



# FERROGRÃO: WEAKNESSES AND LESSONS LEARNED IN IMPLEMENTING A SUSTAINABLE INFRASTRUCTURE AGENDA



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The EF-170 Railroad, also known as Ferrogrão, was designed to reduce transportation costs of soy exports from the Brazilian state of Mato Grosso. Currently, cargo must travel almost 2,000 km on highways connecting the state to the seaports of Santos and Paranaguá. Ferrogrão aims to provide a shorter, lower-cost option with reduced carbon emissions. It consists of approximately 930 km of railroads running from the Southern to the Northern region, through the Amazon rainforest, to the Miritituba river transshipment terminal complex, located in the city of Itaituba, on the banks of the Tapajós river, in the state of Pará. From Miritituba, the cargo will travel on ferries to the ports and be loaded onto ships for export on the Tapajós, Tocantins, and Amazonas rivers, subsequently making its way to the Atlantic Ocean.

Ferrogrão was designed and developed by a business consortium established in 2012. In 2016, the project was added to the portfolio of the Investment Partnerships Program (*Programa de Parcerias de Investimentos* - PPI) and incorporated into the National Logistics Plan (*Plano Nacional de Logística* - PNL) for 2018-2025. This is an iconic project for several reasons. Nearly 1,000 km of greenfield railroads will be crossing the Amazon rainforest. Other data - such as the estimated cost of almost R\$ 17 billion and the route the project will take in parallel to the BR-163/MT/PA highway - make the project even more challenging.

Climate Policy Initiative/Pontifical Catholic University of Rio de Janeiro (CPI/PUC-Rio) aims to provide in depth analysis of infrastructure planning and development in Brazil and assess the impact such projects will have in the Amazon. As the Ferrogrão project moves forward, it offers important considerations policymakers must take into account as they seek to weigh the costs and benefits of large-scale infrastructure development and points to weaknesses in the current life cycle that go beyond Ferrogrão, offering lessons for the broader infrastructure agenda.

From a socio-environmental perspective, Ferrogrão drew attention of many Brazilian and international institutions in July 2017, when a Provisional Decree was issued to withdraw public access from part of the right-of-way of BR-163/MT/PA, where the railroad will be built. At the time, it was found that such withdrawal of public access would impact almost one million hectares of forests in conservation units. In the Brazilian National Congress, the rural caucus mobilized in favor of enacting the Provisional Decree into law; this, however, was avoided by a presidential veto, prompting worldwide commotion. Between 2017 and 2018, the quality of environmental studies and public consultation procedures under the project was challenged in court twice. The project cycle, however, has remained on course, with public hearings on the concession model held in 2019 and approved in July 2020. Shortly thereafter, the project was sent to the Federal Court of Accounts (*Tribunal de Contas da União* - TCU).

Prior to the COVID-19 pandemic, the PPI had announced that the concession notice for Ferrogrão would be published in the second half of 2020, but that is likely to be postponed. The government, however, has announced it expects the country's economic recovery to be based on infrastructure investments, which would likely elevate the priority of the Ferrogrão project. Meanwhile, trends show a new investment model emerging on the global stage, with more rigid and sustainable socio-environmental standards. This trend was gaining momentum among large global investors even before the pandemic. The rise of these standards is partly motivated by the perception that investments, when socially and environmentally minded, are less risky and, therefore, more attractive from a financial standpoint.

CPI/PUC-Rio has assessed Ferrogrão's governance, planning, and environmental risks as a way to contribute to the ongoing debate on sustainable infrastructure policies and projects in the country. This executive summary presents three studies conducted over the last year, which: (i) analyze the robustness of Ferrogrão's planning based on a set of structuring questions, which should be prepared in the pre-feasibility stage; (ii) evaluate the administrative rites and the governance of decision-making related to the project; and (iii) develop an innovative methodology to understand Ferrogrão's area of influence and deforestation risk.

## THE PRE-FEASIBILITY TEST

The first study was conducted by Inter.B Consultoria Internacional de Negócios, with support from CPI/PUC-Rio and the World Resources Institute (WRI). Researchers developed a methodology to assess the pre-feasibility of projects, based on structural questions in the decision-making process during the initial planning stages. These questions serve as quality filters for project selection and identification of significant risks that must be looked into and, eventually, mitigated throughout the project life cycle. Once the methodology had been developed, the questions were posed for the Ferrogrão case; the answers revealed frailties in the project's conception and design, and weaknesses in documentation.

As the study shows, weak development planning in the country gives rise to a significant guidance gap in project selection, given the lack of integrated planning and based on a long-term outlook for sustainable territorial development. The questions also address expected environmental risks. In this regard, deforestation and the project's relationship with conservation units and indigenous lands would have been highlighted from the outset and, as proposed, would inform the feasibility studies and the environmental impact assessment through proper local engagement, as part of a decision-making chain.

According to the study, the economic analysis of Ferrogrão lacked an assessment of the relationship between the project and other investments. In fact, Ferrogrão would be associated with a logistics framework that ignores the most recent developments both in the railroad sector - with the implementation of the Midwest Integration Railroad (*Ferrovía de Integração Centro Oeste* - FICO), the modernization and expansion of the central section of the North-South railroad and the expansion of Ferronorte to Lucas do Rio Verde - and in the upgrading and future addition of a third lane to the BR-163/MT/PA highway. The failure to consider the costs and benefits of paving operations (currently completed) and the expansion of its capacity vis-à-vis the construction of Ferrogrão were not properly addressed. The highway concession - for an atypical ten-year period - uncovers yet another vulnerability that had not been addressed by Ferrogrão's design:

competition from the highway. The economic analysis of the project also failed to consider the capacity of other players in the logistics market to react to the implementation of Ferrogrão by cutting down on freight, and how that would affect the economic and financial feasibility of the project as a whole.

The study proposes that critical aspects of priority projects be identified and accompanied by analyses of increasing depths. At the pre-feasibility (or diagnosis) stage, it is admissible to use secondary information (i.e., data that are already available), as excluding projects at this stage would avoid higher costs. Subsequent stages, such as feasibility studies and environmental impact studies, would impose stricter requirements, including the importance of using primary data and original studies in the absence of full-fledged sources. Finally, the study proposes a governance structure for large infrastructure investment projects executed or financed by the public sector to avoid the misallocation of funds - a problem in more than 14,500 abandoned infrastructure works around the country, half of which were halted by governance-related problems in planning (e.g., limited feasibility, lack of proper design, and low-quality management) and execution.

**THE FULL REPORT IS AVAILABLE HERE:**

FRISCHTAK, Cláudio; LOBO, Marina; FARIA, Manuel; CANINI, Renata; DUQUE, Bernardo. Relatório Técnico Interno. Questões Críticas em Grandes Projetos de Infraestrutura no Brasil: Estudo de Caso: Ferrogrão. Rio de Janeiro: Climate Policy Initiative and World Resources Institute, 2020.

## INFRASTRUCTURE GOVERNANCE AND THE LIFE CYCLE OF FERROGRÃO

The second study was conducted by CPI/PUC-Rio and focuses on mapping and organization of the life cycle stages of the Ferrogrão project, along with selected federal highway and railroad concessions implemented in the Amazon.

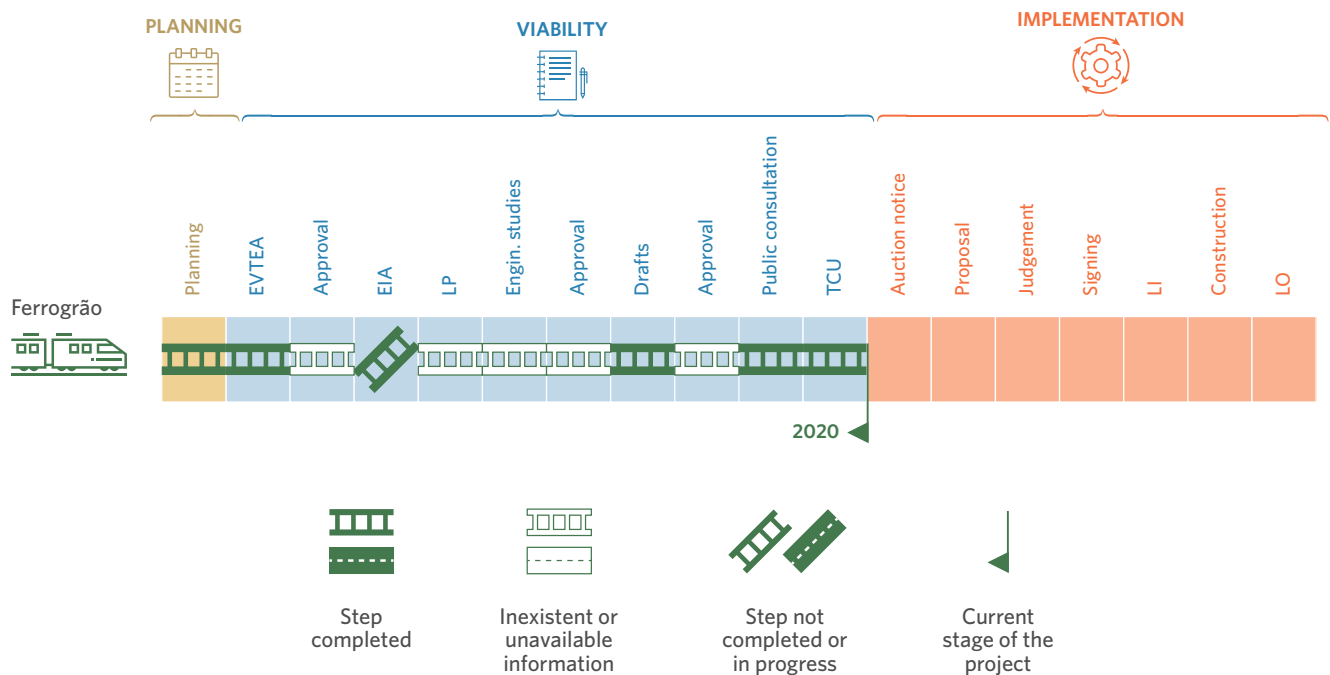
In 2014, the Ministry of Transport - now called the Ministry of Infrastructure - issued a public call for the Expression of Interest (*Procedimento de Manifestação de Interesse - PMI*) in carrying out feasibility studies (*Estudos de Viabilidade Técnica, Econômica e Ambiental - EVTEA*), under the monitoring of Brazil's Land Transport Regulatory Agency (*Agência Nacional de Transportes Terrestres - ANTT*). In 2015, the Ministry of Transport selected the EVTEA proposed by the company EDPL, the only company to submit a proposal. Public hearings began in 2017, led by ANTT, to improve the EVTEA and the drafts for public notice and the concession contract. These hearings, however, were deemed non-compliant due to the lack of participation by stakeholders from indigenous communities; new hearings were convened and held in 2019. A report about the 2017 public hearings was delivered to ANTT in April 2019 and was approved in July 2020.<sup>1</sup> Shortly thereafter, the project was sent to the TCU.<sup>2</sup>

<sup>1</sup> Deliberation 312 and 313 from July 7<sup>th</sup>, 2020. Available at: <http://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?data=08/07/2020&jornal=515&pagina=33&totalArquivos=87>. Access July 8th, 2020.

<sup>2</sup> The Florianativa Socio-environmental Institute (ISAF) filed a Class Action (process n. 1000351-03.2020.4.01.3908/JFPA-Itaituba) with the purpose of changing the railroad outline to avoid passing through the Jamanxin National Park, before submission to the TCU. The injunction was granted. However, the injunction was questioned by ANTT (Agravo de Instrumento nº 1018811-25.2020.4.01.0000/ TRF-1) and the project was cleared to move forward. It is worth noting that the judicial process is still on going, and new decisions may affect the progress of the project.

Based on the mapping of the applicable regulations for concessions in the terrestrial transportation sector (Figure 1), the next step entails the approval of feasibility studies and the draft public notice and contract by the TCU (Figure 1). In addition to public hearings, the Planning and Logistics Office (*Empresa de Planejamento e Logística - EPL*) enacted a public notice in 2019 to commission an Environmental Impact Assessment (*Estudo de Impacto Ambiental - EIA*). The EIA is being prepared by the company MRS Ambiental and overseen by EPL.

Figure 1. Life cycle of terrestrial transportation projects and Ferrogrão status



**Source:** Climate Policy Initiative with information from the applicable federal legislation (Federal Law 13,334/2016; 9,074/1995; 9,491/1997. 11,079/2004; 8,666/1993; and 8,987/1995. Federal Decree 2,594/1998 and 8,791/2016; and CPPI Resolution 1/2016.

The evolution of Ferrogrão’s planning process, along with those of other railroad concessions assessed in the study, did not follow the exact phases described in the flowchart (Figure 1). A notable example was the fact that the EIA was conducted during and after the public hearings. This is not necessarily a violation of a legal rule since the applicable rules do not establish a chronological order for the different stages. However, the order of the stages in the flowchart does follow a logical precedence criterion – for example, between EVTEA and the EIAs,<sup>3</sup> indicating the need for more clear, formal and objective procedures in the decision-making process.

On the other hand, CPI/PUC-Rio lacked access to some documents and information on Ferrogrão that were not available online or made available via the Information Access Law (*Lei de Acesso à Informação - LAI*). Such lack of transparency is not unusual in the terrestrial transportation sector and clearly curtails the role of civil society and academia in evaluating and monitoring the project. More generally, it imposes potential costs on society and taxpayers, as large-scale projects such as Ferrogrão rely - directly and indirectly - on public funds and must, therefore, remain subject to social scrutiny at all times.

3 The EVTEA is a broader study to assess the technical, economic, and environmental feasibility of a project, so it makes sense that it be conducted prior to the preparation of the EIA, a study with a narrower focus meant to determine the socio-environmental impacts the project might cause.

In the context of Ferrogrão's project life cycle, CPI/PUC-Rio researchers evaluated the criteria used for assessing the project's socio-environmental components. They analyzed the EVTEA and the Terms of Reference (ToR) of the EVTEA and the EIA for Ferrogrão, as well as the manuals used by state-owned VALEC engineering and rail corporation for preparing their EVTEA. In addition, they reviewed international guidelines for checking the socio-environmental components of railroads,<sup>4</sup> which state that ten components must always be included and highlight their importance in study preparations.<sup>5</sup>

The primary findings of the analysis of these documents include: (i) Ferrogrão's EVTEA fulfilled 75% of its ToR and analyzed six components beyond those foreseen in the ToR; (ii) the ToR for Ferrogrão's EVTEA followed approximately 74% of the Valec manual; (iii) Ferrogrão's EVTEA followed approximately 63% of the Valec manual; and (iv) of the ten primary components listed in international guidelines, only three were included in the ToR for Ferrogrão's EVTEA.<sup>6</sup>

This analysis concluded that both the ToR for Ferrogrão's EVTEA and the EVTEA itself failed to predict and analyze the most relevant socio-environmental components when checking for potential socio-environmental impacts caused by the project. The project strayed from the EVTEA preparation manual which, though not mandatory, nonetheless represents government guidelines prepared by sector agencies and should be followed more consistently. This frail socio-environmental scenario is also observed in the other federal railroad concessions in the Legal Amazon assessed in the study, which indicates that additional attention should be focused on the ToRs for EVTEA and on studies' compliance with ToRs. Ferrogrão, however, still has time to reduce its risks by improving its socio-environmental analysis before the project's bid.

#### THE FULL STUDY IS IN THE PUBLICATION STAGE:

CHIAVARI, Joana; ANTONACCIO, Luiza; COZENDEY, Gabriel. Regulatory and Governance Analysis of the Life Cycle of Transportation Infrastructure Projects in the Amazon. Rio de Janeiro: Climate Policy Initiative, 2020.

4 A Guide to Good Practices for Environmentally Friendly Roads, Juan D. Quintero. Latin America Conservation Council (LACC), 2016; International Guidelines for Ecologically-adapted Linear Infrastructure, Infra Eco Network Europe (IENE), 2018; Moving Towards Green Road Infrastructure, International Road Federation (IRF), 2013; Roads and the environment, a handbook, The World Bank, 1997; Environmental, Health, and Safety Guidelines for Railways, International Finance Corporation (IFC), 2007; Environmental, Health, and Safety Guidelines for Toll Roads, International Finance Corporation (IFC), 2007, and; Environmental and Social Framework, The World Bank, 2017.

5 The ten socio-environmental components are: (i) forest cover, (ii) conservation unit, (iii) biodiversity and natural habitat, (iv) traditional communities, (v) water resources, (vi) historical and cultural heritage, (vii) riverine communities, (ix) air, and (x) climate.

6 Namely: conservation unit, (ii) traditional communities (indigenous and *quilombola*), and (iii) forest cover. However, only one (forest cover) was analyzed in the EVTEA.

## FERROGRÃO'S MARKET ACCESS AND DEFORESTATION

The third study by CPI/PUC-Rio draws on a market access methodology to model the impacts of the railroad's construction on the transport costs for producers in different cities. Proponents of Ferrogrão argue that it has the environmental advantage of not causing disorderly occupation - unlike the roads in the Amazon, which cause fishbone-shaped deforestation effects along their trajectory. The analysis by CPI/PUC-Rio researchers, however, reveals a different pattern of deforestation associated with the project. The researchers find that the construction of the railroad will encourage farmers and ranchers in the state of Mato Grosso to expand agricultural production, thus increasing the demand for land. Without mitigation measures in place, projections show that this may cause the deforestation of 2,043 km<sup>2</sup> of native vegetation in almost 40 cities in Mato Grosso. Carbon emissions from deforestation carry an estimated cost of US\$ 1.9 billion, with the price of carbon at US\$ 25/tCO<sub>2</sub>e.<sup>7</sup> Internalizing this environmental cost into the Ferrogrão project would further compromise the project's feasibility.

The study also shows the areas at greatest risk of deforestation as guidance for potential mitigation efforts. The researchers argue that deforestation should not be considered merely as a project externality, but rather as a driving condition, highlighting successful control as an important factor in attracting investments.

It should be noted that the risk of deforestation is not the only project dimension that can be identified via the market access methodology. This approach allows decision makers to gauge the different aspects of infrastructure projects in general. It is an important *ex-ante* assessment tool for projects offered by CPI/PUC-Rio to better inform the public debate on sustainable infrastructure. This work initially focuses on the risk of deforestation because (differently than highways) this aspect is often relegated to the background in discussions about railroad construction.

In terms of lessons for improving the decision-making process, Ferrogrão's market access tool and case study illustrate the importance of defining and delimiting the area of indirect influence of projects and incorporating socio-environmental impacts in the cost-effectiveness assessment of infrastructure projects.

### FULL STUDY AVAILABLE AT:

ARAÚJO, Rafael; ASSUNÇÃO, Juliano; BRAGANÇA, Arthur. Resumo para política pública. The Environmental impacts of the Ferrogrão: An Ex-Ante Evaluation of Deforestation Risks. Rio de Janeiro: Climate Policy Initiative, 2020

[https://climatepolicyinitiative.org/wp-content/uploads/2020/03/PB\\_Os-impactos-ambientais-da-Ferrograo.pdf](https://climatepolicyinitiative.org/wp-content/uploads/2020/03/PB_Os-impactos-ambientais-da-Ferrograo.pdf)

<sup>7</sup> This price corresponds to the average carbon price in national initiatives currently in operation ([carbonpricingdashboard.worldbank.org/](https://carbonpricingdashboard.worldbank.org/)). It is also close to the EU ETS (European carbon market) price.

## OPPORTUNITIES AND CONCLUSION

Brazil's agricultural producers face extremely high transportation costs. The EF-170 (Ferrogrão) project tries to solve this issue by offering these producers a cheaper route for these producers to export their grain. Given its scope, it also offers valuable lessons for the consolidation of a sustainable infrastructure agenda in Brazil.

Analyses of different aspects of the project led by CPI/PUC-Rio have identified weaknesses in this project that may hamper its ability to combine economic feasibility with the protection of natural resources. First, Ferrogrão's economic modeling should be reviewed to better capture the relationship between this project and other project's in the logistics infrastructure pipeline of the region. Second, the project's environmental planning should more carefully consider its indirect effect on deforestation to limit the deforestation risk researchers have identified. Third, there is a risk that TCU will endorse Ferrogrão's EVTEA, draft public notice, and concession contract, likely without having access to information in the EIA, which is still under preparation. This is particularly relevant in view of the magnitude, complexity, and territorial scope of the project, located in a highly sensitive area, thus requiring the project to abide by the highest standards of excellence, vis-à-vis its socio-environmental components. Failure to do so will not only weaken a high-visibility project, but it will also undermine the agenda of large-scale greenfield infrastructure projects in the country.

Despite the problems associated with Ferrogrão, there are still some concrete opportunities to make the project more robust through forthcoming decisions (including by the TCU) regarding the outcome of the public hearings and the EVTEA or the public discussions about the EIA. Requiring a realignment of the EVTEA with its ToR, fine-tuning it to include the most relevant socio-environmental components and robust methodologies for assessing Ferrogrão's impact on deforestation, and promoting greater transparency in the decision-making process would be important measures to make this project more sustainable.

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*Climate Policy Initiative (CPI) is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI's Brazil program partners with the Pontifical Catholic University of Rio de Janeiro (PUC-Rio). This work is funded by Gordon and Betty Moore Foundation. This publication does not necessarily represent the view of our funders and partners.*

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