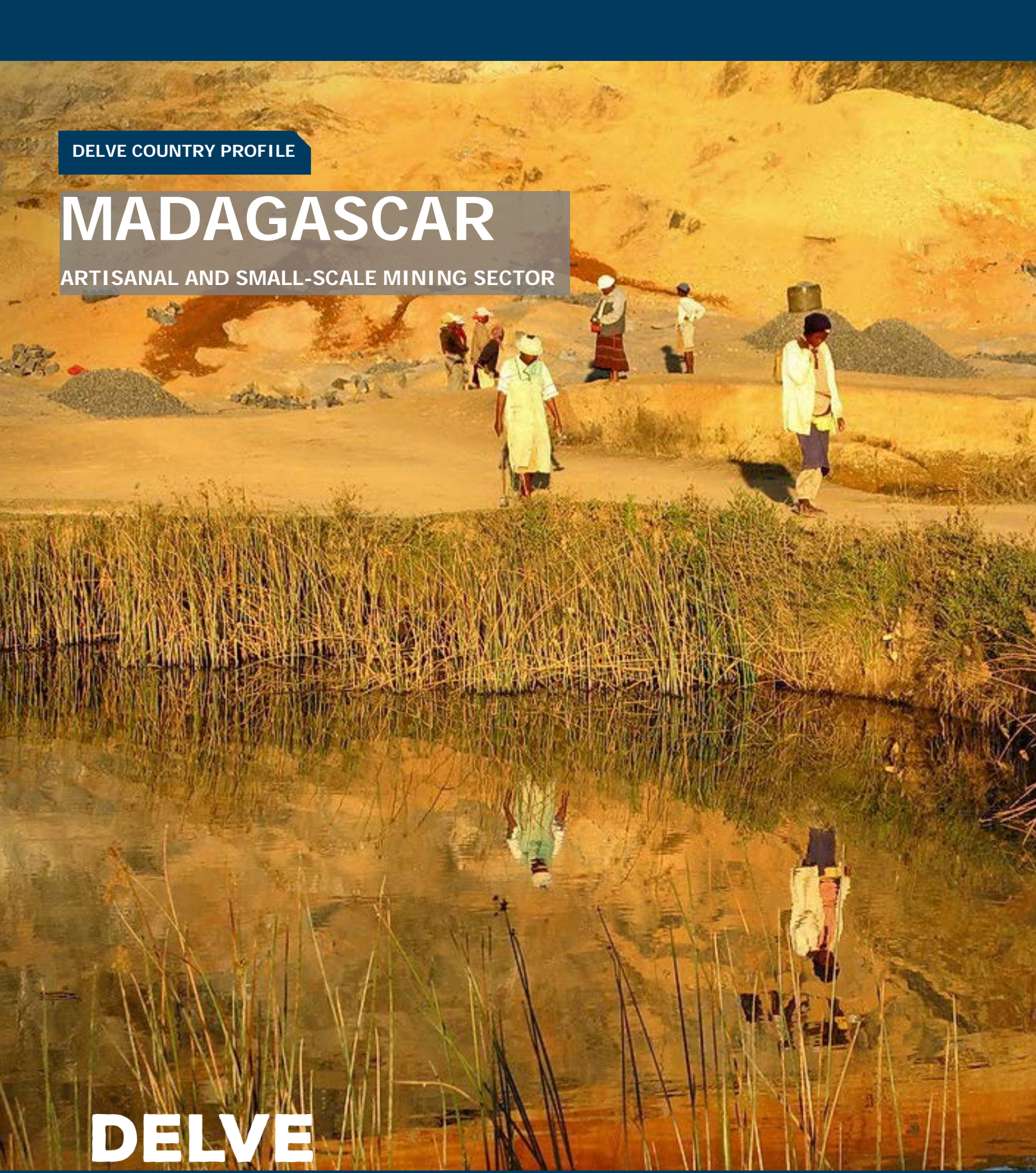


DELVE COUNTRY PROFILE

# MADAGASCAR

ARTISANAL AND SMALL-SCALE MINING SECTOR



# DELVE

A GLOBAL PLATFORM FOR ARTISANAL & SMALL SCALE MINING DATA



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Delve is an initiative to build a global platform for artisanal and small-scale mining (ASM) data. Its vision is a world in which ASM is recognized as an important contributor to global development.

**Acknowledgements and Key Contributors:**

The Delve Country Profile: Afghanistan was developed through a collaboration between the World Bank [Extractives Global Programmatic Support](#) Multi-Donor Trust Fund, Pact,

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Cover Photo: Artisanal and small-scale miners working at a stone quarry in Itaosy, Antananarivo, Madagascar. Photo by [Stefano Bassetti](#) on [Flickr](#), licensed under ([CC BY-NC-ND 2.0](#))

This document was produced with financial assistance from the World Bank’s [Extractives Global Programmatic Support](#) Multi-Donor Trust Fund (EGPS).



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## Definitions & Acronyms

<b>AFDB</b>	African Development Bank
<b>ANOR</b>	<i>Agence Nationale de la filière Or</i> (National Agency for the Gold Sector)
<b>ASM</b>	Artisanal and Small-scale Mining
<b>ASGM</b>	Artisanal and Small-scale Gold Mining
<b>BCMM</b>	<i>Bureau du Cadastre Minier de Madagascar</i> (Mining Cadastre of Madagascar)
<b>BNM</b>	<i>Bureau National Minamata</i> (National Minamata Bureau)
<b>CNAPS</b>	<i>Caisse Nationale de Prévoyance Sociale</i> (National Social Security Fund)
<b>COMINA</b>	<i>Companie Minière d'Andriamena</i> (Mining Company of Andriamena)
<b>DGM</b>	<i>Direction Générale des Mines</i> (General Directorate of Mines)
<b>DGRS</b>	<i>Direction Générale des Ressources Stratégiques</i> (General Director of Strategic Resources)
<b>EITI</b>	Extractive Industries Transparency Initiative
<b>EIA</b>	Environmental Impact Assessment
<b>ECP</b>	Environmental Commitment Plan (Plan d'Engagement Environnemental)
<b>FDI</b>	Foreign Direct Investment
<b>GDP</b>	Gross Domestic Product
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation)
<b>GNI</b>	Gross National Income
<b>IGM</b>	Institute of Gemology of Madagascar
<b>ILO</b>	International Labour Organization
<b>KPCS</b>	Kimberley Process Certification Scheme
<b>LSM</b>	Large-scale mining
<b>MECIE</b>	<i>Mise En Compatibilité des Investissements avec Environnement</i> (Making investments compatible with the environment)
<b>MEDD</b>	<i>Ministère de l'Environnement et du Développement Durable</i> (Ministry of Environment and Sustainable Development)
<b>MEEF</b>	Ministère de l'Environnement, de l'Ecologie et des Forêts (Ministry of Environment, Ecology and Forests)
<b>MMP</b>	<i>Ministère des Mines et du Pétrole</i> (Ministry of Mines and Petroleum)
<b>MMSR:</b>	<i>Ministère des Mines et des Ressources Stratégiques</i> (Ministry of Mines and Strategic Resources)

<b>OECD</b>	Organization for Economic Cooperation and Development
<b>PAGE</b>	<i>Programme d'Appui à la Gestion de l'Environnement</i> (Conservation and sustainable use of natural resources)
<b>PREE</b>	<i>Programme d'Engagement Environnemental</i> (Environmental Commitment Program)
<b>RFI</b>	Radio France International
<b>SDDEMAPE</b>	<i>Stratégie de Développement Durable de l'Exploitation Minière Artisanale et à Petite Echelle</i> (Sustainable Development Strategy for Artisanal and Small-Scale Mining)
<b>SDG</b>	Sustainable Development Goal
<b>STD</b>	Sexually Transmitted Diseases (STDs)
<b>UN</b>	United Nations
<b>UNDP</b>	United Nations Development Programme
<b>USGS</b>	United States Geological Survey
<b>WITS</b>	World Integrated Trade Solution
<b>WWF</b>	World Wildlife Fund

## Country Profile Snapshot: Madagascar

 <p><b>MATERIALS MINED BY ASM</b></p>	<p><b>Rush Management:</b> The Ministry seeks to implement preventative measures and effective management strategies to be responsive to rush situations. This includes development of tools for rush management and prevention along with identification of specific funding prevent and respond to rush events (MMP 2018, 15-16).</p>
<p>Gold</p> <p>Gemstones (sapphires, rubies, emeralds, amethyst, topaz and aquamarine)</p> <p>Mica</p> <p>Salt</p>	<p><b>Laws and policy</b></p>
 <p><b>MINERAL GOVERNANCE FRAMEWORK</b></p>	<p>Mining Code 1999 (<a href="#">2005 Amendment</a>)</p> <p><a href="#">Loi n°2001-031 du 08 octobre 2002 établissant un régime spécial pour les grands investissements dans le secteur minier malagasy (LGIM) modifiée par la Loi n°2005-022</a></p> <p><a href="#">Décret n° 2000-308 du 2 octobre 2000 portant création et fixant les statuts du Bureau du Cadastre Minier de Madagascar</a></p> <p><a href="#">Décret n° 98-394 du 28 mai 1998 portant définition de la politique sectorielle minière à Madagascar</a></p> <p><a href="#">Décret D'application 2006</a></p>
<p><b>Government priorities</b></p>	<p><b>Government institutions</b></p>
<p><b>Mining Code Reform:</b> Reform of the Mining Code was made a top priority by President Rajoelina when he assumed office in January 2019. Mining projects have not delivered on expected outcomes in terms of government revenue and local content contributions with mining the sector’s outdated tax policies, governance shortcomings and global commodity price fluctuations being contributing factors (MMP 2018).</p> <p><b>Institutional Strengthening:</b> The government aims to improve governance and participation of all stakeholders in the ASM sector by improving local governance structures, promoting cross-sectoral coordination among government agencies and building capacity government stakeholders at all levels (MMP 2018).</p> <p><b>Rational Management of ASM:</b> The Rational Management of the Artisanal Mining Sector is aimed at the main stakeholders in the sector (artisanal miners and traders) in order to professionalize their operations and achieve a mutually beneficial operating environment for miners, traders, government and local communities (MMP 2018).</p>	<p>MMSR (Ministry of Mines and Strategic Resources)</p> <p>MEDD (Ministry of Environment and Sustainable Development)</p> <p>DGM (General Directorate of Mines)</p> <p>DGRS (Generale Directorate of Strategic Resources)</p> <p>OMNIS (Office of National Mines and Strategic Industries)</p> <p>BCMM (Mining Cadastre of Madagascar, Mining Cadastre)</p> <p>ANOR (National agency for Gold)</p> <p>IGM (Malagasy Institute of Gemmology)</p> <p>LNIE (National Laboratory of Extractive Industries)</p> <p>BPGRM (Mining Resources Governance Database)</p>



### Economic and development data

#### 2019 Population

Total: 26,969,307  
 Labor force: 14,307,144  
 Women: 50.1%  
 Men: 49.9%

#### 2019 Classification (GNI per capita)

Low income  
 GNI per capita, atlas method (current USD): 520  
 GNI per capita (constant 2010 USD): 482.42

#### 2019 Gross Domestic Product

USD 14.12 Billion

#### 2012 Poverty headcount ratio (2011 purchasing power parity)

Population on/below poverty line: 70.7%  
 Population living on < USD 1.90 per day: 77.4%  
 Population living on < USD 5.50 per day: 97.3%



### Livelihoods

#### Employment

**ASM:** While official figures on employment are sparse, artisanal and small-scale mining is reported to be the second large job provider to people in Madagascar behind agriculture employing one million workers (MMP 2018). Participants in the ASM sector are classified primarily as permanent or migratory/rush participants. In both cases the sector provides the allure of increasing household incomes and alleviating poverty. Despite significant contributions to the Madagascar's economy and local livelihoods, artisanal mining has also been associated with considerable adverse impacts on health, safety, social harmony, the environment, taxation revenue, as well as corruption and illicit trade.

**LSM:** The industrial mining sector is an important part of the Malagasy economy, currently accounting for 95% of the country's formal mining revenues with the remaining 5% being related to the exploitation of precious stones (EITI 2019). The main large mining operations in exploitation phase in Madagascar are Ambatovy, located in the Eastern Madagascar and focusing on nickel and cobalt, QMM (a joint venture between the Malagasy Government and Rio Tinto) focusing on the exploitation of ilmenite in the South-East and Kraoma which has been exploiting chrome for more than 45 years. The industrial sector employed 11,928 employees affiliated with the National Social Security Fund (CNAPS), making up 1.82% of total employees affiliated with CNAPS.

#### Gender participation in ASM

It is estimated that between a third (MEEF, 15; Raharison 2010, 43) and as much as half of those working in ASM are women (Lawson 2018, 172). In Madagascar, women entrepreneurs generally experience the impact of institutional barriers both formal and informal. Formal barriers, such as lack of education and resources, make it difficult to obtain mining and business licenses, and collateral to finance activities while informal, such as cultural and religious constraints, prevent women from successfully participating in markets (Lawson and Lahiri-Dutt 2019).

# MINING SECTOR SUMMARY

## General Mining Context

Madagascar has a long-established history of precious mineral extraction with extensive mineral deposits throughout the island nation. Large scale mining activities have expanded since the early 2000s with industrial production of chromium, cobalt, ilmenite and nickel. Artisanal and small-scale mining (ASM) remains a largely informal activity in Madagascar, but it is believed to be the second largest job provider in Madagascar behind agriculture (EITI 2019, 215) with gold, colored gemstones and mica being key commodities. Historically the government has made efforts to reform the mining sector to increase foreign investment and strengthen governance, but efforts to formalize the ASM sector have been largely unsuccessful. With a renewed strategy for the ASM sector's development created in 2018, the government aims to formalize the sector and increase government revenues.

Like many other Africa nations, Madagascar appears to have quite a long-established history of limited precious mineral extraction for trade and ceremonial purposes ([Campbell 1988](#)). In 1658, the governor of India, Flacourt discovered sapphire, topaz, blue beryl, ruby and emerald in the south of the island at Fort Dauphin. At the same time, a quartz deposit was located during this period and the first export of quartz crystals occurred, sending crystals to Europe via India ([Chambre des mines Madagascar 2014](#)).

Until the annexation of Madagascar to France in 1896, mining remained highly regulated with any notable recorded mining on the island coinciding with colonial occupation (1886 to 1958). The exploitation of gemstones began in 1904 and the first mining decree was declared in 1906. At the same period, the mineralogical potential of Madagascar took off in terms of recognition and following this first decree, the control of gemstone trade was established in 1907 ([Chambre des mines Madagascar 2014](#)). Graphite, one of the first mining resources, was exploited in the Moramanga region deposit under the aegis of colonization. Gold production intensified during that period, peaking at almost 47 metric tons per year in 1908-09 (Campbell 1988, 119). Indigenous artisanal, and often clandestine, mining operations of gold and gemstones are noted to have been prevalent throughout this period ([Campbell 1988](#)). As for mica exploitation, it started in 1918 with 20 tons, thus placing the country fourth in the world in terms of production volume after India, USA and Canada ([Chambre des mines Madagascar 2014](#), 1). At the end of the First World War, Madagascar was recognized as an exporter of radioactive minerals with deposits located on the Antsirabe - Itasy axis. The low radioactive content of the ores, however, led to the cessation of production (Ministry of Mines). In 1925, Madagascar was the world's leading exporter of graphite ([Chambre des mines Madagascar 2014](#)).

Madagascar gained its independence from France in 1960. After being one of Africa's most successful economies in the 1960s, the country lost ground due to several decades of economic mismanagement. From the 1970s to the mid-1990s, gross domestic product (GDP) growth averaged only 0.5 percent, while the population grew at about 2.8 percent per year.<sup>ii</sup> Chromite production, the only commodity exploited industrially in Madagascar prior to the 2000s, started in 1968 with the *Compagnie Minière d'Andriamena*, COMINA, which was nationalized in 1975 and is now known as Kraomita Malagasy or Kraoma SA. With this medium-sized mining company, Madagascar has long been the 10th world producer of chromium ([CSRM 2016](#), 14).



The years 1980-1990 were marked by the increase in the world prices of raw materials and increased demand. However, the Nationalization policy<sup>iii</sup> launched in the mid-1970s made state corporations out of foreign firms operating in Madagascar which resulted in an economic downfall. Export volumes fell, inflation rose, and national debt was significantly expanded.

The country's artisanal mining sector gained special attention in the 1990s. The discovery of sapphires and rubies in the south western towns of Ilakaka and Sakaraha sparked a mining boom in the region, making Madagascar one of the world's largest producers of these colored gemstones ([CSRM 2016](#)). Little governmental control over this growing market led to increased illegality. In order to reaffirm its control over the illegal gemstone market, the Malagasy government suspended the issuance of new permits for sapphires and rubies from 1999 to 2004. This suspension, however, was counter-productive, resulting merely in increased smuggling and corruption (World Bank 2010).

Despite the improvements made by successive regulations<sup>iv</sup>, the results obtained fell short of the objectives set in the 1990s, particularly in terms of the contribution of the mining sector to the Gross National Product and to the economy in general ([Chambre des mines Madagascar 2014](#)). Accordingly, in the late 1990s, with the support of the World Bank, the Malagasy government launched a reform process aimed at strengthening governance of the sector and attracting foreign private investment in order to develop the industrial sector. As part of this process, the state redefined its role in the sector, focusing on being a regulator and no longer a mining operator ([World Bank](#), n.d.). The 1998 Mining Policy Framework clearly states these objectives which were reinforced in the 1999 Mining Code, the Law on Large Mining Investment of 2001 (modified in 2005), the Mining Policy Statement of 2003 and the revised 2005 Mining Code that formalized the mining sector, advocated its liberalization, and encouraged foreign investment. These series of legal reforms coupled with the increasing global demand for raw materials and the growing importance of emerging countries such as China intensified the interest of foreign investors in Madagascar's mineral reserves ([Chambre des mines Madagascar 2014](#)).

The first industrial mining exploration permits were granted in the 2000s. QIT Madagascar Minerals (QMM) was launched in 2009 with an ilmenite, rutile and zircon mine in Tolagnaro, southeastern Madagascar. The Ambatovy project located in eastern Madagascar<sup>v</sup> received a 40-year mining permit in 2006 and began selling nickel and cobalt on the London Metals Exchange in 2015 ([CSRM 2016](#)). At the same time exploration activities suffered a major setback due to political instability and a considerable drop in mineral prices following the 2008 global financial crisis (World Bank 2010).

Another ban on the export of rough stone in early 2008 threatened the survival of tens, if not hundreds of thousands of miners, encouraged corruption and illegal exports, and drove out legal buyers. Madagascar's contribution to the global sapphire market, however, remained significant ([Cook and Healy 2012](#)). During the same period, gold exports increased dramatically, coinciding with the rise in gold prices. In 2009 and 2010, industrial mining investments accounted for more than 80% of Foreign Direct Investment (FDI) in Madagascar reaching \$1.08 billion and \$0.65 billion respectively ([World Bank](#), n.d., 143). Gold and gemstone production restarted in 2012 with official gold production increasing 10-fold compared to 2008 levels and ruby production increasing by roughly 4.4 times 2008 production ([CSRM 2016](#), 14). However, it is difficult to know the exact production statistics due to the informal nature of the sector.

The industrial mining sector is an important part of the Malagasy economy, currently accounting for 95% of the country's mining revenues with the remaining 5% being related to the exploitation of precious stones (EITI 2019). The main large mining operations in exploitation phase in Madagascar are Ambatovy, located in the Eastern Madagascar and focusing on nickel and cobalt, QMM (a joint venture between the Malagasy Government and Rio Tinto) focusing on the exploitation of ilmenite in the South-East and Kraoma which has been exploiting chrome for more than 45 years. Additionally, a cement company (Holcim) and several graphite mining companies (Gallois, Graph Mada) exist (EITI 2019).

A reform of the mining code has been underway since 2015 and is mainly aimed at increasing mining taxation. Following the political transition, the granting of mining permits, including its renewal, has been suspended since 2011.<sup>vi</sup>

Since 2008, Madagascar is part of the Extractive Industries Transparency Initiative (EITI) which promotes good governance and transparency in mining revenues. In 2018, the EITI board recognized Madagascar as having made meaningful progress against the EITI standard. Highlights included the country's decision to go beyond the EITI minimum standards in disclosing exploration data, the publication of data on subnational payments, transfers and social expenditures which has enabled mayors in communes and regions to advocate for their statutory shares of extractive revenues. Madagascar also has made production and export data on the informal gold and precious stones sector available through EITI.<sup>vii</sup>

## ASM context and livelihoods

While official figures on employment are sparse, artisanal and small-scale mining is reported to be the second large job provider to people in Madagascar behind agriculture employing one million workers (MMP 2018). Participants in the ASM sector are classified primarily as permanent or migratory/rush participants. In both cases the sector provides the allure of increasing household incomes and alleviating poverty. It is estimated that between a third (MEEF, 15; Raharison 2010, 43) and as much as half of those working in ASM are women (Lawson 2018, 172). Women face a number of formal and informal barriers to participating in the sector such as lack of education and access to financial resources, along with cultural and religious constraints. Despite significant contributions to the Madagascar's economy and local livelihoods, artisanal mining has also been associated with considerable adverse impacts on health, safety, social harmony, the environment, taxation revenue, as well as corruption and illicit trade.

### EMPLOYMENT

The artisanal and small-scale mining (ASM) sector is an important source of income for rural populations but remains largely informal across Madagascar. It is therefore difficult to estimate both the jobs created by the sector and total production volumes. The 2014 mining policy estimates that one million people are employed in artisanal mining in Madagascar (Crawford and Nikièma 2015 citing 2014 Mining Policy). In 2011, the Ministry of Economy, Commerce, and Industry estimated that about 500,000 workers were involved in ASM, second only to agriculture (USGS 2015 citing Ministry of Economy, Commerce, and Industry, 2011). In 2015 an estimate of the Ministry of the Presidency in charge of Mines and Petroleum identified about one million workers working directly in the sector and it has been said to be the second largest provider of employment after agriculture in Madagascar (MMP 2018). The first published estimate of employment in the sector comes from the International Labour Organization (ILO) in 1999 in which 5,000-20,000 miners were believed to operate across 83 mines (ILO 1999, 5). By comparison, the industrial sector employed 12,500 people in 2012, according to the National Formal Employment Survey, representing 9% of the total workforce in the mining industry and about 2% of the total national workforce (CSRM 2016, 44). Large-scale mining markedly increased in the years 2005-2012 with the development of two large industrial mining projects (CSRM 2016). Most recent available data on employment in the industrial extractives sector comes from EITI's 2018 report and uses workforce declarations from reporting companies contributing to the National Social Security Fund (CNAPS) as a proxy for quantifying employment. In 2018, extractives companies had 11,928 employees affiliated with CNAPS, making up 1.82% of total employees affiliated with CNAPS. Companies who do not declare their workforce to CNAPS are not counted in this data.

Individuals participating in artisanal mining in Madagascar can be classified into two categories: permanent and migratory/rush. Permanent miners traditionally are found in areas of known mineral resources, often in proximity to formal large-scale operations or historically known deposits. In the middle west of Madagascar, there has been a long tradition of gold exploitation organized by villages or families using manual tools and in some cases cooperatives with partial mechanization (Pelon 2010). Rush/migratory mining can attract individuals from all over the country and rapidly occurs because of the discovery of

minerals, historically more common for rubies and sapphires rather than gold (MMP 2018). Both types of mining attract people seeking to improve their livelihoods and alleviate family poverty (Cartier 2009). A 2021 study explored the push and pull factors associated with ASM for rural people in the Alaotra region (Stoudmann et al. 2021). The need to increase household income by complementing agricultural activities was the strongest push factor along with the social pull factor of having friends or family that already participate in the sector (Stoudmann et al. 2021). In many cases, miners who have migrated do not have the opportunity to send the money they earn back home as remittances or to save it in other forms.

In terms of organization, miners work either individually or with their families (often seasonal mining), or in small mining enterprises sometimes linked to large mineral traders, or in cooperatives of dozens of workers holding together a mining permit and working jointly on the deposit. The most frequent organizational structure observed in the gemstone sector is that of an individual company (Raharison 2010 and Razafindrasata 2005). Organizational structures for artisanal gold miners vary. Some work as a collective of families and neighbors from the same district or as laborers working under a landowner or permit holder. The mining chief plays the role of coordinator of the mine site activities. From an organizational point of view, miners often lack the agency to act as a collective to address the challenges they face related to commercialization which include the presence of intermediary buyers who control pricing (MEEF 2018).

Most artisanal miners in Madagascar face barriers accessing traditional financing channels and are dependent on collectors to finance their activities (Raharison 2010, Randria Arson 2017). They have a little margin to bargain on the price of minerals as collectors commonly operate with fixed pricing schemes. In fact, although the price of minerals is influenced by factors such as transportation costs and the financial risk associated with certain types of stone as well as by the international market, its fluctuations also depend on local competition in terms of the number of buyers in the main cities and towns where the minerals are sold. (Cartier 2009, Canavesio 2006). These buyers are also organized in networks, such as in the case of sapphire mining, and decide on the price of minerals (Randria Arson 2017). Most of these transactions are informal and take place at legal counters owned by foreign - Thai, Sri Lankan and, to a lesser extent, West African - or local traders (Canavesio 2006). These transactions are carried out, in most cases, through middlemen who are more present when there is an abundance of miners and stones.

This unfavorable economic environment further impacts artisanal miners who lack the socio-economic infrastructures that would facilitate their mining activities. Local consumption and value-addition activities are very limited post mineral extraction. Most of the minerals produced by artisanal miners are exported and marketed either as raw materials or rough cut. As a result, export operations are largely under the control of foreign investors, mostly from Asia (Raharison 2010).

## **GENDER PARTICIPATION**

It is estimated that between a third (MEEF, 15; Raharison 2010, 43) and as much as half of those working in ASM are women (Lawson 2018, 172). By comparison, using on EITI reporting for industrial mining companies, women make up 12% of reported employment (672 out of 5,477) (EITI 2019, 210). Artisanal mining is essentially mobile in Madagascar, but it is noted that women are much less mobile than men. They migrate much less within regions, and they are also less likely to migrate within the various mining regions of the country (Canavesio 2013). While many women work in the mines, a very large number of migrant women are involved in associated activities, sometimes performing multiple roles. Most women generate income from informal business activities, which may be directly involved in the extractive



operations or provide auxiliary services at mine sites including small food, electronics, catering or textile stores ([Canavesio 2013](#)).

In Madagascar, women entrepreneurs generally experience the impact of institutional barriers both formal and informal. Formal barriers, such as lack of education and resources, make it difficult to obtain mining and business licenses, and collateral to finance activities while informal, such as cultural and religious constraints, prevent women from successfully participating in markets ([Lawson and Lahiri-Dutt 2019](#)). Male-dominated informal institutions (e.g., customary & religious authorities) often control access to resources and women who do not have a relationship with male miners because they are single, divorced or widowed, struggle to participate in the core mining activities. In some instances, women will marry miners in order to gain access to mining opportunities. Mine sites are typically portrayed as masculine frontiers where women ‘help the men’ ([Lawson 2018](#)). For example, it is rare to find women underground where the best stones are found. Instead they are relegated to sieving the residual ore or collecting waste left near shafts and mining areas, aptly called “pooh mining” in Malagasy. Women are said to be too weak to go underground, yet they spend much of their day operating in the water heavy-framed sieves ([Lawson and Lahiri-Dutt 2019](#)).

Women also tend to mix their gemstone activities with their family laundry working at rivers with alluvial deposits ([Lawson 2018](#)). This can further devalue their role in the sector and exacerbates their lack of recognition. Furthermore, it can negatively impact their earnings. As a result, they may also often not be included in any formal or informal census of ASM workers and thus often not taken into account by policy makers ([Eftimie et al. 2012](#)). Furthermore, there are no provisions or mentions of Women in the Mining Code and no dedicated efforts to strengthen their role and safety in the sector.

The Malagasy Labor code<sup>viii</sup>, however, imposes restrictions on women's night work in order to reduce their exposure to risk, but this may be an additional obstacle for women who wish to increase their income by working nights with men ([Crawford and Nikièma 2015](#)).

Women who operate as mineral traders also have limited access to finance or business support. They usually lack even the most basic tools, such as a reliable pair of scales or a loupe, and possess low basic financial and linguistic literacy. A strong positive factor for women gemstone traders is their ability to support each other; they rarely operate on their own. They may sell from individual stalls on the street, but they are more often seen sitting together on the street corner. They form small associations whose functions are not exclusively commercial, but also social and supportive ([Lawson and Lahiri-Dutt 2020](#)). In the gold sector, women do not tend to organize themselves into associations, as most provide ancillary services on the sites according to the needs defined by their spouses.

Women who trade gemstones are the ones who manage to derive the greatest benefit from mining activities. Indeed, they have a significantly better economic situation, as well as a very high level of independence. Their relative economic success is well accepted by the population, whereas this occupation, which depends on daily mobility, is not supported in the majority of the country because of its inadequacy with a more traditional family life ([Canavesio 2013](#)). Moreover, when they have a husband, their income gives them the opportunity to renegotiate their role in the relationship, as has been observed among the rural population of the Antananarivo region (Gastineau et al. 2010).

## LABOR, SAFETY AND WORKING CONDITIONS

Despite significant contributions to the Madagascar's economy and local livelihoods, artisanal mining has also been associated with considerable adverse impacts on health, safety, social harmony, the environment, taxation revenue, as well as corruption and illicit trade ([CSR 2016](#)).

ASM activities mainly involve deposits generally located in remote areas where basic infrastructure is sorely lacking ([Crawford and Nikièma 2015](#)). Despite considerable mineral wealth in mining areas and the many thousands of informal miners working there, local government struggles to regulate the sector. Artisanal miners are usually untrained and work under hazardous health and security conditions. The most relevant risks that they face are associated with shaft and tunnel mining although those working on surface pits are also at risk of landslides and rockfall ([Cook and Healy 2012](#)).

Cook and Healy ([2012](#)) report several health and safety issues facing miners at mine sites. Rock and soil collapse in large open pits, shafts and mining tunnels (techniques commonly used to access gemstones) are among the highest safety risks. Miners often work in very wet conditions, either underground, in pits, or by digging in rivers and ponds in search of gold or gemstones. They often work in holes more than 20 meters deep without proper materials, risking poor air supply and lung disease. These working conditions can cause death or serious accidents. Most mining sites do not have any form of sanitation in their initial stages. In the absence of any toilets or washing facilities, rivers are used for all sanitation and most drinking water (Ali et al. 2018). Microbiological pollution from mining activities also contaminates rivers affecting neighboring populations that use the waterway for personal hygiene ([Giudici et al. 2002](#)). Poor sanitation facilities and lack of clean water further expose miners to health problems such as epidemic and other diseases, including diarrhea, cholera and dengue fever, and increased exposure to malaria. Miners are also exposed to ergonomic problems due to lifting and carrying heavy objects and to dermatological problems caused by poor personal hygiene. However, the high informality of the sector does not allow for affiliation to the social protection system as deployed by the *Caisse Nationale de Prévoyance Sociale* (CNAPS); as a result, medical check-ups related to mining activities such as gold panning are not usually recorded in the health centers near the sites. The "hot money" earned during the rush can also lead to psychosocial problems for miners who take risks with fatalistic recklessness and easily indulge in gambling, excessive alcohol and cigarettes or exposure to Sexually Transmitted Diseases (STDs), such as HIV/AIDS ([Cook and Healy 2012](#)).

Artisanal miners usually work four or five days a week. They commonly perform their mining duties during the day although a considerable number of miners find it more productive to work exclusively at night when temperatures are milder ([Van der Wal 2019](#)). Mining income varies considerably depending on the location, ownership of the pit, production levels impacted by weather conditions, and the number of miners involved at a site ([Van der Wal 2019](#)). In the mica sector where individuals usually operate as teams or family units the average daily earnings can be as much as USD\$12.04 a day. However, these earnings may be reduced by as much as half if production volumes are lower than normal. Additionally, in cases where teams are not owners of the mines site, the miners share as much as half of the earnings with the owner which can reduce income to as little as USD\$3.01 ([Van der Wal 2019, 46](#)). In the mica sector the per adult income per day for collecting scrap mica ranges from \$0.27 to \$3.01 per adult ([Van der Wal 2019, 46](#)). Gold miners tend to earn more with most earning no less than USD\$5 per day and reaching up to USD\$10 per day during productive rushes (World Bank 2010).

Madagascar has signed and ratified international legislation on the protection of children against the worst forms of child labor and has adopted a national law to support these commitments (USDOL 2019). Yet, child labor remains a challenge in the country. According to the U.S. Department of Labor, about half of Malagasy children between the ages 5 and 17 were involved in child labor in 2018. Although far behind the agricultural sector, which accounts for 87% of child labor in the country, the mining sector, which is estimated to involve 86,000 children or 4% of the country's child labor force, remains considerable and deserves special attention (USDOL 2019). In the case of Artisanal and Small-Scale Gold Mining (ASGM), children's participation in mining may be due to the proximity of the mining sites to the communities. Compared to other mining activities, ASGM is operated more intermittently, with children working with their parents and miners combining ASM with subsistence agriculture. Involvement of children in ASGM impacts their education as it causes temporary absenteeism at school during rush periods (Ecoex 2003; [Cook and Healy 2012](#)). Child exploitation in the gold fields dates back to the late 1880s when the Merina government sought to prevent bankruptcy and grow its military in the face of the French intervention. Children were obliged to undertake heavy gold mining. ([Campbell 1988](#)) In the case of gemstone mining, children are less likely to be involved as the sector's activities tend to involve single young men at the exploration stage, after which families will arrive *en masse* as the rush stabilizes. This consolidation of the rush is usually accompanied by an influx of migrants providing services, one of which being the building of private schools as at Ilakaka, and Antetazambato (Ecoex 2003; [Cook and Healy 2012](#)). A 2019 report by SOMO and Terres des Hommes profiled concerns about child labour in Madagascar's mica sector (*see details in Mica, Key Minerals section*).

Under the GIZ-funded *Programme d'Appui à la Gestion de l'Environnement* (PAGE) (Conservation and sustainable use of natural resources), (GIZ 2020, 38), support has been given to Inter-Regional Directorate of Mines to design and implement a 'Health, Safety & Environment' manual for artisanal miners in the Atsimo-Andrefana region. A pilot mining group received training on the management of a mining association, the regulatory framework for mining, and social and environmental requirements for mining operations. Technical, financial and material support was also provided to mining and environmental associations for the rehabilitation and reforestation of abandoned mine sites in the region. Since 2016, roughly 40 hectares have been restored across four pilot sites and are serving as sites for grazing and other agricultural activities in Ankiliabo, Bekily, Anjanakaro and Tandandava. The project efforts have increased capacity and organization among miners in the Atsimo-Andrefana region leading to the creation of *Coopérative des groupements miniers du District de Sakaraha*.

## ENVIRONMENT

The environmental impacts of artisanal mining in Madagascar are considerable. Typically, miners establish their mining activities with little concern for environmental impact and without plans for remediation or restoration as they often lack knowledge about national environmental laws and policies and finances for remediation efforts (World Bank 2012).

Before undertaking mining activities, the Mining Code requires miners to obtain an environmental permit which is issued after review and approval of a site's environmental impact study and the public investigation report conducted by the environmental services. The legislation provides for two categories of environmental impact studies. The Environmental Impact Assessment (EIA) which is required for E (operating) permits and the Environmental Commitment Plan (ECP) required for R (Exploration) and PRE (Small Operations) permits<sup>ix</sup> ([Crawford and Nikièma 2015](#); [Mining Code 2005](#)). In the case of PRE, these

provisions are generally not enforced by the government, and ASM miners tend not to conduct such studies and not to rehabilitate the environment. In addition, artisanal miners in search of gold and gemstones pose an ongoing threat to current and planned protected areas. A 2007 study examined the overlap of mining concessions in relation to protected areas and found mining concession areas overlapped with 33% of surface area planned for protection in 2005 and 21% of areas planned for protection in 2006 ([Cardiff and Andriamanalina 2007](#)). Improved coordination at a governance level and between conservationist and economic actors is critical in order to achieve more sustainable regional development in Madagascar and resolve the competition over land use ([Andriamihaja et al. 2019](#)). The effects of unregulated mining on these protected areas can be significant as it hinders vegetation regeneration, favors invasive species and threatens biodiversity. Research on the impact of gold mining in Ranomafana National Park identified significant deforestation of a forested wetland area and the need for further research on bioaccumulation of heavy metals, habitat loss on endemic bird fauna and overall biodiversity monitoring ([Cabeza et al. 2019](#)). However, the impact of mining-induced deforestation is generally small compared to the impact of other illegal activities such as logging, subsistence farming, or wood exploitation. ([Crawford and Nikièma 2015](#), [Cook and Healy, 2012](#))

Prior to the 2010s, Madagascar did not record evidence of the use of mercury in ASGM. The use of mercury was brought by foreign operators who are believed to use an estimated 18.4 to 43,85 tons<sup>x</sup>. Madagascar does not officially import mercury<sup>xi</sup> making the quantity of mercury used by the sector difficult to estimate exhaustively. It is estimated a population of about 18,113 people (among which 23% of women and 25% of children) live in the *fokontany*<sup>xii</sup> surrounding mining sites and affected directly (contact) or indirectly (through contaminated water, air, and food) by the negative effects of mercury are ([MEEF 2018](#), 15). Madagascar signed the Minamata Convention on Mercury on October 10, 2013 and ratified it on May 13, 2015 to protect human health and the environment from the harmful effects of mercury.<sup>xiii</sup> In 2015, Decree No. 2015-1035, establishing the Gold Regime, prohibited in Article 22 the use of any chemical process in any gold mining activity in Madagascar.

Beyond mercury, artisanal mining also has additional impacts on water bodies. Where some miners use light machinery for dredging and excavation, generating large quantities of tailings there are high levels of water turbidity due to years of disturbance, both in the riverbed and further upstream. This can have devastating consequences for agriculture, as was the case in 2016 when heavy rains flooded residues in rice fields and duck farms. ([Ali et al. 2018](#)) In addition, aquatic ecosystems are significantly disrupted by the pollution of surface water resulting from the washing process of extracted soils ([Guidici 2002](#)). In some locales the washings of the ore has invaded rice fields. Mining also is a source of dust, especially in the dry season. It interferes everywhere, inhaled by minors, in homes near the site and causes nuisance, causing respiratory diseases ([MEEF 2018](#)).



## Key Minerals

Gold, gemstones and mica are the key minerals extracted by artisanal miners in Madagascar. Gemstones have been known to exist in Madagascar since the 16th century. However, the growth of their exploitation is recent, and gemstones such as sapphires, rubies, aquamarine, tourmaline, topaz, amethyst, and emeralds developed later than gold, with the real boom beginning in the early 1990s when the first sapphire rushes intensified. In 2016, Madagascar supplied 40% of the global market (EITI 2018, 31). Each mineral supply chain faces several challenges linked to their largely informal nature with environmental degradation, child labor and illegal mineral trafficking receiving national and international attention.

### GOLD

In 1886, the first documented gold concession was created near Maevatanana, in north-central Madagascar (Belleville 2008, cited by [Cook and Healy 2012](#)). This region remains the most important area for gold mining in the country ([Cook and Healy 2012](#), p.13).

Depending on the region, gold can be a seasonal activity that tends to take place during the three months of the rainy season. In the dry season, miners generally engage in agricultural activities such as rice cultivation. The 2018 National Action Plan to reduce and/or eliminate mercury in ASM produced a national estimate of 630,736 individuals involved as gold miners with 37% being women (233,372) and 20% being children (72,147) ([MEEF 2018](#), 15). The majority of the miners are male, with an age range of 25 to 30 years. Official ANOR (National Gold Agency) figures record 39,991 gold panners' cards and 2113 collectors' cards distributed as well as 9 approved commercial comptoirs spread over 186 communes between 2016 and 2017 ([MEEF 2018](#),15). A typical week for miners during their mining activities consists of four to five days of work, except in the case of particularly intense rush. According to a (2010) World Bank study, most miners will produce about 0.1g to 0.2g per day equivalent to about \$5 to \$10 which represented an important cash income for Malagasy miners in a country where 78.2 percent of the population lived below the national poverty line threshold of \$1.90 per day.<sup>xiv</sup>

Madagascar's official gold production data are updated annually, with an average of 12,000 kg from December 1990 to 2016. The data shows a peak in production in 1994 at 500,000 kg ([CEIC n.d.](#)) with the most recent EITI 2018 report recording official exported gold at 3,051.7 kg (EITI 2018). The reality is only a small portion of the gold produced and exported is officially reported. Official statistics give an incomplete picture of what remains a largely informal mining sector ([CSR 2016](#)). The 2018 National Action Plan to reduce and/or eliminate mercury in ASM estimated annual national production for local artisanal miners at 7,761,583 grams or 7.76 tons of gold while the annual production of foreign national operators (e.g. commonly Chinese) was estimated at a minimum of 6.2 tons of gold. Considering these two production systems (local and foreign), annual production in Madagascar is estimated at a minimum of 14 tons of gold ([MEEF 2018](#)). This estimate is largely considered high, as most estimates vary from 2 to 10 tonnes a year.

Smuggling is a key issue in ASGM as the cost and difficulties of regulatory compliance encourage miners to operate informally ([Cook and Healy 2012](#); [Crawford and Nikièma 2015](#)). This lack of formalization of the

sector hinders formal or informal collaboration between the gold miners themselves (lack of organization), between the gold miners and the administration (payment of taxes or rebates, training, assistance), between the gold miners and the collectors (setting of gold prices), and between the gold miners and the credit or microfinance institutions (MEEF 2018). In October 2020, the export of gold was suspended by the Ministry of Mines and Strategic Resources (MMSR) in order to address the illegal exploitation dominating the sector<sup>xv</sup>. In October 2019 and in December 2020, respectively 5.5 kg and 73.5 kg of illegally exported gold from Madagascar was seized in Mauritius and South Africa.<sup>xvi</sup>

## GEMSTONES

Gemstones have been known to exist in Madagascar since the 16th century. However, the growth of their exploitation is recent, and gemstones such as sapphires, rubies, aquamarine, tourmaline, topaz, amethyst, and emeralds developed later than gold, with the real boom beginning in the early 1990s when the first sapphire rushes intensified (Cook and Healy, 2012).

Sapphire mining makes up the majority of the value generated by gemstone mining activities in Madagascar. According to the 2016 EITI report, Madagascar supplied 40% of the sapphires on the global market (Extractive Industries Transparency Initiative Madagascar 2018, 31). The gemstone is mined in the south of the island, at Ilakaka, Manombe, Marosely, Sakara, and other locations since the late 1990s. A growing illegal market for the stones led the government to ban export of rough stones in 1999 and 2008 in order to increase government control over the illegal market (World Bank 2010). These decisions had a detrimental impact on gemstone production, although Madagascar's contribution to the global sapphire market remained significant (Cook and Healy 2012). Between 2012 and 2015, sapphire production increased drastically from 2,606 to 5,000 kilograms following the discovery of new deposits (USGS 2015, 26.4; Ministry of Economy and Planning, 2013, 55; PricewaterhouseCoopers Madagascar, 2016, 67). In 2013 artisanal miners produced 2,600 kilograms (2.8 tons) of sapphires, 100 kilograms (220 pounds) of rubies, and 150 kilograms (330 pounds) of emeralds, among other gemstones, according to the U.S. Geological Survey's most recent mineral report of Africa (USGS 2017, 1.16)

Rushes to gemstone sites are generally much larger than gold rushes, with miners converging on a site in the hope of making a fortune by finding a large stone, which is much less likely on alluvial gold sites (Crawford and Nikièma 2015). As with gold, the vast majority of gems exported from Madagascar are still informally mined and traded. It is believed that, in terms of volume, most stones are legally exported. However, it has been reported that foreign buyers tend not to declare the high value gems that are smuggled out (SDM, 2006). The increased opportunities for corruption and decreased enforcement have contributed to smuggling of average quality gems as well, with only low-quality stones being declared legally (Cook and Healy, 2012). One of the most prominent rushes occurred in the Ihorombe Region (Ilakaka) where after the discovery of alluvial sapphires in 1999 the small village populations ballooned to over 60,000 by 2005. It was estimated that USD\$4 million dollars' worth of stones changed hands daily in 2001 in 'an informal and illegal economy which is populated by gem dealers, criminal organizations, protection racketeers, miners and individuals in the Malagasy elite' (Duffy 2007, 197). According to Transparency International, artisanal sapphire mining may be linked to illegal gun trade because willing buyers, particularly Sri Lankans, have been found to offer gifts of cars or weapons to traders, increasing the risk of insecurity in the region (Transparency International 2018).

## MICA

Mica deposits are concentrated in southern Madagascar with the first deposits thought to have been discovered by the French in 1912. In southern Madagascar most of the known deposits are found in three regions: Ihorombe (16 deposits); Androy (34 deposits); and Anosy (123 deposits) ([Van der Wal 2019](#)).

In 2019, Madagascar was the second largest exporter of mica worldwide accounting for about 32 percent of the global trade. In 2019, of the 13,365 tons of mica exported, the country earned US\$ 2.6 million ([WITS 2019](#)). This is down from the 17,752 tons produced in 2018. While mica trade from Madagascar is still very modest compared to other commodities the country exports, trade has increased dramatically since 2008 when exports were at only US\$ 0.6 million.<sup>xvii</sup> China is by far the most important trading partner for the mica sector in Madagascar with China representing 95 percent of all mica exports in volume and 91 percent in value ([WITS 2019](#)). Other important destination countries for mica exports are Japan and India.

Most mica mining activities take place in periods outside the rainy season when there is enough water for agriculture. During the rainy season, mining sites, pits and tunnels also become less accessible, and some are even forced to close. Based on the volume exported annually and estimates of productivity per miner per year, there are probably at least 20,000 people involved in mica extraction, about 20% of whom are women ([Van der Wal 2019](#), 24; Stapper 2019), and 2,000 individuals are involved as sorters ([Vander de Wal 2019](#), 62).

Although illicit export flows of mica such as those reported for sapphire are not believed to occur, mica may be exported from areas outside the jurisdiction of the regional office and not all exports within the administrative region are adequately recorded. In fact, there is a discrepancy between the figures exported by Malagasy Customs, the Ministry of Mines and Strategic Resources, and Chinese Customs ([Van der Wal 2019](#)). In 2017, for example, Malagasy Customs reported 34,817 tons, compared to 27,252 tons for the Ministry and 23,153 tons for China Customs (UN Comtrade cited by [Van der Wal 2019](#)). These export figures are about 30 times higher than in 2008, although export revenues have not increased proportionately. Export revenues for mica are only about 11 times higher than in 2008. In fact, during the same period (2008 to 2017), the price per metric ton in Madagascar has decreased from US\$ 482 to \$186, while the price of mica from India, the world's leading mica exporter by value, has continued to rise. Consequently, the pronounced growth of Madagascar's mica exports is accompanied by a lower market price. In the context of growing global demand for mica, it is possible to reverse the downward trend in prices in Madagascar ([Van der Wal 2019](#)). There are three main companies that exploit mica in Madagascar: Société des Mines d'Ampanrandava (SOMIDA), Groupe Kaleta and Exploitation Minière Delorme (SMDA). SOMIDA has the monopoly of production, with a production averaging one thousand tonnes per year ([Raharison 2010](#)).

Mica mining in Madagascar received international attention in 2019 following a report on child labor in the sector by the Centre for Research on Multinational Corporations (SOMO) and Terre des Hommes Netherlands. Mica mining most commonly is performed by families working as a unit and involves the entire household with children being present on sites in some instances. Children's presence at mine sites exposes them to the same harsh working conditions and risks faced by adults (e.g., exposure to fine particulate matter, repetitive movement, lifting of heavy loads, open pits, landslides, imploding mines). Families participation in the sector is primarily poverty driven to supplement income during the dry season when agriculture is not providing income or food security ([Van der Wal 2019](#)). working to meet daily food needs. The study found daily incomes for adults in the sector varied between US\$ 0.27 (collecting scrap mica) to US\$ 30.01 (mining) while the cost of feeding a family of nine in the region was at least US\$ 0.91

per day ([Van der Wal 2019](#), 62). In 2021, the United States Department of Labor (USDOL) awarded US\$ 4.5 million to the United Nations Development Programme to provide direct educational services to children and livelihood services to families to build resilience of vulnerable families in mica-producing communities. The project also intends to build capacity of government officials to address child labor in the mica supply chain and increase engagement of NGOs in the sector.<sup>xviii</sup>



## Development & Economic Indicators

Madagascar is a large island nation located in the Indian Ocean rich in natural resources and biodiversity. Officially becoming a constitutional democracy in 1992, reoccurring political crises have significantly impacted the country's economic growth and its translation of its natural capital into national development. Growth has accelerated in recent years as the political situation has stabilized, but challenges remain in the areas of corruption, weak legal institutions, and appropriate legislation. The ASM sector has the potential to generate more income and contribute to poverty reduction in rural areas. However, if appropriate measures are not taken, it can also continue to exacerbate environmental degradation, social and health hazards, and pollution. Data and information exist to demonstrate the contribution of ASM to the achievement of SDGs 1, 2, 3, 4, 5, 6, 8, 15, 17 in Madagascar, including poverty reduction, gender equality, and revitalized partnerships. Ongoing formalization efforts can help reduce the challenges the sector still faces and enhance its contribution to local and national socio-economic development.

### GENERAL DEVELOPMENT & ECONOMIC CONTEXT

The Republic of Madagascar is the world's fifth largest island located in the Indian Ocean, approximately 400 kilometers off the coast of East Africa. The country is a biodiversity hotspot with a unique wildlife and diverse ecosystems. Its natural resources include a variety of agricultural, mineral, fishing and forestry products. Main exports products include vanilla bean, nickel, gold, precious stones, and clothing.<sup>xix</sup>

Despite its abundant resources, Madagascar still struggles to channel its trade revenues into a sound engine for development. In fact, although the country has officially been governed as a constitutional democracy since 1992, it has had recurrent political crises which have greatly disturbed its economic growth. The country belongs to the group of least developed countries, according to the United Nations.<sup>xx</sup>

Prior to the COVID-19 pandemic, Madagascar was on an upward growth trajectory. Following a prolonged period of political instability and economic stagnation, growth accelerated over the last five years to reach an estimated 4.8% in 2019, its fastest pace in over a decade. Madagascar's GDP in 2019 was estimated at US\$14.12 billion, with a per capita GDP of \$523.36. The island has structural brakes remaining in the development of the economy: corruption and the shackles of the public administration, lack of legal certainty, and backwardness of land legislation. Its population is among the poorest in the world, with 77.4 percent of the population living below the national poverty line threshold of \$1.90 per day<sup>xxi</sup>, significantly higher than the sub-Saharan Africa average of 40%.

The UN Human Development Index is 0.528, ranking the country 164th out of 189 in 2019. The country has the world's fifth highest number of out-of-school children (22% total population),<sup>xxii</sup> half of the children under the age of five suffer from stunting, and, at only 13 percent, the rate of access to electricity is one of the lowest globally.<sup>xxiii</sup> Madagascar is performing well in terms of gender equality, ranking 4th out of 54 African countries according to the Ibrahim Index of African Governance with a score of 75.7 points out of 100 in the 2016 report. ([AFDB 2017](#))

Climate change aggravates the poverty experienced by Madagascar’s population as they face the increased threat of natural disasters. The impact of these natural disasters is made more severe by continuous environmental degradation as a result of deforestation, soil erosion and urbanization.



Ecotourism and agriculture, paired with greater investments in education, health, and private enterprise, are key elements of Madagascar's development strategy. Several major projects are underway in the mining, oil and gas sectors that are anticipated to give a significant boost to the Malagasy economy. The significant contribution to GDP by large-scale mining development in Madagascar can be understood in relative terms to other sectors. Total mining GDP is forecast to be 110 percent of industry GDP, 46 percent of agriculture GDP, and 35 percent of services GDP in 2025 (Weldegiorgis 2018).

**ASM LINKAGES TO DEVELOPMENT INDICATORS**

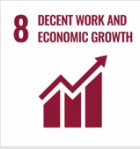

While artisanal mining has contributed significantly to the local economy and livelihoods in Madagascar, it has also been associated with numerous adverse impacts on miners and their communities. Therefore, the impact of ASM on SDGs is mixed as it is both positive and negative, The Data and information exist to demonstrate the sector's contribution to the achievement of SDGs 1, 2, 5, 8, 17 including poverty reduction, employment, and revitalization of partnerships. Major challenges include its adverse impact on the environment, health and education of children. Formalization efforts can further leverage ASM's contribution to the social and economic development of the Madagascar and enable the sector to continue to provide the world with minerals produced under acceptable labor and human rights conditions.

The table/figure below shows examples of linkages between ASM and SDGs in Madagascar.

**Table 1: ASM linkages to Sustainable Development Goals**

 <p><i>End poverty in all its forms everywhere</i></p>	<ul style="list-style-type: none"> <li>o Southern Madagascar is one of the poorest regions in the country and falls below average on a number of development indicators such as poverty, health and education. The country’s south is also where most of the mica and gemstones mining takes place. (<a href="#">Van der Wal 2019</a>)</li> <li>o According to a 2010 World Bank study, most gold miners earned about \$5 to \$10 which represented an important cash income for miners in a country where 78.2 percent of the population lived below the national poverty line threshold of \$1.90 per day<sup>xxiv</sup>.</li> <li>o 87% of the workers in the ASM sector earn less than \$2 a day and depend mainly on pre-financing from intermediaries to work in the sector (MMP 2018).</li> <li>o In the mica sector, the average income per day can range from 0.27 to 3.01\$.</li> </ul>
 <p><i>End hunger, achieve food security and improved nutrition and promote sustainable agriculture</i></p>	<ul style="list-style-type: none"> <li>o Roughly half of the communities in the south are in a state of urgent food insecurity<sup>xxv</sup>. ASM activity provides miners with relatively sufficient income to feed their families.</li> <li>o ASM is mainly a seasonal activity in Madagascar, complementary to agriculture. When miners cannot carry out mining activities during a particular season, they engage in agriculture. This allows them to earn money throughout the year and provide for their families.</li> <li>o When it is not properly carried out, mining has a negative impact on the environment through soil and forest degradation, which indirectly affects farmers' livelihoods and yields.</li> <li>o Mining also has a direct impact on agriculture, as many male farmers try their luck in search of gemstones, resulting in a decrease in the number of people working in</li> </ul>

	<p>the fields and thus a decrease in the agricultural products available on the market. But it can also lead to increased investment in agricultural activities by providing more opportunities for farmers to earn additional income. (<a href="#">Stouddman et al 2016</a>)</p>
 <p><b>3</b> GOOD HEALTH AND WELL-BEING</p> <p><i>Ensure healthy lives and promote well-being for all at all ages</i></p>	<ul style="list-style-type: none"> <li>○ Key health and safety issues observed in mining sites are accidents, physical issues, psychosocial problems, sanitary issues and biological hazards (<a href="#">Cook and Healy 2012</a>).</li> <li>○ Most sites do not have any form of sanitation in their initial stages. In the absence of any toilets or washing facilities, the river is used for all sanitation and most drinking water (Lawson in Ali et Al 2018).</li> </ul>
 <p><b>6</b> CLEAN WATER AND SANITATION</p> <p><i>Ensure availability and sustainable management of water and sanitation for all</i></p>	<ul style="list-style-type: none"> <li>○ Microbiological pollution from mining site including human waste, siltation, and mercury contaminates rivers affecting neighboring populations that use watercourse for personal hygiene (<a href="#">Giudici 2002</a>).</li> <li>○ During rushes for those who do not find gold and stones, malnutrition is a serious risk. Rushes also create precarious living situations where a lack of sanitation options and high density can lead to outbreaks like cholera and diphtheria (Cook and Healy 2012).</li> </ul>
 <p><b>15</b> LIFE ON LAND</p> <p><i>Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</i></p>	<ul style="list-style-type: none"> <li>○ Prostitution of young women and the incidence of Sexually Transmitted Diseases, especially HIV/AIDS, in mining communities are an additional conjunctural issue of ASM. (<a href="#">Cook and Healy 2012</a>).</li> <li>○ The environmental effects of artisanal mining in Madagascar are considerable. Miners establish their mining activities with little concern for environmental impact and without plans for clean-up or restoration as they lack knowledge about national environmental laws, policies and the effects of their operations on the environment (World Bank, 2012).</li> <li>○ Foreign operators are believed to use an estimated 18.4 to 43,85 tons<sup>xxvi</sup> of mercury with an Hg/Au of 3 per year. Fokontany<sup>xxvii</sup> surrounding mining sites and affected directly (contact) or indirectly (through contaminated water, air, and food) by the negative effects of mercury are estimated to cover a population of about 18,113 people (among which 23% of women and 25% of children) live (<a href="#">MEEF 2018</a>, 15). Madagascar does not officially import mercury,<sup>xxviii</sup> therefore, the import of mercury used by foreigners is illegal and impossible to quantify exhaustively.</li> </ul>
 <p><b>4</b> QUALITY EDUCATION</p> <p><i>Obtaining Quality Education is the foundation to improve people's lives and Sustainable Development</i></p>	<ul style="list-style-type: none"> <li>○ In provinces where mica is mined, in the south, roughly a third of the children only finish primary school whereas three in four children nationally go on to finish primary education (<a href="#">Van der Wal 2019</a>, 17)</li> <li>○ The attractiveness of becoming wealthy very fast pushes certain youngsters to drop out of school to work in the mines, often without their parents' consent, (<a href="#">Stouddman et al 2016</a>)</li> <li>○ Involvement of children in ASGM impacts their study as it causes temporary absenteeism at school during rush (Ecoex 2003, <a href="#">Cook and Healy, 2012</a>).</li> <li>○ Children are less likely to be involved in the gemstone ASM activities that tend to involve single young men at the earlier stages (Ecoex, 2003, <a href="#">Cook and Healy, 2012</a>).</li> </ul>
 <p><b>5</b> GENDER EQUALITY</p> <p><i>Achieve gender equality and empower all women and girls</i></p>	<ul style="list-style-type: none"> <li>○ It is estimated that between a third (<a href="#">MEEF</a>, 15; <a href="#">Raharison 2010</a>, 43) and a half of those working in ASM are women (Lawson 2018, 172)</li> <li>○ Madagascar, women entrepreneurs generally experience the impact of institutional barriers both formal and informal. Formal barriers, such as lack of education and resources, make it difficult to obtain mining and business licenses, and collateral to finance activities while informal, such as cultural and religious constraints, prevent women from successfully participating in markets (<a href="#">Lawson and Lahiri-Dutt 2019</a>). Male-dominated informal institutions (e.g. s customary and religious organizations) often control access to resources and women who do not have a relationship with male miners because they are single, divorced or widowed, struggle to participate in the core mining activities. In some instances, women will marry miners in order to</li> </ul>

	<p>gain access to mining opportunities. Mine sites are typically portrayed as masculine frontiers where women ‘help the men’ (<a href="#">Lawson 2018</a>).</p> <ul style="list-style-type: none"> <li>o Women who operate as mineral traders also have limited access to finance or business support. They usually lack even the most basic tools, such as a reliable pair of scales or a loupe, and possess low basic financial and linguistic literacy.</li> <li>o Women who trade gemstones are the ones who manage to derive the greatest benefit from mining activities. Indeed, they have a significantly better economic situation, as well as a very high level of independence, while benefiting from the benevolence and recognition of all migrants. Their relative economic success is well accepted by the population of the pioneer fronts, whereas this way of life, which depends on daily mobility - and which is part of a broader migratory path - is strongly disapproved of in the rest of the country because of its inadequacy with a more traditional family life (<a href="#">Canavesio 2013</a>). Moreover, when they have a husband, their income gives them the opportunity to renegotiate their place in the couple, as has been observed among the rural population of the Antananarivo region (Gastineau et al., 2010).</li> </ul>
 <p><i>Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all</i></p>	<ul style="list-style-type: none"> <li>o In 2011, the Ministry of Economy, Commerce, and Industry estimated that the ASM sector employs about 500,000 individuals, a far higher figure than those employed in agriculture and much higher than those employed in industrial mining. The first published estimate of employment in the sector comes from the International Labour Organization (ILO) in 1999 in which 5,000-20,000 miners were believed to operate across 83 mines (<a href="#">ILO 1999</a>, 5).</li> <li>o The government's limited capacity to collect taxes and royalties from the artisanal and small-scale mining sector represents a significant loss of revenue for the state.</li> <li>o Small-scale mining activities are not a source of national wealth; they contribute mainly to the subsistence of the people who occupy them. (<a href="#">Raharison 2010</a>)</li> </ul>
 <p><i>Revitalize the global partnership for sustainable development.</i></p>	<ul style="list-style-type: none"> <li>o World Bank funded <a href="#">Mineral Resource Governance Project</a></li> <li>o GIZ funded <a href="#">Programme d'Appui à la Gestion de l'Environnement (PAGE)</a> (Conservation and sustainable use of natural resources) – 2015 to 2020</li> <li>o US Department of Labor funded <a href="#">Child Labor Project with UNDP partnership</a></li> </ul>

Sources: Multiple sources, referenced in line.

## Mineral Governance Framework and ASM Formalization

Madagascar's mining sector has been formally governed since 1896 through various mining codes with the most recent reform efforts begun in 2015 aiming to increasing mining taxation and contribution to the national development. Artisanal and small-scale mining is recognized by the current mining code with specialized permits for operators in the sector. However, there remains limited uptake among operators in the sector with informality prevailing as associated costs and accessibility of licensing permits remain primary barriers. The Sustainable Development Strategy for Artisanal and Small-Scale Mining, launched in 2018, seeks to address the sector's informality and improve its contribution to national development through better national and regional governance, improved environmental management and the responsible use of resources in the sector (MMP 2018, 11-12).

### MINING STRATIFICATION

Mining in Madagascar is regulated by Law n°99-022 of 19 August 1999 on the mining code modified by Law n°2005-021 of 27 July 2005 and reinforced by Ordinance n°2019-09. There were five previous texts that have governed the mining sector since 1896 but that had not achieved the objectives set, notably the contribution of the mining sector to the Gross National Product and the economy in general. The Mining Code was then introduced in order to modernize and simplify the regime of the mining sector. It called for the financial participation of mining operators through mining administration fees and covers several aspects including the mining permit regime (simplification and improvement of the management of mining permits), mining infractions, and the new roles of the Administration in the sector, particularly the application of legal and regulatory provisions in mining and environmental matters (Chambre des Mines Madagascar 2014). A reform of the mining code has been underway since 2015 and is mainly aimed at increasing mining taxation. However, concerns have been raised as to new regulations may impact Madagascar's competitiveness as a preferred destination for foreign direct investment (RFI 2020). The granting of new mining permits and renewals has also been suspended since 2011, increasing the risk of illegal trafficking of mineral resources.

Beside the mining code, there are other texts on special regimes:

- Law n°2001-031 of 08 October 2002, modified by Law n°2005-022 of 02 August 2005 on Large Mining Investments. To date, only the Ambatovy Project is eligible to this text which establishes a special regime for investments in excess of 50 billion Ariary (about US\$ 13 million) and addresses tax, customs and exchange rate issues (EITI 2019).
- The MECIE (*Mise En Compatibilité des Investissements avec Environnement* or making investments compatible with the environment) Decree established by Decree No. 99-954 dated December 15, 1999 and amended by Decree N° 2004-167 defines the obligations of the investor to carry out an Environmental Impact Assessment (EIA). This decree stipulates that private or public mining projects that could compromise the balance of the Malagasy ecosystem must be the subject of an impact study; either an EIA or an Environmental Commitment Program, *Programme d'Engagement Environnemental* (PREE) (Chambre des Mines Madagascar 2014).



Since 2000, any occupation of a mining square requires an application for a mining permit, which is addressed to the *Bureau du Cadastre Minier de Madagascar* (BCMM), the Mining Cadastre of Madagascar. For the gold value chain, the *Agence Nationale de l'Or (ANOR)*, the Gold Agency, is an additional state agency that delivers ASM cards and other agreements for *comptoirs* (mineral buying houses) and operates independently of the BCMM.

According to the mining code, there are four types of permits offered to miners:

- **R Permit or Research Permit " *Permis de Recherche* "** confers on its holder, within its perimeter and during its period of validity, the exclusive right to prospect and search for the substance(s) for which the permit was granted. The term of validity for a research permit is 5 years, renewable twice for a period of three years each time. The total area covered by the Permit R that one can hold is 10,000 km<sup>2</sup>. The holder of an R permit has the right of priority to apply for a mining permit.
- **E Permit or Mining Permit " *Permis d'Exploitation* "** confers to its holder within its perimeter and during its period of validity, the exclusive right to exploit the substance or substances covered by the permit, as well as to continue prospecting and research of said substances. The term of validity of the Exploitation Permit is forty years. It is renewable once or several times for a period of twenty years for each renewal. The total area covered by the E Permit that one can hold is 1,000 km<sup>2</sup>.
- **PRE Permit or Permit Reserved for the Small Operator " *Permis Reservé aux Petits Exploitants* "** reserved for the ASM, gives the holder the exclusive right to prospect, research and exploit the substance(s) for which the permit was issued within the perimeter covered by the permit and during its validity. The term of validity of the Exploration and Exploitation Permit for small operators is eight years. It is renewable once or several times for a period of four years for each renewal. The total area covered by the E Permit that one can hold is 100 km<sup>2</sup>.
- **AERP or Exclusive Authorization for Perimeter *Reservation Autorisations Exclusives de Réserve du Périmètre*** which confers to its beneficiary, the exclusive right to prospect and then apply for a mining permit, if applicable, in order to research and/or exploitation concerning one or more squares of the perimeter covered by the authorization.

Before undertaking mining activities, the Mining Code requires miners to obtain an environmental permit which is issued after review and approval of a site's environmental impact study and the public investigation report conducted by the environmental services. The legislation provides for two categories of environmental impact studies. The Environmental Impact Assessment (EIA) which is required for E permits and the Environmental Commitment Plan (ECP) required for R and PRE (Small-Scale Mining) permits.

In Madagascar, "Small-scale or artisanal mining" refers to any open-pit or underground mining operation to a depth to be determined by regulation according to the nature of the work. The operators must use artisanal techniques for extraction and not process minerals on site. Groups of small-scale miners and groups of gold panners are classified in this category regardless of the number of their members. Small-scale miners can work under a mining permit such as a Smallholder Exploration and Mining Permit (PRE) ([Chambre des Mines Madagascar 2014](#)).

Raharison (2010) classifies ASM activities in Madagascar into five types as described in the table below individual scraping , mining unit, informal cooperative, informal enterprise and small mechanized mine.

**Table 2: Types of ASM in Madagascar**

Type	Number of workers	Investment in \$US	Funding model	Materials mined	Mining Methods	Trading
Individual scraping	1	10	Worker's own resources	Pegmatite minerals (beryl, tourmaline)	Excavation less than 6 m deep, diameter 0.6 to 2m	Individual
Mining unit	2 – 6	15 – 20	Workers' or buyers' resources	Gold, ruby, sapphire, fine or ornamental stones, fossils, mineralogical collections	Wells up to 10 m deep or open pit quarry	Individual or collective
Informal cooperative	6 – 30	125 – 250	Workers' or buyers' resources	Pegmatite minerals (beryl, tourmaline, quartz, ...), ruby, sapphire, gold	Pits with 10 m sides and 20 to 25 m depth or cut face up to 50 m	Collective
Informal enterprise	6 – 60	250 – 1250	Promoter's resources	Gold, ruby, sapphire, garnet, emerald, labradorite	Trench, stepped pit or cut face	Collective
Mechanized mine	6 – 60	250k – 2,000k	Promoter's resources	Ruby, sapphire, emerald, gold, building materials, industrial minerals	Open pit mining	Collective

Source : Newsletter of former trainees of the study center of raw materials, 2004, cited by [Raharison 2010](#)

### MINING FORMALIZATION REGULATIONS (ASM FOCUS)

While Madagascar's mining regulatory framework recognizes the ASM sector and makes permitting available, there remains limited uptake among operators in the sector and largely the sector operates informally. Accessibility and costs of permitting along with the administrative steps required to apply for a permit are the primary deterrents for ASMs. Corruption also remains an issue facing the sector and the country more broadly.<sup>xxix</sup> A detailed study by Transparency International (2017) highlighted the varying actors along the value chain (e.g., senior officials, central administrators, local authorities, foreign and national operators) and forms of corruption and interactions that impact permitting, payments, and in some instances human rights ([Randria Arson 2017](#)).

Though the ASM sector remains largely informal, there is a national strategy to formalize it and the government has made several notable interventions historically concerning the management of the sector. In 1999 the issuing of new permits for ruby and sapphire mining was halted by the government. The ban's intention was to reassert control over the sector in light of the large rushes that were taking place in the sector (e.g., Ilakaka). However, the ban on new permits pushed the sector further towards informality as smuggling of gems increased and the informal sale of existing 'laissez-passer' from permit holders in order to export gemstones. Once the ban was lifted in 2004, sapphire exports rose to US\$30 million by 2006 (Cook and Healy 2012, 21). Again in 2008 to 2009, a state intervention, this time a ban on the export of raw gemstones, had largely counterproductive impacts negatively on the sector. The intentions of the ban enacted by Presidential decree are not entirely clear as discussed in detail by Cook and Healy (2012, 21). Potentially intended to encourage foreign gemstone buyers to open cutting factories in Madagascar or in

response to the costly export of a 560kg rock covered with emeralds, the ban drove legitimate foreign buyers out of the market and sent export further underground informally (Cook and Healy 2012, 21).

A 2015 assessment by the IGF using the Mining Policy Framework to evaluate Madagascar's legislative, policy and administrative frameworks provided recommendations intended to strengthen the health, safety and quality of life of artisanal miners who work informally outside the legal framework, and to improve the sector's contribution to sustainable development (Crawford and Nikièma 2015, 8).

- Integration of artisanal mining into the legal system through appropriate legal frameworks, technical support and legalization strategies.
- Integration of artisanal mining into the formal economic system through the promotion of savings and investment, transparent and appropriate revenue policies, certification programs, and greater collaboration with the mines.
- Reduction of the social and environmental impact of artisanal mining operations through the provision of technical training, compliance with minimum health and safety standards, elimination of child labor, promotion of the role of women and their safety in artisanal mining, and implementation of rural development and employment generation policies to promote alternative livelihoods.

Most recently in 2018, the Ministry of Mines and Petroleum have detailed the *Stratégie de Développement Durable de l'Exploitation Minière Artisanale et à Petite Echelle* (SDDEMAPE), Sustainable Development Strategy for Artisanal and Small-Scale Mining. The strategy attributes the sector's informality to historical drivers (lack of collaboration between local and national actors, lack of human and financial resources at the local administrative level to manage sector) as well as the present and future reality of climate change which has increased droughts making agricultural activities even more challenging and forcing agricultural workers to seek out alternative livelihoods like ASM. The SDDEMAPE seeks to ensure the ASM sector's contribution to sustainable development in Madagascar through better national and regional governance, improved environmental management and responsible use of resources in the sector (MMP 2018, 11-12). The implementation of the strategy involves a five-year plan targeting 10 priority intervention geographic areas inclusive of all minerals supply chains with ASMs with a special focus on precious stones. Overall, the strategy is based on four guiding principles, three policy axes and three strategic axes. (MMP 2018, 13-15). The policy axes include the allocation of rebates and royalties to support the management of the ASM sector along with the adoption of a supply chain standard to promote traceability and national certification (e.g. a 'Fairmined Malagasy' label). The strategy is being piloted by the National Governance Committee chaired by the Director General in charge of Mines. The most recently available update on the implementation comes from the 2018 Reconciliation Report to EITI for Madagascar in which the new government is noted to be reviewing the strategy to integrate it into the new *Politique Générale de l'Etat* (General State Policy) based on the *l'Initiative Emergence pour Madagascar* (Emergence Initiative for Madagascar) (EITI 2019, 216).

#### **GOVERNMENT PRIORITIES & KEY TOPIC AREAS**

The current Malagasy mining strategy have been established to accelerate the sector's contribution to national development. It is mostly oriented toward promoting large-scale mining operations and is based on three major principles: transparency and good governance, stability of the legal and fiscal framework and the security of investments, and environmental protection ([Chambre des Mines Madagascar 2014](#)).

**Mining Code Reform:** In regulating the mining sector, the Ministry of Mines and Strategic Resources and the BCMM have paid special attention to maximization of state revenues, community development, proper management and rehabilitation of the environment, promotion of the supply of local goods and services, creation of jobs and valorization of national skills, proper governance of the mining sector, and a policy of first come, first served with respect to the grant of mining permits. However, since 2010, the grant of new mining permits has been suspended. Separately, revisions to the Mining Code are being considered after a failed attempt to introduce a new mining code in 2019. Reform of the Mining Code was made a top priority by President Rajoelina when he assumed office in January 2019. Mining projects have not delivered on expected outcomes in terms of government revenue and local content contributions with the mining sector's outdated tax policies, governance shortcomings and global commodity price fluctuations being contributing factors. The current international and national context relating to COVID-19 has delay such reforms, but still remains a priority for the government.<sup>xxx</sup>

**Institutional Strengthening:** Through institutional strengthening the government aims to improve governance and participation of all stakeholders in the ASM sector. First by improving local governance authorities through decentralizing technical service provision and developing governance tools adapted for each regional context. Secondly by promoting cross-sectoral governance that establishes financing mechanisms for ASMs, creates a platform for inter-institutional communication and planning, and updates institutional roles and responsibilities. Finally, through capacity development of all government stakeholders to better manage and implement the SDDEMAPE (MMP 2018)

**Rational Management of ASM:** The Rational Management of the Artisanal Mining Sector is aimed at the main stakeholders in the sector (artisanal miners and traders) in order to professionalize their operations and achieve a mutually beneficial operating environment for miners, traders, government and local communities. To achieve this, the government intends to updating ASM's management structures (legislative frameworks, mining information systems) and build capacity among artisanal miners through formation of cooperatives, formalization of operations and development of a national 'Fairmined Malagasy' standard (MMP 2018).

**Rush Management:** Mining rushes are characterized by a sudden increase in activity at a mining site often involving the discovery of a mineral body that brings an influx of individuals to exploit the site. According to the Ministry in 2017, 23 major rush sites were observed, resulting in the displacement of approximately 50,000 people (MMP 2018, 15). Commonly rushes are associated with high-value minerals such as gold, precious stones and gemstones, and bring a host of associated immediate and longer term social and environmental problems for local communities (Walsh 2012). The Ministry seeks to implement preventative measures and effective management strategies to be responsive to rush situations. This includes development of tools for rush management and prevention along with identification of specific funding prevent and respond to rush events (MMP 2018, 15-16).

## GOVERNMENT INSTITUTIONS

The main actors involved in the management of the extractive sector are set out in Decree 2019-065, which defines the powers of the Minister of Mines and Strategic Resources, as well as the general organization of this ministry.

The **Ministry of Mines and Strategic Resources** defines and implements the strategy and policies of the sector under two national directorates: The *Direction Générale des Mines (DGM)*, **General Directorate of**

**Mines**, in charge of the administration, promotion and evaluation of mining activities and the *Direction Générale des Ressources Stratégiques (DGRS)*, the **Generale Directorate of Strategic Resources**, that oversees the administration, promotion and supervision of gas and oil activities ([EITI 2019](#)).

The Ministry of Mines and Strategic Resources collaborates closely with several technical agencies:

- *Office des Mines Nationales et des Industries Stratégiques (OMNIS)*, **Office of National Mines and Strategic Industries** is in charge of promotion of geological data and implementation of the national oil policy
- *Bureau du Cadastre Minier de Madagascar (BCMM)*, **Madagascar Mining Cadastre Office** manages the granting of mining licenses.
- *Agence National de l'Or (ANOR)*, **National Gold Agency** oversees gold-related activities. It is in charge of granting mining permits and formalizing the sector.
- *Institut de Gemmologie de Madagascar (IGM)*, **Malagasy Institute of Gemology** serves as the leading sources of knowledge and education in gemstones
- *Laboratoire National des Industries Extractives*, **National Laboratory of Extractive Industries**, oversees the quality of mining products and ensure that they respond to some standards.
- *Base de Données de Gouvernance des Recources Minerales (BPGRM)*, **Mining Resources Governance Database** has also been established. BPGRM carries out a national geological study and the information collected is used to maintain a geological mapping of Madagascar and a rich and reliable geoscientific database.

While the Ministry of Strategic Resources has a commission for the management of large-scale mining investments, there is no similar one for the artisanal sector (with the exception of the Gold Agency) ([Crawford and Nikièma 2015](#))

Governance of the mining sector in Madagascar is difficult given the limited capacity, resources and personnel of the Ministry to enforce applicable laws and regulations ([Van der Wal 2019](#)). The regional and territorial authorities are lacking the means (structures and infrastructure), skills (lack of understanding of the texts), and resolve to enforce the legislative and regulatory texts, leaving foreign and national operators free to operate without always observing the law, for example by using mercury or by not complying with environmental regulations. Some authorities are themselves involved in the mining business, undermining their main function as they are both judge and party ([MEEF 2018](#)).

#### **ASM ASSOCIATIONS AND ALLIANCES**

The Ministry of Mines and Strategic Resources promotes the creation of mining associations, but it does not always offer technical or financial support. This makes it difficult for associations to be sustainable. Most associations also often lack the intellectual, financial and human resources to compete effectively with companies in the export business ([Van der Wal 2019](#)). The grouping of miners into professional bodies remains a component of their plan for the sustainable development of the artisanal and small-scale mining sector, but limited information is available publicly concerning the establishment and health of such associations and cooperatives.



**Table 3: ASM Associations and Alliances in Madagascar (non-exhaustive)**

Name	Address	Contact
Association des Bijoutiers Lapidaires et Exploitants Miniers de Madagascar (ABLEM)	Headquarter in Antananarivo (c/o CCIAA Antaninarenina Antananarivo 101 Madagascar)	+261 20 24 238 21, +261 33 11 297 42, <a href="mailto:contact@ablem.org">contact@ablem.org</a> Contact: Rina TELESPHORE
Chambre des mines de Madagascar (CMM)	c/o Qit Madagascar Minerals SA Villa 3H – Lot II J 169 BP 4003 Ivandry Antananarivo 101	+261 20 22 273 48 (Secrétariat Exécutif) <a href="mailto:infos@mineschamber.mg">infos@mineschamber.mg</a> Président : Mr Ny Fanja RAKOTOMALALA, - Secrétaire Exécutif : Mr Willy RANJATOELINA
Fédération Minière de Madagascar (FEDMINES/EMIR)	Antananarivo: c/o Société Le Quartz 241 Route Circulaire Antananarivo 101 Madagascar	+261 20 22 228 33 <a href="mailto:madaquarts@blueline.mg">madaquarts@blueline.mg</a> Contact: Mr Jeannot ANDRIANJAFY
Fédération des Opérateurs Miniers Malagasy (FOMM) -	<a href="https://www.facebook.com/FOMM-F%C3%A9d%C3%A9ration-des-Op%C3%A9rateurs-Miniers-Malagasy-108139207297659/">https://www.facebook.com/FOMM-F%C3%A9d%C3%A9ration-des-Op%C3%A9rateurs-Miniers-Malagasy-108139207297659/</a>	+261 204 49 32 72 +261 331 15 53 32
Federation des opérateurs miniers de vakinankaratra (FEDOMINVAK)	Mahazoarivo Avaratra, Lot 11 1 F165, Antsirabe 110 Madagascar	+261 20 44 932 72 +261 33 11 553 32 <a href="mailto:romanasylvain@yahoo.fr">romanasylvain@yahoo.fr</a> Contact: Romana Sylvain RAZAFINTSALAMA x

**Source:** Various sources identified through online methods and key informants

### KEY DATA NEEDS & NEXT STEPS

While the artisanal and small-scale mining sector is recognized as the second largest job provider in Madagascar in the *2018 Reconciliation Report for EITI-Madagascar* (EITI 2019, 215), data and research on the sector is significantly lacking and presents a key hinderance to the development of appropriate policies and interventions. The following key data needs provide a selection of areas where enhanced research and data can guide the ASM sector’s sustainable development:

**Improved Geological Data:** Investments in geological data have mainly been funded by donors (World Bank 2012, GIZ 2020) and as such, the continued generation of this information may depend on the sustainability of funding. Following Madagascar’s political crisis, some of the newest country’s geological data was made less accessible when the online portion of the database was shut down. Better geological data can also function as a preventative measure to mitigate and manage the potential for rushes which have come to define the ASM sector in various communities in Madagascar. Through increased awareness of mineral potential and deposits, capacity of local authorities can be developed along with mitigation measures and resources to prevent and manage the risk of rushes.

**Barriers to Formalization:** With the nature of ASM operations occurring informally, outside of state management and the existing regulatory framework, it is critical for government, researchers and NGOs

to deepen understandings of the systemic barriers (cost, bureaucracy, corruption) to formal licensing and dynamics in the sector that disincentivize formalization. For example, noted by Stoudmann et. al (2021), the seasonality of operations makes the bureaucratic steps to apply for permitting not financially accessible for most individuals working in the sector. The diversity of regional mining activities makes it essential for localized data to inform regional management plans that can be implemented in partnership with local authorities to take a 'bottom up' approach to formalizing the sector. This approach can work in concert with the SDDEMAPE bring local and national stakeholders together.

**Conservation & Development:** Research has noted that mining activities and expansion are putting increased pressure on protected areas and impacting biodiversity, contributing to environmental degradation and habitat loss. Further research is needed on bioaccumulation of heavy metals, habitat loss on endemic bird fauna and overall biodiversity monitoring (Cabeza et. al 2019) to better understand the threat mining poses to fauna and communities in proximity. Increased monitoring efforts to account for mining in protected areas is needed as gold and gemstone mining continues to expand in Madagascar. Conservation and development agendas must ensure alignment across local, national and international stakeholders in order to bring coordination and achieve sustainable development outcomes. The impact of climate change is also important to recognize and guide future research. More intense extreme climatic events and longer-term changes to average climates will pressure the country's biodiversity and also function as a push factor for some to enter the ASM sector as agriculture becomes a less viable livelihood.

## Endnotes

- <sup>i</sup> World Bank and OECD National Accounts data files.
- <sup>ii</sup> World Bank data account
- <sup>iii</sup> The nationalization policy was characterized by a strong state interventionist regime and a centralized economy in which the state controlled the production apparatus. Through this policy, the Malagasy government bought most of the foreign private companies and created more public enterprises.
- <sup>iv</sup> Some notable regulations are the law of July 31, 1896, ordinance no. 60-090 of September 5, 1960, ordinance no. 62-103 of October 1, 1962, law no. 90-017 of July 20, 1990 and law no. 95-016 of August 9, 1995
- <sup>v</sup> The project's mine is located near Moramanga and a processing plant in Toamasina. In addition to producing nickel and cobalt the mine also produces ammonia sulfate as a by-product of refining
- <sup>vi</sup> See Transparency International Initiative Madagascar at: <https://www.transparency.mg/permis-miniers-a-madagascar-en-crise-de-transparence>
- <sup>vii</sup> See EITI Madagascar News Article at: <https://eiti.org/news/madagascar-recognised-as-having-made-meaningful-progress-against-eiti-standard>
- <sup>viii</sup> See Equality Now: [https://www.equalitynow.org/madagascar\\_the\\_labor\\_code\\_law\\_no\\_2003\\_44\\_of\\_28\\_july\\_2004](https://www.equalitynow.org/madagascar_the_labor_code_law_no_2003_44_of_28_july_2004)
- <sup>ix</sup> See below section on “Mining stratification for more details on types of mining permits.
- <sup>x</sup> The initial estimate of mercury quantities is based on informal interviews with employees of foreign operators. The value of the mercury/gold ratio, which is equal to three (3), is an assumption based on indirect interviews with employees of foreign operators interviewed at eleven mining sites by the MEEF (2018) and on O'Neill and Telmer (2017) research.
- <sup>xi</sup> See ‘*Une Note D'orientation Sur L'article 3: Sources D'approvisionnement Et Commerce Du Mercure*’ at [https://ipen.org/sites/default/files/documents/Print\\_FR\\_ipen-brief-mercury-trade-v1\\_1-fr.pdf](https://ipen.org/sites/default/files/documents/Print_FR_ipen-brief-mercury-trade-v1_1-fr.pdf)
- <sup>xii</sup> The lowest level in the hierarchy of administration in the country and pertains to municipal districts that may encompass one or several villages. An important task of the fokontany is to administer the residency or exit of people in their area (Van der Wal 2019).
- <sup>xiii</sup> See Minamata signatories at <http://www.mercuryconvention.org/Countries/Parties/tabid/3428/language/en-US/Default.aspx>
- <sup>xiv</sup> See World Bank open data files available at <https://data.worldbank.org/country/madagascar?view=chart>
- <sup>xv</sup> See Ministry note regarding suspension of activities at <http://www.douanes.gov.mg/ooptovez/2021/02/Suspension-des-activites-relatives-a-l-exportation-de-l-Or.pdf>
- <sup>xvi</sup> See Business and Human Rights Resource Center at <https://www.business-humanrights.org/fr/derni%C3%A8res-actualit%C3%A9s/madagascar-les-autorit%C3%A9s-suspendent-l-exportation-de-lor-afin-dassainir-le-secteur-domin%C3%A9-par-l-exploitation-ill%C3%A9gale/>
- <sup>xvii</sup> See UN Comtrade Database <https://comtrade.un.org/>

- <sup>xviii</sup> See US Department of Labor funding announcement:  
<https://www.dol.gov/newsroom/releases/ilab/ilab20210209>
- <sup>xix</sup> See Madagascar page on Observatory of Economic Complexity at  
<https://oec.world/en/profile/country/mdg>
- <sup>xx</sup> See <http://unohrrls.org/about-ldcs>
- <sup>xxi</sup> World Bank open data files available at <https://data.worldbank.org/country/madagascar?view=chart>
- <sup>xxii</sup> See at [https://www.dol.gov/sites/dolgov/files/ILAB/child\\_labor\\_reports/tda2017/Madagascar.pdf](https://www.dol.gov/sites/dolgov/files/ILAB/child_labor_reports/tda2017/Madagascar.pdf)
- <sup>xxiii</sup> See at World Bank country profile at <https://www.worldbank.org/en/country/madagascar/overview>
- <sup>xxiv</sup> World Bank open data files available at <https://data.worldbank.org/country/madagascar?view=chart>
- <sup>xxv</sup> See Relief Web at  
<https://reliefweb.int/sites/reliefweb.int/files/resources/Madagascar%20Humanitarian%20Snapshot%20-%20Mars%20Avril%20%202019%20French%20Version.pdf>
- <sup>xxvi</sup> The initial estimate of mercury quantities is based on informal interviews with employees of foreign operators. The value of the mercury/gold ratio, which is equal to three (3), is an assumption based on indirect interviews with employees of foreign operators interviewed at eleven mining sites by the MEEF (2018) and on O'Neill and Telmer (2017) research.
- <sup>xxvii</sup> The most visible level of governance for miners around mining sites is the fokontany. This is the lowest level in the hierarchy of administration in the country and pertains to municipal districts that may encompass one or several villages. An important task of the fokontany is to administer the residency or exit of people in their area (Van der Wal 2019).
- <sup>xxviii</sup> See *Une Note D'orientation Sur L'article 3: Sources D'approvisionnement Et Commerce Du Mercure'* at [https://ipen.org/sites/default/files/documents/Print\\_FR\\_ipen-brief-mercury-trade-v1\\_1-fr.pdf](https://ipen.org/sites/default/files/documents/Print_FR_ipen-brief-mercury-trade-v1_1-fr.pdf)
- <sup>xxix</sup> Madagascar ranked 149 out of 180 in Transparency International's Corruption Perceptions Index
- <sup>xxx</sup> See Mining Review Africa at <https://www.miningreview.com/base-metals/how-madagascar-is-rebooting-its-mining-sector/>

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