



# CHILD LABOUR IN MADAGASCAR'S MICA SECTOR

**Impact of the mica supply chain on children's rights  
from the Malagasy mines to the international product line**



Stichting Onderzoek Multinationale Ondernemingen  
Centre for Research on Multinational Corporations



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Terre des Hommes Netherlands prevents child exploitation, removes children from exploitative situations and ensures children can develop in a safe environment. Terre des Hommes works towards a world where all children have a decent life and can grow up to be independent adults. A world in which children are no longer exploited. Terre des Hommes will continue its work until this is accomplished.

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# INTRODUCTION

Countless products from paints to cosmetics and from cars to laptops contain mica, albeit mostly in relatively small volumes. The biggest buyers of mica are the electronics and automotive industries. Since the publication of reports by Terre des Hommes and the Centre for Research on Multinational Corporations (SOMO) in 2016 and 2018, awareness has grown about the harsh conditions and the suffering of children in the depths of illegal mica mines in India. The 2016 study estimated that in the Indian states of Jharkhand and Bihar 22,000 children were involved in mica mining. The research concluded that industries and companies using mica sourced from this country are linked to the worst forms of child labour.<sup>1</sup> Together with key stakeholders from the private sector and the government, Terre des Hommes works towards better livelihoods for mica communities in India. As a result, more and more corporates – such as those that are part of the Responsible Mica Initiative,<sup>2</sup> but also individual companies<sup>3</sup> and industry initiatives<sup>4</sup> – are trying to address this problem in their supply chains.

## 1. Introduction

- <sup>1</sup> SOMO and Terre des Hommes (2016), 'Beauty and a Beast, Child labour in India for sparkling cars and cosmetics', <<https://www.somo.nl/beauty-and-a-beast/>> (25 September 2019).
- <sup>2</sup> Responsible Mica Initiative, Members & Governance, <<https://www.responsible-mica-initiative.com/members-and-governance.html>> (25 September 2019).
- <sup>3</sup> For example, Mercedes Benz, 'Mercedes-Benz puts mica mineral high on child labour risk list', <<https://www.terredeshommes.nl/en/news/mercedes-benz-puts-mica-mineral-high-child-labour-risk-list>> (25 September 2019).
- <sup>4</sup> For example, Drive Sustainability, 'Ten leading automotive companies launch an initiative to identify and address sustainability issues in raw materials sourcing', <<https://drivesustainability.org/mediaroom/ten-leading-automotive-companies-launch-initiative-identify-address-sustainability-issues-raw-materials-sourcing/>> (25 September 2019).



1.1 BACKGROUND OF THE STUDY

The 2018 study particularly stressed the need to further examine the conditions in mica mining in Madagascar. It is one of the countries with the greatest risk of violation of children’s rights in mica mining, alongside India, China, Sri Lanka, Pakistan and Brazil.<sup>5</sup> The red flags for Madagascar included evidence of the use of child labour in mica mines in the south of the country and suspected illegal mica mining. Moreover, Madagascar has become increasingly important as an exporter of mica. The study found that the country was the fourth largest mica exporter worldwide in 2015,<sup>6</sup> and that since 2015 it had even overtaken India as the biggest global exporter of sheet mica, the grade of mica that is used extensively in the electronics and automotive industries.

Initial desk research revealed the problematic situation of informal mining (in general) in southern Madagascar, which takes place in a socio-economic context of overlapping issues such as poverty, drought and insecurity. The weak government oversight of the mining sector increases the possibility that children may be exploited as a labour source. Although illegal or unregulated trading of mining products provides income for many poor families, it may also contribute to regional instability and violence in the south, thereby posing an indirect threat to child rights. Information about the reality on the ground is needed to be able to design the right programmes. However, there is scant formal and systematic knowledge about informal mining, including mica mining. More specifically, little is known about the number of children working in the mica sector and their working conditions nor how mica from this country ends up in consumer products. This study aims to fill these knowledge gaps.

This research aims to use the analysis for setting up programmes related to child protection in the context of mica mining with a broad focus on child protection that will cover child labour, education, social services and regional stability/ security. This study also aims to investigate the mica supply chain downstream. This research will be used to identify and engage companies and other relevant stakeholders in the supply chain in the Netherlands, Europe and beyond. Insights into the supply chain will allow Terre des Hommes Netherlands to expand on their ongoing work in the mica supply chain and inform Human Rights Due Diligence exchanges.

1.2 RESEARCH OBJECTIVES

- The research objectives are two-fold:
- 1. **A site-based political economy analysis (on micro level) of informal mining in southern Madagascar: contribution to household income, involvement of children, role in regional economy, and social and economic costs and risks.**
  - 2. **Supply chain analysis of mica production: mining, sorting, processing, transport, export and its further downstream distribution to factories and usage in end products.**

Analysing and ascertaining the structure of, and socio-economic conditions in, the mica mining sector in Madagascar is crucial in order to develop programmes that can mitigate the negative impact of mining activities and to reduce dependence on child labour in mines and provide appropriate alternative livelihoods. This study also aims to investigate the mica supply downstream. The aim is to identify entry points to engage with the Malagasy mining sector and to identify and engage end-user companies downstream - at the other end of the mica supply chain – in mitigating identified risks and in implementing due diligence on children’s rights in their supply chain.

1.3 METHODOLOGY

The approach for this research was developed by SOMO in the course of 2018. The research followed the research guidelines as defined by UNICEF<sup>7</sup>. Desk and field research were conducted in both Madagascar and China and involved two phases. In the first exploratory stage, which started in December 2018 and ended in March 2019, desk and field research were conducted in Madagascar to identify mica mining communities and key stakeholders in the sector. In the subsequent phase, based on the first phase findings, field and desk research were conducted in Madagascar and China in the period from April to August 2019. For the field research in Madagascar, 13 mica mining locations were visited, four of them twice, in two regions in the southern part of the country. Here child labourers (81 in total), adult mine workers, traders, truckers and local administrators were interviewed.



Eight different mica sorting and exporting companies were also visited and in four cases it was possible to interview their management. In addition, a number of interviews were carried out with government officials at different ministries, both in the south, and in the country’s capital Antananarivo. For the field research in China, interviews with representatives of 14 companies were carried out in four counties: Yueyang, Pingjiang, Tongcheng and Jiaying. The other six interviews were carried out with Yueyang Port managers and mica industry experts. In both phases, overall research was coordinated and led by SOMO’s senior researcher Sanne van der Wal, the principal author of the study. SOMO senior researcher Irene Schipper authored the chapter on the Chinese mica procurement chain.

1.4 LIMITATIONS OF THE RESEARCH

The interviews in the mining communities did not allow researchers to gather enough information for a comprehensive in-depth analysis of household budgets. However, the study was able to outline the range of daily income and daily expenses for mica miners in Madagascar. It was also difficult to estimate the contribution of the mica sector to the local economy, as comprehensive and basic information on economies on a regional scale was unavailable. However, some of the characteristics and aspects of other (locally) important sectors allowed researchers to put the contribution of the mica sector into an economic perspective. Overall, in Madagascar the difficulty in accessing information complicated the research.

Sometimes this was the case because authorities and companies were reluctant to share sensitive information. In other cases authorities just did not have the information available or in the desired form. Because of a lack of cooperation from the companies that were identified as relevant for the research in China, the researchers were not always able to conduct interviews with their management or visit their premises of the companies identified. Generally, whenever lack of information was significantly preventing proper and confident analysis, this is clearly indicated in the report. Further studies may be needed to continue building the supply chain downstream.

1.5 REVIEW PROCESS

All companies that are named explicitly in this report were informed of this prior to publication and were given the opportunity to respond. SOMO’s code of conduct requires this right to reply procedure to produce high-quality research to the highest ethical standards. To limit the number of companies for the review process, it was decided not to list all of the approximately 100 identified exporters and importers, mica manufacturers and end-users in this report. However, the companies that were not approached and not named in the report are known to Terre des Hommes. Of the more than 30 companies that were approached for review, only two companies – Fujitsu and Fujikura – took the opportunity to respond. Their reactions are referred to in the report.

5 SOMO and Terre des Hommes (2018), ‘Global mica mining and the impact on children’s rights’, <<https://www.somo.nl/global-mica-mining/>> (25 September 2019).  
6 In 2017, Madagascar was the third largest mica exporter after China and India, UN Comtrade database, <https://comtrade.un.org/data/> (25 September 2019).  
7 [https://www.unicef.org/supply/files/ATTACHMENT\\_IV-UNICEF\\_Procedure\\_for\\_Ethical\\_Standards.PDF](https://www.unicef.org/supply/files/ATTACHMENT_IV-UNICEF_Procedure_for_Ethical_Standards.PDF)



Located in the Indian Ocean, east of Mozambique, Madagascar is a country in southern Africa with a population of 25.5 million (2017). With a land mass of 587,000 km<sup>2</sup>, roughly the size of Ukraine, Madagascar is the fifth largest island in the world.<sup>8</sup> The country is the third biggest exporter of mica worldwide, with seven per cent of the global trade, earning US\$ 6.5 million in 2017. While mica trade from the country is still very modest compared to that of many other commodities it exports, trade has increased dramatically since 2008 when exports were at only US\$ 0.6 million.<sup>9</sup> Of the 34,817 tons of mica Madagascar exported in 2017, 87 per cent was shipped to China.<sup>10</sup> The following chapters will expand on the conditions under which this mica is produced and the actors that play a role in trading and further processing it in Madagascar and China. To provide context and background, this chapter will first briefly introduce Madagascar's development and economy.

## 2. Madagascar - the context

8 World Bank website, Where We Work, Madagascar, 'Overview', <<https://www.worldbank.org/en/country/madagascar/overview>> (23 May 2019)

9 UN Comtrade database, <<https://comtrade.un.org/data/>> (23 May 2019).

10 UN Comtrade database, <<https://comtrade.un.org/data/>> (23 May 2019).





2.1 DEVELOPMENT

Madagascar is one of the least developed countries among all developing countries. On the UN's Human Development Index (HDI), the country is at the bottom with a 161st place among 189 countries in total (2017).<sup>11</sup> Madagascar is also one of the highest scoring countries on the Multidimensional Poverty Index (MPI). With 57 per cent of the country's population suffering severe multidimensional poverty, only eight other developing countries find themselves with a higher score.<sup>12</sup> The country has the world's fifth highest number of out-of-school children,<sup>13</sup> half of the children under the age of five suffer from stunting, and, at only 13 per cent, the rate of access to electricity is one of the lowest globally.<sup>14</sup> Of the total population, 74 per cent are living below the national poverty line and 80 per cent live in rural areas.<sup>15</sup> Three quarters of the population live on less than US\$ 1.90 a day.<sup>16</sup>

Madagascar is also one of the countries in the world that is most severely impacted by natural disasters. Risk of tropical cyclones, prolonged droughts, variable rainfall and severe floods affect 16 of the country's 22 regions.<sup>17</sup> In March 2019, 1.3 million people were severely affected by food insecurity in Madagascar. Roughly half of the communities in the south – the poorest part of the country, where most of the mica mining takes place – are in a state of urgent food insecurity.<sup>18</sup>

Climate change aggravates the poverty of Madagascar's population and the impact is made more severe by continuous environmental degradation as a result of deforestation, soil erosion and urbanisation.<sup>19</sup> Since 2018, the country has also been affected by a measles epidemic, which, to date, has led to 1,245 casualties, mostly children. In the same period, 50 people died of the pest.<sup>20</sup>

In 2018, 47 per cent of all Malagasy children aged 5-17 were engaged in child labour.<sup>21</sup> Most working children (about 87 per cent) are involved in agriculture. However, some four per cent<sup>22</sup> – an estimated 86,000 children – are involved in the mining sector.<sup>23</sup> Child labour in mining is considered to be one of the Worst Forms of Child Labour (WFCL) by the International Labour Organization (ILO). Madagascar has laws and a number of institutes and policies in place to address child labour but these are insufficient to curb the rampant child labour in the country.

It is estimated that 22 per cent, or about 1.2 million, of all children aged 5 to 14 were not attending school in Madagascar in 2016.<sup>24</sup> Education is free up to the age of 16. However, parents are increasingly required to pay for registration and fees to cover teacher salaries and other costs. Consequently, many people cannot afford to send their children to school.<sup>25</sup> In addition, there is a lack of school infrastructure and qualified teachers, and there are few options for transportation in rural areas with long distances between schools.

Banditry is a widespread and increasing problem, especially in the south of Madagascar. The attacks by dahalo, the Malagasy word for bandits, are the island's most persistent source of insecurity.<sup>26</sup> Over five years of banditry-related violence has killed nearly 4,000 people, including 100 state security forces (gendarmes).<sup>27</sup> In 2017 and 2016, gendarmes killed 217 and 220 presumed thieves respectively. In the first eight months of 2018 alone, 292 casualties, both civilians and security forces, were reported.<sup>28</sup> At times, the government responds to bandit-related security threats with extremely violent military style campaigns that go after (suspected) gangs of bandits. These campaigns sometimes involve bloody shootouts and executions.<sup>29</sup>

2.2 ECONOMY

Agriculture, including fishing and forestry, is the primary economic activity in Madagascar, employing 80 per cent of the population.<sup>30</sup> In 2018, agriculture accounted for one fifth of Gross Domestic Product (GDP).<sup>31</sup> The industrial sector, which includes mining, manufacturing, construction and utilities, contributed to 23 per cent of GDP.<sup>32</sup> Making up 57 per cent, services contributed to most of the GDP. This includes mostly government-related services and spending that is largely financed by development aid that amounted to US\$ 780 million in 2017.<sup>33</sup>

With a total share of 25 per cent and 22 per cent respectively, Malagasy exports are dominated by vanilla (US\$ 703 million) and apparel exports (US\$ 634 million).

At US\$ 228 million, cloves are the country's fourth most important commodity exported by value. The combined share of the most important minerals exported by the country – nickel (US\$ 341 million), cobalt (US\$ 152 million), gold (US\$ 85 million) and titanium (US\$ 77 million) – amounts to 23 per cent of all commodities exported.

Madagascar holds extensive deposits of minerals that are found all over the country. The country contributes significantly to the world's production of cobalt (4 per cent refined, 3 per cent mined), ilmenite (2 per cent), nickel (2 per cent) and zirconium (1 per cent), which are all mined industrially.<sup>34</sup> By contrast, nearly 40 per cent of all sapphire produced worldwide annually is mined artisanally in Madagascar.<sup>35</sup> In addition, gold and mica are mined artisanally.

An estimated 2.5 million people, or one out of five of the country's total workforce, find informal employment in mining. Mining companies employ only 6,000 people and a further 4,000 are formally licensed gold panners.<sup>36</sup> Estimates of the number of people working in artisanal and small-scale mining (ASM) vary from 500,000<sup>37</sup> to more than a million.<sup>38</sup> However, the estimates of the number of people working in artisanal and small-scale mining (ASM) are probably underestimates in light of the (perhaps inflated) estimates for employment in the mining sector as a whole and the size of the formal sector in it.<sup>39</sup>

11 UN Development Programme, Human Development Reports, Human Development Index, <http://www.hdr.undp.org/en/composite/HDI> (23 May 2019).  
12 UN Development Programme, Human Development Reports, Multidimensional Poverty Index, <http://www.hdr.undp.org/en/composite/MPI> (23 May 2019). It should be noted that the data that is being used to calculate the index for Madagascar is about 10 years old.  
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26 Small Arms Survey 2011, <http://www.smallarmssurvey.org/fileadmin/docs/A-Yearbook/2011/en/Small-Arms-Survey-2011-Chapter-06-EN.pdf> > (24 September 2019).  
27 J.B. Naudet, 'A Madagascar les zébus équipés de puces électroniques pour éviter les vols', 9 April 2019, L'Obs, <https://www.nouvelobs.com/monde/20190409.OBS11328/a-madagascar-les-zebus-equipés-de-puces-electroniques-pour-eviter-les-vols.html> (24 September 2019).  
28 US Department of State.  
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30 World Bank website, Where We Work.  
31 World Bank, Country Profile, Madagascar, <https://bit.ly/31J7wEC> (23 May 2019).  
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33 OECD website, Countries, Madagascar, 'Aid at a glance charts', <https://tinyurl.com/hfbet8v> (23 May 2019).  
34 2015 figures: USGS, 2015 Minerals Yearbook, Madagascar [Advance Release], February 2019, <https://prd-wret.s3-us-west-2.amazonaws.com/assets/palladium/production/atoms/files/myb3-2015-ma.pdf> (23 May 2019).  
35 Transparency International, 'Overview of Corruption and anti-corruption in Madagascar', 2019, <https://knowledgehub.transparency.org/assets/uploads/helpdesk/Country-Profile-Madagascar-2019.pdf> (23 May 2019).  
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39 The exact figures or categories used as basis for the estimates in the different sources is unknown. Neither is it clear how the large discrepancy between the estimates regarding the size of the informal workforce can be explained.





2.3 SOUTH MADAGASCAR: A CASE APART

The south of Madagascar is one of the poorest regions in the country and finds itself at the bottom half of a number of development indicators such as poverty, health and education. The country's south is also where most of the mica mining takes place. It is therefore important to reflect on some of the characteristics of this region to understand the socio-economic conditions in mica production.

In 2016, the human development index (HDI) score for the country as a whole was 0.51. However, that same year the country's most important regions for mica mining, Anosy (0.47), Androy (0.49) and Ihorombe (0.36), all had below average HDI scores. Ihorombe's score is the lowest nationally.<sup>40</sup> In 2012, Androy had the highest share of the population living in poverty. Poverty levels in Anosy and Ihorombe were also relatively high.<sup>41</sup> The population in the deep south of Madagascar is also generally more vulnerable to effects of climate change (droughts) and insecurity (dahalo), as reported in the most recent national survey available (2013).<sup>42</sup> People in Androy report the highest losses of assets and income due to climate change and insecurity events (or shocks) in all of the country.

In terms of health indicators, the southern provinces of Androy and Anosy are among the worst performers nationally. Androy has the lowest access nationally to health services and, with the exception of one other region, lowest access to pre- and postnatal care.<sup>43</sup> In addition, Ihorombe, and one other region in the country, benefited the least from foreign national development aid.<sup>44</sup>

The Multiple Indicator Cluster Survey (MICS) by INSTAT and UNICEF<sup>45</sup> from 2018 also clearly shows that Anosy, Androy and Ihorombe are often among the least developed regions nationally. In Table 1, a selection is made of the most relevant regional data for various development indicators. In the context of this research, the high share of child labour in Androy is particularly remarkable: 62 per cent of all children aged 5 to 17 are involved in work.

In Madagascar, the population is quite young: roughly half of the population is below 16 years of age. However, in the south and especially in Androy this share is even higher (57%).<sup>46</sup> Indeed, from Table 1 it is clear that girls get married early (roughly half of them before they turn 18), and have children relatively early (9 to 15 per cent of women below 16 has children).

Roughly, half of the children in Androy and Anosy do not go to primary school whereas the national average on primary school attendance is 20 per cent.<sup>47</sup> In the mica provinces, roughly a third of the children only finish primary school (see Table 1) whereas three in four children nationally go on to finish primary education. In addition, the share of children dying young is considerable in the south of the country. In Anosy, 74 children out of 1,000 die before they are five years old (rank 5 nationally). In Androy and Ihorombe, respectively 24 and 22 out of 1,000 children do not grow to be older than one.<sup>48</sup> In Ihorombe, only nine per cent of all children aged 12 to 23 months, the lowest level nationally, are properly vaccinated.<sup>49</sup> Only a quarter of the population in the three main mica provinces has access to safe drinking water whereas the national average is 41 per cent. On average, nine per cent has access to a basic facility to wash their hands with soap and water in or near the house (23 per cent nationally). Roughly 2 per cent has access to a toilet they do not need to share with other households (6 per cent nationally).<sup>50</sup>

Region	Child marriage*		Child labour
Nationally	Girls (40%)	Boys (12%)	Overall 47%
Androy	55% (3)	26% (1)	62% (2)
Anosy	45% (10)	20% (3)	56% (4/5)
Ihorombe	50% (5)	21% (2)	56% (4/5)
Region	Hygiene		
Nationally	Potable water (41%)	Sanitation* (6%)	Basic hygiene* (23%)
Androy	26% (5/6)	1% (1/2/3)	6% (2/3)
Anosy	26% (5/6)	3% (7/8)	13% (6)
Ihorombe	24% (3/4)	3% (7/8)	8% (4)
Region	Education (achievement)		
Nationally	Primary (56%)	1st half secondary (26%)	2nd half secondary (15%)
Androy	27% (2)	10% (1)	9% (7)
Anosy	31% (4)	12% (3/4)	7% (3/4)
Ihorombe	32% (5)	16% (8)	7% (3/4)
Region	Nutrition	Vaccination (12-23 months)	
Nationally	Moderate Wasting* (6%)	Basic* (41%)	All (33%)
Androy	7% (6/7/8)	31% (7)	24% (7/8/9)
Anosy	8% (5)	45% (14/15)	39% (16)
Ihorombe	7% (6/7/8)	24% (6)	9% (1)
Region	Fertility*		
Nationally	Adolescent fertility rate (15%)	Child birth before 15 years (5%)	Child birth before 18 years (36%)
Androy	25% (1)	9% (7)	46% (9)
Anosy	20% (5)	7% (11)	47% (7/8)
Ihorombe	17% (10)	15% (1)	60% (1)

Table 1: Development indicators in mica production regions compared nationally

Source: SOMO based on MICS6 (2018)  
Legend: the corresponding position in the national ranking is shown between brackets. when multiple tanks are given they share the same rank with other regions definitions:  
\* child marriage as derived from women aged 20-24 and who were married before the age of 18.  
\* sanitation: % households that have their own improved toilet facility , not shared with others.  
\* basic hygiene refers to % of households with a handwashing facility with soap/detergent present.  
\* nutrition - Wasting: Moderate and severe – below minus two standard deviations from median weight for height of reference population  
\* vaccinations: basic package includes BCG, Polio3, DTP3 and measles; ALL is an expanded package  
\* fertility: adolescent birth rate is % of women aged 20-24 who gave birth before age 15/18  
adolescent fertility rate is a combined rate calculated from the birth rates of all 5 year cohorts of women aged 15-49.

40 Ministère de l'Economie et du Plan.  
41 INSTAT, l'Enquête Nationale sur le Suivi des indicateurs des Objectifs du Millénaire pour le Développement (ENSOMD), Objectif: 01, 2012-2013, <https://www.mg.undp.org/content/dam/madagascar/docs/rapportsUNDP\_MDG/doc\_OMD/OMD\_1.pdf>, p.140 (24 September 2019).  
42 INSTAT.  
43 World Bank, 'The Deep South', 2018, <http://documents.worldbank.org/curated/en/587761530803052116/pdf/127982-WP-REVISED-deep-south-V27-07-2018-web.pdf> (24 September 2019).  
44 Ministère de l'Economie et du Plan.  
45 INSTAT/UNICEF, Madagascar 2018, Multiple Indicator Cluster Surveys (MICS), PowerPoint presentations.  
46 World Bank, The Deep South.

47 World Bank, The Deep South.  
48 INSTAT/UNICEF, Madagascar 2018, Mortalité des Enfants, Multiple Indicator Cluster Surveys (MICS), PowerPoint presentation.  
49 INSTAT/UNICEF, Madagascar 2018, Vaccination des enfants, Multiple Indicator Cluster Surveys (MICS), PowerPoint presentation.  
50 INSTAT/UNICEF, Madagascar 2018, Eau de boisson, assainissement et hygiène, Multiple Indicator Cluster Surveys (MICS), PowerPoint presentation.





## MICA SECTOR

Mica is the name for a group of different minerals that form in distinct layers and that are highly reflective. Mica's layered structure allows to split it into thin sheets without compromising its mechanical, physical or electrical properties. Mica is also chemically inert, lightweight, flexible, strong, resistant to high temperatures and temperature changes, able to insulate, withstand high voltages, absorb or reflect light and protect against ultraviolet light. Nowadays, mica finds its way into products ranging from paints to soil conditioners and from make-up to smartphones.

### 3. The mica sector in Madagascar



3.1 MICA

Worldwide the main types of mica traded are muscovite and phlogopite. Of the two, muscovite is by far the most frequently mined. Muscovite has better electrical properties than phlogopite. Glistening pigments used in cosmetics are usually made of muscovite. Phlogopite, the type that Madagascar mostly produces, is more resistant to high temperatures, and is used in products that require both thermal stability and electrical properties such as electrical cables.

Mica is traded in two main categories: sheet mica and scrap mica. Scrap mica is a by-product from mining sheet mica or other naturally occurring minerals. In 2015, the global mica market supply amounted to 951,129 tons worth US\$ 478 million. The global market was projected to grow to US\$ 533 million in 2018 and US\$ 669 million in 2024. The majority of mica processing companies globally can be found in India and China. In 2015, China accounted for more than 45 per cent of the global mica market.<sup>51</sup>

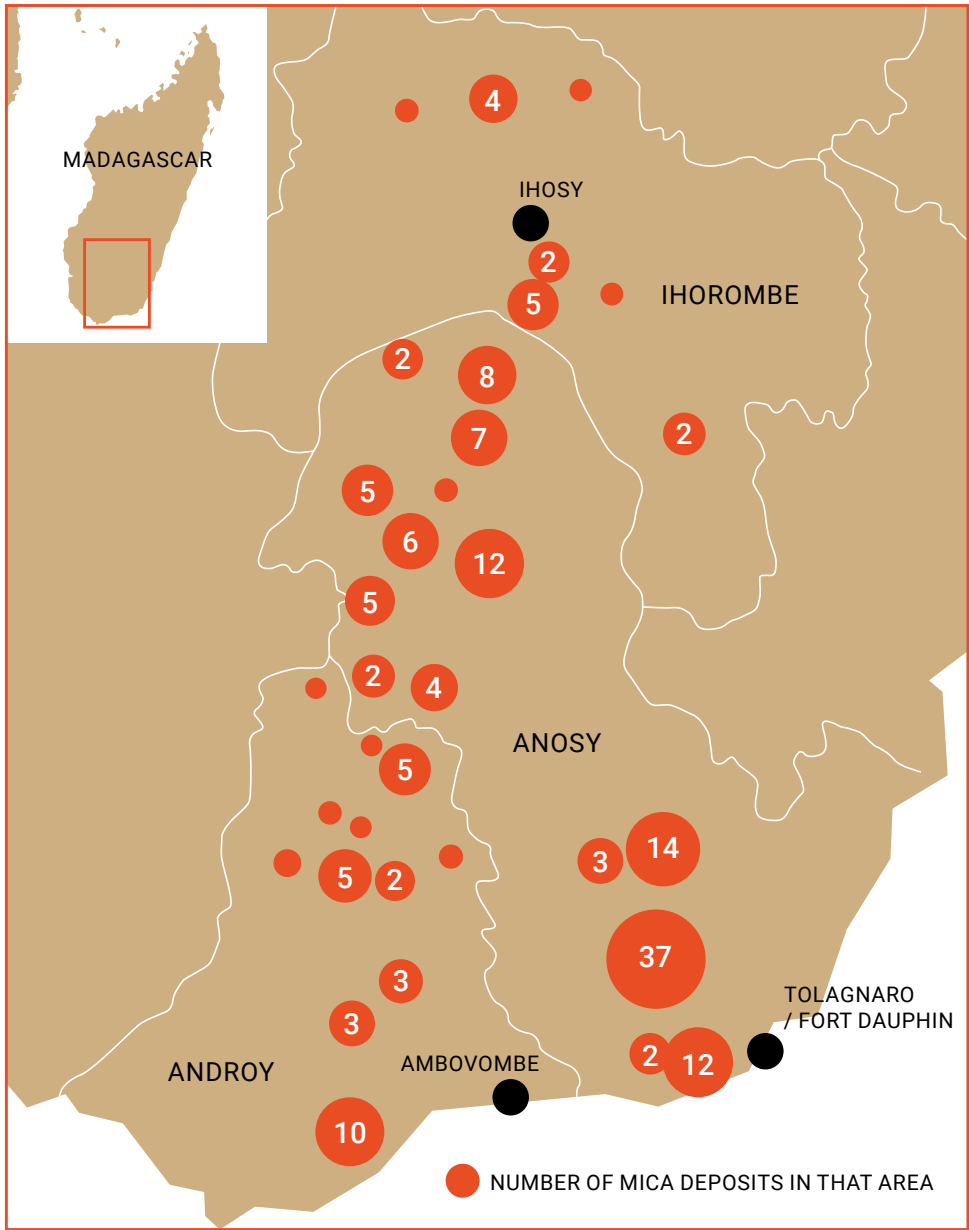


Figure 1: Known mica deposits in south Madagascar

The French discovered mica deposits in 1912 when Madagascar was a French colony.<sup>52</sup> Mostly found in the form of phlogopite and to a very small extent in the form of muscovite, most of the deposits are concentrated in south Madagascar. Of the 201 known phlogopite deposits in the country, 176 are located in the south.<sup>53</sup> In the south most of the known deposits are found in three regions: Ihorombe in the North (16 deposits); Androy in the West (34 deposits); and Anosy in the East (123 deposits) (see Figure 1).

There is no comprehensive overview available of mica deposits or concessions that are actually mined in Madagascar. However, 35 mica production areas, all in Anosy and Androy, are registered with the regional branch of the Ministry of Mines and Strategic Resources. However, the problem with this registry is that the information only details the commune (31 municipalities) or village (four villages) level and not the actual quarries. This means that there can be no absolute clarity as to the actual number of mines, or their status, based on this information.

During interviews, respondents referred to 73 different quarries in total, which are, or have, at some point in the recent past been mined. Comparison of the information from the two sources available also reveals that at least four of the 73 quarries identified by respondents (Andakantoposa, Emitray, Jafaro and Ampantiolotse) may be exploited illegally. This is because these are located in three communes that are not registered by the ministry.<sup>54</sup>

A licence is needed to be able to legally exploit natural resources in Madagascar. The Madagascar Mining Cadastre Office (BCMM, Bureau du Cadastre Minier de Madagascar), a branch of the Ministry of Mines and Strategic Resources, manages all mining licences in the country. In July 2019, the BCMM registered 50 valid mining concessions to exploit mica. Of these, 39 are located in the south and 21 in the middle part of the country. Only six of the permits pertain to exploiting mica only.

The other permits issued allow for extracting all kinds of other minerals (up to 22) as well, from agate to zircon.

It was possible to roughly compare the locations of the licensed perimeters with the locations of the mica mining sites visited during the research.<sup>55</sup> It was found that, of the 13 sites scoped during the field research, in at least five sites (Ambia, Ampiha, Betanimena, Sakaravy and Talakifeno) mica is extracted on terrain with no (valid) licence.

By contrast, for only two mining sites visited (Berongo and Tsakamasy) it could be ascertained with some confidence they had valid permits.<sup>56</sup> At the remaining sites, it could not be excluded that at least some mining is taking place with a valid licence. While this could not be verified, this pattern suggests that more illicit mica mining is taking place in other mining sites.

While the Ministry of Mines and Strategic Resources records the volume of production for the 35 registered mining production locations, these figures were not disclosed for this research. However, as there is no (significant) industrial processing of mica in Madagascar and an uncertain volume is lost during sorting, annual production will be (somewhat) higher than the annual trade of 34,817 tons.

3.2 REGULATION AND GOVERNANCE

The Mining Code of 1999, last amended in 2005, regulates mining in Madagascar.<sup>57</sup> The law, which generally seeks to increase the contribution of mining to the national economy, specifies a range of provisions including area demarcation for mining, licensing, taxing and government administration. A planned revision of the Mining Code that has been in the making for four years is to enhance the mining sector's competitiveness, a key feature of which is to improve license and contract transparency.<sup>58</sup> The Ministry of Mines and Strategic Resources is responsible for governing the mining sector.

51 Transparency Market Research, 'Mica market: Global Industry, Size, Share, Growth, Trends and Forecast, 2016-2024', August 2016.

52 C. Robequain, 'Le mica de Madagascar'. In: Annales de Géographie, t. 56, n°301, 1947. pp. 75-76. <[https://www.persee.fr/doc/geo\\_0003-4010\\_1947\\_num\\_56\\_301\\_12479](https://www.persee.fr/doc/geo_0003-4010_1947_num_56_301_12479)>.

53 Mindat website, <<https://tinyurl.com/y4dvt02u>> (24 May 2019).

54 These are: Esira (Anosy region, Amboasary district), Jafaro (Androy region, Ambovombe district) and Belindo Mahasoia (Androy region, Bekily district).

55 The feature of the BCMM website that allows to see the location of licensed mining perimeters on a map was not working at the time of writing this research. The BCMM office did in the end share a map of Madagascar with indications of the boundaries of the perimeters of valid and expired mica licences. Visual comparison of this map with the coordinates of the mining areas visited in Google Earth allowed researchers to reach the above conclusions.

56 At the time of the research, the mines on these two sites were not being used for extraction. One was abandoned because of dahalo attacks. The other was closed in the wake of fatal accidents.

57 Law N°99-022 of 19 August 1999 modified by Law n°2005-021 of 17 October 2005 concerning the Mining Code <<http://bcmm.mg/en/code-minier-2005/>> (29 May 2019).

58 EITI, 'Madagascar EITI points to lost revenues due to mineral smuggling', 11 February 2015, <<https://eiti.org/madagascar>> (29 May 2019).



Among the tasks of the ministry and its auxiliary organisations, such as the BCM, are enforcement of the Mining Code through mining and transportation inspections, levying various taxes, attracting investments and developing and executing policies for the development of the sector in general.

Governance of the mining sector in Madagascar is problematic. The ministry has limited capacity, resources and personnel to enforce applicable laws and regulations. The ministry's branch for the country's resource-rich south-eastern Anosy and Androy regions, for example, has only one vehicle at its disposal to do the work in an area of 45,000 km<sup>2</sup> (roughly the size of Denmark or Estonia) with very bad roads. As a result, inspections of mines are infrequent and plans to support artisanal and small-scale mining (ASM) through training and organisation cannot be properly implemented.<sup>59</sup> Corruption is another problem, which primarily takes the form of demands for payments to officials to issue licenses or other bureaucratic sign-offs, but also in terms of political interference, bribery and state officials gaining lucrative positions in mining companies.<sup>60</sup>

Mica exporters and traders need to be registered with the ministry at the provincial level for which administration fees apply. Moreover, there is a two per cent tax levied from exporters of the purchasing price of the mica exported out of the country. Of this tax, 1.4 per cent is to go back to the mining communities at the origin of these exports. It could not be ascertained if and how this happens in practice. However, as earlier stated, the administrative capacity at this level is limited and it is therefore difficult to administer, oversee and distribute these funds correctly. The ministry also has income from mining permits as well as exporters, traders and weighing scale registries.

3.2.1 MICA SECTOR POLICIES

While there is no specific regulation for the mica sector, the ministry also develops plans for this sub-sector. In their plans, the ministry focuses on three problem areas specifically: safety (the risk of imploding mines especially), mining in national parks<sup>61</sup>, and low prices for mica.<sup>62</sup> For example, to address the low prices for mica, the ministry explained that it has conducted activities to promote association and formal registration of mica miners in the recent past. However, according to the ministry, these interventions have not proved very successful because of a lack of enthusiasm and/or recognition with miners and a lack of funds from the government side. The ministry also explained that associations that did attempt to organise formally ran into the problem of not being able to get a permit because the BCM was not officially managing licences for a period of many years.<sup>63</sup>

In the experience of the artisanal miners' associations interviewed for this research, such as Tamboroke Miray in Antranomaro, the ministry indeed promotes the creation of associations but it does not always offer technical or financial support, which leads to difficulties for associations and they may not last. They also often lack the intellectual, financial and human resources to compete effectively with companies in the export business. Tamboroke Miray, for example, still has difficulties to find customers for the mineral products such as mica, quartz and beryl they mine in an area to which they collectively own the mining exploitation licence. Since the artisanal miners' association was created in 2016, they only succeeded this year in finding a buyer for their mica. According to the same regional department of the ministry, there are 15 other associations of miners registered in their area. However, apart from their name and the region in which they are registered, it did not provide further details. As mica mining is a relatively important activity in the region, it is likely that a number of these associations, if active, are (also) mining mica.

3.2.2 LOCAL LEVEL MICA SECTOR POLICIES

The most visible level of governance for mica 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. They do this for example by issuing documents of residence or displacement called 'passports', the fees of which amount to about Ar 500 (US\$ 0.13). This type of document is often used by migratory miners as they change workplaces regularly. During the research, it was ascertained that the fokontany are often not administered adequately because registries were incomplete and not up-to-date. This meant that accurate information about the size and composition of the population of villages was unavailable.

Both fokontany and municipalities (communities), the next level up in the administrative hierarchy, tax mica production directly within their administrative area. While it is unclear how systematically these local taxes are levied in practice, information gathered from truck drivers and local stakeholders indicated they are not uniformly applied on each administrative level. For example, tolls levied by communities on passing mica trucks ranged from Ar 40,000 (US\$ 10.70)<sup>64</sup> to Ar 50,000 (US\$ 13.38). The tax per truckload of mica at the fokontany level also varied, ranging from Ar 10,000 (US\$ 2.68) to Ar 20,000 (US\$ 5.35). In addition, the security forces may pocket Ar 50,000 (US\$ 13.38) per truck at roadblocks. Local administrators interviewed claimed the need to tax mica production directly in order to maintain or further develop local infrastructure and facilities such as roads and schools. However, according to the Ministry of Mines and Strategic Resources all these taxes are illegal.

3.3 THE MICA SUPPLY CHAIN IN MADAGASCAR

The mica sector in Madagascar encompasses all mica supply chain stages around and between the mining pit and the exporting ship. The key functional stages in this upstream part of the global mica supply chain (see Figure 2) are mining, collecting, transportation, primary processing (cleaving and sorting), exporting (sourcing and sales) and shipping (transportation, loading and shipping). In turn, on each functional level or link in the supply chain, other actors may be involved. Namely, for mining supplies (head lights, batteries, crow bars, shovels and sifting material), maintenance (welding and forging), catering and retail (food, drink and groceries), transportation (local buses and truck rental companies), security (security forces and police), administration (village heads, mayors and ministry officials) and banks and insurance companies.



Figure 2: Functional phases in the mica supply chain in Madagascar

59 Interviews with officials in regional (4 April 2019) and national offices (2 April 2019) of the Ministry of Mines and Petroleum.  
60 T. Heyman, 'Walking the tightrope: Madagascar balances mining and the environment - Mining Technology', Mining Technology, 6 May 2016, <<https://www.miningtechnology.com/features/featurewalking-thetightrope-madagascar-balances-mining-and-theenvironment-4894423/>> (7 June 2019).  
61 In the course of the field research, it was confirmed that mica miners do work at night in the parks to mine mica "in all discretion" and sheltered from the eyes of park staff.  
62 Mica from Madagascar is roughly 3.5 times cheaper than Indian mica, and twice as cheap as Chinese and Brazilian mica. Source: SOMO and Terre des Hommes, (2018).  
63 Interviews with officials in regional (4 April 2019) and national offices (2 April 2019) of the Ministry of Mines and Petroleum.

64 Exchange rate of 01 Oct 2019: 3736.79AR - 1USD Treasury - UN Operational Rates of Exchange





### Mining and loading

In Madagascar, mica is mined artisanally. There is no evidence of mining companies being directly involved in mica mining. As already noted, there are probably at least 73 locations where mica is mined in the south of the country. It was not possible to collect detailed information on the number of people involved in mining in these locations or their productivity throughout the year. However, based on the volume exported annually and field research-informed estimates of productivity per miner per year among other indicators, there are probably at least 20,000 people involved in mica mining alone.<sup>65</sup>

To load mica on the truck for transportation, loaders offer their services to mica traders. Groups of local young men usually do this type of work, as loading is physically demanding.

### Collecting and weighing

Mica sourcing in the mining sites is done by so-called traders. These are people who work on a freelance basis, or who are on the payroll of exporters. To operate successfully, these businesspeople need to be familiar with prices and quality of mica and need to have contacts with exporters and resources to travel. They may go from site to site to see if there is enough mica of the right quality and right price. There are also traders who collect only from a few specific sites for their own account. In case they have a deal and have sufficient volume, they will call exporters to arrange for the mica to be transported to their facilities. Traders need to be registered with the Ministry of Mines and Strategic Resources. The number of traders is estimated at 400.<sup>66</sup>

A somewhat distinct group from the traders in the mica sector are the people that manage the scales to weigh the mica on-site before it is transported. They are mostly working for the exporting companies. The scales they use, often with the name of the exporting company on it, could be seen at a number of mining sites visited in the course of the research. These scales need to be approved by the ministry as well, but it was found that this is not always the case. There were reports of miners complaining of scales being tampered with to their disadvantage.

### Transportation

Transportation of mica to the processing sites is done by truck. Trucks may have various capacities ranging from 6,000, 12,000 to 28,000 kg and some even have lorries to extend capacity. The exporting companies mostly own the trucks and have their drivers on their payroll as well. However, some drivers also work for themselves. In addition, there are also companies that rent trucks to transport the mica. According to some exporters, transportation is the most significant cost factor in their business. Drivers may go from one site to another to collect mica but generally try to collect a full load at one site. Mining sites are often in very remote areas and, as roads are generally in very bad shape, it may take many days for them to collect and deliver their cargo at the processing sites. Many trucks are recognisable as being from a specific company because of the colours in which they are painted and/or the company name that is written on them.

### Sorting

Six mica sorting facilities were scoped for this research. They are all part of companies that export mica as well: Radoran, Harenasara, Hnoor, Tri-H and Tsaravintana. Three of the facilities are located in Fort-Dauphin, two in Amboasary and one in Tranomaro. One company, Radoran, even has two locations where they process mica. Although this could not be verified, it is likely that most other exporting companies also own sorting facilities. During peak times (in the dry season) when there is a high supply of mica, up to 200 people may be involved in sorting at the largest among the sorting companies. This would mean that around 2,000 sorters are employed in the sector.<sup>67</sup>

### Exporting

Based on information from the Anosy Regional office of the Ministry of Mines and Strategic Resources, 30 exporters were registered with them as being involved in exporting mica in the period 2015-2017. In that period, the four leading exporting companies in the country by volume were Tri-H, Radoran, Hnoor and Somida (in descending order of importance).

Exporting companies are predominantly operating in the Anosy region, many of them in its capital Fort Dauphin, and a few are based in the Androy province. There are mica-exporting companies like Tsaravintana that export other minerals, such as malachite and quartz, as well.

### Shipping

The final stop for most mica before it leaves the country is the Ehoala port near Fort Dauphin (Tolagnaro). The port is the most important harbour for Malagasy mica exports, next to Tamatave (Toamasina) and Tulear (Toliara).<sup>68</sup> The port terminal and its facilities were opened in 2009 and were originally built to export ilmenite from the nearby mine of QIT Madagascar Minerals.

### 3.3.1 LINKS BETWEEN EXPORTERS AND MINING LOCATIONS

An important aim of this research is to ascertain the links between the different actors in the supply chain. In files received from the Ministry of Mines and Strategic Resources, mica sourcing areas of the registered exporters are recorded as well. In the period 2015-2017, there were 11 different areas (see Table 2). Except for Andalatanosy and Beraketa, which are in the region of Androy, these are all in Anosy. The Anosy region is by far the most important area for sourcing mica. Of the 27,000 tonnes of mica taxed by the ministry in 2017, at least 87 per cent was sourced in this area. The most popular sourcing areas for mica in 2017 were Ranopiso (10,000 tonnes), Ambatoabo (8,000 tonnes) and Tranomaro (4,000 tonnes).

Strictly speaking, the areas referred to in Table 2 are the names of towns. These towns do not represent actual mining locations but refer to one or several quarries in that town area.

For instance, there are at least five mica quarries in operation in the Tranomaro area, and two in each of the Ambatoabo and Ranopiso areas.

Interviews and observations during the field research allowed us to identify some of the precise sourcing locations of a number of the leading exporting companies. Based on this information and that received from the ministry, it is clear that exporters source mica from overlapping mining sites and quarries. In 2017, for example, leading mica production sites such as Ranopiso were a sourcing area for six different companies, Tranomaro for five and Ambatoabo for four. Based on their names, three exporting companies could be identified that own valid permits to exploit mica. This suggests that few exporters are supplied by mining locations of which they own the exploitation rights, if at all.<sup>69</sup> Mining activities at Sakamasy, a site owned by mica exporting company Somida, for example, were reportedly stopped. By contrast, there is at least one exporting company that has a licence to extract mica in an area where there is active exploitation. This company reportedly arranged with the artisanal miners in their permit area to pay them the regular price on condition that they sell it to them exclusively.

ANOSY			ANDROY
Ambatoabo	Imanombo	Ranopiso	Andalatanosy
Ankariera	Maromby	Tranomaro	Beraketa
Behara	Ranomafana	Tsivory	

**Table 2: Mica mining areas connected to registered mica exporters in Anosy and Androy**

<sup>65</sup> The rough estimate is based on dividing the official export volume in 2017 by productivity. There are no national production figures available. Therefore, official exports are taken as a proxy to national production. An uncertain amount of mica waste will not be exported so actual production will be higher than export. Productivity was calculated at 18 kilos for a person (working in a (family) unit) working 6 days a week and 4 months a year. The calculations and assumptions were based on information collected during interviews.

<sup>66</sup> Anosy office, Ministry of Mining and Strategic Resources.

<sup>67</sup> Total sorting worker estimate based on the available figures for volume exported for exporting companies registered with the Ministry of Mining and Strategic Resources in 2017. Based on these figures the average workforce per volume was calculated which was then multiplied by the UNComtrade reported export volume of 2017.

<sup>68</sup> Interview with Ministry of Mining.

<sup>69</sup> Exporting companies may dispose of mining permits under different names such as those of the company owners.



3.3.2 EXPORT DESTINATIONS

China is by far the most important trading partner for the mica sector in Madagascar. The trade with China represents 87 per cent of all mica exports in volume and 81 per cent in value (UN Comtrade, 2019). Other important destination countries for mica exports are Estonia and India (Fig. 3).

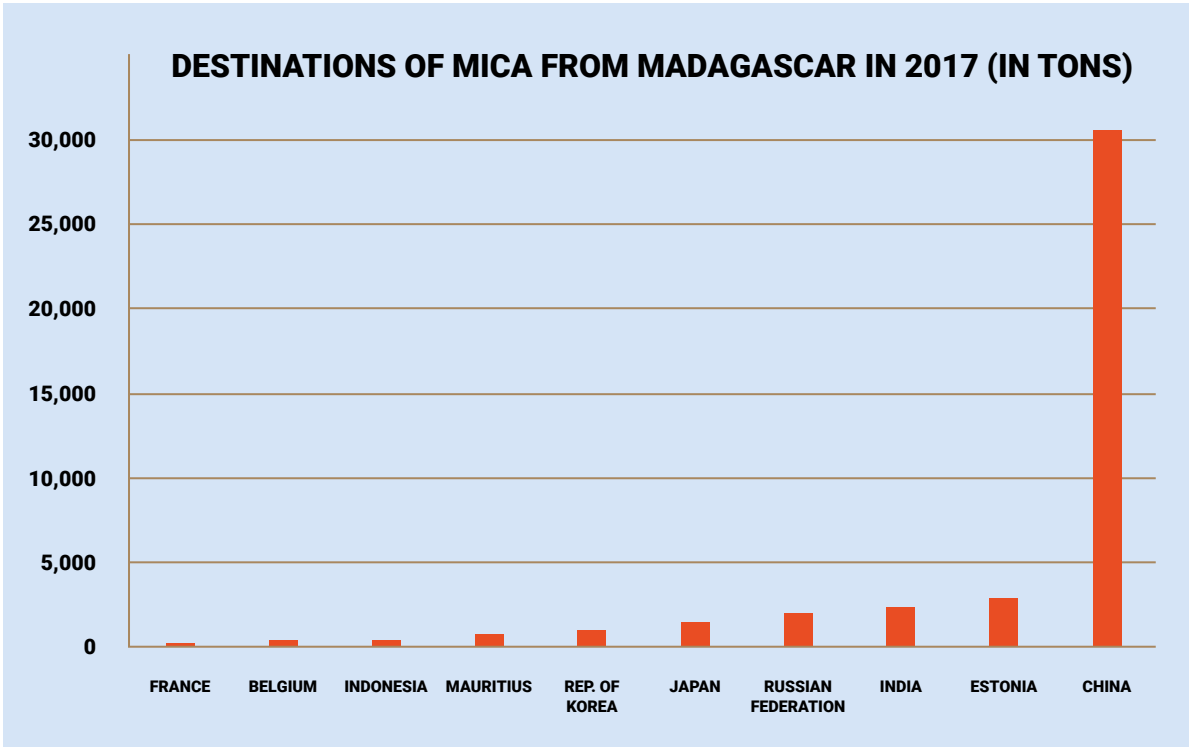


Figure 3: Destinations of mica from Madagascar in 2017. Measured in tonnes.  
Source SOMO based on Comtrade 2019.

Illicit mica exports

The volume of mica exports reported by Malagasy customs<sup>70</sup> for 2017 (34,817 tonnes) is higher than the figure reported by the regional branch of the Ministry of Mines and Strategic Resources (27,252 tonnes) and Chinese customs (23,153 tonnes).<sup>71</sup> This suggests that mica is exported from areas that do not fall under this regional office’s jurisdiction and/or that not all exports in this administrative region are adequately registered. The figures, however, do not immediately give rise to suspecting illicit mica export flows, such as reported for sapphire for instance. If that were the case, higher figures would be expected at the producing (ministry) or receiving (Chinese market) end.

Box 1: Illicit mica exports.

70 As reported in UN Comtrade (2019).  
71 UN Comtrade (2019)





3.3.3 VALUE DISTRIBUTION

Solid information on prices for mica along the supply chain was available on three different levels (see Table 3) and shows marked differences. The average selling price of a kilo of mica at the mining site (US\$ 0.05/kg)<sup>72</sup> as reported by miners is about half the price (US\$ 0.09/kg) exporters report to the Ministry of Mining for sourcing mica.<sup>73</sup> In turn the free on board price (FOB) (US\$ 0.09/kg), reported by Malagasy customs, is twice the sourcing for price exporters.<sup>74</sup>

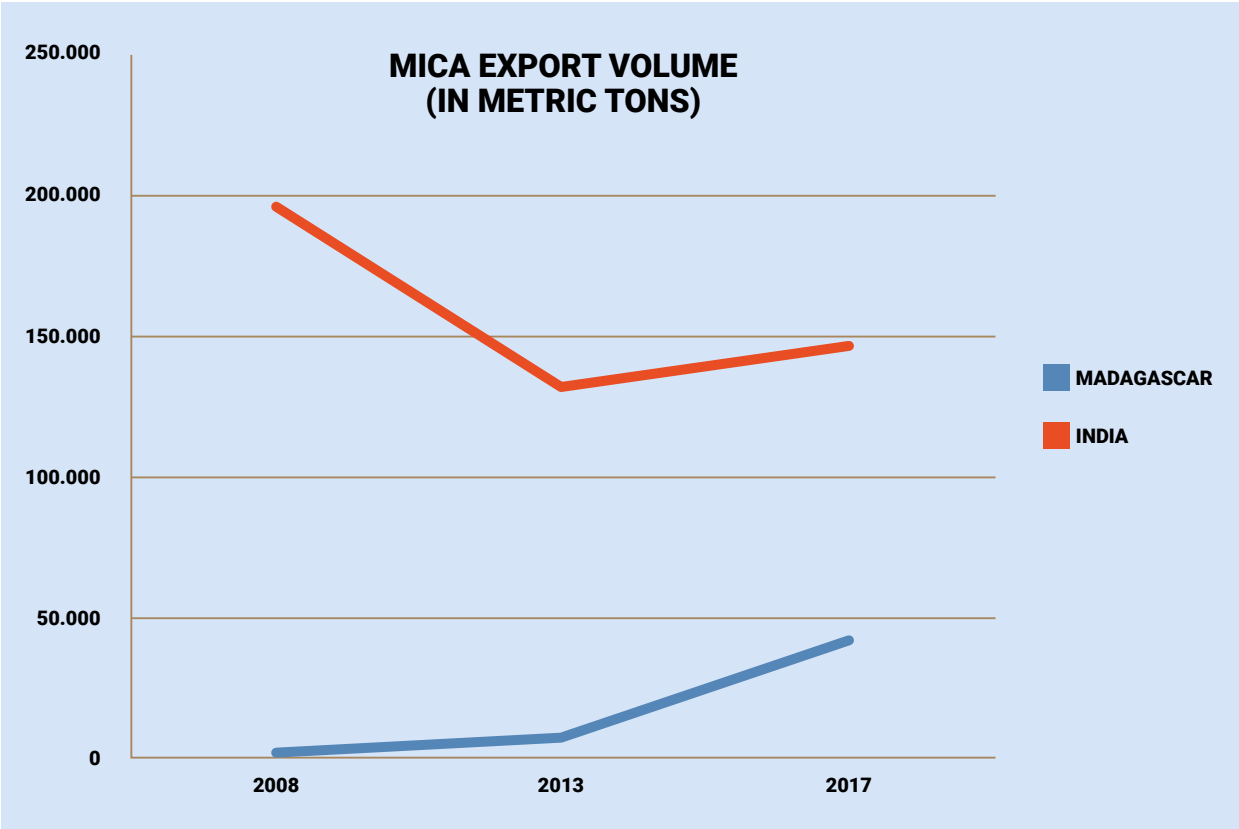
It should be noted that the study could only obtain some gross prices and there is little reliable information on the costs incurred between the mine and free on board price (FOB) at the port. Exporters, for example, need to cover costs for transportation to collect the mica from the mining sites, which are reflected in their sourcing prices.<sup>75</sup> During interviews one source claimed that the price for transporting mica is about Ar 1.25/km/kg (US\$ 0.0003). If this is true, this would mean that, for collecting mica at the sites visited during the research, the transportation costs would range from half to twice the cost price at the mine. In addition, in between buying and selling the exporter incurs costs for sorting and transportation to the harbour. Another cost factor for the exporter at this stage is the reduction of the exportable volume. Part of the mica material includes soil and calcite that will not be sold but discarded after sorting. According to one source this non-exportable waste could amount to 30 per cent of the total volume.<sup>76</sup> If this is true, net margins for exporters when sourcing good quality mica are probably very attractive, in which case there would theoretically be some space for miners and sorting workers to bargain for a better price.<sup>77</sup>

	MINER	EXPORTER	
	Sell	Buy	Sell
Average price US\$/kg	0.05	0.09	0.21

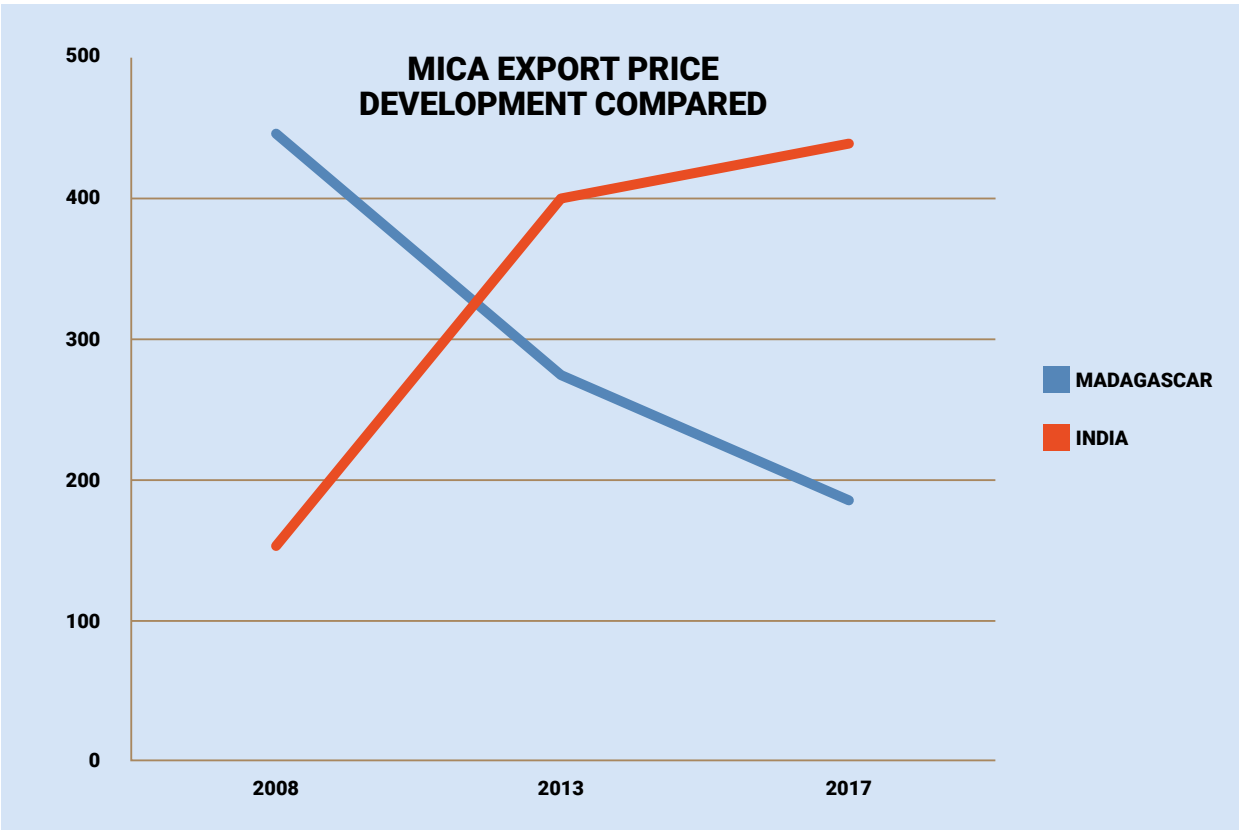
**Table 3:** Mica prices along the supply chain in 2017.  
Source: SOMO based on field research, information received from the Ministry of Mining and UN Comtrade.

The export figures from both Madagascar and India in the 10-year period from 2008 to 2017 also add an interesting perspective on the distribution of value in the mica supply chain (see Figures 4 and 5). Whereas the export volume of mica from Madagascar in 2017 is 30 times more than in 2008, the export revenue for mica has not grown proportionately. Its revenue is only 11 times more than it was in 2008. As a matter of fact, the price per metric ton in Madagascar has gone down from US\$ 482 to US\$ 186, while prices for mica from India, the leading exporter of mica by value globally, have steadily increased on a higher price level. Therefore, the pronounced growth of exports of mica from Madagascar comes with a lower price. In the context of an increasing global demand for mica, this suggests that there are opportunities to reverse the declining price trend in Madagascar.<sup>78</sup>

72 Average kilo price reported in the field research.  
73 Average kilo price calculated by SOMO based on information received from the Ministry of Mining detailing volumes and prices for mica sourcing by registered exporters.  
74 Average kilo price calculated by SOMO based on FOB price in 2017 (UN Comtrade, 2019)  
75 It is unknown which costs make up the sourcing price reported by exporters. Next to transportation there may also be costs incurred to pay for illegal taxes during transportation and the fee for mica traders.  
76 PACT, Mica in Southern Madagascar, A review of findings from Pact’s March 2019 field trip. PowerPoint presentation, April 2019.  
77 The average ratio of the not exported mica waste to the volumes sourced is the key uncertain factor here. Further research into this ratio is recommended to understand margins and estimates of the workforce  
78 Further research into price formations in the global mica trade is recommended to understand the differences in price.



**Figure 4:** Mica export volume (in metric tons). Source: Data base UN Comtrade.



**Figure 5:** Mica export price development compared. Source: Data base UN Comtrade.



The most labour-intensive phases in the Madagascar mica supply chain are mining and sorting. Although working conditions are harsh, the geology and the characteristics of the mineral itself allow for mica to be mined and sorted relatively simply and the skills needed can be learned on the job or by observation.

## 4. Socio-economic impact of mica production in Madagascar







#### 4.1 LABOUR CONDITIONS IN MINING

Mica mining in Madagascar essentially involves digging holes in areas with mica deposits to a depth that mica is found and then extracting it. Usually, (vertical) shafts of one to two metres wide are dug up to a depth of typically two to 15 metres (there are mica mines that go as deep as 60 metres). This shaft then allows for extraction of the mica (using crowbars and chisels) from the soil in the process of which horizontal tunnels and caves are formed. Shafts can give access to multiple tunnels, or caves, in different directions and/or at different depths. In mica-rich areas, many shafts may be created close to each other and the different tunnels that run from each of them may even connect.

Because of their physical strength, men and adolescent boys typically construct the mines (i.e. digging shafts and tunnels) and do the actual extraction of mica in the mining pit. Women generally do all the other work that is needed. They hoist the extracted mica from the pit with the pulley, go back and forth in mines to gather mica collected by the men and take the mica to be weighed. They also support the men working in the pits by talking to them, and bringing them water and food. Women who do not have a relationship with male miners because they are single, divorced or widowed, do not participate in this type of activity. To ensure their own needs and those of their children, if any, they may collect mica waste left near the pits and and/or the mining area. With the exception of adolescent boys, children tend to do the same type of work as women. They turn the pulley with buckets of mica, transport mica from the mine to the collection point and collect mica waste that was spilt or left by others. The latter is even done by very young children because they are not allowed to enter the mines.

Work in and around mica mines is often physically demanding and takes place under harsh conditions, exacerbated by the climate and setting. The southern region of Madagascar is mostly arid with savannah and/or desert-like landscapes with vegetation consisting of shrubs, cacti and grasses and very few trees. Temperatures are typically high and the heat is even worse in the quarries because in many sites there is little vegetation that could provide shade. This aggravates working conditions because the strong heat, reinforced by the lack of shade, exhausts workers. Ironically, the lack of shade is to some extent due to vegetation being removed or damaged during the construction of mines.

In Ambia, one of the mining sites included in the field research, temperatures are so high that many people do not work in the mines in the afternoon when temperatures are

highest but they choose to work only four to six hours before noon. A considerable number of miners even prefer to work exclusively at night when temperatures are milder. They say that working at night allows them to be more productive. However, miners who are really in need, work as much as they can, whether it is during the day or at night. In general, miners work from 7 a.m. to noon and from 1 to 5 p.m.

The working and living environment around mica mines is also very dusty. People who live and work in the mining communities are exposed to fine particles of mica and sand. The dust is blown into their eyes and lungs by the wind and/or because of sorting mica, moving bags and extracting mica in the pits. Hence, in all the stages of the mica mining process, people may be exposed to the dust.

Workers who extract the mica from the mines must use contortionist movements at suffocating depths. With lower levels of oxygen, they have to keep up the pace to be able to remove as much mica as possible. The deeper mines can be particularly challenging, forcing miners to come back to the surface periodically to get oxygen and regain strength. Bezaha is the only mica mining site visited for the research where gas-fuelled pumps are used to keep mining pits dry. However, their use also causes frequent fainting of the miners working underground because of the exhaustion fumes.

Work in mica mines may also require significant sacrifices including leaving behind family and making children work instead of them attending school. Also, generally, mining communities do not have access to safe drinking water or adequate sanitation and medical services. Despite these difficult conditions, miners persevere because they have few other viable options that allow them to make a living:

**“We have to work the mica mines even if it’s difficult because otherwise we do not eat. We do not know what else to do, we must suffer to eat”.**

**(Young man, 19, Ambia).**

**“Because working with mica is physically too demanding, women who have the means prefer to have a small-scale retail business”.**

**(Woman, 42, Ambia).**



However, the most serious and immediate risk of mining is the risk of death because of imploding mines or landslides. Among the serious mica accidents reported during the field research there were accounts of three casualties in Sakamasy, three in Ambia, as well as three in Ambatoabo.

Most of the people working in mica mining do not work in the quarries all year round. Mining work takes place in periods outside the rainy season when there is enough water for agriculture. Respondents indicated that the dry period usually falls between April and September. The wettest months of the year are from January to March.<sup>79</sup> In the rainy season, most respondents prefer farming or other activities such as herding, collecting firewood and stall keeping over the back-breaking work of mining. During the rainy season, mining sites, pits and tunnels become less accessible and some are even forced to close. Mica absorbs water, making it heavier to transport and more difficult for miners to sell it to the next party in the value chain. Only miners who have no alternative livelihood strategy, such as farming, usually work in mica mining every day of the year and all year round.

4.2 LABOUR CONDITIONS IN SORTING

Processing of mica takes places both on the mining sites as well as further downstream at the processing companies. At the quarries, processing consists of categorising the mica according to its size as well as removing pieces of stones or visible calcites encrusted inside the mica sheets or attached to mica pieces. Occasionally, mica is also sieved. The sorting of mica in exporting companies is more standardised in order to meet certain standards before exporting products. Workers involved in sorting for these companies (mostly women and children but also men) systematically remove calcite, sieve and categorise mica pieces according to size and colour. Also, for uniformity, pieces of mica may be further split into thinner or smaller pieces.

Just like in the quarries, the work in the sorting facilities is harsh. Workers often have back pain because of sitting on the ground for hours on end. Because of the fine particles of mica and dust in the air they are exposed to, they often have respiratory problems that are apparent from the frequent coughs. They also often have wounds on their feet and hands from the tools they use to clean or cleave the mica. Those who sieve mica may also be affected by pain in arms and shoulders from shaking and holding the sieves. Just like their colleagues in the mines, the sorters are exposed to high temperatures. By contrast, the areas for sorting observed during the field research provided cover from the sun in the form of nets or (tin) roofs.

4.3 INVOLVEMENT OF CHILDREN

Madagascar has ratified all key international treaties on child labour, including the Convention on the Rights of the Child (and its two Optional Protocols), ILO Convention 138 on Minimum Age, and ILO Convention 182 on the Worst Forms of Child Labour.<sup>80</sup> The government’s laws and regulations are in line with these international standards.<sup>81</sup> Madagascar’s Labour Code sets the minimum working age at 15. It also states that the minimum age cannot be less than the age of completion of compulsory education, effectively raising the minimum working age to 16. Malagasy law prohibits hazardous occupations and activities for children; children of both sexes under the age of 18 may not be employed in work exceeding their physical capacities, presenting danger, or which by its nature and the condition under which it is undertaken, is likely to harm their morals.

The Government has elaborated a National Action Plan to Combat Child Labour in Madagascar, in collaboration with - among others – international employers’ and workers’ organisations. The National Action Plan will be implemented over a period of 15 years.

The Division for the Prevention, Abolition, and Monitoring of Child Labour (PACTE) of the Ministry of Civil Services and Labour is responsible for enforcing child labour laws.

Convention on the rights of the child <sup>82</sup>

The CRC has 54 articles and gives children a number of rights to protect them including:

- The right to life, survival and development
- The right to an identity and a nationality
- The right to live with one’s parents and receive parental guidance
- The right of non-discrimination. All rights apply to all children without exception
- The right to play, rest and relax
- The right to freedom of expression
- The right to education
- The child has the right to be protected from work that threatens his or her health, education or development
- The right to be treated fairly
- The right to adequate food
- The right to a standard of living adequate for the child’s physical, mental, spiritual, moral and social development
- The right to be protected against all forms of abuse – slavery, excisions, physical and moral violence
- The right to be protected against armed conflict
- The right of refugee children to protection and help
- The right of disabled children to lead decent lives

Box 2: Convention on the Rights of the Child<sup>82</sup>

For many Malagasy children, the rights stipulated by the CRC (see Box 2) remain unfulfilled. In the mining villages in particular, at the top of the list of unfulfilled rights are the rights to adequate food, to a standard of living adequate for the child’s physical, mental, spiritual, moral and social development and the right to go to school. Other rights, such as the right to play, rest and relax, to be cared for, and the right to life and dignity are also not fully respected. Moreover, child labour in mining is generally considered one of the Worst Forms of Child Labour (WFCL) by ILO convention definitions.<sup>83</sup> Despite these normative frameworks, probably half of the conservatively estimated 20,000 people involved in mica mining, and half of the estimated 1,600 people working in mica sorting in Madagascar, are children.<sup>84</sup>

4.3.1 EXPLOITATION OF CHILDREN IN MINING

Mica mining is often a family affair. Families will be working as a unit. With the exception of teenagers, children will rarely be seen working alone. The involvement of children in mining work changes overtime as they grow up. Toddlers will just stay close to their mothers at the mines whereas teenagers are already full-fledged workers. As already noted, children are generally involved in the same type of work as the adult female workers. As they grow older, boys will gradually do more of the work that adult men are involved in – including digging mining shafts and extracting mica from the mines.

Adults are able to express their problems in more detail than children. The children’s complaints are more general and expressed more visually. Indeed, the youngest respondents in this research, had trouble putting their condition in words and making cause-and-effect relationships between their mica work and their visible signs of poor health. Besides, sometimes gestures say more than words.

79 World Data website, Climate for Anosy, <<https://www.worlddata.info/africa/madagascar/climate-anosy.php>> (23 September 2019).  
80 [https://www.dol.gov/sites/dolgov/files/ILAB/child\\_labor\\_reports/tda2018/Madagascar.pdf](https://www.dol.gov/sites/dolgov/files/ILAB/child_labor_reports/tda2018/Madagascar.pdf)  
81 Ibid.

82 OHCHR, Convention on the Rights of the Child, <<https://www.ohchr.org/Documents/ProfessionalInterest/crc.pdf>> and UNICEF, The United Nations Convention on the Rights of the Child, <<https://www.unicef.nl/files/English%20child%20friendly%20convention.pdf>> (23 September 2019).  
83 Dylan O’Driscoll, ‘Overview of child labour in the artisanal and small-scale mining sector in Asia and Africa’, K4D, 4 October 2017, <<https://assets.publishing.service.gov.uk/media/5a5f34feed915d7dfb57d02f/209-213-Child-labour-in-mining.pdf>> (23 September 2019).  
84 The estimate of the number of children involved is based on on-site observations and the typical family size in the region.



Young children, for example, just showed their hands and feet, which were marked by wounds from the work around the mica mines. Overall, many children are more or less exposed to the same harsh working conditions and risks as adults every day. They complain of back pain because they must bend to pick up mica from the ground or when they extract mica from the mines. They complain of headaches because of the heat and the lack of water or oxygen. Children report having muscle pain due to the repetitive and hard work carrying heavy loads, using crowbars and lifting hammers.

Many children seem resigned to their harsh working conditions and life. The children who we have interviewed justify the work because they have nothing to eat, because they are poor, or because their parents do not have enough money to put them in school. In short, they need to work with their parents for the family to survive. Conditioned by routine, a minority of the children even think their living and working conditions are normal.

**4.3.2 EXPLOITATION OF CHILDREN IN SORTING COMPANIES**

Interviews with eight children working in a sorting company in Amboasary allowed a more in-depth understanding of the harsh reality for children sorting mica in Malagasy export companies. Overall, it seemed that both children and adults in sorting complained more about the difficult working conditions than their colleagues in the mining areas. The conditions at the workplace for children are the same as those for adults: hot and dusty.

In addition, the burdensome tasks they perform are the same: carrying heavy loads, breaking, splitting and sieving mica involving repetitive movements, handling heavy and sharp tools. Lack of a nutritional diet comes on top of all this. Children earn less than adults because their work pace is lower and payments are based on the number of kilos sorted. It was observed that, even if young children work as hard as they can every day, their salary is not enough for them to afford enough food.

**‘We cannot always finish the job because we are too hungry’.**  
**(Girl, 10, sorting mica in an Amboasary company).**

None of the children sorting mica who we interviewed can afford three meals a day. They only eat in the evening due to a lack of money. Because the quality of the mica that they process varies, their work does not ensure a stable income either. When mica is very sturdy, it is more difficult to cleave and when there is a lot of calcite, it needs to be removed, which slows down the pace of work. Consequently, sometimes children may need two days to sort a single bag of low-quality mica<sup>85</sup> and only get Ar 900 (US\$ 0.24). On days when they earn more, Ar 4,000 (US \$1.08) for example, because the mica to be sorted is of good quality, they must immediately think of less prosperous days and stock extra supplies of rice. At the sorting facilities, sorted mica is paid at the rate of about Ar 20 (US\$ 0.005) per kilo. This is considered far too low by respondents.

**Frederic’s story**

Frederic is only 8 years old but he is already working in a sorting company like his big brother. He performs the same sorting activities as the adult workers, with the same materials in the same environment. Similar to his young colleagues, his hands are marked by traces, wounds and scars of repetitive work to remove calcite.

Like his peers, the little boy’s appearance also shows signs of food insufficiency and a worrying state of health that accompany his hard work and life: thinness, a bloated belly and coughing.

Just like two of his comrades, he works in the company either in the morning or

in the afternoon, according to the school’s schedule. He explained that he comes from a very poor family. This is why he is forced to work at the company, like the others, to be able to eat. Despite the difficulties in his life and that of his family, he hopes to be able to realise his dream of becoming a teacher.

**Box 3: Frederic’s story**

<sup>85</sup> In Madagacsar, mica is often packed and transported in secondhand woven polypropylene bags of 50 kilos. Typically, these bags were originally used to receive World Food Programme food aid or to import rice from India.





Felicia's story

Felicia is a 13-year-old girl who works in a sorting company in Amboasary. She lives with her mother and eight siblings. She explained that she has never attended school. In the sorting company where she works, she does all the sorting tasks adult workers engage in as well. In addition, just like them, she complains about the harshness of her tasks.

From Felicia's statements, it is clear that accidentally hurting oneself comes with the job:

"Sometimes, we hit the mica but it's our fingers that receive the blow" or "Every day we hit the mica and our nails are all damaged".

Like the other children in the group, she is not in good health; she coughs a lot and talks about her deplorable nutritional situation. Very often, she leaves early to work at the company on an empty stomach and can only eat at night if she can find something to eat. During the day she drinks water to suppress the feeling of hunger:

'If we do not have any food, we only drink water'.

As she does not go to school, she works from Monday to Sunday, without a rest, from 7 a.m. to 3 p.m. Felicia is conscious of the harsh reality of her life and is aware of the fact that things may never improve for her.

Box 4: Felicia's story

4.4 BROADER CONTEXT OF EXPLOITATION OF CHILDREN

The lack of respect for children's rights in the mica sector takes place in a broader context of interrelated and mutually reinforcing problems. A number of these problems, such as migration and separation from parents, inaccessibility of education and health services and nutritional deficiencies are linked to the high prevalence of child labour and (sexual) exploitation of children. This section provides a narrative of the conditions as perceived by community members interviewed and as observed during the field research. When a comparison is made between Androy, Anosy, Ihorombe and national data, the MICS 2018 data were used<sup>86</sup>, with reference to Table 1. This Table shows that the three regions in the south perform far worse than average on a number of social indicators such as education, nutrition, child marriages, fertility and child labour. Clearly, the inaccessibility of social services aggravates the situation and contributes to the inadequate fulfilment of children's rights.

4.4.1 INACCESSIBILITY OF BASIC SERVICES

If there is any infrastructure for health and education services in the mining areas, it is often a marginal service. In the best case, there are basic health centres that are poorly endowed with equipment and health professionals. In Ambatoambo,

for example, only two people make up the care team: a midwife and a trainee.

'The materials we use here are old. Our premises are damaged, the roof leaks when it rains. We do not have chairs, mattresses, wardrobes or enough rooms for patients. (Midwife, 3 years of service)'

A lack of qualified medical staff means that unqualified staff such as birth attendants or traditional healers look after those who seek medical care. A midwife in Tsilamaha explained:

'Here there is no hospital, I work for myself, I work at home. They (the inhabitants) come directly to my home when they are sick and when their condition is more serious, they must go to Antranomaro. There are also those who practice ancestral medicine'. (Midwife in Tsilamaha for 5 months)

In these villages and communes, the main pathologies reported by health professionals are malaria, coughing, diarrhoea, vomiting and a virulent form of measles that has caused many deaths in Madagascar. People in the mining communities are more likely to die of such diseases due to a lack of proper treatment and vaccination levels that are

among the lowest in the country (see section 2.4). While on a national level 41 per cent of children between 12 and 23 months have received the basic package of BCG, Polio3, DTP3 and measles immunisation, Androy and Ihorombe score 10 and 15 per cent points lower respectively. Anosy is the only one of the three mining regions that has a slightly better vaccination rate but it is still not half way towards the required 95 per cent coverage level that is required to obtain full protection for the entire population.

'People have died of malaria and measles. Since January, there have been about eight deaths'. (Midwife in Tsilamaha).

'Measles has hit more than 100 children. It was a difficult time because they cannot go to school or play with cold water'. (Village chief in Andranondambo)

For people in the mining communities without adequate health facilities, accessing services in the surrounding communes can be exceedingly difficult. Even if they can arrange for enough money to afford care and transportation, they may need to travel a long way and may be exposed to banditry on the way.

It was observed that initiatives to help communities fight malaria by distributing mosquito nets do not always seem very effective: mosquito nets are often used as high-quality rope for use with the pulleys and are an essential building material to construct huts. In addition, the presence of a public pump in the village does not always guarantee its broad use for drinking water either. In the village of Bezaha, villagers prefer rainwater or river water because it is considered tastier. In other mica mining villages, such as Ambia and Maromainty, there are no pumps at all, with the consequence that people drink open surface water.

4.4.2 INSUFFICIENT AND INADEQUATE NUTRITION

The lack of nutrition is an issue where poverty leaves its most obvious footprint. Although food shortages affect many in the mica mining areas, their negative impact is particularly harmful to the health and development of children. Habits and food consumption may vary from place to place, depending on the availability of food products and families' financial possibilities. While chronic malnutrition affects almost 4 out of 10 children under 5 years of age in Madagascar, the MICS 2018 shows that acute malnutrition,

or wasting, prevails under 7 to 8 per cent of the children under age five in the three mica mining regions. Most people in the mining community do not enjoy a diversified and good quality diet and most miners skip breakfast. More people have some form of lunch (leftovers from yesterday's dinner, noodle soup) and most people will have at least some food for dinner (cooked dried cassava, noodles or rice soup, rice, etc.). Cassava is the preferred staple as it is cheaper and more widely available than rice, the national staple.

The climate, non-availability of water for irrigation and soil conditions in the mining areas often do not allow miners to be self-sufficient in food. Rice, cassava, fruit and vegetables cannot be grown everywhere and are not available all year round either. Cactus, by contrast is more abundant in this climate. The fruits of these plants are often on the miners' menu. Poverty is generally so pronounced that, if people have poultry or livestock, it is not going to be for ordinary family consumption but rather for sale in order to get a little additional income. Indeed, villagers rarely consume animal proteins such as eggs, milk or meat.

'We do not eat, we are hungry'. (Girl, 7, Andranondambo)

'A child cannot understand the difficulties for adults to find food. They cry to show that they are hungry but there is nothing we can give them'. (Man with two children, Ankazofotsy).

4.4.3 MIGRATION

While some miners come alone, others migrate to the mining sites with their families. The origin of migrant workers on the mining sites as well as the length of their stay varies. However, the children that (temporarily) migrated with their families reported being native to villages and towns within a 100 km radius. By contrast, some of the migratory miners without a family, or who didn't bring their family, sometimes reported coming from the most distant corners of the island, sometimes up to more than 2,000 kilometres away (Toamasina, Antsiranana, Mahajanga). For children who are still attending school, migration to the mining sites mainly takes place during school holidays and/or during the dry season.

Most migrant workers will not relocate to the mining sites permanently. Depending on the situation this will make the population of mining communities grow. The village of Andranondambo, for example, has expanded as more and

86 Reference to Table 1 page 12, Multi Indicator Cluster Survey 2018 by UNICEF in collaboration with the Madagascar government and supported by the World Bank, USAID of US Department of Labor, Findings on the Worst Forms of Child Labor – Madagascar.



more migrants have arrived. According to the village chief, out of 2,200 people living in the village, there are about 300 migrants. This contrasts starkly with the composition of the population at the mica mining rush village Ambia. The number of migrants in this hamlet far outnumbers that of natives during the dry season when mica mining is at its peak. In those periods there may be only about 50 natives compared to more than 2,000 migrants.

Ten per cent of all children involved in mining who were interviewed had to leave their parents because of work. In the mining sites these children usually are chaperoned by another family member (uncle, grandfather or aunt). For the parents who send a child to work away from home it means one mouth less to feed. In addition, all children (and even adults) who are separated from their close family members (father, mother and/or sometimes grandparents) will send money from the mining site. Parents and chaperones may even think these children are better off this way. However, regardless of motivation, their action often does not lead to any improvement. As already noted, children often get insufficient and inadequate food in mining and sorting areas. Education may be hampered because schools are remote or non-existent. Additional abuses of child rights manifest themselves in their workplaces in the form of child labour, health and safety hazards and being away from their parents. In the mining sites, many children are like Julie (see Box 5), a migrant child, far away from her parents, stopped school, not eating her fill, working very hard at a young age to earn some money and losing her childhood. Indeed, child labour generally does not address but perpetuates a situation of poverty.

Julie’s story

Julie is a 13-year-old girl living in Ambia but is originally from Ambovombe. Her parents live separately. Her mother lives in Ambovombe, her father lives in Antananarivo. She has four brothers and sisters but her father does not contribute at all to their needs. Knowing her mother’s difficulties in raising her children and the misery that plagues her family, her maternal grandfather decided to take Julie and one of her little sisters with him to the mines. In Ambovombe, Julie went to school, thanks to the Fraternidad project that financed it. Now she lives with her grandfather. She no longer goes to school but devotes herself exclusively to mica work. Julie would have liked to continue going to school but she had to stop while she was in second grade. In Ambia, there is no school.

For Julie all days of the week are the same: in the morning, she leaves the house with her grandfather to accompany him working in the mines and they do not return until the evening. In the mining area her job is to collect mica waste. She complains about the back pains this work causes her. She also complains about the difficulty of working in the overwhelming heat.

When home, she needs to do domestic chores such as cooking, washing dishes, fetching water from the river, cleaning and collecting wood. The little money Julie earns is mostly spent on food:

‘I save my money to buy tea and bread in the morning. When I do not have any, I have no breakfast either’.

Indeed, paying the family breakfast is the financial burden that is bestowed on Julie. Her income is not more than a meagre Ar 750 (US\$ 0.20) a day on average. However, she does try to save money to buy clothes.

Her diet is marked by a great lack of diversity. At breakfast she has tea, bread or ampago (a popular broth made from carbonated rice that may form at the bottom of a pan when cooking rice), at midday rice with cactus fruit, or pumpkin, and in the evening either rice or corn. In a life scarred by unprotected children’s rights, Julie dreams of becoming a shopkeeper.

Box 5: Julie’s story



4.4.4 EDUCATION

Local authorities rarely have exact figures on population size and composition, and the number of children going to school. MICS data (Table 1) show that the three regions in the south achieve about half the national average when it comes to completing primary or secondary school. Interviews with the mining communities allowed the researchers to gain a better understanding of how children and teachers perceived the challenges of education in the mining areas.

For this research 81 children who work in mica mining were interviewed. Of these children, 31 did not go to school. The eight children who had never gone to school explained this was due to a lack of means or parental support and/or a lack of schools altogether. The 23 children who left school reported this was due to a lack of means or parental support as well, but also referred to early marriage, illness and safety concerns (insecurity) as a reason.

Teachers in Andranondambo, Ambatoabo and Amboasary who were interviewed confirmed that dropping out of school is a common phenomenon in mining sites and especially in times when there is little food. To them, offering free lunch in the school canteen is the primary solution to make their schools more attractive.

‘People are hungry, sometimes parents want to educate their children but they cannot afford it so they have them leave school. Work in the mica sector is a common motive for stopping school. Parents also remove their children from school as soon as they are 13 or 14 years old; they push them to get married’.

(Teacher, Talakifeno, Ambatoabo).

A teacher in Andranondambo explained that parents do not stop moving from one mining area to another. In addition, attacks of dahalo, or fear thereof, make parents flee with their children. Both of these factors hinder children from going to school.

Children who do go to school are not educated under optimal conditions. There is a lack of furniture and teachers lack educational materials such as books. There are also reports of criminals trashing schools. Young teachers are deserting their schools because of these problems. They reportedly cannot cope with the lack of safety and means of communication such as telephone or internet.

‘Our school was wrecked by the dahalo, we no longer have chairs or book cases. The dahalo also destroyed all the books. There is little that remains [for] us to teach with now’.

(Teacher, Talakifeno, Ambatoabo).

The lack of teachers and the large number of pupils per teacher that are cramped into the schoolrooms cannot but impact negatively on the quality of the education. Sometimes, there are so many students that there are six to eight children at each table.

It should be noted that the availability of schools in villages does not automatically mean all village children will go to school. By contrast, in case there is no school in the village such as in Ambia and Maromainty, some children will be prepared to attend one in places further out if they are motivated to work and are encouraged by their families. There are even teenagers that combine school and mica work (see Box 5). Boys of 15 that still go to school are quite rare in the south of Madagascar. For children like him combining work and school is exhausting.



### Marc's story

Marc is 15 and lives in Ambatoabo with his mother, her partner and his siblings. For years, Marc has been working when school is out. He is not only involved in mica work, but also herds goats, helps farming rice or does household chores such as collecting firewood and fetching drinking water. When Marc is working at the mica quarry, he does so from 7 a.m. to noon, weekends and during school holidays because the rest of the time he goes to college. At the mining site, Marc always works with his family. His duties include digging pits as well as extracting and sorting mica.

While Marc may produce 12 kilos of mica a day, he will not be paid for this output specifically. This is because all the family's mica production is pooled together. Furthermore, income from mica work is exclusively managed by the adults. He receives between Ar 200 and 3000 (US\$ 0.05-0.80) of pocket money per month. Family income is mostly used to cover food expenses and is insufficient to give him more than he receives.

He finds the working conditions very difficult:

**‘We are exposed to the sun that hits hard while we work. The soil we need to dig into to extract mica is very hard and we have a lot of sores on our hands because of it’.**

With his busy schedule combining work with school as well as household chores, Marc has little diversity in his three meals a day: he always eats rice with, depending on the case, some fish, beans or meat. Marc's dream is to one day be able to buy a bicycle and a motorcycle.

### Box 6: Marc's story

### 4.4.5 COMMERCIAL SEXUAL EXPLOITATION OF CHILDREN

Prostitution is widespread in Madagascar (see Box 8). Ascertaining it, however, is not always easy because of cultural specificities in terms of seduction and perception of sexual practices. In some areas of southern Madagascar, for example, it is common for young men from one village to go out with girls from another village for money without the term 'prostitution' being mentioned. This practice is so common that there was even a time that authorities asked that the money given to the girls should not exceed a certain sum to avoid insecurity problems. This is because young boys without money resort to theft and organised forms of criminality such as banditry (dahalo) to be able to afford it.

In a number of mica mining sites, young girls were found to be sexually exploited. In the mining villages the traders and their friends, or collaborators, are among the most important and wealthy people.

The traders may take advantage of their status and assets to sexually exploit poor girls on the mica sites and can even afford to choose who they want. Adolescent girls are under immense pressure to have sex with them, as the sum they receive is relatively high and earned quickly compared to working in mica mining.

In Tsilamaha, it was observed that girls attempted to attract the attention of 'rich' mica traders upon their arrival at the weighing location in the centre of the village. A discussion with the village chief and other villagers confirmed that commercial sexual exploitation of children happens regularly at such occasions. They referred to an incident involving one of the girls that was just observed. Apparently, this girl of about 14 years old was offered Ar 50,000 (US\$ 13) by a trader in exchange for sex. However, when another mica trader offered her Ar 60,000 (US\$ 16) she went with him instead, which resulted in tensions. The village chief also confirmed that young men resort to banditry because of the high price of paid sex with minors.







**Jao's story**

Jao, a 13-year-old boy, no longer goes to school but works in sapphire and mica mining. He lived in Amboasary with his mother but was forced to move to Andranondambo to be with his father, who was working there with mica and sapphire. Because his father is no longer able to work because of a serious illness, it is Jao who takes care of him now.

Jao does not have a watch: he leaves for work at the beginning of the day and returns when it starts to get cold (towards 5 p.m.).

Every day he needs to mine about 10-20 kg of mica to cover their expenses. He admits that he does not work every day to spare himself because he complains of being tired. To help his mother who divorced from his father, Jao occasionally sends her Ar 20,000 (US\$ 5.35) when he earns enough money.

Jao is a lively boy who loves fashion and is looking for experiences. He confessed that he also frequents prostitutes, spending Ar 2,000 (US\$ 0.54) to Ar 5,000 (US\$ 1.34) on each occasion.

He also offered to help arrange girls for the men in the research team. Jao finds it difficult to work in the mica and sapphire business. Yet he never thinks of stealing:

**‘It’s not good to steal because it’s forbidden, and we risk being killed by the commander’.<sup>87</sup>**

**Box 7: Jao's story**

Studies on sexually transmitted infections (STIs) and AIDS show that truck drivers are a risk group because they are among the loyal customers of prostitutes. The research team witnessed a case involving mica truck drivers and two girls of about 14 and 15 years old who were victims of commercial sexual exploitation in the village of Antanimora, a transit place for the transport of mica. At first, they were observed in the truck and later in a bar where discussion with the girls helped to understand more about their lives (see Box 6).

**Portrait of two sexually exploited children**

Nadine and Francine come from the Amboasary region, about 97 km from Antanimora, the place where the team interviewed them. The girls told us they got into the truck because they wanted to ride a truck, so they came along with the driver to collect mica. They do not know exactly for how long they will be joining him nor where they are going exactly. Even the driver does not know yet. According to the trucker, his boss (owner of a transport company specialising in mica transport), only asked him to wait up for a trader in Antanimora who will show him the place to collect the mica.

In the bar where the research team was able to talk to them, the two girls seem to be at ease and make it more comfortable for themselves by ordering all kinds of foods and drinks. The driver, who is about 40 years old, also seems at ease with the situation. He is explicitly showing off in front of the other young men in the bar, loudly encouraging the girls to order more food and drinks as well as referring to the research team: “You can still add things if you want, do not feel restrained! They are our friends!”

Because their mothers were aware of them having left with the driver, they say they do not have any reservations about sleeping over in Antanimora. However, it is impossible to ascertain how the girls really feel and what pressures they might be under. A car mechanic in the village told the research team that he had asked the youngest girl what it would cost to have sex with her. She told him Ar 50,000 (US\$ 13.38), saying that she is still a virgin.

**Box 6: Portrait of two sexually exploited children**

**4.5 CONTRIBUTION TO HOUSEHOLD BUDGET**

People in the south live from hand to mouth. A large majority of people will work in mica mining during the dry season only. This is the time of year they have no options to provide food by farming. Therefore, while miners may need less income for food when they are not mining mica, the lion's share of the mining income will be spent on food when they are. However, even when mining, many miners do not eat their fill, skipping all but dinner each day. This shows that mica mining income is meagre but essential for many people in the absence of other options to buy or grow food.

Interviews in mining communities did not allow researchers to gather enough information for a comprehensive in-depth analysis of household budgets.

The available information did, however, allow researchers to understand the situation of income and expenses for mica miners in Madagascar. The findings show that mining income varies considerably. An important factor in fluctuating income is the mining location; some quarries as well as pits are more productive than others. Ownership of the pit is also an important factor: if it is your own, you get to keep all the income; if not, you have to share half of it with the owner. Weather conditions add to varying daily income levels as well because rain negatively affects business. Finally, there is also competition: there will be less mica waste to collect if there are many other women or children collecting it.

Income in mining sites may range from Ar 1,000 (US\$ 0.27) for collecting scrap mica to Ar 11,250 (US\$ 3.01) for mining per adult a day.

87 Referring to the then head of the security forces in the southern region.





If one considers that the international extreme poverty line of US\$ 1.90 a day equals Ar 7,100<sup>88</sup> in purchasing power parity in Madagascar, it is clear that income levels are sometimes extremely low. Indeed, the minimum wage in the non-agricultural sector amounts to Ar 6,139 (US\$ 1.64) for 8 hours a day. Families or teams working together in their own pit may earn as much as Ar 45,000 (US\$ 12.04). It may, however, be halved if production is in the lower range and lower (again) if their earnings need to be split with the owner, in which case earnings amount to only Ar 11,250 (US\$ 3.01).

In general, families in Madagascar have many mouths to feed. Fertility rates are as high as eight in Androy and six in Anosy.<sup>89</sup> To illustrate, the cost of buying only the staples to cook three meals a day for a family of nine amount to Ar 3,400 (US\$ 0.91) for manioc and Ar 8,100 (US\$ 2.17) for rice. Calculations by WageIndicator show that Ar 20,579 (US\$ 5.51) is the daily income needed to cover the necessary living costs of a typical family in Madagascar.<sup>90</sup> Adolescents making Ar 1,000 (US\$ 0.27) to Ar 1,500 (US\$ 0.41) on their own account collecting scrap mica may spend Ar 1,000 on meals alone. This leaves them little or nothing to set aside. For comparison, children of four years old collecting scrap mica will only contribute Ar 150 (US\$ 0.04) to family income.

#### 4.6 CONTRIBUTION TO LOCAL ECONOMY

It is difficult to estimate the contribution of the mica sector to the local economy as comprehensive and basic information on economies on the regional scale is unavailable. Moreover, as this research shows, it is quite a challenge to collect the necessary information to be able to understand the economic dimensions of the mica sector itself. Nevertheless, some of the characteristics and aspects of other (locally) important sectors allow researchers to put the contribution of the mica sector into a better economic perspective.

First of all, the population size of the most important mica production regions combined – Anosy (809,313), Androy (903,376) and Ihorombe (418,520) – is roughly 2.1 million people. Assuming the share of people involved in agriculture in these regions is similar to the national level of 80 per cent, there are 1.6 million people involved in agriculture. This compares to an estimated minimum of 22,000 (miners, sorters and traders) people being involved in the mica sector. This means that only a marginal one per cent of the people in these three provinces is working in the mica sector. However, as noted, mica mining is mostly complementary to agriculture, allowing people to earn income in periods when working on, and living off the land, is not attractive or possible.

Looking at a national perspective, the share of official export value per mica miner compares positively with two other key artisanal and small-scale mining sectors in Madagascar: gold and sapphire.<sup>91</sup> Gold is by far the greatest export earner among the three minerals however; its workforce is estimated to be twenty times larger than the mica workforce.<sup>92</sup> The estimated number of people mining sapphire is about three times that of the people mining mica however; illicit exports are estimated to be worth US\$ 150 million.<sup>93</sup> This makes taxable sapphire export revenue much lower, even lower than that for mica.<sup>94</sup>

#### 4.7 CONFLICT MINERALS

There are no clear criteria to define whether a specific mineral (trade) can be characterised as a conflict mineral (trade). The term ‘conflict minerals’ is used to designate trade in minerals from conflict-affected and high-risk areas that finance armed groups, fuel human rights abuses and/or corruption and money laundering.<sup>95</sup>

According to the Organisation for Economic Co-operation and Development (OECD) Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas,<sup>96</sup> high-risk areas are “often characterised by political instability or repression, institutional weakness, insecurity, collapse of civil infrastructure, widespread violence and violations of national or international law”. The guidance describes conflict-affected areas as “identified by the presence of armed conflict, widespread violence, including violence generated by criminal networks, or other risks of serious and widespread harm to people”.

Many elements in these international notions and definitions are characteristic of the situation in the mica mining regions in the south of Madagascar (see further below). Nonetheless, it is argued here that mica is not a clear case of a conflict mineral. This is mainly because its impact, manifested in the number of people working in it as well as the income they generate, is still relatively limited compared to a number of other minerals such as sapphire and gold.

The problems defined in these international definitions play out on a much larger scale than the areas where the mica sector is concentrated. Political instability, insecurity, armed violence, corruption, human rights abuses such as child labour, weak institutions and infrastructure are characteristic of the whole country. Although, the south of Madagascar is more impacted by a number of these problems than other areas of the country, it is unlikely that the mica sector plays a significant role in contributing to, or perpetuating, these problems even in this more confined area of the country.

The most probable, and important, reason for this is that revenue in the mica sector is relatively low.

Prices for mica hardly compare to those for gold or sapphire. Sheet mica costs US\$ 0.03-0.05 per kilo at the mine and scrap mica only US\$ 0.01, whereas sapphires may cost hundreds or even thousands of dollars for a small stone. Low prices for mica mean that mica miners and communities do not get rich from mica (as is also amply illustrated in the preceding sections in this chapter). As a result, mica miners, mines, communities and other actors, with the exception of perhaps mica traders that are reportedly occasionally targeted, are generally of no special interest to criminals or organised crime. Whereas owners of mica exporting companies may (also) have substantial income, their companies are usually located in towns where it is more safe. Finally, while the number of people involved in the mica sector is considerable, their number is much lower than the half million people that are conservatively estimated to be working in the gold and sapphire sector alone. From this perspective, the contribution of mica to fuelling human rights abuses is relatively limited as well.

However, the hardship of the mica mining communities is exacerbated substantially by the constant fear and threat of bandit attacks. When attacks are feared, many people flee the mining quarries to try their luck elsewhere and/or to return at a later date.

<sup>88</sup> Salary Converter website, <<http://salaryconverter.nigelb.me/>> (23 September 2019).

<sup>89</sup> INSTAT/UNICEF.

<sup>90</sup> Wage indicator website, <<https://wageindicator.org/salary/living-wage/madagascar-living-wage-series-january-2018-country-overview>> (23 September 2019). A typical family consists of two parents with 4.5 children, of which 1.9 are working.

<sup>91</sup> The comparison of ratios is for analytical purposes only. Mica miners receive only a small share of the export price and estimates of workforces are very rough.

<sup>92</sup> Estimate based on the average reported by two different sources: IISD, Rapport d'évaluation de Madagascar, March 2015, <<https://www.iisd.org/sites/default/files/publications/mpf-madagascar-assessment-of-implementation-readiness-fr.pdf>> (23 September 2019); The Guardian, 'A million artisanal gold miners in Madagascar wait to come out of the shadows', 15 November 2016, <<https://www.theguardian.com/sustainable-business/2016/nov/15/gold-rush-madagascars-artisanal-miners-could-benefit-from-global-downturn>> (23 September 2019)

<sup>93</sup> The estimate was based on the average of the number of people involved in mining in a current sapphire rush region and former one: The Guardian, 'Sapphire rush' threatens rainforests of Madagascar, 2 April 2017, <<https://www.theguardian.com/world/2017/apr/02/sapphire-rush-threatens-rainforests-of-madagascar>> (23 September 2019).

<sup>94</sup> Transparency International Initiative Madagascar, Fascicule sur le secteur minier artisanal à Madagascar, Or et Saphir, December 2016, <[https://www.transparency.mg/assets/uploads/download\\_manager/fascicule.pdf](https://www.transparency.mg/assets/uploads/download_manager/fascicule.pdf)> (23 September 2019).

<sup>95</sup> European Commission website, Conflict minerals, 'The regulation explained', <<http://ec.europa.eu/trade/policy/in-focus/conflict-minerals-regulation/regulation-explained/>> (23 September 2019).

<sup>96</sup> OECD, OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas, 20 March 2013, <<http://dx.doi.org/10.1787/9789264185050-en>> (23 September 2019).





## GLOBAL SUPPLY CHAINS

This chapter focuses on the downstream supply chain of mica coming from Madagascar. The aim is to establish the itinerary of the transformation of mica into parts and products and identify their key industrial users and overseas clients. In the previous study by Terre des Hommes/SOMO in 2018 it was already revealed that Madagascar produces sheet mica which is especially in high demand for the electronics, automotive and energy industries. The first phase of this study identified that most of the mica is exported to China. For this reason, the research identified China as the first entry point to further trace the mica downstream.

### 5. Mica from Madagascar in global supply chains





To map the downstream supply chain from the Malagasy ports to the factories, the research initially intended to focus solely on sheet mica (HS code 252510), which is almost exclusively exported to China. However, the available information from Chinese customs on shipments that specific companies in this country receive does not distinguish between different grades of mica. It was therefore not possible to specifically focus on the use of sheet mica at this level. This study therefore follows all imported mica from Madagascar into China and makes an effort to identify the type of clients that source mica products.

### 5.1 MICA EXPORTS FROM MADAGASCAR TO CHINA

In 2017, the mica exports<sup>97</sup> from Madagascar totalled 34,800 tons, worth US\$ 6.5 million. The exports are composed as follows:

- ‘mica: crude and rifted into sheets or splittings’ (HS Code 252510): 66 per cent
- ‘mica waste’ (HS Code 252530): 33 per cent
- ‘mica powder’ (HS Code 252520): 1 per cent

Of the total mica export from Madagascar, 87 per cent in volume was exported to China in 2017.<sup>98</sup> Of the mica grade ‘crude and rifted into sheets and splittings’, 95 per cent was exported to China in 2017. This grade of sheet mica and splittings is especially used for products in the electronics and automotive industries, such as capacitors, resistors and insulators, which are small components that are mounted on printed circuit boards.<sup>99</sup> The total value of sheet mica to China is almost US\$ 4 million (see also Table 4).

Mica ‘waste’ (or scrap mica) is the basis for many different mica products including mica flakes, mica powder and mica paper. Scrap mica is a by-product of sheet mica mining and processing. It can, however, also be recovered as a by-product from beneficiation of other minerals such as feldspar and quartz.<sup>100</sup> Mica flakes, mica powder and mica paper products are used in paints and coatings, cosmetics, construction and in the automotive and electronics industries. In 2017, 71 per cent of the scrap mica exported from Madagascar was shipped to China. The remaining scrap mica was exported to Estonia (18%), Russia (5%), Japan (2%) and India (1%) and some small amounts to four other countries.<sup>101</sup>

<sup>97</sup> It would be more logical to refer to imports here but there is a much greater level of detail in the export figures from Madagascar than in the import figures from China in the UN Comtrade database.  
<sup>98</sup> UN Comtrade.  
<sup>99</sup> SOMO and Terre des Hommes (2018), p. 42. ‘TMR reports that sheet mica is not being used by the paints and coatings, cosmetics or construction sectors’.  
<sup>100</sup> SOMO and Terre des Hommes (2018), p. 19.  
<sup>101</sup> UN Comtrade.

HS CODE	TOTAL MICA EXPORT FROM MADAGASCAR IN TONNES (AND VALUE IN US\$)	MICA EXPORT FROM MADAGASCAR TO CHINA IN TONNES (AND VALUE IN US\$)	PERCENTAGE OF TOTAL EXPORTED TO CHINA
<b>252510</b> - mica: crude and rifted into sheets or splittings	22,805 (US\$ 4,390,451)	21,606 (US\$ 3,973,442)	95%
<b>252530</b> - mica scrap	11,563 (US\$ 1,949,585)	8,222 (US\$ 1,164,849)	71%
<b>252520</b> - mica powder	448 (US\$ 123,232)	448 (US\$ 123,232)	100%
<b>2525</b> - mica including crude, sheet and splittings, powder and mica waste	34,816 (US\$ 6,463,269)	30,276 (US\$ 5,261,524)	87%

**Table 4:** Mica export from Madagascar in 2017.  
Source: SOMO, based on UN Comtrade database.<sup>102</sup>

The exports of mica from Madagascar to China increased more than four-fold between 2013 and 2017 from almost 7,000 tonnes to more than 30,000 metric tonnes (see Table 5).

	2013	2014	2015	2016	2017
Mica export from Madagascar to China in tonnes, HS Code 2525	6,782	9,426	14,195	18,153	30,276

**Table 5:** Mica export from Madagascar to China in the period 2013-2017.  
Source: SOMO, based on UN Comtrade database.

<sup>102</sup> UN Comtrade database.



5.2 IMPORTING COMPANIES

Based on data obtained from Chinese customs, 18 different importers of Malagasy mica could be identified for 2017 alone. Together these companies received 79 shipments of mica from Madagascar for a total value of US\$ 6,144,487 in 2017.<sup>103</sup> In Table 6, four of the 18 identified exporters over 2017 are listed.<sup>104</sup>

IMPORTING COMPANY	NUMBER OF SHIPMENTS	VALUE (US\$)
Ningbo Ram Electric Material Ltd.	8	1,345,646
Dongguan City Non Cloud Mines Ltd.	10	1,082,745
Electrical Industrial Co., Ltd. Hubei Ping	10	1,042,639
China National Township Enterprises Corporation1	5	788,320
Unknown (10 shipments of unknown importers)	10	588,305

**Table 6:** *Top five importers in China of Malagasy mica in 2017.*  
*Source: SOMO, based on information retrieved from the Panjiva database.*

In 2017, the share of the imports of the top four largest importers combined was US\$ 4.2 million (or 69 per cent of total imports). The top four is followed by a group of importers for which the names are unknown with 10 shipments in total, representing a value of US\$ 588,305. This means that for almost 10 per cent of the total import value of mica from Madagascar, only the destination (Hunan Province) is known. The remaining 14 Chinese importers account for 21 per cent of the total import value. Shipments in the first quarter of 2018 (no customs data was available after this date at the time of the research) were also reviewed and revealed six additional companies as well as the 18 companies already identified for 2017. Hence 24 importing companies in total were the starting point for further mapping the supply chain to the factories.

China also imports mica from a range of other countries. When looking at all the shipments to China in 2017, the following countries are among the top 5: India (387 shipments), Madagascar (79 shipments), Nigeria (28), Japan (21) and Canada (12). The high number of shipments from Nigeria is noteworthy as it suggests that this country is apparently a much more significant mica exporter than was known from the previous research by SOMO.<sup>105</sup>

5.2.1 TYPES OF MICA IMPORTERS

Based on the research on the importers, three different types of importers can be distinguished:

- 1. Import by manufacturers
- 2. Import agencies
- 3. Import for traders and manufacturers by state-owned enterprises

In Table 7, a selection of the 24 importers that could be identified as importers of mica from Madagascar are presented by type. The total number of companies identified for each category is noted in brackets.<sup>106</sup>

IMPORT BY MANUFACTURERS (13)	IMPORT AGENCIES (10)	IMPORT FOR TRADERS / MANUFACTURERS (1)
Dongguan City Non Cloud Mines Ltd.	Hunan Xingfeichang International Trade Co., Ltd (Xingfeichang)	China National Township Enterprise Corporation
Ningbo Ram Electric Material Ltd.	Shanghai Xianghu International Trade Co., Ltd (Xianghu)	
Pamica Electric Material (Hubei) Co.		
Pingjiang VPI Mica Insulating Materials		
Pingjiang Xingke Mica Products Co., Ltd.		

**Table 7:** *Selection of Chinese mica importers identified by type.*  
*Source: SOMO, based on information retrieved from the Panjiva database.*

Import by manufacturers

The largest group of Chinese mica importers are manufacturing companies. While they all import mica from Madagascar for their own factories, some will also import for other companies. For instance, Pamica Electric Material (Pamica), a leading Chinese mica product company, is only importing mica for its own products, just like Pingjiang VPI Mica Insulating Materials. Ningbo Ram Electric Material, on the other hand, imports mica not only for its own production but also for other manufacturers (e.g. Xiangbei).<sup>107</sup> Almost all manufacturers are also importing mica from other countries as well as Madagascar. India is the most important sourcing country.<sup>108</sup>

Import agencies

Import agencies represent a smaller group of Chinese mica importers. These mica trading companies supply mica to manufacturers in China. For example, Shanghai Xianghu has close relations with the mica companies in Pingjiang county (Hunan). Most of these import agencies are also importing from India; and in some cases, from a third or fourth country as well.

Import for traders/manufacturers

China National Township Enterprises Corporation is a category on its own as it is the only state-owned enterprise importing mica from Madagascar. The company is supplying mica traders as well as mica manufacturers. It has a local reputation for being the largest importer of Malagasy mica in China. In 2017, however, it was the fourth largest importer of mica from this country. China National Township Enterprises Corporation also imports mica from India.<sup>109</sup>

It was indicated during the field research that in reality there are more importers than those listed by customs. Because not all importers have a legal import status as a company, they are making use of the status of other importers. This means that the listed importers, to some extent at least, may be importing on paper only while other importers are actually involved in it.

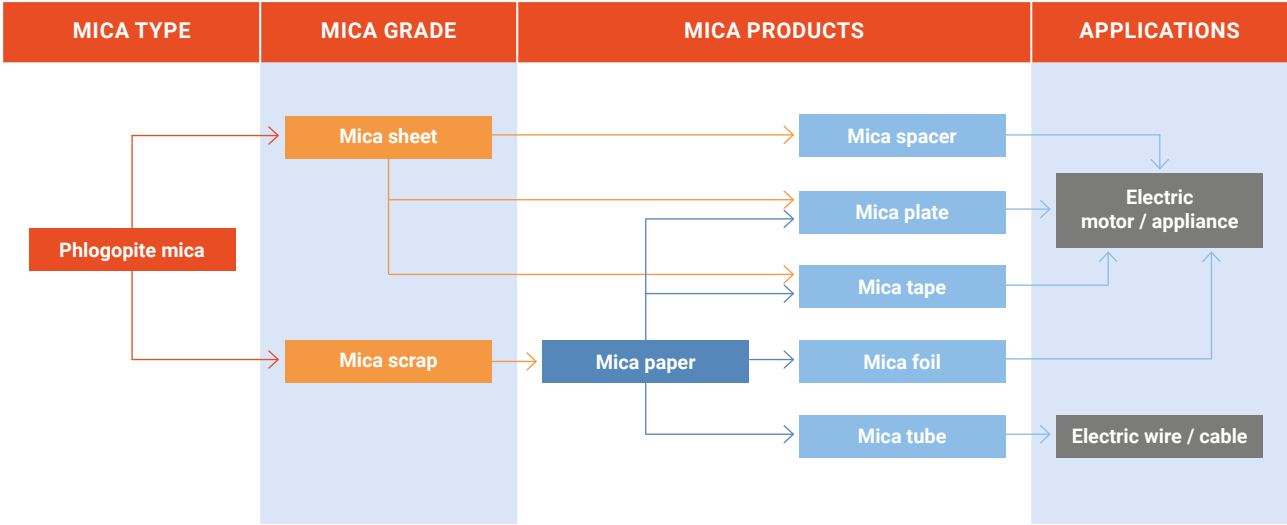
<sup>103</sup> It is common that different sources report somewhat different trade statistics.  
<sup>104</sup> These four importers were approached for review to limit the number of companies in the review process (see introduction). Not all 18 importers are listed in the report but they are known to Terre des Hommes.  
<sup>105</sup> SOMO and Terre des Hommes (2018), p. 19.  
<sup>106</sup> The commissioners of this research dispose of a complete list.

<sup>107</sup> Interviews field research.  
<sup>108</sup> Also importing from India: Dongguan City Non Cloud Mines, Ningbo Ram Electric Material Ltd. (and from Nigeria); PAMICA (and from Nigeria): Pingjiang Xingke Mica Products; Source Panjiva database, visited 29 July 2019.  
<sup>109</sup> Panjiva database.



### 5.2.2 GRADES AND PRODUCTS OF MICA

As noted above, China mainly imports sheet and scrap mica from Madagascar. According to previous reports, sheet mica is used for built-up mica and fabricated mica products. The latter are pieces of sheet mica that are cut and punched according to different specifications.<sup>110</sup> However, according to a Chinese industry analysis (2017),<sup>111</sup> mica paper – which can be made from sheet as well as scrap mica – is gradually replacing these more traditional mica products made of sheet mica and is becoming the primary insulating material. This is because the production process of mica paper is less labour-intensive than cutting and punching sheet mica into the required shapes and therefore production costs are lower overall. Together with scrap mica, sheet mica is also used for various other mica products such as mica spacer, mica plate, mica tape, mica tube, mica foil and fabricated mica.<sup>112</sup> It is mainly in the form of these products that mica finds its way into electrical appliances and motors, wires and cables (see Figure 6).



**Figure 6:** Mica products made of Malagasy mica.  
Source: Created by research organisation in China.

Mica powder and flakes that are based on scrap mica also have a very wide range of uses. In addition to electrical insulation, mica powder can be used in weldments and products made of ceramic and rubber. Moreover, mica powder can be used as a pearlescent raw material as well for related products such as plastics, paints, inks and cosmetics. However, as this research focuses mainly on the use of sheet and scrap mica from Madagascar, the use of mica powder by manufacturers in China is not further investigated.

### 5.3 DISTRIBUTION OF MALAGASY MICA IN THE CHINESE MICA SUPPLY CHAIN

In 2017, Yueyang Port was the most important entry point for mica from Madagascar in China. Hunan, the province in which the port is located, was also the most important importing province in the country. Other importing provinces and cities are (in decreasing order of importance): Hubei (Wuhan), Fujian, Zhejiang, Guangdong (Shenzhen), Jiangsu, Guangxi, Hebei, Jiangxi and Sichuan.<sup>113</sup>

The mica from Yueyang is mainly supplied to the neighbouring counties of Pingjiang and Tongcheng, where most of the mica paper production in China is concentrated (see Figure 7). The mica product producers in this region in turn supply mainly companies in the Yangtze River Delta region with cities such as Shanghai, Jiangsu and Zhejiang.

<sup>110</sup> SOMO and Terre des Hommes (2018), p. 19.

<sup>111</sup> 'Three questions about mica insulation materials', China Powder Industry. NO.3, 2017.

<sup>112</sup> For an explanation of the different types of mica-based products see for example: C.L. Roongta website, Fabricated Mica, <<http://www.roongtamica.com/product/fabricated-mica/>> (23 September 2019)

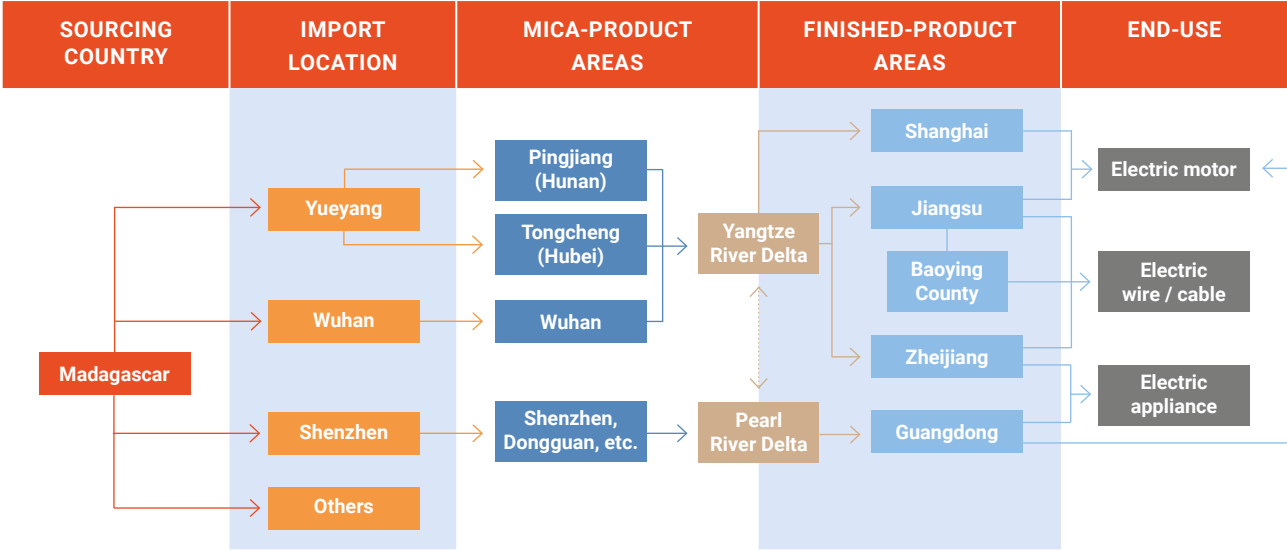
<sup>113</sup> Information based on: '2018-2023 China Mica Market Prospect Analysis and Investment and Financing Strategy Research Report', issued by the China Business Research Institute, <<http://www.askci.com/news/chanye/20180212/170605118163.shtml>> (27 August 2019).



End-product manufacturers in this region are involved in many fields such as electric wires and cables, electric motors and appliances.

Wuhan is the capital of Hubei Province. The city hosts some of the largest mica product manufacturers such as Hubei Zhongtian Mica Products Co., Ltd. (Wuhan) and Pamica Electric Material (Hubei) Co.

Shenzhen is one of the core cities in the Pearl River Delta region. Mica imported here is mainly supplied to enterprises producing home appliances and electrical equipment in Guangdong Province, which includes cities such as Shenzhen, Dongguan and Shantou.



**Figure 7:** The distribution areas of Malagasy mica in the Chinese supply chain.  
Source: Graphic made by SOMO partner in China.

Pingjiang County plays a particularly important role in China's mica supply chain. In the past 30 years, the annual output of mica paper in the county has accounted for 80 per cent of the national market.<sup>114</sup> The local government of Pingjiang has adopted the mica industry as its leading industry and aims to build an industrial cluster for high-end insulating materials, with a series of mica products mainly composed of mica paper, mica tape, mica plate and mica shaped pieces. For this purpose, the Pingjiang Special Industrial Zone has been established, which is attracting more and more new mica product manufacturers. There is also a Pingjiang Mica Insulation Material Association. Some of the largest mica paper companies in Pingjiang include Xiangbei and VPI.<sup>115</sup> Examples of smaller companies are Xingke and Shengying, which have been operating for 10-20 years or more.

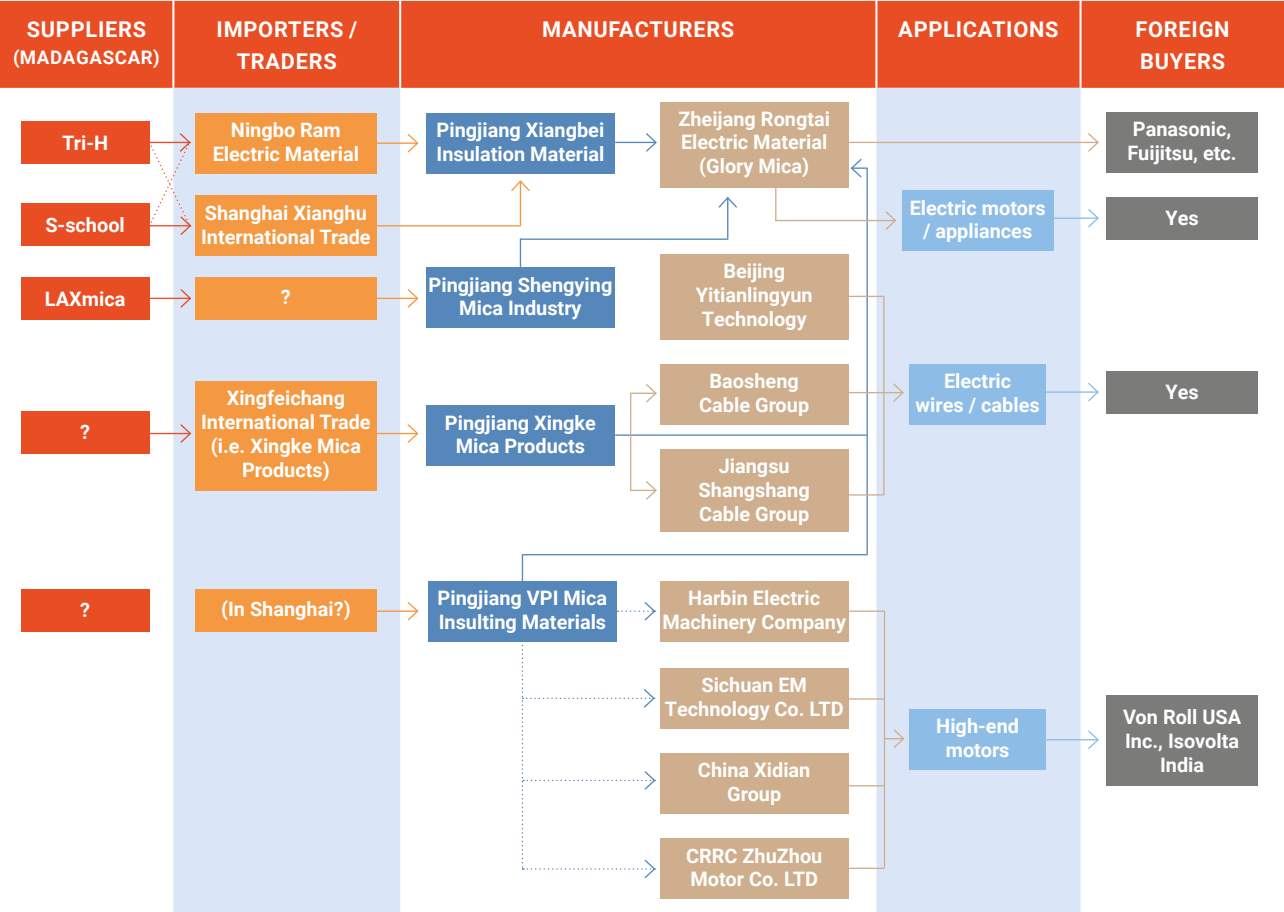
<sup>114</sup> Yueyang Bureau of Industry and Information Technology, <[http://www.yueyang.gov.cn/jxw/7249/7251/content\\_773360.html](http://www.yueyang.gov.cn/jxw/7249/7251/content_773360.html)> (30 July 2019).

<sup>115</sup> Interview with the Secretary of Pingjiang Mica Insulation Material Association.



5.4 COMPANY LINKS FROM PORT TO BRAND

As already noted above, Yueyang is the main port for the import of Malagasy mica in China, and Pingjiang is the main location for the production of mica products. The field research in this county allowed researchers to ascertain a number of relationships between companies supplying and sourcing mica along the supply chain from port to brand manufacturer. Some of these company links along the supply chain are shown in Figure 7 and are further discussed below.



**Figure 8: The flow of Malagasy mica through the supply chain.**  
Source: Graphic made by SOMO partner in China based on desk and field research.<sup>116</sup>

Pingjiang Xiangbei Insulation Material cluster

Two mica exporters in Madagascar that were identified as supplying Chinese companies are Tri-H and S-school.<sup>117</sup> The Chinese importers of this mica are the manufacturing company Ningbo Ram Electric Material Ltd. and the import agency Shanghai Xianghu International Trade Co., Ltd.<sup>118</sup>

The mica product manufacturer Pingjiang Xiangbei Insulation Material Co., Ltd (Xiangbei) in turn mainly relies on these importers for its mica supply. Xiangbei also directly imports mica from Madagascar itself. However, this import only accounts for about 10 per cent of the needed volume.<sup>119</sup>

<sup>116</sup> While S-school and LAXmica were identified as Malagasy exporters during the research in China, no further information could be found about these companies.  
<sup>117</sup> Ibid.  
<sup>118</sup> Interviews during the field research.  
<sup>119</sup> Ibid.

Further down the supply chain, Xiangbei supplies mica paper to Glory Mica Co. Glory Mica is a subsidiary of Zhejiang Rongtai Electric Material Co., Ltd.<sup>120</sup> Glory Mica is one of the leading insulating material companies in China. It produces various mica products such as mica paper, mica tape, mica plate and mica tubes. Glory Mica not only purchases mica paper from Xiangbei but also from at least two other companies that are identified as sourcing mica in Madagascar, namely Shengying and VPI.

One of Glory Mica's clients is Panasonic (Japan). Panasonic is known to have sent a third-party audit company to Xiangbei to conduct a responsible supply chain audit for its mica products.<sup>121</sup> Other international clients include Fujitsu, Murata, Danyo, Galanz and Midea.<sup>122</sup>

Pingjiang Xingke Mica Products cluster

Pingjiang Xingke Mica Products Co., Ltd (Xingke) is another manufacturing company that imports its own mica from Madagascar. Between July 2014 and July 2018, Xingke received 26 shipments of mica from Madagascar and two from India. This means that most of the mica imported by Xingke (93 per cent) is sourced in Madagascar.<sup>123</sup> Xingke produces mainly mica paper, mostly used for wires and cables. Buyers of Xingke include Shangshang Cable and Baosheng High Voltage Cable Co., Ltd.<sup>124</sup> and others.<sup>125</sup> Baosheng High Voltage Cable was formerly known as Prysmian Baosheng Cable Co. The Prysmian Group divested its 67 per cent share in the company in November 2016.<sup>126</sup>

High-voltage cables are used for electric power transmission over long distances. These high-voltage cables are used by the energy industry, including the renewable energy industry (e.g. for wind and solar energy), but also in many other industries such as oil and telecommunications.<sup>127</sup>

Pingjiang VPI Mica Insulating cluster

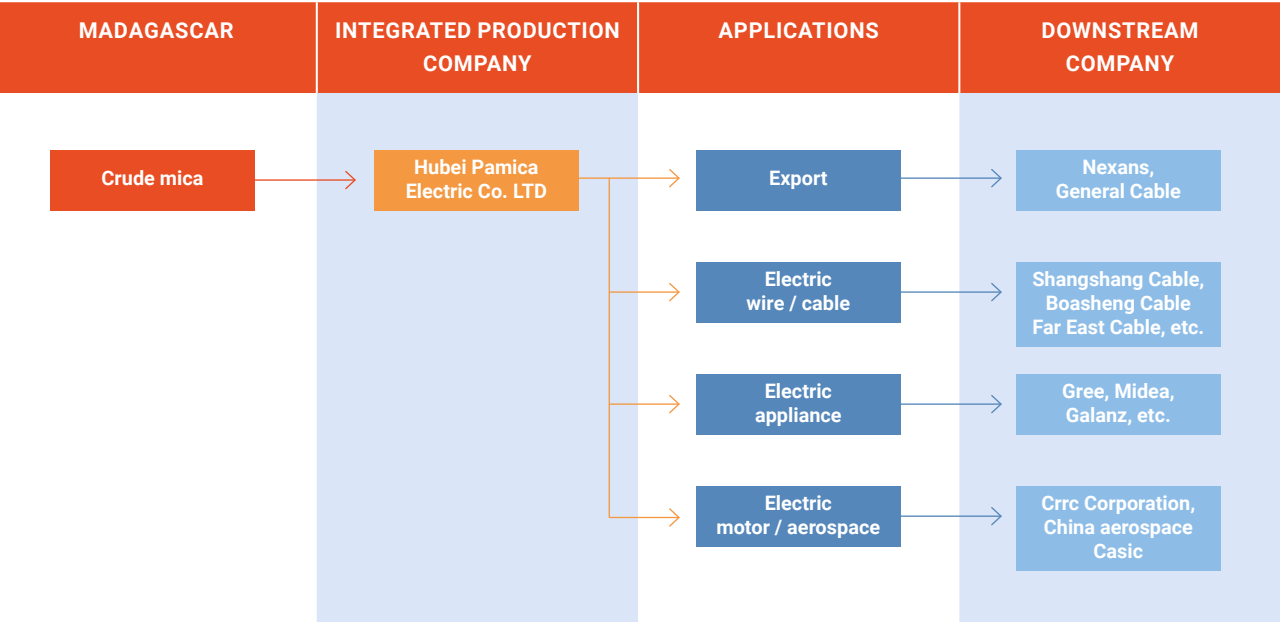
About half of the mica used by Pingjiang VPI Mica Insulating Co., Ltd (VPI) is sourced in Madagascar. Currently, VPI relies much on import agencies, some of which are based in Shanghai.<sup>128</sup> VPI's mica products are mainly used in the electromechanical sector. End customers of VPI include Harbin Electric Machinery, Sichuan EM Technology, China Xidian Group and CRRC Zhuzhou Motor. VPI exports its mica products to other countries such as Switzerland, Austria and Japan as well. Two overseas clients of VPI are Von Roll USA Inc. and Isovolt India.<sup>129</sup> The ultimate parent of Von Roll USA is Von Roll Holding AG (Switzerland). Von Roll sells mica tape for electrical insulation and thermal insulation for use in electrical machines and equipment but also for the insulation of cables.<sup>130</sup> Isovolt Ag (Switzerland) also sells mica tape.<sup>131</sup> Mica products from both Von Roll and Isovolt can contain mica from Madagascar through their supplier relationship with VPI.

Large integrated mica companies: Pamica

Compared with most of the other mica product companies based in Pingjiang, integrated companies such as Pamica have a larger scale of production and profit from supply chain integration advantages. This type of company is called an integrated company because they 'integrate' two or more levels of the supply chain in one company. Such companies usually import raw materials independently, carry out technology development and have production lines of both simpler products as well as more processed products. Through the field research and desk research for this study, researchers identified two integrated companies that import mica from Madagascar. One of them is Pamica (see Figure 9).

<sup>120</sup> Glory Mica website, <<https://glorymica.en.china.cn/about.html>> (23 September 2019).  
<sup>121</sup> Interview field research.  
<sup>122</sup> China.cn, Zhejiang Rongtai Electric Material Co., Ltd., Company Information, <<https://glorymica.en.china.cn/about.html>> (30 July 2019).  
<sup>123</sup> Panjiva database.  
<sup>124</sup> Formerly known as Prysmian Baosheng Cable Co., Ltd., <<http://www.baosheng-hv.com/>> (30 July 2019).  
<sup>125</sup> Interview field research.  
<sup>126</sup> Prysmian Group website, <[https://www.prysmiangroup.com/sites/default/files/PR\\_Prysmian%20Group\\_PBCC%20closing\\_ENG.PDF](https://www.prysmiangroup.com/sites/default/files/PR_Prysmian%20Group_PBCC%20closing_ENG.PDF)>; Prysmian bought a HV cables factory in China previously operated by Shen Huan Cable Technologies: Prysmian Group website, <<http://yes.prysmiangroup.com/news/the-group-to-acquire-the-assets-of-the-shen-huan-cable-for-42-m>> (30 July 2019).  
<sup>127</sup> Allied Market Research website, <<https://www.alliedmarketresearch.com/high-voltage-cable-market>> (30 July 2019).  
<sup>128</sup> Interview field research.  
<sup>129</sup> Panjiva database.  
<sup>130</sup> Von Roll focuses on products and systems for electrical power generation, power transmission and industrial applications. Von Roll Insulation offers electrical insulation products, systems and services for generators, high- and low-voltage motors, transformers and other applications. Von Roll, Insulating Systems for the Motor Repair Industry, <[https://www.eis-inc.com/medias/sys\\_master/ha7/he8/8836386783262.pdf](https://www.eis-inc.com/medias/sys_master/ha7/he8/8836386783262.pdf)> (30 July 2019).  
<sup>131</sup> Isovolt group website, 'Energy', <[https://www.isovolt.com/energy\\_en.php](https://www.isovolt.com/energy_en.php)> (30 July 2019).





**Figure 9:** Supply chain map of integrated mica production company Pamica.  
*Source: Graphic made by SOMO partner in China.*

Pamica<sup>132</sup> reports being the largest mica product manufacturer in Asia. The company produces mica-based insulation products such as mica paper, mica tape, mica plate, mica sheets, mica silicon crystal electric heating film and fabricated mica. The company's products are used for special wires and cables, household appliances, electronics, rail transportation, metallurgy, machinery, shipbuilding, aviation, aerospace, nuclear energy, wind energy and other industries. With imports worth US\$ 0.4 million, Pamica was the seventh largest China-based importer of mica from Madagascar in 2017 by value. As well as importing mica from Madagascar, the company also imports mica from other countries – 69 per cent of all shipments come from India, 24 per cent from Madagascar and the remaining imports come from Nigeria, Sudan, Iran and Sri Lanka.<sup>133</sup>

Pamica has a large client base, which includes many companies active in various industries.<sup>134</sup> Company clients include:

1. Electric cable companies, such as Shangshang, Far East, Baosheng, etc.
2. Electric appliance companies, such as Gree, Midea, Galanz, etc.
3. Electric motor companies, such as CRRC, China Aerospace.
4. Manufacturers of diverse mica products: Axim Mica (USA),<sup>135</sup> Asheville Schoonmaker (USA).

One of Pamica's many international customers in the electronics sector is Fujikura (Japan). In turn, Fujikura has a wide client base in the energy, telecommunication, transportation, aerospace, shipbuilding, automotive and electronics industries. For the automotive sector, it produces wire harnesses, automotive wires, main fuse boxes, relay connectors, seat belt sensors and capacitive sensors, among other products. Fujikura's products for the electronics sector include flexible printed circuit boards (FPCs), membrane switches, cables, coaxial cables and connectors.<sup>136</sup>

**5.5 TRACEABILITY OF MICA IN THE SUPPLY CHAIN IN CHINA**

It was possible to identify 24 different Chinese companies that were importing mica from Madagascar during the period January 2017 until March 2018. Yueyang (Hunan) is the main port used by the identified mica importers and neighbouring Pingjiang county is the country's main production location of mica products. Other important locations are Tongcheng, Wuhan and Shenzhen. The main products made of Malagasy mica that were identified by the field research through researching the clients of the Chinese importers are mica paper, mica spacers, mica plate, mica tape, mica tube and mica foil. Therefore, the conclusion can be drawn that companies sourcing these mica products from the above-mentioned mica production areas are highly likely to be buying products containing Malagasy mica and therefore they should undertake due diligence efforts to address the possible human rights violations in their supply chain. It must be noted here that the identified Chinese importers of Malagasy mica also import mica from India, Nigeria, Sri Lanka, Sudan and Brazil. In addition, mica mined domestically may also be sourced by Chinese mica trading and manufacturing companies. With the exception of Nigeria, which was not identified as a mica producing country in previous research, all these countries (including China) were classified as high-risk mica production countries in terms of child rights violations.<sup>137</sup>

It was not possible to assess how products including mica from Madagascar are used in products made by different international (brand) manufacturing companies. For example, it is not clear how mica paper is further processed in car parts or electronics components. What the research did show, however, is that products including mica from Madagascar are extensively used to produce electric wires and cables as well as electric motors and appliances. The client base of companies such as Glory Mica, VPI and Pamica also shows that these products are used extensively by large international electronics and cable production companies, as well as manufacturers of mica products in the European Union and the USA.<sup>138</sup> In response to the request to review this study's information on the company, Fujikura claims that it only buys mica tape from Pamica.<sup>139</sup> Fujikura also sent a statement that it requested Pamica to draft a response to the questions included in this research.<sup>140</sup> The statement suggests that the mica tape it sells to Fujikura is not made of mica from Madagascar. However, there is no information on how Pamica is able to make such a claim. Fujikura also expresses its commitment to further address human rights impacts in its supply chains should they become aware of them, in line with their company's sourcing policy. Fujitsu is the only other company that responded to this study's review request.<sup>141</sup> In its response, it asks for more information on how they would be using mica from Madagascar. Pending this answer, they could not agree to being mentioned explicitly in the report. Fujitsu did not respond after having received the more detailed information they requested.

132 Pamica website, <<http://www.pamica.com.cn/>> (30 July 2019).  
133 Panjiva database. There were 101 shipments in total over the period January 2013 to January 2018.  
134 For an overview of Pamica's clients, see Pamica website, 'Mica partners', <<http://www.pamica.com/about-us/mica-partners/>> (30 July 2019).  
135 Axim mica is supplied by various mica companies that are sourcing mica in Madagascar: Zhejiang Rongtai Electric Material, Pamica Electric Material (Hubei) and Ninbo Ram Electric Material; Panjiva database (30 July 2019).  
136 Fujikura website, <<http://www.fujikura.co.jp/eng/industry/index.html#nl-lv2-03/nl-lv2-03-lv3-03/nl-lv2-03-lv3-03-lv4-05>> (30 July 2019).

137 SOMO and Terre des Hommes, (2018). As already noted, Nigeria was not identified as a significant exporter of mica hitherto this research. Further research into mica mining in this country is recommended.  
138 International clients of companies were identified through interviews, the Panjiva database and company websites.  
139 Fujikura, email, 6 September 2019.  
140 Fujikura, email, 20 September 2019.  
141 Fujitsu, email, 6 September 2019.



The last chapter of this report presents a summary of the findings, a concluding discussion and offers some recommendations. The concluding discussion elaborates on some of the most important findings in the research and analyses (potentially) hindering and enabling factors that affect socio-economic conditions in the mica supply chain in Madagascar in relation to these findings. The third section presents recommendations for different key actors on possible contributions to improve socio-economic conditions in Madagascar. The study concludes with recommendations for further research.

## 6. Perspectives for improving socio-economic conditions





## 6.1 SUMMARY OF KEY FINDINGS

- It is estimated that roughly 22,000 people work in the mica sector in Madagascar, consisting of about 20,000 miners and 2,000 sorters, half of which are estimated to be children.
- Mica mining in Madagascar is concentrated in 3 provinces in the south.
- Mica mining takes place mostly during the dry season when agriculture is not providing income or food security.
- Workers usually come from poor backgrounds and work is mostly undertaken to earn additional income during the dry season when agriculture is not providing income nor food security.
- Work in mica mining and sorting is often a family occupation that involves the entire household.
- Overall, many children are exposed to the same harsh working conditions and risks as adults every day, such as back pains due to mining and headaches because of the heat and the lack of water or oxygen. Children report having muscle pain due to the repetitive and hard work carrying heavy loads, using crowbars and lifting hammers. Very young children who had trouble putting their condition in words just showed their hands and feet that were marked by wounds from the work around the mica mines.
- The level of social services in the three regions is far below national averages and leads to underperformance of the children in terms of health, nutrition and education development.
- Children active and present in and around the mines and processing centers are exposed to very fine mica dust particles that lead to frequent coughs and respiratory problems.
- The gravest immediate risk in mining is death due to imploding mines or landslides. Among the serious mica accidents reported during the field research there were recent accounts of three casualties in Sakamasy, three in Ambia, as well as three in Ambatoabo.
- Of the 13 mica mines that were visited, only two had valid licences (five had no (valid) licence at all, and for six sites the license situation was unclear). This finding leads to the suspicion that more illicit mica mining is also taking place in other mining sites.
- The costs to buy staples to feed a family of nine (fertility rates are between 6 and 8 children in the mica mining regions) amount to at least US\$ 0.91 per day. The income of adults varies between US\$ 0.27 when collecting scrap mica to US\$ 3.01 per day when mining.
- Most miners will skip breakfast and many will have dinner only. All children interviewed sorting mica only ate in the evening due to a lack of money.
- The mica export from Madagascar has increased enormously over the last 10 years and in 2017 it was the third largest mica exporter globally.
- The annual growth of mica exports goes hand in hand with lower prices per kilo. Export prices from India, the country's main competitor on the international market, are currently more than twice as high.
- The formal export value of mica mining could be much higher if the export price of mica had not dropped so much over the last ten years, where no clear reasons for the decrease in prices have been identified in this research.
- Despite the relatively low value of mica as a mineral and its relatively small workforce in mica mining compared to gold mining and sapphire mining, the sector is contributing more tax revenues than sapphire mining in Madagascar.
- Mica from Madagascar is not a clear-cut case of a 'conflict mineral'. This is mainly because its impact – in terms of the number of people working in it as well as the income they generate – is still relatively limited compared to a number of other minerals such as sapphire and gold.
- A number of international brand manufacturers were identified that are clients of Chinese mica importers and mica product manufacturers that make use of mica from Madagascar
- 87 per cent of the mica from Madagascar is exported to China, where a number of important mica manufacturing centres have been established, producing high-quality and high-tech mica products for national and overseas clients.
- Mica from Madagascar ends up in wires, cables, appliances, the automotive industry, and beyond. A number of European, American and Japanese companies have been identified further down the supply chain but it has been acknowledged that hundreds more are downstream users.

## 6.2 CONCLUDING DISCUSSION

In the impoverished south of Madagascar, mica is one of very few options for people to earn a low but relatively steady source of income. Mica mining is attractive, above all during periods when farming – the most important activity for most people in this part of the country – is not possible due to weather patterns and/or is not providing enough food. Mica mining is also attractive because becoming active in the sector does not require high investments for tools, land leases, education or housing. In addition, families find it attractive that even young children can contribute to the family's income.

From another perspective, the fact that people and children in mining communities are exploited to produce a mineral that is used extensively in electronics, cars and cables, is yet relatively unknown. These workers suffer from harsh, unhealthy and unsafe working conditions and may earn just enough to afford one meal a day. The rights of many children in the mining communities are at stake. They go to work from a young age on an empty stomach and do not have the chance to go to school, play or rest.

Socio-economic indicators in the main mica producing regions of the country are often below the national average. They show that human rights – including the right to food, education, safety and the right to be protected from the worst forms of slavery – are not adequately protected or fulfilled by the government. The case studies in this research suggest that conditions in the mica sector are not necessarily better than the regional average, despite the income that is generated through ever-increasing exports of the mineral. While plans are being developed to this end, in practice there is very little government support for the sector visible in the communities. Moreover, based on the interviews with government officials during the course of this research, addressing flagrant human rights violations such as child labour do not seem to be the first priority. The cases of children working in the sorting facilities of the exporters, and the generally appalling working conditions there with low pay in unhealthy working conditions, show that local companies are exploiting people and particularly children.

There is an urgent need for international companies sourcing mica and mica-based products, as well as the Malagasy government, to take responsibility for addressing the problematic conditions and for contributing to improving the fulfilment of children's rights. The situation for the majority of people working in the mica mining sector in Madagascar is clearly unacceptable. However, a number of characteristics of the global mica (product) sector may be conducive to

addressing the problematic conditions and contributing to improving the fulfilment of children's rights in Madagascar. As these characteristics tend to vary upstream and downstream of the global supply chain, they are discussed separately for each level.

### 6.2.1 POTENTIALLY CONDUCTIVE CHARACTERISTICS FOR SECTOR INTERVENTIONS UPSTREAM

First, in contrast to sapphire mining, the other important form of artisanal mining in the south of Madagascar, mica is a bulk commodity. Mica is priced per kilo instead of per carat. The flow of mica through the supply chain is much more visible, traceable and taxable than that of sapphires. This means that there is a better possibility for monitoring, administering, formalising and regulating the mica sector than the sapphire sector. In turn, this has the benefit that public and private policies and interventions – such as taxation or possible multi-stakeholder improvement schemes – in principle, can be applied more equitably, structurally and readily. In addition, the relatively low price per volume diminishes the risk that effective interventions contribute further to instability and insecurity in the mica regions.

Second, compared to other artisanal mining sectors in Madagascar, mica mining is rather contained geographically. While roads are in very bad condition, most of the mining sites can be reached by truck or four-wheel drive. Most of the important exporters and sorting facilities are also concentrated in a few towns. All these geographical factors make the sector relatively accessible for interventions that aim to improve conditions in mining and sorting.

Third, the government of Madagascar is currently amending the Mining Code and has shown interest in collaborating with local and international organisations to build capacity and use resources to improve the natural resource management base and its opportunities for the people of Madagascar.

Fourth, the structure of the supply chain in Madagascar is not overtly complex in nature. The number of functional layers that affect most of the workforce are essentially limited to mining and sorting. This simplicity also suggests that (on a functional level) the number of appropriate and tailored strategies and interventions to be developed can also be limited.

Finally, the size of the sector is also limited. The number of people working in the mica sector in Madagascar is relatively low compared to other important artisanal mining sectors.





The number of mica mines in operation is limited, and so is the number of companies involved in sorting and exporting mica. The small size of the sector suggests that even relatively modest interventions in terms of cost and effort can reach many and hence have a high impact on the sector upstream. The relatively limited number of mines and exporters in the sector, as well as further concentration in production in trade, is also potentially conducive to efficient and effective public and private sector interventions that are urgently needed to address the problematic living and working conditions that miners and sorting workers are facing in Madagascar.

### 6.2.2 POTENTIALLY CONDUCTIVE CHARACTERISTICS FOR SECTOR INTERVENTIONS DOWNSTREAM

When analysing the characteristics of the global mica supply chain downstream of Madagascar, a different and sometimes contrasting perspective emerges. It was possible to identify a substantial number of companies in China that import mica from Madagascar and use it in their products. This shows that the downstream part of the sector is not impenetrably opaque and complex. This in turn is helpful for both public, private and civil society organisations that want to address the problematic human rights situation involved in the production of this mineral in the source countries.

The distribution network in the middle of the supply chain in China has served to identify the chain of transformation into parts and products, that will support the identification of clients who buy the products containing mica.

The research was able to identify a number of international brand manufacturers that are clients of Chinese mica importers and mica product manufacturers that make use of mica from Madagascar. These international mica clients are at high risk of being linked to human rights violations, including the worst forms of child labour, through their supply chains. They should not tolerate, profit from, contribute to, assist with or facilitate human rights violations in the course of doing business. Moreover, they should commit to eradicating the worst forms of child labour from their supply chains.<sup>142</sup> Indeed, in line with the OECD Guidelines for Multinational Enterprises, these companies have the responsibility to carry out due diligence for mica in their supply chains.<sup>143</sup> Downstream companies should use (and increase) their leverage with companies and other potentially influential actors upstream in order to mitigate the risks of human rights violations in the mica supply chain. Downstream companies should prioritise working with upstream suppliers to improve conditions for workers in the supply chain and not stop using mica from Madagascar and/or stop working with suppliers that are known to import mica from Madagascar.

The UN Guiding Principles on Businesses and Human Rights promote constructive engagement and the enabling of responsible trade in high-risk areas.<sup>144</sup> In addition, (international) civil society organisations (CSOs) aiming to improve living and working conditions in the south of Madagascar and its mica sector can use this research information to engage with international brand manufacturers to this end.

### 6.3 RECOMMENDATIONS

This study aims to ascertain and analyse the social and economic characteristics of the mica supply chain in Madagascar – from mica mine to consumer product line. Therefore, advice on concrete and coherent approaches for improvement-oriented interventions to address the problematic conditions in the mica sector are beyond this study's scope. However, this study concludes by proposing a number of directions such approaches could take, as well as some of the elements they could focus on for different public and private actors. For a more detailed discussion of the general responsibilities and possibilities of different important stakeholder groups, refer to recommendations included in the research by SOMO and Terre des Hommes on the global mica industry.<sup>145</sup> The study ends with recommendations for further research.

#### 6.3.1 ADDRESSING MULTIDIMENSIONAL PROBLEMS

Concerted, informed and coherent efforts involving different important stakeholders and duty bearers are required to address the many and complex problems plaguing mica mining and sorting communities in Madagascar. One of the key suggested targets of interventions for addressing problematic conditions in the mica sector would be activities helping miners and sorters to gain more income from their work. This would help them raise their standard of living and may allow them to send their children to school instead of work. Such interventions could include elements such as organising miners to have more bargaining power with traders and exporters and creating private or public mechanisms to increase the prices for crude mica and wages in sorting.

Approaches could also include a focus on improving the export price of mica, as prices per volume of the mineral from Madagascar are relatively low compared to the international competition. All-important stakeholder groups – the national government, international brand manufacturers and national and international CSOs – can play a role here.

At the same time, however, the problems that the mica sector is creating as an income strategy need to be addressed. This includes perpetuating poverty because children are being kept away from school. Tackling these underlying issues means addressing unsafe and unhealthy working conditions, child labour and environmental degradation. At this level, the government has the obligation to improve the enforcement of regulations, meaning more capacity is needed to monitor and inspect working and living conditions in mining and sorting. Other important stakeholder groups, such as international brand manufacturers and national and international CSOs, can play a role here. They could, for example, lobby the government to urge it to more action to formalise mining in this respect. CSOs could also advise the government on the proportionality and effectiveness of different kinds of enforcement and formalisation. Merely preventing children to work without alternatives and without adequate access to basic education, if pursued at all, is likely to only exacerbate conditions in the mining communities. The same may be true in relation to stopping unlicensed mining.

There is a clear need to improve access to health care, sanitation, drinking water and education in mica mining and sorting communities in Madagascar. To this end, investments in staff and infrastructure are required but also flanking policies such as awareness raising and making school more attractive by providing meals. It is the state's duty to protect human rights. In the underlying case this means providing access to basic needs. However, other important stakeholder groups – importing country governments, international brand manufacturers and national and international CSOs – can and are advised to take action and more responsibility in this respect.

142 OECD, Practical actions for companies to identify and address the worst forms of child labour in mineral supply chains, 2017, <<https://mneguidelines.oecd.org/Practical-actions-for-worst-forms-of-child-labour-mining-sector.pdf>> (30 July 2019)

143 OECD, OECD Guidelines for Multinational Enterprises, 2011 Edition, <<http://www.oecd.org/daf/inv/mne/48004323.pdf>> (30 July 2019)

144 For a more elaborate discussion on how companies can scale up their responsible business conduct due diligence efforts see SOMO and Terre des Hommes, (2018).

145 SOMO and Terre des Hommes, (2018).



The widespread insecurity in the mica regions of Madagascar needs to be contained as well because, alongside the instability and lawlessness that it creates, it generates fear and forces people to relocate. Crime is also negatively impacting on education in the region as it prevents teachers from teaching and discourages children from going to school. These factors all add further to the vulnerability of mica sector communities that are already incredibly vulnerable. The national government is responsible for security and the rule of law, and while large-scale activities to curb the insecurity are ongoing with support from the UN, it is recommended to step up efforts to address crime in the southern mica producing regions in a way that does not further infringe on human rights. Other important stakeholder groups, such as international brand manufacturers and national and international CSOs, can play a role here as well. They could urge the government to take more responsibility for containing crime, as well as monitoring the role of the government in addressing this issue.

To fund investment in improvement approaches and sector oversight, higher taxes could be levied on exports by the government. Furthermore, funds could be raised to this end by CSOs and businesses all along the supply chain. For instance, responsible mica sourcing mechanisms could be designed that create incentives for the mining sector actors to invest in better facilities in communities as well as respectful conduct.

Finally, possibilities should also be considered for mining sector communities to diversify their income. To this end, private and/or public programmes for reforestation and restoration of unproductive mines and quarries could, for example, be developed. That way, the mining sector communities can potentially contribute to improving the local climate instead of furthering environmental degradation.

In all of these approaches, the government in Madagascar is the principal duty bearer. However, companies sourcing mica from Madagascar, directly or indirectly through the mica-based products they source, have a responsibility to address the problematic situation in mica mining as well as sorting.

International organisations, the United Nations and CSOs can play a role in raising awareness of the problems with the government and private sectors. To increase the chances of more effective and rapid approaches, it is recommended that CSOs become active in advocating, designing and implementing remedial approaches as a matter of urgency.

### 6.3.2 RECOMMENDATIONS FOR FURTHER RESEARCH

Further research is needed to better understand price formation on the global level. It is not sufficiently clear what factors are playing a role in keeping average prices for Malagasy mica so low compared to other markets. Further research is required into wider distribution of Madagascar mica to countries such as Estonia and its use downstream. Further research into value distribution in the supply chain in Madagascar is also recommended. This should include a better understanding of important factors that play a role in it, such as the ratio of unexported mica sorting waste to actual volume exported and prices for different qualities of mica. To better understand the scale of human rights risk in mica supply chains, more research is recommended on the technical aspects of the manufacturing process of mica products. To this end, more information is needed on how factors such as price, grade and origin of mica affect usage in semi-finished and consumer products. Further research is also needed from companies in the Netherlands and Europe on their supply chain upstream to identify the specific semi-finished products containing mica they source. Mica that ends up in the consumer products, that are widely used in the public domain, in machinery and by consumers. To develop initiatives and fine-tune strategies to improve conditions in mica mining communities in Madagascar, it is recommended to study and review approaches that have been implemented in other artisanal and small-scale mineral mining sectors. This includes gold and gemstone sectors as well as mica mining in India.







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