pose to human communities, including the populations of extractive companies and localities in and around the areas where they operate. Many ores are radioactive, and their extraction, processing and transport require appropriate measures.

IOGA is based in Antananarivo. It houses a geophysics observatory and a university training center. The institute undertakes meteorological, astronomical, geodesic, magnetic and earthquake recording work. IOGA also houses the Time Service, research laboratories in geophysics (gravimetry, electricity, seismology, magnetometry, spectrometry/radiometry), geomagnetism, seismology, infrasound, applied geophysics and observatories (seismological, infrasound, geomagnetic and precision GPS stations). IOGA uses modern scientific communications such as satellite links and the Internet to distribute data.

Both institutes train scientists and technicians at Master's and Doctorate levels.

Website: <https://instn.cea.fr/en/> & <http://ioga.univ-antananarivo.mg/>

In the past, most research on Malagasy geosciences was carried out abroad, in particular at French universities, but today, **doctoral schools** enable students to carry out scientific research, the results of which can be consolidated into thesis.

**Two doctoral schools** at the **University of Antananarivo** enable students to prepare doctoral thesis in the field of geosciences and on subjects relating to the development of mineral resources.

- **Engineering and Geosciences (INGE)** with research topics relating to mineral resources as:
  - EAD 1: Geosciences, Organic Mineral Materials and Gems
  - EAD 2: Mineral and Petroleum Engineering

Research focuses on the structural control and geochemistry of geological materials, and on the modeling of fractured rock masses and the distribution and behavior of trace elements during laterite alteration.

Website: <https://univ-antananarivo.mg/Ingenierie-et-Geosciences-INGE>



### - **Earth and Evolution Sciences (STE)**

- EAD 1: **Georesources and the Environment** (GéoEnvi) to address topics relating to mineral resources (Precambrian crystalline basement): its geological characteristics and associated mineralization linked to metamorphism or magmatism events.

- EAD 2: **Sedimentary Resources and Global Change** (RSC), including exploitation and development of resources associated with the Phanerozoic sedimentary cover.

Website: <https://univ-antananarivo.mg/Sciences-de-la-Terre-et-de-l-Evolution-STE>

Due to the lack of equipment (age, number, analytical capacity, inadequacy or even shortage of chemical inputs, etc.), particularly in laboratories of Madagascar's faculties, higher education institutions, research centers and institutes, research work for the preparation of a thesis requires internships in university laboratories and research centers abroad, particularly in Europe and especially in France.

**Research centres:** Madagascar has a number of research centres attached to the University and the Ministry of Scientific Research. These research centers specialized in various disciplines such as scientific and technical research on innovations, technology, industry, nuclear research and geophysics.

### - **National Centre for Industrial and Technological Research (CNRIT)**

CNRIT or Centre National de Recherches Industrielle et Technologique was created in 1987. It is a public scientific establishment attached to the Ministry of Higher Education and Scientific Research. CNRIT's missions are essentially to carry out the following activities:

- Participation in the development and implementation of the national Technological Research policy. Following actions are undertaken:
  - Research and innovation;
  - Making the most of local raw materials and resources;
  - Development of endogenous technologies;
  - Absorption and adaptation of foreign technologies.
- Valorisation and application of research results for sustainable development (economic, social, environmental). These activities include:
  - Supervise, assist and support development operators;
  - Strengthen regional capacities and skills by mastering clean technologies;
  - Managing and protecting the environment (industrial, physical and social, etc.)

The **CNRIT** aims to develop technologies and valorise **raw materials and natural resources**, including volcanic fertilizers, refractory bricks, biogas and agro-industrial applications. Within this framework, the Center's engineers conduct research in metallurgy, geology, energy, chemistry, computer science and applied electronics. The Centre has two laboratories, but they are poorly equipped.

Centre National de Recherches Industrielle et Technologique

38, rue Rasamimanana, Fiadanana

Antananarivo 101

Madagascar

Website: [www.agro-oi.com/fr/7/29418/cnrit-centre-national-de-recherches-industrielles-et-technologiques-mg.html#.WUj6XqGUeKo](http://www.agro-oi.com/fr/7/29418/cnrit-centre-national-de-recherches-industrielles-et-technologiques-mg.html#.WUj6XqGUeKo)



### - **National Centre for Environmental Research (CNRE)**

The mission of the Centre National de Recherches sur l'Environnement is to promote **environmental compliance and environmental research** in line with the country's economic development policy. Within this framework, the **CNRE** aims to contribute to the implementation of Madagascar's **conservation strategy**, in the service of sustainable development.

Its a public establishment with commercial interest (EPIC) created by decree n°2016-612 of May 25, 2016 reorganizing the Centre National de Recherches sur l'Environnement (CNRE).

The **CNRE** has a food and water analysis laboratory (feed water and wastewater), a physicochemical analysis laboratory and a laboratory for biological experiments (malaria, others).

CENTRE NATIONAL DE RECHERCHES SUR L'ENVIRONNEMENT

Rue Rasamimanana Fiadanana, BP 1739. Antananarivo 101

Website: <http://cnre.recherches.gov.mg/cnre/presentation.php>

- **Relevant organisations across the African continent** and in Europe to host interns and apprentices with upstream and downstream players in the extractive industry.

- QMM <https://www.riotinto.com/en/operations/madagascar/qit-madagascar-minerals>

- Ambatovy SA (AMSA and DMSA): it has set up its own training center at its Tamatave processing site. <https://ambatovy.com/en/>

- Nextsources Materials Madagascar <https://www.nextsourcematerials.com/>

- Blackearthminerals <https://eviongroup.com/maniry-project/>

- And in general all mining companies operating in Madagascar and their mining equipment suppliers



## 6. Energy and digital transition: develop a strategy for the EU and Africa Partnership

**Relations between the EU and Madagascar** are dynamic. While Madagascar shares the values of the EU and our vision for global political priorities, a number of reforms remain to be implemented. The EU supports the country in its efforts to strengthen democracy and continues to assist it in matters of human development, resilience, and good governance.

Under Article 8 of the Cotonou Agreement, a periodic **political dialogue** is held between the Malagasy authorities, the Delegation of the European Union and its Member States with a view to exchanging information, encouraging mutual understanding and facilitate the definition of common priorities. This dialogue focuses primarily on the fundamental values and principles shared by the European Union and Madagascar, as well as all questions of general or regional interest.

One of the main axes of the European Union's foreign trade is the development of **bilateral trade** with third countries, concretized by free trade agreements. Europe is the first destination for Malagasy exports. The Big Island carries out 45% of its exports with the EU, while 20% of its imports come from the EU. The economic and commercial partnership aims to contribute to the increase in productive investments, the creation of jobs in Madagascar and the competitiveness of the Malagasy economy<sup>42</sup>.

Two “**Team Europe Initiative**” programs to support the Great South of Madagascar have just been launched in Fort-Dauphin. These are two initiatives: “Green Deal” and “Renewable and Sustainable Energy” but which do not directly concern the mining sector.

The 2021-2027 multi-annual indicative program (MIP) for Madagascar should be based on the country's national development plan, the **Emergency Plan for Madagascar** (EPM), 2019-2023, which has not yet been formally approved. The framework for the MIP for 2021-2027 includes **three priority objectives**:

- **Governance and human development**: This area is based on an analysis of the evolution of the situation in Madagascar over the last ten years in terms of poverty, human development, and governance, which shows stagnation or even regression of indicators and an increase in inequalities. Madagascar is among the countries where access to quality social services is the weakest with strong inequalities between regions.
- **Sustainable growth and jobs**: This area aims to respond to one of the major challenges in Madagascar, which is to make economic growth contribute to job creation and the sustainable and inclusive improvement of the social and economic conditions of the population of Malagasy that is deeply marked by poverty. The business environment began to improve in Madagascar according to the Doing Business 2020 ranking, although there were still many indicators to improve.
- **Green Deal**: This area is supported by the analysis of the country's situation, strong demand from national authorities, and the achievements of EU rural development and environmental projects.

**Support measures**: the action of the EU Delegation in Madagascar in favor of civil society will be placed under the sign of a strategic partnership between the EU and CSOs. To achieve such a partnership, it is

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<sup>42</sup> [https://www.eeas.europa.eu/madagascar/lunion-europeenne-et-madagascar\\_fr?s=106](https://www.eeas.europa.eu/madagascar/lunion-europeenne-et-madagascar_fr?s=106)



necessary to support civil society in order for it to become a real actor of governance, strong, legitimate, and structured, in favor of the consolidation of the rule of law, the culture of accountability, sustainable integrated development, and gender equality.

The EU will carry out targeted actions in favor of civil society such as:

- Accompany CSOs to move from a role of the basic service provider to a role of checks, balances and advocacy.
- Improve the legal and regulatory framework governing CSOs and support the empowerment of the common multi-donor support fund for civil society toward an entity permanent national.
- Create spaces for dialogue between the government and civil society to strengthen their role in the process of developing, monitoring implementing, and evaluating public policies.
- Contribute to creating a real civic space.

As part of the new Mining Code, strategic mining substances are of particular interest to the Nation in terms of their critical nature and geostrategic context, are referred to as Strategic Mining Substances. The **list of strategic substances** is set by regulation. The holder of a Permit containing strategic mining substances is authorized to sell on the national market or to export his production at the market price, subject to the State's right to determine the proportion of production that the holder must sell to national industry.



## 7. Opportunities for responsible investments

### 7.1. Identification of individual exploration, mining and refining projects

Investment opportunities for the development of a CRM value chain are mainly around mining production itself, through the development of local processing tools, but also through diversification of exploited minerals. Hereafter the project who could be of an interest for Europe:

1. Tantalus or Beravina (REE, Ta-Nb);
2. Green Giant (graphite ± V);
3. Millie's Reward (Li);
4. Toliara (heavy minerals, REE);
5. Molo, Maniry, Graphmada, Sahamamy or Vatomina (graphite);
7. Ambatovy (Ni, Co).

This proposed selection (detailed hereafter) covers different commodities and different stages of project development.

The training sector also requires investment or at least support, as an essential sector for skills development.

More broadly, as part of the institutional sector, support from the Malagasy State can be offered to improve the business environment.



Project Name	Location	Description	Resource estimate, reserves	Project phase and information level: scoping, prefeasibility, feasibility studies	What is investment needed for? e.g., exploration, infrastructure, construction (mine/ processing plants), expansion, ESG upgrade	Known offtake agreements?	Link to project web page
Green Giant Project (Nextsource materials)	Toliara Province, Fotadrevo village	Vanadium deposit (graphite) in metamorphosed black shales	Total Indicated resource is 49.5 Mt at 0.693% V <sub>2</sub> O <sub>5</sub> . The total Inferred resource is 9.7 Mt at a grade of 0.632% V <sub>2</sub> O <sub>5</sub>	Advanced Exploration	Exploration (metallurgical testwork)		<a href="https://www.nextsourcematerials.com/assets/green-giant-vanadium-project/">https://www.nextsourcematerials.com/assets/green-giant-vanadium-project/</a>
Toliara Project / Ranobe deposit (Base Resources)	45 km north of Toliara	Heavy mineral sands deposit Ti-Zr-(REE)	Mineral Resource of 2580 Mt at 4.3% heavy mineral (HM), with Ore Reserves of 904 Mt at 6.1% HM	DFS for Ti-Zr (not for REE/monazite yet)	Monazite (REE) recovery testwork, resolving social problems, construction		<a href="https://baseresources.com.au/our-assets/toliara-project/">https://baseresources.com.au/our-assets/toliara-project/</a> <a href="https://toliarasands.com/?_ga=2.182618981.214574776.1689168313-2029223485.1689168313">https://toliarasands.com/?_ga=2.182618981.214574776.1689168313-2029223485.1689168313</a>
Molo (Nextsource materials)	Toliara Province, Fotadrevo village	Graphite mine	Measured mineral resource of 23.62 Mt grading 6.32% C	Small scale production	Expansion	ThyssenKrupp (Tesla?)	<a href="https://www.nextsourcematerials.com/assets/molo-graphite-mine/">https://www.nextsourcematerials.com/assets/molo-graphite-mine/</a>
Graphmada (Greenwing resources)	100 km South Toamasina	Graphite mine	Mineral Resource of 61.9 Mt at 4.5% FC	Small scale production	Expansion		<a href="https://www.greenwingresources.com/graphmada">https://www.greenwingresources.com/graphmada</a>
Millie Reward (Greenwing resources)	100 km South West Antananarivo	Li pegmatite exploration project	None	Greenfield exploration	Exploration		<a href="https://www.greenwingresources.com/millies-reward">https://www.greenwingresources.com/millies-reward</a>
Maniry (Evion)	SE Toliara	Graphite deposit	Probable Reserves 16.2 Mt @ 6.58% TGC; Indicated resources <a href="#">16.7 Mt @ 6.9% TGC</a> ; Inferred	DFS (November 2022) – BFS underway	Construction	Anzaplan Germany?	<a href="https://eviongroup.com/maniry-project/">https://eviongroup.com/maniry-project/</a>





			resources 23.3 Mt @ 6.1% TGC				
Marofody (DNI metals)	50 km South Toamasina	Graphite deposit	None	Exploration	Exploration		<a href="https://www.dnimetals.com/projects-2">https://www.dnimetals.com/projects-2</a>
Vohitsara (DNI Metals)	50 km south-southwest of Toamasina	Graphite deposit	Inferred resources (2019) 4 Mt @ 5% GC	Development	Pilot plant construction		<a href="https://www.dnimetals.com/projects-2">https://www.dnimetals.com/projects-2</a>
Sahamamy (Tirupati graphite)	70 km south Toamasina	Graphite mine	Total Mineral Resource 7.1 Mt @ 4.20% GC	Small scale production	Expansion		<a href="https://tirupatigraphite.co.uk/sahamamy-project/">https://tirupatigraphite.co.uk/sahamamy-project/</a>
Vatomina (Tirupati graphite)	70 km south Toamasina	Graphite mine	Total Mineral Resource 18.4 Mt @ 4.6% GC	Small scale production	Expansion		<a href="https://tirupatigraphite.co.uk/vatomina-project/">https://tirupatigraphite.co.uk/vatomina-project/</a>
Beravina (DFR Gold)	220 km East Maintirano	Zirconium deposit with REE potential	Inferred Mineral Resources 1.5 Mt @ 15.3% ZrO <sub>2</sub>	Exploration	Exploration		<a href="https://dfrgold.com/beravina-madagascar/">https://dfrgold.com/beravina-madagascar/</a>

Table 28: List of mining projects proposed for investment opportunities.



## 7.2. ASM sector country profiles

### Country profiles on ASM sector developments and investment

One of the core objectives of the AfricaMaVal is to identify investment opportunities in a number of commodities considered critical by the European Union, and there is a clear interest to include the ASM sector in the identification of such opportunities. The emphasis should be on identifying responsible investment opportunities that strengthen the artisanal sector's supply potential and address ESG impacts while also contributing to higher value addition and economic development.

To ease identification of opportunities, the following categories should be considered:

- Governance: focusing on the needs of the sector to strengthen its governance to ensure it contributes to socio-economic development. This could include support to government, knowledge sharing programmes, extension services to the ASM sector, etc.
- Support to existing initiatives: existing initiatives which focus on supporting the ASM sector to improve its social and economic impacts, and that could benefit from stronger / continued financing.
- Value chain projects (processing, trading, etc.): opportunities to support value addition projects which directly support and benefit the ASM sector.
- Small-scale mining projects: specific small-scale mining projects which might benefit from financing opportunities and investment (e.g., to improve mining techniques, production, environmental and social impact management.).



# Conclusion

The complex and rich geological history of Madagascar led to build highly diversified geological settings. Numerous terranes encompass a promising geological potential for discovery various mineral deposits. There are currently many highly prospective areas and thousands of mineral occurrences, and most of these areas are virtually unexplored or underexplored. The main underexplored/unexplored ECRM potential are represented by lithium and graphite. It is noteworthy that nearly all other ECRMs, as well as many additional metals and minerals such as copper, platinum and nickel constitute a probable geological potential to be further investigated.

The results of our preliminary tests on mineral prospectivity mapping carried out on lithium, manganese and graphite on area mentioned by the Ministry are already particularly promising, but need to be further refined with the acquisition of new data (e.g. geological mapping on a more precise scale, geochemical and geophysical surveys).

Nowadays, very limited mines are in operation and, apart from Ambatovy nickel-cobalt mine, most only produce mineral concentrates exported directly abroad without any added value for the country.

Despite the richness of the mining context in Madagascar, large-scale mines are underdeveloped, processing units are rare and recycling activities are non-existent, except tailings recycling by ASM (The Ibity site, famous for its gemstone-rich pegmatite fields, is now converted into mica and spodumene mines). The ASM sector plays a significant role in the economy of Madagascar, and although ASM actors operate informally (the second-largest source of employment). The recent increased demand of lithium and favourable market prices has led many ASM actors to shift to the production on lithium-bearing minerals. Trading mainly involves Indian and Chinese traders, who export unprocessed and low concentrations of lithium ores. In addition, the ASM sector has also been producing manganese, mainly sold to Asian traders.

Along this value chain, there are several bottlenecks and interdependencies that can affect the efficiency and productivity of the mining sector. Infrastructure are underdeveloped. Mining companies has to ensure their own energy production and national roads are in an advanced state of degradation. However, 2 deep-water ports propose modern facilities.

Regarding the fiscal, legal and regulatory context, the mining code had been frozen for 12 years and the context was not favourable until 2023. Tax regime related to the Mining sector had been reviewed and approved in 2023, and the mining activities should therefore increase significantly. Since 2020, Madagascar is experiencing a sharp contraction of - 7.1% in the economy due to the economic impact of pandemic closures on Madagascar's mining, tourism, transport, and service sectors. Growth had started to recover in 2021 but was interrupted again in 2022 by a third wave of the pandemic followed by a sequence of severe weather events and the adverse effects of the war in Ukraine. While the government is friendly to foreign investment in mining, it hasn't actively sought it due to political instability. The governance of the mining sector has been deeply disrupted following numerous crises that the country has experienced periodically from 1972-2009. However, the government of Madagascar has collaborated with various partners in acting to reverse this trend.



So far, no Malagasy company is ESG certified. However, major mining companies like Ambatovy SA and Rio Tinto/QMM SA are incorporating the ESG indicators into their decision-making processes. Nevertheless, Madagascar has been committed to implementing the EITI Standard, a global standard on transparency and good governance in extractive activities, since 2007.

The Malagasy's mining sector encompasses both formal and informal players across the upstream and downstream segments of the business ecosystem. Formal upstream players first of all include Government Ministries. Informal upstream players first of all include ASM engaged in manual or semi-mechanised mining activities, but most of them are dedicated to gemstones.

Relations between the EU and Madagascar are dynamic. While Madagascar shares the values of the EU and our vision for global political priorities, a number of reforms remain to be implemented. The EU supports the country in its efforts to strengthen democracy and continues to assist it in matters of human development, resilience, and good governance.

Seven project opportunities, mainly dedicated to the Large-scale Mining sector had been identified within the framework of this report. Geological mapping combined with airborne geophysics and geochemical and mineral assessment in specific CRM districts should be the entry point for a better understanding of the resource. The training sector also requires investment or at least support, as an essential sector for skills development. More broadly, as part of the institutional sector, support from the Malagasy State can be offered to improve the business environment.



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## D9.3 – MADAGASCAR case study

Mining activities	Decree n° 2001-688 of August 03, 2001, setting the conditions for application of certain provisions of Law n° 99-022 of August 19 on the mining code
	Decree n° 2000-308 of October 02, 2000, creating and establishing the statutes of the Mining cadastre Office (BCMM), supplemented by Decree n° 2017-175 of March 16, 2017 annexing decree n° 2000-308 of May 10, 2000 establishing the statutes of the Mining Cadastre Office (BCMM)
	Order n° 9770/2020 Fixing the amount of the fee for the issuance of an Exclusive authorization to reserve a perimeter (AERP) and the mining administration fees for the year 2020
	Order n° 8902/2018 of April 12, 2018, defining the perimeter, the classification of the Communes concerned as well as the rates of distribution of the Mining Rebates by communities benefiting from the Project of Ambatovy
	Order n° 1455/2016 defining the procedures for granting approval to gold comptoirs and model specifications
	Interministerial Order n° 1454/2015 of January 20, 2016, defining the model for the various documents relating to collection activities
	Order n° 1453/2016 of January 20, 2016, defining authorized equipment and the model for various documents relating to gold panning
	Order n° 2015/28066 of September 07, 2015, declaring gold stocks held by private individuals
	Order n° 8887/2014 of February 21, 2014, defining the terms and conditions for the distribution and use of mining rebates from certain mining projects
	Order n° 9874/2013 amending certain provisions of Interministerial Order n° 52005/2010 of December 20, 2010, amending Interministerial Mine-Forests Order n° 18633/2008 of October 17, 2008 placing sites covered by Order n° 17914/2006 of October 18, 2006 under temporary global protection and lifting the suspension of the granting of mining and forestry permit for certain sites
Order n° 7902/2013 of April 09, 2013 laying down the technical characteristics of operating procedures and the tools, materials and equipment authorized for small-scale mining activities	
Order n° 7903/2013 of April 09, 2013 laying down the standard articles of association for groups of small-scale miners and groups of gold panners	
Order n° 7904 of April 09, 2013 on mining product collection activities	
Order n° 14519/2013 of July 05, 2013 setting the terms for calculating transaction amounts for mining offenses.	
Order n° 28088/2012 of October 19, 2012 setting the terms and conditions for approving private laboratories and experts for quality certification of mining substances and hallmarking	
Order n° 5470/2012 of March 30, 2012 setting the model activity report for each type of mining permit	
Interministerial Order n° 14-421/2008 setting the transitional collection terms for royalties and rebates on mining substances intended for exploitation	
Order n° 8186/2008 of April 09, 2008 amending the calculation of the period of validity of mining permit	
Order n° 10901/2007 of July 04, 2007 setting the flat-rate fees levied by the BCMM for each registration of operations affecting the rights allocated in the mining permit	
Interministerial Order n° 21.985/2007 setting out the procedures for collecting mining royalties and rebates	



## D9.3 – MADAGASCAR case study

	Order n° 4851/2001 of April 18,2001 setting the basis for the mining royalty on certain mining products
	Settlement agreement between QMM-SA and the Malagasy Government
Trading company	Law n° 2014-04 of September 04,2014 on commercial companies with public shareholdings
	Law n° 2001-026 of September 03,2004 on partnership contracts and civil partnerships
	Law n° 2003-036 of January 30,2004 on commercial companies, amended and supplemented by Law n° 2008-032 of December 17,2008 and Law n° 2014-010 of August 21,2014
	Decree n° 2011-050 of February 01,2011 amending Decree n° 2005-151 of March 22,2005 and Decree n° 2004-453 of April 06,2004 setting the conditions for application of Law n° 2003-036 of January 30,2004 on commercial companies
	Decree n° 2008-440 of May 05,2008 on the trade and companies register and the publicising of movable property credit
	Decree n° 2005-151 of March 22,2005 amending certain provisions of Decree n° 2004-453 of April 6,2004 setting the conditions for application of Law n° 2003-036 of January 30,2004 on commercial companies
	Decree n° 2004-453 of April 06,2004 setting the terms and conditions for the application of Law n° 2003-036 of January 30,2004 on commercial companies
Changes	Law n° 2006-008 of August 02,2006 on the Foreign Exchange Code
	Decree n° 2017-122 of February 21,2017 setting the terms and conditions for access to the integrated foreign exchange management system
	Decree n° 2016-1349 of November 08,2016 on the creation, organization and operation of the National Committee on Trade Facilitation
	Decree n° 2009-048 of January 12,2009 setting out the terms and conditions for the application of Law n° 2006-008 of August 02,2006 on the Foreign Exchange Code, amended by Decree n° 2022-1183 of August 10,2022
	Circular n°755-2018 of August 30,2018 on foreign exchange allocations
	Order n° 13312/2015-MFB/SG/DGT/DOF/SSOC of April 02,2015
Taxation	Tax convention between Madagascar and Morocco
	Tax convention between Madagascar and Mauritius
	Tax convention between Madagascar and France
	Tax convention between Madagascar and Canada
	Tax Code 2023 following LFI n° 2022-015 of December 22,2022
	Tax procedure codes following LFI n° 2022-015 of December 22,2022
Customs	Customs code 2023 following LFI n° 2022-015 of December 22,2022
Labor	Convention N° 97 on Migration for Employment of January 22,1952
	Law n° 2008-031 of December 31,2018 authorizing the ratification of Convention n° 143 on migrant workers
	Law n° 2003-044 of July 28,2004 on the Labor Code
	Decree n° 2014-1355 of August 21,2014 acceding to the International Convention on the Protection of the Rights of All Migrant Workers and Members of Their Families.
	Decree n° 69-145 of April 8,1969 establishing the Social Security Code





## D9.3 – MADAGASCAR case study

	Interministerial Order n° 5410/99 of June 3,1999 amending Decrees n° 1703 - VP/TR/F of April 23,1969 and n° 2431 - TR/F of June 17,1969 setting the rates of contributions due to the Caisse Nationale de Prévoyance Sociale and regulating the distribution key for these rates
	Order n° 2806 of July 8,1968 organizing company medicine
Immigration	Law n° 1962-002 of June 6,1962 on the organization and control of immigration
	Decree n° 1994-652 of October 11,1994 repealing the implementing decree for law n° 1962-002 on the organization and control of immigration
Investment	Agreement on the reciprocal protection and promotion of investments between Madagascar and South Africa, dated September 22,2006 and ratified by the Law n° 2007-003 of July 27, 2007
	Agreement on the reciprocal protection and promotion of investments between Madagascar and the Federal Republic of Germany, signed on April 8,2006 and ratified by the Law n° 2007-006 of July 27,2007
	Agreement on the Protection and Promotion of Reciprocal Investments between Madagascar and the People's Republic of China, concluded on November 4,2005 and ratified by the Law n° 2006-027 of November 24,2006
	Agreement on the reciprocal encouragement and protection of investments between Madagascar and the Belgo-Luxembourg Economic Union concluded on September 29,2005 and ratified by the Law n° 2006-008 of November 24, 2008
	Agreement on the reciprocal encouragement and protection of investments between Madagascar and France of January 14,2005, ratified by the Law n° 2004-043 of January 14,2005
	Agreement on the protection and promotion of investment between Madagascar and Mauritius dated April 06,2004, ratified by the Law n° 2005-001 of May 25,2005
	Agreement on the protection and promotion of investment between Madagascar and Norway dated September 28,1967
	Agreement on the protection and promotion of investment between Madagascar and Denmark dated July 26,1967
	Agreement on the protection and promotion of investment between Madagascar and Sweden dated June 23,1967
	Agreement on the protection and promotion of investment between Madagascar and Germany dated March 21,1966
	Agreement on investment protection and promotion between Madagascar and Switzerland dated March 31,1966
	International Convention on the Settlement of Investment Disputes between States and Nationals of Other States signed in Washington in 1965
	Law n° 2007-036 of January 14, 2008, on investments
	Law n° 2005-022 of October 17,2005 amending certain provisions of Law n° 2001-031 of 08/10/2002 establishing a special regime for major investments in the Malagasy mining sector (LGIM)
	Law n° 66-011 of July 05,1966 authorizing ratification of the Convention on the settlement of investment disputes between States and nationals of other States



## D9.3 – MADAGASCAR case study

	Decree n° 99-954 of December 15,1999 on making investments compatible with the environment, amended by Decree n° 2004-167 of February 03,2004 on making investments compatible with the environment. (Decree MECIE)
	Circular n° 5286 of August 04,1987 supplementing Circular n° 28046 of 25/11/1972 setting out the terms and conditions for the application of Order n° 4100 of 25/11/1972 relating to foreign investment in Madagascar
Dispute resolution	Code of Civil Procedure amended and supplemented by Law n° 97-038 of October 30,1997, Law n° 2001-022 of 09 April 2003, Law n° 2015-035 of February 03,2016, Law n° 2016-039 of January 25,2017 and Law n° 2017-012 of July 18,2017 amending and supplementing the provisions of the Code of Civil Procedure instituting a special procedure for small civil and commercial disputes
	Law n° 66-022 of December 19,1966 promulgating the second, third and fourth parts of the Code of Civil Procedure and amending certain articles of the first part of the said code
	Law n° 59-006 of September 23,1959 amending art. 146 of the Code of Civil Procedure and art. 62 of Decree n° 198 of 11/06/56 (modern Malagasy civil procedure and traditional Malagasy civil procedure)
	Ordinance n° 60-107 of September 27,1960 reforming the organization of the judiciary and the Code of Civil Procedure and creating a court of appeal in each provincial capital, amended by Ordinance n° 76-014 of May 17,1976.
	Ordinance n° 62-041 of September 19,1962 on general provisions of domestic law and private international law
	Order n° 62-058 of September 24,1962 promulgating a code of civil procedure



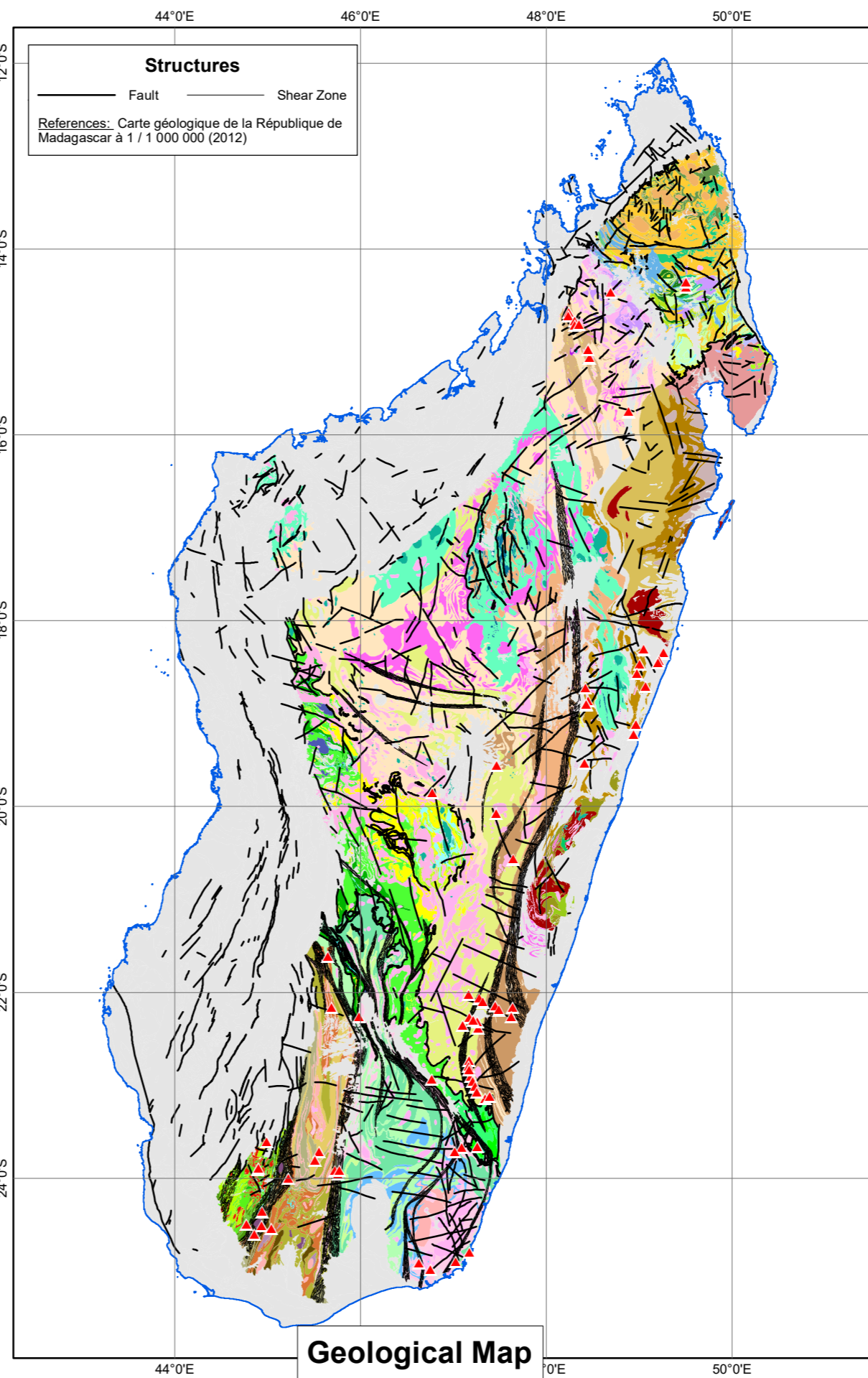
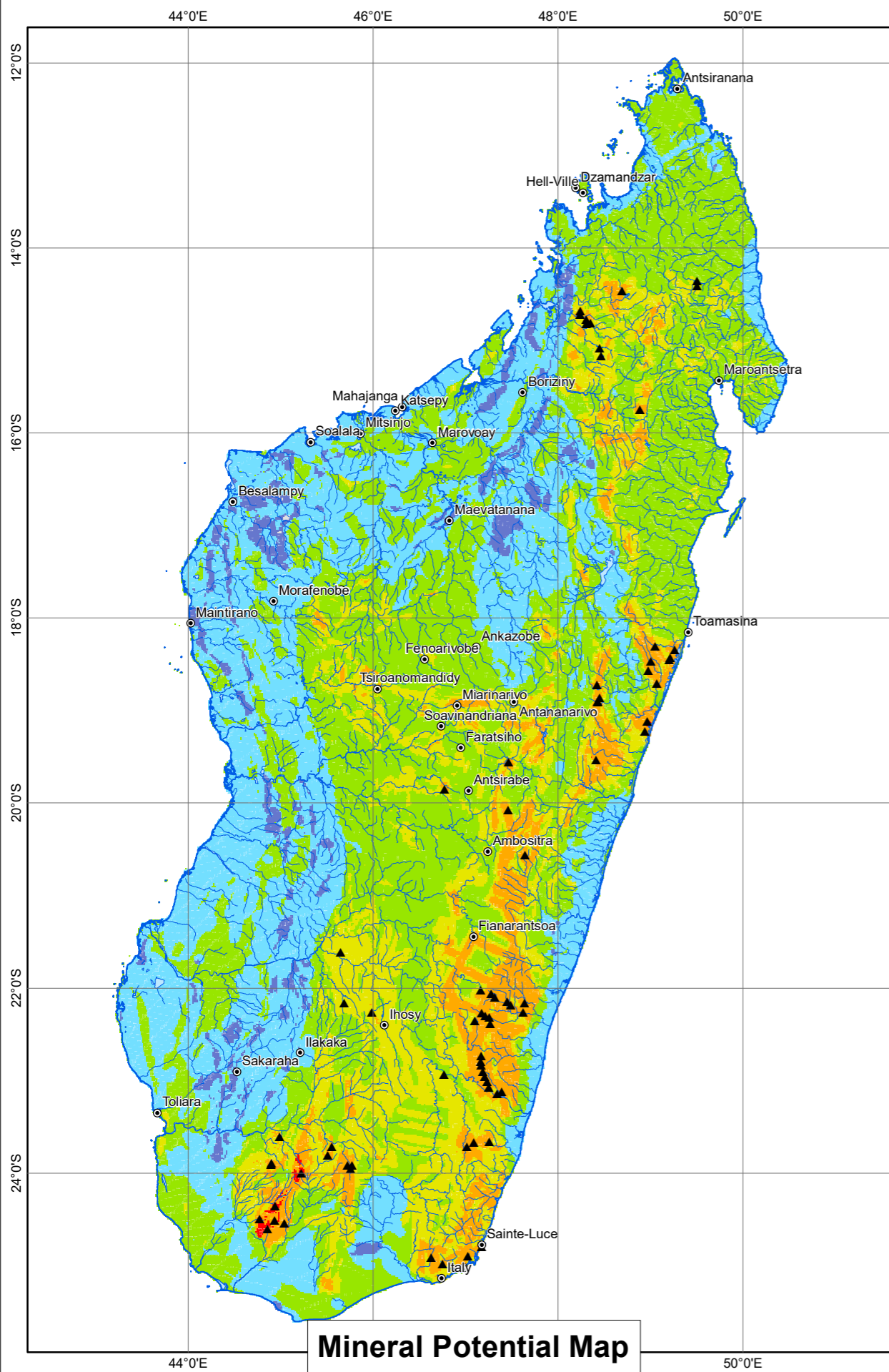
# APPENDICES



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# Country: MADAGASCAR

## MINERAL POTENTIAL MAP - GRAPHITE (Gr)



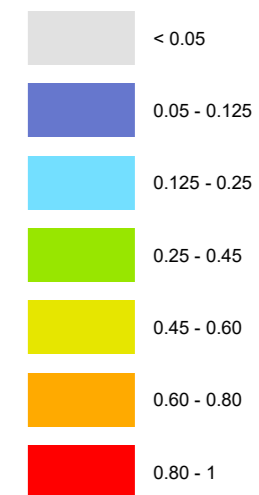
**Structures**

— Fault — Shear Zone

References: Carte géologique de la République de Madagascar à 1 / 1 000 000 (2012)

### Legend

#### Score



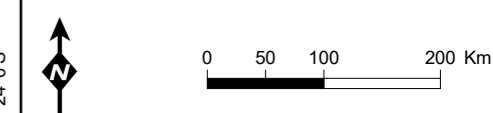
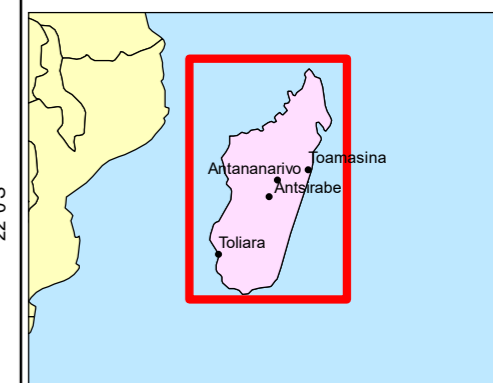
#### Known occurrences

- ▲ Graphite (Gr)
- ▲ SIG Afrique - © BRGM 2018

#### Confusion matrix

True negative Cells: 182100 84.49%	False positive Cells: 31540 14.64%
Non-occurrence in database Non-occurrence predicted	Non-occurrence in database Occurrence predicted
False negative Cells: 77 0.04%	True positive Cells: 1783 0.83%
Occurrence in database Non-occurrence predicted	Occurrence in database Occurrence predicted

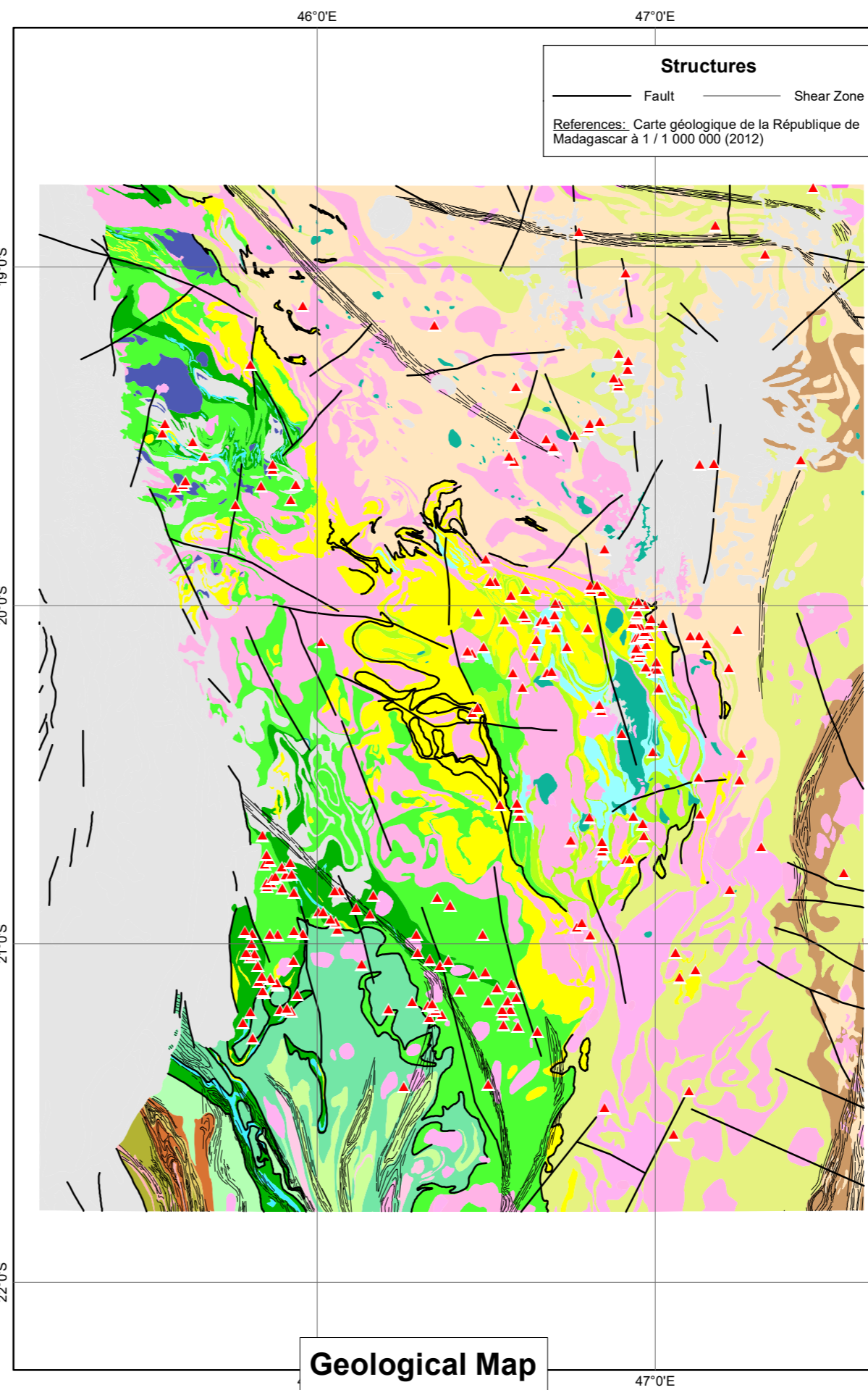
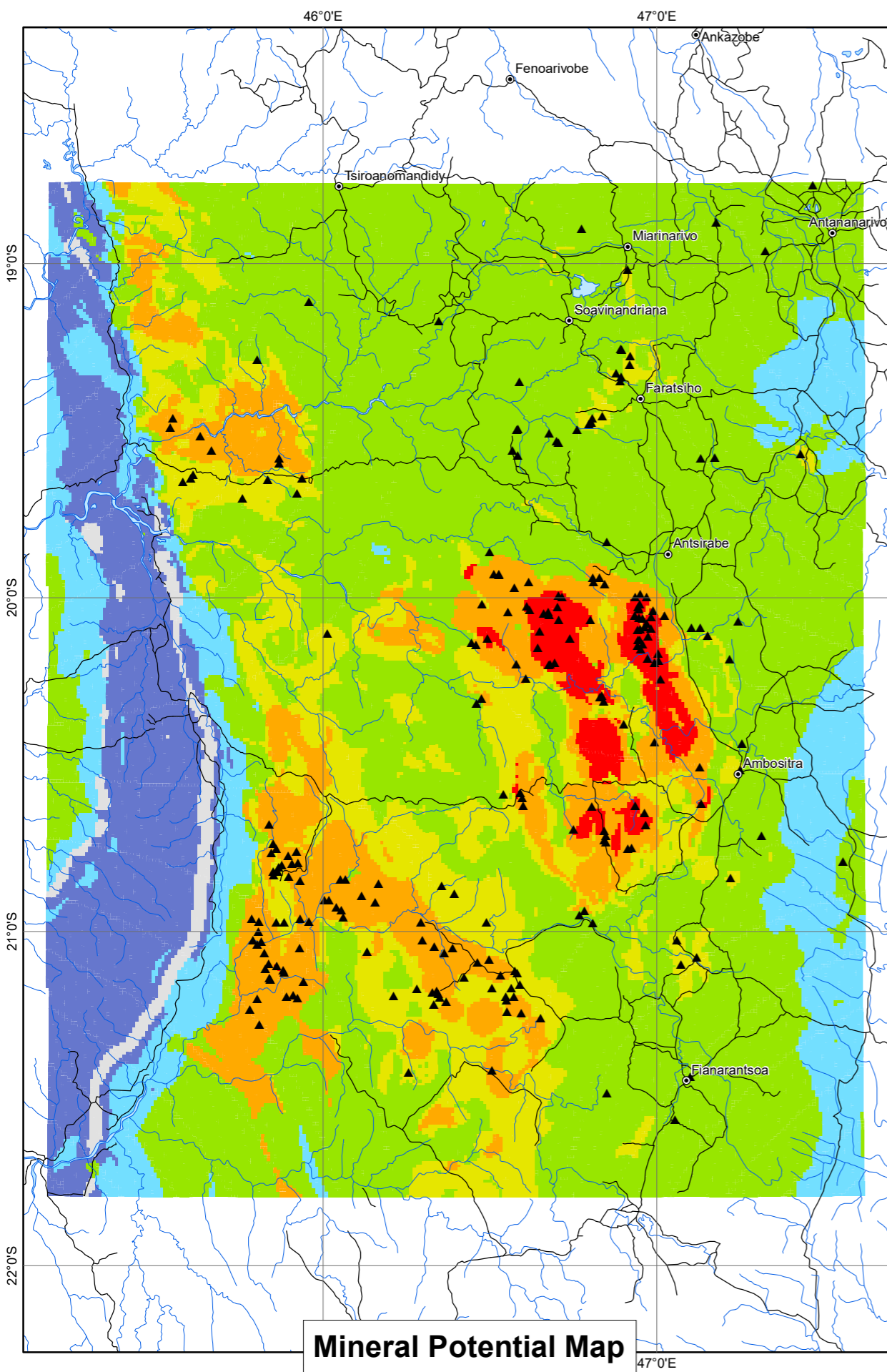
Best threshold (G-Means): 0.51  
Cell size: 1667 m



Datum : WGS84 (World Geodetic System 1984)

# Country: MADAGASCAR (Antsirabe)

## MINERAL POTENTIAL MAP - LITHIUM (Li)



### Legend

**Score**

- < 0.05
- 0.05 - 0.125
- 0.125 - 0.25
- 0.25 - 0.45
- 0.45 - 0.60
- 0.60 - 0.80
- 0.80 - 1

**Known occurrences**

- Lithium (Li)
- SIG Afrique - © BRGM 2018

**Confusion matrix**

True negative Cells: 67708 78.93%	False positive Cells: 13508 15.75%
Non-occurrence in database Non-occurrence predicted	Non-occurrence in database Occurrence predicted
False negative Cells: 1332 1.55%	True positive Cells: 3231 3.77%
Occurrence in database Non-occurrence predicted	Occurrence in database Occurrence predicted

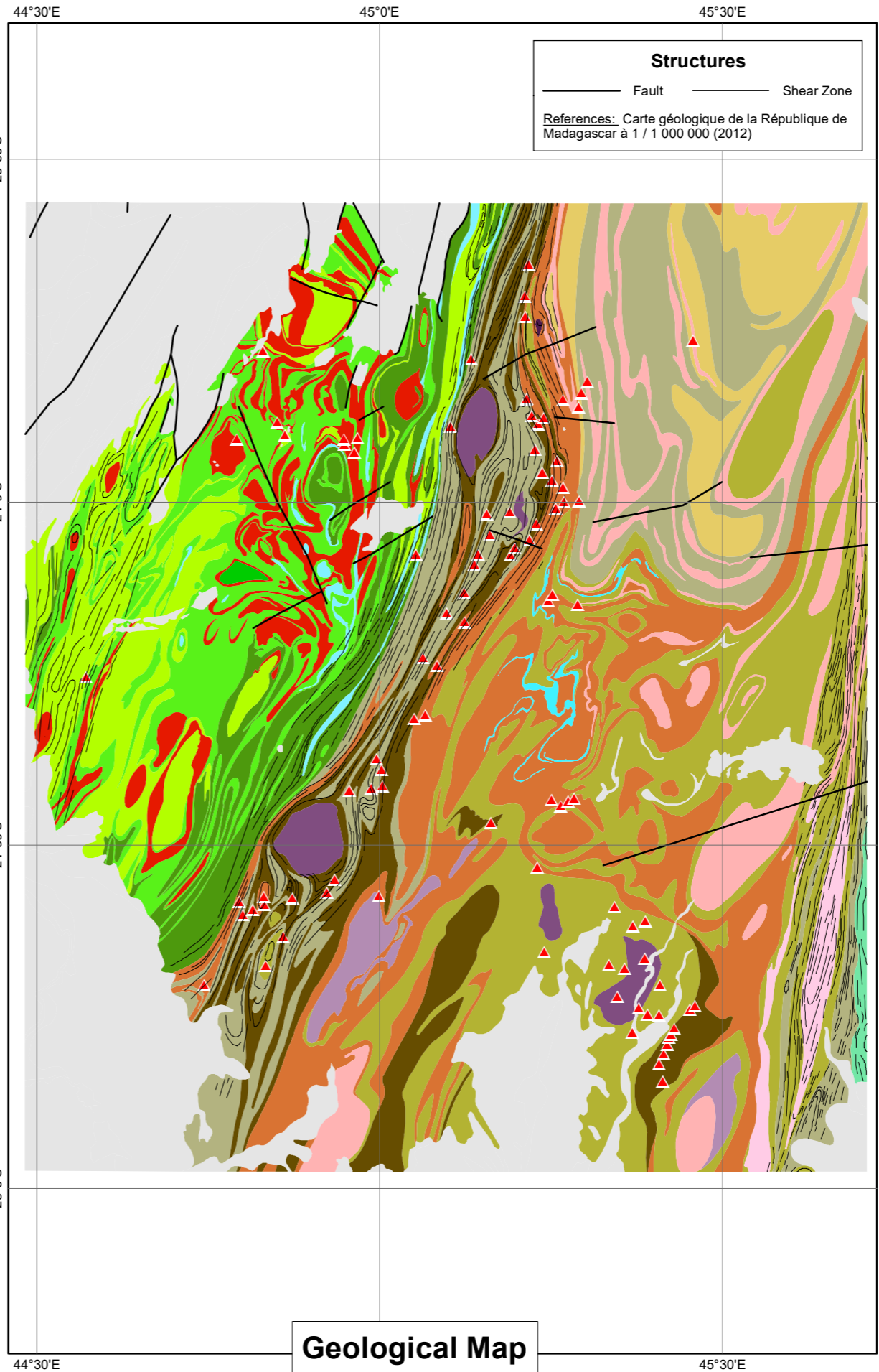
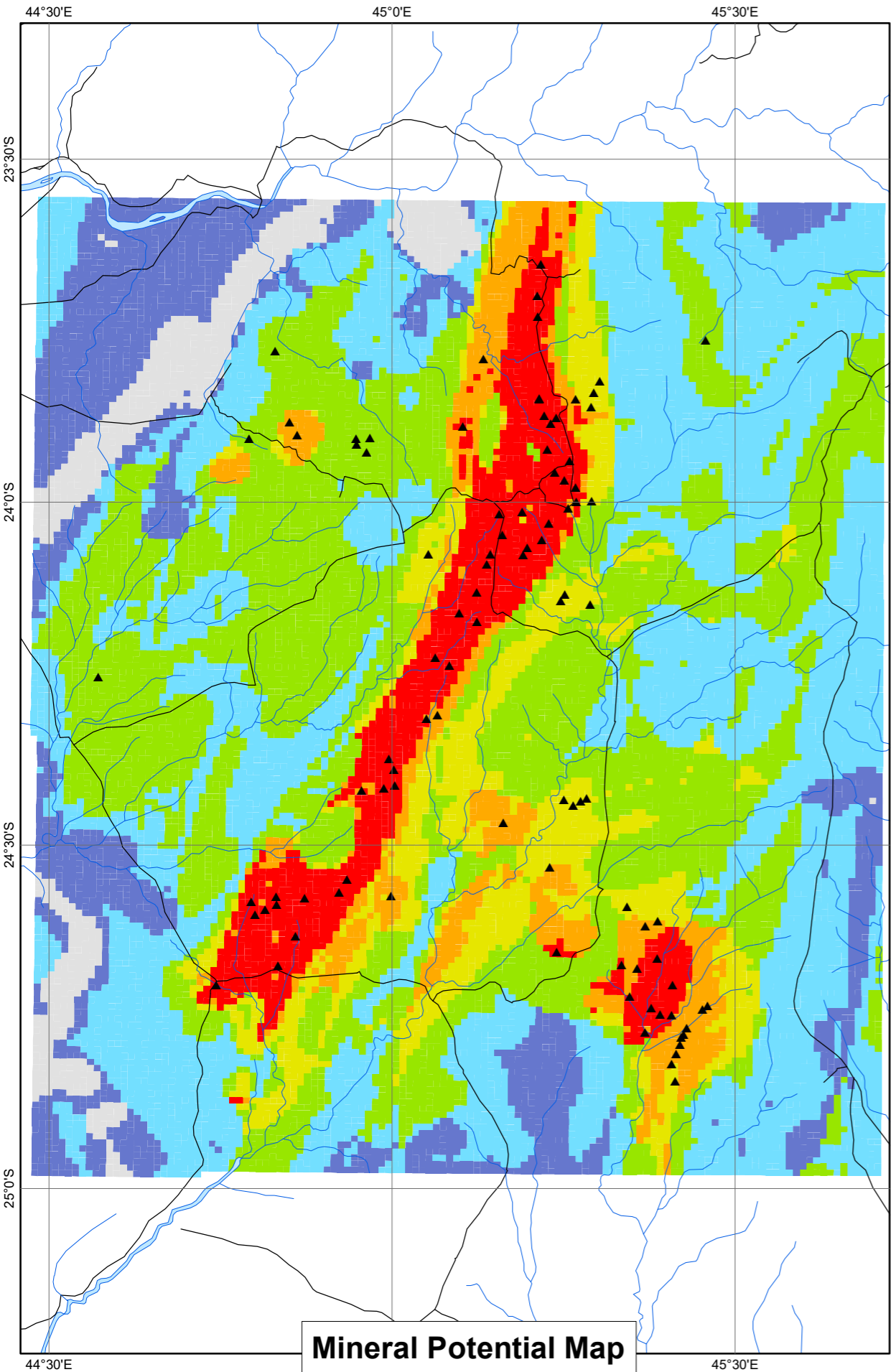
Best threshold (G-Means): 0.44  
Cell size: 1000 m

**Datum** : WGS84 (World Geodetic System 1984)

January 2024

# Country: MADAGASCAR (Ampanihy)

## MINERAL POTENTIAL MAP - MANGANESE (Mn)



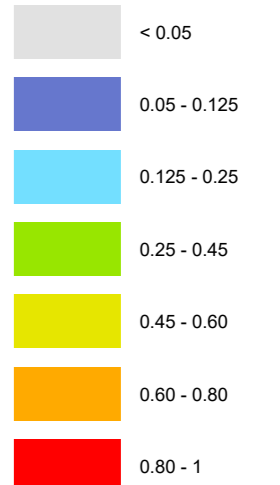
**Structures**

— Fault — Shear Zone

References: Carte géologique de la République de Madagascar à 1 / 1 000 000 (2012)

### Legend

#### Score



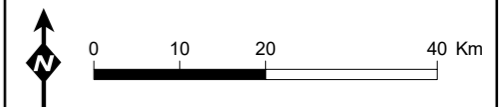
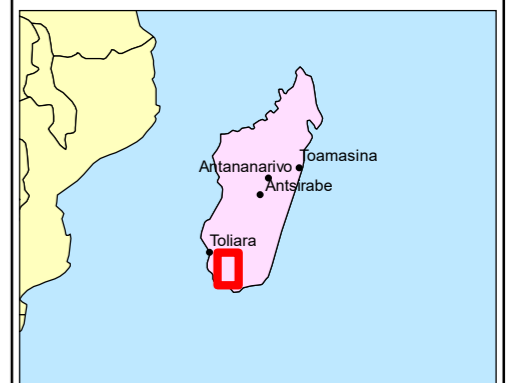
#### Known occurrences

- ▲ Manganese (Mn)
- ▲ SIG Afrique - © BRGM 2018

#### Confusion matrix

True negative Cells: 15931 80.71% Non-occurrence in database Non-occurrence predicted	False positive Cells: 2082 10.55% Non-occurrence in database Occurrence predicted
False negative Cells: 412 2.09% Occurrence in database Non-occurrence predicted	True positive Cells: 1312 6.65% Occurrence in database Occurrence predicted

Best threshold (G-Means): 0.41  
Cell size: 1000 m



Datum : WGS84 (World Geodetic System 1984)

January 2024

