

TAX MANEUVERS AND MINING



**What's left for
communities?**

Production **Justiça nos Trilhos**
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Cover - Woman waiting to
cross the railway line. Vila
União, Buriticupu/MA.
June 2021.

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List of Acronyms

Alepa – Legislative Assembly of the State of Pará
ANM – National Mining Agency
BNDES – National Bank for Economic and Social Development
CF – Federal Constitution
CFEM – Financial Compensation for Mineral Exploration
CIF – International Classification of Functions, Disability and Health
CIM – Multimodal Intermunicipal Consortium
COMEFC – Consortium of Municipalities of the Carajás Railroad in Maranhão
Consema/MA – State Environmental Council of Maranhão
CPI – Parliamentary Commission of Inquiry
CSLL – Social Contribution on Net Income
DL – Decree of Law
DNPM – National Department of Mineral Production
EFC – Carajás Railroad
EFVM – Vitória-Minas Railway
EUA – United States of America
Fenafisco – National Federation of State and District Tax Authorities
Fico – Central-West Integration Railroad
FOB – Free On Board
FPM – Municipal Participation Fund
GO – Goiás (State)
IBGE – Brazilian Institute of Geography and Statistics
Ibram – Brazilian Mining Institute
ICMS – Tax on the Circulation of Goods and Services
HDI – Human Development Index
II – Import Tax
IJF – Tax Justice Institute
Inesc – Institute of Socioeconomic Studies
IR – Income Tax
IRPJ – Corporate Income Tax
Itic – Institute of Information and Communication Technology
IUM – Single Mining Tax

JCP – Interest on Equity
LAI – Access to Information Law
MA –Maranhão (State)
MG – Minas Gerais (State)
MP – Public Ministry
MP – Provisional Measure
MPC – Public Ministry of Accounts
NCM – Mercosur Common Nomenclature
Unicamp – State University of Campinas
OCDE – Organization for Economic Co-operation and
Development
ILO - International Labor Organization
UN – United Nations
PA – Estado do Pará (State)
PEC – Constitutional Amendment Project
Pecex – Price under Export Quotation
PGFN - Attorney General of the National Treasury
GDP – Gross Domestic Product
PIS - Social Integration Program / Pasep - Public Servant Asset
Formation Program
Previ – Pension Fund for Employees of Banco do Brasil
Renca – Copper and Associates National Reserve
Secex – Secretary of Foreign Trade
Sefa – Secretary of State for Finance
Sema – Secretary of State for the Environment and Natural
Resources
Sindifisco – Union of Tax Auditors of the Federal Revenue
Service of Brazil
Sudam – Superintendence for the Development of the Amazon
SUS – Unified Health System
TCE – State Court of Auditors
TFRM – Rate of Control, Monitoring and Inspection of Research,
Mining, Exploration and Use of Mining Resources
UFMA – Federal University of Maranhão
UTI – Intensive Care Unit
VPM – Value of Mineral Production

PRESENTATION

The central argument of a mining company and the public power to justify the installation of a mineral project in a certain location, in Brazil and in the world, is always the economic question.

How much that project will bring back in taxes, jobs, income generation, infrastructure and will impact the human development of the city, however, it always falls short of what was promised. In this report, it is shown that, in the case of Vale, in the states of Pará and Maranhão, the reality is different from the company's propaganda.

The configuration of the tax system favors large companies, which play with the available loopholes and use the so-called "tax planning" to roll over gigantic debts, distribute billions in profits and dividends to shareholders and pay much less tax than the general population.

Those who live with Vale's infrastructure in Maranhão and Pará, however, need to fight for the simple installation of a walkway for the community to be able to cross the railroad more safely. Cases of deaths and other serious accidents are common on the railroad that leaves Carajás, in Pará, and goes to São Luís, in Maranhão, for almost a thousand kilometers. Noise, air and water pollution; harassment and persecution of residents, are part of the scenario of poor cities with a very low Human Development Index (HDI).

There is an abyss between practice and the development discourse, which mining propagates. This report details a key case of the Brazilian and global economic model, as the ore extracted by Vale, in the Amazon, and exported to Asia, Europe, and other regions, is part of an intricate chain.

The present and future of the Amazon, Brazil and the planet depend on how these issues will be dealt with today and in the future. Understanding this complexity, its contradictions and its misconceptions, which contribute to growing inequality, is fundamental for us to live in a minimally fairer and more transparent world.

Seeking to contribute to this debate, Justiça nos Trilhos, with the support of Fastenaktion, sought to develop an analysis with elements that can help to understand the dynamics of tax evasion in the activities of the mining

chain and the consequences for the impacted communities. The work begins with a synthesis of the text and then presents it in three parts. This study had the collaboration of investigative journalist Mauricio Angelo and the Institute of Fiscal Justice (IJF). The journalist's participation comes in the first part with the presentation of the company Vale S.A. and its economic dynamics in the extraction and commercialization of iron ore, as well as with the fiscal return of mining in the states of Pará and Maranhão, bringing brief testimonials from impacted communities. The second part resulted from studies and research by the Institute of Fiscal Justice on the subject of the Regulatory Framework and taxation on mining in Brazil on the basis of under-invoicing of iron ore exports in the period from 2017 to 2020. Finally, the third part of this report brings the replies of companies and public bodies, the recommendations, as a result of the research, and the final considerations. We wish to all a good reading and that this material can support the debates with a view to greater transparency in information and control of tax evasion related to mining.

Methodological path

Regarding the path taken to reach the results of this research, Brazilian legislation and human rights treaties, related to extractive activities, especially mining, to which Brazil is a signatory were taken as reference. Communities along the Carajás Railroad in the state of Maranhão, where Justiça nos Trilhos concentrates its field actions, were selected for the interviews. The recordings were done in the month of June 2021 when the photos were taken.

For the content, bibliographic and documentary studies were carried out, as well as searches on official websites and pages of organizations specialized in mining. Based on the Access to Information Law, requests for information were sent repeatedly to companies and public bodies.

This analysis was, thus, carried out on the basis of bibliographic studies, listening to people in the communities and researching mining-related taxes. The recommendations are the result of this analysis and the accumulation of academic discussions on the subject.

SYNTHESIS OF THE REPORT

Tax Maneuvers and Mining: What's left for the communities?

Justiça nos Trilhos

June 2022

This document is the result of research carried out by investigative journalist Maurício Ângelo, with the co-participation of Fiscal Justice Institute (IJF)'s researchers Guilherme Morlin and Isabela Callegari, coordinated by the organization Justiça nos Trilhos, in partnership with Fastenaktion Ending Hunger Together. It aimed to evaluate the strategies and evidence of tax evasion in the iron mining sector, the main product in Brazil's mineral export agenda.

Notably, the recurring arguments of large companies in favor of mining activity are related to the supposed dynamism of the local economy. They emphasize the jobs and taxes that would result from the projects, despite the known and inherent socio-environmental damages and risks. However, even the economic impacts always fall far short of what was promised, in addition to often condemning regions to cycles of rise and decline, due to their dependence on extractive activities.

Research on local impacts and strategies for tax evasion shows that, in the case of iron mining, in the states of Pará and Maranhão, the reality is different from that advertised by companies. In addition to companies using their good relationship with political power to negotiate and indefinitely postpone large debts, the configuration of the tax system greatly favors them, due to legal exemptions for the export of ore; and even so, they use the so-called *tax planning* to distribute profits and dividends and pay less taxes than the general population. More specifically, the research found that the practice of under-invoicing exports in order to reduce the tax base continues, even with recent laws that seek to curb it; also, that there are no public means to verify that the proper tax adjustments are being made. If the under-invoicing is not properly adjusted in the tax return, the practice constitutes tax evasion.

Another important aspect that permeates this debate is that tax evasion reduces not only the payment of taxes, but also the Financial Compensation for Mineral Exploration (CFEM), which would be necessary for the local population to develop a way out of economic dependence on an activity inherently finite. It is noteworthy, however, that the methodology adopted here considered only the possible evasion of taxes on profit, not including the CFEM, in order to be in line with the methodology of the previous study.

The report investigates the history and internal dynamics of the main company in the iron ore exploration sector, Vale S.A.; the distribution and decision-making process around CFEM resources; the signs of under-invoicing and decrease in the tax base; the situation of communities affected; and, finally, it presents the responses of the companies consulted, the conclusions and some recommendations.

Vale S.A.

Created in 1985, Vale S.A. currently has 10,756 wagons and 217 locomotives to transport products, with a capacity for 230 million tons of iron ore per year. Besides iron, the company also extracts manganese, copper, bauxite, aluminum, gold, silver, cobalt and coal, among others, and its main customer is China. The country ranks as the second largest iron exporter in the world, which makes Vale S.A. one of the main iron ore companies in the global market.

In November 2020, a shareholders' agreement expired, which meant that the mining company's control could be more dispersed. A high state presence in the controlling block – like the National Bank for Economic and Social Development (BNDES) – was a reality since privatization in 1997. In April 2021, BNDES sold the perpetual debentures it had held since then, for the amount of R\$ 11.5 billion. It was the final step towards getting rid of any state ownership in the mining company. The change paves the way for expanding the domain of international investors, which puts even more pressure on results that tend to ignore the minimum of social concern that remained in the mining company.

In December 2020, the company managed to extend, in advance, the federal government's concession of the Carajás Railroad (EFC) and

the Vitória-Minas Railroad (EFVM), for another 30 years, starting in 2027, when the current contracts expire. This occurred without public consultation, as well as without a public debate on socio-environmental impacts. Its net income in 2020 was approximately R\$ 25 billion. In the first half of 2021 alone, Vale S.A. had a result of R\$ 70 billion, the largest in history for a publicly traded company in Brazil, losing only to Petróleo Brasileiro S.A. (Petrobras).

International financiers and distribution chain

Among the main financiers and shareholders of Vale S.A., in recent years, there are some of the largest financial institutions on the planet, such as Black Rock, the Bank of America, Citigroup, JP Morgan Chase, HSBC, Barclays, ABN Amro, Vanguard, Santander and Goldman Sachs. About 10% of the investment funds are based in the United States. In Switzerland, the subsidiary companies of Vale S.A. are Vale Switzerland S.A., Vale International S.A., CMM Overseas S.A., a commodity trader, Srv Corporate S.A., an obscure institution classified as a “bank” and Vale Power S.A. As an affiliate, there is Vale Slab S.A. The global distribution chain includes giant companies, such as the Indian ArcelorMittal; the South Koreans Hyundai and Posco; the American Nucor Steel; the German ThyssenKrupp; and the Finnish Outokumpu.

Vale S.A.’s debts in Brazil

According to data from the Attorney General’s Office of the National Treasury (PGFN), Vale S.A.’s current debt with the Brazilian government exceeds R\$ 41.4 billion, considering all types of debt, such as tax benefits (the main part, with R\$ 39 billion) and securities in guarantee or suspended by court decision. A study by Fenafisco, which represents the tax auditors of the States and the Federal District, managed to detail the company’s active debt with Brazilian states. It adds up to more than R\$ 1.7 billion for Pará, and R\$ 1 billion for Minas Gerais. With Rio de Janeiro the debt amounts to R\$ 125 million and with Espírito Santo, to R\$ 6 million. This active tax debt basically regards the Tax on the Circulation of Goods and Services (ICMS).

The federal government has already carried out almost 30 tax refinancing programs (Refis) in the last 20 years alone, offering discounts and very favorable terms for large companies, proving that, in this case, not paying is a great deal. For the PhD in economics from the University of Campinas (Unicamp), Juliano Goularti, coordinator of the study “Debt Barons”, published by Fenafisco, companies take advantage of tax legislation and bet on legal chaos in order not to pay what they owe and get generous rebates. Currently, Vale S.A. maintains tax discussions with the Federal Government and all debts are suspended.

Distortions in the Financial Compensation for Mineral Exploration (CFEM) and evidence of corruption in Maranhão

CFEM is paid by mining companies to the federal regulatory body, which is the National Mining Agency (ANM). Different types of ores result in different CFEM rates, which thus range from 1% for rocks and sands to 3.5% for iron ore. The Income Tax (IR) reform, which still has to go through the Senate, wants to change the rate to 5.5% on iron, copper, bauxite, gold, manganese, kaolin, nickel, niobium and lithium.

Unfortunately, it has been observed by the communities and movements involved that CFEM’s resources are directed, especially, to projects that have the purpose of maintaining the administrative machine, such as the Administration, Infrastructure, Economy and Finance Departments, to the detriment of improvements favoring the most impacted communities, and economic alternatives to mining activity, as recommended by Law No. 13,540, of December 2017.

As for the Multimodal Intermunicipal Consortium (CIM), former Consortium of Municipalities of the Carajás Railway (COMEFC), in Maranhão, a dossier from the Maranhão Court of Auditors, released in 2021, indicates that the Consortium may be a source of corruption in fraudulent bids in cities through which the EFC passes. Since 2013, when it was created, the Consortium has positioned itself as the mediator of mining company Vale S.A. and the communities affected by the company. Although there is a movement on the part of some mayors and civil society to face corruption and ensure that resources from mining are, in fact, applied for the common good,

especially for the most impacted communities, the CIM dialogue still remains limited to the company and the government, without any participation of the communities.

The non-taxation of mining in Brazil

Mining companies would be subject to the same taxes as any large company, but they receive a series of benefits in the form of tax exemptions. The first major benefit is obtained through the Kandir Law, Complementary Law No. 87/1996, transformed into Constitutional Amendment No. 42/2003, which exempted primary products from ICMS payment when exported.

The Kandir Law establishes that the Union must compensate the states for losses, but what can be observed is that the amounts paid for such compensation have always been far below the due, generating significant tax losses for the states. In addition to the ICMS exemption, under the Kandir Law, exports are also exempt from contributing to the Social Integration Program (PIS)/Public Servant Asset Formation Program (PASEP), while imports of capital goods used in mining benefit from reductions in Import Tax (II) rates, granted to machines and equipment that meet certain specifications, the so-called *ex-tariff*.

In the context of the Legal Amazon, there are even more exemptions. The main one grants a tax waiver of 75% of the Corporate Income Tax (IRPJ) to large companies in the region, a 25% reduction in freight for the importation of machines and inputs, and yet another 7.5% may be discounted upon the purchase of machines and other equipment. Some of the big companies benefited are Vale, BHP Billiton, Hydro and Mineração Rio do Norte (CARDOSO, 2015). In relation to IRPJ and Social Contribution on Net Income (CSLL), companies can apply have another series of legal deductions that make it possible to reduce their taxable income, in which depreciation, accelerated accounting depreciation, amortization, depletion, incentivized mineral depletion and financial expenses stand out. It is worth noting that it is possible to deduce the exhaustion of an finite public good that was granted by the very Union itself, that is the mine itself.

In turn, the distribution of profit to shareholders, in the form of dividends, have also been exempt from Income Tax (IR) since 1995. Another way of remunerating shareholders is through a typically Brazilian tax figure, Interest on Own Capital (JCP), whereby the company is obliged to withhold 15% of the profit distributed to partners and shareholders, deducting it as an expense in its tax return. This artifice reduces the taxable base and its final tax, so that the company fails to pay the 25% that would be due in IRPJ of large companies and pays only 15%. when they receive dividends. Investors, on the other hand, are exempt and, when they receive JCP, taxation is exclusive at source at 15%, without being subject to the IRPF table, as is the income of any worker.

In addition to these benefits, large mining companies use strategies to reduce the payment of taxes, which is the main object of investigation here. Under-invoicing exports, or over-invoicing imports, reduces taxable income and, therefore, the Corporate Income Tax (IRPJ), the Social Contribution on Net Income (CSLL) and, in the case of mining, the CFEM. Companies carry out these transactions through subsidiaries in tax havens, which intermediate the transactions, without ever actually importing the ore. Through transfer pricing, a company exports to a subsidiary, in an under-invoiced way, and that subsidiary exports to the real destination, with the correct price. Companies can also choose to indebt subsidiaries and be able to deduct taxes for paying interest to companies in the same group elsewhere.

Under-invoicing and loss of revenue in the iron ore export sector

The improper invoicing of exports and imports represents a serious issue for peripheral economies. Under-invoicing of exports, over-invoicing of imports and illicit financial flows, in general, are part of a financial architecture that concentrates wealth in offshore financial centers, which contributes negatively to the redistributive impact of fiscal policy and compromises stability and prosperity in these countries (UNCTAD, 2020).

Exporting at a price lower than that practiced on the market implies an implicit transfer of foreign currency abroad and a reduction in taxable income in the national territory, where the income was

generated. The transaction itself does not constitute illegality, as long as the company makes adjustments to taxable income in its tax returns, in accordance with market prices. This practice is associated with a triangulation between companies located in different countries, where there is a strong discrepancy between the country of purchase and the country of destination of the goods. The country of purchase is the country of residence of the company that contracts the purchase of the exported goods, regardless of the physical destination to which the goods are shipped. Thus, the difference between the country of acquisition and the country of destination of exports indicates some form of intermediation in international trade, which can be based on real or fictitious operations.

Considering the relevant participation of iron ore in Brazil's exports, its expressive absolute value and the countries involved in commercial transactions, the practice of transfer pricing in these exports translates into a significant commercial under-invoicing. Our analysis, which covers the period from 2017 to 2020, demonstrates the repeated under-invoicing of iron ore exports in Brazil, aimed at reducing the tax base of large mining companies.

China is the main destination for Brazilian iron, accounting for 65.8% of exports of this ore in the analyzed period. China's position is compatible with its importance as a trading partner of Brazil and the main importer of raw materials in the world. The Chinese share in iron ore exports has been growing from 57% in 2010 to 74.2% in 2020. In the same period, Switzerland was responsible for 88.9% of iron ore purchases, which corresponded to an average annual value of US\$ 16.85 billion. The country's share of acquisitions maintained the growth trend previously observed in a study carried out by the Fiscal Justice Institute (IJF, 2017), reaching 90.8% in 2020. A smaller share of purchases was made in countries such as Singapore (2.5%, in the period from 2017 to 2020), United Kingdom (1.7%) and Portugal (1.4%).

Switzerland's high share of Brazilian mineral exports is not an extraordinary case. In fact, Switzerland plays an important role in the world trade in commodities, due to its role as a commercial intermediary. It is estimated, for example, that around 40% of the world trade in oil is conducted by Swiss companies, as well as 60% of the trade in grains and 60% of the trade in metallic commodities

(SWISS TRADING AND SHIPPING ASSOCIATION, 2022).

However, the country does not have logistical advantages: ports, access, natural resources, etc. The advantages offered by the country are of a tax and fiscal nature, and it is often remembered as a tax haven¹ (ALSTADSÆTER et al., 2018).²

The first survey carried out by the IFJ, published in 2017, identified the occurrence of under-invoicing in iron ore exports. A capital outflow of US\$ 39,132 billion was estimated in the period from 2009 to 2015, and the corresponding tax loss was estimated at US\$ 12,407 billion. It also showed that Switzerland played the role of commercial intermediary in Brazilian iron ore exports. The country accounted for about 80% of iron ore acquisitions from 2006 to 2015, although almost all of these acquisitions were destined for other countries, mainly China (IJF, 2017).

In the present work, we estimated the under-invoicing of iron ore exports for the period from 2017 to 2020, using the same methodology as in the previous study. The outflow of capital associated with under-invoicing, in the period from 2017 to 2020, was US\$ 19.379 billion, which corresponds to an average outflow of US\$ 4.844 billion per year, obtained in the comparison between import and export prices reported by the countries. This result was lower than the estimated value when comparing international quotation prices with export prices, that is, we used the most conservative values, aiming not to overestimate the capital outflow. Extrapolating the results of the first study, in which only 23% of the transferred profit was declared and taxed, we estimate a loss of revenue of US\$ 5,073 billion in the period between 2017 and 2020, corresponding, on average, to US\$ 1,268 billion per year.

This brings us to a crucial point in our study. In 2012, Law No. 12.715 was approved, which established new forms of tax

1. See also TJN (2021).

2. The Federal Revenue Service of Brazil classified Switzerland as a tax-favored country in 2010, although in 2014 it restricted this classification to "legal entities incorporated as a holding company, household company, auxiliary company, mixed company and administrative company". [...], as well as the regime applicable to other legal forms of incorporation of legal entities, by means of rulings issued by tax authorities, which result in the incidence of IRPJ, in a combined manner, of less than 20% (twenty percent), according to federal, cantonal and municipal legislation" (RFB 2010; RFB 2014).

adjustment, with the main focus precisely on combating the practice of transfer pricing in the export of commodities. In the same vein, Law 12.973, approved in 2014, determined taxation on a universal basis, that is, taxation of the profit of subsidiaries outside the country. In theory, the new legislation would prevent the eventual profit earned by foreign subsidiaries via transfer pricing, from going without being taxed in Brazil. However, society does not have the means to verify whether such tax adjustments are in fact being carried out, due to tax secrecy and, as far as we can determine, the revenue agencies continue to face the same difficulties with the practice of transfer pricing and evasion by mining companies, despite the approval of the new laws.

Results identified regionally

Products from the mineral extractive industry and agriculture have been the main items on Brazil's export agenda in recent decades. In turn, iron ore has remained among Brazil's foremost export products, with extraction concentrated in the states of Pará and Minas Gerais and representing about 70% of exports from the mineral extractive sector in 2020, when summing up the figures for the agglomerated, non-agglomerated and concentrated ore (IBRAM, 2021).

In this study, it was possible to estimate the outflow of capital and the consequent tax losses distributed across the Federation Units. The concentration of capital outflow was identified in the states of Pará and Minas Gerais since the production and export of iron ore is concentrated in these states. For Pará, a loss of tax collection of US\$ 2.324 billion was estimated and, for Minas Gerais, of US\$ 1.801 billion, over the period from 2017 to 2020. States such as Espírito Santo and Rio de Janeiro would also have suffered a significant loss of revenue, associated with the under-invoicing of exports. This estimated loss totaled US\$ 557 million, in the case of Espírito Santo, and US\$ 321 million, for Rio de Janeiro.

Consequences for States

Since 2019, Pará occupies the position of the main mining state in the country, surpassing Minas Gerais. Pará accounts for half of the sector's production in Brazil, reaching R\$ 97 billion in Mineral Production Value (VPM) in 2020. This amount represented 13% of the state's Gross Domestic Product (GDP) and 10% of total exports of the country, while it corresponded to 40% of the Brazilian trade balance surplus in 2020. However, despite the huge numbers, mining fails to generate jobs and provide beneficial returns for society.

Between 2000 and 2020, the value of mineral production grew by about 18 times. Pará's participation in national mining increased from 23% to 47%. The weight of mining in the State's GDP increased from 4.5% to 13.5%. Meanwhile, direct mining jobs just went from 1.6% to 1.9% of total jobs, and the weight of taxation, considering ICMS, CFEM and the Mining Resource Inspection Fee (TFRM) on the value of mineral production, went from 2.4% to 3.5%.

On the other hand, results obtained by the Parliamentary Inquiry Commission (CPI) in Pará showed that Vale S.A. presented a net income of US\$ 120 billion, from 2004 to 2017, allocating approximately US\$ 43 billion to its shareholders, while, in the same period, it paid only US\$ 4 billion to the Union, the States and the Municipalities all together (ALEPA, 2021). According to a recent report published by Pará's Sindifisco (ENRIQUEZ, 2021), the effective tax burden in the sector is estimated at only 15.8% of the value of mineral production, due to the legal exemptions granted to companies in the region of the Superintendence for the Development of the Amazon (SUDAM) and to export.

Considering the scenario of closure of some iron mines in the State of Minas Gerais, due to problems with the tailing's dams, the expectation is that the state of Pará should expand its iron ore extraction from 230 million tons per year, in 2020, to 260 million tons per year in 2024 (IBRAM, 2021). Part of this could be turned into benefits for society, but the state does not pay ICMS on iron ore, due to the Kandir Law, and in addition, it grants income tax incentives

to companies, due to the fact that they are installed in the SUDAM area. Thus, the effective tax burden of iron ore in this region is limited to the TFRM, the Social Contribution on Net Income (CSLL) and CFEM, which are, in turn, probably under-invoiced, due to the transfer pricing practice discussed here.

Mining impacts on communities in Maranhão

Currently, trains in Maranhão carry solid bulk (soybeans and other grains), liquids (fuels and fertilizers, among others), in addition to iron ore. The state has the second worst Human Development Index (HDI) in Brazil, worse only than Alagoas', among the 27 states of the federation. The monthly household income per capita is only R\$ 676, according to the Brazilian Institute of Geography and Statistics (IBGE), which is half the Brazilian minimum wage.

Among the main cities on the EFC route, in the state, there are Açailândia, Buriticupu, Alto Alegre do Pindaré, Itapecuru Mirim and São Luís. Complaints from surrounding communities include the lack of viable and safe crossing of the railway from side to side, such as viaducts and footbridges; trampling of people and animals caused by trains, including the death and mutilation of residents; the damage to the structure of the houses, cracking under the constant impact of the passing of trains; noise, water and air pollution; in addition to the persecution and criminalization of leaders and the lack of dialogue by Vale S.A. with communities. The report brings several testimonies from residents, from different municipalities, about these and other violations of rights.

Although some impacts are caused by steel companies, which are not owned by Vale S.A., it is the mining company's iron ore that supplies the production of essential alloys for steel production, so that the entire production chain is committed to violations of human rights. The report also presents the opinion of the UN rapporteur, Baskut Tunkat, responsible for the issue of "Implications of environmentally sound management and disposal of hazardous substances and waste", on such human rights violations, based on a December 2019 visit to the community of Piquiá de Baixo, in the municipality of Açailândia.

Responses received from companies and public institutions consulted

The fourth part of the report presents Vale S.A.'s answers and positions, as well as of other companies and public institutions. In summary, Vale S.A. responds that CFEM resources are collected in accordance with the law and that it is up to the ANM to exercise supervision over the collection and distribution of the corresponding amounts. Regarding the safety of communities crossed by the railroad, the company informs that it constantly invests in technology and actions to reinforce danger-free coexistence with its railroads, which, according to it, are the safest in the country.

The Brazilian Mining Institute (IBRAM) responded that it considers Brazil's legislation to be good on the topic of transfer pricing, as it prohibits possible price manipulation in marketing to organizations controlled in other nations. The ANM, the government of Maranhão, the Public Ministry of Maranhão, the Court of Auditors of Maranhão, as well as the municipalities of Açailândia, Alto Alegre do Pindaré, Buriticupu, and Itapecuru Mirim did not respond to the questions sent.

Recommendations

The conclusions that derive from the study seek to provide theoretical support and technical instruments to society, so that they demand, through political mobilization, greater social control and democratization of decisions around mining activity. Recommendations are made to companies in the sector aiming to improve their practices; to the judiciary, to enforce legislation and community demands towards companies; and to the legislative and executive powers of the federation and states, so that they are more rigorous about the activity's regulation and control.

Some of the main recommendations are: the need for greater tax transparency; the democratization of decision-making processes around the installation of mining projects and the allocation of CFEM resources; independent external audits in the companies, validated with the communities; non-postponement of court decisions and payment of reparations favorable to mining victims; the return of ICMS taxation on primary products, with the repeal of the Kandir Law; the design of collective and long-term plans

aimed at overcoming dependence on mining activities; review of tax benefits and exemptions granted to mining companies; rigorous environmental licensing, which pass through the judgment of organized civil society before any approval; the review of the flexibility of environmental licensing; strengthening inspection and control institutions, such as IBAMA; the alignment of the CFEM rate to that of the main mining countries in the world, also considering the specific needs of resources in accordance with regional development; the interruption of the practice of transfer pricing at its origin, that is, in the sale of the ore, and not in a subsequent tax adjustment; curtailing the transfer of profit to subsidiaries in tax havens; and finally, the strengthening of the Federal Revenue Service, the Financial Activities Control Council (COAF) and the other bodies responsible for tax inspection.

Part I



Underpass access to the communities, built by Vale. June 2021.

I.I OVERVIEW OF VALE S.A.

1. Vale S.A: What it is and what it does

Founded in 1942, Vale S.A. is among the three largest mining companies in the world, in terms of market value.³ It disputed with Rio Tinto the position of largest producer of iron ore (300 million tons) on the planet, in 2020, and is the leader in nickel (244.6 million tons).⁴

Vale S.A. also extracts manganese, copper, bauxite, aluminum, gold, silver, cobalt and coal, among other ores. It operates in more than 30 countries, on five continents, and has more than 71 thousand employees and 247 thousand shareholders,^{5 6} being a company that stands out on the New York Stock Exchange. Vale S.A.'s net income in 2020 was approximately R\$25 billion.⁷

In the Amazon region, in the state of Pará, Vale S.A. operates the Carajás Complex, the largest iron ore extraction project in the world. The production is transported by a railroad of almost 1,000 kilometers,⁸ which leaves from Carajás, in Pará, until it reaches the port of Ponta da Madeira, in São Luís, capital of Maranhão. The Carajás Railroad (EFC) is essential for Vale's exports, whose main customer is China.⁹

Inaugurated in 1985, it currently has 10,756 wagons and 217 locomotives to transport products, with a capacity for 230 million tons of iron ore per year. The railroad crosses at least 130 villages and communities from the State of Pará to São Luís/MA,¹⁰ drastically affecting the way of life of those people and causing numerous human rights violations.

In December 2020, Vale S.A. managed to extend in advance, together with the federal government, the concession of the EFC and of the Vitória-Minas Railroad (EFVM) for another 30 years, starting in 2027, when the current contracts expire.¹¹

3. <https://www.mining.com/top-50-biggest-mining-companies/>

4. <http://www.vale.com/brasil/pt/aboutvale/reports/4t18/paginas/producao.aspx>

5. <http://www.vale.com/brasil/PT/investors/company/shareholding-structure/Paginas/default.aspx>

6. <http://www.vale.com/brasil/PT/investors/company/shareholding-structure/Paginas/default.aspx>

7. <http://www.vale.com/brasil/pt/business/reports/4t20/paginas/default.aspx>

8. <https://portal.antt.gov.br/vale-estrada-de-ferro-carajas>

9. <https://www.oliberal.com/para/governo-garante-inicio-de-ferrovia-que-interligarabarcarena-maraba-e-parauapebas-em-2021-1.212000>

10. <https://justicanostrilhos.org/mapa-das-comunidades/>

11. <https://oglobo.globo.com/economia/vale-tera-concessao-de-ferrovias-por-mais-30->



◀ **Figure 1**
Representation
of the Carajás
Railroad (EFC)

Source:
Wikipedia¹²

The planned investment is R\$ 24.7 billion, starting in 2021. This amount includes the concession of the two railroads (R\$ 11.8 billion) and counterparts agreed with the federal government, such as R\$ 8.7 billion for the construction of the Central-West Integration Railroad (Fico). Another R\$3.9 billion is earmarked for commitments undertaken by Vale, such as expanding the passenger train service and works to improve the safety of the railroad systems.

Vale S.A. formalized the request for an early extension in December 2015. Two years later, the National Congress approved Law 13.448/2017, which regulated the matter and allowed the inclusion of cross-investments, as a counterpart for the anticipation of contracts, as is the case with the Fico railroad.

In the 2014 elections, the last one with authorization for donations made by companies, Vale S.A. donated R\$ 82 million¹³ to deputies, senators, governors and presidential candidates, with emphasis on the states of Minas Gerais and Pará. How much this support affects the advantages obtained by the company is a question that seeks an answer.

anosincluindo-estrada-de-ferro-de-carajas-1-24799270

12. <https://upload.wikimedia.org/wikipedia/commons/5/51/Carajas.JPG>

13. <https://brasil.estadao.com.br/noticias/geral,com-r-82-milhoes-em-doacoes-eleitoraisvale-espalhou-influencia-em-25-estados-e-no-congresso,70002702885>

Figure 2 ▶ Vale's global operations

Source: Vale S.A.'s Annual Report 20-F (2021).¹⁴



The business segments of Vale S.A. around the world are represented in Figure 2.

2. Shareholder spraying indicates more international control

The year 2020 marked an important change underway in the shareholding control of Vale S.A..

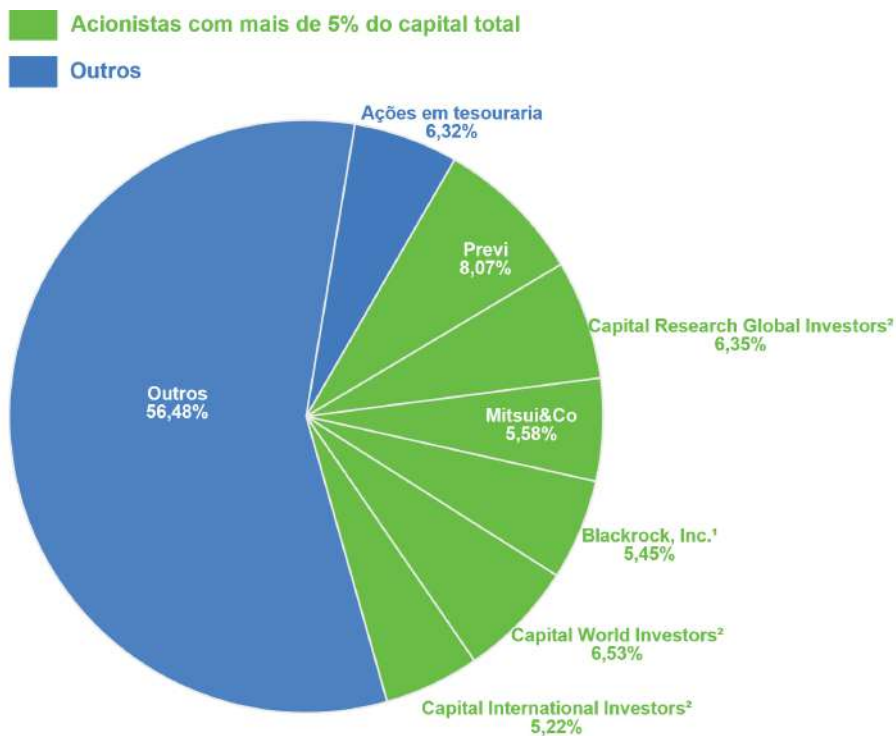
In November of the same year, a shareholders' agreement expired,¹⁵ which means that the mining company's control could now be more dispersed, without a mandatory control block.

The agreement was in force between Litela Participações S.A. and Litel Participações S.A. – which bring together state pension funds, including Banco do Brasil; Petrobras and Caixa Econômica Federal; Bradespar S.A., belonging to Banco Bradesco; Mitsui Group, one of the largest Japanese conglomerates; and BNDES Participações S.A. (BNDESPar), of the National Bank for Economic and Social Development (BNDES).

These companies were able to sell their stakes in Vale S.A. in the amount of 20.6%, which were blocked.

14. <http://www.vale.com/brasil/PT/investors/information-market/annual-reports/20f/Paginas/default.aspx>

15. <https://www1.folha.uol.com.br/mercado/2020/11/fim-de-acordo-de-acionistas-podepulverizar-capital-da-vale.shtml>



◀ **Graph 1**
Shareholding composition of Vale S.A. in February 2022

Source: Shareholding Structure of Vale S.A.¹⁸

¹ Posição de 31/12/2020
² Posição de 28/09/2021

With this change, BNDES hastened to sell a good part of its shares. Less than a week after the change, on November 16, 2020, BNDES sold 40 million shares of Vale,¹⁶ worth R\$ 2.5 billion. The buyer was the US bank Morgan Stanley.¹⁷ In August, BNDES had already sold R\$ 8.1 billion in shares in the mining company. Together, the two operations represent a reduction of 175 million shares of Vale S.A. for the Brazilian state-owned development bank. At the end of February 2021, BNDES completed the cycle and zeroed out its stake in Vale S.A.,¹⁹ selling 120 million shares, which yielded R\$11 billion to the bank.

16. <https://www1.folha.uol.com.br/mercado/2020/11/bndes-vende-mais-r-25-bilhoes-emacoes-da-vale.shtml>

17. <https://investidor.estadao.com.br/mercado/vale-bndes-venda-participacao-vale3/>

18. <http://www.vale.com/esg/pt/Paginas/ComposicaoAccionaria.aspx>

19. <https://exame.com/invest/bndes-vende-quase-120-milhoes-de-aco-es-e-zera-participacaoacionaria-na-vale/>

The tendency is for other pension funds to quickly follow the same path, getting rid of their holdings, and Vale S.A. will have less and less direct and indirect state presence in controlling shareholders. In August 2020, Caixa de Previdência dos Empregos do Banco do Brasil (Previ) had already reduced its shareholding in Vale, from 5.03% to 4.98%.²⁰

The high state presence in the controlling block – like the BNDES – had been a reality since privatization in 1997.²¹ In April 2021, BNDES sold the perpetual debentures it had from Vale since then, in the amount of R\$ 11, 5 billion.²² It was the final step to get rid of any stake in the mining company.

The change opens the way for a greater dominance of international investors, which puts even more pressure on results and tends to ignore the minimum of social concern that was left in the mining company.

Among Vale's main international investors are the American companies BlackRock, Capital Research Global Investors²³ and Vanguard, which, together, accumulate more than US\$ 11 billion in shares.

Capital Research, for example, has systematically increased its stake in Vale, managing 5.11% of the mining company's common shares in December 2020.²⁴

Other major world financial institutions, such as Morgan Stanley, Santander, J.P. Morgan Chase and UBS, are also Vale's shareholders.

In practice, the pool of foreign investors currently represents around 60% of the mining company's controlling interest.²⁵ Vale S.A. is the company with the highest market value on the Brazilian stock exchange, exceeding R\$ 500 billion.

In September 2021, Vale S.A. began to disclose its shareholding control, placing several funds under the umbrella of "others". In February 2022, the shareholding composition of Vale S.A. was as shown in Graph 1.

20. <https://www.moneytimes.com.br/previ-fundo-de-previdencia-da-caixa-vende-acoes-davale/>

21. <https://www1.folha.uol.com.br/fsp/brasil/fc080513.htm>

22. <https://economia.uol.com.br/noticias/estadao-conteudo/2021/04/13/venda-de-titulos-da-vale-rende-r-115-bi-ao-bndes.htm>

23. <http://www.vale.com/EN/investors/information-market/Press-Releases/Pages/Valeinforms-increase-of-relevant-shareholding-ownership-.aspx>

24. http://www.vale.com/PT/investors/information-market/Press-releases/ReleaseDocuments/1204_aumento_CRGI_p.pdf

25. <https://economia.uol.com.br/noticias/estadao-conteudo/2021/02/06/estrangeirosavancam-na-vale-e-ja-sao-donos-de-55-das-acoes-da-mineradora.htm>

3. Shares, profit and dividend distribution

Vale S.A. competes ton for ton, with Rio Tinto, the post of largest producer of iron ore in the world. The new commodity boom and rising Chinese demand have favored both. And the Brazilian mining company continues to obtain licenses to expand its exploration projects in the State of Pará, in the Amazon, its main mine complex today.²⁶

Vale S.A. also extracts nickel, manganese, copper, bauxite, aluminum, gold, silver, cobalt and coal, among others. It operates in more than 30 countries on five continents.

This new cycle made it possible for Vale to break records in terms of net income. Vale S.A. pocketed R\$ 70 billion in the first half of 2021, the second largest result in the history of a publicly traded company in Brazil, losing to Petrobras.

The board of directors of Vale S.A. approved, in September 2020, the distribution of R\$ 12.4 billion to its shareholders,²⁷ as remuneration for profit, in the first quarters of 2020.

It was the second time that the mining company has remunerated shareholders, since the disaster in Brumadinho (MG), which left 270 dead, in January 2019. In August 2020, the company paid R\$ 7.25 billion as remuneration for the result of 2018.

Shortly after the dam rupture, Vale S.A. had suspended the payment of dividends and variable compensation to its executives. However, in April 2020, shareholders also approved a compensation package that included R\$ 19 million in awards to the board for performance in 2019.

Dividend distribution continued firmly in 2021.

Since the resumption of the distribution of profits and dividends, more than R\$ 60 billion have been pocketed by shareholders. Of this total, R\$ 40 billion refers to the first half of 2021 alone.²⁸ This amount is higher than the amount (R\$ 37 billion) agreed, without the participation of those affected, with the government of Minas Gerais, as compensation for the disaster.²⁹

26. <https://exame.com/negocios/vale-da-mais-um-passo-para-recuperar-titulo-de-maiormineradora/>

27. <https://www1.folha.uol.com.br/mercado/2020/09/vale-anuncia-r-124-bilhoes-emremuneracao-a-acionistas.shtml>

28. <https://www.poder360.com.br/economia/vale-anuncia-distribuicao-de-r-40-bi-emdividendos/>

29. <https://observatoriodamineracao.com.br/com-desconto-de-r-17-bilhoes-vale-e-governode-minas-gerais-fecham-acordo-por-reparacao-de-brumadinho/>

Vale S.A.'s
wagons with
iron ore.
Francisco
Romão
Settlement,
Açailândia.
June 2021.



In total, Vale S.A. closed 2021 with net income of US\$ 22.4 billion, equal to around R\$ 121 billion. That's a staggering 360% up on the 2020 income, which had been a record.

With that, the mining company secured the highest profit in its history, almost 4 times higher than the record achieved in 2020. This result is, by far, the highest ever for a publicly traded company in Brazil.

In 2021, of the total dividends distributed in the country, almost half, or US\$ 12.4 billion, came from Vale. The number was the second highest amount paid by a mining company around the world, beaten only by the Anglo-Australian mining company BHP Billiton.

These values place Vale S.A. in the position of eighth largest payer of dividends in the world³⁰ and Brazil only behind China and Russia, among the countries considered emerging.

30. <https://www1.folha.uol.com.br/mercado/2022/03/empresas-brasileiras-pagamdividendo-recorde-em-2021-e-vale-e-destaque-mundial.shtml>

4. Iron ore

In 2020, the year of a global pandemic, iron ore appreciated by 74% and reached US\$ 160 per ton,³¹ the highest level in almost eight years.

For 2022, Vale S.A. projected to produce up to 370 million tons of iron ore.³² Already responsible for about 50% of the total production by the mining company, the Carajás Complex has been under increasing pressure to increase its production since the start of operations of the S11D project, the largest in the world, in December 2016.³³

In 2019, Vale S.A. announced the plan to increase production by 70% in the south of Carajás,³⁴ with direct repercussions on the outflow capacity. The mining company is working to expand its yearly production in Carajás from 90 million to 150 million tons, according to an announcement made to international investors.³⁵

Vale S.A. ended 2021 with the production of 315.6 million tons of iron ore, an increase of 5.1% compared to the previous year.

According to analysts, the rising price of ore and the strong projected world demand will benefit Vale's profits.³⁶ The analysis is that the mining company has a relatively low level of indebtedness, by industry standards, and does not have large investments planned in the short term, which favors cash generation.

The iron ore market is also likely to be impacted by the war.³⁷ Russia and Ukraine account for 25% of the 120 million tons of iron ore pellets used in the steel industry and produced on a large scale in Brazil, such as at Samarco, in Mariana (MG). Impacts on the price and supply of pellets will depend on the duration of the conflict.

31. <https://valor.globo.com/empresas/noticia/2020/12/31/minerio-de-ferro-tem-valorizacaode-74percent-em-2020.ghtml>

32. http://www.vale.com/PT/investors/information-market/quarterly-results/ResultadosTrimestrais/RELATORIO%20DA%20ADMINISTRACAO%202021_p.pdf

33. <http://www.vale.com/brasil/pt/aboutvale/news/pages/vale-inaugura-o-largest-da-historia-da-mineracao.aspx>

34. <https://valor.globo.com/empresas/coluna/vale-vai-aumentar-em-70-producao-no-sul-decarajas.ghtml>

35. <https://www.otempo.com.br/economia/vale-anuncia-que-ampliara-producao-deminerio-no-para-1.2182174>

36. <https://economia.uol.com.br/mais/ultimas-noticias/2021/01/19/veja-como-ganhar-nabolsa-com-10-candidatas-a-campeas-de-dividendos.htm>

37. <https://observatoriodamineracao.com.br/guerra-na-ucrania-inflaciona-commoditiesmineraiis-e-pode-favorecer-o-lucro-de-mineradoras/>

Iron Ore

Thousand metric tons	3T21	2T21	3T20	9M21	9M20	% variation		
						3T21/2T21	3T21/3T20	9M21/9M20
Sistema Norte	53.020	43.501	56.850	138.814	139.213	21,9%	-6,7%	-0,3%
Serra Norte e Serra Leste	31.961	26.916	32.459	84.177	78.258	18,7%	-1,5%	7,6%
S11D	21.059	16.585	24.391	54.637	60.955	27,0%	-13,7%	-10,4%
Sistema Sudeste	19.532	18.059	16.307	51.121	40.817	8,2%	19,8%	25,2%
Itabira (Cauê, Conceição e outros)	7.795	7.233	6.465	20.709	17.796	7,8%	20,6%	16,4%
Minas Centrais (Brucutu e outros)	5.696	5.490	4.394	14.642	12.233	3,8%	29,6%	18,2%
Mariana (Alegria, Timbopeba e outros)	6.041	5.337	5.448	15.770	10.788	13,2%	10,9%	46,2%
Sistema Sul	16.138	13.441	14.930	41.287	34.054	20,1%	8,1%	21,2%
Paraopeba (Mutuca, Fábrica e outros)	6.867	5.899	7.064	18.083	16.585	16,4%	-2,8%	9,0%
Vargem Grande (Vargem Grande, Pico e outros)	9.271	7.542	7.866	23.204	17.469	22,9%	17,9%	32,8%
Sistema Centro-Oeste	731	684	589	1.915	1.793	6,9%	24,1%	6,8%
Corumbá	731	684	589	1.915	1.793	6,9%	24,1%	6,8%
IRON ORE PRODUCTION¹	89.421	75.685	88.676	233.137	215.877	18,1%	0,8%	8,0%
IRON ORE SALES²	67.844	67.218	65.769	194.361	172.040	0,9%	3,2%	13,0%
IRON ORE AND PELLET SALES²	75.881	74.865	74.233	216.316	194.765	1,4%	2,2%	11,1%

¹ Including third-party purchase, run-of-mine and feed to pellet plants.

² Including third-party purchase and run-of-mine.

Table 1▶
Table of iron ore production

Source:
Production Report of Vale S.A.³⁸

5. International financiers and distribution chain

In recent years, among Vale's main financiers and shareholders, there have been some of the largest financial institutions on the planet, such as BlackRock, the Bank of America, Citigroup, JPMorgan Chase, HSBC, Barclays, ABN Amro, Vanguard, Santander, Goldman Sachs and others.

From the United States and Canada, even from Europe and Asia, there are several sources of loans and the shareholders of the Brazilian mining company are varied. Among investment funds, about 10% are in the United States.

Among the investment funds with Swiss participation, there are funds from institutions such as Credit Suisse,³⁹ UBS⁴⁰ and Swisscanto,⁴¹ although with small shares, which do not exceed 0.05% of the total. Minority shareholders include Credit Suisse Asset Management, Capital International Sarl,

38. <http://www.vale.com/brasil/PT/business/reports/3t21/Paginas/producao.aspx>

39. <https://www.bloomberg.com/quote/CSIFMRD:SW>

40. <https://markets.ft.com/data/funds/tearsheet/summary?s=LU0328353924:USD>

41. <https://www.swissfunddata.ch/sfdpub/en/funds/docs/35956>

UBS Asset Management (Switzerland) and Zürcher Kantonalbank (Asset Management).

In Switzerland, Vale Switzerland S.A. and Vale International S.A. also appear, as well as CMM Overseas S.A.,⁴² a certain *commodity trader*, Srv Corporate AS,⁴³ an obscure institution classified as a “bank” and Vale Power S.A.. There appear also an affiliate, called Vale Slab S.A.

Vale S.A.’s global distribution chain includes giant companies such as India’s ArcelorMittal, the South Koreans Hyundai and Posco, the American Nucor Steel, the German ThyssenKrupp and the Finnish Outokumpu.

All data comes from the Refinitiv platform, which was owned by Thomson Reuters, one of the largest communication conglomerates in the world and is now owned by the London Stock Exchange.⁴⁴ Refinitiv is one of the main financial information tools on the planet (consultation made in May 2021).

6. Vale S.A.’s debt to the States

The total debt of Vale S.A. with the Union and States, such as Pará, Minas Gerais, Espírito Santo and Rio de Janeiro, exceeds R\$ 44 billion. The mining company questions the information.

According to data from the Attorney General’s Office of the National Treasury (PGFN), Vale S.A.’s current debt with the Brazilian government exceeds R\$ 41.4 billion, if all types of debt, such as tax benefits (the principal, with R\$ 39 billion), collateral bonds or bonds suspended by court decision.

A study by the National Federation of State and District Tax Authorities (Fenafisco⁴⁵), which represents the tax auditors of the States and the Federal District, managed to detail Vale S.A.’s active debt with Brazilian states. And the result was that the debt is over R\$ 1.7 billion to Pará and R\$ 1 billion to Minas Gerais. With Rio de Janeiro, the debt is R\$ 125 million and, with Espírito Santo, R\$ 6 million.

This active tax debt basically involves the Tax on the Circulation of Goods and Services (ICMS).

42. https://www.dnb.com/business-directory/company-profiles.cmm_overseas_sa.0b295c184c87c165f57480ad6bc3f6b9.html

43. <https://www.moneyhouse.ch/en/company/srv-corporate-sa-14018995331>

44. <https://www.refinitiv.com/en/about-us>

45. Study called “Barões da Dívida”. <https://baroesdadivida.org.br/map>.

For Juliano Goularti, PhD in economics from the University of Campinas (Unicamp) and coordinator of the study "Barons of the Debt",⁴⁶ published by Fenafisco, companies take advantage of the tax legislation, which is confusing and complex, and bet on legal chaos in order not to pay what they owe and get generous rebates.

A court case may remain idle for 7 to 10 years. In addition, the federal government has implemented almost 30 tax refinancing programs in the last 20 years alone, offering huge discounts and longer terms. In short: not paying what you owe is a great deal!

"The successive tax refinancing programs are a stimulus to default, to not paying the tax on time, because the company knows that later on there will be a new program, that will benefit it", affirm critically Goularti.

He believes that large companies end up practicing unfair competition with medium and small entrepreneurs. The fiscal war between the states favors even more the large enterprises that dictate the direction of the economy.

46. <https://baroesdavidia.org.br/home>

I.II FISCAL AND SOCIAL RETURN ON IRON MINING FOR MARANHÃO

1. Less taxes, less return for society and more profit for companies

The certainty of impunity even makes large companies, such as mining companies, end up using the non-payment of taxes to reduce the cost of production and increase the profit margin, betting on the judicial challenge. Thus, society loses twice.

The national average recovery of active state debt is a measly 0.6%.

“Taxes are what allows the state to carry out public social policies. The less tributes are collected, the more it directly interferes with cutting-edge services”, recalls Goularti.

In other words: more profit for company shareholders and less government investment in health, education, security and infrastructure.

Sought out, Vale S.A. contested the debts and cited that it adhered to refinancing programs made available by the government.

“Vale clarifies that it routinely complies with all its tax obligations. The company informs that it maintains tax discussions at the state level due to differences in the interpretation of the tax legislation of these entities. It also informs that all negotiations are guaranteed or have their enforceability suspended, which gives it the certificate of tax compliance in those jurisdictions. Vale also has tax discussions with the Federal Government, all of which are suspended. As is public knowledge, Vale joined refinancing programs, such as the Refis of Oversea Profits, and debts in installments continue to be considered at their original value in the Active Debt of the Federal Government, without the reduction of fines and interest presented by the aforementioned programs, until the total settlement of their installments”, disclosed the mining company, in a note.⁴⁷

On the other hand, as already mentioned, Vale S.A. made more than R\$ 70 billion in profits in the first half of 2021 alone.

Samarco Mineração, whose control is 50% in the hands of Vale S.A. and is undergoing judicial recovery,⁴⁸ also owes R\$ 5.7 billion to the Federal

47. <https://observatoriodaminerao.com.br/vale-deve-mais-de-r-44-bilhoes-para-a-uniao-e-estados-do-para-minas-rio-e-espirito-santo/>

48. <https://observatoriodaminerao.com.br/devendo-r-50-bilhoes-samarco-pederecuperacao->

Vale's railroad bridge over the river in Piquiã de Baixo, Açailândia/MA, June 2021.



Government. In total, the debt of Samarco, responsible for the rupture of the Mariana dam, exceeds R\$ 50 billion.

Even with this situation, the head of the Tax and Customs Studies Center of the Federal Revenue, Claudemir Malaquias, celebrated, on January 25, 2022,⁴⁹ the “expressive increase in revenue from the sectors of metallurgy and mineral extraction” in 2021.

For the Brazilian Federal Revenue Service, it was an “extraordinary” collection of R\$ 40 billion in Corporate Income Tax (IRPJ) and Social Contribution on Net Income (CSLL), last year.

“The increase in revenue from the metallurgy and mineral extraction sectors is related to the cycle of rise in commodity prices abroad. These two sectors are being mainly responsible for the growth of IRPJ and CSLL. More recently, we have noticed an increase in the collection of the fuel sector and in corporate reorganizations”, said Malaquias.

judicial/

49. <https://www.opovo.com.br/noticias/economia/2022/01/25/malaquias-houve-altaexpressiva-na-arrecadacao-de-metalurgia-e-mineracao.html>

Rate	Mineral
1%	Rocks, sand, gravel, clay and other mineral substances, when intended for immediate use in civil construction; ornamental rocks; mineral and thermal waters
1,50%	Gold
2%	Diamond and other mineral substances
3%	Bauxite, Manganese, Niobium and Rock Salt
3,50%	Iron

◀ **Table 2**
Rates of CFEM incidence

Source: Annex of Law 13.540/2017. Self elaboration.

2. CFEM and the allocation of collected funds

As stipulated in the Federal Constitution of 1988, mineral resources are assets that belong to the Union. To exploit them, mining companies need to pay compensation, called Financial Compensation for Mineral Exploration (CFEM). The CFEM should not be confused with a tax, as it is a compensation for the use of an asset that belongs to society, is exhaustible and non-renewable. CFEM is similar to oil royalties.

The responsibility for collecting the CFEM rests with the National Mining Agency (ANM), a federal regulatory agency. The CFEM rate varies according to the type of ore exploited, ranging from 3.5% for iron ore to 1% for rocks and sands (cf. table 2 below). In sales operations, it is levied on net sales, deducting taxes and transport and insurance expenses, since the amendment to Law 13.540/2017 (Brasil, 2017).⁵⁰

Table 2 shows the percentages of CFEM incidence.

The Income Tax reform project - PL2337/2021, proposed by the executive, includes an additional 1.5% of the CFEM levied on iron, copper, bauxite, gold, manganese, kaolin, nickel, niobium and lithium.⁵¹

The resources collected with the CFEM are not exclusive to the Union, which needs to share them with States and Municipalities, with the mining municipalities keeping 60% of these resources. With the advent of Law 13.540/2017, the CFEM apportionment rates have changed. Non-producing

50. BRASIL, Lei nº 13.540/2017; Altera as Leis nº 7.990, de 28 de dezembro de 1989, e 8.001, de 13 de março de 1990, para dispor sobre a Compensação Financeira pela Exploração de Recursos Minerais (CFEM). In. Planalto; Disponível em: http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2017/lei/l13540.htm

51. <https://www12.senado.leg.br/noticias/materias/2021/09/16/projeto-que-altera-regras-do-imposto-de-renda-sera-analisado-no-senado>

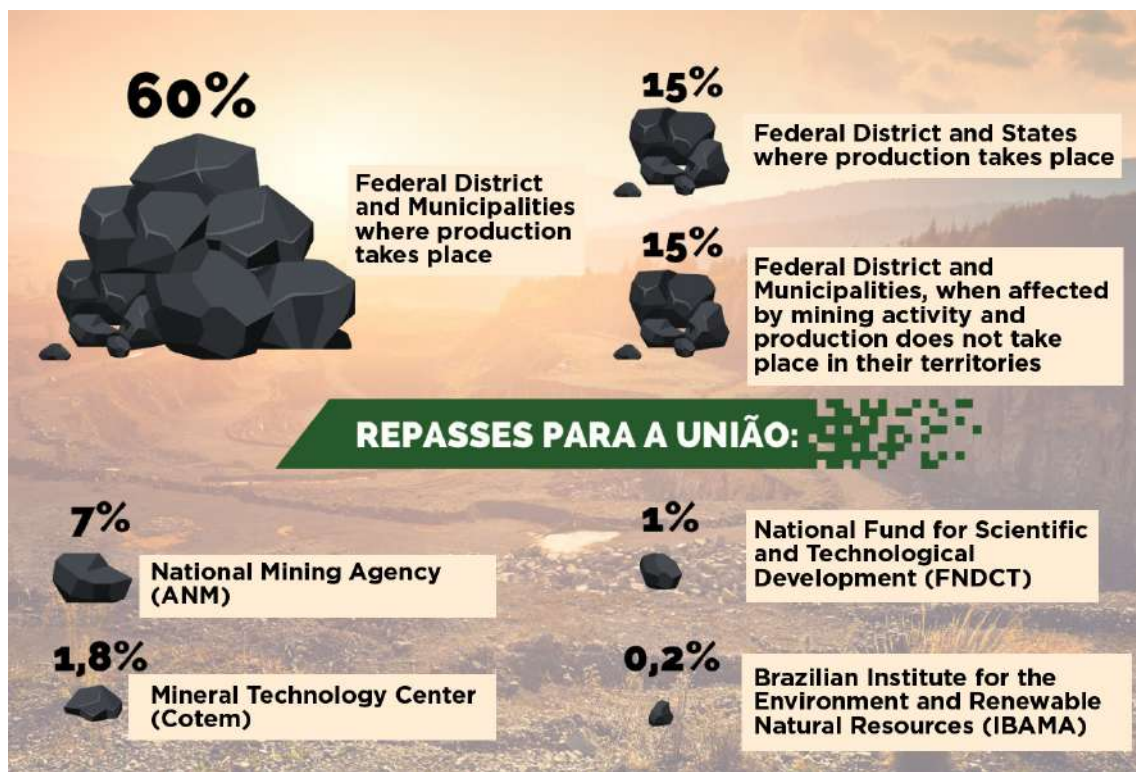


Figure 3 ▶
Distribution of
CFEM - Law
13.540/2017⁵³

Source:
Law 13.540/2017.
Self elaboration.

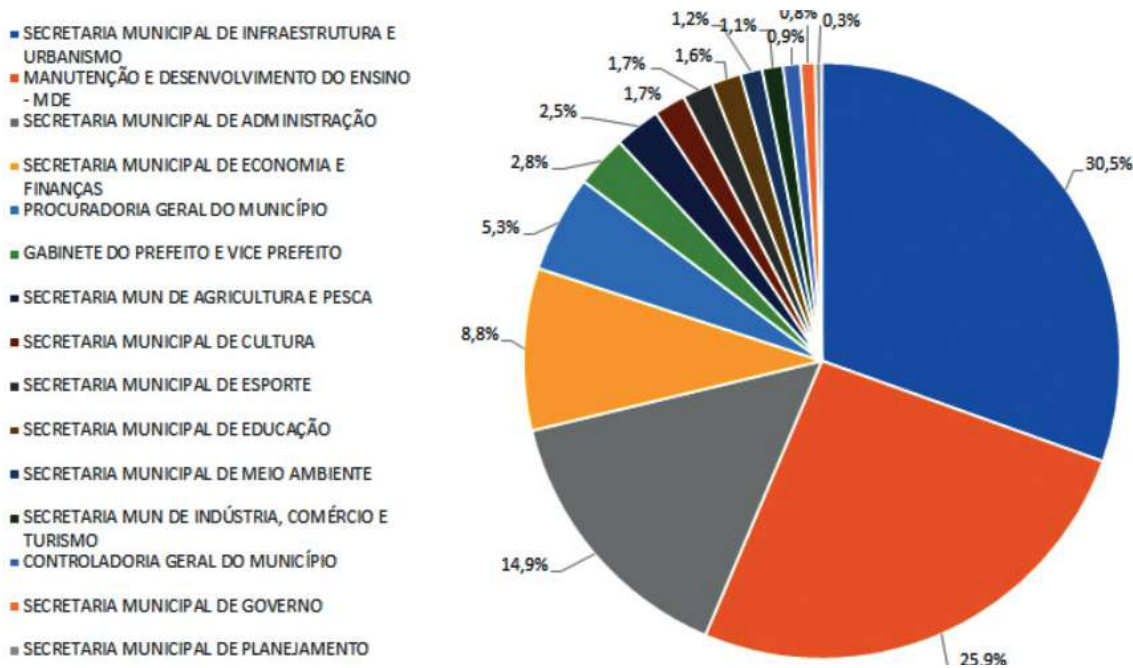
municipalities, which, however, are affected by mining because of some mining-related infrastructure, like a railway, a pipeline, a dam, a residue dump or other, in their territories, started to receive a share of 15% (BRASIL, 2017), as figure 3 shows.

3. Current application, distortions and consequences of the use of CFEM in Maranhão

The “De Olho na CFEM” project,⁵² which counts on the participation of Justiça nos Trilhos (JnT) (Justice on the Tracks), monitors the spending of this tax in six of the main mining municipalities impacted by mining in Brazil: Canaã dos Carajás (PA), Parauapebas (PA), Marabá (PA), Alto Horizonte (GO), Conceição do Mato Dentro (MG) and Açailândia (MA).

The objective is to investigate whether the resources that mining leaves in the municipal coffers, in the form of CFEM, are being used to improve the living conditions of the population and whether they are being used to build a development that is not dependent on mineral exploration.

52. <http://emdefesadosterritorios.org/conheca-o-projeto-de-olho-na-cfem/>



◀ **Graph 2**
Expenses, by budget units, linked to Açailândia City Hall (2020)

Source: Castro, 2021.

In Maranhão, the municipalities that benefit from the CFEM are: Açailândia, Alto Alegre do Pindaré Anajatuba, Arari, Bacabal, Bom Jardim, Bom Jesus das Selvas, Buriticupu, Cantanhede, Caxias, Cidelândia, Codó, Coroatá, Igarapé do Meio, Itapecuru Mirim, Itinga, Miranda do Norte, Monção, Pindaré Mirim, Pirapemas, Rosário, Santa Inês, Santa Rita, São Francisco do Brejão, São Luís, São Pedro da Água Branca, Timbiras, Timon, Tufilândia, Vila Nova dos Martírios and Vitória do Mearim.

The case of Açailândia, analyzed here, is emblematic as regards the use of resources from CFEM with the public administration, to the detriment of the most impacted communities in Maranhão. Reports of corruption in several cities also illustrate how mayors have been misappropriating this money.

4. Where is CFEM going, in Açailândia?

In 2020, the state of Maranhão was responsible for raising R\$ 20.47 million, out of a total of R\$ 6.079 billion collected with CFEM (ANM, 2020).

According to Law 13.540/2017, CFEM revenues are distributed by the Union

53. Although Law 13.540/2017 established the percentage of 15% for non-producing municipalities affected by mining, article 2 of Decree 9.407/2018 determined that 13% will be allocated to the Federal District and affected municipalities and 2% will be allocated to the DF and mined municipalities to compensate for the loss of collection with CFEM arising from Law 13.540/2017

to federative units, including non-producing municipalities affected by mining, such as Açailândia.

The Carajás Railroad (EFC) crosses the territory of Açailândia and is responsible for the outflow of iron ore extracted by the company Vale S.A. The municipality also suffers from the effects of the steel mills that produce pig iron and of the eucalyptus monoculture. Thus, Açailândia became part of the list of municipalities affected by mining, provided for in Law 13.540/2017 (Castro, 2021). In 2020, R\$ 32.7 million of the amounts collected with CFEM were transferred to the City Treasury, representing 11.4% of the total current revenue of the Açailândia municipality. In 2019, the first year in which Açailândia received this resource, R\$ 25.6 million was transferred, representing 9.3% of total current revenue (Castro, 2021).

The use of CFEM resources, however, was not made available on the city hall's transparency portal, but generically included under the heading "Ordinary Resources". The analysis of the expenses linked to this general source makes it very difficult to know how the CFEM revenue is applied. This practice already shows the lack of commitment of the municipal administration towards properly accounting for the proper application of the funds from CFEM (Castro, 2021).

According to Castro (2021), the municipality's expenditures are grouped in eight management units in the 2021 budget. Of these eight units, the items Infrastructure and Urbanism (30.5%); Maintenance and Development of Education (25.9%); Administration (14.9%); and Economy and Finance (8.8%) represent a total outcome of 80% of the R\$ 119.3 million in the municipal budget directly linked to the maintenance of the management unit named "Açailândia City Hall". Graph 2 shows the share of expenditure by budget unit.

Considering the actions carried out by three of the four management units with the highest expenditures, Castro (2021) demonstrates that resources are directed especially to projects with the purpose of maintaining the public machine. This is the case of the Administration Secretaries (14.9%); Infrastructure (18.6%); and Economy and Finance (8.8%).

Thus, this configuration makes the city's transparency precarious and makes it even more difficult for the population to demand the appropriate destination, including in activities that can be developed independently of mining or as an alternative to this activity, as provided for in §6 of article 2. of Law 13.540/2017.



Rua da Fumaça, Piquiá de Baixo. Açailândia/MA, June 2021.

According to this legislation, at least 20% of each of the CFEM installments destined to the collecting municipalities “will be allocated, preferably, to activities related to economic diversification, sustainable mineral development and scientific and technological development”.

However, because Açailândia does not specify the CFEM source in its budget, unlike other municipalities evaluated within the “De Olho na CFEM” project, it prevents verification of compliance with this recommendation in the legal provision. This practice could be changed with the approval of proposed amendments to the bill 004/2021, the LDO of 2022, presented by Rede Cidadania de Açailândia.⁵⁴

These amendments would oblige Açailândia city hall to give more transparency in the breakdown of the application of the CFEM budget, by having to present the list of projects and activities with values from CFEM.

54. <https://cmacailandia.ma.gov.br/noticia/comissao-de-financas-recebe-proposta-de-emendas-ao-projeto-da-ldo-atraves-da-rede-cidadania>

5. Mining, Covid-19 and social vulnerability in Açailândia

Despite the revenues from mining, Açailândia ended the year 2020 with a percentage of 29% of people in extreme poverty, or poverty.

Of the residents, 9,525 families were in a situation of poverty or extreme poverty, of which 13%, or 1,283 families were not supported by the Bolsa Família Program, of the federal government.

This is an extremely socially vulnerable population, which does not see CFEM collaborating with the city's economy and improving the quality of their life.⁵⁵

At the beginning of the Covid-19 pandemic in Brazil, in March 2020, the municipality of Açailândia had only three respirators in the Unified Health System (SUS), and no Intensive Care Unit (ICU) bed exclusively for Covid cases and not even for general use.

At the end of May, it had a total of 24 respirators in the SUS and 10 exclusive ICU beds for Covid-19 cases. Despite the city reacting to the health crisis with new beds and respirators, the response, both from public authorities and the private sector, was insufficient to face the worst pandemic in 100 years.

Up to June 22, 2022,⁵⁶ Açailândia recorded 8,902 cases of Covid-19 and 292 deaths.

6. Complaints of Corruption

Mining money is directly involved in strong complaints against mayors and businessmen of cities cut by Vale's railroad, in Maranhão.

In 2019, the Public Ministry of Maranhão (MP-MA)⁵⁷ filed six complaints against those involved in fraud in bids carried out from 2013 to 2016 in the Municipality of Itapecuru Mirim (MA), a municipality located 108 kilometers from the capital São Luís. According to the MP, the criminal organization was headed by former mayor, Magno Amorim, who allegedly embezzled R\$ 27 million in public funds. The complaints are divided among the political, administrative, legal and business segments.

The suspicions of corruption in Itapecuru Mirim go further. The MP discovered that the theft of millions from the city budget was not just of

55. http://emdefesadosterritorios.org/wp-content/uploads/2021/04/Nota-Te%CC%81cnica-2_marc%CC%A7o-de-2021_Socioecono%CC%82mico.pdf

56. <http://covid-19.acailandia.ma.gov.br/>

57. <https://g1.globo.com/ma/maranhao/noticia/2019/01/18/mp-denuncia-organizacao-pordesvio-de-r-27-milhoes-em-prefeitura-no-ma.ghtml>

EVOLUTION OF THE HDI OF THE MUNICIPALITIES ALONG THE CARAJÁS RAILWAY – EFC

MUNICÍPIOS	IDH-M 2000	IDH-M 2010	População 2010	Percurso EFC (Km)
AÇAILÂNDIA	0,666	0,672	104.047	123,6
ALTO ALEGRE DO PINDARÉ	0,538	0,558	31.057	89,6
ANAJATUBA	0,567	0,581	25.291	23,9
ARARI	0,617	0,626	28.488	26,6
BACABEIRA	0,602	0,629	14.925	40
BOM JARDIM	0,515	0,538	39.049	NP
BOM JESUS DAS SELVAS	0,580	0,558	28.459	49,2
BURITICUPU	0,595	0,556	65.237	34,8
CIDELÂNDIA	0,613	0,600	13.681	47
IGARAPÉ DO MEIO	0,540	0,569	12.550	26,8
ITAPECURU MIRIM	0,609	0,599	62.110	23
ITINGA DO MARANHÃO	0,664	0,630	24.863	NP
MIRANDA DO NORTE	0,625	0,610	24.427	8,3
MONÇÃO	0,564	0,546	31.738	12,2
PINDARÉ-MIRIM	0,620	0,633	31.152	14,5
SANTA INÊS	0,671	0,674	77.282	9,6
SANTA RITA	0,592	0,605	32.366	14,8
SÃO FRANCISCO DO BREJÃO	0,629	0,584	10.261	2,8
SÃO LUÍS	0,778	0,768	1.014.837	19
SÃO PEDRO DA ÁGUA BRANCA	0,588	0,605	12.028	47
TUFILÂNDIA	0,521	0,555	5.596	14,2
VILA NOVA DOS MARTÍRIOS	0,594	0,581	11.258	35
VITÓRIA DO MEARIM	0,615	0,596	31.217	34,9
IDH M do Maranhão 2000	0,476		1.731.919	696,8
IDH M do Maranhão 2010	0,639			

▲ **Table 3**
Evolution of the HDI
of the municipalities
located along the EFC

Source: Presentation of the CIM
in the Chamber of Deputies.⁵⁸

money received from mining company Vale.⁵⁹ The scheme also involved funds from the Municipal Participation Fund (FPM) and Health. The irregularities started even before the biddings and involved shell companies, nepotism and false competition.

In a series of reports at the time of the complaints, TV Record showed that residents of the region face a reality of neglect,⁶⁰ suffering and corruption and

58. <https://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-temporarias/especiais/54a-legislatura/pl-0037-11-mineracao/audiencias-publicas/COMEFC.pdf>

59. <https://recordtv.r7.com/reporter-record-investigacao/videos/as-margens-da-ferroviacarajas-quadrilha-transforma-prefeitura-em-balcao-de-negocios-08012021>

60. <https://recordtv.r7.com/reporter-record-investigacao/videos/riqueza-da-mineracaocontrastacom-miseria-e-sofrimento-dos-vizinhos-da-ferrovia-carajas-08012021>

Figure 4 ▶
Municipalities
associated with
the CIM (26)

Source: CIM
web page



the money from Vale S.A. does not improve the daily lives of the population at all, confirming the findings of this report.

Table used by the Consortium of cities crossed by the railroad (CIM – Multimodal Intermunicipal Consortium)⁶¹ confirms that the HDI, in these locations, remains very low and does not show significant evolution (the latest available data from the Brazilian Institute of Geography and Statistics – IBGE are from 2010). (Table 3).

A dossier from the Maranhão Court of Auditors revealed in 2021⁶² shows evidence of the participation of Karla Batista, former mayor of Vila Nova dos Martírios, in the Multimodal Intermunicipal Consortium (CIM). For the TCE, the Consortium may be the source of corruption in fraudulent bids in cities crossed by the Carajás Railroad (EFC).

CIM is the former Consortium of Municipalities of the Carajás Railroad in Maranhão (COMEFEC). (Fig. 4).

In February 2021, precautionary measures by the TCE suspended CIM bids.⁶³ The reports are based on the detection, by the teams of auditors of the TCE, of multiple irregularities in bidding processes carried out by the Consortium in the Electronic Auction modality.

61. <https://www2.camara.leg.br/atividade-legislativa/comissoes/comissoes-temporarias/especiais/54a-legislatura/pl-0037-11-mineracao/audiencias-publicas/COMEFEC.pdf>

62. <https://recordtv.r7.com/reporter-record-investigacao/videos/consorcio-de-municipios-eapontado-como-fonte-de-corrupcao-em-licitacoes-fraudadas-15012021>

63. <https://site.tce.ma.gov.br/index.php/noticias/1904-medidas-cautelares-do-tcesuspendem-licitacoes-do-consorcio-intermunicipal-intermodal>

The bidding processes detected by the representations were intended for the supply of school lunches, office supplies, cleaning material, outsourced services, public lighting network maintenance services, press services, visual communication and knitting, for the municipalities that are part of the Consortium.

Based on the facts found, the 2nd TCE Inspection Nucleus requested the granting of a precautionary measure, with the purpose of suspending the bids, at the stage they were in. The Accounting Public Prosecutor (MPC) accepted the Representation and granted a Precautionary Measure, in the terms required by the TCE technical unit.

The TCE Plenary, unanimously, issued the Precautionary Measure requested by the 2nd Inspection Nucleus, with the following determinations: suspension of bids at the stage they are in and, if the contracts have already been formalized, the suspension of payments arising therefrom; in addition to this, the prohibition of carrying out any administrative measures resulting from the bidding, which are incompatible with the precautionary measure granted by the Court of Auditors, until it would decide on the merits of the issues addressed.

At least since 2017, allegations of corruption have been accumulating and the affected communities have been making denunciations.

In 2017, a meeting between civil society and MPE/MA took place in the quilombola territory of Santa Rosa dos Pretos, in Itapecuru Mirim, to discuss the performance of the Consortium of Multimodal Corridors of Maranhão (COMEFC) in that quilombola territory, as well as in Monge Belo.

More than 50 people participated in the meeting, representing 19 quilombola communities. Study groups from the Federal University of Maranhão (UFMA), organizations for the defense of human rights and traditional peoples, as well as journalists and lawyers participated in the meeting.

After complaints of embezzlement of funds from quilombola communities in Itapecuru Mirim, during the administration of former mayor Magno Amorim were remembered, the MP listened to the communities and took charge of the complaints made about the lack of supervision by COMEFC, which created the conditions for the embezzlement of more of R\$ 3 million for the construction of schools, health units (UBS) and projects to generate employment and income.

In addition to the embezzlement of funds, the non-completion of works and the construction of wells in locations other than the original destination were

pointed out, in addition to other irregularities, which led to the filing of an Administrative Misconduct action by the MPE, in progress in the district of Itaipuru Mirim. In 2020, the newly elected mayor, Benedito de Jesus Nascimento Neto, called Coroba, adopted transparency measures for the use of CIM and CFEM resources.

Since 2013, when it was created, the Consortium, currently CIM, has been acting as the mediator between the mining company Vale S.A. and the communities affected by the impacts of mining, with regard to the transfer of compensation funds from Vale.

Today, the CIM is chaired by Fufuca Dantas, mayor of Alto Alegre do Pindaré. In April 2021, Fufuca received, at the Consortium's headquarters, the Secretary of State for the Environment and Natural Resources of Maranhão, Diego Rolim, to discuss Environmental Licensing in the consortium municipalities. The mayor of Itaipuru Mirim, Benedito Coroba, also attended the meeting.

According to the news,⁶⁴ which demonstrates the proximity of the CIM with the state government of Maranhão, today, on the list of the State Secretariate for the Environment and Natural Resources (Sema), there are 25 municipalities qualified with the Environmental Licensing System, according to the Consema Resolution n. 043/2019. Nine of them are part of the CIM.

In a December 2020 release,⁶⁵ when still in the presidency of the CIM, Karla Batista reports a meeting with representatives of the National Mining Agency to guarantee the transfer of the surplus in the collection of CFEM, which in 2020 reached R\$ 900 million per month.

“In such a challenging year, the Multimodal Intermunicipal Consortium worked tirelessly so that the affected municipalities throughout Brazil could obtain the extraordinary revenue of R\$ 7.8 billion in accumulated value until December 2020”, says the text.

The efforts undertaken by the mayor mentioned above in favor of the reception of the tax do not seem to be equal to her commitment to ensure transparency and the good use of the resource. In any case, there is a movement on the part of some mayors and civil society to face corruption and make sure that the public revenues from mining are, in fact, applied towards the common good, especially of the most impacted communities.

64. <https://web.facebook.com/cimconsorcio/>

65. https://web.facebook.com/cimconsorcio/posts/2174392216018178?_rdc=1&_rdr

7. Mining and job creation in Pará

Although it accounts for more than 13% of Pará's GDP, mining fails to generate jobs and provide returns for society. Currently, Pará is the state that stands out in terms of mineral production in Brazil, even surpassing Minas Gerais, which held this prominent position for a long time.

The research "Estudos da Mineração no Pará", launched at the end of 2021, by Maria Amélia Enríquez, with the support of Sindifisco do Pará, analyzes several relevant data on the fiscal and tax strategies used by mining companies, in particular Vale S.A., and the weight of the extractive sector in Pará's GDP.

According to data from this research, 13.5% of Pará's GDP comes from mining, which represents 89% of the State's exports. In 2020, Pará reached R\$ 97 billion in Mineral Production Value (VPM), half of the sector's production in Brazil (ENRÍQUEZ, 2021).

According to Enríquez (2021), with regard to exports, the data are quite expressive. Almost R\$ 100 billion were exported in 2020, with minerals accounting for 80% of this amount. If we add all the metals, the percentage exceeds 90%. The exported value was equivalent to 10% of the country's total exports.

From the research carried out by Enríquez (2021), we highlight the following data, considering the period between 2000 and 2020:

- The value of mineral exports grew 16 times, with Pará's share of national mining rising from 23% to 47%. However, Pará's share of the national GDP rose from 1.9% to 2.3%. If we consider GDP per capita, it went from 52% to only 56% of the national GDP per capita;
- Despite the strength in the mining activity, direct jobs in mining had little change, going from 1.6% to 1.9% of total jobs in Pará. The transformation industry had its participation reduced in the state GDP, going from 16% to just 4%;
- Taxation of the mineral sector on the value of mineral production increased from 2.4% to 3.5%, taking into account ICMS, CFEM and TFRM. As exports are largely tax-free, tax collection in relation to GDP declined from 9.6% to 9%.

PARÁ ECONOMY'S LIFE WHEEL, IN 2019/2020

Figure 5 ▶
Values of mining in the economy

Source: System of Regional Accounts (SCR-IBGE), Comex Stat, IPEA data.



The extraction of iron ore in Pará made by Vale S.A., in the last 35 years, went from 10 million tons per year to around 200 million tons per year. At the end of 2020, approximately 2.8 billion tons of iron ore were extracted from Pará, generating revenue of US\$ 336 billion, approximately R\$ 1.69 trillion. This is equivalent to 55 times all the revenue forecast in this year's Pará budget (ENRÍQUEZ, 2021).

According to Enríquez (2021), in the same year, Vale extracted 192.3 million tons of iron ore, generating an approximate revenue of R\$ 78.2 billion. However, taxes and compensation related to the mineral sector (CFEM and TFRM) were only R\$ 3.18 billion, representing 4% of the Value of Mineral Production (VPM).

Projections indicate that Vale's extraction in Pará will intensify. The Board of Directors approved the Serra Sul 120 project, which will increase extraction capacity by 120 million tons per year. In addition, the company is licensing a new mine in Carajás, the N3, with an estimate of extracting 10 million ton/year and intends to resume production at Serra Leste, in Carajás, with the expectation of extracting 10 million ton/year. Vale will also start operating the Gelado Project, which will enable the recovery of 10 million tons of high-grade iron pellets in Carajás. As a result, Vale is projected to increase from 230 million tons per year in the Northern System, in 2020, to 260 million tons per year in the medium term (Brasil Mineral, Sept. 2020).

Again according to Enríquez (2021), the reversion in benefits to society is small, because exports are exempt from ICMS and even what is collected is transformed into tax credits, that is, States become debtors in relation to exporting companies. The consequence is that the mineral extractive sector contributes to the collection of ICMS with only 2.68%, on average.

“In the Collection Bulletin of the Secretary of State for Finance (Sefa), of February 2021, in which the ICMS collection was R\$ 1,165 billion, there is a contribution related to mining of R\$ 42,861,886, that is, 3.68%. The value of ICMS collection from the retail and wholesale trade, on the other hand, represented R\$ 235,263,303 (20.19%); for fuel, R\$ 280,269,489 (24.05%); and for electricity, R\$ \$ 136,970,524 (11.75%), which reveals the strong mismatch in terms of the tax contribution of the main economic activity of the State” (Enríquez, 2021. p. 7).

Finally, due to the fact that companies receive IRPJ exemption for operating in the SUDAM area, the effective tax burden on iron ore extracted from Pará will be limited to the levy of TFRM, CFEM and Social Contribution on Net Income (CSLL), which are likely to be under-invoiced by the transfer pricing practice discussed in this work.

All comparative studies show that the propaganda of mining companies, the steel chain and public authorities about job creation as one of the great assets of mining activities is nothing more than propaganda, a political fallacy. In addition to this observation, it is necessary to expose the criminal silence regarding the future of the territories impacted by mining activities, because, in addition to the number of jobs generated being below what's promised, these territories end up having a high cost of living, while at the same time losing an important part of their traditional ways of subsistence.

8. Voices of communities affected by Vale in the state of Maranhão

Vale S.A. is proud to have the Estrada de Ferro Carajás (EFC), which according to the company is the most efficient railway in Brazil. The railway, inaugurated in 1985, is now 892 kilometers long, connecting the largest open-pit iron ore mine in the world, in Carajás, in southeastern Pará, to the port of Ponta da Madeira, in São Luís (MA).

Its tracks carry hundreds of millions of tons of cargo and 350,000 passengers a year. Around 35 trains circulate simultaneously, including one of the largest freight trains in regular operation in the world, with 330 wagons and 3.3 kilometers in length.

From 2013 to 2017, 575 kilometers of EFC were duplicated in Pará and Maranhão, increasing its capacity to 230 million tons of iron ore

Jandiel,
resident of
the Francisco
Romão
settlement,
Açailândia/MA,
June 2021.



transported per year. In total, to transport products, EFC has 10,756 wagons and 217 locomotives.

Today, the trains carry solid grains (soybeans and other grains), liquids (fuels and fertilizers, among others), in addition to iron ore.

The EFC is also interconnected with two other railroads: Companhia Ferroviária do Nordeste (CFN) and Ferrovia Norte-Sul. The first crosses, in most of its extension, seven states in the Northeast region and the second cuts through the states of Goiás, Tocantins and Maranhão, facilitating the export of grains produced in the north of the state of Tocantins through the Port of Ponta da Madeira.

Vale S.A. ended 2021 with a net income of over R\$121 billion. It is the biggest profit in the mining company's history and the biggest ever for a publicly traded company in Brazil. The profit of Vale S.A., in 2021, far exceeded the 2019 GDP of the entire state of Maranhão, which was R\$ 97 billion, the last year available, according to official data.⁶⁶

Vale S.A.'s impressive figures, however, do not translate into human development and social well-being. Maranhão has the second worst HDI in

66. <http://imesc.ma.gov.br/src/upload/publicacoes/1b5e089ebfcca232534c4256f43d9c7d.pdf>



Vale's train,
Francisco
Romão
settlement,
Açailândia/MA,
June 2022.

Brazil,⁶⁷ only better than Alagoas, among the 27 states of the federation. The monthly household income per capita in Maranhão is only R\$ 676, according to the IBGE.⁶⁸ Half of Brazilian minimum wage.

All this logistics with incessant 24-hour transport ends up concentrating the consequences that the explosion in the sale of commodities on the international market causes to traditional communities in Maranhão. Justiça nos Trilhos mapped at least 130 communities and villages crossed by the Carajás corridor. Among the main cities along the route are Açailândia, Buriticupu, Alto Alegre do Pindaré, Itapecuru Mirim and, of course, the capital São Luís.

The main complaints from the communities include the lack of safe ways of crossing the railway from side to side, such as viaducts and footbridges; people and animals being run over by trains, including the death and mutilation of residents; the damages to the structure of the houses, cracking with the constant impact of passing trains; noise, water and air pollution; in addition to the persecution (criminalization) of leaders; and the lack of dialogue between Vale S.A. and the communities.

67. <http://www.atlasbrasil.org.br/ranking>

68. <https://www.ibge.gov.br/cidades-e-estados/ma.html>

Deuzimar,
resident of
Vila Nova,
Alto Alegre do
Pindaré/MA,
June 2021.



A good part of the money transferred by the mining company to the affected cities is lost in the mismanagement of city halls, embezzlement and cases of corruption. In the end, the residents are left with the negative impact, do not receive any return and cannot post their positions in the local media, as these are financed by Vale S.A. Thus, it is possible to say that Vale S.A.'s operations in Maranhão cause cumulative detrimental impacts to communities.

The testimonies of residents, reported in this section, which reveal this situation, were collected during a visit to communities in municipalities in the State of Maranhão, in the first week of June 2021.

8.1 Voices that echo from Alto Alegre do Pindaré and Buriticupu

Many people died on this railway line. We do not see Vale's resources being applied as they should be. We see the people in need; the railway cuts the city from end to end, but we don't see the benefit of Vale, we don't have basic sanitation, we don't have security. Here they should generate employment, but most of the companies that come here today have labor force from outside, and there are qualified people to be employed from here. (Leandro



Vale's Wall.
Alto Alegre do
Pindaré/MA,
June 2021.

Pereira - PTB, 35 years old, city councilor of Alto Alegre do Pindaré, who lives in the community of Auzilândia).

According to Pereira, the city receives from R\$1 to R\$2 million per month in transfers from Vale S.A., but the population does not know about its application.

What is there in our town today? Within Auzilândia (one of the districts of the municipality)? Because we don't see things happen. What I miss the most is security. We don't have expectations of a good life, because of the company that uses our territory. The company is rich, but we don't see the benefits. (Pereira).

The mayor elected in 2020, in Alto Alegre do Pindaré, is a relatively well-known authority on the national political scene. Francisco Dantas Ribeiro Filho, Fufuca (PP), current president of the Multimodal Intermunicipal Consortium (CIM), is the father of federal deputy André Fufuca, who came to command the Chamber of Deputies, in 2017, as 2nd vice president of the house, after the absences of the holders. Fufuca Dantas, the father, is a rancher and politician with a long history of positions held in Maranhão, including two previous terms as mayor of Alto Alegre; as state deputy and secretary of Mines and Energy, from 2009 to 2010. For residents, these political positions

House by the
railroad. Alto
Alegre do
Pindaré/MA,
June 2021.



should contribute to a better performance in controlling the impacts of mining in the municipality, but that is not what is observed.

Dona Deusimar, 58 years old, resident of Auzilândia, is direct: “*Many people have died on this railway line, killed by the train*”. With the popular language and wisdom common to the residents heard, Dona Deusimar continues on the daily effects of Vale S.A. trains:

“I have a deep headache, it’s hard in my life to have a day where I don’t have a headache. I’ve had this headache for over 5 years now. The train noise is annoying. And when there’s one going up and the other going down, the headache is stronger, too strong, sometimes I think I won’t even resist”.

Reports show that there are many villages without safe crossings and that many walkways were built without observing all security measures. On this subject, Pereira points out: “*I’ve seen many children and adults pass under the train. There have already been several deaths in Auzilândia and other communities. I think that, for a company like Vale, this kind of thing was not supposed to happen*”.

In the opinion of Jerônimo Alves, another resident of Alto Alegre do Pindaré, Vale S.A. should meet with the communities, see the needs of each one, since the realities are not all the same, and respond to needs.



Riverside, rural community, Alto Alegre do Pindaré/MA, June 2021.

“The lack of lighting on the walkways generates accidents and thefts. People take advantage of dark places to rob. Crossing in some communities is not available. The issue of mud and dust... the ambulance enters a community and gets bogged down,” he reports.

Alves says that the city government does what it wants, with the funds received, and not what the communities need. Communities on the side of the railway were divided, preventing residents from accessing livestock, planting subsistence crops; preventing products from being shipped in a timely manner, due to the problems caused by the trains. Some even interrupt access for days. Traditional activities such as fishing are also affected.

“We used to fish in the streams, but due to the duplication of the railroad, there were many streams that were grounded, so there is no way to fish anymore, it’s over”, says Alves (Alto Alegre do Pindaré). For him, what communities need is quality infrastructure, a health center and sports equipment, places for young people to have fun.

The problems are repeated in the neighboring city of Buriticupu, about 71,000 inhabitants, whose position in the HDI ranking is 145th among the 217 cities in Maranhão.⁶⁹

69. https://pt.wikipedia.org/wiki/Lista_de_munic%C3%ADpios_do_Maranh%C3%A3o_por_IDH-M

José Horlando,
Vila União
settlement,
Buriticupu/MA,
June 2021.



José Orlando has lived in Vila União, Buriticupu district, since 1991. He and his family have always lived off farming and fishing. He says that the duplication of the railroad caused even more inconvenience; that several people have already lost their lives, trying to cross the railway line and that the grounding of the river has a direct consequence of the works of Vale S.A.

“We suffer from the precariousness of the lack of basic sanitation, garbage collection, work to improve the streets, quality school... none of this. But if you look, there are houses that are cracked by the shaking of the train, there are families who go hungry, who live very close to the railway line and have no way of producing”, he says.

The community has no ambulance, no hospital, and suffers from the poor condition of the roads, another maintenance that Vale S.A. stopped doing over time, according to the resident. Road kills are common and the constant passage of the train prevents the free movement of the population.

“When we started to demand safe crossings, Vale’s strategy was to send two inspectors on Saturday and Sunday to check how many people crossed the line. People here work in the fields all week, Saturday and Sunday are rest days. This was a strategy to say that there was no need to build a footbridge because few people crossed the line, so there was no obligation to put a



Lindalva Santos, health worker, Novo Oriente settlements, Açailândia/MA, June 2021.

crossing here in the community”, says José Orlando, with an expression of indignation.

8.2 Vale S.A. deliver incomplete equipment

Alzeneide Moraes, known as Gabi, lives in the Francisco Romão settlement, in the rural area of Açailândia. The community had to interdict the trails of Vale S.A. in order to be heard and attended to by the mining company. Even so, the installed viaduct has problems and leads to accidents.

“Instead of providing us with benefits, it brought us great concerns. Some things were left undone on the viaduct, such as railings, lighting, among other details. This raises the concern of residents, who have to cross on this viaduct at night. There has even been a serious accident leading to the death of a young man and leaving another in a wheelchair”, says Gabi.

Francisco Romão is a community formed by approximately 102 families, who live from agriculture. The community has elementary and secondary schools, although with limited shifts and offering of classes. It is the school of the Francisco Romão settlement that receives students from the Novo Oriente village, which is 6 kilometers away, and from other settlements in

the vicinity. There is only one health post in the Planalto I settlement, built in 2017, but it does not meet the needs of the communities that make up the Novo Oriente region, as it does not have regular service. It lacks medicines, equipment and is distant from other communities. The Novo Oriente region comprises six settlements, including Francisco Romão.

The economic base is agricultural activity, restricted to the subsistence of families. Some supplement their income with Bolsa Família, a benefit granted by the Federal Government. Residents do not have basic sanitation; the water supply is made through two artesian wells and the water is distributed without treatment for consumption.

The situation of the viaduct is repeated in the health service. *“Through our revindications, we got an ambulance, but it is not equipped. We are asking the authorities to equip the ambulance, because in fact it is just a car”*, says Gabi. Without structure, the community has to fight for a public service to be delivered and then for it to be delivered in full.

Lindalva Souza, 56, is a nursing technician with a degree in social work. She says that she accompanies the itinerant team that covers the region of Planalto 1, Novo Oriente, Francisco Romão, Agroplanalto (a camp in the process of regularization by Incra) and João do Vale, the five settlements covered by the health service. The team works three times a week, each day in a different settlement, and twice a month in each settlement. In total, there are three technicians, a nurse, a doctor and the driver. The work is primary care, such as prenatal care, medical consultations, exams and medications.

“That ambulance is capable of transporting, not saving lives. Because we know that if someone is feeling sick, lacking oxygen, or something else, we cannot save their life in a car with just a stretcher to lie on”, says the nursing technician.

According to her, the health post should be in Francisco Romão, which is central to the five settlements. On the other hand, the ambulance used by Vale S.A. is complete, with everything. The equipment offered to communities is quite different.

The situation is repeated at the post located in Planalto I, far from her home. *“Our post is not equipped. On opening day, they brought everything they would need there; when inauguration was over, they took everything back. Our health post only has one room, which has two beds and a chair to sit on. In the office, there is a closet and a chair, nothing else. And there are scales, but there is not even a table to do the screening and measure the pressure.*



View from a house in Piquiá de Baixo of a pig iron plant. Açailândia/MA, June 2021.

If Vale wanted to equip our health post, it would be good, putting a table, a chair... it would be good. But they said that it is not their responsibility to create a health center, that it was the municipality's responsibility", she reports.

In this pushing game, the entire community is harmed. Lindalva points out that the train noise is every day and never fails. *"What bothers me the most here is this 'rustle' of the train, because I have a health problem, labyrinthitis; it feels like there's something shaking in my head. Noise pollution is a very harmful thing."*

8.3 Piquiá de Baixo: a story of abandonment

The case of Piquiá de Baixo, a community on the edge of the urban and rural areas, in the municipality of Açailândia (MA), is one of the most symbolic on how the mining and steel sector can impact the environment with its ventures. Someone who agrees with this analysis is the United Nations Human Rights Council.

In December 2019, Baskut Tuncak, United Nations special rapporteur on "Implications of the environmentally sound management and disposal of

Sign in the area of construction of the houses in terrain of resettlement of the community Piquiá de Baixo, Açailândia/MA, June 2021.



hazardous substances and waste”, during his visit to the community of Piquiá de Baixo, emphasized that *“the struggle of more than 300 families in Piquiá de Baixo is emblematic”*. The visit resulted in a report in which the UN urges for measures.⁷⁰

In the 1970s, a steel factory *“invaded a peaceful community without its consent, a blatant example of an industry operating for decades without due respect for human rights and limited state intervention,”* the report says.

Vale S.A. supplies iron ore and transports processed products to ports for export, amid the expansion of the mine-railway-port logistic system along the Carajás export corridor. *“Alarmingly, steel mills in Açailândia have been operating without a license for at least eight years because they do not meet environmental requirements,”* the report notes.

Although it does not own the pig iron and steel companies, it is Vale S.A.’s iron ore that supplies the production of essential alloys for steel production. The entire production chain, therefore, is full of human rights violations, as evidenced by reports and field investigations.

70. https://www.ohchr.org/EN/HRBodies/HRC/RegularSessions/Session45/Documents/A_HRC_45_12_Add.2.docx



Image of houses for the resettlement for the community of Piquiá de Baixo, Açailândia/MA, June 2021.

Studies reveal several cases of health problems, including coughing, shortness of breath and wheezing, and headaches. In the community, 65% of members reported respiratory problems, with others suffering from eye diseases and various skin problems, exacerbated by pollution, states one of the studies.

“Community members were burned with pig iron slag and waste, where the waste area was not properly fenced and without adequate signage of hazards and risks associated with contact with pig iron residue. Despite the unmistakably dangerous pollution, the data provided to the Government by the companies does not suggest that it is above acceptable levels. The government did not investigate or sanction the companies”, the UN claims.

According to rapporteur Baskut Tunkat, *“Vale has the responsibility to remedy the damage inflicted on the community, although it does not own the steel production facilities. The situation of the communities of Piquiá de Baixo is a clear violation of the rights to life, health and information”.*

Maria José da Silva has lived in Piquiá for almost 50 years and reports that before the companies arrived, the water was good, clean and the community did not face the risks it had to face after the plants were built. The black dust that invades the houses and accidents with the *‘munha’* (deposit of incandescent hazardous residues), have become routine.



Child from
Piquiá
de Baixo.
Açailândia/MA,
June 2021.

“People used to enter and there were many accidents, people were burned, people died. Because there’s that thing, that red dust on the ground, you don’t say it’s fire, and if you come and step inside, that’s it, it covers your foot and it causes havoc in there”, she says.

A good part of the residents could not stand the effects of the “development” brought by the companies – risk of imminent death, respiratory diseases, risk of accidents at any moment, intermittent dust 24 hours a day – and left Piquiá.

Maria José’s three children live outside Maranhão and she relies on the money her children send her to survive. Maria’s expectation is that the construction of houses for the resettlement of families, whose work is delayed, will be soon completed.

“If there was a way for Vale to help soon, in those houses, in order to finish the job for us to move, it would be good. It’s everybody’s dream here. This shack of mine just didn’t fall down because I bought some brick and made this wall,” she says.

Another resident of Piquiá, Marilene Martins, confirms the discomfort, pollution and abandonment. *“As the train passes nearby, the community should be well cared for, especially because of the wonder of the river that*



Child from Piquiá de Baixo. Açailândia/MA, June 2021.

passes there. But here everything is abandoned, we are abandoned”, she complains.

Antônia Alves says that, with the river polluted, children are permanently exposed to allergic reactions and diseases. Her young daughter, she says, *“always gets sore skin when she comes back from the river. The water is only good for washing dishes.”*

If Vale really helped, she says, life in the community would be totally different. *“This is a place where they make a lot of money, but it’s also a very forgotten place. They don’t do any good here. This house where I live is full of dust that comes from the steel mills. We never finish cleaning,”* she says.

A qualitative monitoring,⁷¹ carried out by the organization Justiça nos Trilhos, during 2021, with women from Piquiá de Baixo, on the time they use for health care, compared to women from other neighborhoods, confirms that the impacts of pollution emitted by steel companies in the region has a significant impact on the health of families.

The main symptoms reported are headache, allergy (itching), fever, weakness and bellyache. In total, 22 symptoms were detected. This information

71. <https://justicanostrilhos.org/>

indicates that the symptoms mentioned are related to factors typical of that territory, where the concentration of pollutants is higher, as they appear systematically in the survey among women from Piquiá de Baixo and a resident of Piquiá de Cima, which does not occur with women from other neighborhoods. The voices that emerge from the communities reveal the seriousness of the impacts of direct and indirect mining activities. Again, it is possible that there is no equity between these activities and social and economic development. In this equation, the impacted communities are on the losing side.

Part II



View of Vale's train in the Novo Oriente region, municipality of Açailândia/MA, June 2021.

II.I - REGULATORY FRAMEWORK AND TAXATION OF MINING IN BRAZIL:

Study of the under-invoicing of iron ore exports from 2017 to 2020

The improper invoicing of exports and imports represents a serious issue for peripheral economies. Export under-invoicing, overpricing of imports and illicit financial flows in general, are part of a financial architecture that concentrates wealth in offshore financial centers. These operations subtract a relevant share of tax revenue from peripheral countries, weakening the redistributive impact of fiscal policy and jeopardizing stability and prosperity in these countries (UNCTAD, 2020).

Different estimates reveal that the *offshore* financial centers concentrate a considerable portion of family wealth worldwide (ZUCMAN, 2014; ALSTADSÆTER et al., 2018). These centers also play an important role in foreign trade operations, concentrating between 15% and 25% of global trade (COBHAM et al., 2014). The high participation of the *offshore* economy in financial and commercial operations stems from the conditions of low taxation and secrecy found in these locations.

A previous study, carried out by the Instituto Justiça Fiscal (IJF), with support from the Red Latinoamericana por Justicia Económica y Social (Latindadd) and the Financial Transparency Coalition (FTC), identified the occurrence of under-invoicing in iron ore exports. A capital outflow of US\$ 39,132 billion was estimated during the period from 2009 to 2015, and the corresponding tax loss was estimated at US\$ 12,407 billion. The same study showed that Switzerland played the role of commercial intermediary in Brazilian iron ore exports. The country accounted for about 80% of iron ore acquisitions from 2006 to 2015, although almost all of these acquisitions were destined for other countries, mainly China (IJF, 2017).

The results published by the IJF in 2017 had repercussions in the media and among politicians and were exposed in the final report of the Parliamentary Commission of Inquiry (CPI) of the Chamber of Deputies, which dealt with the rupture of the Brumadinho dam (CÂMARA, 2019), and led to the

establishment of another CPI, in the Legislative Assembly of Pará, in 2021 (ALEPA, 2021). The CPIs demonstrate the need to investigate irregularities and environmental and socioeconomic impacts of mining activity, and recent environmental disasters call for reflection on the role of mineral exploration in the development of Brazil. In this context, the question is posed of how the appropriation and distribution of income generated from the exploitation of the Brazilian subsoil occurs.

Considering the high participation of iron ore in the Brazilian export basket and its expressive absolute value, the practice of transfer pricing in these exports translates into a significant commercial under-invoicing. The seriousness of the issue and its economic and social importance suggest that it is necessary to reproduce the analysis of iron exports made by the IJF study (2017) for the most recent period. The present work extends the analysis made previously, incorporating a brief history of mineral regulation in Brazil and of the tax issues involved, and updating the estimate of evasion due to under-invoicing for the period from 2017 to 2020.

Therefore, in this work, the ambiguous treatment given to the ownership and use of the subsoil, by Brazilian legislation throughout history, is analyzed; the main tax strategies of large mining companies and the disputes of these companies regarding tariffs and contributions are addressed; and recent changes in mineral and tax legislation presented. Furthermore, the under-invoicing of iron ore exports is estimated for the period from 2017 to 2020. From the empirical analysis, it appears that the results found in the previous period (from 2009 to 2015) are recurrent.

The data reveal, for the period from 2017 to 2020, an outflow of capital associated with the under-invoicing of iron exports in the amount of US\$ 19.379 billion, which corresponds to an annual average of US\$ 4.844 billion. If such under-invoicing is not adequately adjusted in the tax returns made by companies, such practice would mean an estimated tax evasion of around US\$ 5.073 billion, in the period 2017-2020, corresponding to US\$ 1.268 billion per year.

This leads to a crucial point in our study. In 2012, Law 12.715 was approved, which established new forms of tax adjustment, with the main focus precisely on combating the practice of transfer pricing in the export of commodities. In the same vein, Law 12.973 was passed in 2014, determining taxation on a universal basis. In theory, the new legislation would prevent the eventual profit earned by foreign subsidiaries via transfer pricing, from passing without being taxed in Brazil. However, society has no way of verifying whether such

tax adjustments are in fact being carried out, due to tax secrecy, and as far as we could determine, the Revenue bodies continue to face difficulties with the practice of transfer pricing and tax evasion by mining companies, despite the passing of new laws. The only study, to date, that had access to the values offered for taxation by companies revealed a tax adjustment on mineral exports corresponding to only 23% of the under-invoicing estimated in IJF 2017 study.

Furthermore, the patterns of commercial intermediation found previously are repeated in the most recent period, which contradicts official statements by the companies. According to data obtained via the Access to Information Law (LAI), in the period from 2017 to 2020, Switzerland accounted for 89% of the acquisitions of iron ore exported by Brazil, however 65.8% of these acquisitions were destined for China. Such information is incompatible with the reports of the main exporting companies, which claim that Switzerland is the intermediary for operations with merely logistical purposes and only for other European countries.

1. Mineral regulation in Brazil: common goods under private decisions

Over time, subsoil ownership and access to mineral resources have been regulated in different ways in Brazilian legislation, without, however, being able to guarantee the real democratization of decisions around this common good, nor to structure strategies with a view to overcoming mining. Dalpian (2018) makes a historical review of these legislative changes, showing that, if in the 1891 Constitution the mines belonged to the landowners, according to 1988 new Constitution the subsoil resources become the property of the Union, at the same time that it can grant to private sectors its exploitation. In 1934, ownership of the soil was separated from the mine, which became nobody's property, since subsoil resources were characterized as belonging to the nation, but not as patrimony of the Union. State authorization was required for its exploitation and state participation directly in the activity remained incipient. Constitutional Law 04/1940 gave the State competence to create a tax to be applied to national mineral coal, to fuels and lubricants of any origin, but it was only in 1964 that the creation of the Single Mining Tax (IUM) was legislated. Finally, the Mining Code, Decree-Law 222/1967 regulated the exploitation of minerals.

While it lasted, the IUM was the main tax on mining extraction, and, by way of comparison, in 1984 the IRPJ of the sector represented a mere 14.2% of the total collection with the IUM. According to the law that established it, the miner did not have to pay what would be due in other productive and commercial activities, with the exception of IRPJ, notary seals and remuneration fees for public service provided, thus configuring a kind of substitute tax. When the division between subnational entities was dealt with by Decree-Law 334/1967, a link was established between tax revenues and investments related to mining activities, evidencing a compensation to the companies themselves for the tax paid, and not to the State, in view of the depleted natural resource.

Thus, a legal relationship was not established by which the population could democratically decide on the use of mineral resources, nor was it intended for society to benefit materially and to prepare itself for a post-extractive development. On the contrary, companies benefited both from access to the subsoil and from the tax reverted to mining infrastructure.

The Federal Constitution of 1988 embraces the Mining Code of 1967 but makes mineral resources the property of the Union and, in 1989, the Financial Compensation for Mineral Exploration (CFEM) was created by Law 7.990, which was added to the other taxes. Note that the CFEM is not a tax, but a payment for the use of exhaustible and non-renewable national patrimony. However, it is commonly misinterpreted as compensation for the socio-environmental damage caused and not for the private exploitation of a national patrimony. There is another contribution, part of the environmental licensing, called environmental compensation, fixed at up to 0.5% of the reference value of the enterprise; this one, yes, can be seen as a compensation, destined to the management of Conservation Units.

With the regulation of CFEM, in 1991, a ceiling of 3% on net sales was established, a fact that has always been criticized by specialists and social movements, since all other mineral exporting countries use different bases of incidence, such as the gross revenue. This Brazilian peculiarity has been used, over the years, by companies, in self-interest, to artificially inflate costs in order to reduce the tax base, on which an already low rate is applied by international standards. It is known, for example, that from 2001 to 2007, the National Department of Mineral Production (DNPM) made Vale S.A. pay R\$ 4 billion related to unduly discounted costs (MILANEZ, 2019).

The most recent discussions on amending the Mining Code began in 2009, during the Lula government, in dialogue with businesses around the 2030

Inside of a house in the Francisco Romão settlement, Açailândia/MA, June 2021.



Mining Plan. A first project to change the Code was presented in 2013, when Law 12.858 amended the legislation on CFEM, allowing it to be used for educational expenses, including personnel. There was then an interruption in the discussion and in the political eagerness to change the mining legislation, due to the troubled political processes that led to the impeachment of President Dilma in 2016.

The subject returned in the Temer government, with changes approved quickly, without dialogue with society. In July 2017, Temer launches the Mineral Industry Revitalization program, presenting three Provisional Measures: MP 789/2017, which changed the CFEM rates and would become Law 13.540/2017; MP 790/2017, not approved, which made procedural changes to Decree-Law 227/1967; and MP 791/2017, which created the National Mining Agency (ANM), replacing the DNPM, and would become Law 13.575/2017.

Under the pretext of reducing bureaucracy, the DNPM autarchy was replaced by the new Agency. In fact, this change favored the performance of companies, since, according to international evidence, large companies are able to control regulatory agencies instead of being regulated by them (MILANEZ, 2019). As for MP 790, which intended to change the mining code, it was reedited

as Decree 9.406 and approved in 2018, in the form of Decree 9.407, which modified the CFEM distribution rules.

Law 13.540/2017 changes the CFEM calculation basis from net to gross invoiced production, alters CFEM percentages and changes its distribution. The Union goes from 12% to 10%; producing states, from 23% to 15%; and producing municipalities, from 65% to 60%. The remaining 15% became part of a fund for non-producing municipalities affected by production. The rules for considering the affected municipality were established as follows:

- Existence of infrastructure for rail or pipeline transport of mineral substances;
- Existence of port structures and operations for loading and unloading of mineral substances;
- Existence of sterile piles, tailings dams, or structures for the processing of mineral substances.

It can be said that the law was the product of popular pressure, regarding the increase in CFEM rates and the consideration of non-producer municipalities as “affected”, but the conciliatory agreement with the interests of mining companies kept the rate limit at 3.5%. In terms of affected municipalities, the 23 municipalities in Maranhão crossed by the Carajás Railroad, and municipalities in the States of Minas and Espírito Santo affected by the Vitória-Minas Railroad stand out (INESC, 2018). The rates were changed according to Table 4.

The change from net to gross invoicing was an achievement, since, in addition to promoting a larger tax base and in line with international standards, it prevents tax maneuvers to reduce the calculation base by inflating costs. Also, the new law does not establish an obligation on how to allocate resources but recommends that at least 20% of the amount destined to States and Municipalities be used in activities related to economic diversification, sustainable mineral development and scientific-technological development (BRAZIL, 2017).

As for the two later Decrees, hastily approved during the Temer government, Decree 9.407/2018 reduces the percentage that had been established for affected municipalities, from 15% to 13%, returning 2% for municipalities that had been severely affected by the loss of revenue caused by the change in the legislation. Decree 9.406/2018 deepens the financialization of the mining sector, establishing, for example, that the mining concession can be given as a guarantee for financing purposes, stimulating short-term returns

and attracting small, even less transparent, companies to the sector, thus increasing the socio-environmental risk of mining.

The same decree establishes that mining companies may request from the ANM a declaration of public utility in view of the expropriation of properties, which means a huge setback, even in comparison to the 1967 law, which determined that only the executive branch could declare public utility.

The transfer of this power to the ANM makes any public contestation and democratic litigation impossible. Furthermore, the Decree greatly reduced the maximum number of fines applicable to mining companies and maintained the legislative loophole that can make mining viable in the Cobre e Associados National Reserve (Renca) (MILANEZ, 2019).

New proposals for amendments to the Mineral Code, scheduled for 2022, are being debated in Congress and some topics related to mining are recurrent, both in the specialized media and on the agenda of large law firms. These are topics that represent old yearnings of companies in the sector, such as the authorization of mining in indigenous lands, regulation of dam safety and mine closure and the end of mineral taxes. The business sector celebrated PL 191/2020, presented by the Executive Branch, which establishes mining in indigenous lands, through compensation to the traditional peoples affected (MATTOS, 2020).

Type of ore	Before Law 13.540	After Law 13.540
	Net invoicing	Gross invoicing
Iron ore	2%	3.5%, may be reduced up to 2%
Niobium	0.20%	3%
Bauxite, Manganese, Rock salt	3%	3%
Diamond	0.20%	2%
Gold	1%	1.50%
Other substances, including Copper	2%	2%

Table 4 ►
Changes in CFEM
with Law 13.540/2017

Source: INESC (2018).

Finally, the TFRM is the Control, Monitoring and Inspection Fee for Research, Mining, Exploration and Use of Mining Resources, in force since 2012 only in Minas Gerais, Pará and Amapá, with a fixed rate per ton of ore. The collection with the TFRM, in these states, has been as high as the portion of the CFEM destined to them, being this, therefore, an important and constant object of litigation between states and large companies.

The executive power of the states argues that the fee is necessary to exercise the inspection required by the mining activity, since they have the regular exercise of police power. Article 23, item XI, of the CF establishes that such power is exercised by the State, together with the Union and the Municipalities. Companies, in turn, advocate the unconstitutionality of the fee, which would be outside the competence of the State and would be disproportionate in relation to the costs of the inspection activity (SCAFF, 2013).

2. Non-taxation of mining in Brazil

In addition to the compensations and mining-specific fees mentioned in the previous section, the sector would be subject to the main taxes common to other large-scale activities, listed and specified in Table 5. Despite the pertinence of all these taxes to the mining activity, it receives a series of benefits in the form of exemptions, in addition to the tax strategies that companies practice with a view to reducing the tax base, as will be presented here.

Thus, the first major benefit mining entrepreneurs receive is through Complementary Law 87/1996, called Kandir Law, transformed into Constitutional Amendment 42/2003, which exempts primary products from ICMS payment when exported. Before the validity of this benefit, there was an incidence on mining products, with a rate inversely proportional to the aggregated value. The Kandir Law established that the Union must compensate the states for losses, but what can be observed is that the amounts transferred for such compensation have always been far below the due, generating significant tax losses for the states. The large mining companies are among the most interested in the continuity of this benefit, putting public pressure for its indefinite extension, in exchange for more investments in the area. In other words, the exemption favors their profits and the exercise of an activity that is extremely harmful from a social and environmental point of view.

TAX	Description
IRPJ	Corporate Income Tax. Within the competence of the Union, it affects the profit of companies. On the taxable base calculated by the Actual or Presumed Profit, it is levied at a rate of 15% with an additional 10% on the part that, of the calculation basis, exceeds R\$ 20.000 monthly.
CSLL	Social Contribution on Net Income. Union competence and linked to the financing of social security (health, assistance and social security), based on the net profit of companies, calculated by the same rules as the IRPJ. The rate is 9%.
IRRF	Income Tax Withheld at Source. Union competence and levied on income paid, credited, delivered, includes that remitted abroad in the form of profits, interest, amortizations, dividends, royalties, technical and scientific assistance and similar. It represents an obligatory withholding of taxes payable by third-party recipients of the income. Since 1996, distributed earnings and dividends are not subject to withholding of IRRF, nor are they part of the calculation bases of their beneficiaries, even when sent abroad.
II	Import tax. Within the competence of the Union, of regulatory nature, it can be used as an instrument of economic policy. It focuses on the import of foreign goods, having as a triggering event the passage of foreign products through the Customs. It affects the extractive sector in the import of essential equipment for prospecting activities and exploration.
IE	Export Tax. Within the competence of the Union, of an extra tax nature, it has as a triggering event the output from the Brazilian territory of national or nationalized products. As it is a tax that burdens exports, its application is residual and is restricted to situations related to the risk of lack of internal supply or prevention of embezzlement and smuggling.
ICMS	Tax on the Circulation of Goods and Services. Competence of the States and not cumulative. That is, the rate is applied on the global value of the operation, however, it is up to the taxpayer to collect only the difference between this calculated value and the one that had already been charged in previous stages.
IOF	Financial transaction tax. Within the competence of the Union, it is calculated on credit operations, foreign exchange operations and the value of insurance premiums. It is regulatory in nature and can be used as an instrument of economic policy.
PIS/PASEP	They are social contributions , within the competence of the Union, aimed at financing social security. Because they focus on the company invoiced revenues, they make up the basket of indirect taxes, which are also exempted in export activities.

Table 5▲
Taxes and relevant contributions to the extractive sector in Brazil

Source: Dalpian et al. (2015).

Even if the magnitude of the Union's compensation to the States were adequate, the mining companies would still be in the advantage, while the federal budget would be penalized by the law. Finally, if this compensation were done correctly, mining activity would be further encouraged by the states. In addition to the ICMS exemption under the Kandir Law, exports are also exempt from the Social Integration Program (PIS)/Public Servant Asset Formation Program (Pasep), while imports of capital goods used in mining usually benefit from reductions in Import Tax (II) rates, granted on machines and equipment that meet certain specifications, the so-called *ex-tariff*.

In turn, the distribution of profits and dividends to shareholders has also been exempt from Income Tax (IR) since 1995. Another way of remunerating shareholders is through a typically Brazilian tax figure, Interest on Own Capital (*Juros sobre Capital Próprio* – JCP), in that the company remunerates the equity of the partner or shareholder and can deduct this fictitious expense in the income tax return. This artifice reduces the taxable base and, consequently, its final tax, so that the company pays less than the 25% that would be due as IRPJ of large companies. As for investors, when they receive JCP, taxation is exclusive at source at 15%, without being submitted to the IRPF rate table like the income of any worker.

In the context of the Legal Amazon, there are even more exemptions. The military government created, in 1966, specific laws to encourage extractivism in the Amazon, granted under the Superintendence of Amazon Development (Sudam) and many are still in force today. Currently, the main one grants a tax waiver of 75% of the IRPJ to large companies in the region; 25% reduction in freight for importing machinery and supplies; and yet another 7.5% may not be paid if they are used to purchase machinery and equipment. Some of the large companies benefiting are Vale, BHP Billiton, Hydro and Mineração Rio do Norte (CARDOSO, 2015).

As regards IRPJ and CSLL, companies have another series of legal deductions that make it possible to reduce their taxable income, among which depreciation, accelerated accounting depreciation, amortization, exhaustion, encouraged mineral exhaustion and financial expenses stand out due to their relevance. Even the cost of acquiring and modifying contracts, or rights of any nature, can be deducted as amortization. In the case of mining, the impact that derives from the possibility of deducting the exhaustion of a finite public good, which was granted by the Union itself, requires special attention and in-depth studies.

Marilene Sousa, resident of Piquiá de Baixo, Açailândia/MA, June 2022.



Finally, we come to the main focus of this study, which deals with the investigation of methods of improper invoicing, aiming at tax evasion, in addition to the exemptions and benefits granted legally. Under-invoicing exports, or over-invoicing imports, reduces taxable income and, as a consequence, IRPJ, CSLL and, in the case of mining, CFEM. Companies do this through subsidiaries in tax havens, which broker the transactions without ever actually importing the ore.

Through transfer pricing, a company exports to a subsidiary, in an under-invoiced way, and that subsidiary exports to the actual destination at the correct price. Companies can also choose to cause debts to subsidiaries and be able to deduct taxes for paying interests to companies in the same group elsewhere.

Under Brazilian law, transfer pricing is illegal when no corresponding adjustment to taxable income is made. Law 9.430/1996 already established maximum limits for the deductibility of costs among related companies, aiming to curb price differentiation in relation to what would be applied in a transaction with non-related companies. This law established three methods of calculating parameter prices for imports and four for exports, based on presumed or pre-fixed profit rates for each economic sector.

In addition to modifying the profit margins established by the previous methods for the industrial sectors, Law 12.715/2012 introduced new methods, optional in 2012, and mandatory in 2013, of exclusive price-parameters for commodities, aiming precisely to combat the transfer pricing practice in the export of these goods. Thus, it was established that the commodity export parameter prices would be based, mandatorily, on the average values traded on internationally recognized stock exchanges, adjusted by the average market premium on the transaction date, which constitutes the method called Price under Quotation in Exports (Pecex) (MANTOVANI, 2015).

However, as we will see later, this law has not been able to stop the practice of transfer pricing and, even after it came into force, Vale S.A., the main company in the sector, has been annually notified by fiscal authorities in relation to the divergence between prices declared for IR purposes and market parameter prices. As the company itself mentions in the explanatory notes of all its financial reports, following the enactment of this legislation, it continues to appeal, in court, against these fines, as it disagrees with authorities on the interpretation of this issue.

With the same objective of curbing the erosion of the taxable base through exports, Law 12.973 was approved in 2014, which provides for taxation on a universal basis. In theory, this new law would also contribute to ending the practice of transfer pricing, since the profit of a subsidiary in another country must be declared in Brazil by the controlling company, in order to be taxed according to the Brazilian rate (BRASIL, 2014). However, by the same token, there is no way to know if the legislation is being effective in this sense, considering that we would need data subject to tax secrecy, as will be discussed here. Thus, our study will seek, in subsequent sessions, to assess evidence of transfer pricing in iron ore exports for the recent period, in line with the previous study and in light of the aforementioned legislative changes.

3. Data and methodology

The investigation of improper commercial invoicing practices has several obstacles. Hong and Pak (2017) discuss the different methods used for estimating transfer pricing and commercial invoicing. An increasing number of works use detailed business transaction data, which contributes to the accuracy of estimates. However, detailed trade statistics of the transaction are not publicly accessible in Brazil. Therefore, the gain in precision may imply a loss in terms of the replicability of the results.

Vale's train
seen from the
Francisco Romão
settlement,
Açailândia/MA,
June 2021.



Following the same criteria as in the previous publication (IJF, 2017), we chose to use official and public trade statistics. Foreign trade statistics were obtained from the Foreign Trade Secretariat (Secex) of the Brazilian Ministry of Economy. Official statistics of Brazilian trading partners were extracted from the United Nations International Trade Statistics Database (UN Comtrade). Complementary data were required through LAI, i.e., Law 12.527, of November 18, 2011. Trade margins for the conversion of Free on Board (FOB) prices to Cost, Insurance and Freight (CIF) were calculated on the margins published in the OECD Stat, in the International Transport and Insurance Costs of Merchandise Trade (Itic) database. The methodology used in the present research is therefore based on that used in IJF (2017).

The analysis in this study focuses on exports of iron ore and its concentrates, not agglomerated,⁷² as this is the most expressive category in terms of value and quantity, among exports of iron ore and ores in general. The estimate focused on measuring the under-invoicing of iron ore exports and the associated tax losses. Two complementary methodologies were used, the first using the import prices of the exported ore, at destination, and the second

72. This commodity is represented by NCM code 260111, in the Harmonized Commodity Description and Coding System (HS), established by the World Customs Organization (WCO).

using the international quotation. Both prices were taken as a reference and compared with the export price practiced in Brazil.

Note that the price recorded for export is reported in FOB values and, therefore, it was necessary to add the margin for marketing, freight and insurance costs to convert it into CIF values. This operation used the estimate for the trade margin, obtained from the Itic/OECD basis. The Itic database provides detailed data for iron ore exports, broken down by Brazil's trading partner.

The average margin was calculated for each year, weighted by the share of each country in iron ore exports in the corresponding year. The countries listed on Itic were the destination of 98.55% of Brazilian iron ore exports, from 2017 to 2020,⁷³ and, from the average margin, export prices were converted from FOB to CIF. It is noteworthy that the use of a more accurate estimate of the trade margin represents an advance in relation to the methodology applied in the study carried out by IJF in 2017.

Finally, from the measurement of commercial under-invoicing, it was possible to estimate the loss of revenue resulting from this practice. The estimation methodology is in accordance with the arm's length principle, proposed by the OECD, and also with the provisions of Brazilian legislation, in Law 9.430/1996, which regulates transfer pricing. In particular, the methodology complies with the new Pecex method, introduced by Law 12.715/2012, as presented here, which provides that, in the case of commodity exports, the price charged must be compared with the international quotation.

4. Estimates of under-invoicing of iron ore exports and loss of revenue

Products from the mining industry and agriculture were the main items on Brazil's export agenda in recent decades. In turn, iron ore has remained among Brazil's main export products, with extraction concentrated in the states of Pará and Minas Gerais. It represents about 70% of exports from the mineral extractive sector in 2020, when the agglomerated, non-agglomerated and concentrated ore figures are added (IBRAM, 2021). The country ranks as the

73. Consequently, the estimated margin is an approximation of the trade margin actually applied. Export destination countries not included in the Itic table were responsible for 1.45% of Brazilian iron ore exports in the 2017-2020 period. It was considered that the trade margin for these countries follows the average margin of the rest of the sample.

second largest iron exporter in the world, which makes Vale S.A. one of the main companies in the global iron ore market.

According to results obtained by the CPI of Vale S.A. in the state of Pará, the company presented net income of US\$ 120 billion, from 2004 to 2017, allocating approximately US\$ 43 billion to its shareholders, while, in the same period, it paid only US\$ 4 billion to Union, States and Municipalities as a whole (ALEPA, 2021). Also, according to a recent report published by Sindifisco do Pará (ENRIQUEZ, 2021), the effective tax burden in the sector is estimated at only 15.8% of the value of mineral production, due to legal exemptions given to the Sudam region and the export sector.

This estimated actual charge does not, however, consider the maneuvers carried out through triangulation and under-invoicing maneuvers, as discussed here, which erode the tax base beyond the legal exemptions. Based on Vale S.A.'s annual reports, Enriquez (2021) calculates that, from 2016 to 2019, R\$ 20.9 billion were paid in federal taxes; R\$ 11.45 billion in state taxes and R\$ 8.27 billion in municipal taxes, which results in an average of 9% of the revenue collected in taxes by the company, corroborating the fact that there are strategies that reduce the tax incidence base, in addition to the benefits already granted.

Table 6 ►

Iron ore exports in US\$ million, and share (%) of iron ore in Brazilian exports (2017 - 2020)

Source: Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy. Self elaboration.

Year	Export	Percentage
2017	16,713.00	7.80%
2018	16,718.80	7.60%
2019	20,237.30	9.70%
2020	24,259.10	10.50%

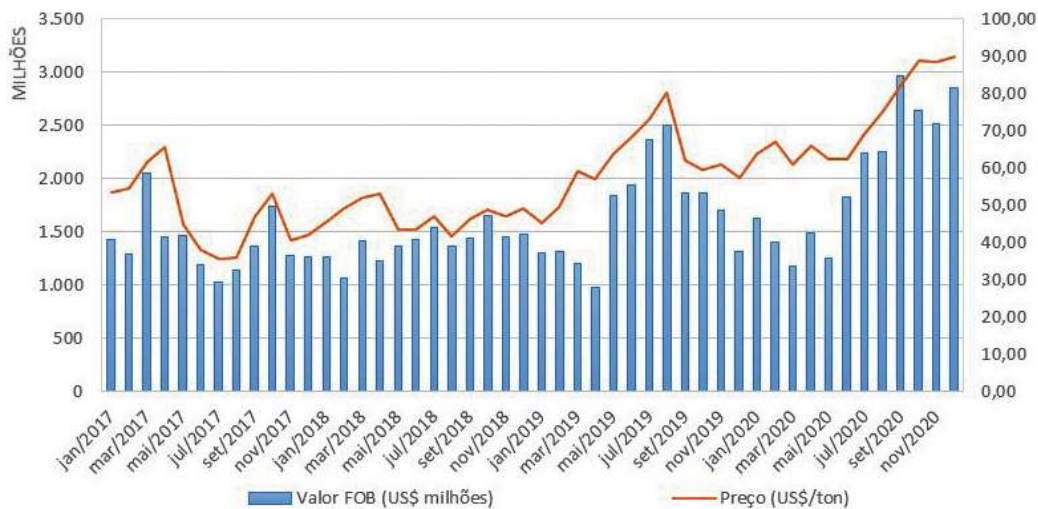
*Value of exports (in US\$ million, FOB) of iron ore and its concentrates, not agglomerated. Percentage in relation to total exports for the same year.

	2016	2017	2018	2019	2020
Production	R\$ 46,233	R\$ 63,182	R\$ 72,396	R\$ 93,830	R\$ 142,987
Vale's participation	77.29%	79.17%	84.74%	71.90%	-

Table 7 ▲

Value of commercialized production (R\$ million)

Source: National Mining Agency, Brazilian Mineral Yearbooks. Self elaboration.



◀ **Graph 3**
Iron ore exports
(in US\$ million) and
price (US\$/t), by
month (2017-2020)

Source: Data from the
Special Secretariat
for Foreign Trade and
International Affairs,
Ministry of Economy.
Self elaboration.

Iron ore was the second main product on Brazil's export agenda in 2020, behind soybeans. In 2020, iron ore exports totaled US\$ 24.2 billion, representing 10.5% of exports in that year (SECEX, 2021). Table 6 below presents the value of iron ore exports and their share in Brazil's total exports in the recent period. As can be seen in Graph 3, the recovery in the price of the commodity in recent years, as well as the significant increase in the amount exported, contributed to the increase in the share of iron ore in exports in 2019 and 2020.

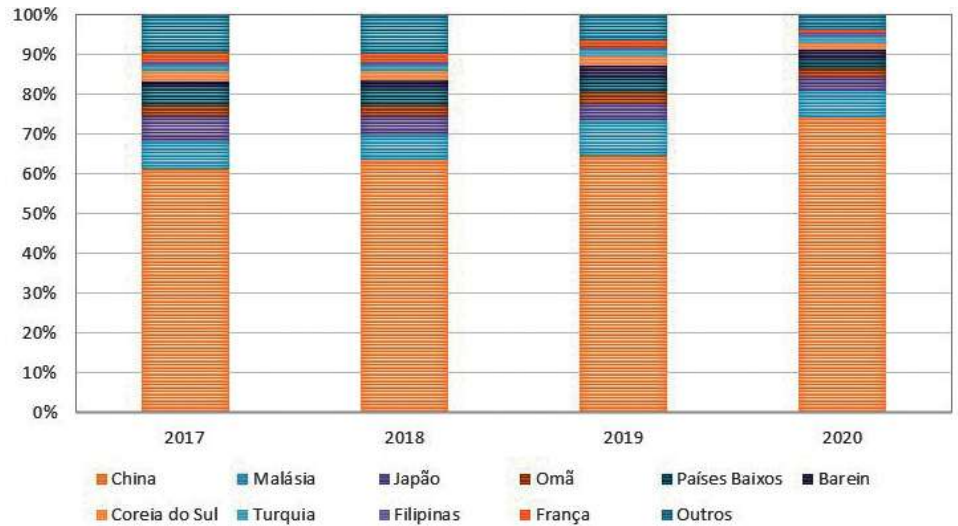
Regarding the value of iron mineral production and the participation of companies, we observed a constant expression of oligopoly in the extraction of this ore, with Vale S.A. as the main company, as shown in Table 7.⁷⁴

China is the main destination for Brazilian iron, accounting for 65.8% of exports of this ore in the analyzed period. China's position is compatible with its importance as a Brazil's trading partner and the main importer of raw materials in the world. Chinese participation in Brazilian iron ore imports has been growing from 57% in 2010 to 74.2% in 2020. Graph 4 shows the other important destinations for iron ore exports in the recent period: especially Malaysia (7.4%, on average, in the period 2017-2020); Japan (4.5%); Oman (2.8%); Netherlands (3.6%); and South Korea (2.3%).

74. It is noteworthy that an inconsistency was found in the Brazilian Mineral Yearbooks between the value of the total commercialized production of the ore and the exported value, showing evident underreporting of production. It is recommended that further analysis be carried out on this point in further studies.

Graph 4 ►
Exports of iron ore (in value) by country of destination (2017-2020)

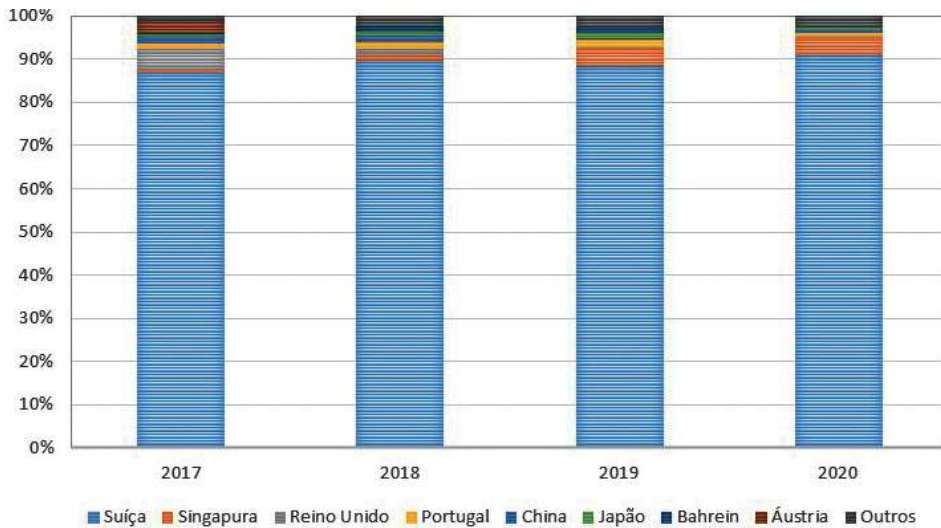
Source: Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy. Self elaboration.



*Percentage share of destination countries for exports of iron ore and its concentrates, not agglomerated

According to data obtained through LAI, which indicate where ore acquisitions take place for each export destination country, China was responsible for only 0.9% of acquisitions in the period, despite being the destination of 65.8 % of exports. A previous publication on the topic (IJF, 2017) had already revealed the discrepancy between destination and acquisition countries. This difference showed a consistent behavior over the period examined (2005-2016), evidencing a pattern of commercial intermediation. The study showed that about 80% of iron ore exports were acquired by companies based in Switzerland, in the period from 2005 to 2016, although almost all of these acquisitions were destined for another country. The country of purchase is the country of residence of the company that contracts the goods to be exported, regardless of the physical destination to which the goods will be shipped. Thus, the difference between the country of acquisition and the country of destination of exports indicates some form of intermediation in international trade, which can be based on real or fictitious operations. (Graph 4).

Current data corroborate the results obtained in the previous study. Once again, Switzerland proves to be the main country of acquisition of Brazilian iron ore exports, as shown in Graph 5. In the period from 2017 to 2020, Switzerland was responsible for 88.9% of iron ore acquisitions, which corresponds to an average annual value of US\$ 16.85 billion. The country's share of acquisitions maintained the growth trend already observed in the



◀ **Graph 5**
Iron ore exports (in value) by country of acquisition (2017-2020)

Source: Data from the Federal Revenue Service of Brazil required by the Tax Justice Institute through the Access to Information Law. Self elaboration.

*Percentage share of exports of iron ore and concentrates of iron ore, not agglomerated.

previous study, reaching 90.8% in 2020. A smaller share of purchases was made in countries such as Singapore (2.5% in the period 2017 to 2020), the United Kingdom (1.7%) and Portugal (1.4%).

Switzerland's high share of Brazilian mineral exports is not an exceptional case. In fact, Switzerland plays an important role in the world trade in commodities, due to its role as a commercial intermediary. It is estimated, for example, that around 40% of the world oil trade is conducted by Swiss companies, as well as 60% of the trade in grains and 60% of the trade in metallic commodities (SWISS TRADING AND SHIPPING ASSOCIATION, 2022). However, the country does not have advantages in terms of location, ports, costs or natural resources. The advantages offered by the country are of a tax and fiscal nature, and for this reason it is often remembered as a tax haven⁷⁵ (ALSTADSÆTER et al., 2018).⁷⁶

In this sense, an estimate by the Tax Justice Network suggests that Switzerland causes a tax loss to other nations that exceeds US\$ 21 billion annually (TJN, 2022). Tax havens such as Switzerland have been vectors of tax

75. See also TJN (2021).

76. The Brazilian Federal Revenue Service (RFB) classified Switzerland as a tax-favored country in 2010, although in 2014 it restricted this classification to "legal entities incorporated as a holding company, household company, auxiliary company, mixed company and administrative company [...], as well as the regime applicable to other legal forms of incorporation of legal entities, through rulings issued by tax authorities, which results in an incidence of IRPJ, in a combined manner, of less than 20% (twenty percent), according to federal, cantonal and municipal legislation" (RFB, 2010; RFB, 2014).

Graph 6 ►
Export price (US\$, CIF)
and international quotation
(US\$, CIF) of iron ore
(2017-2020)

Sources: Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy; Refinitiv, Eikon; and International Transport and Insurance Costs of Merchandise Trade, OECD. Self elaboration.

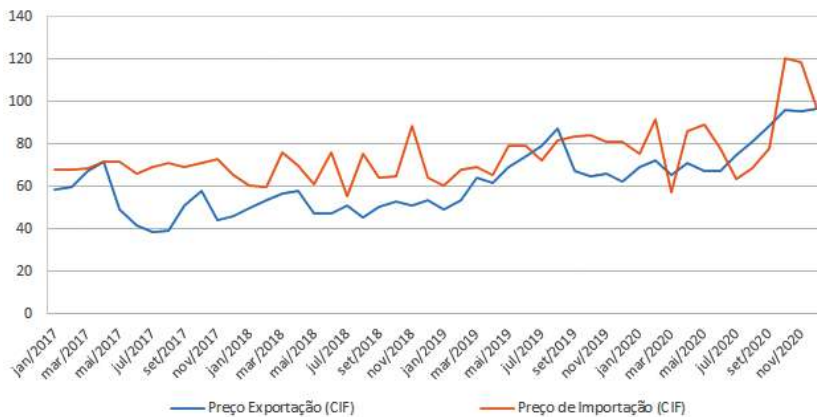


*Export price of iron ore and its concentrates, not agglomerated, in Brazil (CIF, margin according to OECD data). International quotation (Iron Ore 62% Fe CFR China, TSI).

evasion in central and peripheral economies (ZUCMAN, 2014). In the case of Brazil, Alstadsæter et al. (2019) estimated that residents in the country had US\$ 87 billion in offshores in 2007, equivalent to 6.2% of the Brazilian Gross Domestic Product (GDP) in the same year. Of this total, US\$ 71 billion was allocated in Switzerland and the remainder distributed in other tax havens. The commercial intermediation role played by Switzerland requires a more detailed analysis of the iron ore trade. The international quotation in the iron ore market allows the establishment of a basis of comparison for the prices practiced by companies in the international transactions of these goods. The reference quotation can be used to verify the practice of undue commercial invoicing. In addition, we analyzed the pricing of iron ore imports from Brazil, as reported by Brazilian trading partners.

In Graph 6, the trajectory of iron ore export prices (CIF) is compared with the international quotation price (CIF) in the period of 2017-2020. Although export price fluctuations follow the international quotation, the export price remains below the quotation throughout the series. In Graph 7, it is also revealed that the difference between the two prices oscillated around US\$ 20 during most of the series. On average, the difference between the international quotation and the export price was US\$ 22.63 in the analyzed period.

Comparing, in turn, the export price (CIF) with the import price (CIF), there appear once again a positive price difference for most of the period from 2017 to 2020. The import price consists of the price reported by the importing



◀ **Graph 7**
Export (US\$, CIF) and import (US\$, CIF) price of iron ore (2017-2020)

Sources: Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy; United Nations Commodity Trade Statistics Database (UN Comtrade); and International Transport and Insurance Costs of Merchandise Trade, OECD. Self elaboration.

*Export price reported in Brazil (CIF, margin according to OECD data). Import price (CIF) of iron ore exported by Brazil, as reported in destination countries for Brazilian exports. Iron ore and its concentrates, not agglomerates.

countries of Brazilian iron ore. The difference between the two prices is smaller than in the case of the international quotation, becoming slightly negative in short time intervals. Even so, the difference between prices is positive, for most of the series, oscillating around US\$ 15, as shown in Graph 7. On average, between 2017 and 2020, the difference between import and export prices was of US\$ 12.30, corroborating the indication of under-invoicing of iron ore exports in the period.

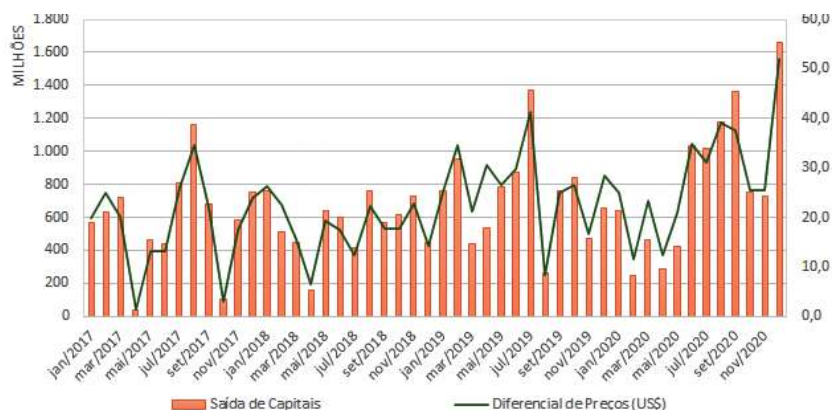
Based on the price differences obtained, it is possible to estimate the under-invoicing of iron ore exports in the period from 2017 to 2020. Under-invoicing corresponds to the volume of capital implicitly sent abroad through transfer pricing. Therefore, the volume of this capital outflow is proportional to the difference between the reference price (international quotation or import price) and the export price.

In Graphs 8 and 9, the monthly estimates of export under-invoicing are presented. In Graph 8, the estimate is based on the difference between the international quotation and the export price. There was a significant outflow of capital throughout the series, accumulating an amount greater than US\$ 32 billion, equivalent to US\$ 8 billion per year.⁷⁷

In turn, Graph 9 shows the estimate of commercial under-invoicing based on the difference between the import price and the export price. The outflow of capital related to the under-invoicing of exports remains significant, in this

77. Both values are updated to December 2020 prices as per the Consumer Price Index for All Urban Consumers released by the Federal Reserve Bank of St. Louis, MO.

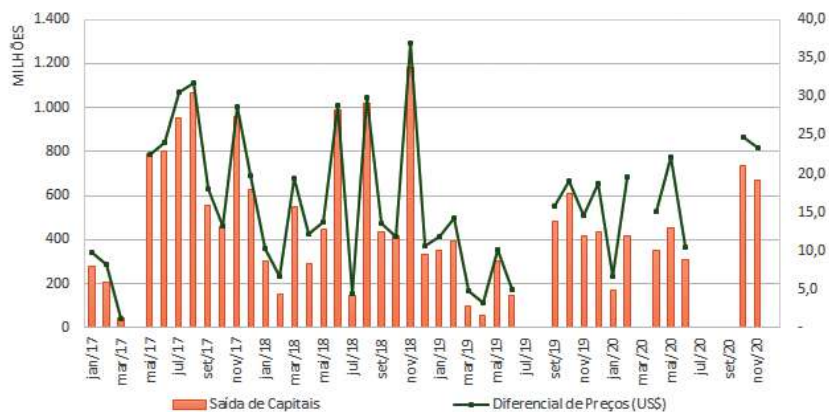
Graph 8 ►
Under-invoicing of iron ore exports (US\$ million) and price difference (price and exports) (2017-2020)



Sources: Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy; Refinitiv, Eikon; and International Transport and Insurance Costs of Merchandise Trade, OECD. Self elaboration.

*Estimated monthly capital outflow associated with under-invoicing of exports of non-agglomerated iron ore and concentrates, in millions of dollars; December 2020 values. Differential between international quotation prices (Iron Ore 62% Fe CFR China, TSI) and export (reported in Brazil, CIF).

Graph 9 ►
Under-invoicing of iron ore exports (US\$ million) and price differential (imports and exports) (2017-2020)



Sources: Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy; United Nations Commodity Trade Statistics Database (UN Comtrade); and International Transport and Insurance Costs of Merchandise Trade, OECD. Self elaboration.

*Estimated monthly capital outflow associated with under-invoicing of exports of non-agglomerated iron ore and concentrates, in millions of dollars; December 2020 values. Import price differential (reported in destination countries for Brazilian iron exports) and export (reported in Brazil).

second analysis, although at a lower volume, in relation to the previous one. By this method, it was estimated that capital outflows in the period from 2017 to 2020 amounted to US\$ 19.379 billion, which corresponds to an average outflow of US\$ 4.844 billion per year.⁷⁸

78. Values updated to December 2020, according to the previous note.

Export under-invoicing (US\$)				
	Estimated value	Taxed value (23%)	Not Taxed value	Loss of revenue (US\$)
2017	6,737,008,339	1,549,511,918	5,187,496,421	1,763,748,783
2018	6,260,193,268	1,439,844,452	4,820,348,816	1,638,918,597
2019	3,281,145,673	754,663,505	2,526,482,168	859,003,937
2020	3,100,849,892	713,195,475	2,387,654,417	811,802,502
Total	19,379,197,172	4,457,215,349	14,921,981,822	5,073,473,820

Sources: Estimate of the present study. Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy; United Nations Commodity Trade Statistics Database (UN Comtrade); and International Transport and Insurance Costs of Merchandise Trade, OECD. Percentage of the taxed amount from Mantovani (2015) and IJF (2017). Self elaboration.

▲ Table 8
Loss of tax collection resulting from under-invoicing of exports of iron ore (2017-2020)

In a previous study (IJF, 2017), we identified that only 23% of the estimated under-invoicing via transfer pricing was adjusted in taxable income. Thus, most of the profit transferred from Brazil, mostly to Switzerland, would be associated with a loss of tax revenue. The reduction in export earnings of mining companies reduces the taxable income of these companies obtained in that country, thus reducing tax collection. Thus, we estimate that the under-invoicing of iron exports caused a loss of revenue in Brazil of US\$ 12.41 billion in the period from 2009 to 2015 (IJF, 2017).

Based on the estimate of the under-invoicing of iron ore exports presented here, it is possible to estimate the associated tax revenue loss. However, the lack of transparency regarding adjustments to taxable income is an obstacle to this analysis.⁷⁹ Thus, in order to estimate the tax loss, we extrapolated the

79. This information was requested from the Brazilian Federal Revenue Service through the LAI, but the request was not granted, on the grounds that an additional data extraction would be necessary, which would be outside the scope of the LAI. We disagree with this interpretation, since, on the merits, any information to be extracted from the revenue bases, which is not an individual declaration by a single taxpayer, will require some degree of consolidation, as amounts from more than one declaration will be consolidated. If the information refers to a single declaration, it cannot be provided due to tax secrecy; if it refers to a group of declarations, it cannot be provided because it is a consolidation of data. This interpretation would completely exclude revenue data from the scope of the LAI.

On the other hand, any information that does not concern the entire revenue database requires

result of the previous study, which showed that only 23% of the transferred profit was declared and taxed. In line with the previous study, the estimate was made only on the two taxes on legal entities, disregarding the loss of indirect revenues, like CFEM, for example.⁸⁰

Thus, considering only the IRPJ (25%) and CSLL (9%), which total a rate of 34%, it was possible to estimate the loss of collection in Brazil, based on the application of this rate to the portion of undeclared commercial under-invoicing, that is, after deducting 23% of the estimated total under-invoicing. We used the lowest estimate of under-invoicing, in order to preserve the parsimony of the loss of revenue's estimate,⁸¹ choosing to consider an under-invoicing of US\$ 19.379 billion (US\$ 4.844 billion per year), obtained in the comparison between import and export prices, a figure lower than that resulting from the comparison between international quotation and export price. Therefore, with conservative parameters, we estimate a loss of collection of US\$ 5.073 billion dollars, in the period from 2017 to 2020, which corresponds, on average, to US\$ 1.268 billion a year (Table 8).

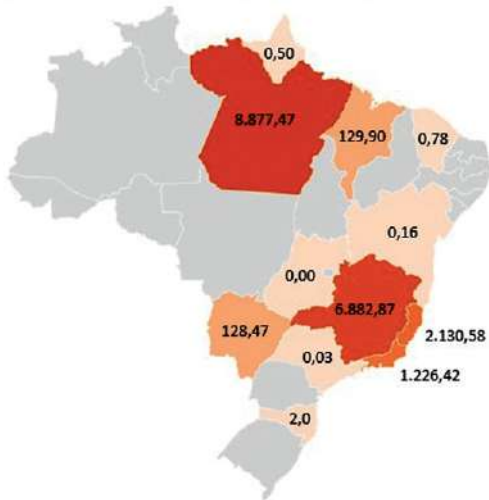
5. Geographical distribution of capital outflows

Up to this point, we worked with aggregated results at the national level. It is possible, however, to estimate how the outflow of capital and the consequent tax losses are distributed across the Federation Units (states). The total outflow of capital, by state, in the period 2017-2020, is shown in Figure 6. The amounts of capital outflows in the states of Pará and Minas Gerais are identified since the production and export of iron ore are concentrated in those states.

the use of some filter, at least in order to exclude from the search results rectified or canceled statements. We requested a simple filter that included only information related to companies that declare themselves in two codes of the National Classification of Economic Activities (CNAE). If the application of these filters is considered a "structured search", any information that is not the entire IRS database will be excluded from the LAI.

80. This option is in accordance with the analysis carried out in the previous study: "The significant estimated loss refers only to taxes that are directly levied on the profit of iron ore exporting companies, without considering existing indirect impacts, such as the loss associated with financial gains (not declared) obtained by the residents' funds remitted and invested abroad, and losses related to the lack of CFEM payments" (IJF, 2017, p. 35).

81. In this sense, we follow Zucman (2014, p. 56), who defends criteria of precision and parsimony in estimating the assets allocated in tax havens, in order to preserve the rigor and robustness of the estimates.



◀ Figure 6
Capital outflows by state, 2017-2020, in US\$ million

Sources: Data from the Special Secretariat for Foreign Trade and International Affairs, Ministry of Economy; United Nations Commodity Trade Statistics Database (UN Comtrade); and International Transport and Insurance Costs of Merchandise Trade, OECD. Self elaboration.

* Estimated capital outflow associated with under-invoicing of exports of non-agglomerated iron ore and concentrates, in US\$ million; December 2020 values; per Federation Unit.

There is an estimate of a loss of tax collection of US\$ 2.324 billion in Pará and US\$ 1.801 billion in Minas Gerais in the period 2017-2020.⁸² States such as Espírito Santo and Rio de Janeiro also showed a significant loss of revenue associated with under-invoicing of exports. This loss totaled US\$ 557 million, in the case of Espírito Santo, and US\$ 321 million, in Rio de Janeiro.

The estimate of capital outflows by state was based on the share (in value) of each state in the export of iron ore and its concentrates, including roasted iron pyrites, known as pyrite ashes (NCM 2601). The export is classified according to the Federation Unit corresponding to the municipality where the exporter shows domicile (SECEX, 2021).

6. Additional remarks

The practice of transfer pricing has been an important vector for transferring profits between countries (COBHAM et al., 2014; UNCTAD, 2020). Exporting at a price lower than that practiced on the marketplace implies an implicit transfer of foreign currency abroad and a reduction in taxable income in the national territory, where the income was generated.

82. Values updated to December 2020.

The practice itself does not constitute illegality, as long as the company corrects the taxable income in its tax returns, in accordance with marketplace prices.

There is a loss of revenue in the exporting country, since part of the profit is taxed in the importing (or intermediary) country and then deducted from the taxable income in the exporting country, a fact observed in different sectors of the economy and in many countries.

In view of the above, and even in the face of recent legislative changes, we conclude that society does not have the necessary means to know, or even to investigate, whether the wealth obtained privately from mineral exploration has its due tax counterpart.

Even though they are finite and common goods, this topic is subject to tax secrecy and, therefore, we cannot know if the necessary adjustments are being made. As mentioned earlier, as far as we were able to determine, there are enduring difficulties with tax evasion in the mining sector within the scope of the Revenue bodies.

Recent legislation is even claimed by large mining companies, in their official reports and in the response given to the publication of the IJF (2017),⁸³ as evidence of the alleged impossibility of tax evasion or tax indifference in the transfer pricing strategy.

However, the logic of the new legislation is precisely to disincentivize the practice of under-invoicing, since, if the due tax adjustments are made, there is no gain from under-invoicing and avoidable tax declaration steps are added. We can infer, then, that if the evidence of transfer pricing remains, it is because the benefit in such a practice also remains, so that the new legislation is not, so far, being effective in rendering this strategy obsolete.

In fact, the work by Mantovani (2015), even with a short time horizon analysis, corroborates this hypothesis, by showing a tax adjustment value corresponding to less than 25% of the estimated under-invoicing.

Regarding taxation legislation on a universal basis, we recommend that similar analyzes of effectiveness be produced, based on similar methodology.

Finally, it follows from the present study that, in the context of private exploration and exportation of the nation's natural resources, it is highly desirable to establish a maximum deviation from the parameter price directly at the ore's sale stage, or else that tax adjustments contained in the IRPJ statements were open and widely publicized for public scrutiny.

83. See LCA (2019).

Part III

1. Response and positioning of Vale S.A., other companies and the government

After the scientific investigation and after listening to the communities for the analysis presented here, it was necessary to listen to the companies and public bodies responsible for the regulation and control of activities related to mining. Contacts took place through the channels provided by the companies and their respective public departments. All received a summary of the content presented above.

Vale S.A., Anglo American and CSN Mineração, the three largest iron ore producers in Brazil, received the main points of the study by the Fiscal Justice Institute (IJF) with the data, information, findings, methodology and statements of the researchers.

The Brazilian Mining Institute (Ibram), an organization that brings together the largest mining companies in Brazil and class entities in the sector, was also asked to speak out. Vale S.A. and Ibram, upon receiving the complete study, forwarded the answers, presented here in full.

a. Vale S.A.'s response on possible tax evasion, CFEM and the impacts generated by its operations in the State of Maranhão

Vale S.A. will analyze the new IJF study, but it is already possible to say that the main premises of this study remain in relation to the previous version and, therefore, our position remains valid:

“LCA Consultores, with the collaboration of Dr. Bernard Appy, analyzed the IJF – Latinidad study and concluded, in his Executive Summary, that the Brazilian transfer pricing legislation does not allow price manipulation in sales to subsidiaries abroad. The study also emphasizes that Brazilian legislation adopts the taxation system on a universal basis, so that the profit earned abroad by subsidiaries of Brazilian companies is incorporated, in the year in

which it was earned (i.e., on the accrual basis), to the calculation basis of the IRPJ and CSLL of the Brazilian parent company.

Transfer pricing is strictly regulated by the Federal Revenue's Normative Instruction 1.312/2012 (with its subsequent amendments), with no margin for artificial transfer of profits abroad. In addition, the Brazilian parent company would not have any gain from any eventual transfer of profits abroad, since if the profit earned abroad were taxed less than in Brazil, the difference between the Brazilian rate and the effective rate levied abroad would be taxed in Brazil. In other words, the Brazilian company would not have any economic advantage since Brazilian legislation captures such profits via taxation of subsidiaries abroad. In summary, the Latindadd Study is inadequate both for disregarding the current transfer pricing rules and for failing to observe the existence of taxation rules on a universal basis".

Regarding the other questions:

"On the Financial Compensation for the Exploration of Mineral Resources (CFEM), the company informs that the funds are collected directly by Vale to the National Mining Agency (ANM), which is the entity responsible for calculating and crediting the amounts to the municipalities in the area of influence of the Carajás Railroad, as provided for in a federal decree. It is also up to the ANM to set standards and exercise supervision over the collection and distribution of CFEM.

Regarding the safety of communities that cross the railroad, Vale informs that it constantly invests in technology and actions to reinforce safe coexistence with its railroads. In recent years, significant investments have been made in mobility along the entire Carajás Railroad (EFC), totaling the construction of 48 new road viaducts, 80 level crossings, 15 pedestrian walkways, 44 automatic gates, among other protective measures, such as the construction of protective walls to prevent undue and unsafe crossing of pedestrians along the line. In addition, it maintains community relations teams dedicated to awareness-raising actions and campaigns.

Regarding the allegations of alleged environmental impacts associated with the operation of the EFC, such as cracks in houses and pollution, the company informs that it strictly complies with environmental legislation and reiterates that it systematically evaluates the environmental variables associated with its operations, maintaining specific programs validated by the regulatory environmental agencies.

Currently, EFC is classified by the National Land Transport Agency (ANTT) as the safest railroad in Brazil, with the best safety index among all Brazilian railroads. For the coming years, new mobility works are also planned, such as railway viaducts, road access to communities near the railroad, construction of new sections of protection barriers, an increase in the number of footbridges and the automation of level crossings. In addition to investments to improve safety, mobility and crossing for the communities, other social investments are carried out in the regions where the company operates, which can be checked on the company's website, under the sustainability tab: www.vale.com.

Regarding dialogue, Vale reiterates that it maintains relationship channels available to the community via Contact us at www.vale.com , Alô Ferrovias (0800-2857000), and also has dedicated community relations teams, which frequently visit neighboring communities, exercising active listening and open and transparent dialogue on all demands related to the company's operations. All demands received are duly recorded and answered to the communities within an average period historically less than 10 days.

Regarding the inspection and monitoring of investments made in partnership with the Multimodal Intermunicipal Consortium (CIM), the company clarifies that all projects are signed directly with the City Halls of the municipalities in our area of operation and not with the CIM, which acts as an intervening party.

All projects are previously evaluated, considering internal integrity/ compliance criteria and alignment with Vale's social action guidelines. Once approved, the partnership is established through its own legal instrument with clauses related to the responsibilities of each party, including regular inspections carried out by Vale's teams. The contract provides that the Municipalities first present the rendering of accounts of each stage of the project's progress for evaluation/approval by Vale, and then there is the financial disbursement. The contracts also provide for the suspension of transfers in cases where the measurement presented by the City Halls does not meet the established requirements."

b. Response from the Brazilian Mining Institute (Ibram)

Specialists consulted by Ibram consider that Brazilian legislation, related to the topic of transfer pricing, prohibits possible manipulation of prices in marketing to organizations controlled in other nations. And they complete that a Brazilian company controlling other organizations abroad has no economic advantage, as explained in the following paragraph.

They justify that the Normative Instruction (IN) nº 1312, of the year 2012, of the Federal Revenue of Brazil, regulates the so-called transfer pricing and, according to it, there is no room for an artificial transfer of profits to these other countries. Even if there was some profit arising from a transfer abroad, the parent company located in Brazil would be taxed here, if the foreign taxation on the profit was lower than the rates prevailing here in the country.

Anglo American's advisors said it would not respond directly and would endorse Ibram's response. CSN Mineração did not respond to the placement request.

c. Response of the Intermunicipal Consortium (CIM) on CFEM, allegations of corruption, irregular use of funds and relations with Vale S.A. and the communities

“The Intermunicipal Multimodal Consortium - CIM, a legal entity governed by public law, herein represented in the form of its Constitutive Act, by its President at the end signed (Francisco Dantas Ribeiro), due to the inquiries received, manifests itself in the following terms:

It so happens that, as soon as it took office, the new CIM board, democratically elected on January 19, 2021, through its new President, determined the hiring of a specialized company to provide auditing services on personnel expenditures and situational diagnosis consultancy.

Subsequently, the aforementioned audit detected irregularities, as stated in a separate report, with regard to the Functional and Remuneration Structure of public employees, undue payment to the Severance Indemnity Fund - FGTS, Social Security Debts, etc.

In this wake, in order to preserve public assets and administrative morality, we forwarded the aforementioned audit to the regency control bodies, namely:

Court of Auditors of the State of Maranhão – TCE/MA and Attorney General of Justice of the State of Maranhão – PGJ/ MA.

Within the scope of the TCE/MA, the CIM has not only certified itself in all claims against former managers but has also been complying with all decisions issued by the Court of Auditors in relation to the annulment and/or suspension of procedures considered irregular, such as those cited by the haughty journalist.

Specifically in relation to the 2021 Audit Report, within the scope of previous years (2016/2020), we highlight its full acceptance by the Public Prosecutor of Accounts of the State of Maranhão - MPC/MA, given that the work has become entirely a Lapsd Complaint listed under No. 7.173/2021, drawn up by the His Excellency Attorney of the State of Maranhão, Mr. Jairo Cavalcanti Vieira, under the Rapporteurship of the Eminent Counselor João Jorge Jinkings Pavão.

In this sense, considering the harmfulness of the acts perpetrated by the former managers of the Multimodal Intermunicipal Consortium - CIM, during their respective periods of operation, we have already investigated and adopted all appropriate administrative and/or judicial measures aimed at punishing those involved and obtaining reimbursements to the public purse.

On the other hand, in relation to the Financial Compensation for Mineral Exploration - CFEM, it is a type of contribution paid by mining companies to the Union, States, Federal District and Municipalities for the economic use of mineral resources.

On this point, it is worth mentioning that it is up to the National Mining Agency - ANM, an autarchy linked to the Ministry of Mines and Energy, to set standards, exercise supervision, collect, constitute and collect CFEM credits, so that the Multimodal Intermunicipal Consortium – CIM contributes only to the social and economic development of the associated municipalities at the multimodal level, through guidelines on the ways of applying those funds, collecting municipal taxes, making socioeconomic and environmental compensations, creating partnerships, projects, agreements, etc.; in other words, it does not manage or allocate the amounts that are received by its members in terms of CFEM, as this resource is transferred directly to each municipality.

Furthermore, CIM's revenue is composed only of financial transfers from the consortium municipalities, arising from a percentage applied to another source of municipal gain (Fund of Participation of Municipalities - FPM),

legally adjusted in the Assembly and governed by an Apportionment Agreement, being the responsibility of the consortium the application of resources in the achievement of the defined objectives, observing the rules of public accounting, the execution of revenues and expenses in accordance with the rules of financial law, applicable to public entities, as well as the annual presentation at the Ordinary Assembly, and the monthly availability, at the headquarters of the CIM, or at the request of the Consortium Member, of data on the expenses incurred in face of expenditures realized by the Consortium Members on the basis of the aforementioned Apportionment Agreement.

In addition, in observance of the fundamental Principles of Administrative Legality and Morality, we aim at unrestricted compliance with the Transparency standards/requirements set by Normative Instruction N. 28 of May 5, 1999 and other regulations, so that we publish on our website (<http://cimmail.com.br/site/transparência/>), all bids, official publications, legislation, tax liability reports, contracts, rendering of accounts, accounting data and others.

It should be noted that, so far, the current management has not received from any of its consortium municipalities, a request for a shared bidding process.

Regarding the dialogue between the CIM, Vale and the Government of the State of Maranhão, on what they are doing to improve the application of the funds received in favor of society, it is worth noting that each municipality can apply the funds according to its real need, only paying attention to the limits established by Law n° 7.990/89.

Nevertheless, the CIM has sought to guide the use of resources towards investments that can reach the largest number of beneficiaries and help solve problems that are recurrent in most municipalities, such as basic sanitation issues.

Vale maintains a permanent dialogue with the CIM and has shown itself to be a strong partner in supporting the funding of several projects with the municipalities, which are carried out under the strict supervision of the Company, with CIM actively participating in helping municipalities to overcome all bureaucratic requirements aimed at approving projects before Vale.

As for the State Government, it has shown itself willing to help whenever it is called upon, including offering training, which allows municipalities to improve inspections and the issue of environmental licensing, a fact that is

very relevant for the municipalities that make up the CIM, since they are affected by environmental impacts resulting from mineral exploration.

With regard to the adequacy of the amounts received as CFEM, the current CIM's Board of Directors became aware of the TCU Audit Report, as well as the CPI established in the State of Pará, which indicate that the amounts transferred as CFEM would be less than what should be passed on. In this sense, the CIM has already convened the consortium municipalities, which decided in assembly to hire a specialized advisory and consultancy, with a view to investigating such issue.

In view of the above, it is clear that the Consortium, through its current directors, to the exact extent of its attributions, has been meeting all the legal guidelines for the functioning of the CIM in favor of its consorted municipalities.”

d. Parties that did not respond

The National Mining Agency; the government of Maranhão; the Public Ministry of Maranhão; and the Court of Auditors of Maranhão, which received questions regarding the topics covered in this report, did not respond to requests for a position.

The municipalities of Açailândia; Alto Alegre do Pindaré; Buriticupu; and Itapecuru Mirim also did not respond to the questions sent.

As can be seen, among companies, only Vale issued an opinion, in which it repeats the narrative that it complies with all legal obligations and that investments in community improvements are part of its policy, contradicting the evidence presented by the impacted communities themselves.

Of all the public bodies, the Brazilian Mining Institute (Ibram) issued an evasive response, in a clear demonstration of lack of self-criticism, as its position contradicts studies that point to the difficulty of mapping tax evasion due to the lack of criteria and methods in Brazilian legislation.

As for the CIM, the response focused on holding the previous management accountable; emphasized the good relationship with the company Vale S.A. and the State but did not bring up its direct relationship with the most impacted communities in the respective municipalities.

As for institutions and companies that did not respond, there is a clear lack of commitment to public debate on issues related to mining and the well-being of communities that live on the margins of the development announced by the big mining enterprises.

2. Recommendations

To the mineral sector:

- To inform, in a clear, objective and transparent way, what it exploits and what returns in benefits to the State;
- To accept the legitimacy of the mineral tax;
- To maintain a transparent, effective and open dialogue with the communities affected by its operations;
- To respect Convention 169 of the International Labor Organization (ILO) about the Free, Prior and Informed Consultation, ratified by the Brazilian state;
- To invest heavily in science, technology, innovation and sustainability, at all stages of its production chain, to reduce reported socio-environmental impacts;
- To be transparent in its relations with the Executive and Legislative branches, not preventing civil society from participating in relevant discussions, such as changes to the CFEM and the New Mining Code;
- To accept truly independent external audits and not those hired by the companies in order to follow a predefined script;
- To demand social and environmental due diligence from its subsidiaries, suppliers and customers;
- To minimize the generation of tailings, residues and all the contamination caused along the mining sector chain, betting and investing heavily in innovative solutions;
- To appreciate lenders and banks that are signatories to, and effectively respect, the United Nations' "Principles for Banking Accountability";
- Not to delay the execution of court sentences favorable to their victims.

To the states of Maranhão and Pará:

- To dedicate themselves to the restoration, in the Constitutional text, of taxation of primary and semi-finished products, since ores are non-renewable resources formed by geological ages that are depleted locally and taxation is an effective instrument to bridge the gap between the present of exploration and a future without mining;
- To create and invest in highly qualified technical staff to also advance in non-tax mineral policies, such as local content policies;
- To demand full transparency from the municipalities on CFEM-related expenditures and require each municipality to keep an updated section dedicated to this data on their official websites;
- To effectively inspect mining companies;
- To review tax benefits and exemptions granted to mining companies;
- To build economic alternatives to mining, both to avoid excessive mining dependence in regions that live on the basis of their deposits, that develop little and whose growth worsens social, infrastructure, health, safety and education indicators, and so that cities not yet mined do not go through the same problems;
- To carry out an environmental licensing process that complies with technical criteria, respects environmentalists' warnings about socio-environmental risks and does not rush approval of problematic projects;
- To carefully analyze whether indiscriminate mineral research to open new mining fronts, financed by companies, is really of socio-environmental and socio-economic interest for the development of the State and if there are better, more viable and environmentally responsible alternatives;
- To maintain dialogue with organized civil society and social organizations that work in defense of territories.

To the Union and the Legislative Branch:

- To make the Ministry of Mines and Energy act in favor of society, with public policies that consider the direct and indirect impacts of mining and of large infrastructure projects;
- Not to allow the ANM to be a business desk, or just a dispatcher for mining interests and actually fulfill its mission of being a regulatory agency for the mineral sector;
- To align the CFEM rate to that of the main mining countries in the world and, above all, according to the return that Brazilian society need, considering our level of socioeconomic development;
- To review tax benefits and exemptions granted to mining companies immediately, starting with the review of the Kandir Law;
- To restrict the practice of price transferring at its origin, that is, in the sale of the ore, and not according to the possibility of a subsequent tax adjustment;
- To curb the transfer of profit to subsidiaries in tax havens, in a stricter way than what has been tried with the taxation of profit on a universal basis, which is based on the assumption that companies will inhibit the practice on their own;
- To strengthen the Federal Revenue Service, the Financial Activities Control Council (COAF) and other monitoring bodies, so that Brazilian fiscal and tax governance is transparent, effective and works for the common good;
- To review the flexibility of environmental licensing;
- To strengthen institutions, such as the Brazilian Institute for the Environment and Renewable Natural Resources (IBAMA), to open new public tenders and to invest in combating the chain of crimes committed in the Amazon;
- To work to meet the climate goals of the Paris Agreement and other international commitments.

3. Conclusion

The data obtained, the reports collected and the findings of this study show that the fiscal and tax realities on which the mineral sector is based are extremely favorable for mining companies and harmful to society.

The communities directly and indirectly impacted by the Carajás logistics corridor, in Maranhão and Pará, have been reporting for years the absolute neglect of Vale S.A., the lack of dialogue, the health problems caused, the damage to the structure of their homes, the lack of safe crossings, the subtraction of traditional means of income generation and the insufficiency of the compensation offered by the companies.

The lack of transparency and space for community participation in the policy for the application of CFEM funds, added to the misuse by some municipal managers, compromise the purpose of the law which, although evasive, recommends that the Compensation has the objective of improving the quality of life and fostering economic alternatives, with a view to the mineral good being of a finite nature.

The close relationship between companies and public authorities was evident, while there is a total lack of dialogue with civil society, especially with the most impacted communities. This reality makes the promise of development, announced in Vale S.A.'s propaganda, even more distant from the real life of communities that suffer from the impacts of mining.

The mineral lobby has neglected the quality of life of the affected communities and the environment, in a denialist position of the UN Principles on Business and Human Rights, as well as other national and international legislation, aimed at ensuring the responsibility of mining and steel chain companies towards impacted communities.

The search for an answer to break this dichotomy is urgent, complex and demands political will, organization, social mobilization, revindication by civil society, rule changes, oversight, transparency, incisive action by public bodies and authorities.

This report will certainly not solve such delicate historical questions, built under a myriad of influences from political and economic powers that have proven harmful so far, but it points out possible paths, shows immediate realities and draws attention to relevant data for this debate.

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