



CENTRO DE INTEGRIDADE PÚBLICA

Anticorrupção - Transparência - Integridade

NIPEPE EXPECTS TO RECEIVE BILLIONS OF DOLLARS FROM GRAPHITE EXPLORATION, BUT WITH LITTLE BENEFITS FOR THE LOCAL POPULATION



Maputo, Outubro de 2023

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Maputo, 2024



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Rui Mate and Suizane Rafael

Maputo, June 2024

Table of Contents

1 Introduction.....	5
1.1 Research Objectives.....	6
1.2 Methodology.....	6
1.3 Limitations of the Research.....	7
2. The Current Economic and Social Situation in Nipepe is Precarious.....	7
3. The project pledges to bring local development.....	8
4. Forecasts indicate favourable conditions for generating significant revenues in less than 10 years of Nipepe graphite production.....	10
5. Tax Authority warns about very high expectations regarding the project.....	12
6. Despite the new dynamic created by the company, the population feels excluded from job opportunities.....	13
7. Distrust leads population to demand the completion of 125 houses before production begins.....	14
8. Proximity to the resettlement area and factory constitutes an environmental hazard ignored by everyone.....	17
9. Conclusion.....	18
9.1 Recommendations.....	19
10 Documents consulted.....	20

1. Introduction

Estimates from this research, based on prices from global graphite market experts, point to fiscal gains, from production tax alone, of more than 96.72 million US dollars in the first 10 years, out of around 25, from the exploration of 5 million tons of graphite reserves in the district of Niipepe, Niassa province¹. Despite this potential, a series of problems may together reduce the project's full potential to improve the precarious situation in which the Niipepe district finds itself immersed. These include: **a.)** the lack of transparency in local labour opportunities; **b.)** local content; and **c.)** the neglect of environmental issues.

The current global movement towards promoting the development of technologies and use of renewable energy places graphite as a critical material for the decarbonization of transport and heavy industry. This will result in a high growth of its market in the coming years. Global demand for graphite is expected to grow from 1.5 million tons per year in 2020 to 4.3 million tons per year in 2030, due to the increased use of batteries as the main source of energy to replace traditional sources².

Despite these expectations, it is important to note that the increase in global demand depends on the increase in demand for products that use graphite as a component. This is the case with electric cars. Recently, Syrah Resources, the largest graphite producer outside of China, interrupted its production in May and June due to excess stock in the international markets, derived from the reduction in sales of electric vehicles that led mining companies to increase supply in 2022, a fact that was not repeated at the beginning of 2023 because there was a change in the Chinese subsidy regime and due to the rules imposed by COVID-19, which affected sales of electric cars³.

Graphite plays an important role in the energy transition due to its unique properties that make it essential in various applications related to clean and sustainable energy. Some of the areas where graphite is key in the energy transition include: i) its key role in lithium-ion rechargeable batteries, which are used in electric vehicles and energy storage systems; ii) graphite is used in several applications related to renewable energy, such as the manufacture of wind turbine blades, which require lightweight and resistant materials to maximize efficiency; iii) it is used in some fuel cells as a sealing component and electricity conductor, helping to generate electricity through chemical reactions that produce water and heat as by-products; iv) in addition to batteries, graphite is also used in energy storage technologies, such as supercapacitors, which have the ability to store and release energy quickly; and v) graphite is used in electronic and semi-conductor components, which are crucial for the operation of energy-efficient devices, such as solar panels and energy monitoring and control systems⁴.

Therefore, graphite plays a vital role in enabling clean and sustainable energy technologies. Its role in the energy transition is essential for building a greener future with lower carbon emissions.

Mozambique is known for having large reserves of high-quality graphite, mainly in the northern province of Cabo Delgado. The country's reserves are estimated at around 25 million tons, placing the country in 5th place in the world among countries with the largest graphite reserves⁵. In terms of production, in 2022, Mozambique occupied the 2nd position worldwide, with 170,000 tons, after China, which produced 850 million tons⁶. These figures show the role that the country plays, and may play, at a global level in the coming years, in the context of the energy transition with the exploration of its graphite reserves.

1 We considered the tax on production as it is easiest to estimate taking into account the available data.

2 Blencowe Resources (2023): <https://www.proactiveinvestors.co.uk/companies/news/1008452/graphite-demand-is-set-to-soar-and-the-right-companies-with-the-right-expertise-could-reap-huge-rewards-1008452.html>. Accessed on 25/10/2023

3 Diário Económico (18/07/2023). *Cabo Delgado: Syrah Resources Não Retoma Produção de Grafite e Desvaloriza 100 Milhões em Bolsa*. Available at: <https://www.diarioeconomico.co.mz/2023/07/18/oilgas/extractivas/cabo-delgado-syrah-resources-nao-retoma-producao-de-grafite-e-perde-100-milhoes-em-bolsa/>. Accessed on 25/10/2023.

4 Buxton Mineradora (n.d.). O Grafite – O que é o Grafite. Tipos. Available at: <http://www.buxtonmineradora.com/site/mercado-de-atuacao/>. Acesso 09/08/2023

5 The countries with reserves above Mozambique are: reserves behind Turkey with 90 million tonnes, Brazil (with 74 million tonnes), China (with 52 million tonnes) and Madagascar (with 26 million tonnes). U.S. Geological Survey Mineral Commodity (January, 2023). U.S. Geological Survey, Mineral Commodity Summaries, January 2023. Available at: U.S. Geological Survey, Mineral Commodity Summaries, January 2023: <https://www.usgs.gov/publications/mineral-commodity-summaries-2023>. Accessed on 09/08/2023.

6 Idem.

Mozambique has around 53 graphite prospecting and research licenses in force⁷, of which 44 are in Cabo Delgado province, one in Nampula province, six in Tete province and two in Niassa province. In terms of concessions⁸, the country has 13, of which 12 are in Cabo Delgado province and one in the province of Niassa⁹. The projects in the actual production phase are Twigg Mining And Exploration (Syrah Resources), one of the largest graphite mining companies in Mozambique, which operates the Balama mine in Cabo Delgado province, one of the largest graphite mines in the world, and GK Ancuabe Graphite Mine, which explores graphite in Ancuabe, also in the province of Cabo Delgado¹⁰.

In Niassa province, the district of Nipepe has hosted, since 2017, a graphite exploration project led by the Chinese company DH Mining Development Company, Lda., in an area of around 2,469.14 hectares, with estimated reserves of 5 million tons¹¹, i.e. 20% of the country's reserves. Exploration is planned for a period of 25 years. Production was expected to start in 2022, but the outbreak of COVID-19 has affected the normal course of assembly activities at the processing plant, which has changed the forecast to 2024¹².

Given the importance that graphite plays in the world market, expectations have been raised about its benefits for the economy. Considering, furthermore, that the implementation of this type of activity is not new in Mozambique, it is expected that the mistakes made in the process of resettlement and inclusion of communities, through the creation of local employment for example, which have occurred in the implementation of similar projects, will not be repeated in the Nipepe project or that they will be minimized as much as possible.

1.1 Research Objectives

The general aim of this research was to analyse the implementation process of the DH Mining Development Company Lda., showing the potential positive and negative impacts on local development.

Specifically, the research aimed to:

1. Describe the current economic and social situation in the district of Nipepe and show how the exploration of graphite could positively or negatively affect this situation;
2. Evaluate the process of installing the company in the district and its impact in social, environmental and economic terms; and
3. To determine the company's fiscal contribution levels to date and the forecasts for the duration of the project.

1.2 Methodology

To produce this report, field research was used, which included observation and semi-structured interviews, complemented by documentary research and bibliographical consultation. Three employees from the Nipepe district government, one from the Niassa provincial government and one local leader were interviewed. The local leader spoke, according to him, on behalf of the remaining members of the resettled Nipepe community. Visits were made to the company from various locations of interest to the research. In addition, statistical forecasts were made, based on the bibliographical research, which made it possible to make inferences.

The research carried out showed that the project, apart from being likely to frustrate the population's expectations in relation to the expected benefits in terms of improvements of their economic and social well-being, partly due to the excessive tax benefits granted, it has little connection with the local economy, and revealed lack of transparency in employment opportunities; there are environmental problems, which are neglected by everyone, and others reported throughout the report.

The information collected from the various sources was cross-referenced and resulted in this report, which is divided into the following parts: 1) This Introduction; 2) *The economic and social situation of Nipepe*; 3) *A description of the company's promises in the district*; 4) *Revenues forecast for the company and production tax*; 5) *Precautions in relation to the expectations created*; 6) *Changes that have occurred since the installation of the company*; 7) *Resettlement situation*; 8) *Environmental aspects ignored*; and 9) *Conclusion and recommendations*.

7 Document granted to legal or natural persons under the terms and conditions of the Mining Law for prospecting and researching mineral resources for a period of 5 years, renewable for a maximum of the same period.

8 Document granted to legal or natural persons under the terms and conditions of the Mining Law for the exploration of mineral resources for a period of 25 years, renewable for a maximum of the same period.

9 Diário Económico (17/05/2023). *Grafite: O Que Perdemos (e Ganhamos) Com o Minério do Futuro*. Available at: <https://www.diarioeconomico.co.mz/2023/05/17/oilgas/extractivas/grafite-o-que-perdemos-e-ganhamos-com-o-minerio-do-futuro/>. Accessed on 09/08/2023.

10 Idem.

11 See Mozambique Mining Cadastre Map Portal - <https://portals.landfolio.com/mozambique/en/>. Accessed on 14/07/2023

12 Information from the factory administrator who received the research team on May 19, 2023 19 de Maio de 2023.

1.3 Limitations of the Research

The access and openness of the company DH Mining Development Company, Lda. to provide relevant information about the project was one of the major limitations in this research. Access to the company was only possible after much insistence. On the first request, made on April 16 and 17, 2023, the company's managing director informed us that he was not in Nipepe, and recommended that we leave questions that would be answered later by email. In the second approach, on May 19, 2023, the managing director, despite being in Nipepe, sent the research team to the company's administrative officer, Pedro da Rabeca, who informed the team that in order to receive them, they would need to have a "road map" signed by the district government in order to confirm the legitimacy of the research team.

Having complied with the protocol required by the company, Pedro da Rabeca responded briefly to the questions posed by the research team, always referring the depth of the answers to the general manager, who never received the team. He also asked for the answers to be sent by email, but they had not arrived by the end of this report.

The other limitation had to do with access to community members, which was reduced. The local leader spoke on behalf of everyone, which reduced the scope for the team to gather more comprehensive information directly from community members. Access to community members is by means of a kind of authorization from the leader. Hence the research team's limitation in interviewing community members directly.

2. The Current Economic and Social Situation in Nipepe is Precarious

As the statistics presented below demonstrate, the social and economic indicators of the district of Nipepe reveal that the district has many shortcomings in terms of lack of access to basic services. This can be seen in the high levels of illiteracy, with around 70.4% of the population (aged 15 and over) unable to read or write; the absence or deficiency of basic health, education and infrastructure services; and low levels of formal employment, concentrated mainly in the public sector.

Although it is recognized that the data is relatively old, the fact that the economic and social dynamics in Mozambique have not changed drastically, and based on visual observation in the field, it is considered that the 2008 data presented here is not very different from the current reality¹³.

Nipepe is a rural district with a mainly agricultural population. Data from the 2017 population census by the National Statistics Institute (INE) indicates that there are 45,086 inhabitants, representing around 3% of the total population of Niassa province, which is 1,713,751 inhabitants¹⁴. The population of the district of Nipepe is mostly young, with 46% under the age of 15¹⁵.

About 45.8% of the population's main source of water is rivers and lakes, and only 0.1% has water piped into their homes from the public distribution network. In sanitation terms, around 91.9% of the population has no latrine or uses an unimproved traditional latrine¹⁶.

Firewood represents 91.1% of the main source of energy used by the population. Electricity is only used by 0.3% against 4.2% which is the average for the province. Around 9.2% of the population use other sources such as oil for lighting, candles, batteries and others.

In terms of literacy, around 70.4% of the district's population is considered illiterate, compared to around 40% of the national illiteracy rate. The district is poor in health infrastructure. It has six health centres, which correspond to a ratio of 0.3 per thousand beds per inhabitant, compared to 0.67 at provincial level¹⁷.

The largest employer in the district is public administration and compulsory social security and defence, which absorbs 56% of formal employment, followed by the activities of associative organisations sector, with 22%, and education with 9%. The remaining employment, which accounts for 13 per cent, is divided between the retail trade, accommodation and catering and human health activities sectors.

The district's economy is essentially centered on cotton cultivation, promoted by the João Ferreira dos Santos,

¹³ The data presented in this section refer to the updates available on the INE website regarding the Nipepe 2008 district profile.

¹⁴ INE (Censo 2017): <https://www.ine.gov.mz/web/guest/d/quadro-67-populacao-por-distrito-de-nascimento-segundo-distrito-de-residencia-em-2017-e-sexo-provincia-de-niassa-2017>

¹⁵ Governo de Niassa (2016): <https://www.niassa.gov.mz/por/Informacao/Perfis-Distritais/Nipepe>

¹⁶ INE (2008): <https://www.ine.gov.mz/web/guest/d/distrito-de-nipepe>

¹⁷ idem

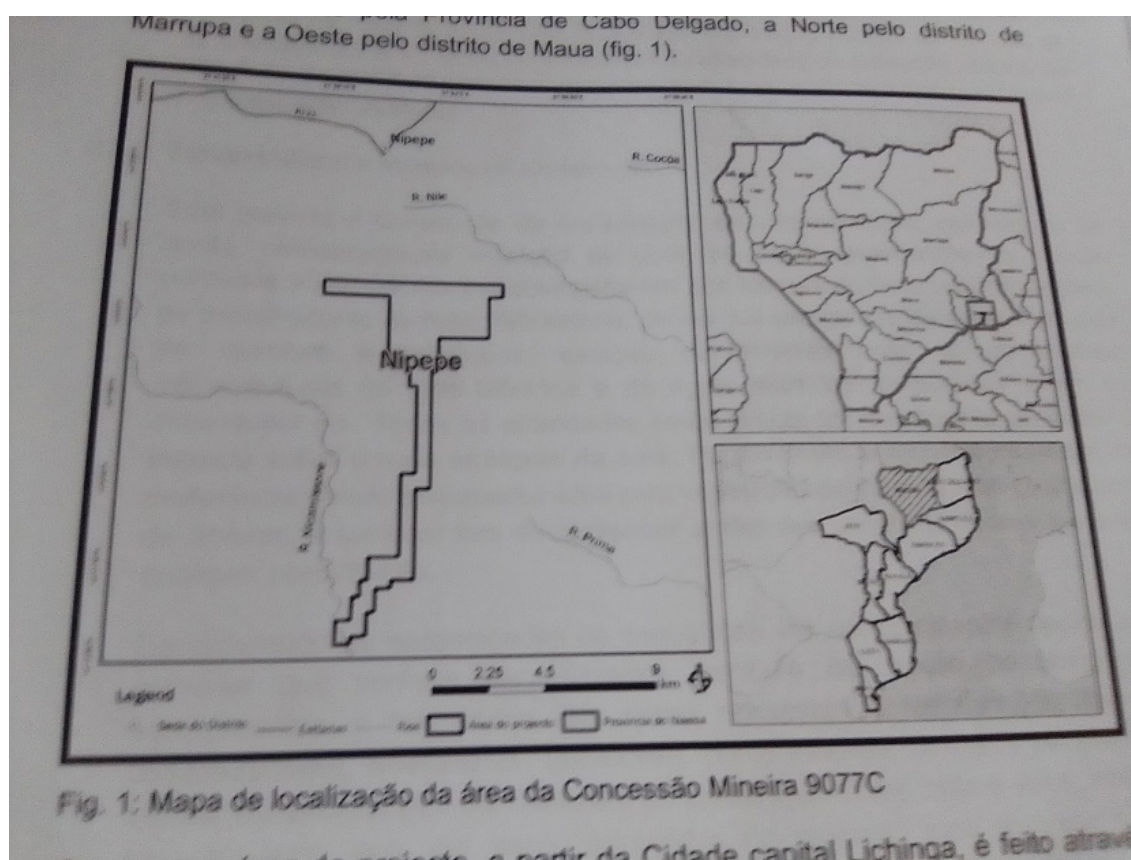
a company based in Cuamba¹⁸. Tobacco was also grown by the Mozambique Leaf Tobacco company, which ended up leaving the district in 2020 due to the COVID-19 pandemic¹⁹. There are three other logging companies²⁰.

Against this backdrop of challenges, the installation of the DH Mining company, as reported by régulo Nipepe, who spoke on behalf of the Mwichi community, is fraught with enormous expectations that it can help the district reverse its current economic and social situation, characterised by very low development indicators. The expectations of the population of Nipepe are the same as those expected in any situation where there is an extractive project.

3. The project pledges to bring local development

DH Mining Development Company Lda. is a Chinese company owned by Hong Kong Germstone Mining Development Co Limited and Juan Yuxiao Group Company Limited²¹. It started its activities on August 1, 2017, with the aim of building and operating a plant for processing graphite as well as developing other complementary activities related to the mining of metals and semi-precious stones. See Figure 1 for a map of the concession area.

Figure 1: Map of the area concessioned to DH Mining Development



Source: Administration of the District of Nipepe

The company's initial investment was estimated at 30 million US dollars, spread over five years, as shown in Graph 1 below. Production was scheduled to start in 2022 but, due to delays caused by the effects of the Covid-19 pandemic, which affected the process of setting up the plant, the start of production was rescheduled for 2024.

18 <http://www.jfs.co.mz/jfsweb/conteudo/san/localizacao>

19 Diário Económico (2020): <https://www.diarioeconomico.co.mz/2020/09/30/negocios/mocambique-leaf-tobacco-reduz-producao-do-tabaco-devi-do-a-queda-da-procura/>

20 Informação do administrador do distrito de Nipepe

21 <https://hkg.databasets.com/en/gongsimingdan/number/2143454>

Graph 1: Investment by DH Mining Company Lda. for grafite exploration in Nipepe, Niassa (2017-2022)



Source: Provincial Directorate of AI Lichinga

Any community that hosts an extractive project for the exploration of natural resources, such as minerals, always hopes to take advantage of this “privilege”. Generally, the implementation of a new natural resource exploration project is accompanied by the expectation of: i) **the creation of local jobs**, which improve the family income of community members; ii) **economic development**, driven by the activity of the extractive company which attracts more investment, increasing tax collection and generating opportunities for local businesses; iii) **infrastructure improvements**, such as roads, energy systems and water supply, which can benefit the entire community; iv) **increased state revenues**, which can be directed towards social and infrastructure investments in the region; v) **skills development**, through the opportunity to acquire new skills and technical knowledge, which can benefit the local workforce; and vi) increased local economic activity, local companies can benefit by supplying goods and services to the project, contributing to the growth of the local economy²².

The benefit expectations mentioned above do not differ from what was found in the interviews and conversations held with Régulo Nipepe, some members of the community, the Nipepe district government and the DH Mining company. According to the accounts of those interviewed, since setting up in Nipepe, the company has carried out various works classified as being of social responsibility, such as the rehabilitation of the Maua-Nipepe road, the streets of the village of Nipepe; the opening of water holes, the supply of air-conditioning units to district government institutions, the supply of face protection masks within the scope of COVID-19, and the rehabilitation of mosques and chapels.

The district government and the company have also indicated that other investments will be carried out by the company which, in addition to the population of Nipepe, will benefit other neighbouring districts. These include the construction of the Nipepe-Malema regional road, in Nampula, and the respective bridge over the Lúrio River, which will be used to transport the graphite produced by the company, and a 110 Kva power line. It has been publicly announced that the construction work on the bridge, valued at four hundred million Meticaís, will be completed before the end of 2023²³.

Due to their nature, these projects are not necessarily developed out of goodwill or as part of the company’s social responsibility. Although the reports and public discussions indicate this, in fact, they are part of the company’s strategy to build infrastructures that can meet its production and marketing needs. This type of infrastructure are public goods that do not exclude nor compete with each other. Therefore, the company cannot exclude shared use with the rest of the communities (assuming no tolls will be placed). However, there is an attempt to convey the idea that these are actions carried out by the company for the pure benefit of the community, offering “free lunches”.

22 Távora, J. B. (1959). Desenvolvimento e localização da indústria extrativa de produtos minerais no Brasil. Brasil: IBGE, Conselho Nacional de Estatística./[Development and location of the mineral extraction industry in Brazil]

23 TVM (2023): <https://tvm.co.mz/index.php/noticias/nacional/item/11211-ponte-sobre-o-rio-lurio-em-nipepe-pronta-em-dezembro>

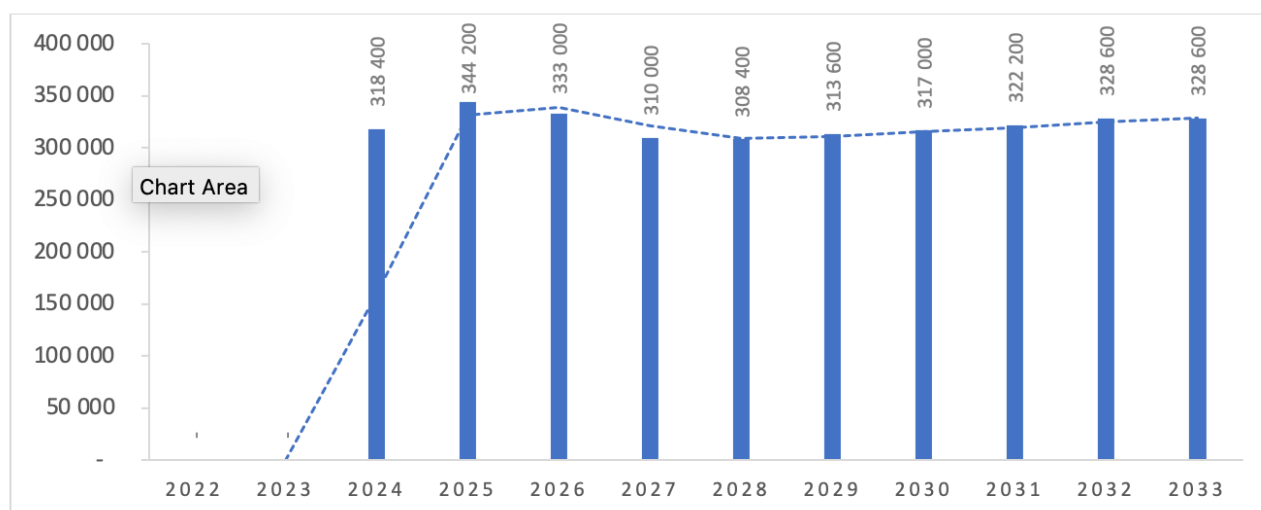
4. Forecasts indicate favourable conditions for generating significant revenues in less than 10 years of Nipepe graphite production

International graphite market experts estimate that, given the magnitude of expected demand, the price of natural graphite will rise from USD1,203 per ton in 2022 to USD1,643 per ton in 2033, i.e. a variation of 37% in 12 years²⁴. Transformations in the graphite market are driven by the growing demand for lithium-ion batteries, as shown in Graph 2, below left. The graphite market's turning point is expected to occur in 2023²⁵, as shown in Graph 3 below.

The dynamics predicted in the world market raise expectations of greater fiscal gains that the exploration of graphite in Nipepe can bring to the State treasury over its 25 years of exploration, and the transformations that could occur with the transfer of 10% of the production tax, destined for the local development of the communities directly affected and for the rest of the district.

Based on price data estimated by graphite market experts for the period 2022 to 2033 and the value of reserves of 5 million tons, which correspond to an average production of 200 thousand tons per year over the 25 years of exploration, it is possible to predict revenue for the company worth 3.2 billion dollars in the first 10 years of exploration. This value is 10,747% above the expected investment of 30 million dollars. (see the numbers mentioned in the graph below).

Graph 1: Value of DH Mining Development Company Lda. revenues forecast for 2022-2033 (million USD)



Source: Aunor's forecasts

The price forecast for the period 2034 to 2048 was based on the ARIMA (0,0,1) time series model (0,0,1). The estimated prices remain at an average of 1,593.14 dollars per ton over this period. However, the revenue forecasts are not presented in this research, since the interest was in forecasting only the first 10 years of the project. In future analyses, the previsions for the entire period could be provided.

Assuming that the prices mentioned above are the reference prices for determining the value of graphite production²⁶, an average annual production tax for the period can be estimated at 9.67 million dollars²⁷, around 623.91 million MT²⁸. With this amount, the province of Niassa will receive an average of 967.2 thousand dollars (around 62.39 million MT) a year as part of the transfer of 10% of the production tax revenue to the producing areas, divided into 2.75% for the communities hosting extractive projects and 7.25% for the other districts. At the end of the first 10 years of production, Niassa province will have benefited from 9.76 million

24 Black Rock Mining (March 2023). Available at: <https://blackrockmining.com.au/wp-content/uploads/PaydirtBatteryMaterialsInvestorPresentation21Mar23.pdf>. Accessed on 09/08/2023.

25 Buxton Mineradora (sem ano). Mercado da grafite – Produção mundial. Available at: <http://www.buxtonmineradora.com/site/mercado-de-atuacao/>. Accessed on 09/08/2023

26 Calculated by multiplying the price by the quantity and the rate of 3%.

27 GdM (18/06/2015): <https://www.portaldogoverno.gov.mz/por/Empresas/Licenciamentos/Actividade-Mineira/Taxas-e-Valores-a-Pagar>.

28 Considerando um cambio de 64,52MT/USD. Cambio do Banco de Moçambique do dia 09/08/2023. https://www.bancomoc.mz/media/1fkco4ze/taxas-de-c%C3%A2mbio-de-refer%C3%A2ncia-12h30_09082023.pdf.

dollars (623.91 million MT) from graphite exploration, while the district of Nipepe will have benefited from 2.66 million dollars (174.28 million MT), that is, the district will have an average annual availability of 17.42 million to invest in development projects. See graph below:

Graph 2: Value of production tax and transfers to communities resulting from the production of DH Mining Development Company Lda. forecast for 2022-2048 (million USD)



Source: Author's forecasts

Data obtained from the Niassa Provincial Directorate of the Tax Authority shows that, between 2022 and May 2023, DH Mining Development Company Lda. paid 2.98 million MT of its tax obligations. Of this amount, property tax represents the tax category with the greatest weight, with 82% of the total paid by the company (see Table 1 below). The property tax is due annually and is levied on the area of the mining concession, in this case measured in hectares, and for the first 5 years the rate is 30.00MT per hectare, rising to 60.00MT from the 6th year until the end of the mining concession²⁹.

Looking only at the average level of contribution from the production tax of this project, calculated based on the prices forecast for the period 2022-2033, which is 9.67 million dollars annually, equivalent to 623.91 million MT³⁰, it can be concluded that this level of contribution is still low compared to its potential. It is important to note that at this moment the company is still in the investment phase and is only incurring costs that must be recovered when production and marketing begin.

Table 1: Contribuições fiscais da DH Mining Development Company Lda. 2022 – Maio de 2023

N/O	Descrição	2022	2023	Total
1	Property Tax	2,000,946,53	439,801.80	2,440,748.33
2	IRPS 1 Category	149,047.75	285.762.50	434,810,25
3	Stamp Tax	-	7,000,00	7,000.00
4	Others	100,000,00	-	100,000,00
TOTAL		2,249,994.28	732,564.30	2,982,558.58

Source: Lichinga Provincial Directorate of AT

29 ITIE Moçambique (2022). Décimo Relatório Independente da Iniciativa de Transparência na Indústria Extractiva – 2020. Available at: <http://www.itie.org.mz/relatorios-de-reconciliacao/>. Accessed on 09/08/2023

30 Exchange rate: 64,52MT/USD, on 27/07/2023 - https://www.bancomoc.mz/media/12xp43ty/taxas-de-c%C3%A2mbio-de-refer%C3%A2ncia-12h30_27072023.pdf

5. Tax Authority warns about very high expectations regarding the project

As is already the case in other extractive projects in Mozambique, such as Moatize, Inhassoro and Larde, where tax benefits have frustrated local development expectations, in an interview with the research team, a senior official of the Mozambican Tax Authority in Lichinga, who requested anonymity, warned that the company DH Mining Development Company Lda. would benefit from customs and tax incentives under the provisions of the Tax Codes approved by Law 4/2009, of 12 January, for the first five (5) years, starting from the implementation of the project. In this regard, the interviewee warned that:

“...they should not get excited and emotional in this region of Mozambique because the government has created tax facilities for companies of this type of activity. Due to the nature of the project, and by virtue of the law for attracting investments in Mozambique, investing companies are given the prerogative of a period for recovering the capital invested on account of the tax incentives set out in the Code of Tax Benefits. In this sense, the income arising from the company’s productive activity to maximize revenue in the province may not be short-term, due to the need to recover the capital invested, under the terms of the project’s authorization. However, other related taxes could be collected, whether from dependent or specialised work, among others...”

With the tax incentives granted, according to the interviewee, the company will only be able to bring more visible gains from its production activity to the province in the long term, and short-term results would be visible if tax and customs incentives were reviewed. Thus, very high expectations could result in frustration on the part of the population who may not see the benefit of the company’s presence for the next 10 years.

Regarding the direct benefits for Nipepe, Virgílio Benesse, from Rede de Paralegais Desenvolvimento Sustentável e Justiça às Comunidades de Niassa (REPADES-JAC) [Network of Community Paralegals for Sustainable Development and Justice in Niassa], a civil society organisation based in Lichinga and which has been following the process since the beginning, says that the presence of DH Mining Development Company, Lda. can be seen in two ways. The first points to the development of Nipepe and the second to the impoverishment of the local population due to non-compliance with commitments that may arise in the future. For Virgílio Benesse, if the 2.75% tax benefits that the government has approved, and which should be channelled to local communities, are not properly applied when the company starts production, the possibilities and expectations of economic and social development in Nipepe, based on the exploration of graphite, will be frustrated.

Law no. 15/2022, of 19 December, which amends article 20 of Law no. 20/2014, of 18 August, the Mining Law, determines that the increase in values to be channeled to local communities and for the province that hosts the extractive industry, must, in fact, be translated into structural changes in these places. Virgílio Benesse stated the need to continue to monitor and advocate for more benefits to stay in Nipepe.

Asked about the existence, or not, of a representation from Tax Authority and another from the mineral resources sector in Nipepe, the district administrator said that both the Mozambican Tax Authority and the Mineral Resources area have no representation in the district, and added that tax payments have been made in Cuamba and Lichinga. This situation may not be a problem so far, but when the company starts production and marketing, it will need a unit that can monitor the quantities and quality of the graphite produced in order to guarantee a fair value for the production tax. Otherwise, the current problems of declaring values based on the information provided by the company will continue and will not guarantee a fair portion of taxes to the State.

6. Despite the new dynamic created by the company, the population feels excluded from job opportunities

According to the report of régulo Nipepe and members of the local government, the start of the company's installation in the district has brought with it a movement of people from different parts of Mozambique looking for work at DH Mining Developmente Company Lda, or informal traders who find this a place of opportunity to develop their activities. However, the high levels of illiteracy, 70.4% of the population, shown above, are a challenge for employment opportunities.

The local market in the village of Nipepe is an example of this movement, a scenario that has not been seen since 2019. Likewise, on the road linking the districts of Cuamba-Metarica-Maua-Nipepe, there is a great deal of movement of heavy vehicles transporting heavy machinery and others for passenger transport. The district administrator, Sérgio Igua, stated that the changes taking place in the district are due to private investment by DH Mining Developmente Company Lda. As he explained:

"... the company hopes to contribute to the development of the district by creating jobs, which is already visible today. At the moment, it already directly employs 450 workers, most of them from Nipepe.... Given the dimension of the company, and looking at the demand for other services, the investment will require the construction of a 110kva power line from the district of Maua to Nipepe. Although there is a 30kva EDM line from Maua to Nipepe, until now the company has not used it, preferring to work with diesel generator sets and solar energy. This power line investment will employ 100 young people from the two districts, and there is an agreement with EDM for its construction, which is expected to be finished by the end of 2023...there is also the construction work for the bridge over the Lúrio River between Nipepe and Malema (Nampula) to be used for the flow of graphite minerals..."

The district administrator's statement expresses the expectations and changes that he sees and feels as a day-to-day manager of the district's destinies.

In an interview, the District Permanent Secretary, Tomás Assane, said that the social dynamics in Nipepe has changed a lot and will still change, especially in public service providers, in this case the government. He recognised that the demands of the extractive industry are very strong, and therefore, it is imperative to open more training windows for local young people, so that they can have opportunities to take on the challenges that the company requires. According to Tomás Assane:

"...we have a lot of pressure with the arrival of many people in the district, rental houses are already few, the trend towards high prices is also a reality with the arrival of traders from other areas of Niassa and beyond. Attendance at the health centre here in the village has doubled. Regarding employment for locals, I'd like to say that from the consultations and concertation with the company, it was decided that priority should be given to locals. We know that there are areas where the locals can't work, so we'll have to give them vocational training so that they know how to do something..."

The administrator of DH Mining Development Company Lda, Pedro da Rabeca, interviewed as part of the research, said that the company currently employs 420 workers, including permanent and seasonal staff, 400 of whom are Mozambican and 20 Chinese. He also mentioned that he still has no idea of how much labour will continue after the factory is set up for the production phase, but the idea is to continue with the majority of the workers involved in this construction phase.

The company's workforce numbers differ between those provided by the district government, 450-500, and those provided by the company, 420. Among Mozambicans, according to the company's data, 30 are women, working as geologists, cooks, cleaners and engineers. Without citing numbers, the company representative said that a large part of the workforce is generally made up of people from the Nipepe district. The company highlights challenges in the quality of the local workforce, which is why it has been resorting to other provinces, which also translates into other challenges of apparent exclusion of opportunities for locals.

Pedro da Rabeca also mentioned that most of the companies involved in setting up the factory and mine are Chinese, as are the materials used, many of which come from China. This phenomenon of little involvement of local content, due to the weak local response capacity, reduces the possibilities of improving structuring economic dynamics locally, always relegating nationals to small-scale activities.

Some of the community members interviewed by the research team said that the arrival of the company opened up job opportunities, as well as chances for the commercialisation of their products, as previously they depended on traders from Nampula, Cuamba and Maputo. However, they say that although job opportunities do exist, they are still not enough to cover the majority of those in need and question the criteria used to post vacancies. According to the interviewees, DH Mining sets the vacancies inside its office, which is only accessible to workers.

The district administrator, confirming the allegations made in the interviews with community members, said that many young people from Nipepe had been unable to get a job with DH Mining Development Company because of certain requirements specific to the process. The company had vacancies for bricklayers, industrial electricians, carpenters, plumbers, etc., and it was difficult for local young people to meet the requirements to fill these vacancies. It is in this highly competitive field that Nipepens are sometimes left out.

Currently, according to the District Permanent Secretary, Tomás Assane, some young people from Nipepe are employed by the company but, in heavy machinery operation, the bulk of the workers come from outside (Nampula, Zambézia) because they have experience in previous jobs. Acknowledging the challenges of training to increase opportunities for access to employment, Tomás Assane said that the Instituto de Formação Profissional e Estudos Laborais Alberto Cassimo (IFPELAC), in Lichinga, will train 100 young people from Nipepe and Maua in areas such as electricity, mechanics and plumbing, so that they can increase their chances of getting a job at the company and thus reduce the feeling of exclusion among local young people.

The Secretary of State for the province of Niassa, Lina Portugal, who visited the company, corroborated the population's complaints and demanded that vacancies be displayed in public spaces in the town of Nipepe and elsewhere.

This situation shows signs of lack of transparency on the part of the company in involving the local population in job opportunities, which can be a source of potential conflict due to the exclusion of the local population.

7. Distrust leads population to demand the completion of 125 houses before production begins

As occurred in other parts of the country where natural resource exploration projects were implemented, in Nipepe the installation of DH Mining required 125 families from the village of Mwichi, about 8km south of the town of Nipepe, to be moved to a new location to house their homes and/or fields and thus make way for graphite exploration.

According to the interviewees, during the consultations carried out by the research team in Nipepe, at the beginning of the process there was a lot of mistrust between the parties due to reports of similar processes taking place in Tete, Zambézia, Nampula and Cabo Delgado. As they said, DH Mining Development Company is similar to Africa Great Valley, which explores heavy sands in the district of Chinde, in Zambézia province, and the reports they had did not encourage the resettled community. In order to reach an understanding, several meetings were held to determine how the process would proceed until 2022 and a consensus was reached. According to reports by the administrator of Nipepe, Sérgio Igua, a joint team, involving the government of Nipepe, members of the community and the company, visited Chinde to find out about the process and see the houses being built.

Even after the joint visit, as reported by the district administrator, Sérgio Igua, by members of the Mwichi community and of the Rede de Paralegais Desenvolvimento Sustentável e Justiça às Comunidades de Niassa (REPADES-JAC), the company tried to “fake” the population by building a house that didn't follow the agreed model (type 3 house, with 1 living room inside, 1 kitchen and 1 bathroom, both outside). The model house built was immediately rejected by the population and the district administration. The company had to correct it by building a new one as agreed. See the rejected model house below.

Figure 2: Model house for the resettlement of the Mwichi community - rejected



Source: researchers

The sources interviewed by the research team reported that at the beginning of the process there were several conflicts and a lot of mistrust between the parties. However, with the arrival of the construction phase of the houses, the atmosphere of conflict and mistrust improved. In a conversation with the research team, régulo Nipepe reported that, at first, the people affected were suspicious of the company's presence in Mwichi in the following terms:

“...these are things that happen, unfortunately, when entrepreneurs like these arrive. One of my nduna tried to oppose this many times. But that was due to some agitation he had from people coming from Lichinga. We've worked hard to get where we are. The people of Mwichi themselves chose where the new houses are being built, which are made of masonry, compared to the ones where they lived before. The initial idea was to move them away from their original area, but through the dialogue we had with the government and the company, we managed to reach this understanding. We will continue to be attentive to overcome any misunderstandings that may arise. There are always people with bad faith who come to get in the way...”

For his part, Vigilio Bento Benesse, from REPADES-JAC, said that for more than four years he has been assisting the local communities of Nipepe in matters related to basic legislation and dialogue between private companies and the government. He explained that the resettlement and compensation for the communities had happened thanks to pressure from civil society, namely REPADES-JAC and AMDER (Associação Moçambicana para o Desenvolvimento Rural Sustentável) [Mozambican Association for Sustainable Rural Development], who worked together in Nipepe. He added that the communities of Mwichi would have been harmed if the organization had not been on the ground working with the company, the government and the communities, and stressed the need to continue monitoring the situation permanently.

The approved resettlement houses, after the indicated corrections, are being built 3 km from the graphite factory, in an area of 2,000 hectares. According to the project, each family will receive a house, built on a plot with an area of 2,500 square meters, measuring 50 meters wide by 50 meters long. In addition to the houses, each of the 125 families will be allocated a plot of land for cultivation, measuring 2 hectares. See the houses below.

Figure 3: Mwichi community resettlement houses - approved and under construction

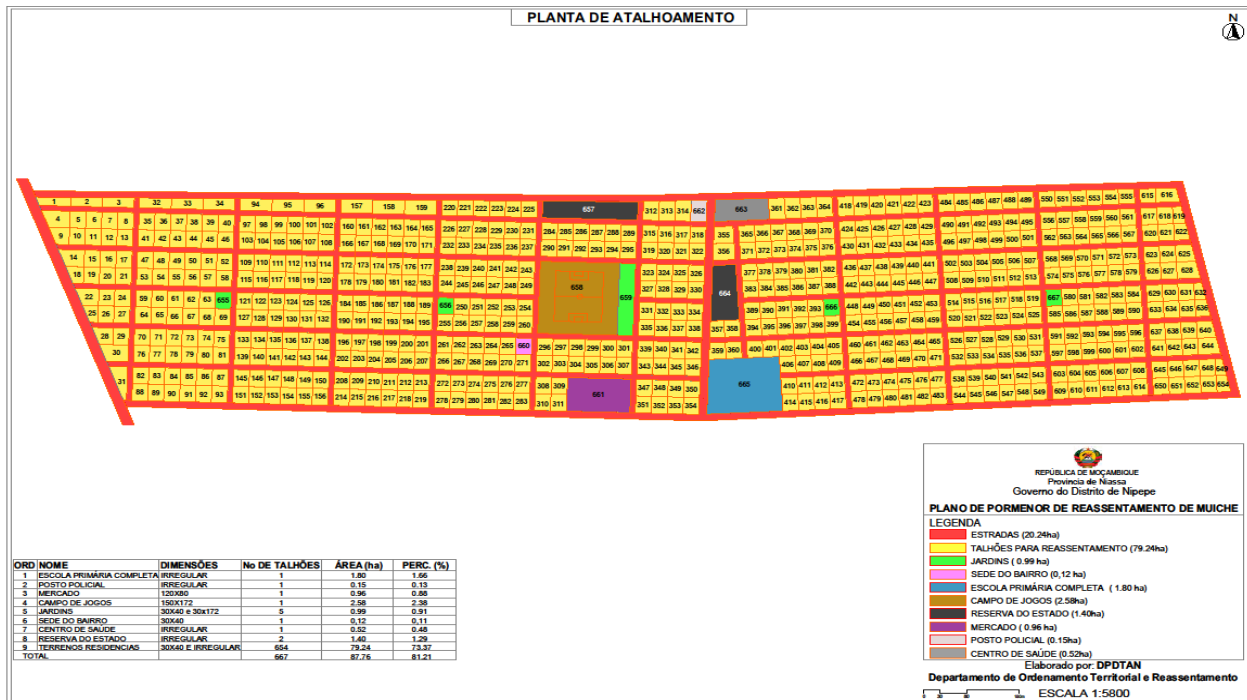


Source: researchers

Because of the suspicions that arose at the start of the construction of the resettlement houses, and the track record of Chinese-owned companies in this type of process, the community has demanded that the project does not start production before the 125 houses are completed and handed over to their owners. According to the administrator of Nipepe, Sérgio Igua, the graphite exploration will not begin until the 125 houses have been built, due to the experiences of other areas where the process has been poorly handled. We don't want to make the same mistake.

In addition to the houses, the resettlement project includes social infrastructures such as a school, a water supply system and units for the production of vegetable gardens using irrigation, making it possible to produce all year round without depending on the rain. The administrator told the research team that there were also plans to build a health unit. However, as the resettlement is less than two kilometers from the village of Nipepe, this has been postponed until a future date, which no one can say when that will be. In Metarica-Lúrio, a water pumping station is under construction on the Lúrio River, which will supply the graphite processing plant via a 30km pipeline. According to the interviewees, part of this water will feed the resettlement area and other agricultural activities. See the detailed plan of the resettlement area below:

Figure 4: Detailed plan of the Mwichi community resettlement area



Source: Direção dos Serviços Distritais de Planeamento e Infra-estruturas de Nipepe
 Directorate of Planning and Infrastructure Services of the District of Nipepe

In addition to the houses and social infrastructure planned, the director of Nipepe District Planning and Infrastructure Services, Gervásio Raitone, indicated that the families will be compensated 9,000.00MT for each fruit tree lost and 17,000.00MT for each hectare of field given over to the project.

8. Proximity to the resettlement area and factory constitutes an environmental hazard ignored by everyone

Mining is an economic and industrial activity that can cause serious damage to the ecosystem. Like any mining activity, graphite extraction has significant impacts on the environment and local communities. In addition to the displacement of communities, soil degradation, water and air pollution are some of the negative effects caused to the environment by this activity. Wherever mining takes place, there is always environmental damage, such as dust raising, water pollution, etc.

In Nipepe, according to the local authorities, all aspects were observed to avoid directly affecting the environment as well as the people. Furthermore, when the community is resettled from Mwichi, this will be 3km from the DH Mining Development Company plant, which raises doubts about the likely impacts this proximity could have on the environment and people's health. China, the world's largest graphite producer, has had to close mines due to graphite pollution that has contaminated the air and water, damaged crops and raised health concerns³¹. This scenario raises concerns about the dangers that this proximity could pose for the resettled communities. The distance of 3 km does not seem to be enough to withstand the combustion of dust and the impacts of explosions on homes, especially in the case of future mine expansions.

Regarding this aspect, Gervásio Raitone, the director of District Planning and Infrastructure Services of Nipepe, said that studies carried out at the resettlement site and in nearby villages have shown that the dust from mining and chimneys will not reach them. According to him, the community of Mwichi is 3km from the graphite processing plant. The environmental assessment carried out shows that the position and direction of the wind will not affect the population and the fields.

31 Exame.55 (14/03/2014): <https://exame.com/negocios/grafite-nas-baterias-da-tesla-contribui-para-poluir-a-china/>

This positioning is extremely dubious questionable. In a consultation on wind movements, it was generally realised that winds don't always follow the same direction, as they can vary according to different atmospheric conditions, i.e. the wind can change direction depending on the time of day and season³². The fine dust produced in mines can travel great distances on the wind, literally thousands of kilometres on some occasions. Dust is harmful to human health and can cause, or aggravate, many respiratory disease as well as cardiovascular diseases and meningitis. It can affect agricultural production; disrupt air, road and rail transport³³. A more detailed study of the risks that this proximity could pose to communities is therefore recommended.

In the research team's interaction with the company's manager, Pedro da Rabeca, he mentioned that the mining company has an Environmental Impact Study plan, approved in 2014, which has been used since the beginning and which was in the process of being updated. Upon requesting access to the plan, the director said he would send it later by email (at the time of writing this report, the document had not been sent). He also mentioned, but without providing any evidence, that the company was in the process of registering native flora species for subsequent replanting.

It would be important that preventive measures in relation to the mine operations were implemented, such as a plan with the process for reducing local pollution by fine dust, which could be washing the lorries in the mine, or a dust removal system in the processing plant.

9. Conclusion

Graphite is a resource whose global forecasts indicate favourable conditions for its commercialisation as it is a resource whose demand is expected to increase significantly in the coming years to respond to climate issues. However, this may not benefit the population due to the non-transparent and efficient management of resources.

By granting excessive exemptions to extractive projects, without a thorough analysis of their cost and benefit, the government opens up space for communities to benefit little from the exploration of resources. This exploration in remote areas, where poverty levels are visible to the naked eye, at the same time as resources are extracted, opens up space for possible conflicts to arise when the expectations of the company's installation are not fulfilled. Generally, the message that is transmitted to the population is that there will be employment and development with the arrival of the company in the locality. These kinds of messages sometimes don't meet the expectations of the local population hosting these investments. We can cite the experience of the Lago district, where two mining companies, Kenmare (1995-1997) and GoldOne (2008-2016) left without leaving a trace of development. The fear is that Nipepe will follow the same path if certain practices and processes are not corrected in the short term.

Forecasts presented in this report show that in the first 10 years, the company could contribute around 9.67 million dollars a year from production tax alone, which today represents around 623.91 million MT. With this amount, Niassa province could benefit from an average annual revenue of 967.2 thousand dollars (around 62.39 million MT), as part of the transfer of 10 per cent of the production tax revenue to the producing areas.

This value can be broken down into 2.75 per cent for the communities hosting the extractive projects and 7.25 per cent for the other districts.

However, the allocation of tax benefits to the DH Mining company, transparency issues in relation to employment, local content and the environment could undermine the potential benefits that this project could bring to Nipepenses, in particular, and Mozambicans in general.

32 Meteoropóle (18/02/20220). *Porque os Ventos Mudam de direção*. Available at: <https://meteoropole.com.br/2020/02/por-que-os-ventos-mudam-de-direcao/>. Accessed on 09/08/2023.

33 Science Advances (12/12/2018). *The mysterious long-range transport of giant mineral dust particles*. Available at: <https://www.science.org/doi/full/10.1126/sciadv.aau2768>. Accessed on 09/08/2023

9.1 Recommendations

Therefore, we recommend that:

To the Government

- To review the tax benefits granted, implement effective mechanisms to guarantee the right skills training for Nipepenses, in particular, and Mozambicans, in general, so that they can participate in the entire resource exploration chain through their labour and as suppliers of goods and services to this industry, since everything used, at least in the installation of the factory and the highly specialised labour, is foreign, Chinese;
- To take a closer look at environmental issues, which are an element that is being neglected in this project, whose bill in the future could be very high. The mineral explored could be at the expense of the lives and well-being of Mozambicans, especially those who live less than 3 kilometres away from the mining area;
- It is also recommended that the government gradually build capacity to monitor and supervise the quality and quantity produced directly at Niipepe, in order to avoid losses due to possible distorted information provided by the company.

To the company management

- To improve its communication with the community, in particular, and with civil society, in general, and in this process it could open a space to publish information of public interest about its activities, in Portuguese and in a local language (example of a web page); and
- To improve the way it posts job opportunities and present an up-to-date environmental impact study and make it public.

To INAMI and other entities that supervise extractive activities

- To carry out a study on the environmental impact of the project, which is 3 metres from the communities' residential areas; and
- Monitoring how the company deals with employment and local content issues in general.

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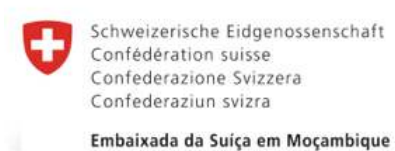
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