SIGA
MOBILIDADE

INFRASTRUCTURE DEVELOPMENT PROJECTS FOR SERRA GAÚCHA STAGE ONE OF PHASE ONE THE REGIONAL TRAIN BUSINESS PLAN

Trem Regional da Serra Gaúcha

IDENTIFICATION

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SIGA MOBILIDADE

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EXECUTIVE STATEMENT

What follows is a request for your consideration to become a participant in the development of the Serra Gaucha Regional Train through funding instruments amounting to $1,995,957,624.00 Billion over 10 / 15-years, along with the critically important innovative technologies and expertise needed to complete the project. The return on investment (ROI) will be secured through multiple instruments in addition to the resources generated from the excavation and sale of natural resources, and through the abundant Carbon Credits available for development. Resources for the train development will aid to bring forth other planned elements to the transportation systems.

The development of the rail system has been coordinated over 15 years by Arnildo Schildt, the project's Chief Architect, Ambassador, and Visionary. He has made connections traveling to four continents to bring together the expertise and equipment needed to establish and build a sustainable transportation infrastructure, developed to support viable ecosystems planned for the inclusion (72) of Rio Grande do Sul's municipalities.

Throughout the years, Schildt has earned the respect and support from the local, state, and national governments, as well as the business and institutional communities for the implementation of these endeavors. With an eye towards progress for his community at Villa Christina, Caxias do Sul, in Rio Grande do Sul Brazil, his idea and vision have expanded to include an airport, and logistic center, (CDL) which had been introduced by Mr. Paulo Tomasini during a meeting between the two gentlemen to identify the ways to achieve the objectives. This meeting would spark the development of a closed loop transportation system for the Serra Gaucha inclusive of an airport and seaport. Tomasini, an experienced businessman, who has held numerus executive level decision making positions in the Municipality of Canela, task Schildt, with the idea of an integrated transportation system designed to accommodate projected growth, and to increase the quality of life for the communities of the Serra Gaucha.

The train system is the first component to a transportation infrastructure system for moving passengers and cargo. It is the linchpin element, to development of the projects planned for the Serra Gaucha Region. The development of the train is a private initiative coordinated by SIGA MOBILIDADE URBANA, and its consortium of registered Brazilian & United States (US) companies. This undertaking has been sanctioned for development by the initial 14 Municipalities. The regional train is the catalyst for transporting an expanded economy of scale for producers from the agricultural, forestry, indigenous raw materials and value-added product industrial sectors in the region. The railway system will provide the assurance of consistent delivery schedules for the workforce and products from the factories and fields in the region. These transportation infrastructure railway system will help to increase exports from the region thereby gaining access to the global marketplace .As important, the system will minimize the carbon footprint, which aids in the reduction of CO_2 emissions, all of which, to mitigate the impact and effects from Climate Change.

The notorious atmospheric occurrences increased in regularity starting in 2003. These events have broadened in devastation and intensity over a 10-year prior leading to the catastrophic events of May 2024. These catersatify are concrete evidence of Climate Change. This is destined to happen again in the future unless early warning systems, climate modeling, and innovative technologies are implemented. By not accepting the potential of rapidly changing environmental conditions, and or not incorporating innovative technologies, and engineering techniques required for mitigation, devastation will adversely affect any region the next atmospheric event will once again occur to an unprepared population. This possibility has become our greatest concern for developing a sustainable infrastructure and ecosystem for the communities, and the potential for timely returns on investments being delayed. This occurrence has been demonstrated by the 2024 flooding, and landslides events, which curtailed production from the region and disrupted the existing transportation infrastructure of roads and bridges leading to the only international airport in the state.

AN INTRODUCTION TO SERRA GAÚCHA

The Serra Gaúcha region is writing history once again. With the active participation of the Northeast Region of the State of Rio Grande do Sul and especially the following 14 municipalities: Bento Goncalves; Garibaldi; Carlos Barbosa; Farroupilha; Caxias do Sul; Nova Petrópolis;, Gramado; Canela; São Francisco de Paula; Cambara do Sul; Jaquirana; Bom Jesus; São Jose dos Ausentes, and Vacaria. Also in support are the Chambers of Industry, Commerce and Services, along with the region's businesspeople and all representative entities. Collectively, we will change the reality of infrastructure in Serra Gaúcha, especially with regard to transportation and logistics. The Serra Gaúcha Regional Train is the key component to the development of Rio Grande do Sul (RS), in specific and Brazil, in general. Our focus, as previously stated, is to improve the quality of life in the region by laying the foundation for new employment opportunities that require specialized training and expertise thereby opening a pathway for citizens to expand their income and job mobility potential.

Initial priority will be offered to the 14 municipalities that comprise the first segment of the railway line. The second phase will include a route that will reach the municipalities of Flores da Cunha and Arroio do Sal, a city on the coast of Rio Grande do Sul that will benefit from the construction of a seaport. The **Executive Project / master executive plan** for the Serra Gaúcha Regional Train will delineate the route and location of passenger stations in the 14 municipalities, the location of the 4 cargo transfer stations, licensing, and urban planning projects for each city at their designated stations.

We will begin partnership agreements with companies to acquire future passenger and cargo trains, first qualifying local companies such as Marcopolo, Randon, Gerdau and RGE. If the need is confirmed and there are none in Brazil, we will seek out manufacturers in the global marketplace. We, the people of Rio Grande do Sul, have always been strong, united, fearless and determined. We fight for ideas, goals and dreams. This dream will be the future for our region, our cities and state, thus providing the security of a better future for us, for our children and for the next generations who will write history in our region. Therefore, this is a special announcement for the people of Rio Grande do Sul to build history and an opportunity for any inhabitant of the world to be able to invest in a private initiative project that will not only elevate our region, but also make it a global showcase.

It should be noted that throughout the year the charm of Serra Gaúch already attracts visitors from Brazil and other countries. The tourist hubs of Gramado and Canela; the wineries of Bento Gonçalves; the waterfalls of São Francisco do Sul to the great Buddhist temple Khadro King in Três Coroas are major tourist attractions. From the adventures of the icy nature of São José dos Ausentes, to the unmistakable Edelbrau beer from Nova Petrópolis, Serra Gaúcha brings together an extraordinary array of experiences that offers a wide range of business opportunities.

The region's economy pulsates with the tourism industry, the business environment is dynamic, and new initiatives are frequent. According to a recent survey published in Revista Amanhã, the region concentrates 32 of the largest companies in Rio Grande do Sul, Santa Catarina and Paraná. The survey went on to state that the 500 largest companies in the Southern Region says that investing in Serra Gaúcha is an economically solid option for those looking for a return in volume and who have enough capital to diversify the application of resources. In favor of the social, cultural and economic development of Rio Granda do Sul, we shall proceed with our progress. "*GO GAÚCHOS, TOGETHER WE ARE STRONGER."*

FORMATION OF THE SERRA GAÚCHA

Serra Gaúcha is a geographic region in the northeast sector of the State of Rio Grande do Sul, in Brazil. The history of Serra Gaúcha as we know it today begins at the end of the 19th century, with the decision of the Brazilian Empire to colonize the region with a European population. As a result, thousands of immigrants arrived by ship, mostly Italians and Germans, to clear an area that was almost entirely unexplored. The region has very specific sociocultural characteristics, such as a strong German and Italian influence, large production of grapes and wineries, along with developing its tourist and manufacturing industry for a wide vanity of products.

The Metropolitan Region of the Serra Gaúcha was created by Complementary Law nº 14,293 of August 2013, being constituted by the municipalities of Antônio Prado, Bento Gonçalves, Carlos Barbosa, Caxias do Sul, Farroupilha, Flores da Cunha, Garibaldi, Ipê, São Marcos, Nova Padua, Monte Belo do Sul, Santa Teresa and Pinto Bandeira. All municipalities corresponded to the Northeast Urban Agglomeration, created in 1994, plus the municipalities of Ipê, Pinto Bandeira and Nova Roma do Sul.

The proximity between Serra Gaúcha and the Metropolitan Region of Porto Alegre, the State Capital, was another determining factor to the boundaries of the Serra Gaúcha. Nova Petrópolis, for example, is less than 100 kilometers from the state capital and about 35 kilometers from Gramado.

The evident economic interaction between the regions facilitates investments in profitable properties that require guarantees of large cash flows, allowing shorter periods of capital recovery, for Returns on Investments, (ROI). If one were to invest wisely in real estate, it is important to bet on prosperous cities, rich in culture, with stable per capita income, encouraging human development indices, and strong tourist activity. The municipalities of the Serra Gaúcha inevitably are currently profitable choices and will become more so with the planned ecosystem developments.

The education and quality of life in the region are reflected in the care and willingness of the population, in general, to keep public and private spaces clean and in order. These activities generate a culture of good manners and a lower cost for everyone with repairs and maintenance due to carelessness or inappropriate use. The municipality of Carlos Barbosa is the best example, as it ranks as a leader in quality of life according to a survey by the Fundação de Economia e Estatística (FEE), which in its report highlighted that all classrooms of the 14 schools in the municipal network of schools had air-conditioning devices. The small town of less than 30,000 inhabitants still has six state high schools in the public network and seven other private institutions.

Among the more prominent cities in the Serra Gaúcha are the metropolitan cities of Gramado and Canela. While the first is the capital of mountain tourism, the second takes advantage of its proximity of only 9 kilometers away, and the countless natural beauties, to also enjoy. The presence of visitors, although the destination is not as popular as its neighboring municipality, however, results on other hand, a good business opportunity in the real estate sector in Canela.

The city of Canela offers infrastructure, entertainment, gastronomy, beautiful landscapes, welcoming people, and safety (last year, there was not even a record related to firearms in the city, according to the Department of Public Security of Rio Grande do Sul). In the municipality of Canela, opportunities continue to arise for those who want to invest in profitable properties that offer flexible business models. The Canela City Hall reported that between 2018 and 2019, 210 projects for new ventures received approval to get off the ground. The Banco Central do Brasil (BCB) Selic rate is at its lowest level in 20 years. More importantly, it opens the possibility to create letters of credit for development, which allows discounts on taxes and governmental priorities. This makes credit for real estate cheaper, generating a boost in the economy. Signs of recovery have already been noticed by the Brazilian Association of Real Estate Credit Entities (ABECIP), which is expecting a continued favorable market for the future. With 110 large-scale projects approved in 2024, according to the City Hall, Gramado once again emerges as an economic leader that Serra Gaúcha has shown to be in recent years. The strength of tourism in Gramado and Canela has benefited from the economic diversity thanks to the performance of local industry, agriculture, and commerce.

ECONOMIC PROFILE OF SERRA GAÚCHA

The economy of Serra Gaúcha is growing at an accelerated pace, leading the State of Rio Grande do Sul to gain an important share in the performance of the national economy. The State occupies the fourth largest position among Brazilian states, participating with 6.4% of the composition of the Gross Domestic Product National (**GDP**). This is largely due to the combination of agricultural activities with industrial transformation, benefiting the entire population of Rio Grande do Sul (RS).

The Serra Gaúcha Metropolitan Region has the city of Caxias do Sul as its hub, being the largest urban center in the region and the second most populous city in the State. The Serra Gaúcha Metropolitan Region forms, with the Porto Alegre Metropolitan Region, a north-south occupation axis with very dynamic economic characteristics. In 2020, according to population estimates, the group of 14 municipalities has a population of 864,018 inhabitants. The table below identifies the population, area, demographic density and urbanization rate of the Serra Gaúcha metropolitan region.

Ano de inclusão na RMSG	Municípios	População Total 2020 (1) (habitantes)	Área 2019 (2) (km²)	Densidade Demográfica 2020 (hab/km²)	Taxa de Urbanização 2010 (3) (%)
	RMSG	**864.018**	**4.663,7**	**185,3**	**91,62**
2013	Antônio Prado	13.045	348,2	37,5	72,00
2013	Bento Gonçalves	121.803	273,6	445,2	92,3
2013	Carlos Barbosa	30.241	230,7	131,1	79,36
2013	Caxias do Sul	517.451	1.652,4	313,2	96,3
2013	Farroupilha	73.061	361,5	202,1	86,5
2013	Flores da Cunha	31.063	273,6	113,5	76,88
2013	Garibaldi	35.440	167,6	211,5	88,67
2013	Ipê	6.689	599,4	11,2	51,58
2013	Monte Belo do Sul	2.530	69,7	36,3	28,84
2013	Nova Pádua	2.558	102,7	24,9	29,88
2018	Nova Roma do Sul	3.717	149,1	24,9	47,41
2013	Pinto Bandeira*	3.036	104,8	29,0	-
2013	Santa Tereza	1.726	74,1	23,3	36,5
2013	São Marcos	21.658	256,4	84,5	87,54

Source: IBGE (1) Population 2020. (2) Territorial Areas 2019 (3) There are no data available for urban population in the 2020 Population Estimates. Municipality installed in 2013

There are 32 companies from the Serra Gaúcha among the 500 largest companies that make up the corporate elite in the states of Rio Grande do Sul, Santa Catarina, and Paraná. Serra Gaúcha once again confirms its prominent role in the business elite of southern Brazil. In the region, they lead the way among the largest organizations in the South of the country, Empresas Randon, Marcopolo and Tramontina.

In 2019, the Randon conglomerate recorded net revenues of R$5.092 billion, an increase of 19.47% over the previous year. Marcopolo and its affiliates obtained a result of R$ 4.314 billion, an increase of 2.79%. Tramontina achieved net revenue of R$3.882 billion, an increase of 4.44% over 2018. In total, the corporate elite of the South added up to R$ 620 billion in sales.

Soprano, (controlled by the Paco Indústria Metalúrgica holding), headquartered in Farroupilha, had a net revenue of R$ 416 million in 2019, a growth of 13%, Soprano highlights as differentials to ensure the position in the first row of the corporate cast with constant investments in innovation, new businesses, and with adequate structure for each movement. With more than 65 years of history, the company operates strongly in the civil construction, electrical materials, furniture, and housewares markets. It also has units in Caxias do Sul and Campo Grande/MS. Outside of Brazil it is present in Mexico City, with a business office in Shanghai, China, via another differentiator for the company. In view of these companies in the Serra Gaúcha they are among the top 500 Brazilian companies and the largest in the South of Brazil:

1. Randon Companies, automotive sector, Caxias do Sul
2. Marcopolo and Subsidiaries, automotive sector, Caxias do Sul
3. Grupo Tramontina, metallurgy, Carlos Barbosa
4. Grendene S/A, leather and footwear, Farroupilha
5. Rodoil Distribuidora de Combustíveis S/A, commerce, wholesale & retail, Caxias do Sul
6. Paludo Participações S/A, plastic and rubber, Nova Prata
7. Colombo, commerce, wholesale and retail, Farroupilha
8. Todeschini S/A, furniture, Bento Gonçalves
9. Fuga Couros S/A, leather and footwear, Marau
10. Unimed Nordeste, health, Caxias do Sul
11. Pettenati S/A, textile and clothing, Caxias do Sul
12. Madeira Giacomet S/A, wood and forestry cultivation, Caxias do Sul
13. Paco Ind. Metalúrgica S/A (Soprano), metallurgy, Farroupilha
14. Tondo S/A, food and beverage, Caxias do Sul
15. Ceran – Cia. Energ. Rio das Antas, energy, Bento Gonçalves
16. Fund. univers. of Caxias do Sul (UCS), education, Caxias do Sul
17. Madem S/A, furniture, Garibaldi
18. Salton Participações S/A, food and beverage, Bento Gonçalves
19. Voestalpine Meincol S/A, metallurgy, Caxias do Sul
20. Bertolini S/A, furniture, Bento Gonçalves
21. Moinho do Nordeste S/A, food and beverage, Antônio Prado
22. Valeo Climatization, electromechanical, Caxias do Sul
23. Unicasa Indústria de Móveis S/A, furniture, Bento Gonçalves

24. Mogasa – Moinhos Galópolis S/A, food and beverage, Caxias do Sul
25. Mecasul Automecânica S/A, commerce, wholesale and retail, Caxias do Sul
26. Pisani Plásticos S/A, plastic and rubber, Caxias do Sul
27. Crediare S/A, financial, Farroupilha
28. Intral S/A, electronics, Caxias do Sul
29. Neogás do Brasil, natural gas, oil and petrochemicals, Caxias do Sul
30. Metasa S/A, metallurgy, Marau
31. Sociedade Educacional Santa Rita S/A (FSG), education, Caxias do South
32. Newsul S/A, emb. and plastic and rubber components, Bento Gonçalves

Source: *Amanhã Magazine and PWC Brazil*

PARTICIPATION OF INDUSTRIES IN THE SERRA GAÚCHA

The industry's contribution to the Brazilian economy was presented through a study prepared by FIERGS. The importance of the industry for the economy of Brazil evidenced through several economic variables. Starting with the total value of the 2021 GDP of the industry in Brazil, which is R$ 1.3 trillion, representing 20.4% of the total value of the national GDP, to which, this data has a multiplier effect.

The industry generates 9.7 million formal jobs with an average salary above the national level. In this Brazilian scenario, the Rio Grande do Sul industry corresponds to 6.8% of GDP (R$ 89 billion) and employs 777,300 workers, representing 8% of formal jobs in the country.

When the study arrives at the regional industry sectors, it presents the important figures related to the participation of industries in the Serra Gaúcha region, which, with a GDP of R$ 9.5 billion, represent 10.6% of the industrial GDP of RS. With more than 6 thousand industrial establishments, the region employs 104.8 thousand workers and generates R$ 2.4 billion a year in taxes – 11.3% of the total collected by the industry in RS. According to the vice president of SIMECS - Union of Metallurgical, Mechanical and Electrical Material Industries of Caxias do Sul and Region, Rúben Antônio Bisi, we are in a state at the extreme of the country, where the logistics problem is greater.

> *“Freight values weigh a lot for the Rio Grande do Sul industry. We are the third largest consumer of steel in the country and all our cargo demand takes place today by highways. The freight exemption ends in 2022. We need to extend it until 2032", he claimed.*
>
> *For Rúben Bisi, the state needs better logistics to develop. In this sense, he suggested as an alternative the resumption of the railway infrastructure, through a railroad linking RS to SP, as well as highlighting the importance of another port on the coast gaucho, structuring investments that will help reduce freight costs. He also highlighted issues related to excessive bureaucracy to release licenses and the need to simplify processes.*
>
> *Finally, reaffirming that it is the industry that pays most of the taxes, he emphasized how fundamental it is to have a federal and state industrial policy to rescue the leading role that industry deserves and needs”.*

The Municipality of Bento Gonçalves, since its origin, has distinguished itself in furniture production in the state, becoming the furniture hub of excellence in Rio Grande do Sul and Brazil. The furniture sector in Bento Gonçalves is one of the oldest in the country. As the sector developed in the region, the consolidation of the furniture hub was observed from the emergence of new ventures in the municipalities of Antônio Prado, Flores da Cunha, Farroupilha, Garibaldi, São Marcos, and Caxias do Sul. The development of the furniture sector in Serra Gaúcha has brought important benefits to the region.

The main reason is investing in the various links in the furniture chain including; machinery and equipment, chemical products, wooden sheets of plywood, and laminates, along with components; of plastic, and metal parts, among others. The municipality of Bento Gonçalves is a reference for the whole country when it comes to furniture hubs, from where furniture is exported all over the world. The primary destination for furniture produced in Bento Gonçalves goes to the United States. Although Argentina no longer appears in the ranking of the 10 largest furniture importers, other destinations for local production are Chile, Uruguay, Peru, and the United Kingdom.

One of the more traditional industries “footwear,” is clustered in Rio Grande do Sul. It has been changing its profile on the national scene. The Serra Gaúcha, according to official data from the Brazilian Association of Footwear Industries (Abicalçados), currently has 144 shoe factories identified. Fifty-nine of these companies are located in Farroupilha, which also accounts for the largest number of direct jobs in the sector in the region: and estimated 2,723 out of a total of 8,129. Also according to Abicalçados, statistics the footwear industries in this cluster were responsible, for sending 1.01 million pairs abroad, which generated revenues of US$ 14.38 million during 2013. That performance of the segment in exports represented an increase of 20.74% in terms of volume when 844,450 pairs were shipped, responsible for revenue of US$ 12.77 million.

Despite the positive numbers in exports, the local segment suffers from several factors. These include unfair competition, mainly from imported items, lack of qualified labor, and the famous Brazilian cost, comprised of; inadequate infrastructure, high tax burden, and outdated labor legislation, among other factors. Even with all the mishaps, the footwear manufacturers in the beautiful Serra Gaúcha continue to rely on the quality of their products and innovative marketing strategies deployed to maintain competitiveness, both in the domestic market and with regard to exports.

Known throughout Brazil, Grendene, whose head office is in Farroupilha as an important producer of men's shoes, especially those made of leather, the municipality of Farroupilha intensifies a change in profile that began in 2006. Since that year, marketing aimed at men have given way to products for women, a segment recognized as much more promising. The priority natural raw material was also gradually replaced by synthetic ones, which generate better use and reduce costs. According to data from the Union of Footwear and Artifacts Industries of Farroupilha (SINDICALFAR), the city currently has 74 companies installed, including footwear factories, workshops, and artifact industries.

The Serra Gaúcha is also an important hub in the metal-mechanical industrial segment. Steel is deeply linked to the region's history and is responsible for much of the economy. Today, many of the companies in this segment are market references at national and international levels. Serving high-level companies that are responsible for a large part of the Rio Grande do Sul, and Brazilian economy able to meet large demands for iron and steel.

The region has high quality raw materials for the manufacturing of various products ranging from automotive components, machinery equipment, and metal products are among many others that are essential to many industries. (SIMECS), the Union of Metallurgical, Mechanical and Electrical Material Industries of Caxias do Sul and Region, covering 17 municipalities in Serra Gaúcha, represents more than 3,300 small, medium and large companies (in the whole of RS, there is an average of 9,000 companies) and, according to FIERGS (Federation of Industries of Rio Grande do Sul) the segment, in the entire state, is responsible for 37.6% of the Industrial GDP of Rio Grande do Sul.

Within the metalworking industry, there is an accounting for 52,000 jobs generating annual sales estimated at around R$ 23 billion. On several fronts of economic and social activities, the total GDP of the municipalities covered by SIMECS is among the highest in the entire state of Rio Grande do Sul. One of the Union's main focuses is to act as a driving force for the competitiveness of the Metallurgical, Mechanical and Electrical Material industries in Caxias do Sul and the region.

The intention is, creating a new route covering the two regions, Hortênsias and Campos de Cima da Serra. In December, mayors and their representatives signed the protocol at a meeting held in Canela. An initiative, therefore, involving the 14 municipalities, it intends to build a new rail network with international investments without the involvement of the public power. The project foresees the construction of a train to transport cargo and passengers with approximately 372 km in length, aiming at the tourist potential of the region.

The MobiCaxias entity in the municipality of Caxias do Sul has an Infrastructure Chamber provided the opportunity to contact The US Trade and Development Agency (USTDA), an American fund that helps companies around the world to develop development projects. Thus, this US$ 2 million contribution agreement signaled by the USTDA must be signed between MobiCaxias and the American fund to carry out feasibility studies in order to attract investment from companies.

The next actions involve the conclusion of the infrastructure hearings in mid-March 2025, with the executive and legislative bodies of the other cities that have expressed interest in joining the primary 14 municipal railway instillations. So far, seven cities within Campos de Cima and Hortênsias have been approached. These municipalities were receptive to the advances, as laws had been created designating areas for multimode transportation stations to be installed.

The next municipalities organized–for instillation of the stations are in Gramado, São Francisco de Paula, Bento Gonçalves, Garibaldi, Carlos Barbosa and Farroupilha. The expectation is that by the middle of the year all municipalities will be defined and with legislation on rail access. It is expected that by the end of second quarter of the year 2025, the revised engineering and environmental studies will have been concluded. From there, the TENDER biddings can be issued for construction and materials of the projects will commence.

GDP OF THE FIRST 14 MUNICIPALITIES FOR DEVELOPMENT

RS GDP RANK	MUNICIPALITIES 2023	GDP (R$ 1,000)	GDP RS M/Share	PROJECTED GDP 2027	PROJECTED GDP 2032	PROJECTED GDP 2037
2	Caxias do Sul	31,688,460	5.45%	$33,272,883.00	$35,435,620.40	$37,916,113.82
14	Bento Goncalves	7,498,499	1.29%	$7,873,423.95	$8,385,196.51	$8,972,160.26
21	Farroupilha	4,398,447	0.76%	$4,618,369.35	$4,918,563.36	$5,262,862.79
33	Carlos Barbosa	3,529,578	0.61%	$3,706,056.90	$3,946,950.60	$4,223,237.14
35	Vacaria	3,245,665	0.56%	$3,407,948.25	$3,629,464.89	$3,883,527.43
40	Garibaldi	2,997,963	0.52%	$3,147,861.15	$3,352,472.12	$3,587,145.17
45	Gramado	2,658,018	0.46%	$2,790,918.90	$2,972,328.63	$3,180,391.63
75	Canela	1,595,255	0.27%	$1,675,017.75	$1,783,893.90	$1,908,766.48
106	São Francisco de Paula	1,026,513	0.18%	$1,077,838.65	$1,147,898.16	$1,228,251.03
108	Nove Petropolis	972,684	0.17%	$1,021,318.20	$1,087,703.88	$1,163,843.15
149	Bom Jesus	613,622	0.11%	$644,303.10	$686,182.80	$734,215.60
279	Cambara do Sul	242,576	0.04%	$254,704.80	$271,260.61	$290,248.85
362	São José dos Ausentes	155,631	0.03%	$163,412.55	$174,034.37	$186,216.77
447	Jaquirana	94.041	0.02%	$98.74	$105.16	$112.52
	Total	**60,716,952**	**10.47%**	**$63,490,742.74**	**$67,791,675.39**	**$72,537,092.66**

Source: Gross Domestic Product of Municipalities (IBGE, 2023). **NOTE:** Update data occurs every 5 years. Projections are bass upon the demographic shift expected in 3 and 5 year intervals based upon MobiCaxias 2040

SIGA MOBILIDADE URBANA - THE CONDUCTOR

SIGA Mobilidade Urbana, (SIGA) is the orchestrator, the coordinating conductor of the railway transportation infrastructure systems. SIGA is a privately held corporation with partners, and affiliates that maintain strong relationships with decision makers at all levels of the Brazilian government, the region's business and academic communities, as well as civil society and other nonprofit organizations. In addition, the company's leadership has and continues to build relationships and partnerships on a global basis. SIGA's leadership clearly understands that the success of the multi-pronged transportation system designed to benefit the 72 Serra Gaucha region municipalities, and its population depends upon identifying and securing the necessary expertise, technological advances, and innovations to build, sustain, and further develop the system.

SIGA's approach over the past three years has been to address complex infrastructure issues that may have an impact upon a number of vastly different ecosystems. At the same time and of equal importance is balancing the socioeconomic factors that improve the quality of life for today's population as well as planning for the projected population expected in 2040.

In developing plans for the SERRA GAÚCHA REGIONAL TRAIN, we evaluated potential contenders interested in becoming offerors of financing instruments, as well as candidates seeking to become bidders for upcoming contracting opportunities. SIGA leadership believes we have selected the resources best suited for involvement in the project based upon the offerors and candidates: previous experience; best practices; technological innovations; research; ongoing and potential commercial partners, and the financial resources to realize these elements with MobiCaxias' guidelines. Most importantly, our key collaborators for the infrastructure developments were identified.

SIGA also signed a contract to assist CERILUZ Group, a regional power generation and distribution company in their development venture as a partial component to establish regional ecosystems. These elements are all integral components to ensure the social and economic developments of the proposed ecosystems. Our goal is to take advantage of potential carbon credits, natural and renewable resources, and the techniques and technologies found in the relationships with Safeweb Institute's Safe Carbon CO_2 and the development of CarbonSat located in Southern Brazil, to minimize the carbon footprint of CO_2 emissions for future generations.

Following our thorough evaluation of all interested collaborators, SIGA leadership selected and formed primary level alliances with the Marcopolo Corporation, the Randon Corporation, and Formula 1. Additionally, SIGA vetted the next level contractors and selected the Gerdau Group, GCA Construction, and CREC-10 in a merger to complete the transportation infrastructure. Of those having a vested interest and who will play active roles in project development are: MobiCaxias; KPMG; GRAVINA Advogados; Banco do Brasil; Universidade de Caxias do Sul, and the 14 municipal governments where the facilities will be located. We are also associated with organizations focused on trade and export opportunities with organizations such as; Pacto Verde, JBS Corporation, RXM Trading Company and Copersucar Trading, to name a few. To date, more companies have been approved and will be included as the project develops.

Our approach over the past 3 years has been to select and secure sustainable ecosystems to create and maintain the infrastructure of rail trains, airport systems and the Distribution Logistics Center (CDL) for; transportation systems, energy generation, agricultural viability, aquifers, remediation and technological innovations. The objectives of our efforts are designed to increase opportunities for health care, education and commerce for sustainability in the state of Rio Grande do Sul (RS), Brazil.

In addition to the resources of international development banks, SIGA will consider other avenues to secure financing beyond the capital invested by SIGA Mobilidade's top executives. Even In spite of the recent disastrous climatic events that struck the state, we are prepared to execute the full development plan and welcome a blend of financing and investment resources that are mutually beneficial to developing the regional ecosystems.

OVERVIEW OF THE TRAIN PROJECT

The development of a regional train for the Serra Gaúcha is an old initiative, whose time has come to stimulate growth within and around the Serra Gaúcha. Findings from previous studies to reactivate the railway network in the municipalities of the Uva e Vinho winery region were not pursued. Reasons included inconclusive feasibility studies, an inability to secure financing sources without an avenue to assure even marginal returns on investments. Consequently, the earlier train project was unable to move forward.

Within the last 8 to 10 years, a different, more holistic approach to addressing the same issues of trans cargo shipping has emerged. The idea of expanding the scope of the transportation models within the supply chains would gain momentum to reestablish the Serra Gacha Regional Train lines. The newly proposed route for the train will travel throughout 14 municipalities in the region to accommodate the projected demographics for 2040. The objective is to increase the regional GDP and the population's quality of life.

To this end, Instead of reusing the deactivated tracks, SIGA leadership has identified a new route which covers several more districts of Uva e do Vinho, Hortênsias, and Campos de Cima da Serra, districts that were not included in the earlier plans. The stations for the 14 municipalities are now cover the tourist sector; the metals, mechanical and industrial sectors, wide-ranging agricultural areas; woodworking and other growing industry sectors where large-scale production and manufacturing of products and goods are produced.

The Serra Gaúcha Regional Train is important initiative aiming to connect 14 municipalities in Rio Grande do Sul, promoting the economic and social development of the region. With a length of 372 km, the system forms a mobility network that covers iconic cities such as Bento Gonçalves, Garibaldi, Carlos Barbosa, Farroupilha, Caxias do Sul, Nova Petrópolis, Gramado, Canela, Cambará do Sul, Bom Jesus, Vacaria, São José dos Ausentes, São Francisco de Paula and Jaquirana. The route will be marked by bridges and viaducts, ensuring the efficiency and safety of operations. The train system will also connect São Francisco de Paula to the port in Arroio do Sal, which in the future will have a railway line connecting Arroio do Sal to Terra Roxa, in the state of Paraná. This innovative project not only facilitates passenger transport, but also enhances cargo logistics, with specific stations for each of these segments. The infrastructure includes the construction of bridges and viaducts, ensuring a safe and efficient journey.

Through partnerships initiatives with Siga Mobilidade Urbana, the Serra Gaúcha Regional Train represents a commitment to sustainability and regional development, promoting a viable alternative to road transport. In addition, Serra Gaúcha Mobility and GROTTO stand out in the coordination and promotion of this project that aims to transform the way people and goods move around the region. The Regional Train is committed to promoting the reduction of carbon emissions, contributing with carbon credits and reinforcing its responsibility towards safeguarding the environment.

By uniting communities, the Regional Train will not only improves mobility, but also enhance the culture and tourism of Serra Gaúcha, contributing to a more integrated and accessible future for all. The Serra Gaúcha Regional Train represents a significant step towards a more connected and sustainable future, offering an efficient, accessible and environmentally responsible transportation alternative for all Gauchos.

The train project will also benefit one third of the population of Rio Grande do Sul, in a contingent of 72 municipalities that encompass one-third of the state's GDP. The train project will generate 3,000 direct jobs and approximately 5,000 jobs, indirectly. The train will mitigate 20% of carbon emissions in Rio Grande do Sul by changing the transportation system in Serra Gaúcha.

The project is a consensus of the 14 municipalities, the State and the Union of Serra Gaúcha through protocols of **BYLAWS OF THE INTERMUNICIPAL CONSORTIUM REGIONAL TRAIN OF SERRA GAÚCHA** signed between the parties. There is no provision of capital by the municipalities, the State or the Union only development incentives and appropriation of lands. The Gaúcha Regional Train infrastructure project is being instituted to accommodate the projected demographics for an expansion of the region's GDP index. The train project is being developed in conjunction with the Canela Hortênsias Region Airport and Logistic Center.

This infrastructure development projects will support a multipurpose transportation system for the transport of products produced in the Serra Gaúcha region. The transportation of the indigenous workforce is required for an expansion of the region's GDP, capable of expanding in the regional and global markets for tourism, industries,' passenger transportation. These considerations to accommodate the demographic expansion have been slated for the 2040 projected growth in the State of Rio Grande Do Sul. The Capital Expenditures (CapEx) are identified in the project's budget of $1,995,957,624.00 USD to be applied as designated, in the projects' equity, funds usage, and proposed distribution via the schedule of deliverables on pages 92 to 100.

The primary objective is to stabilize the transport and delivery systems of the supply chain for the delivery of goods to proposed export facilities. Second, this endeavor will ensure more timely deliveries and volumes of products, many of which are categorized as perishable. Third, the development will minimize the degradation and fatalities of the current road infrastructure by decreasing the number of heavy transport vehicles carrying goods over the road systems not designed for those loads. Lastly, with a diminished carbon emission from the current mode of supply chain operations, there will be a stable foundation for implementing viable regional ecosystems. The proposed railway system is being designed to allow for achieving the following results:

- Sustain the projected demographics of the population in the region, accommodating a greater influx of tourism and minimalizing the carbon footprint from everyday activities via a matrix of interconnected ecosystems of infrastructure, industries, societal and environmental adaptations.
- Accommodate and become an interracial component to the tourist industry as an attraction that will motivate and allow tourists to circulate throughout the region.
- Reduce the cost of transporting natural raw materials from forestry, mining, agriculture and industrialized value-added products from the region.
- Increase the industrial and commercial competitiveness of companies in the region.
- Reduce the flow of vehicles on the region's roads, whether cargo or passengers.
- Reduce the emission of greenhouse gases emitted by the transport network in the region.
- Reduce the travel time between cities.
- Increase international commerce being established through our global consortia.

OBJECTIVES AND SUCCESS CRITERIA

Objectives	Success Criteria
Decrease the volume of cargo transported by ground transportation modal	Rail module should reach 15% of transport loads by 2035
Serve as a viable means of transportation for handling passengers	Movement of an estimated 8 million passengers by 2035
Generate funds through the issuance of bonds via Carbon Credits for development	Generation of US$ 1.5 billion in carbon credits by passengers 2035
Provide quality service to carbon credit users (passengers, cargo and tenants)	User satisfaction rate above 80% and punctuality above 95%

MILESTONE CHECK LIST

First phase	Fundraising preparation to identify funding secure resources and obtaining procedures to obtain carbon credits usage for development projects.	**2022-24**
Second phase	Elaborate and promote the project's economic viability, completion of engineering and negotiation of the private lands to be acquired.	**2022-25**
Third phase	Purchase of equipment, i.e. locomotives, cargo and passenger cars and implementing construction of stations and railway line.	**09-2025**

PRIORITY REQUIREMENTS AND ASSESSMENTS

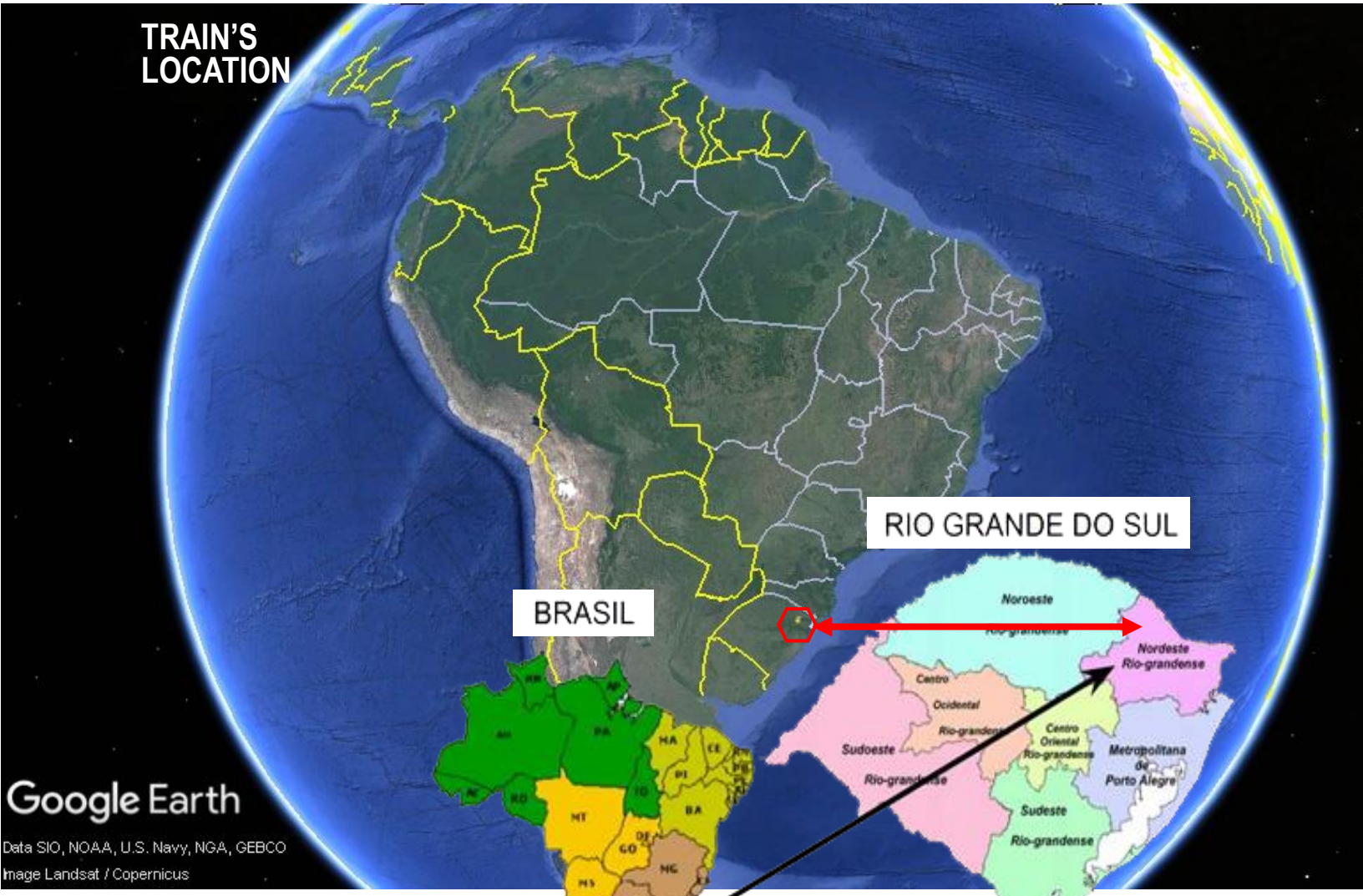
1. Legislation on railways infrastructure remains unchanged with 99 year concession. ✓ Completed
2. Investors must have their return guaranteed. By Law No. 10,303, of 10/31/2001) ✓ Completed
3. There is a positive view of the project through the Public Hearings convene. ✓ Completed
4. Industrial entrepreneurs realize how the railroad will improve their competitiveness in regional and international markets, from the industry sectors convening ✓Completed
5. The tourism sectors realize the advantages of having more than one interconnected modes of transporting more tourist and employees, confirmed via the Associations. ✓Completed
6. The 14 Municipal Governments have approved the development in each community. ✓Completed

ANALYZATIONS & OBSERVATIONS

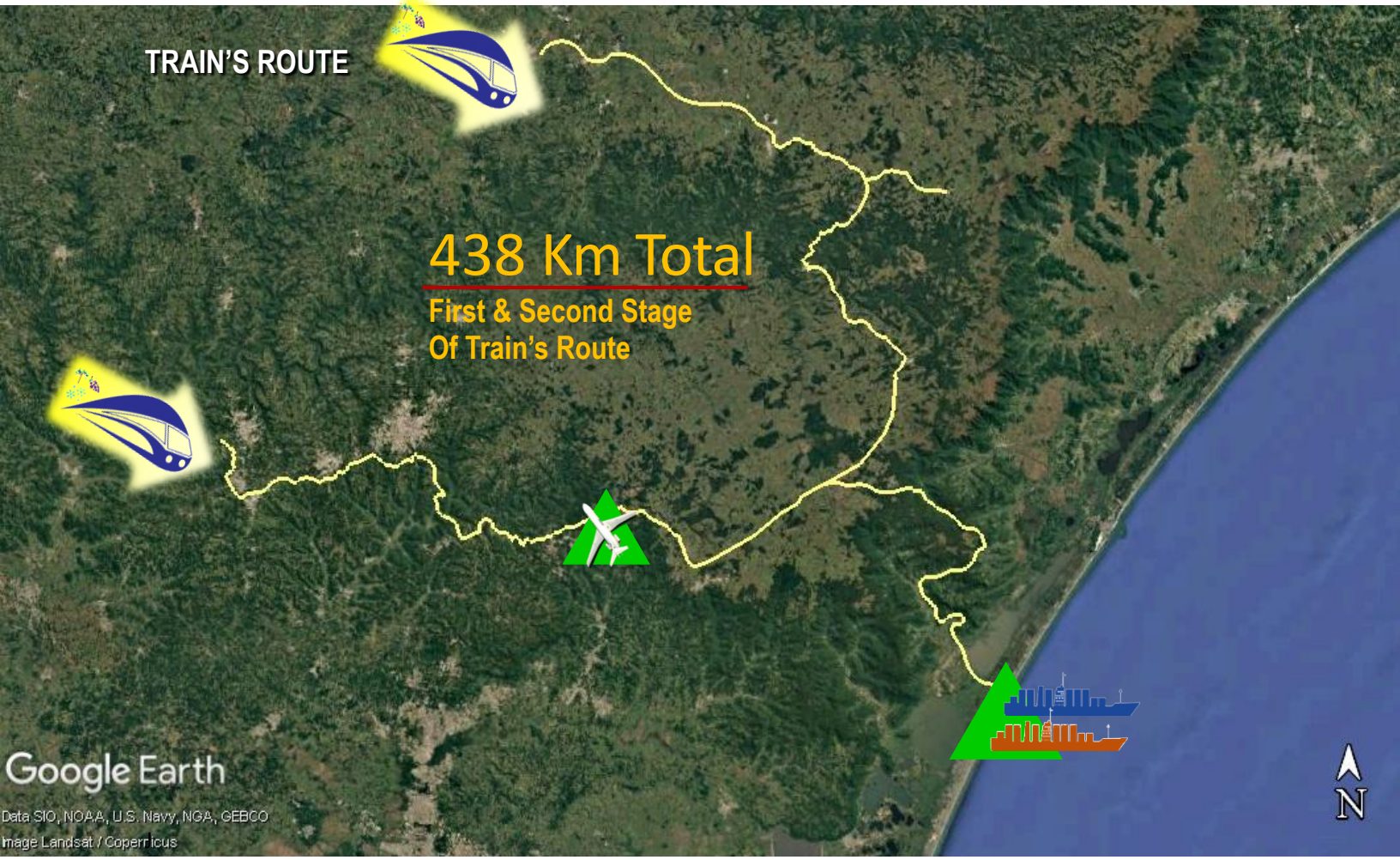
A. Due to an instinctive desire for political gain, there will, and has been politicians who have made attempts to obstruct the progress of the project, but to no avail.
B. Investors and population will be more supportive if the project is environmentally sustainable, financially feasible and viable for the communities.
C. Due to the volume of resources involved, the project must have transparence and be compliant in all regulatory procedures across Local, State, and Federal governments.
D. The railroad should be limited to the Serra Gaúcha region of the state for the first 10-15 years.
E. The manufacturing of as much of the equipment to be used on the railroad to be contracted by companies located in Serra Gaúcha region.

ASSESSMENTS OF RISK

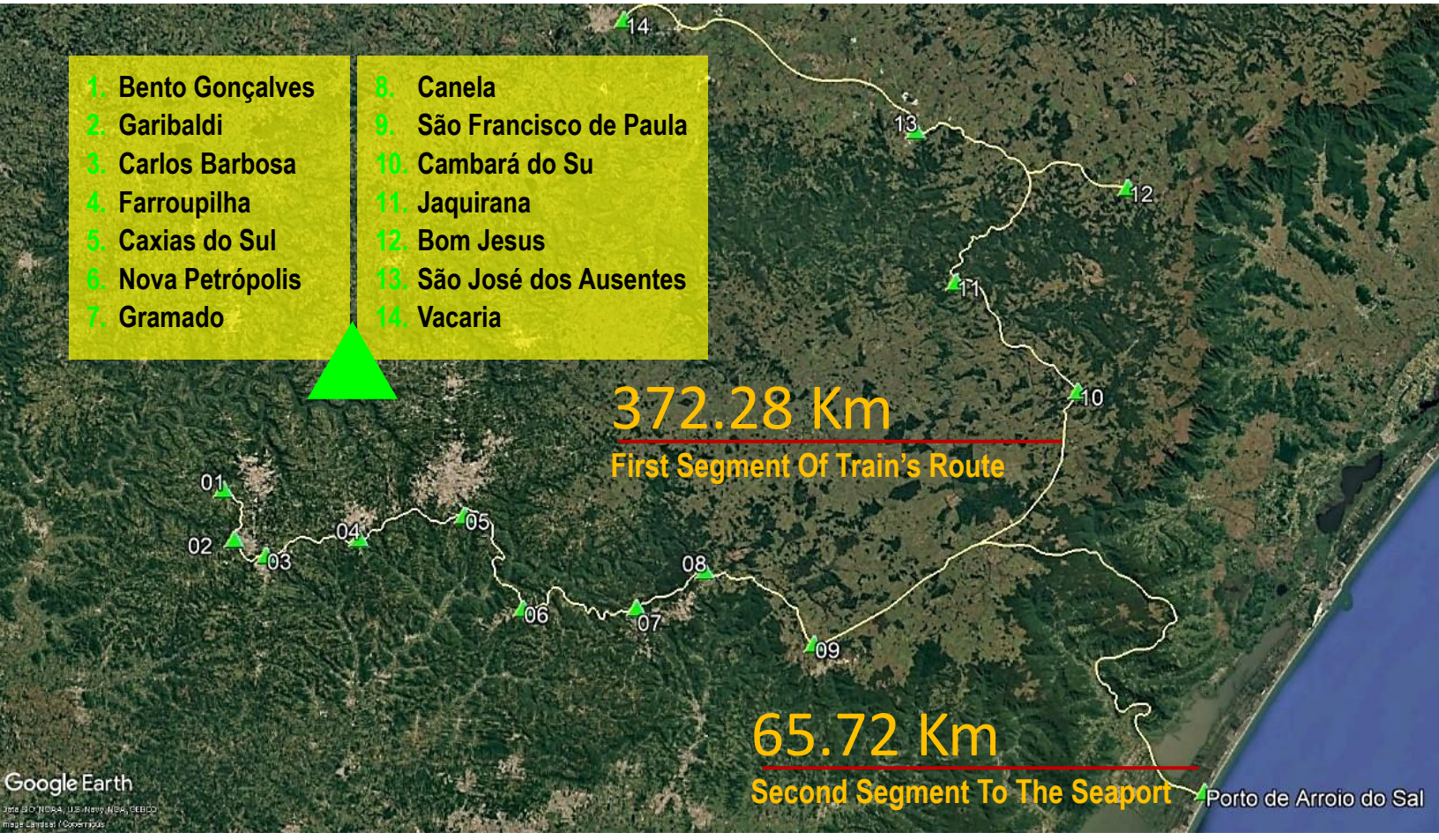
- Not raising enough funds to complete the work (-)
- Governmental change of legislation preventing the autonomy of private companies in the railway sector. (-)
- Low demand for freight transport (-)
- Low demand for passenger transport (-)
- Demand for cargo transportation exceeds available capacity (+)
- Demand for passenger transport exceeds available capacity (+)
- Work load and cost becomes much more expensive than expected (-)
- Uncalculatable risk associated with Climate Change conditions (-)

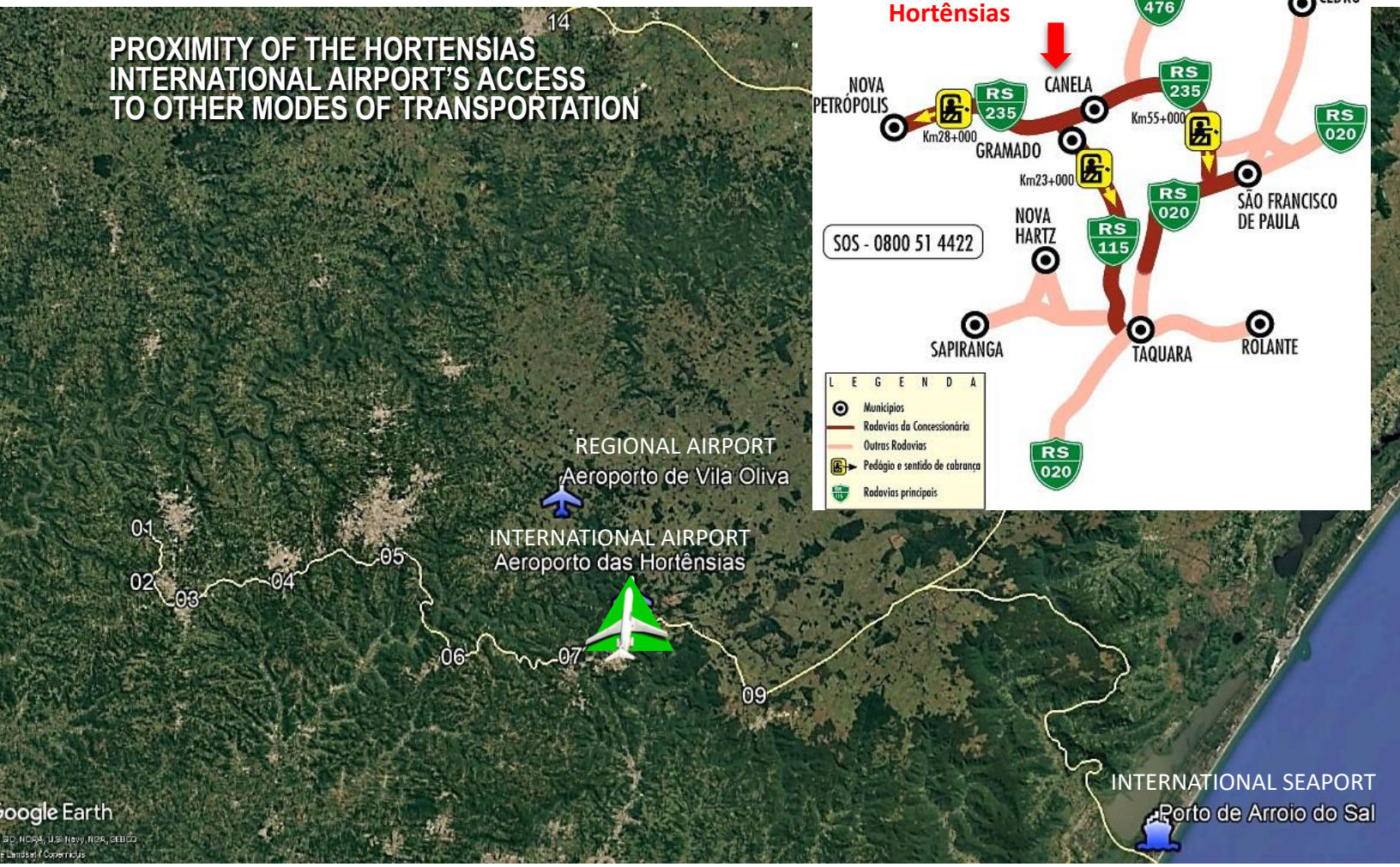


Trem Regional da Serra Gaúcha

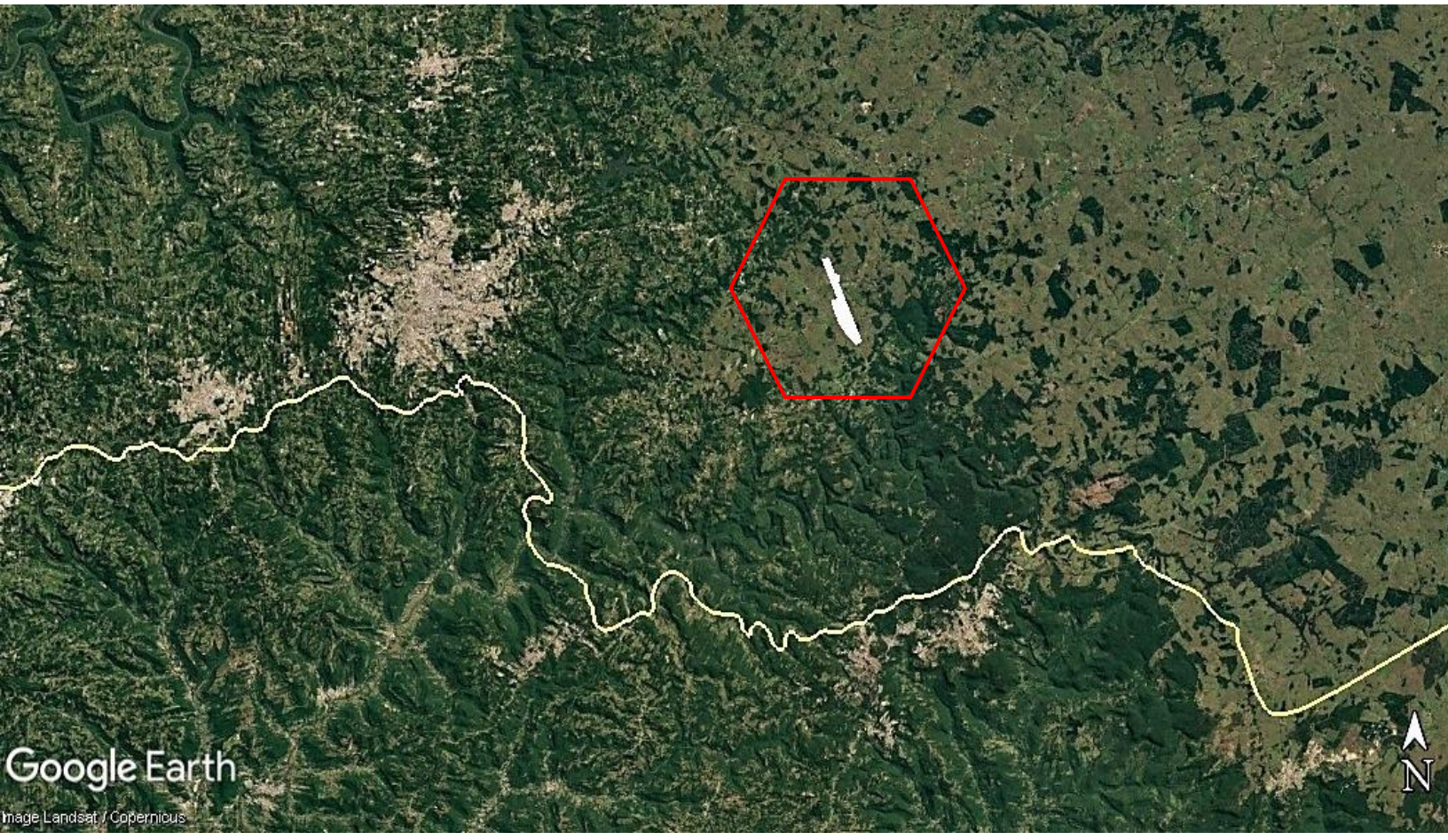


FIRST 14 TRAIN'S STATIONS





THE GAÚCHA MOUNTAIN'S INTERNATIONAL AIRPORT AND CDL COMPLEX



THE PRIMARY PROTAGONISTS & DRIVERS

CAXIAS DO SUL

The importance of Caxias do Sul, the largest municipality in the Serra Gaûcha region, along with its major similarly named city, Caxias do Sul, is clear as together, they are the region's epicenter and population hub. What also is obvious and undeniable is that the region's future development must include its largest municipality, and the city which serves as the State of Grande do Sul's principal business center. Rightly, assumptions can be made that further growth and development of the municipality and city must depend upon attracting an even larger population and diverse businesses along with the required supporting resources. Regrettably, neither the municipality, nor the city is prepared to accommodate the 2040 projected expansion.

Currently, the city has a large population and faces mobility, solid waste collection, and other problems. Attracting more people would only exasperate the problems. Caxias do Sul must improve its public service delivery systems to ensure and raise the region's living standards and its GDP *per capita* through regional growth and development. As is stated my many, "The larger the population…the greater the problems associated with its development." The time is long overdue for Caxias do Sul to grow with the support of its neighboring cities. This does not mean stopping growth or expelling people from the city, but rather decentralizing growth and redirecting some development initiatives to small, neighboring cities.

The Serra Gaûcha region accounts for 16% of cargo moved internally. This percentage indicates high integration, but it could be even higher, especially considering the amount of existing industrial products. As example, Caxias do Sul contains the largest number and diverse companies due to the fact that it has a population able to assemble subsystems developed and aggregated by third parties in neighboring cities. Caxias do Sul the municipality has the potential to increase its prominence by becoming the regional hub for the assembly and export of products located within the region. It should be mentioned here that the smaller municipalities must have a "network relationship" interacting, in turn, with their neighboring municipalities. To achieve this goal, a new and normal culture of cooperation needs to be established so that smaller companies begin to collaborate with larger ones for mutual benefit. It is much faster and less expensive to improve a subsystem that is the specialty of a small company than for a large company to improve it on its own. This is because small companies can focus on their products. What is up to large companies is to demand quality and technological development. The aircraft industry represents the classic example. It takes many companies to build a single aircraft. No one company manufactures the aircraft's components. And lately, not even the fuselage is manufactured by a single company

For these and other reasons, the Caxias Do Sul municipality must improve its roadway network with the region and, if possible, promote regional public transport by train, VLT or Maglev Cobra (developed by UFRJ) which would be the superior option for the region, however, like the others, it is expensive.

In addition to the road network, it is necessary to establish a logistics hub that converge all modes of transport in one place. The best options are to make usage of the region airport, while in preparation for the future Serra Gaúcha International Airport. There, a railway terminal can be installed which connects to the national railway, road network, and to the future Porto do Litoral Norte in Arroio do Sal. This scenario allows the region and companies to streamline and organize themselves by facilitating access to the national and international marketplaces. However, as stated previously, this is a massive amount of work to be completed by the Caxias do Sul municipality as the sole entity. The introduction and growth of interconnectivity will benefit the entire Serra Gaucha region and should be a shared responsibility as the infrastructure will be used by residents and business entities throughout the region. The 500,000 people who now live in Caxias do Sul municipality accomplish quite a bit, but the almost 1,2 million people in the region can achieve far more.

In short, what the City of Caxias do Sul should focus upon is: improving its quality of life quotient; promoting a culture of collaboration, cooperation and outsourcing; developing a large-scale logistics infrastructure that connects the entire region with reliable and rapid transportation options that includes the region's medium-sized municipalities. Like what's projected for Caxias do Sul, other medium-sized cities must become development hubs for the smaller cities that neighbor them.

Arial view of Caxias's Central Business District.

Local tourist train

Each of the medium-sized cities need to hire skilled and experienced people to address the problems the City of Caxias do Sul now faces. This approach of developing smaller local hubs throughout the region and cost-sharing supports growth, connectivity, productivity as well as improves the quality of life throughout the region

It is important to emphasize that medium-sized cities have large enough populations to interest companies in staying in their cities. Therefore, the cities should focus on becoming local hubs of innovation and industrial production. Furthermore, a very strong cooperation network must be created with neighboring municipalities, so that, as already mentioned, the costs of human development and quality of life can be shared. However, for this to occur, the municipality must be large enough to support the infrastructure and at the same time meet the demand, which will come from the population of neighboring municipalities, which, in turn, do not have the population or resources to maintain a large-scale structure. The following are medium-sized municipalities with more than 25,000 inhabitants that will collectively benefit and support the undertakings.

Municipality	Population
Bento Goncalves	123.151
Farroupilha	70,286
Vacaria	64,197
Canela	48,946
Gramado	40.134
Garibaldi	34.335
Carlos Barbosa	30,420

For growth to occur, cargo transportation and the movement of people must be as efficient as possible. That is why it is important to support regional integration projects (Serra Gaúcha Airport, Regional Train, North Coast Port, rail access, improved highways, to name a few of the transportation options. It is far too expensive and time-consuming for each municipality to have its own port, airport, train terminal, so only with regional infrastructure projects will medium-sized cities experience growth and development, whether through tourism, agriculture, industry or services.

In short: what medium-sized municipalities should focus on is improving their quality of life, promoting a culture of cooperation/outsourcing, developing logistical infrastructure that connects them to the epicenter Caxias do Sul, and the other neighboring municipalities, along with forging stronger ties and relationships with the smaller, neighboring municipalities.

An Arial view of the central city of Conela's Cathedral

CANELA & GRAMADO

Canela and Gramado are the drivers of the tourism industry. Combined, they are considered to be of the most visited cities in Brazil. Gramado received approximately 8 million tourists in 2023, which corresponds to approximately 200 visitors for each of the 40 thousand residents. This record number highlights the importance of tourism for the local economy and for the State of Rio Grande Do Sul (RS). This number is the highest in the historical series and represents an increase of 6% compared to 2022.

Tourism in the city of Gramado generates more than R$1.5 billion annually for the local economy, which represents around 86% of the Gross Domestic Product (GDP). Businesses also boost the city's economy, with highlights including the more than 100 companies in the furniture sector, 270 hotels, 19 chocolate factories, as well as knitwear and construction, which are considered to be the most profitable in Gramado. Other industry sectors highlight include the agribusiness sector, which is an important source of employment for the majority of Italian and German immigrants. The main products include honey, jam, wine, cheese, and breads, in addition to the oriental horticultural products.

TOURISM INDUSTRY

Serra Gaúcha is one of the most visited regions in Brazil. In addition to its beautiful landscapes, the Serra Gaúcha offers very interesting cultural characteristics. The German and Italian influences, in addition to the gaucho influence, of course, are the most apparent. This influence can be seen in several aspects: in the local architecture and in the production of grapes and wines, in the cuisine and customs. The Serra Gaúcha is large but is subdivided into three different geographic and cultural regions: Campos de Cima da Serra (Gaucho), the Hortênsias region (German) and the Serra region (Italian).The Gaucho Region includes the cities of Bom Jesus, São Francisco de Paula and São José dos Ausentes, as well as the canyons of Itaimbezinho, Fortaleza and Malacara. It is the region of gaucho culture, formed from the miscegenation of the border with Argentina and Uruguay.

The German Region includes Gramado and Canela, the main tourist cities in Serra Gaúcha. It has a very strong influence from immigrants who came from northern Germany. The Italian Region includes the cities of Bento Gonçalves, Farroupilha, Garibaldi and Caxias do Sul, characterized by Italian immigration from the Veneto region. The region is famous for its wine production, as well as its gastronomy, especially pasta and grilling techniques, (barbeque).

According to the Ministry of Tourism, Brazil recorded 12.3 million trips in 2021, with 99.3% of them taking place within the country. The Southern region ranked as the third most visited (17.3%). Rio Grande do Sul was the fifth most sought-after state as a tourist destination for visitors (6.5%). In the Uva e Vinho Touristic Region, encompassing 33 municipalities, Caxias do Sul stands out as the municipality with the highest employment rate (5,637 jobs), representing 52.4% of the total. Among the sectors contributing significantly to employment in the municipality are transportation, restaurants, and hotel accommodations. [RAIS 2020].

HOTEL ACCOMMODATIONS

Gramado continues to expand. The city continues to receive new hotels and inns, totaling more than 270 units throughout the city, and with at least 10 new hotels under construction, in addition to luxurious spas. The city currently has 27,000 beds between hotels and inns, a significant increase in just 6 years (from 2013 to 2019), when it had around 11,500 beds.

In 2022, the occupancy rate of hotels and inns in Gramado reached 72%, surpassing the 61% recorded in 2021. The Christmas and New Year period significantly increases hotel occupancy, raising their occupancy rate to up to 80%. In 2023, the occupancy rate was even better, especially during holiday periods, with the average occupancy rate reaching 85%. The Gramado Film Festival is one of the most important cultural events in Brazil. Held during the month of August, the city receives a large number of tourists and the occupancy rate is also high.

Gramado's Christmas Lights, during the months of November, December and part of January, is the time of year when the city receives the most tourists, reaching 100% occupancy. Many tourists seek accommodation in neighboring cities, such as Canela, Nova Petrópolis and São Francisco de Paula.

Street scene of the central city of Conela

PROFILE OF TOURIST ATTRACTIONS

Gramado is a city that draws a lot of attention during; Easter, Valentine's Day, the Film Festival in August and also at Christmas, the city's biggest highlight. However, the city in Serra Gaúcha offers festivals and attractions throughout the year, such as Gramado in Concert and Carnival in February, Chocofest and the Festa da Colônia between April and May. The city also hosts Amor Gramado and Estação Gramado, from May to July, and the Festival of Culture and Gastronomy, during the month of September. Recent data proves that 94% of visitors approve of Gramado as a tourist destination.

Furthermore, data also shows that 33% of visitors seek Gramado for its natural attractions, while 24% for its cultural and historical attractions, and 28% for its climate. Among the visitors, 34% are from the Southeast Regions of Brazil, 65.6% are married and 53% are coming to Gramado for the first time. And, if we talk about the international market, 60% of the tourists are from Uruguay, 30% from Argentina and 10% from Paraguay. The chart on the next page is an approximation of the population in the smaller municipalities with less than 25,000 inhabitants that will also support the expansion and development of the train route.

Municipality	Population
Nova Petrópolis	23,300
São Francisco de Paula	21,893
Bon Jesus	11.202
Cambara do Sul	6.361
São Jose dos Ausentes	4.172
Jaquirana	3,690

The sentinel upon entering New Petropolis

The sum total populations of the small municipalities ranking in population would be the second largest in the region (just over 70,000 inhabitants). This number, by itself, already conveys its importance. These municipalities generally do not have a large enough population to have large companies or large infrastructures, because these are expensive and require other infrastructures. Therefore, it is necessary for these municipalities to join forces with medium-sized municipalities to grow through the synergy created.

Small municipalities sometimes cannot offer the same attractions as larger cities, and that is where their main attraction lies: offering what a large or medium-sized city cannot offer. Municipalities with smaller populations should explore the sense of exclusivity, of being able to have a large house, of being able to be away from the urban chaos, in other words, superior quality of life and sustainable development. These attractions are generally decisive factors for families with high purchasing power, who can afford longer and more frequent trips, larger homes and other expenses that distance may cause.

Therefore, it is imperative that smaller municipalities offer the necessary infrastructure so they can continue their professional and leisure activities and, at the same time, live further away from urban centers. For this to happen, it is necessary to have a stable connection with high-speed internet, quality education and health, and roads in good condition. After all, no one wants to travel half an hour a day avoiding potholes or driving on unpaved roads. That said, the biggest challenge is to attract families with greater purchasing power and, at the same time, preserve local traditions and cultures. To do this, massive participation from the population is necessary, which, because it is small, makes the task easier.

Quality of life and ease of transportation are the factors that these municipalities should prioritize. As far as jobs are concerned, they must be very well connected with neighboring municipalities and larger municipalities in the surrounding area. This will only happen with quality infrastructure (telecommunications and passenger services), which is why support for regional infrastructure is so important. Small municipalities cannot do much alone, but integrated into the region, they operate as part of a much larger network and benefit from mutual development. Here there is the possibility of business for local internet providers, which can act independently or together.

This also solves the problem of new generations leaving their hometowns to live in larger ones, whether for study or work reasons. If there is a transportation network that allows for comfortable, fast, punctual and cheap travel, it makes much more sense to continue living where you are and pay only for transportation, than to have to rent an apartment, furnish it and have to do everything yourself away from your family.

At this point, the regional train allows for the rapid, punctual and comfortable transportation of passengers, in addition to having very low operating costs. This will only become a reality with collaborative work at a regional level. Another point that small municipalities can benefit from is the culture of cooperation, where residents of these municipalities can offer their technological services remotely or with frequent visits, instead of being present daily. This includes outsourcing companies for design, marketing, engineering, culture, content creation, among others.

THE DEMAND

SERRA GAUCHA REGION 72 MUNICIPALITIES

TERRITORY:	**253,002 km²**
POPULATION:	**3.5 Million**
Distance to State Capital City and Porto Alegra Airport and Seaport:	**123 km**
Metropolitan Inhabitants of Caxias, Canela, and Gramado.	**1.5 Mil**

ADVANTAGES OF THE TRAIN

- New mode of passenger and cargo transportation between the 14 municipalities, streamlining the process and reducing operating costs;
- Fast connection between the cities involved and Vila Oliva Regional Airport and Hortênsias International Airport, as well as the Port of Arroio do Sal;
- Connection between the Grape and Wine tourist centers with the Hydrangeas Region;
- Practical, accessible, fast urban mobility, and transport of goods and people;
- Encouragement of new investments, such as industries, hotels and new tourist attractions, generating employment and income;
- Creation of new jobs through the mode in the region;
- Encouragement of the creation of new businesses around the railway line in the 14 municipalities, such as theme parks and,
- Quick access for students from 14 municipalities to universities, colleges and schools.

MUNICIPAL POPULATION PROJECTIONS FOR PASSENGERS AND FREIGHT USAGE

Municipal	Population 2024	Project 2027	Project 2032	Project 2037
Caxias do Sul	463,501.00	483,501.00	503,501.00	523,501.00
Bento Gonçalves	123,151.00	143,151.00	163,151.00	183,151.00
Farroupilha	70,286.00	90,286.00	110,286.00	130,286.00
Carlos Barbosa	30,420.00	50,420.00	70,420.00	90,420.00
Vacaria	64,197.00	84,197.00	104,197.00	124,197.00
Garibaldi	34,335.00	54,335.00	74,335.00	94,335.00
Gramado	40,134.00	60,134.00	80,134.00	100,134.00
Canela	48,946.00	68,946.00	88,946.00	108,946.00
São Francisco de Paula	21,893.00	41,893.00	61,893.00	81,893.00
Nova Petrópolis	23,300.00	43,300.00	63,300.00	83,300.00
Bon Jesus	11,202.00	31,202.00	51,202.00	71,202.00
Cambará do Sul	6,361.00	26,361.00	46,361.00	66,361.00
São José dos Ausentes	4,172.00	24,172.00	44,172.00	64,172.00
Jaquirana	3,690.00	23,690.00	43,690.00	63,690.00
Total	**945,588.00**	**1,225,588.00**	**1,505,588.00**	**1,785,588.00**

PROJECTIONS	Totals for 2024	Projected 2027	Projected 2032	Projected 2037
Daily Commuter Bus/Train Transport @ 3% Ann. Increase.	23,275.00	70,523.25	647,466.91	1,961,824.72
Cargo Transport Per M/T@ 10% Ann. I	96,000,000	384,000,000	6,144.000,002	24,576,000,009
Seasonal Tourist Transport @ 10% Ann. Increase	30,420.00	60,840.10	243,360.70	486,721.50

Data Sources: *CNI-Confederation National of Industry of Brazil, and MobiCaxias 2024 Report*

The railway line is expected to debut in the 1st. quarter of 2028, with its madden voyages between the first completed stations of Bento Gonçalves to Caxias do Sul with the commuter Tram operating the rail line.

MOVEMENT OF CARGO AND PASSENGERS

The Serra Gaúcha is the main industrial and tourist hub of the state of Rio Grande do Su. Its mobility infrastructure has been neglected for decades which are now taking its toll: the difficulty in moving around the region and the cost of doing so. In order for the region to make the most of its potential, it is urgent to increase its logistical efficiency. We can say that the cost of vehicle maintenance (generated by poor logistical conditions), accidents, freight costs, and delivery delays drain resources that could be used to develop the region and increase its productivity. Assess the feasibility of transporting both passengers and cargo on the line, optimizing their use and economic potential. This may include specific freight cars and dedicated timetables for different types of transportation.

The population throughout the region of the 14 cities is expected to increase by 20 thousand per year. The current usage of public transportation is 23,735 thousand persons per day with an expected increase of 1 percent per year for the next 4.5 years until completion of the train systems. Cargo movement across the state is currently totaling at 8 Million tons per month. Starting in Bento Gonçalves and going to Vacaria with collections of products for distribution over Brazil with 70 percent of the cargo freight for export over world. Also from Vacaria to Bento Gonçalves represents around 3 Million tons per month of importations.

Data Source: *CNI-Confederation National of Industry of Brazil.*

INDUSTRY SECTORS ALONG TRAIN'S ROUTE

1. BENTO GONÇALVES - 116 km

- Furniture sector
- Wine sector
- Fruit growing sector
- Metallurgical sector
- Transport sector

2. CAXIAS DO SUL - 79 km

- Fruit growing sector
- Transport material sector
- Food and beverage sector
- Metalworking sector
- Pharmaceutical and veterinary products sector
- Textile sector of clothing and fabric artifacts

3. NOVA PETRÓPOLIS - 28 Km

- Fruit growing sector
- Knitwear and Handicrafts sector

4. FARROPILHA - 94 km

- Furniture sector
- Knitwear sector
- Paper and cardboard sector
- Metalworking sector
- Hardware industry and trade sector

5. GARIBALDI - 114 km

- Winery sector
- Poultry sector

6. CARLOS BARBOSA - 108 km

- Industrial sector in the production of cutlery, pans sinks and electrical equipment (Tramontina)
- Industrial sector in the production of shoes, wooden frames, furniture
- Industrial sector dairy (Cooperativa Santa Clara)

7. SÃO VENDELINO - 90 km

- Poultry and swine breeding sector
- Agricultural sector in the cultivation of corn for silage
- Agricultural sector in the production of strawberries and grapes

8. FELIZ – 71 km

- Metalworking sector
- Footwear sector
- Furniture sector
- Fruit growing sector
- Pig culture and poultry sector

9. NOVA HAMBURG — 82 km

- Leather-footwear sector formed by tanneries, chemical industries, footwear components
- Metallurgical industry and electronic components sector
- Plastic sector
- Metalworking sector

10. SAPIRANGA - 68 km

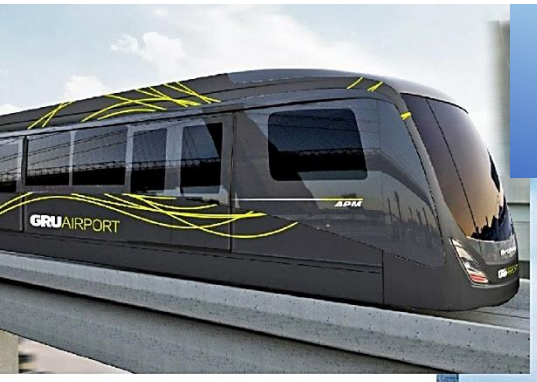
- Footwear sector
- Clothing sector
- Household appliances sector

11. TAQUARA - 54 km

- Footwear sector.
- Clothing sector.
- Plastic products industry sector
- Dairy industry sector.
- Wine and juice industry sector
- Furniture industry sector.
- Metalworking industry sector

MEANS OF PASSANGER RAIL TRANSPORT

The passanger rail cars proposed by the Marcoplo Corporation are being developed for both the employes daily comute throughout the region along with cars spefically designed for the trourist industry.



PEOPLE MOVERS

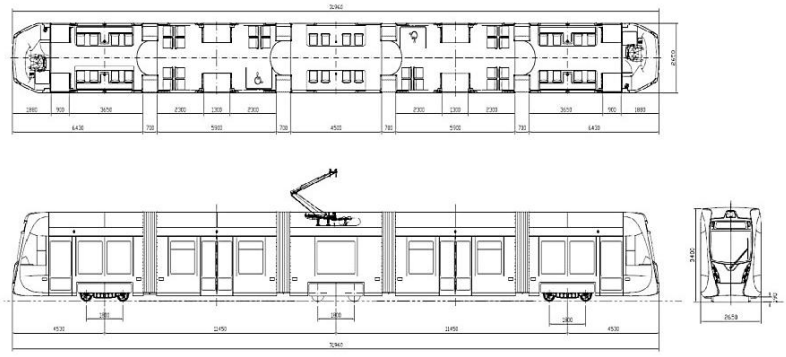
The multimodal Depot/Station planned for the Hortensia International Airport.

These tramways will be equiped with wide viewing windows for the touriest to enjoy the scenery along the trem's route.

DAILY PASSENGERS AND CARGO TRANSPORTED BY ROADS

The public transportation routes as of 2024 areoperating at a capasity of 23,275 passangers per day, transporting passangers by various forms of buses and short run tourest trains. The propoat single tracking passanger and cargo trains The numbers of 8 million tons per month from the region via the trucking has been caculated from the cargo data obtained through the CNI-Confederation National of Industry of Brazil.

Tramway — Marcopolo RAIL

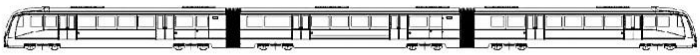


-100% Elétrico
-Piso Baixo
-Parcerias Estratégicas

	Turismo	Intercidades	Urbana
Largura de portas	1000 mm	1000 mm	1300 mm
Número de abertura de portas por carro	2	2	6
Capacidade de passageiros por carro	70	70	180

Turismo e Intercidades **Urbana**

2 carros - 140 passageiros **2 carros - 360 passageiros**



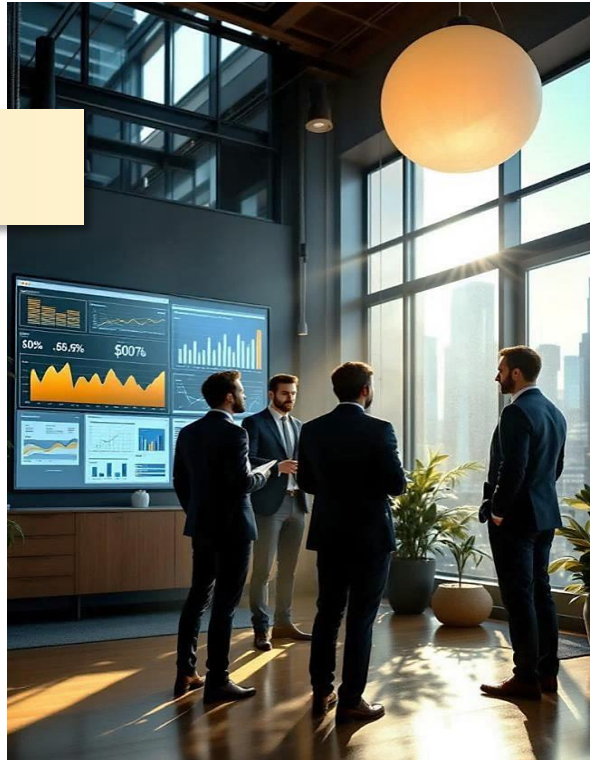
3 carros - 210 passageiros **3 carros – 560 passageiros**

4 carros - 280 passageiros **4 carros - 760 passageiros**

Projected demands for passanger usage, and freight cargo being transport once railway system is completed.

	YEAR 2024	YEAR 1 2025	YEAR 2 2026	YEAR 3 2027	YEAR 4 2028	YEAR 5 2029 5%	YEAR 6 2030
Commuter Bus/Public Transportation @ 3% & 5%	23,275	23,973.25	24,692	25,433	26,196	27,506	28,881
Commuter Train Ann. Once Completed @ 10% & 13%						20,952	24,095
Tourist 2025 Bus/Public Ann. Transportation @ 10% & 15%	30,420.	33.462	36,808	40,489	46,562	53,546	61,578
Fright/Cargo /Per MT	96,000,000	105,600,000	116,160,000	127,776,000	140,556,600	154,608,960	177,800,304

EVOLUSION OF ALLIANCES & CONSORTIUMS FOR EXPANDING THE REGION'S GDP EXPORTS



The driving force behind the overall development process has been the necessity to expand, strengthen and diversify the region of Rio Grande do Sul's economy through the construction of a sustainable, multi-pronged transportation system designed not only to serve the region's current and projected population growth, but also to ensure a delivery system that increases the region's GDP.

SIGA Mobilidade Urbana, is a privately held corporation whose board of directors, Chief Executive Officer (CEO), and corporate officers have worked diligently over the past five years developing plans for the Regional Train and the Hortênsias International Airport in Canela to synchronize the transportation systems through the utilization of smart grid and integrative technologies. Our tasks for **BUILDING SUSTAINABLE INFRASTRUCTURE** are delineated below along with deliverables accomplished as of to date 2025. The development process has been guided by the CEO's belief in an old adage included here to make that point… "*It takes one man's dream to build a road however; it will take many men, to complete it*."

This collective approach, which is inclusive of SIGA's thoroughly vetted alliance members has been the CEO's method of operation for the more than the15 years he conceptualized a sustainable transportation infrastructure and ecosystems and bringing that vision to actualization. As SIGA's trusted colleagues grew into a leadership team, contractual agreements were made with alliance member entities that represented the various producer associations in sectors including agricultural and livestock, industrial, tourism, marketing, construction, and mechanical. SIGA's engagements and alliances range from establishing market access and brand development for various enterprises which are inclusive, but not limited to, technology innovation-based companies for brand development. The first example of an important collaboration is the repackaging of products under the brand identification, "GROTTO BRAZIL ERPORTTRADE" which positions SIGA/GROTTO for an expanded participation in the global marketplace.

The first GROTTO Center of Distribution outside of Brazil has been planned for the United States, within the Baltimore, MD/Washington, DC corridor. SIGA/GROTTO's planned expansion into designated global markets through a network of consortiums has been identified in our proposed expansion for export trade. Operating under the GROTTO brand, the Washington, DC offices will focus on public relations and provide access to global decisionmakers. The planned site for the Distribution Center will be strategically located between the Baltimore, MD seaport, and the Baltimore Washington/Thurgood Marshall International Airport(BWI), as headquarters for the distribution for products throughout the United States.

Still other major alliances key to developing the transportation infrastructure within the region. An important alliance and collaboration includes MobiCasias the University of Caxias do Sul which works toward regional development. The relationships with, GROTTO, Belissima Imoveis, and safe carbon CO2 are a party to SIGA's corporate structure and alliances, via MOU agreements, an acquisition of, and or a subsidiary of SIGA. Two in-country prime contractors, Marcopolo and Randon Corporations are cemented into the matrix along with RGE, the Irapuru Group and KMPG.

BUILDING SUSTAINABLE INFRASTRUCTURE

MULTIMODAL TRAIN LINE FROM BENTO GONÇALVES TO VACARIA

The Serra Gaúcha Regional Train is a transformative multimodal train line connecting Bento Gonçalves to Vacaria. This undertaking will revolutionize transportation in the region, bringing economic, social, and environmental benefits. We have analyzed the crucial aspects outlined in defining task, and planning the criteria to ensure the financial viability and sustainability of the train's development, from its initial planning until its operations.

DEFINING TASK AND PLANNING

1

ENVIRONMENTAL ASPECTS, STUDIES & LICENSES

We are within compliance with environmental legislation, obtained the necessary licenses and authorizations from regulatory and compliance bodies (IBAMA, FEPAM, etc..)

2

LINE LAYOUT AND ENVIRONMENTAL IMPACT

The route of the railway system prioritizes the minimum environmental impact and the maximum social benefits inclusive of topographic surveys, analysis of sensitive areas and environmental impact studies and connectivity.

3

ENGINEERING AND INFRASTRUCTURE

Detailed designs for the railway infrastructure components, special works of art and development multimodal stations are into establishing an integrated system.

LEGAL & INSTITUTIONAL ASPECTS

ENVIRONMENTAL LICENSES AND STUDIES: Critical among all projects is in compliance with environmental legislation, and has obtained the necessary licenses and the appropriate authorizations from regulatory bodies.

EXPROPRIATIONS AND RESETTLEMENT OPTIONS: In the expropriation process, we considered the fair market value of the lands needed, with remuneration options provided. All procedures will be conducted with complete transparency, and insurance for appropriate relocations to affected families, if and or when it is necessary.

PUBLIC PARTICIPATION: The collective participation of civil society, communities for all stages of the project has been vetted through public consultations and hearings.

DEMAND AND ECONOMIC VIABILITY

An analysis of the regional statists have been conducted to gather the current and to determine in best estimates of the real demand for passenger and freight transportation, assessing the long-term economic vision of the project.

FINANCING RESOURCES

The development of the railway train systems as a private initiative has presented several financing options that will be utilized. The range from direct loans with security bonds for collateral, private investments, Initial Public Offerings (IPOs) to our reserves of Carbon Credits with insurances wraps and national guarantees for foreign investments.

HERITAGE PRESERVATION AND CONTINUITY IN THE DEVELOPMENT

The preservation of the historical and cultural heritage of the region is imperative during the implementation of the rail line. Adapting the project or creating protective measures when necessary.

PROJECTIONS OF JOBS CREATION

The projected direct, and indirect employment opportunities that will be created from the construction of the rail systems from both the cargo and passenger train. What will be the expected continuous employment opportunities for operation of the railway line?

TOURISM PROMOTION

Enhance the development of tourism industry in the region, taking advantage of the new transportation infrastructure to attract more visitors.

Vacaria ● Bom Jesus ● São José dos Ausentes ● Jaquirana ● Cambará do Sul ● São Francisco de Paula ● Canela ● Gramado ● Nova Petropolis
Caxias do Sul ● Farroupilha ● Carlos Barbosa ● Garibaldi

14
Municipal Stations

14 Passenger Station, and 4 Depots Serving 42 Municipalities in the Serra Gaúcha, Rio Granda do Sul Regional Train

1. ENVIRONMENTAL ASPECTS

ENVIRONMENTAL IMPACT STUDIES

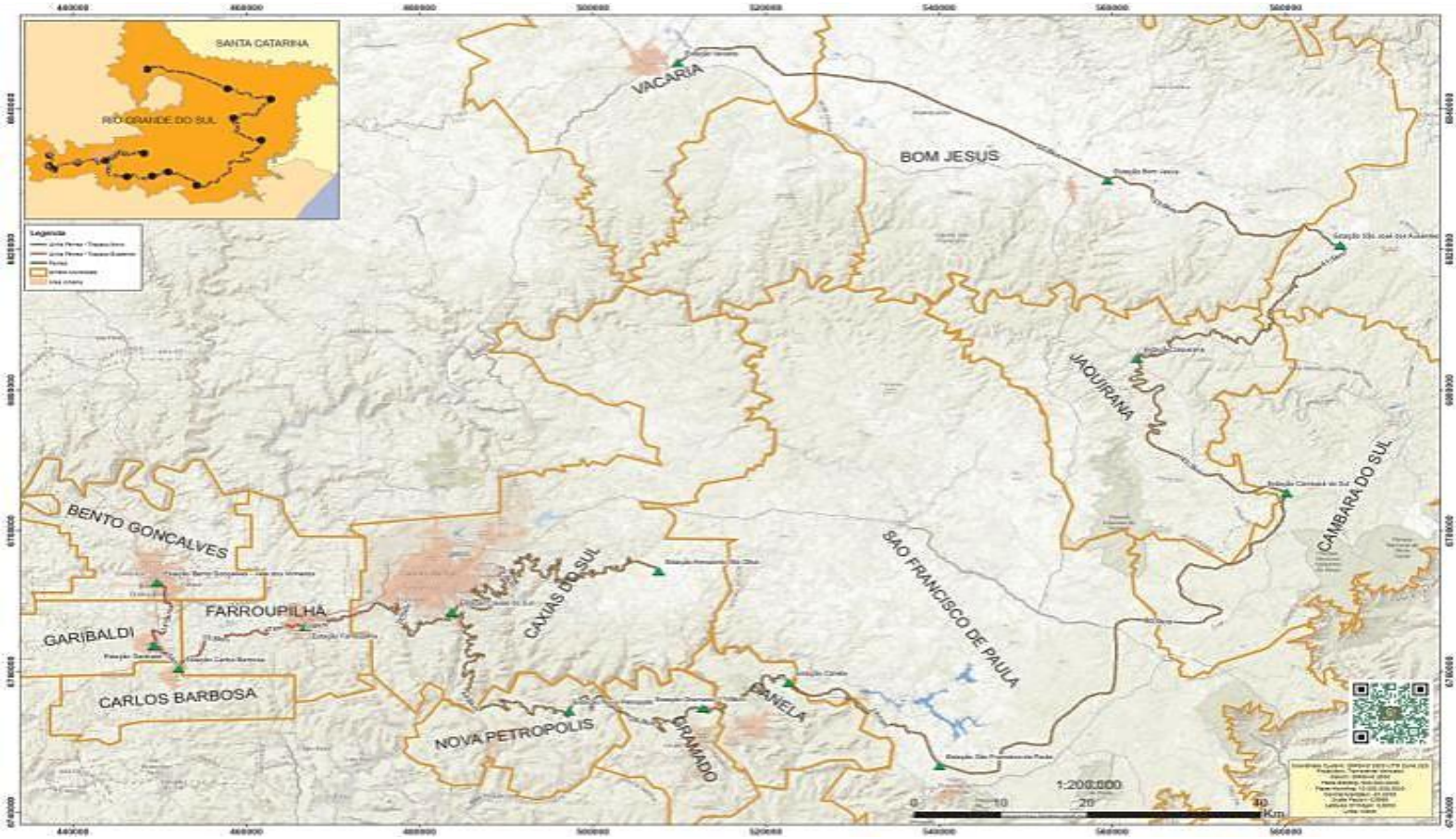
Rigorous EIA/RIMA, impact studies have been conducted with broad public participation and consultation with indigenous communities, were applicable. Analyze of environmentally sensitive areas (APPs, conservation units), we are seeking solutions or mitigating measures to minimize impacts.

STUDY BASES

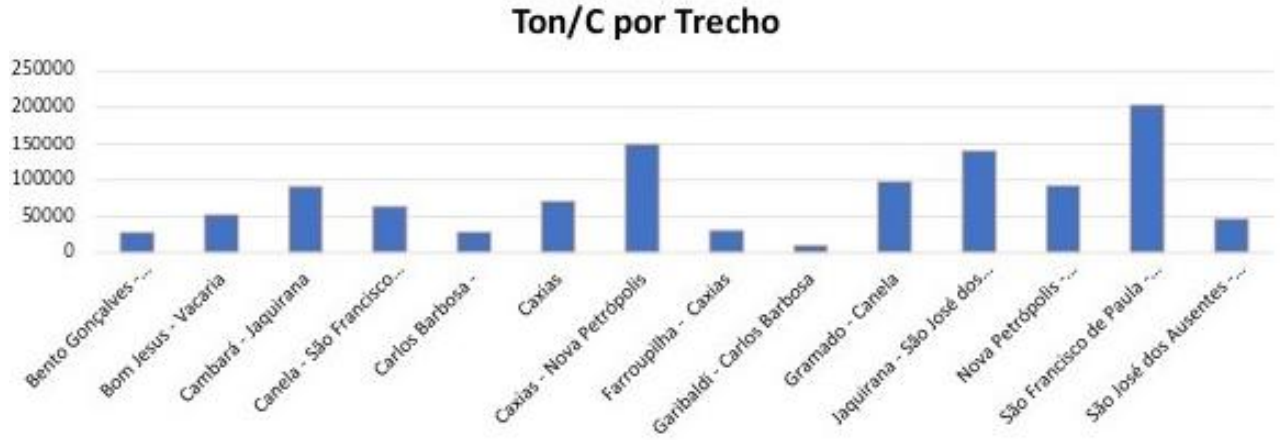
The preliminary analysis commissioned by the Serra Gaúcha Regional Train consortium brings a sampling preliminary estimate with the generation of carbon credits based on the preservation of the vegetation area and forest restoration due to mandatory environmental compensation.

CARTOGRAPHIC BASES	SCALE	CRITERIA	
Spring Areas	1:20.000	Binária -	50m
Indigenous Areas	1:20.000	Binária -	1000m
Wetlands	1:25.000	Binária -	50m
Soil Classification	1:25.000	Multicriterial -	
Urban Centers	1:20.000	Binária	1.000m
Slope	1:20.000	Binária =	<20˚
Road Rental	1:20.000	Escalonar-	
Rivers 30m	1:25.000	Binária -	300m
Rios 50m	1:25.000	Binária -	300m
Road System	1:20.000	Escalonar-	
Conservation Units	1:50.000	Binária -	1000m

METHODOLOGY



A 150m strip was defined for each edge (300m area around the entire railway line) from the center of the train line, to be used as an environmental compensation area, as defined in the image below: This preliminary analysis was developed from georeferenced satellite images on a scale of 300x300m each pixel of the images. The estimate was defined based on logarithms and a database estimated worldwide according to the methodology of the LUCID website (http://lucid.wur.nl). Information about the train line and vegetation, geographic and topographic formations generates a multispectral model where an estimate of the total accumulated volume of Carbon in the vegetation biomass (Ton/C) can be generated.



RESULTS

From the preliminary analysis of an estimate of carbon accumulated in the biomass of existing vegetation (Ton/C) it was possible to find the results shown in the following graph and table.

The estimated tonnage of carbon for each section of each municipality: Total area of the section, minimum pixl, pixl maximum, average Carbon per ha, and total tc estimate per section along the train's route.

TRECHO	AREA há	MIN tc	MAX tc	MEAN Tc/ha	Total Por Trcho Tc
Bento Gonçalves - Garibaldi	855,56	7,00	766,00	32,42	27.739,01
Bom Jesus - Vacaria	3.373,71	15,00	1.257,00	15,44	52.100,35
Cambará - Jaquirana	2.557,26	13,00	1.076,00	35,58	90.997,13
Canela - São Francisco de Paula	1.620,00	12,00	1.024,00	39,15	63.414,93
Carlos Barbosa -	828,54	14,00	778,00	34,53	28.613,05
Caxias	1.312,78	42,00	1.186,00	54,06	70.972,22
Caxias - Nova Petrópolis	2.600,91	20,00	1.330,00	57,36	149.189,26
Farroupilha - Caxias	1.000,36	6,00	778,00	30,50	30.514,73
Garibaldi - Carlos Barbosa	329,20	10,00	574,00	29,22	9.618,60
Gramado - Canela	1.301,88	200,00	1.059,00	75,30	98.030,86
Jaquirana - São José dos Ausentes	2.469,40	16,00	1.034,00	56,81	140.278,70
Nova Petrópolis - Gramado	1.689,34	38,00	1.061,00	54,95	92.824,40
São Francisco de Paula - Cambará do Sul	4.879,12	10,00	1.095,00	41,66	203.247,93
São José dos Ausentes - Bom Jesus	2.059,69	15,00	1.297,00	22,48	46.312,02
				TOTAL	1.103.853,20

CONSIDERATIONS

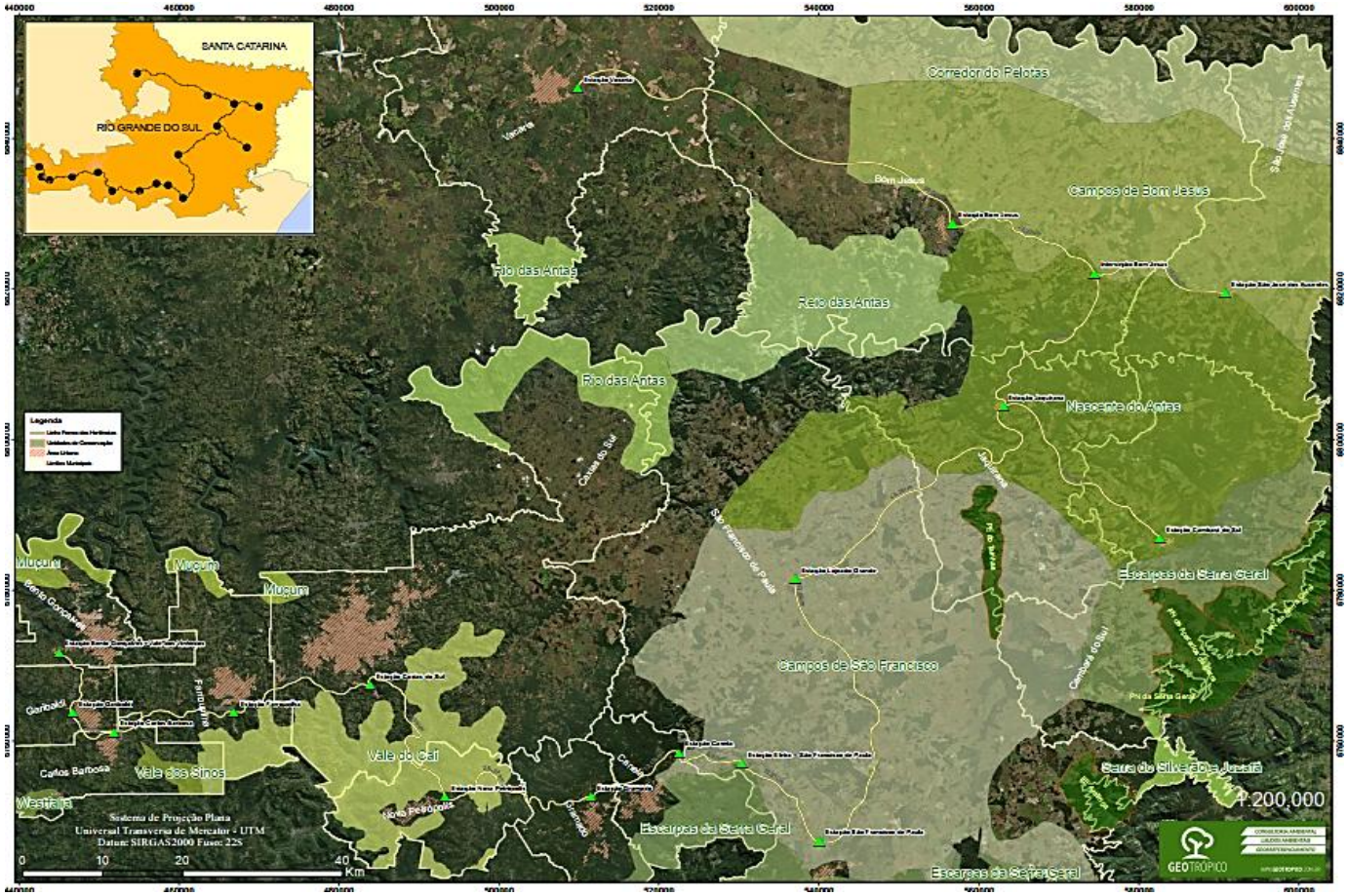
It is important to highlight that this preliminary analysis presents a positive perspective requiring additional on-site studies, inventory surveys of existing vegetation and monitoring before and after the implementation of the railway line and after compensation and forest restoration. The studies for the train's route, stations, and depots were conducted along a path determined to be best suited for the economic viability for getting the broadest sectors of industries goods to market. The analyses would also entail the least amount of impact regarding any environmental adaptation from the train's development and evaluating the geosocial economic impact to the region.

The amount of Carbon Credits that can be generated from this methodology, however the studies require extensive monitoring, and collecting of data to build a knowledge base modeling system for computations to be developed and applied.

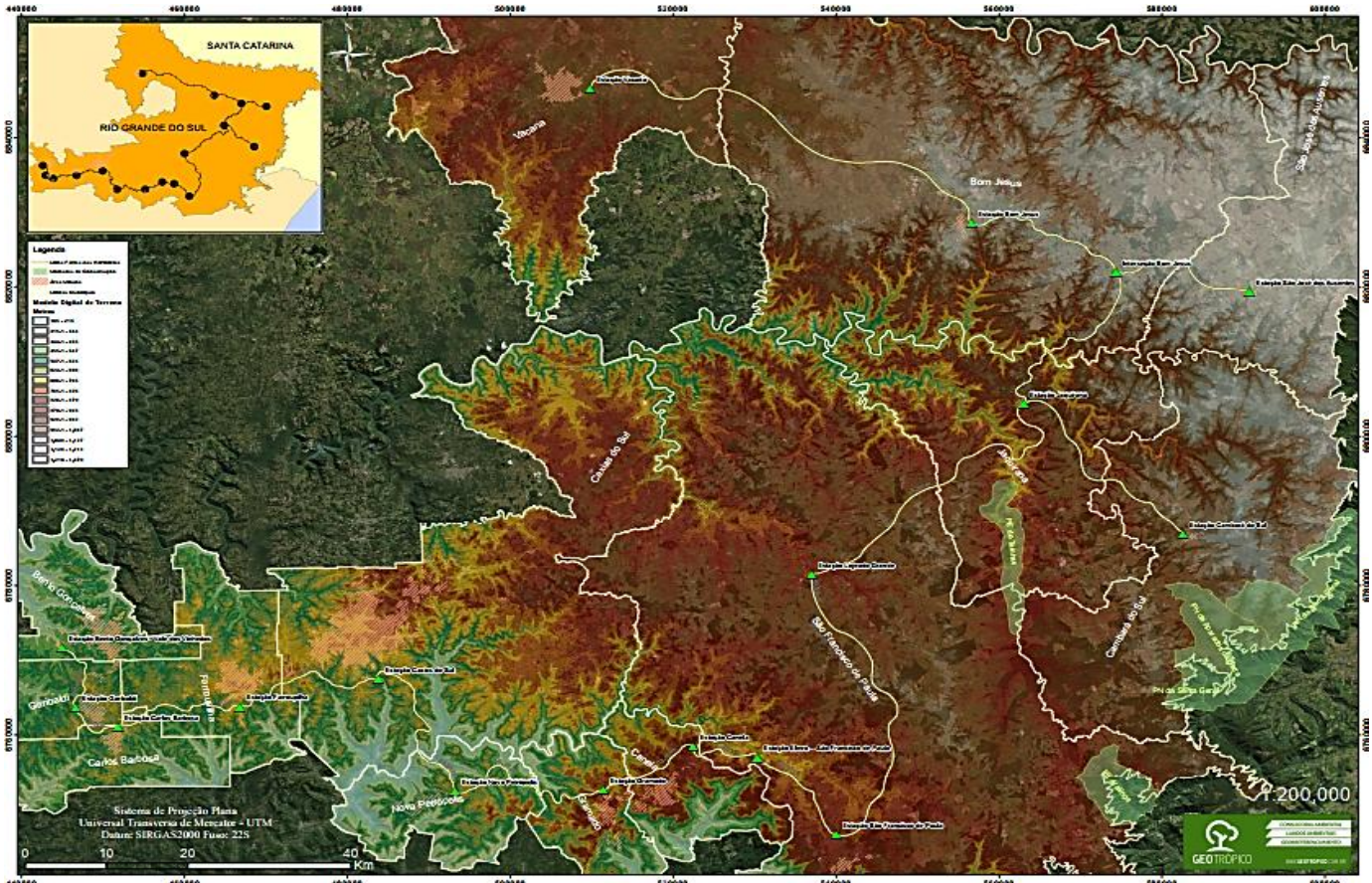
Geotrópico
Brites Fraga Pereira
CRBio 75654
Sócio - Diretor Técnico.
51 991649301

Geotrópico
Rafael Gomes de Moura
CRBio 69908
Sócio - Diretor Técnico.
51 981596255

ECOLOGICAL MAP



TOPOGRAPHY MAP

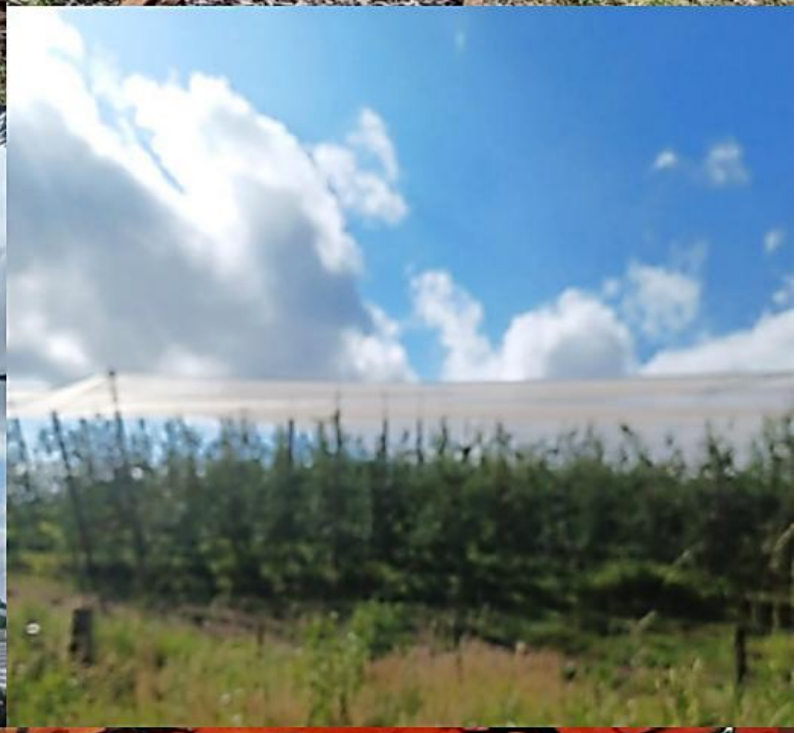



2. SITES FOR THE SERRA GAUCHA
REGIONAL TRAIN ROUTES & STATIONS
CAXIAS
DO SUL
Sicredi


GARIBALDI
EU ♥ ROLANTE
EU ♥ AUSENTES
SÃO JOSÉ DOS
SANTA MARIA DO HERVAL
CENTRO - 6 KM
BR-116
Eu ♥ Jaguarana
Um retorno ao passado

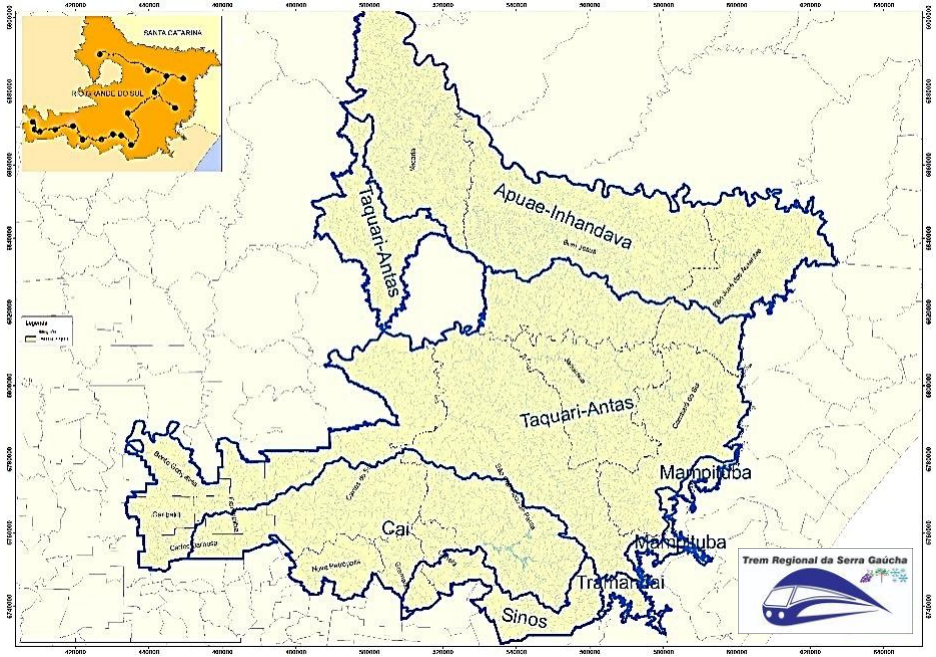

ALTO FELIZ


Carlos Barbosa
Porto Alegre
Bento Gonçalves
Veranópolis
DIVISA DE MUNICÍPIO
CAMBARÁ DO SUL
SÃO JOSÉ DOS AUSENTES

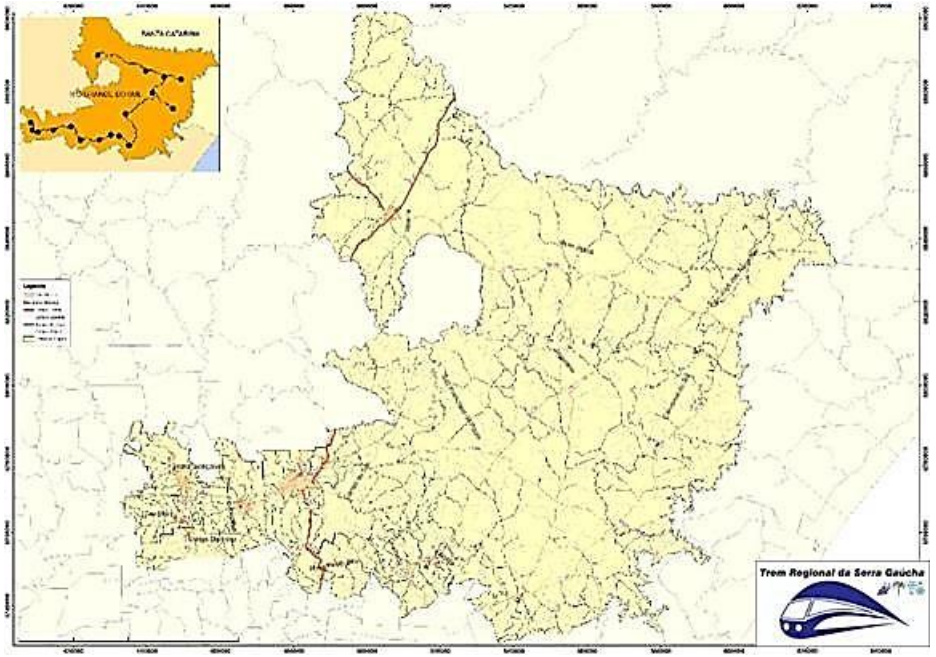



CAXIAS
DO SUL
Sicredi

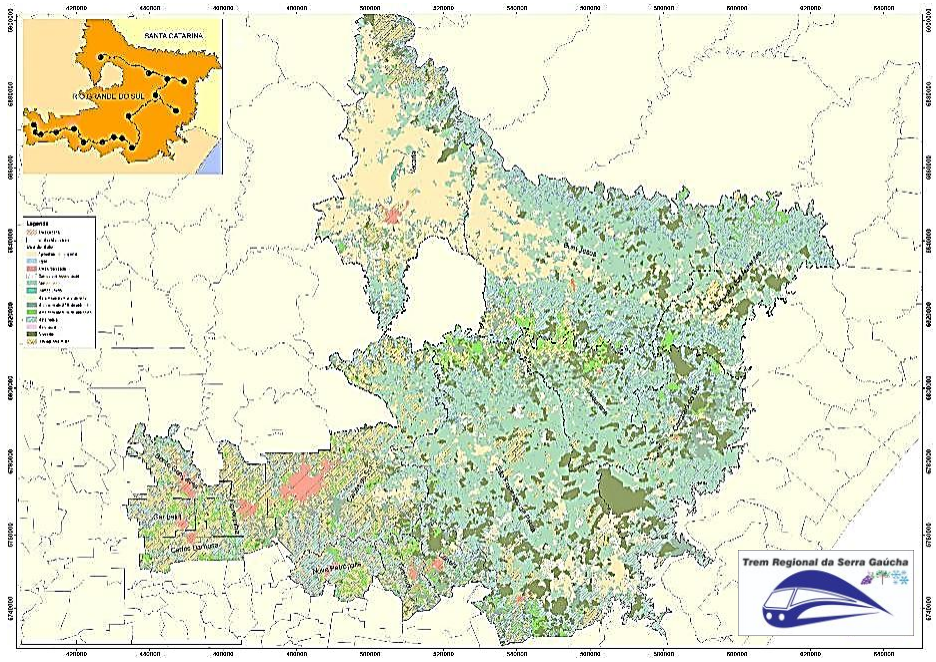
CARTOGRAPHY OF ATTRIBUTES IN THE REGION



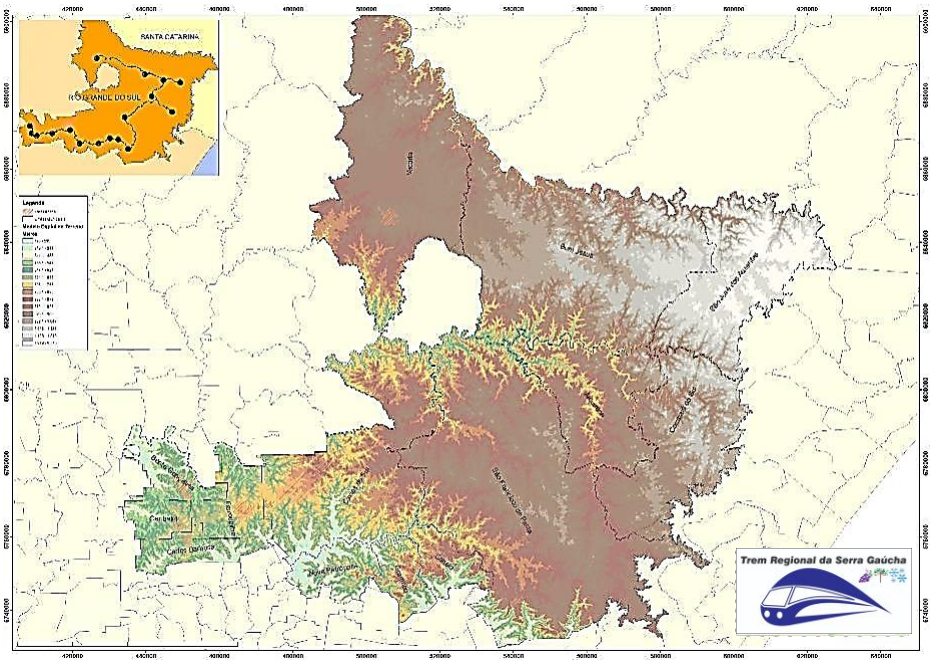
Hydrography



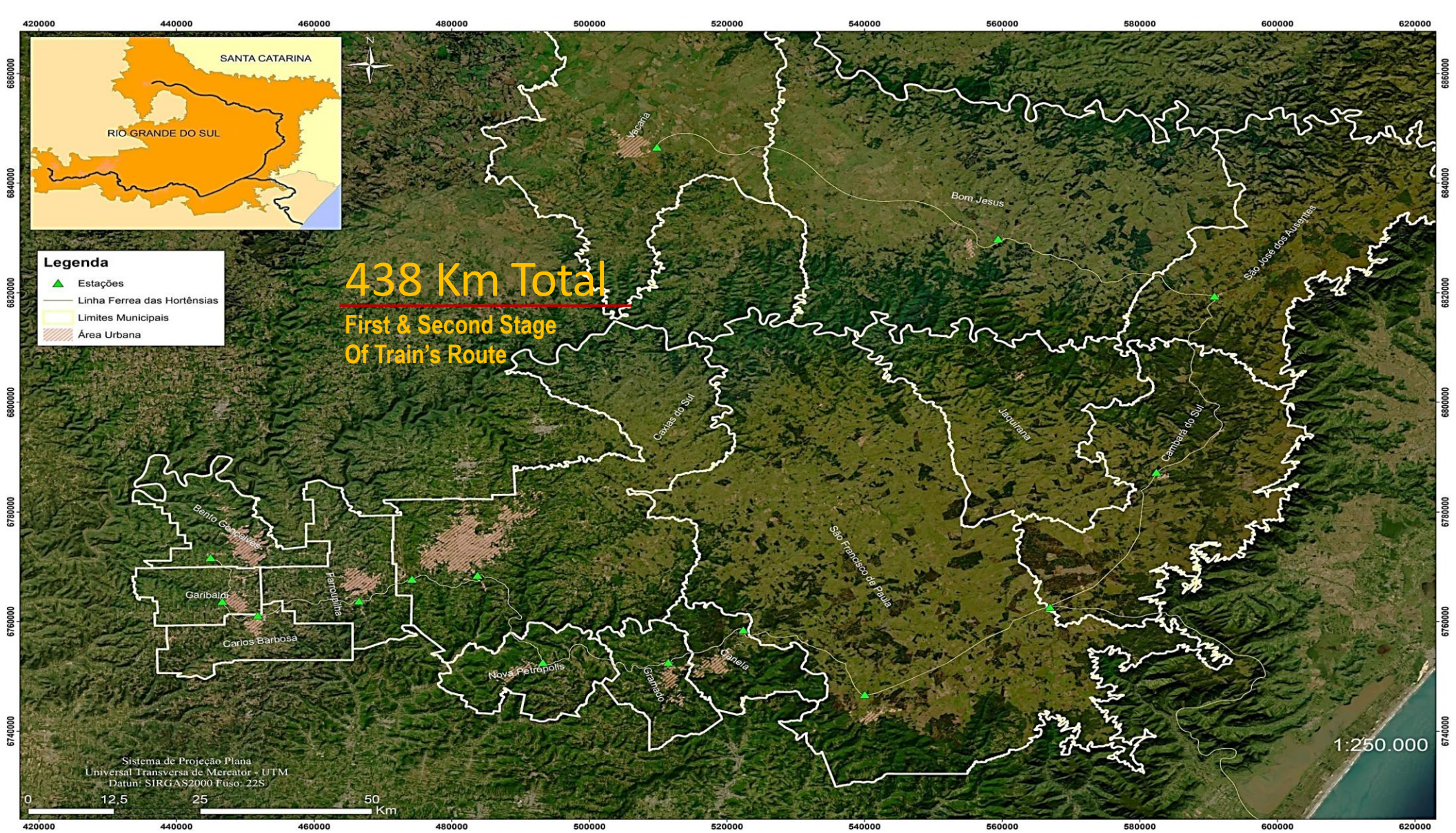
Road System



Land Usage



Topography



INTEGRATION OF MULTIMODAL TRANSPORTATION LINES CONNECTIONS

Integrate the train line with other modes of transport systems connecting a passenger train, buses, vans, personal transport vehicles, manual and motorized bicycles, and long or short-haul trucks through efficient intermodal terminals for passengers and cargo. This will create a cohesive and comprehensive transport network for the region at each station stop for passengers and cargo movement.

This interconnectivity will be the bases for the supply chain structure for moving products from the factories and fields to the consumers. Adding to the assessment of the validity of the train system's demand is verfication of the tourism industry that will utilize the statical data gathered for an accurate evaluations of the industry sector's contribution to the GDP profile in support of the demographic expansion.

With the expected increase from the tourist industry, the number and variety of modes of personal transportation will also increase. In Brazil, rail transport is used in a complementary way, feeding the other terminals.

Domestic railway terminals carry out cargo loading and unloading operations, coming from or destined for different railway lines or other modes of transport, in the national territory. In the nation here are currently 14 rail networks terminals in operation for transport and distributed. The proposed CDL and airport at Canela is planned as the 15th CDL terminal for South Brazil.

MOVEMENT OF FREIGHT CARGO

In Brazil, rail transport is used in a complementary way, feeding the other terminals. Domestic railway terminals carry out cargo loading and unloading operations, coming from or destined for different railway lines or other modes of transport, in the national territory. The main function of the train lines of the freight railways is to carry out the transport of these items for domestic consumption or for export. That is why the terminals must be built close to the main destination of the lines, or close to the industrial and agricultural production sectors, facilitating the loading and unloading of cargo. In these Rail Cargo Terminals, the items produced are positioned in the train wagons, thus being able to continue the journey to the desired destination.

Over long and medium distances, rail transport tends to have lower private and social costs. The energy efficiency of rail transport is proven for distances greater than 500 km and less than 1,000 km. In these cases, the efficiency is greater than that of road transport. That is, the same load can be transported for the same distance with less energy if the modal used is rail and with lower emission of pollutants. Greater energy efficiency results in lower private rail transport costs that are not reflected in freight prices.

A Cargo Rail Terminal also serves as the terminus of rail lines, as well as at the Road Terminals. However, the Cargo Railway Terminal, its operation has some differences. It is at these end points of a line where the loading or unloading of cargo takes place. As the lines make circular paths, that is, they always return to the same terminal, there is a whole logistics stipulated so that the loads are loaded or unloaded in an efficient and adequate way. Therefore, Rail Cargo Terminals can be defined as a series of facilities and equipment for loading, unloading and transferring products or even passenger transit. They can be located at the ends of the railway lines or even at intermediate points. The infrastructure conditions of the terminals, specialized for the different types of cargo, are of great importance for the efficiency of the transport system, involving aspects of agility, information and safety in the transhipment of cargo. Rail freight is also safer than road freight, with a lower accident rate and a lower incidence of theft and robberies.

In Brazil, rail freight transport has the following characteristics:

- Great load capacity in its wagons forming convoys.
- Suitable for long distances, ideal between 500 km to 1,000 km.
- High energy efficiency in cargo transport, in relation to the fuel consumption.
- Low level of pollution in relation to other modes.
- High value with the implementation cost.
- Low cost of transport in relation to the road modal.
- Low maintenance cost of machines and wagons.
- Greater safety of the cargo transported in relation to the road modal, since that there are few accidents, thefts and robberies.
- Slow transport due to its loading and unloading operations on the wagons,
- Low flexibility in relation to the small length of the rail network.
- Low integration of rail networks between Brazilian states.

Wagons are designed for the specific transport of cargo, resulting in greater productivity. The locomotives, on the other hand, are being developed with a view to reducing fuel consumption and greater traction effort for the same power. On the other side, an unloading Cargo Rail Terminal has the opposite function. With a technological apparatus and well-organized systems, the goods, normally positioned in containers, are removed and delivered to the previously stipulated destinations. In this way, the Cargo Railway Terminal plays a very important role, since it is in these spaces that there is a whole complex apparatus to achieve position or remove loads efficiently, without loss or waste of goods, which would generate undue losses for the production sectors.

In the Cargo Rail Terminal, despite being defined as a type of rail yard, it is an operation area that has different functions, such as train formation, loading and unloading, parking and rolling stock workshop in general. It usually presents at the end points or return of the railroads (extremes), in the case of a carousel railroad. It can be used as the beginning and end of a route, as these points are usually loading and unloading points. The location should preferably be flat, although not all patios are presented this way. The reason for this flat condition is to facilitate the traction of machines and wagons, because on ramps (inclines and slopes), the difficulty of locomotion is increased. The logistics of the rail sector is essential for trips to be fast, efficient and trouble-free along the way. To justify the statement, the factors mentioned above are indispensable for a Cargo Rail Terminal. If a company organizes a delivery of a certain type of cargo, stipulating a time for the completion of the trip, arranging all the details with the recipients and others, it is essential that the cargo loading process is fast and efficient, avoiding that the agreement previously stipulated is not complied with.

Just as the loading must be streamlined, the unloading of items from the wagons also needs to be well organized, mainly for the same reason mentioned above, the organizational logistics of the railway line at these terminals. Regarding the components that are part of these terminals, we can mention some more important ones. There are also some fundamental divisions, which go according to the needs of each Cargo Rail Terminal. One of the most used track items in yards is the AMV (Track Change Device), this item allows the train to maneuver inside the yards.

Illustrative figure (track changer)

The AMV is a set of accessories, machines and components that are designed to allow rolling stock to move from one line to another, ensuring continuity of the track for a given path.

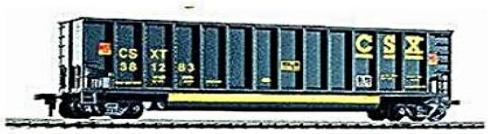
Now days, railway compositions are usually referred to in Brazil as "Trems," and in other Portuguese-speaking countries. The two terms are equivalent, originally both referring to a set of vehicles traveling together. So, it is the set of wagons coupled to each other and pulled by a locomotive is a Trem.

The Cargo Rail Terminals are essential for carrying out cargo weighing. As this process is essential for any type of railway line, the quality of the scales and the mechanisms for calculating these weighing is extremely important.

The following types of wagons that are most commonly used in cargo transport:

Vagão para granéis líquidos

Vagão para Transporte de Bobinas



Vagão tipo Gôndola
(granéis sólidos expostos ao tempo)

Vagão Plataforma para Contêineres

All Door Box Car

High Cube

There are two types of railway scales for measuring the weight of the loads carried be each wagon. The static scale, where the weighing takes place with the trains stopped at a railway terminal, and the dynamic scales, which allow weighing to be carried out even with the trains in motion.


Illustrative figure (Static Scale)

The loading and unloading of cargo is essential for the functioning of the railways, and it is at the railway terminals that this happens. In addition, cargo weighing, which is essential to determine wagon weights, is also carried out at rail terminals through the use of Rail Scales, further increasing the importance and need for terminals. The Cargo Railway Terminals are essential for the quality of national railways, largely because of their functions and composition apparatus.


Illustrative figure (Dynamic Scale

TYPICAL MODAL OF LOADS CARRIED

- **Grains**
- **Agro Prods**
- **Metal Ores**
- **Steel Products**
- **Cement and Lime**
- **Manures and Fertilizers**
- **Petroleum Derivatives**
- **Mineral Coal & Clinker**
- **Value-added products**
- **Raw and refined timber**
- **Granite, Marble, Indigenous Stones and other materials for construction**.
- **Products requiring mass tonnage, etc**….

LOADING AND UNLOADING OF CARGO

Each of the planned Depots Terminals will be equipped to load and unload utilizing on or more of the following types of terminal for loading and unloading various cargo:

Solid Bulk:

Terminals for solid bulk are made up of loading and unloading facilities. Among the installations for charging, three models are basically defined, which are:

- ❖ Terminal Beach.
- ❖ Loading walls.
- ❖ Loading Silos

Terminal Beach: it is one of the most archaic and natural types of loading. Through forklifts and mechanical shovels, the loading of the stopped composition occurs

Loading Walls: in this model, the mechanical shovels are placed on a wall, in an area above the wagons, facilitating loading from above. Mechanical shovels and bucket trucks are also used, but they are positioned on high walls, above the height of the wagons, allowing loading from above.

Loading Silos: this model allows, through the effect of gravity, standard volumes of cargo to be launched at the top of the wagon, through the silo. They are large structures, which use the gravity factor to “launch” the products in the wagons in a more practical way.

Courtyards can be defined as follows:

Maneuver Yard (most common).

Maintenance yard.

Interaction Patio

Triage Home.

Railway Terminals.

Note: In addition there is the crossing yard, which is another nomenclature for the active diversion.

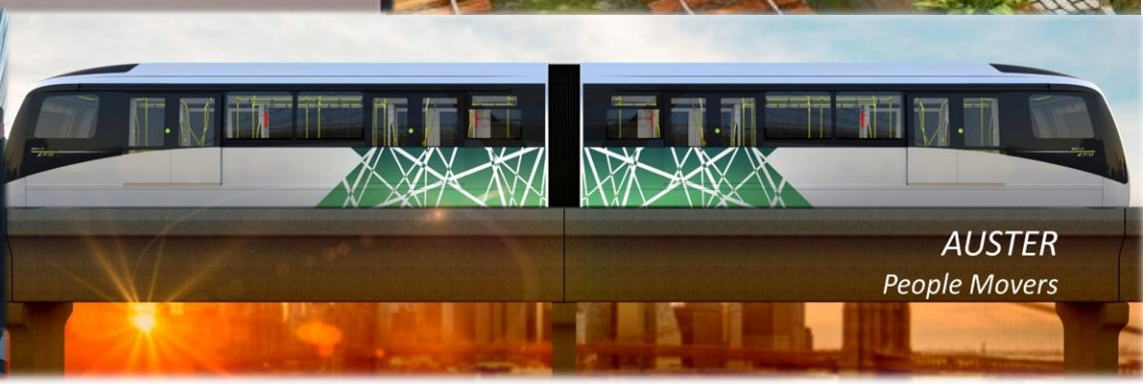
The cargo data comes from CNI-Confederation National of Industry of Brazil.

Illustrative figure, Terminal Beach

Illustrative figure of Loading Walls

Illustrative figure of Loading Silo

MOVEMENT OF PASSENGERS



INTER CONNECTIVE MODES: COMMUTER BUS AND PASSENGER TANDEMS MARCOPOLO, PRIAM CONTRACTOR

INTER CONNECTIVE MODES: VIA HORTENCIAS INTERNATIONAL AIRPORT AND LOGISTIC CENTER (CDL)

The movement of passengers and cargo is imperative to the development of the region. As previously stated, the impetus behind the train and regional developments is the metropolitan area of Caxias do Sul, the major proponent of sustainable development. To this and other matters, the consideration to implement a viable transportation infrastructure system is no longer a passive decision, but a requirement. The city not only stands out for its breathtaking landscape but also for its robust economy which is vital to the social dynamics of the region. With a constantly growing tourism sector, the city and surrounding communities of Gramado and Canela welcome visitors from various parts of the country, throughout the continent, and from around the world. This promotes cultural exchange and generates essential revenue for the local communities. Furthermore, the city invests vigorously in education, fostering intellectual and professional development among its inhabitants, thus ensuring a more promising future for generations to come.

A cityscape of Caxias do Sul

In 2022, the Municipal Secretary of Traffic, Transportation, and Mobility (SMTTM) reported that 221,449 passengers passed through Hugo Cantergiani Regional Airport in Caxias do Sul (RS). The airport serves flights from companies such as Azul, Gol, and Latam, with main destinations including Viracopos, Guarulhos, and Santos Dumont. Gol led the movement, with over 100,000 passengers. Starting from March 26, Gol added flights to Congonhas. In addition, the airport also accommodates private aircraft, and nearly 2,500 non-commercial flights took place in 2022. Weather conditions redirected 11,065 passengers, less than 5% of the annual total. Development of the future international Airport in the Municipality of Canela is one of the most ambitious and promising projects for the municipality and the region. Expected to handle between 1 and 2.5 million passengers annually, the airport symbolizes not just advancement in terms of infrastructure, but also the consolidation of the cities as a strategic hub in the Serra Gaúcha region.

Another crucial factor is the planned road connectivity, which promises to link Caxias to other key regions through the multi-connective transportation hubs. This road infrastructure expansion, along with the regional train and the proposed airport's capacity, will make the municipalities even more attractive for investments, businesses, and visitors. Within the Municipality of Caxias do Sul, there are 22 cooperatives across six sectors, including agriculture, consumption, credit, infrastructure, health, and labor. These cooperatives foster economic and social development, offering better growth opportunities and a higher quality of living. The cooperative model is highlighted by the United Nations as a way to create wealth and alleviate poverty, promoting the pursuit of equality. The actions proposed by cooperatives are aligned with sustainable community development, which encompasses social, economic, and environmental dimensions.

The Socioeconomic Development Index (IDese in Portuguese), is the indicator used to measure the levels of development for municipalities in the state of Rio Grande do Sul, Brazil. The index is calculated based on the data analysis from three main areas: Education, Income, and Health. According to a survey, dated 2019, Caxias do Sul ranked 46th among the 497 municipalities in the state of Rio Grande do Sul, with a score of 0.824, which is considered a high level of socioeconomic development. The monetary volumes transacted through financial institutions in Caxias do Sul, are based on data provided by the Central Bank of Brazil for time deposits, credit operations, and savings, which are observed as follows.

In 2021, Caxias do Sul reached R$ 3.7 billion in time deposits (such as CDBs and RDBs), a decrease of 16% compared to the previous year. For demand deposits (private), there was a decline in 2018, with the value recovered in 2020 but a slight decrease in 2021. Regarding credit operations (loans, discounted securities, and financing), the value reached R$ 7.9 billion in 2021, with growth in July 2022. In savings, there was also a positive variation from 2016, to 2021, with a slight decrease observed in July 2022. Similar growth trends can be observed between 2019, and 2020. There is also a decrease in all products in 2021, with some even experiencing negative growth rates, such as time deposits in Caxias do Sul (-16.5%), demand deposits in RS (-3.6%), and demand deposits in Caxias (-0.9%). For Brazil, the only observed product with a negative growth rate was savings (-0.3%), which is different from what was observed in Caxias do Sul and the state, where positive growth rates were recorded.

Technology innovation conference and workshops

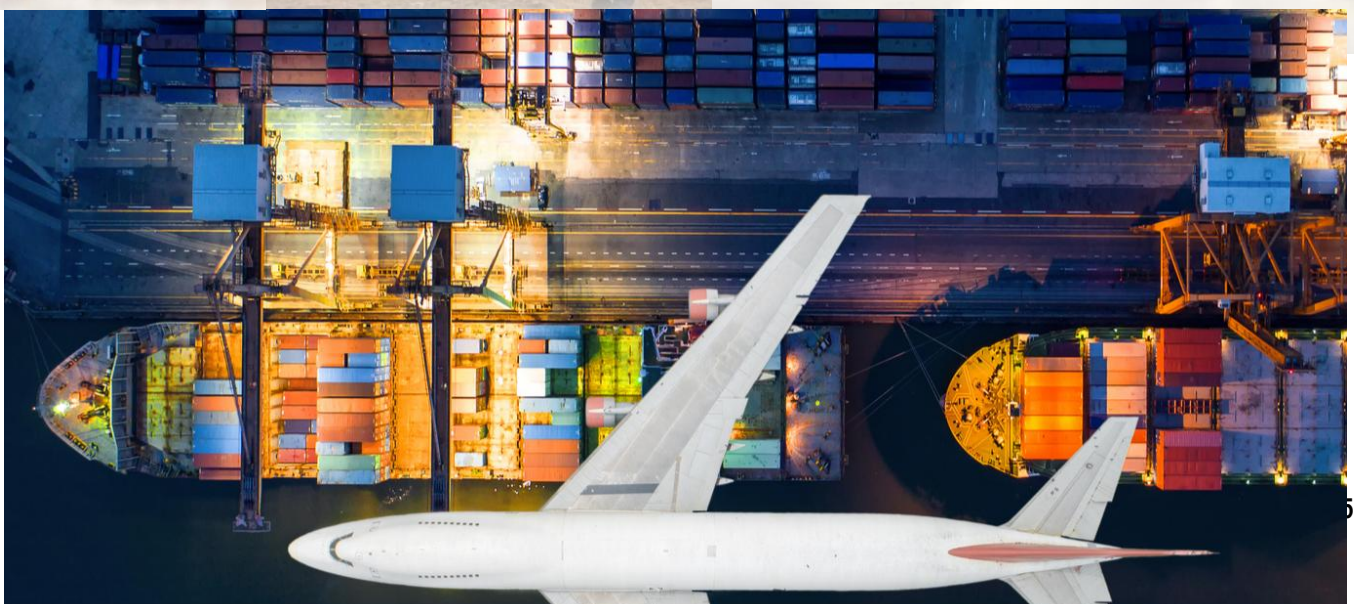
Caxias do Sul has been emerging as a prominent hub for innovation and entrepreneurship in Brazil. The city was recently recognized by Connected Smart Cities for its exemplary practices in smart cities and also stood out in the Global Startup Ecosystem Index, a renowned global ranking of startup ecosystems. The city not only actively participates in renowned events, such as the 9th edition of Connected Smart Cities, but also celebrates World Creativity and Innovation Day, an initiative by the UN. This commitment to innovation was further strengthened with the decision by the Mayor to establish the Week of Creativity and Innovation in Caxias.

A significant milestone for Caxias do Sul is its participation in Tech Road, a strategic partnership with neighboring cities, such as Porto Alegre, Florianópolis, Joinville, and Curitiba. This collaboration aims to establish a network among these cities, encouraging the exchange of experiences, attracting investments, and mutually strengthening innovation ecosystems. The Tech Road emergence has been pivotal in enhancing Caxias's international visibility, placing it in a broader context of technological development in the South region of Brazil. In terms of development, and partnerships, Caxias do Sul was selected for a technical cooperation focused on the digital transformation of municipalities. In the entrepreneurship scene, the city shines in the Entrepreneurial Cities Index (ICE) 2023, being recognized as the sixth most innovative municipality in Brazil. The National Sebrae also highlighted Caxias's progress, emphasizing its advancements in public policies geared towards innovation. All these achievements consolidate Caxias do Sul as a promising destination for entrepreneurs and investors.

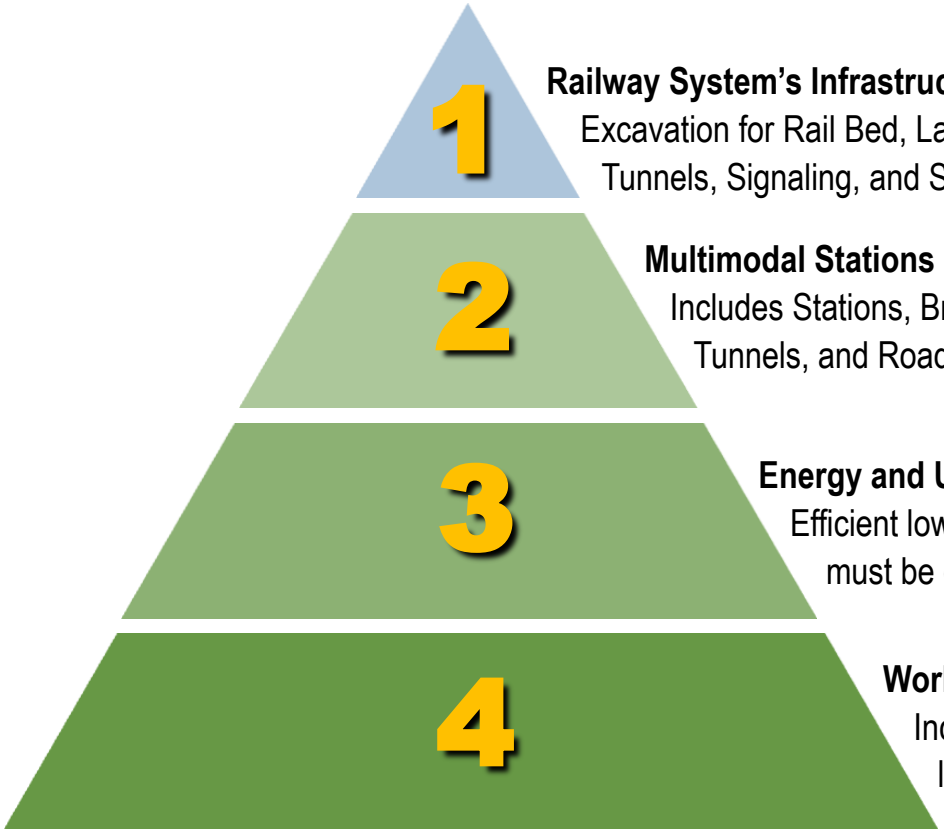
Affirming its commitment to innovation and sustainable development, Caxias do Sul, a city already recognized for its economic and industrial dynamism, took a significant step towards the future with the establishment of the Innovation Law. This legislation, pioneering in its approach and scope, positions the municipality as a leader in promoting an environment conducive to the growth and development of technology-based companies. The Innovation Law not only acknowledges the importance of innovation as a driver of economic development but also sets clear mechanisms to encourage and support innovative initiatives. One of the most notable aspects of the law is the legal security it offers to tech companies. By investing in Caxias do Sul, companies can be assured that they operate in an environment that understands and values innovation.

The legislation provides tangible incentives for companies looking to develop innovative projects. For instance, companies engaging in innovative activities can benefit from a reduction in the ISSQN tax. This proactive approach not only attracts existing businesses to explore new areas of innovation but also encourages startups and entrepreneurs to choose Caxias do Sul as their base. Another groundbreaking aspect of the Innovation Law is its openness for companies from other states to test their technologies in Caxias do Sul. This allows the municipality to become a “testing ground” for innovations, where new ideas can be validated and refined in a real environment. By doing so, Caxias do Sul benefits by becoming an innovation hub, attracting talent, investments, and, of course, cutting-edge technologies.

Furthermore, it establishes a specific investment fund for innovation is another notable feature of the law. This fund allows the public power to raise resources from different spheres to invest directly in innovative projects, ensuring that the most promising ideas receive the necessary financial support to materialize. Caxias do Sul's Innovation Law is more than just a legal document; it's a statement of intent. It shows that the city is committed to positioning itself at the forefront of innovation in Brazil, offering an environment where innovative ideas are not only welcome but actively encouraged and supported. In a constantly changing world, with technology playing an increasingly central role in our lives, initiatives like the Innovation Law are crucial to ensure that Caxias do Sul continues to thrive and lead in the 21st century.



3. ENGINEERING AND INFRASTRUCTURE DETAILS



Railway System's Infrastructure:
Excavation for Rail Bed, Laying Tracks, Bridges, Tunnels, Signaling, and Switching Stations;

Multimodal Stations Interconnectivity:
Includes Stations, Bridges, Viaducts, Tunnels, and Roadways;

Energy and Utilities Systems:
Efficient low impact, and above all must be generationally sustainable;

Works of Art Applications:
Inclusive of community involvement local artisan participation for stations;

The engineering for each phase and aspect of the project's development must take into consideration the projected demographics, but also, the geographic characteristics of the environment. In addition it must also identify and apply innovative solutions to minimize potential impacts and maximize efficiency across all the interconnected systems. It is imperative that redundancy and backup systems be in place to maintain stability for all operations.

RESOURCES FOR THE RAILWAY LINES

In addressing the engineering interconnectivity aspects of the RAILWAY, ROADS, ENERGY, INFORMATION, and TELECOMMUNICATION SYSTEMS development, we have taken into account several measures to mitigate disruption and projected future requirements. The cost factors, identified within, are conservative and justified to meet the next 7 to 10-year demand for a recovery from the 2024 disasters, which crippled the regions GDP. The following narrative will provide an overview of the components being considered for the interconnectivity of a sustainable transportation ecosystem.

RAIL & ROAD SYSTEMS ACCESS

METHODOLOGIES

The conventional planning method is a process that uses a combination of a Geographic Information System (GIS) and (CAD) computer-aided design tools (such as; Civil3D, MicroStation, and ArcView) to help evaluate a route. These tools, however, were developed for use in the initial planning phases, in both the conceptual and executive projects' implementation, making the planning process slower and less assertive. Subsequently, these tools, fall short of the technical characteristics needed for the analysis that are now required to comprise a holistic approach to the activities of the tools and techniques being utilized for precise decision-making, for a good final product.

The conventional process requires time and several resources. The traditional methods of – GIS and CAD tools – make it impossible to analyze the complexities that are linked to a collective ecosystem's development. This process involves multiple engineering variables, environment, community restrictions, and now, with requirements for adaptive climate change measures to help mitigate the effects from atmospheric disturbances. With these integrative levels of planning incorporated into the development the loss of profits, property and more importantly life, can be minimized, which are the primary considerations for sustainable development. The ability to consider multiple and potentially conflicting restrictions in a study to increase the number of options and a range of viable alternatives with solid bases to be explained as to the “WHYs,” allows for best practices to be applied. These alternative solutions become more viable to respond timely when new restrictions are presented. The limited sensitivity analyzes when comparing time vs. costs is critical. These are some of the characteristics that exemplify why the conventional no longer meets the expectations linked to viable infrastructure expansion, and development plans for roads and railways modes of transportation. This brings us to consider the usage and advantages for employing a Quantm® software system to optimize solutions.

Quantm provides the capability to expedite workload and solve the complexity of variables associated with linear infrastructure projects. The system can demonstrate a variety of alternative best practice solutions for compliance with the imposed social and environmental constraints. The Quantm software application is built upon leading technology in route optimization and is supported by engineers, planners, GIS technicians, transportation specialists, mathematicians, and software programmers. This allows its users to employ the most advanced technology in the world to integrate complex constraints, community, and environmental aspects into the planning process and selection of alternatives.

Quantm's ability to simultaneously consider the environment, community, cultural aspects, flood areas, existing linear objects, and diverse geologies has been independently documented in projects in the USA, Canada, France, Spain, South Africa, China, Australia, New Zealand and Brazil. In these projects, compliance with the restrictions was improved by reducing the environmental impact and the analysis of the routes was delivered in a considerably shorter period of time compared to the traditional method.

Where it was possible to make a comparison between the traditional method v/s Quantm, most of the savings were made in the costs of cut/fill, movement and transportation of the raw materials excavated. It is also capable of reductions in structures such as bridges, tunnels, walls, culverts, etc. With Quantm, new route generation can be done quickly and efficiently, by investigating and evaluating literally millions of routes that meet the constraint conditions. In this way, Quantm has repeatedly enabled planners and designers to deliver with significantly improved construction costs while meeting the environmental, community and engineering constraints imposed on the projects.

In considering environmental, social and urban constraints, Quantm software enables users to identification low-cost route alternatives that reduce, and in some cases eliminate, the project's impact on certain environmental, social and urban areas. If routes that meet all restrictions cannot be identified, the system identifies these occurrences so that the team can make subjective decisions based on the information obtained by the software. The speed of the system allows the team to quickly and efficiently generate routes with varied geometry conditions and environmental restrictions. In this way, the team will have a greater and better quantity and quality of information to make recommendations when presenting alternatives to stakeholders and the community. In projects where Quantm was used, its ability to evaluate, compare and document information and alternatives provided by a previously conducted study allowed the team to quickly continue studying new alternatives, which resulted in greater viability. All of this was done in a short period of time and without friction or wear and tear on the relationship between the participating entities.

Where it is not possible to maintain the desired geometry conditions (a condition that can occur due to multiple restrictions), the system clearly indicates these violations. In this way, the team will have information at hand to make adjustments and apply criteria in the decision-making process. All routes are presented in 3 dimensions with horizontal and vertical geometry that can be seen in plan, profile and dynamic cross-section with their respective offset. Determining the most economical option that complies with the defined restrictions are benchmarks to the development. It has been consistently and repeatedly demonstrated that, when there is a route made using the conventional method, compared to alternatives generated by Quantm, savings can range from 7% to 20%, even when the corridor is previously defined.

The example below shows the differences in cost per route, per defined corridor.

1. A vertical optimization, only in the profile of the original route made using the traditional method, resulted in savings of US$28 million;
2. The optimization made in a 200-meter corridor with a central axis in the original route resulted in savings of US$36 million, and;
3. A 1 km corridor demonstrated that if Quantm had been used from the beginning, the savings would have been US$58 million.

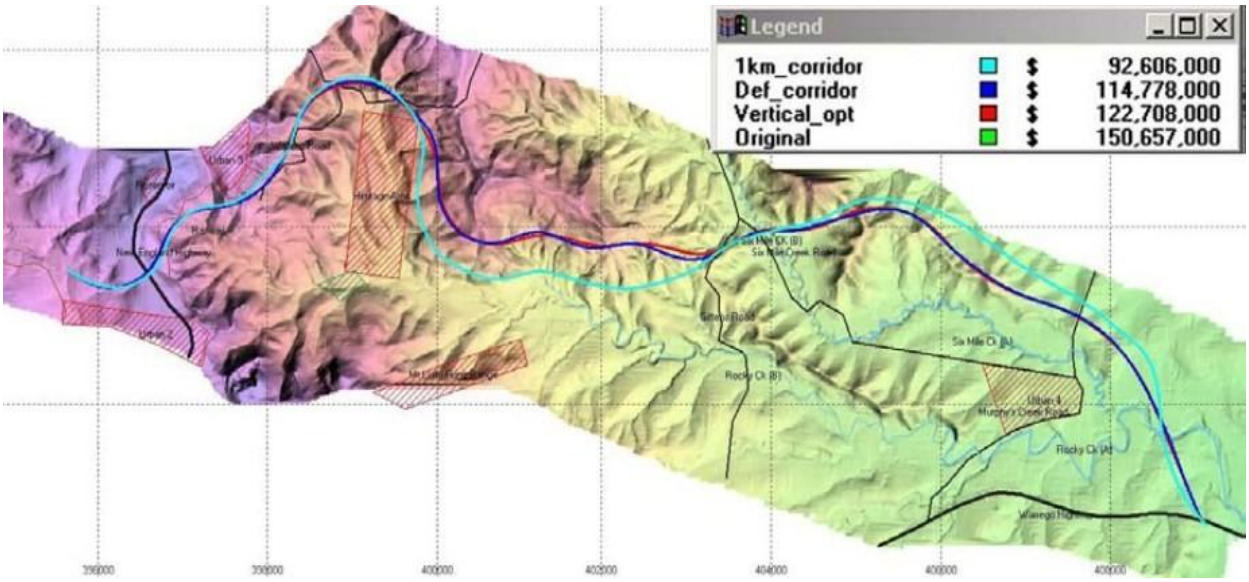


Figure 3 – Routes generated by Quantm software.

In another project where Quantm was applied, the team had to evaluate the impact on construction costs of modifying the ramp grade to allow a passenger train to use the same corridor as the highway. The result was that the grade could be reduced from 6% to 3% without major impact on the highway construction cost. Furthermore, any reduction beyond 3% would significantly impact the location of the route and the viability of the project.

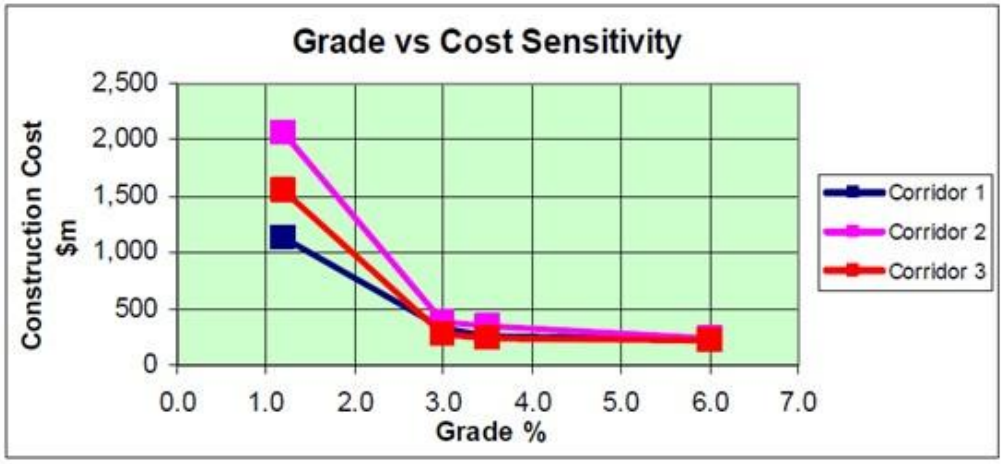


Figure 4 – Comparison between grade and construction cost.

One of the main benefits of Quantm is the breakdown of costs for each route alternative used in each simulation. This aspect helps the user to make decisions more quickly, since the software generates a range of information that supports decision-making, including: earthwork volumes, length of the railway superstructure, expropriation costs, and estimates for special engineering works (bridge, viaduct, tunnel, etc.).

The Quantm software delivers quantities and cost estimates at a project development and planning stage that would not have been possible before. The accuracy of the cost estimate is directly linked to the accuracy of the input unit costs fed into the software. The in-depth analysis of the various alternatives provides the necessary confidence that all options have been investigated and evaluated. All steps that led the project to determine the best alternatives were archived in the scenario “tree” of the project under study. If new restrictions arise during the course of the project, they can be quickly defined in the database and optimized within a period of 24 to 48 hours, in a new set of optimized alternatives, being presented without jeopardizing the project delivery deadlines or the budget allocated to the study.

In this first stage, at least 03 (three) simulations will be performed, resulting in 50 route alternatives each, totaling a minimum of 150 route alternatives. These initial simulations will be in the form of “free exploration”, that is, considering the entire available MDT area. Based on the analysis of the initial results, the technical team will conduct a study to identify possible implementation corridors. In a subsequent phase, still in this pre-aerial photogrammetric survey stage, more simulations will be performed, resulting in 25 more alternatives for each identified corridor. For these alternatives generated in each corridor, the following criteria will be evaluated:

- Variation in CapEx cost,
- Variation of the extension, and
- Horizontal and vertical geometry behavior.

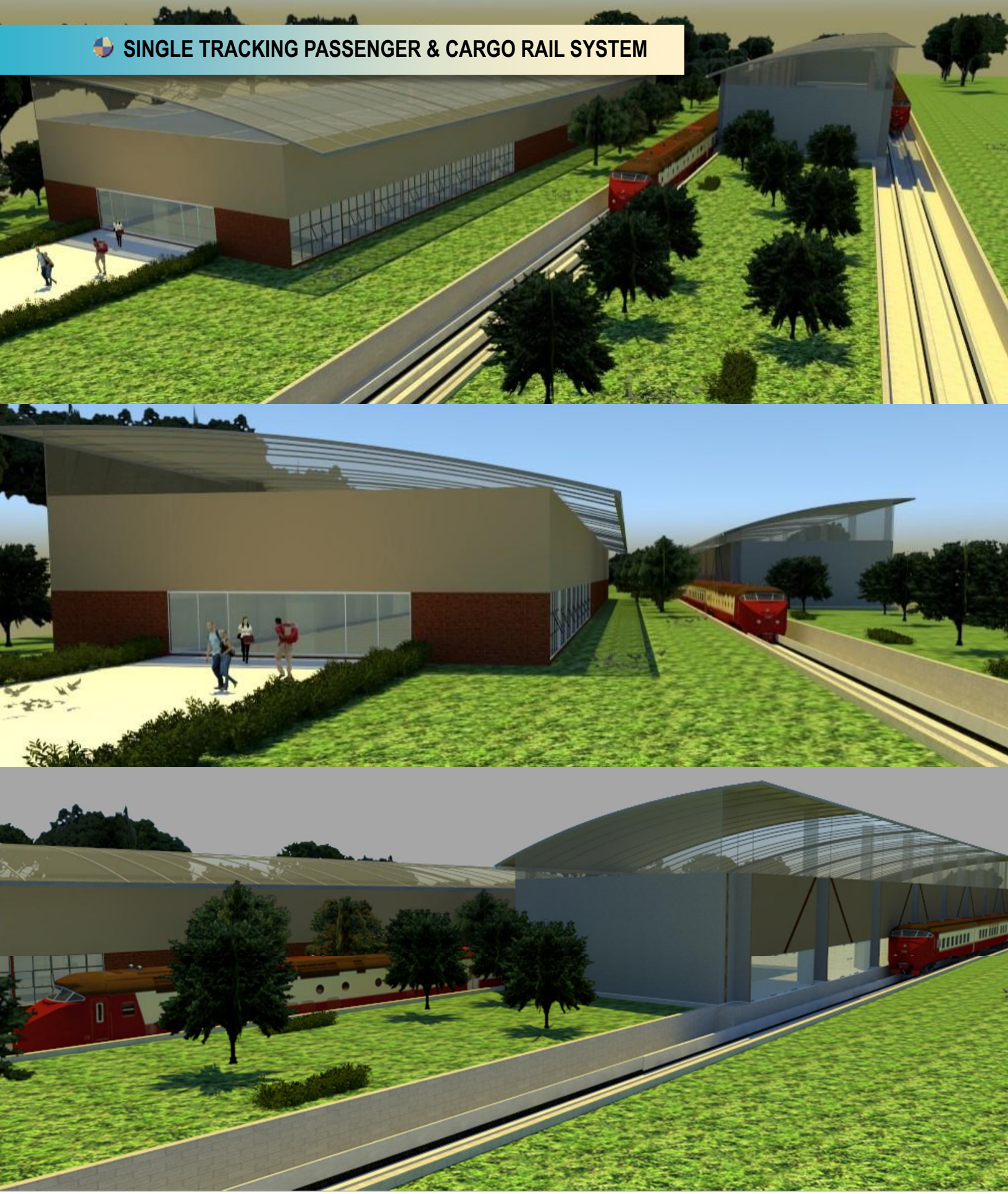
It is important to mention that the Digital Terrain Model (DTM) to be used will be the one based on the SRTM – Band X with 90 and 30m resolution respectively. Once the corridors have been defined in the previous stage, the study in Quantm will move on to the automatic and manual refinement phase. The records will be verified using available orthoimages. Next, the entire updated base will be imported into Quantm® to perform a new simulation, which will be used to obtain 25 more route alternatives for each identified corridor. Based on this new simulation, a statistical analysis of the CapEx cost will be performed among all route alternatives to obtain the cost variation range.

In the last phase, 01 (one) route alternatives will be defined for each segment, which will comply with criteria to be defined. Once these alternatives have been defined, manual refinement will be carried out for final adjustments of at least 01 (one) route alternative for each segment, with the delivery of all data (in xls, dwg, shp, xml and kmz formats) provided by the Quantm software.

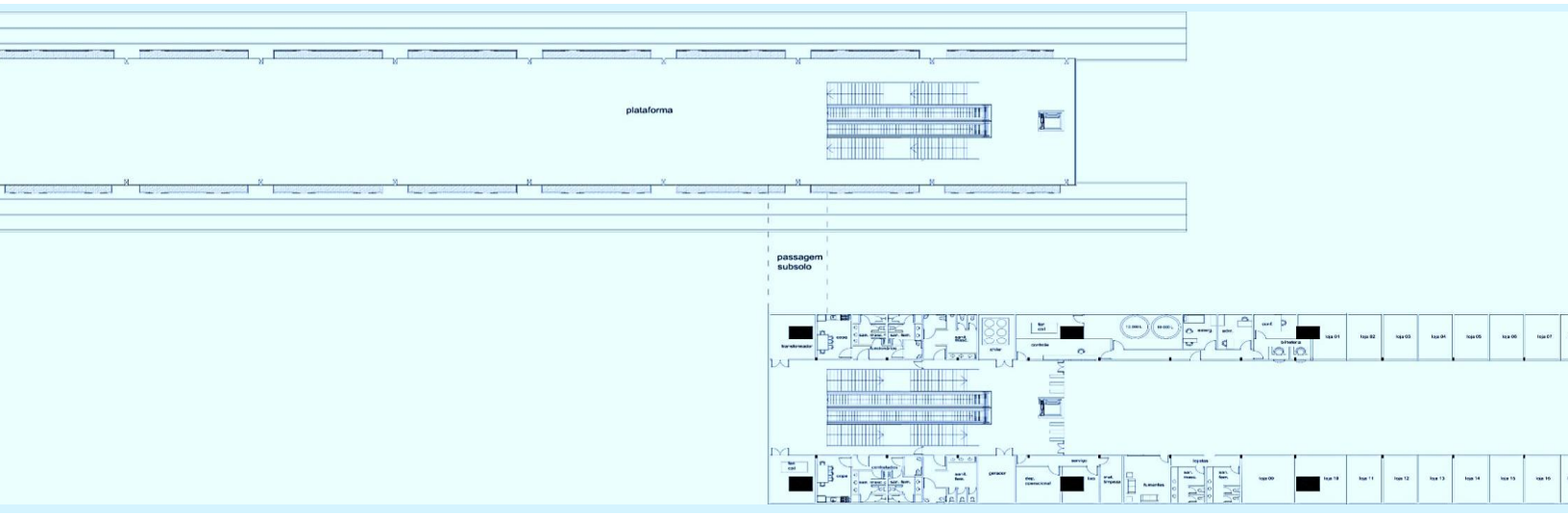
The process of a single-tracking system can be best explained as passengers and cargo traveling to, and from the various destination points on a two (2) railway bed corridor layout. This proposed method of operations is reported to be a more economical means of establishing the initial rail system that will address the various aspects of each station's requirements in the shortest time for the development of the full railway routes and stations.

The cost to analyze and plot the best route through the Quantm software program will consider, not only the initial bed for the two primary single tracking routes for the destination points, but will also consider the attributes of the terrain for an expansion. This methodology has been considered for several reasons. First to ensure the adequate lands required for the current and future needs. Secondly, the cost at the current market price would be shielded from future price increases in the cost for excavation and cost of lands. Lastly, the value of the raw materials that will be extracted from the excavation will aid in the deference of the cost through the sale of the raw materials.

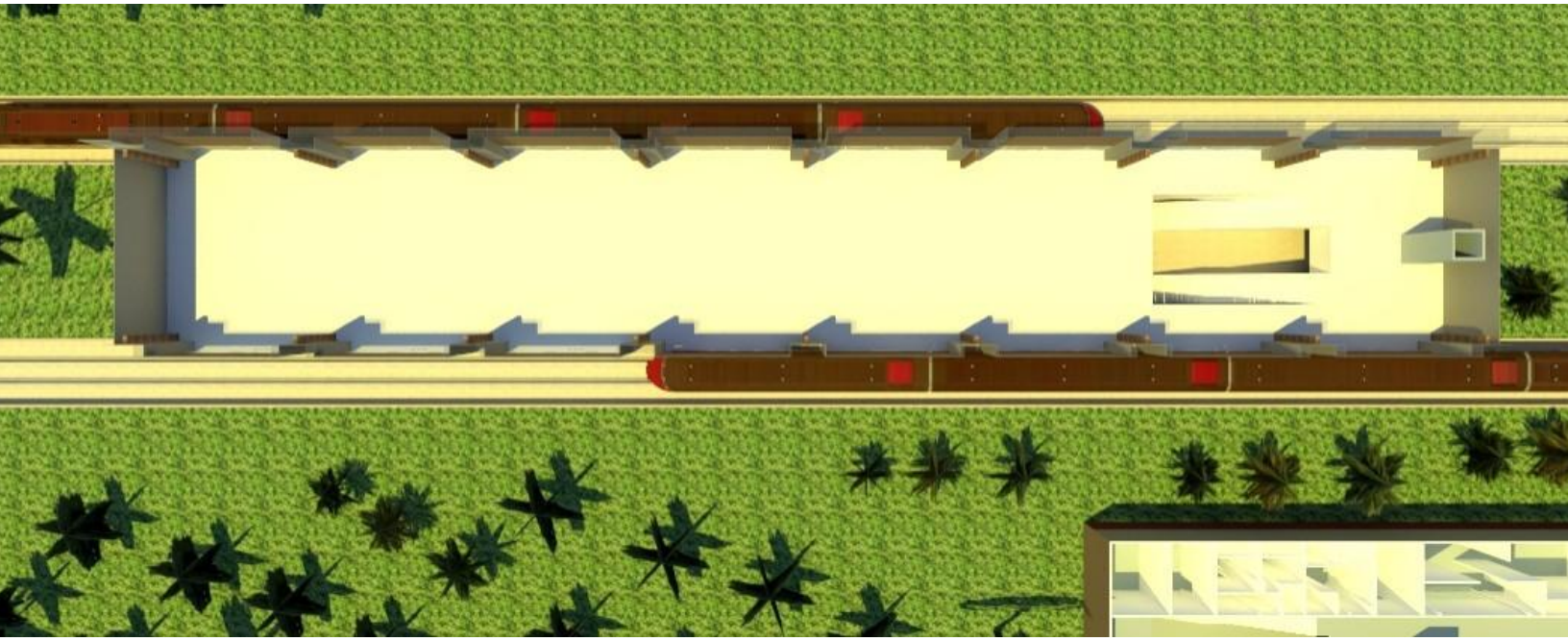
SINGLE TRACKING PASSENGER & CARGO RAIL SYSTEM



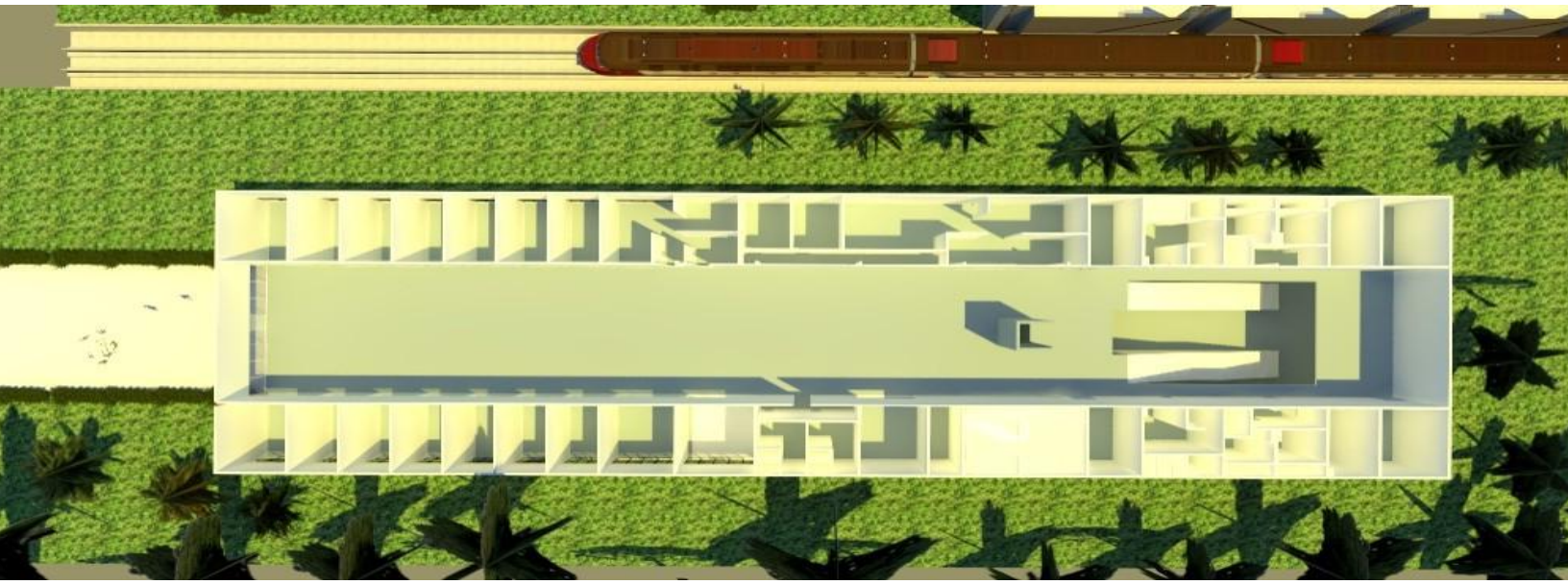
Aerial view: *Conceptual model illustration of the proposed passenger station entrance, single rail tracking configuration, and cargo depot.*



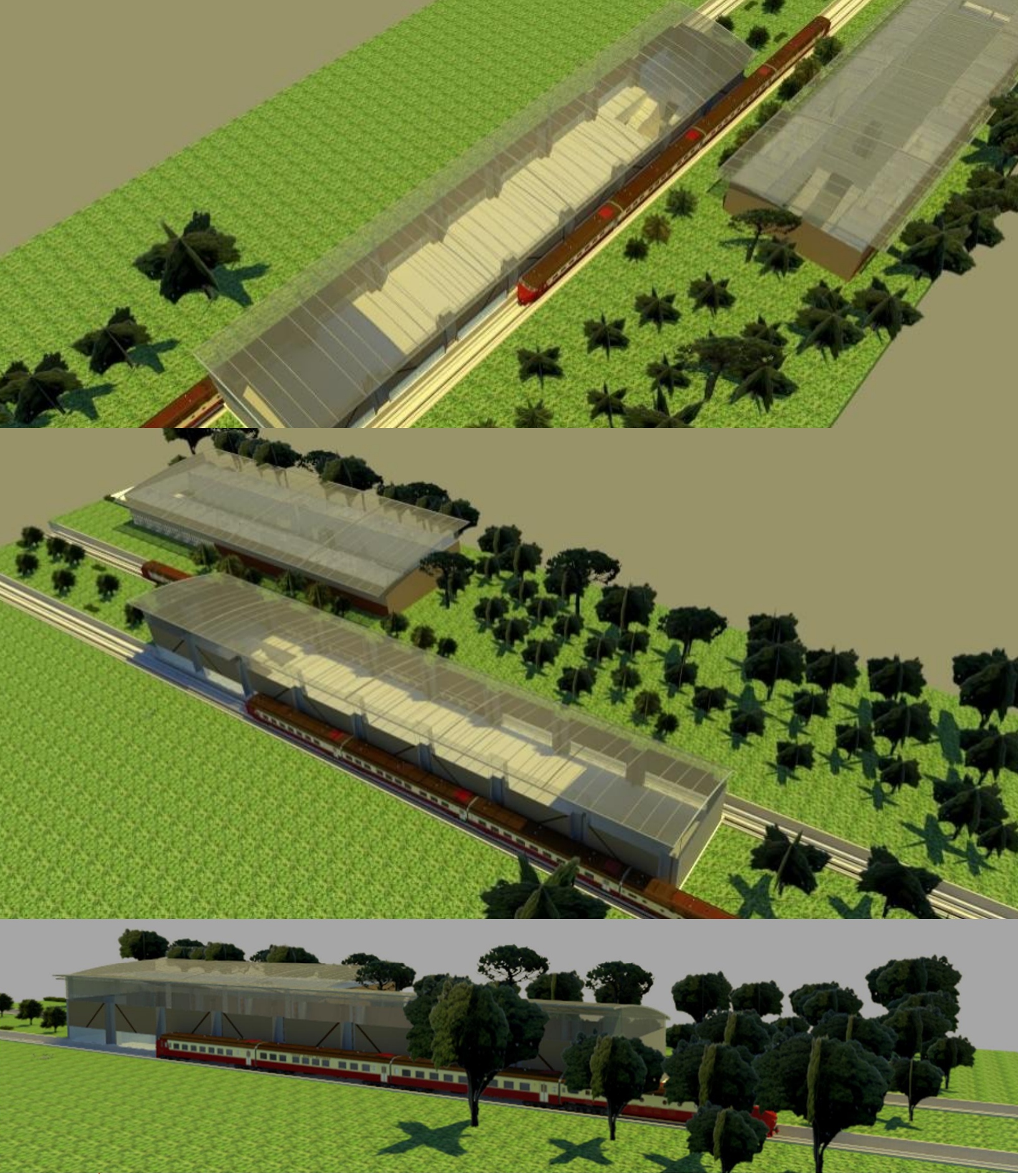
Above: *illustration blueprint of the passenger station, cargo depot and single tracking management area.*



Above: *Conceptual model illustration configuration of passenger embarkation and debarkation area.*



Above: *Conceptual illustration configured for facilities management of single rail tracking operations.*



Ariel views left and right: *Conceptual model illustration of single rail tracking for passenger station, cargo depot management area.*

This methodology has been considered for several reasons. First to ensure that there are adequate lands required for the current and future needs. Second, the cost at the current market price would be shielded from future price increases in the cost for excavation and cost of lands. Lastly, the value of the raw materials that will be extracted from the excavation will aid in the deference of the cost through the sale of the raw materials.

The major and most important elements of the single tracking system are the safety factors incorporated in the switching systems that are built into every other passenger rail station and cargo depot. Both the passenger stations and cargo depots will have fail safe mechanisms incorporated in to their 24 hour scheduling for the movement of cargo and passengers, with passenger access starting at 5:00 hrs., until 18 or 19:00 hrs., and cargo shipping from 19:00 to 4:00 hrs., are the proposed time scheduling. This proposed scheduling and the consistent maintenance of the switching stations, and the dynamic and static scale will aid in the insurance of safety for the passengers and the timely delivery of goods to their points of destination.

The consideration for having the prime contractors readily accessible for maintenance and troubleshooting the passenger line engines and cars built by the Marcopolo Corporation adds an extra measure of assurance for maintaining the proposed scheduling in addition to the cost savings from its established facilities and workforce in the region that would be represented in their cost factors. These measures hold the same for the manufacturing and maintenance of the cargo train's wagons that are to be built by the Random Corporation.

With regards to the cargo trains engines we have consider the viability of multiple energy sources to power the cargo locative. The initially proposed locative engines for the cargo trains will utilize at least 50% diesel and 50% electric power. There is also an option in the coming years for a third engine operating with solar and/or a hydrogen powered engine to drive the cargo train.

It is expected that the development of the rail system will employ an estimated construction roster of 1,000 to 1,200 persons over the next 4 years. After completion of the systems, we are expected to employ 300 persons to conduct the various operational aspects of the train. The objective is to maintain the train's functioning at its optimum capacity 24 hours, 7 days a week.

ENERGY RESOURCES

We have orchestrated alliances within our development matrix with RGE for the electric power to support the train's energy requirement. Initially eighty 80% of the electricity will come from the isolated dedicated substations for electricity energy supply and distribution directly in each of the 14 municipal cities' stations, and eventually, the latter 2 stations to come on line in the second phase going to Arroio do Sal and Flores da Cunha. The arrangement calls for power to each of the train stations and depots, the surrounding infrastructure of the roads lighting systems and various other support systems primarily for the passenger trains.

The proposed electrical conduits and distribution lines will be deployed underground with sensor arrays for monitoring to minimize the threat of potential power outage or distribution disruption. In preparation for laying the train's bed and the security fencing where applicable, the installation of a solar array will be applied. This measure will also call for an isolated, dedicated power storage and distribution network system to be constructed at points along the train's path. The initial eighty percent of electric power supplied by RGE will be supplemented by 20% from alternative self-sustained renewable solar and wind power. Once fully operational with adequate generation and storage capacity, the train's energy system will transform its power ratios from the 80% supplied by RGE to 80% supplied through its internal solar and wind array resources installed along the train's route and maintained by the Serra Gaúcha Regional Train.

INFORMATION SYSTEMS

The information systems are being designed as a property standalone system for the train's operations, coordination, and scheduling. To ensure the continuity of regulatory procedures, a reciprocal concession from SIGA, for the first 10 years the central operation department will be interconnected with all the official departments of transportation in the State of Rio Grande do Sul and Brazil to ensure continuity in the quality of services, and once again more importantly, operational safety.

The platforms will be somewhat similar to those use in USA and Europe as an integrate system online and on time by satellite connection so everybody knows everything all the time. However, additional element will provide analyst data from the train's consistent route, monitoring the various elements programed into the sensor array for computing and modeling of specific environmental and economic variables.

TELECOMMUNICATIONS

The telecommunications will be comprised of an internal operating system connected via hard lines and satellite connections to the internet with either Voice over Internet Protocols (VoIP), and/or Session Initiation Protocols (SIP) data transmission. The hardlines, cellular phones, and other platforms within the operations will be maintained through the internal server system. All passenger trains will have free WiFi signal to the internet. We will consider a range of telecom providers such as Embratel and/or other national internet providers. The train's internal operations management will have supplemental emergency communication systems of 2 and 3-way nationwide access long-range Walkie Talkie frequencies, equivalent to paraphilia utilized by the First Responders systems directly linked into their chain of command.

4. HERITAGE PRESERVATION AND CONTINUITY IN THE DEVELOPMENT

HERITAGE PROTECTION AND CONNECTIVITY

The preservation of the historical and cultural heritage of the region is imperative during the implementation of the rail line, adapting the project or creating protective measures when necessary, above all else.

From the tours stats, among the major events hosted by Caxias do Sul, the traditional Grape Festival and Mercopar are the most prominent. The Grape Festival is a nationally renowned event, held since 1931, celebrating the culture of Italian immigrants who made the region of Caxias do Sul their home. The event takes place in February at the Mário Bernardino Ramos Exhibition Park, one of the most traditional venues in the Serra Gaúcha, featuring: a showcasing artistic displays, parades, grape tasting, gastronomy, national/regional shows, and an agro-industrial fair. The last fair, held in 2022, attracted nearly 350,000 visitors with 250 exhibitors from industry, commerce, services, entities, and sponsors, as well as over 150 regional artists.

JOB CREATION PROJECTIONS

The Thematic Attraction Index is an analytical tool that provides information on a city's ability to attract people based on the diversity of the Commerce and Services sectors. The index offers insights into the relative position of cities in terms of the provision of goods, services, and inputs, assisting in urban planning and investment decisions. Caxias do Sul stands out in some areas, demonstrating its regional potential and importance on the national stage. Caxias do Sul is particularly prominent in clothing and footwear shopping, holding the 33rd position in the national ranking—a notably high position compared to other categories. This ranking suggests significant regional attraction in the apparel sector, showcasing the city's potential as a hub for this market segment in the Brazilian landscape.

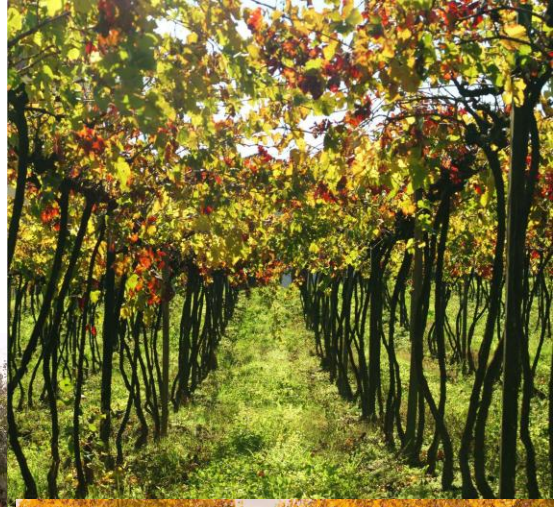
Oher crucial factors are the planned road connectivity, which promises to link Caxias to other key regions. The expansion in road infrastructure, development of the railway, coupled with the airport's capacity, will make the municipalities even more attractive for investments, business, and visitors. In Caxias do Sul, there are 22 cooperatives across six sectors, including agriculture, consumption, credit, infrastructure, health, and labor. These cooperatives foster economic and social development, offering better growth opportunities. The cooperative model is highlighted by the United Nations as a way to create wealth and alleviate poverty, promoting the pursuit of equality. The actions proposed by cooperatives are aligned with sustainable community development, which encompasses social, economic, and environmental dimensions.

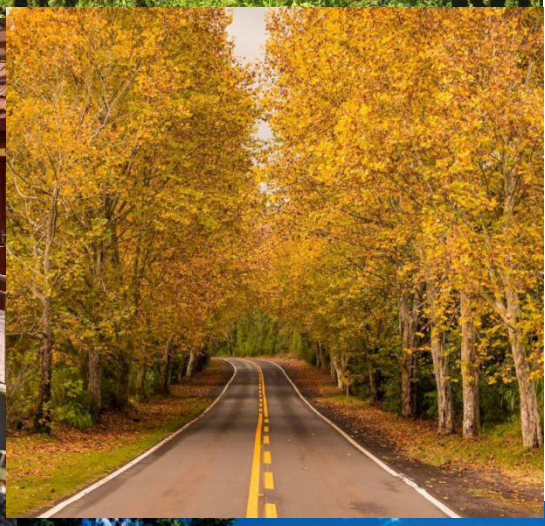
Mercopar is an industrial innovation fair that has been taking place for 30 years, aiming to connect national and international companies, facilitating the exchange of knowledge and industry trends among small, medium, and large businesses. The last edition (31st), held in 2022, generated R$430 million in business and attracted approximately 35,000 people (27,000 in-person visitors and 8,000 online platform accesses). There were 512 exhibitors from sectors including metalworking, information technology, energy and environment, rubber, industrial automation, plastic, electro-electronic, along with the handling and storage of goods.

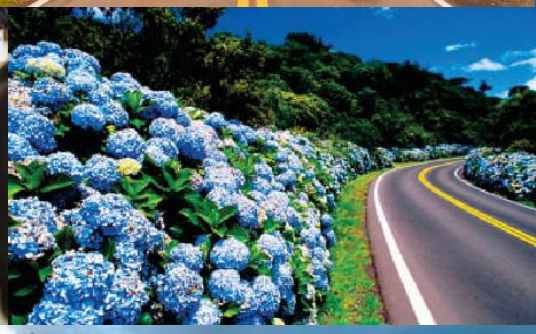
Following the presentation of the New Municipal Tourism Plan, approved in 2021, a website with tourist information for the city was created along with actions to encourage both the local population and tourists to visit the city. An example of this was the Caxias do Sul Tourism Week, which aimed to showcase the city's potential. Another highlight of the Plan is the acquisition of the +TURISMO SEAL, a certification filed with the Ministry of Tourism, which if approved, would allow the municipalities to request federal resources for investments in the sector. We are projecting a 10-15 percent increase of the seasonal employment and a 5% increase to the employment statics within the first year of operations of the train and modes of transport systems.

TOURISM PROMOTION

Enhance the development of tourism in the region, taking advantage of the new transportation infrastructure to attract more visitors. The multimodal rail line between Bento Gonçalves and Bom Jesus has the potential to transform the region.







With careful planning, public participation and with a commitment to sustainability, we can create an infrastructure that will benefit future generations. Caxias do Sul offers seven tourist routes: Ana Rech, Colônia Paths, Caravaggio Paths, Criúva, Immigrant's Road, Urban La Città, and Trentino Valley.

1. The Ana Rech route stands out for the traditions and customs of Italian immigrants, with an emphasis on the craft culture.
2. Colônia Paths integrates the municipalities of Caxias do Sul and Flores da Cunha, highlighting gastronomy and wines.
3. The Caravaggio Paths comprise a pilgrimage route that passes through the municipalities of Canela, Gramado, Nova Petrópolis, Caxias do Sul, and Farroupilha, connecting the Our Lady of Caravaggio Sanctuaries in Canela and Farroupilha.
4. Criúva was named after a typical tree in the region and is known for its ecological trails and sports activities, as well as its religious aspect.

5. The Immigrant's Road route encompasses the path that the first immigrants traveled upon their arrival in the Serra Gaúcha region in the mid-20th century. Among the route taken by tourists, there is a focus on centuries-old tourist spots, such as stone churches and caves.
6. The urban side tells the history of the city of Caxias do Sul through visits to places like the Municipal Museum, Ambience Museum, Stone House, and National Immigrant Monument.
7. The Trentino Valley is a route known for the stages of wine production, from vine planting to wine age.

The city of Caxias do Sul boasts four Tourist Information Centers, providing details about the city's attractions and events. These centers are strategically located in key areas such as the Pavilions of the Grape Festival, the Airport, the Bus Terminal, and Dante Alighieri Square. During the first semester of 2022, there were 15,013 flights at the state's airports, with Caxias do Sul being the second most frequented destination, hosting 339 flights and serving 15,638 passengers. Regarding road transportation, the average weekly passenger flow is 1,328, totaling 34,533 passengers in the first semester of 2022. There was a notable increase in the daily average of passengers, reaching 4,144, representing a 212% surge in early March, coinciding with the celebration of the National Grape Festival ([Tourism Observatory RS, 2022).

COMPENSATION OPTIONS FOR EMINENT DOMAIN DISPLACEMENT

Develop efficient environmental compensation plans to mitigate the project's unavoidable impacts. As further explained under Compensation Options for areas of land where the train will pass the following are compensating options:

- Magnetic Transportation Cards may be issued to family that owns land in question for a period of 35 years, renewable for another 35 years to use the trains between the 14 municipalities indefinitely.
- Land will be purchased from the owner and the right of possession and ownership will be transferred via deed to the company. The amount to be paid will be at the market value of the land, in the municipality where the area is to be compensated.
- The family or enterprise may receive a ready-made store at the passenger stations to be built in each municipality and/or at the cargo transfer stations. There will be clothing stores, appliance stores, shoe stores, toy stores, markets, bars, restaurants, bookstores and hotels. This will be at the passenger and cargo stations. All storage, transportation, loading and unloading systems will be prioritized for the owners of the land areas to take over these businesses, generating employment and income for their families and the municipalities in question.
- Carbon Credits, where families will be compensated with an annual amount during the 35 years of the concession or bidding in relation to the zero carbon project that the winning company implements in relation to mitigation, additionality and compensation in an area of 10m wide on each side along the entire length of the train line. With the advantage that the carbon credit tends to increase annually. In addition to all other carbon modalities in the process.

5. LEGISLATIVE AND PUBLIC HEARINGS

On 12/10/2004, SIGA"s CEO presented to the Legislative Council the progress made over the past 3 years.

He reviled the various funding resources and insurance instruments that have been identified for the train's development.

CITY COUNCIL, FEATURE 02

Councilors of Caxias do Sul approve the creation of a parliamentary front in support of the Serra Regional Train

FILIPE BROGLIATTO
02/14/2025 - UPDATED ON 02/14/2025 - 11:44

1 MINUTE READ

Proposing councilor, Sandra Bonetto/NOVO
Credit: Vitor Ló/Caxias City Council

Group will remain active until December 31, 2026

In the ordinary session this Thursday (13), the City Council of Caxias do Sul unanimously approved the creation of the **Parliamentary Front to Support the Installation of the Serra Gaúcha Regional Train** . The initiative, formalized by request 17/2025, was authored by councilwoman Sandra Bonetto (Novo) and will be valid until December 31, 2026.

The document, signed by 14 other members of parliament from different parties, highlights that the implementation of the Serra Gaúcha Regional Train is essential for sustainable development and improving the quality of life in the region. The project seeks to address mobility and logistics challenges by offering an efficient, safe and environmentally sustainable transportation alternative. In addition, it foresees positive impacts on tourism, strengthening the local economy and generating jobs.

The objectives of the parliamentary front include raising state and federal funds, encouraging public-private partnerships (PPPs) and promoting actions that ensure transparency and efficiency in project execution.

The Creation of a Parliamentary Front to Support the Installation of the Serra Gaúcha Regional Train Approved.

According to the documentation of 2025, the implementation of the Serra Gaúcha Regional Train is a necessary initiative for sustainable development and improving the quality of life in the region. The project aims to address mobility and logistics challenges by offering an efficient, safe and sustainable solution. In addition, it will boost tourism, strengthen the local economy and create job opportunities.

The preceding and following pages of photographs and newspaper articles represent a cross-section of events and forums that chronicle the many public hearings held in support of the train's development dating back to the years 2020, and 2021 after recovery from the global pandemic and more recent 2024 and 2025.

The first Municipal City Mayors of the Serra Gaúcha signing the document intentions for the Regional Train development along with their staff members and SIGA's representatives.

Quatro anos de construção

A ideia de operação do trem da Serra gaúcha é que faça o transporte de cargas entre meia-noite e 5 horas. Entre 5 horas e meia-noite, possa ser utilizado por passageiros, com vagões que tenham teto transparente, bem como opções de entretenimento no próprio espaço. "O trem vai facilitar a conexão entre as cidades, ampliar a capacidade de escoamento das produções, trazer mais agilidade e segurança para todos, melhorar a mobilidade urbana. E também possibilitará um transporte mais seguro e mais barato", garante o presidente do consórcio.

Ainda não há um prazo definido para o início das obras ou da operação do trem. Entretanto, Arnildo diz que as empresas consultadas afirmam que conseguem terminar a construção da linha férrea em quatro anos.

Só que para isso se concretizar será preciso muita negociação anterior com os donos das áreas privadas por onde o trem deve passar. "Haverá um trabalho nos próximos meses com os proprietários para que possamos conversar sobre as compensações. Há possibilidade de pagar pelos terrenos em dinheiro, também disponibilizar áreas das estações para exploração de serviços de hotelaria e gastronomia, conceder tickets vitalícios para uso do trem. Temos uma série de opções e as famílias vão escolher o que é melhor", atesta.

DIVULGAÇÃO

Reunião com prefeitos sobre o projeto ocorreu em maio de 2022

O que dizem os prefeitos da região

Em maio de 2022, em uma reunião da Associação dos Municípios de Turismo da Serra (Amserra), os prefeitos da região tomaram conhecimento sobre o projeto. Segundo Arnildo, foi comunicado sobre um aporte de R$ 50 mil de cada cidade. O valor deve ser devolvido após definida a empresa vencedora da licitação ou concessão. "As prefeituras vão ter poder de fiscalização", aponta.

Para o vice-prefeito de Gramado, Luia Barbacovi, a ideia do projeto é boa, mas ele acredita que é algo que se concretize somente a longo prazo. O presidente da Amserra e prefeito de Canela, Constatino Orsolin, destaca que ainda não existe uma unanimidade da viabilidade do projeto. "Mas tudo que venha para somar com o desenvolvimento da região é de grande valia", diz.

Já para o prefeito de Nova Petrópolis, Jorge Darlei Wolf, o projeto precisa ser debatido e esclarecido, pois, conforme ele, o pagamento de R$ 50 mil por todos os municípios não é justo. "Uma vez que o transporte de passageiros e cargas não contemplaria todas as cidades da mesma forma. Nova Petrópolis, por exemplo, teria pouco proveito do transporte de cargas", enfatiza.

Outro projeto no Estado

O Rio Grande do Sul possui outros projetos de transporte de cargas e passageiros, como o hyperloop. O "trem-bala" deve ligar Porto Alegre a Caxias do Sul em apenas 19 minutos, passando também pela Região das Hortênsias. Questionando sobre o projeto, Arnildo avalia que o trem regional será um complemento e que um vai se beneficiar com o outro.

"Vai ser de grande eficiência porque vai trazer o público, que hoje fica quase três horas na estrada, em poucos minutos. Auxilia no contexto geral. Só que os turistas que buscam a região querem chegar logo, mas querem poder observar os pássaros, as árvores, os rios. Isso precisa ser feito com um trem normal. Então, vai ser ótimo para ambos", ressalta.


SIGA
MOBILIDADE
URBANA
RIO GRANDE DO SUL • SUSTAINABLE GOALS
GROTTO
BRAND RS BRAZIL for Life
GRAND RIVER SOUTH • PRODUCT LINES, S.A.
WE ARE BUILDING VIABLE
ECOSYSTEMS AND SUSTAINABLE
INFRASTRUCTURE IN SOUTH BRAZIL

CARBON CREDITS USAGE & TECHNOLOGIES

As the world faces the challenges of climate change, businesses, and individuals are increasingly turning to carbon credits as a way to reduce their carbon footprint and support sustainable development. In the preliminary studies cited the generation of carbon credits are but a fraction of the potential available assets proposed in the development of the train, stations depots and merchants establishment that will be required to be in compliance with the sustainable eco regulations. In the estimates of the Serra Gacha Regional Train buffer strip, the following considerations are being taken into account to utilize the Carbon Credits that are available to help offset the cost of development along with the raw materials from excavation.

- Carbon credits are a way to offset greenhouse gas emissions by investing in projects that reduce or remove carbon dioxide from the atmosphere. By purchasing carbon credits, individuals and businesses can support projects such as renewable energy, reforestation, and energy efficiency, and reduce their environmental impact.
- Carbon credits are traded on carbon markets, where they have a monetary value based on the amount of carbon dioxide they represent. Each carbon credit represents one tonne of carbon dioxide equivalent (CO2e) that has been avoided or removed from the atmosphere. Companies or individuals can purchase these credits to offset their own carbon emissions, thus supporting sustainable projects and reducing their environmental impact.
- Carbon credits not only help to reduce greenhouse gas emissions, they also support sustainable development by promoting clean energy, protecting forests, and improving access to clean water and sanitation. Furthermore, carbon credits can provide economic opportunities for developing countries and communities, as they can generate revenue from sustainable projects and support local employment.

Figure 1

- If you're interested in reducing your carbon footprint and supporting sustainable development, consider purchasing carbon credits from reputable providers. Look for projects that align with your values and priorities, and verify that the credits are third-party certified to ensure their legitimacy. By investing in carbon credits, we can turn emissions into opportunities and support a more sustainable and resilient future for ourselves and for the planet.

GLOBAL CARBON MARKET

The global carbon credits market operates under the Kyoto Protocol and the Paris Agreement. It allows companies and nations to compensate your emissions by purchasing carbon credits from projects that reduce emissions in other areas of the world. Carbon credits are often traded on stock exchanges, and its value varies according to supply and demand. Carbon Market in Brazil: Brazil is one of the countries that actively participate of the carbon credits market. With the vast extension of forests and their importance in reducing emissions, the country is involved in projects to reduce deforestation and reforestation that generate carbon credits. The carbon credits market in Brazil has attracted investors and companies interested in offsetting their emissions.

FINANCING SUSTAINABLE PROJECTS

Many companies and financial organizations often invest in emissions reduction projects as a way to meet their targets for sustainability and social responsibility. This may include project financing renewable energy, reforestation, energy efficiency and others. Financial Innovations: The carbon market has encouraged financial innovation, such as the creation of impact investment funds and green bonds, which channel capital for sustainable projects that generate carbon credits. The carbon credit market is a dynamic and evolving area that is interconnected with financial and investment issues.

As concerns about climate change increases, the carbon market is likely to play an increasingly important role in allocating financial resources to projects sustainability and the mitigation of greenhouse gas emissions. We intend to utilize the marketing strategies and contacts made at Conference of the Parties COP-29 for preparation of Proof of Concept that will be presented to the (UNFCCC) during the third quarter of 2025 at COP/30 in Brazil. Upon presentation of Proof of Concept, the intention is to consider its usage as an international standard for a means of verification of Carbon Credit Certification.

Regulated and Voluntary Carbon Credit Markets: Carbon credit markets play a vital role in reducing GHG emissions, there are two main types of markets: regulated and voluntary. Regulated Markets: These markets are created based on regulations governments, such as the CDM established by the Kyoto Protocol. Companies and governments are required to reduce emissions or acquire carbon credits to meet their targets. Brazilian legislation related to regulated carbon credits involves the Policy National Climate Change Act (Law No. 12,187/2009) and the Commission's regulations Inter-Ministerial Council for Global Climate Change (CIMGC).

Voluntary Markets: These markets are based on voluntary companies, organizations and individuals who wish to offset their emissions and promote sustainable practices. Although they are not compulsory, they play an important role in promoting climate action. Participation in voluntary markets has grown in Brazil as companies seek to reduce their carbon footprint and demonstrate commitment to sustainability.

- Legislation related to carbon credits varies according to countries and regions. In Brazil, legislation is a combination of government regulations and international agreements. The National Climate Change Policy (Law No. 12,187/2009) establishes guidelines for reducing GHG emissions in the country and regulating Interministerial Commission on Global Climate Change (CIMGC) defines procedures for the implementation of CDM projects and the issuance of carbon credits. The law that changes rules for the management of public forests by concession, to expand the possibilities of exploration of the area by the concessionaire (Law nº 14,590/23) which allows credit trading of carbon and the exploitation of the biodiversity of the granted unit.

Regulated Markets: In accordance with international legislation; The Kyoto Protocol (CMNUCC, 2023) established the framework for the CDM and defined emissions reduction targets for countries signatories and the Paris Agreement (2015) commits countries to limit the increase in global temperature and promote mitigation actions. In this sense, regulated carbon credits are generally certified by entities recognized and authorized by the competent body of the country or region in which the project is located.

At the international level, the body that supervises and regulates carbon credit activities is under the United Nations' Framework Convention on Change (UNFCCC), which includes the Clean Development Mechanism (CDM). However, there are several national and regional entities that are authorized to certify carbon credit projects, subject to UNFCCC guidelines. Some examples of these entities include:

- **National Designated Entities (DNA):** In many countries, National Designated Entities Nationals are responsible for evaluating and approving carbon credit projects in accordance with UNFCCC guidelines. They ensure that projects meet the criteria established and that emission reductions are real and measurable.
- **Certification Organizations:** There are independent certification organizations who act as third parties to verify carbon credit projects and issue emission reduction certificates. Examples include Gold Standard and Verified Carbon Standard.
- **Audit Entities:** In some cases, independent auditors, often auditing companies, are hired to verify carbon credit projects and issue verification reports that are submitted to the competent authorities.
- **Environmental Regulators**: In some countries, environmental regulatory agencies have a role in the certification and verification of carbon credit projects.

Carbon credits come from the flexibility mechanism, called the Clean Development Mechanism (MDL). They emerged through the proposal of the Kyoto Protocol, with the objective of guaranteeing economic development, combined with environmental protection, with reduction targets being established to be achieved by nations. One carbon credit is equivalent to one ton of carbon dioxide (CO2), which is the main gas causing of the greenhouse effect. This offset is no longer emitted or is sequestered from the atmosphere. Thus, credits are a kind of "permission" to emit such gases. The owner of a credit can emit a ton of carbon or concentrate equivalent tons of other greenhouse gases.

Countries that fail to meet targets can buy credits from nations that have reduced their emissions. The same logic applies to companies. Due to the extra cost of the purchase, an incentive is created for companies to reduce emissions or invest in projects that yield credits. Brazil, as it has a large area of both planted forests and native forests, has potential in relation to this system, which in addition to being a measure allied to the environment, it can bring financial compensation to the country.

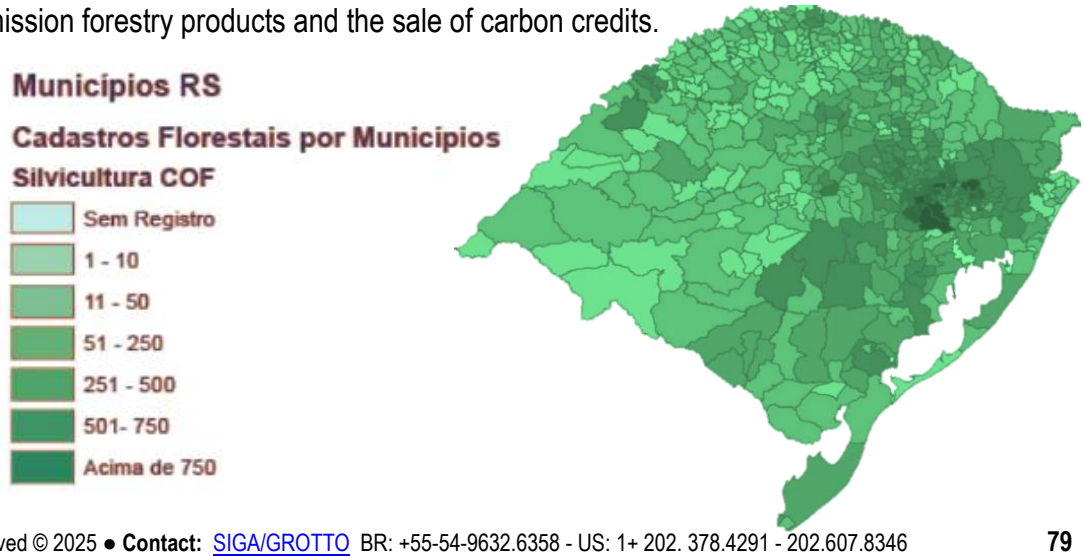
It is important to note that for carbon credits are accepted and traded on international markets, they must be certified by entities recognized by the UNFCCC and comply with international guidelines and regulations. Additionally, carbon credits must be issued in accordance with standards and methods specific to ensure that they represent a real and measurable reduction in greenhouse gas emissions greenhouse gases. Therefore, the certification of regulated carbon credits involves a rigorous verification process in accordance with national and international standards. With this factor in mind, SIGA has taken what it feels to be necessary steps to establish contractual engagements with corporations developing technologies for verification of said credits and with associations such as AGAFLOR, Gaúcha Association of Foresters and AGEFLOR, Gaúcha Association of Forestry Companies that will encore the continuous production of CO2 inhibitors from the forestry and agricultural industries in South Brazil.

FOREST PLANTATION AREAS

The planted forest sector stands out for its potential impact in relation to climate change mitigation through its extensive forest areas, which can be considered a renewable resource and a recycling source of carbon, with storage and storage being of fundamental importance in terms of sustainability and reducing climate impacts. The carbon balance in forest ecosystems is represented by net primary production, which is defined by difference between the chemical energy fixed by photosynthesis and the loss between heterotrophic and autotrophic respiration and mortality. Planted forests have a great capacity to remove CO2 from the atmosphere, inserting carbon (C) into the plant biomass and, consequently, in the soil, thus allowing an excellent carbon balance.

At the national level, planted forests have high potential for carbon sequestration, and for With 9.6 million hectares of plantations, the country stores around 1.9 billion tons of carbon dioxide (IBÁ, 2021). Already the Legal Reserve (RL) and Permanent Preservation Areas (APP) areas total around 6 million hectares and stores around 2.06 billion tons of carbon dioxide IBÁ, 2021 (Figure 2 below). These advantages allow the carbon balance of planted forests to be favorable, even enabling the generation of income from the certification of low-emission forestry products and the sale of carbon credits.

Figure 2



The RS Regional Development Councils were created by Law 10,283/1994 and regulated by Decree 35-764/1994. Their objective is to promote harmonious and sustainable regional development; the integration of government and region resources and actions; improving the population's quality of life; the equitable distribution of the wealth produced; encouraging people to stay in their region; the preservation and recovery of the environment. The State is divided into 28 Regional Development Councils (COREDEs), Coredes, aiming to define public policies aimed at each of the regions. The Coredes that have the highest coverage of planted forests can be seen in Table **1**.

Table 1 – Evolution of Planted Area by gender in RS

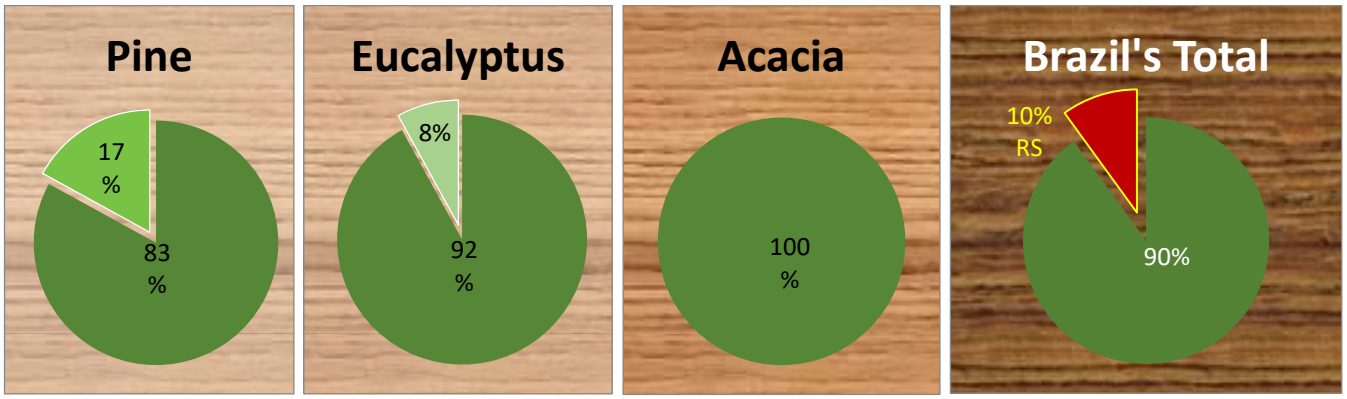
COREDE	EUCALYPTUS	PINE	ACACIA	TOTAL
Sul	74.292	49.828	34.765	158.885
Vale do Rio Pardo	72.274	20.638	16.712	109.625
Centro-Sul	80.292	4.567	11.032	95.891
Hortênsias	3.103	92.262	135	95.500
Fronteira Oeste	42.202	2.404	52	44.658
Campanha	33.261	657	9.637	43.556
Campos de Cima da Serra	1.024	42.116	-	43.141
Metropolitano Delta do Jacuí	30.533	4.384	7.169	42.086
Litoral	12.090	28.318	-	40.408
Jacuí-centro	16.000	8.825	658	25.483
Vale do Jaguari	18.494	303	30	18.828
Vale do Taquari	15.504	522	404	16.429
Vale do Caí	4.354	-	7.503	11.857
Outros	23.284	9.776	1.497	34.557

Source: *AFUBRA, AGEFLOR, FEPAM, SEMA*

In Rio Grande do Sul there are approximately 780.9 thousand hectares cultivated with planted forests, which corresponds to 2.7% of the 28.2 million hectares of forest within Rio Grande do Sul's territorial boundaries. The total area of properties where forestry is the predominant and active is an estimated total area of 1.84 million hectares. At the national level, the planted area in RS corresponds to approximately 10% of the total area of planted forests in Brazil. Eucalyptus plantations represent 54.6%, while pine and acacia represent 33.9% and 11.5%, respectively.

In the national context, planted forests in Rio Grande do Sul represent 10% of the national total, with emphasis on the acacia genus in which the State holds practically 100% of the plantations, followed by pine and eucalyptus plantations, with 17% and 8%., respectively, as shown in Figure 3 on the next page.

Figure 3 – Representativeness of RS in terms of forest planting



Source: *FEE the State Statistics Foundation*

The history of the planted area in Rio Grande do Sul is presented in Table 2 below. It should be noted that the significant difference in the planted area from 2015 to 2016 does not reflect an increase in the planted area, but rather a greater availability of data and a change in the methodology for collecting information.

Table 2 – historical of RS in terms of forest planting

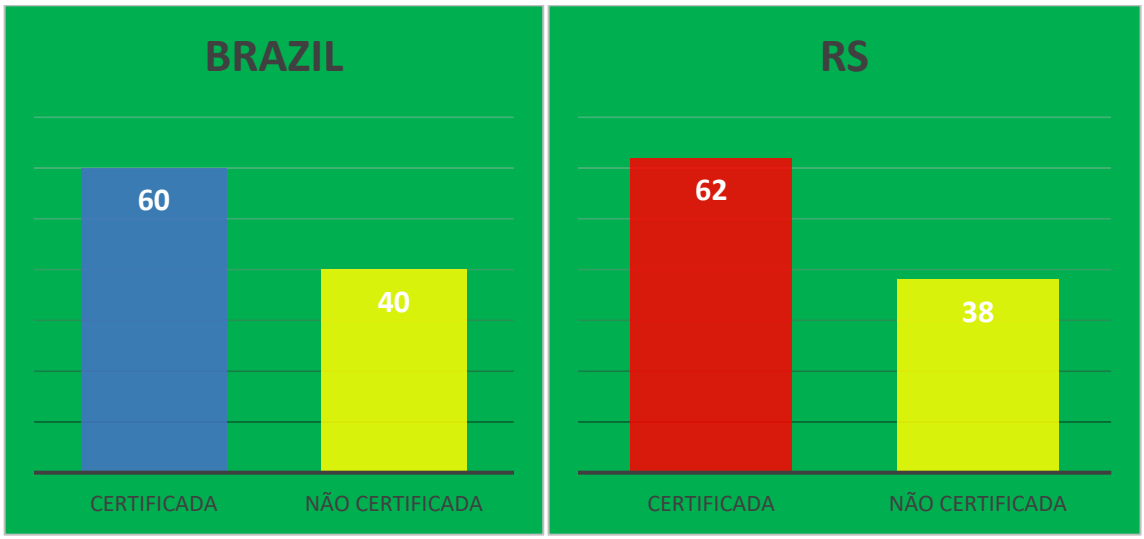
YEAR	PINE	EUCALYPTUS	ACACIA	TOTALS
2006	18 1.4	184.2	142.4	508.0
2007	182.4	222.2	159.0	563.6
2008	173.2	277.3	18 8.3	638.8
2009	171.2	272.0	139.I	582.3
2010	169.0	273.0	89.9	53 1.9
2011	164.8	280.2	89.1	534.I
2012	164.8	284.7	90.2	539.7
2013	164.2	316.4	88.8	569.4
2014	184.6	309.I	103.6	597.3
2015	184.6	308.5	100.0	593.I
2016	264.6	426.7	89.6	780.9

Source: *AFUBRA, AGEFLOR, FEPAM, SEMA*

CERTIFIED FORESTS

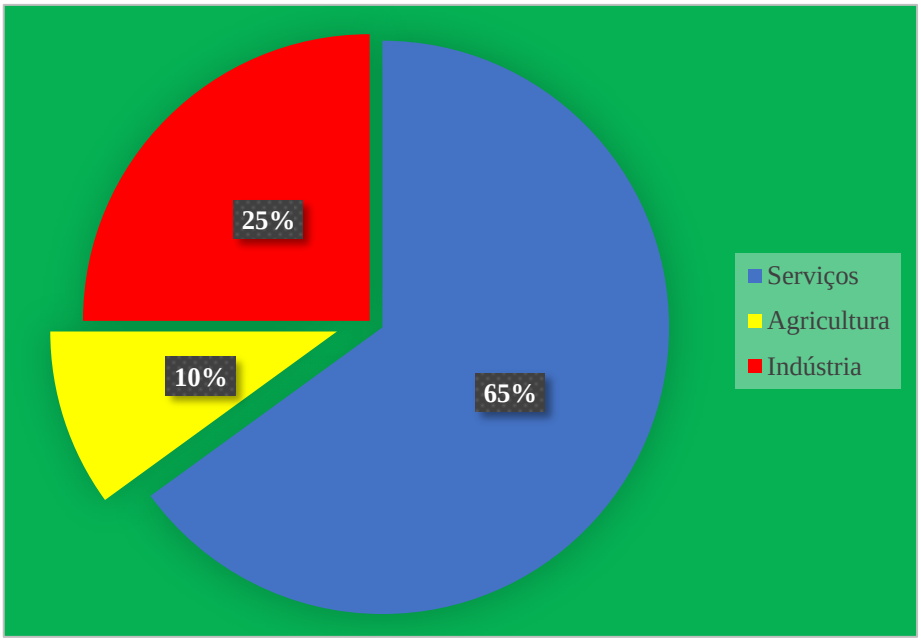
The forest certification process aims to guarantee that the wood comes from areas where forest management is ecologically correct, socially fair and economically viable. To achieve this, one of its criteria is full compliance with current legislation. Given this scenario, forest certification is used as a marketing element for companies, contributing to the enhancement of image and products, in addition to facilitating access to international markets. In Rio Grande do Sul, around 300 thousand hectares planted are FSC certified areas. Figure 4 shows the participation of certified areas in relation to the total, in Brazil and in the State.

Figure 4 - Composition of National and State



Source: *FSC Certification (Forest Stewardship Council)*

Figure 5 - Composition of State GDP



Source: *FEE State Statistics Foundation*

Table 3 – Planted Forests by municipality

Ranking	County	Area (ha)	Ranking	County	Area (ha)
1	Encruzilhada do Sul	61.280	14	Dom Feliciano	14.636
2	São Francisco de Paula	42.556	15	São José dos Ausentes	13.513
3	Piratini	39.997	16	Pinheiro Machado	12.305
4	Cambará do Sul	20.527	17	Jaquirana	12.245
5	Cachoeira do Sul	20.255	18	Taquari	12.163
6	Bom Jesus	18.974	19	Bagé	12.126
7	São José do Norte	18.646	20	Cacequi	11.073
8	Butiá	17.645	21	Pedras Altas	10.954
9	Triunfo	17.473	22	Santa Vitória do Palmar	10.858
10	Mostardas	15.904	23	São Jerônimo	10.788
11	São Gabriel	15.578	24	Barra do Ribeiro	10.535
12	Pantano Grande	15,134	25	Rio Pardo	10.115
13	Canguçu	14.990	26	Outros	474.022
					Total 934.290

Source: *AFUBRA, AGEFLOR, FEPAM, SEMA*

CARBON CREDITS VERIFICATION AND CARBON SAT TECHNOLOGY

Establishing the alliance with Safeweb Institute's Safe Carbon CO_2 in conjunction with the application of C is the confirmation of boots on the ground in Brazil for verification and the measuring of Corban Credits for development. Combining techniques and technology is a revolutionary innovative solution for tackling climate change, offering an advanced technological solution for the accurate measurement, certification, and automatic generation of carbon credits. When utilized it has the potential to significantly impact the global market due to its accuracy, efficiency, automation, and ease of adoption. Its ability to accurately measure greenhouse gas (GHG) emissions is fundamental for the legitimate generation of carbon credits. Its advanced technology allows for more reliable and efficient data collection, ensuring that emission reductions are properly quantified. In addition, automation in the process of generating carbon credits significantly optimizes the time and resources required for companies to offset their emissions. In the context of climate change, where reducing GHG emissions is crucial, CarboSat offers a practical and scalable solution for monitoring and mitigating these emissions, meeting the global demand for technologies that contribute to the fight against climate change. Its legitimacy and credibility, stemming from precise measurement and automation in the process, are vital to guaranteeing the trust of investors, governments, and consumers.

CarbonSat's ease of adaptation makes it attractive to a wide range of sectors and organizations, suggesting the possibility of widespread adoption of the technology, amplifying its global impact. In addition, the transformative potential of CarbonSat is highlighted, and recommended that the technology can drive the transition to a more sustainable economy. The application also addresses the process of measuring GHG and generating carbon credits, highlighting the importance of accuracy and transparency in this process. Carbon credits are essential for meeting emission reduction commitments in international climate agreements, such as the Kyoto Protocol and the Paris Agreement, and for voluntary emission offset initiative. The carbon credit market is presented as a crucial part of climate change mitigation strategies, with significant financial implications.

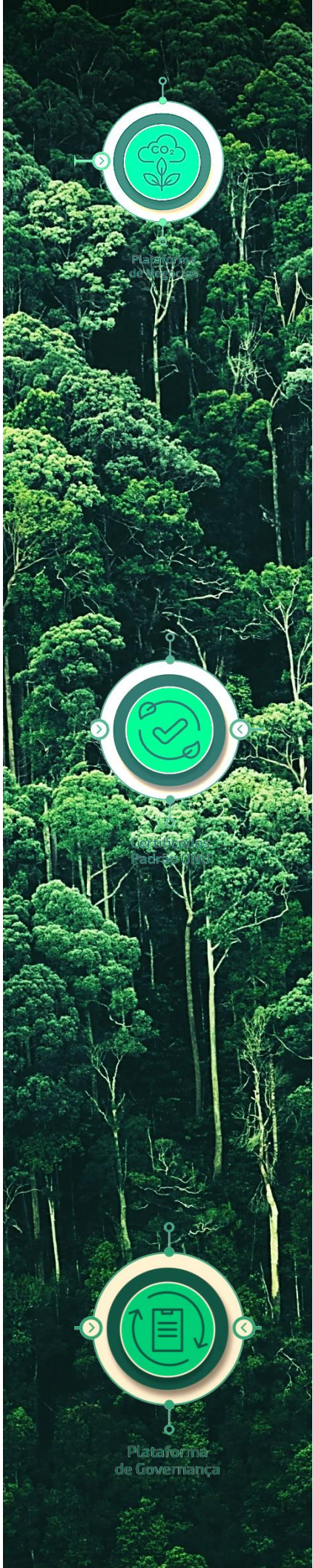
Carbon pricing creates incentives to reduce emissions, driving investments in clean technologies and efficient processes. The market also offers business opportunities, allowing companies to develop emission reduction projects and sell the carbon credits generated as an additional source of revenue. In this sense, Brazil's role in the carbon credit market stands out, especially due to its vast expansion of forests and deforestation reduction projects. Despite the challenges facing the global market, the growing attention to climate change and initiatives such as the Paris Agreement has the potential to boost the carbon market, playing a key role in the transition to a more sustainable economy.

The process of measuring GHG and generating carbon credits highlights the importance of accuracy and transparency in this process. Carbon Credits are essential for meeting emission reduction commitments in international climate agreements, such as the Kyoto Protocol and the Paris Agreement, and for voluntary emission offset initiatives. The Carbon Credit market is presented as a crucial part of climate change mitigation strategies, with significant financial implications. The market also offers business opportunities, allowing companies to develop emission reduction projects and sell the carbon credits generated as an additional source of revenue.

In this sense, Brazil's role in the carbon credit market stands out, especially due to its vast expansion of forests and deforestation reduction projects. The Brazilian Government has already instituted incentives for the Banking Industry and its Central Bank to take advantage of the resources provided through the use of Carbon Credits, as a means for development. Despite the challenges facing the global market, the growing attention to climate change and initiatives such as the Paris Agreement has the potential to boost the carbon market, playing a key role in the transition to a more sustainable economy.

In short, CARBON SAT is presented as a promising innovation that can make a significant contribution to reducing GHG emissions and combating climate change. It highlights, not only the importance of the technology but also the relevance of the carbon credit market as a crucial financial tool to boost global sustainability. This will establish our Bona Fides, for the proposed usage, and availability of Carbon Credits for the sustainable development projects in South Brazil. We develop projects that aim to decarbonize the environment, contributing to the fight against climate change and the slowdown of global warming.

SafeCarbon CO2's commitment to implementing the complete journey towards decarburization, through the development of techniques and technological innovations, and SOCIO-ENVIRONMENTAL solutions provides a more inclusive approach. The process of recycling, reusing more products, and making more sustainable choices in our daily lives by setting goals that everyone agrees on and creating incentives to pursue them are the focal points to a social reengineering! In this way, several countries have committed to reducing greenhouse gas (GHG) emissions through international commitments



In Brazil, it is no different. Social concern about the climate crisis has been growing every year, and one of the solutions found to overcome this challenge is to invest in decarburization practices. Carbon Credit is not only a financial tool but also an environmental asset, intending to encourage the reduction of greenhouse gas emissions by people, companies, organizations, and countries. A carbon credit is a unit of measurement that represents the reduction of one metric ton of carbon dioxide (CO2) or equivalent greenhouse gases (GHG) from a specific activity or project over a certain period. An accurate measure of the carbon footprint that calculates the equivalent carbon emission into the atmosphere by a person's activity, event, company, organization, or government can be quantified.

Carbon credits have different natures. In the regulated market, they will be monitored by governments, while in the voluntary market, they depend on the interest of individuals, to buy and sell independently. The main benefit of the carbon credit system is that it provides a financial incentive for companies and organizations to reduce their greenhouse gas emissions. This helps accelerate the adoption of more sustainable practices and the transition to low-carbon technologies.

Project development and certification for environmental projects are actions and goals carried out to preserve the environment and can be carried out by companies, public bodies, institutions, and associations, among others. Through our techniques and application of CarbonSat technologies, and certification via Safeweb, our objectives are the stabilization of greenhouse gas concentrations in the atmosphere. At a level that prevents dangerous anthropogenic interference is possible with a climate modeling system, to allow ecosystems sufficient time to adapt naturally to climate change. The convention under this scenario is to ensure that food production is not threatened and to allow economic development to continue to maintain sustainably.

An offset credit is a tool for governments and companies to achieve the carbon reduction targets set by the Paris Agreement. Individuals or companies that want to offset their own greenhouse gas emissions can purchase these credits through an intermediary or from those who directly capture the carbon. The entire process is certified by independent entities or those linked to the UN. According to the Kyoto Protocol, they include carbon dioxide (CO2), methane (CH4), nitrous oxide (N2O), sulfur hexafluoride (SF6), as well as two families of gases: hydrofluorocarbons (HFCs) and perfluorocarbons (PFCs). The management of forests to obtain and secure economic viability, social, and environmental benefits, while respecting the mechanisms that support the ecosystem is the object of management. Considering, cumulatively or alternatively, the use of multiple timber species, multiple non-timber products and by-products, as well as the use of other forest goods and services is being adapted.

8. AVAILABLE CARBON CREDIT [CO²E] FOR PROJECTS DEVELOPMENT

The following is a limited offer from the cooperative for the sale of Carbon Credits. The evaluations are for access to the Equivalent Carbon Credit Project [CO²e], totaling with specifications described below:

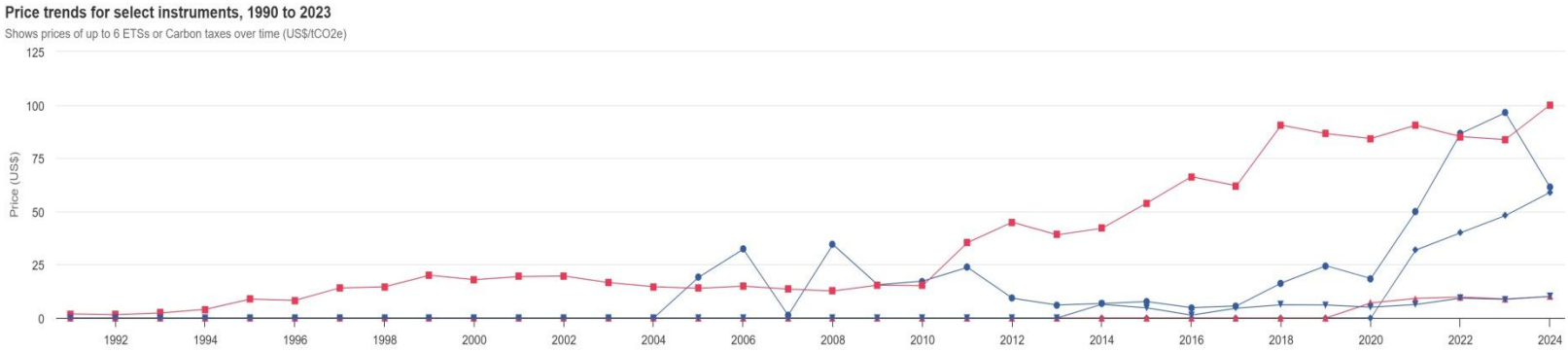
Lots 1 to 4 CCs available = 35 Million Tons. Projections for 285 Million Tons in 4 years upon verification
Certification: VCS (Verified Carbon Standard)
Type: REDD ++; Reducing Emissions from Deforestation and forest Degradation
Type of Project: Reforestation - 80% from (Projects Amazon & Atlantic Forest) and 20% relative to Biomass

Certification

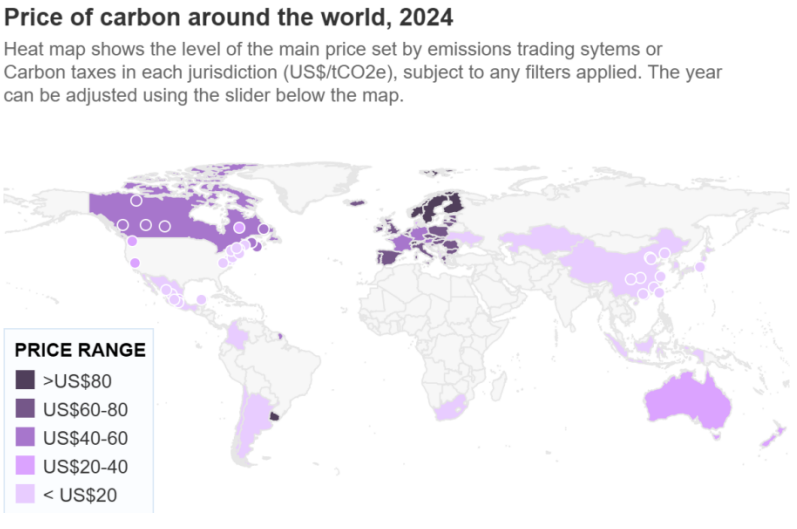
The projects described are approved and certified, with Mandated representatives assigned to projects;

- **All projects current with environmental licenses;**
- **All projects duly licensed and registered with the UN;**
- **All projects with credits approved by the UN; Custody - IHS MARKET.**
- **Carbon Credits will be utilized for opportunities for sustainable development**

SUMMARY OF GLOBAL MARKET PRICING FOR CARBON CREDITS



The consortium of landowners represented by SIGA/GROTTO in Rio Grande do Sul will entertain offers for negotiated pricing. The purchase of Carbon Credits at a reduced price is an incentive to secure funding requirements for the Serra Gaúcha Region planned infrastructure projects for the Regional Train System and the International Airport. The acquisition of these Credits will aid in the restoration from the May 2024 devastation, and provide the knowledge base and engineering for the infrastructure that will be required to mitigate the anticipated effects of Climate Change.



The primary incentive being offered is requirements for term contract agreements of not less than five to seven years for the purchase of products at 2% to 7% above fair market price for products from the region.

9. ECONOMIC DEVELOPMENT MATRIX

SIGA's plans for the regional development have considered the estimated cost for the transportation infrastructure from a vantage point of expansion. The train's development, combined with the statistics for the inevitable growth in demographics and retooling for an increased economy of scale for Serra Gaúcha's GDP, is the goal. This mode for a holistic approach will better support a sustainable ecosystem for social reengineering. The framework is an evolution from the 3 primary corporate Methods of Operation that have been established and tightly woven into a planned development structure of alliances for the expanded economy of the region. The amalgamation is the catalyst that drives the effort and differentiates SIGA's efforts from the previous undertaking for a railway system. More importantly, its objectives entail a broader perspective from the previous plan, with global brand identification.

The corporate matrix is a compilation of the principal officer's experiences in Political and Civic Diplomacy, Advertising/Public Relations, and the development of Manufacturing and Supply Chain Distribution. These core experiences and expertise have been lent to the development of the Train, Airport, and CDL, that will eventually culminate with development of the seaport, completing the transportation infrastructure creating the arteries for the ecosystems. The delegation of responsibilities and task will be divided as follows, with the appropriate qualitative and quantitative reports of the work.

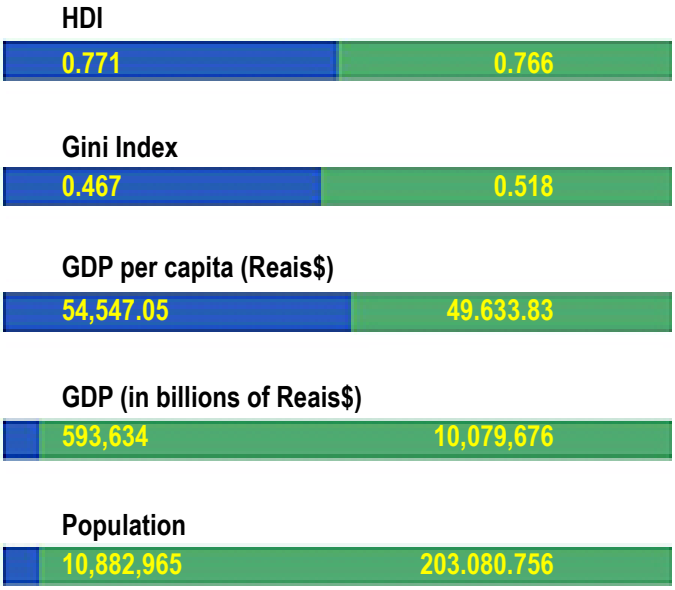
The creation of Request for Proposals (RFPs), Tender Offerings and contract BIDs for the continuous and uninterrupted development of the Serra Gaúcha Regional Train works will be done as an Management Administrative Act, edited by the President according to the powers conferred to him in degree, type, and number. These amendments will be absorbed by the Siga Mobilidade Urbana Officers into resolutions, and ratified into SIGA's corporate law. Public Bidding and or Concession will pay with interest and monetary correction as the Notary Act designates the company opting for the advance BID of the Futures Market. In this case, the Ticket of passage, referring to 50% of the monetary value paid of the insurance quota of the passage that will be issued in the Futures Market of the railway operation, this action will be instituted for the maximum period of 5 years from the entry into operation of the partial or total railway line.

The recently established consortiums in the United States is for the purpose of expansion to gaining market share, is the first of several planed global consortiums for the exportation of Brazilian products produced and transported from the Serra Gaúcha Region. Train State of the Art in Sustainability. MO’s for trading directly in to GROTTO Trade of products an initiating consortiums collective best interest und contract for a designated period. Alliances with SIGA GROTTO BRAZIL will facilitate:

- Commercial intermediation to facilitate internal external logistics.
- Validation of qualified suppliers,
- Monitoring of global distribution logistics,
- Packaging evaluation of product lines,
- Evaluation of product placement in markets, and
- Exploration and expansion of Regional and International Market Share.

INDICATORS SOCIOECONOMIC

Proportions of the socioeconomic indicators of RS, in comparison to the nation state of Brazil:



Source: Prepared from IBGE Cidades e Estados (2023), IBGE/SIDRA (2023), IBGE/SCR (2023) and Atlas Brasil

Rio Grande do Sul (RS) is the sixth most populous state in Brazil, with a Municipal Human Development Index (**HDI**-M) of 0.771, tied with Espírito Santo (**ES).** It has the sixth lowest (**Gini Index),** an indicator which reflects the status of social inequality, and fifth-largest Gross Domestic Product **(GDP)** in the country. This indicates a robust and varied economy with an emphasis on agribusiness, vehicle, and footwear sectors.

GOVERNANCE AND CLIMATE FINANCING

The state participates in international agreements, such as Regions Adapt (COP 21), Under-2° Coalition, and Race to Zero and Race to Resilience. It is part of national initiatives such as the Governors for Climate coalition and the Green Brazil Consortium, the Alliance for Climate Action (ACA Brasil), and collaborates with CDP, and participates in Abema. At the regional level, it leads efforts to promote climate change (CBC, 2023).

In 2022, RS launched ProClima 2050, a comprehensive plan that seeks to establish Climate Compliance, covering: Implementation of the Climate Governance Plan, in partnership with ICLEI; Carrying out the GHG Inventory by 2025; Risk and Vulnerability Analysis and the Climate Action Plan, roadmaps for decarbonization and climate regulations that ensure the transversality of actions. This program also includes the PSA and Biogas programs (Government of RS, 2023). In 2024, at COP 29, it launched the Climate Roadmap for municipalities in Rio Grande do Sul, an initiative partially financed by UNDER2. Among the municipalities verified by the Climate Roadmap, there were only two stated that had climate action plans, *(Government of RS/IEDE, 2025)*.

The ABC+ Plan 2020-2030 was established in 2023 and is under development, *(Gov. RS/SEAPI, Oct. 2024)*. In December 2020, SEMA/RS launched the State Revitalization Program of Hydrographic Basins, focused on water security, which includes actions to improve the quality and quantity of water in hydrographic basins in situations of vulnerability and environmental degradation, improving aquatic ecosystems and reducing the risks associated with extreme climate events, *(Government of RS/SEMA, 2023*). The Rio Grande Plan encompasses emergency actions, reconstruction and long-term projects to strengthen local infrastructure and economy (Governo RS/SERG, 2024), including Contingency Planning for Socio-environmental Disasters, which proposes to create contingency plans and protocols with a standard of excellence for all federated entities in risk areas, the implementation of which began in October 2024.

Although the State Fund for Climate Change and Environmental Disasters, provided for in Law No. 13,594 of 2010, has not yet been created, in June 2024, Decree 57,647 regulated the Rio Grande Plan and provided for the Rio Grande Plan Fund (FUN-RIGS). Its aim is implementing actions, projects or programs for the implementation of climate resilience and addressing the social, economic and environmental consequences resulting from the climate events of 2023 and 2024. *(Governo RS/SERG, 2024),RS/SERG, 2024a).*

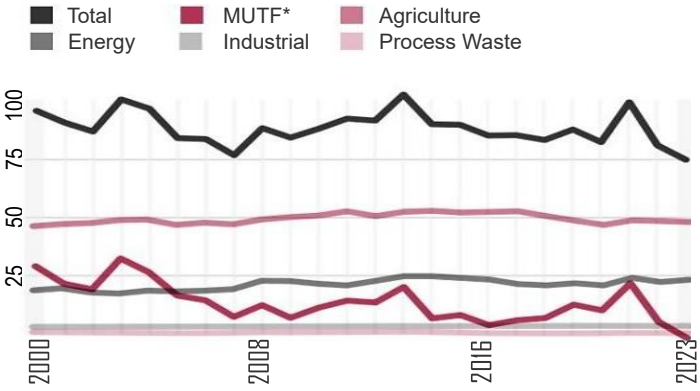
NET GREENHOUSE GAS EMISSIONS

The agricultural sector has historically been the largest emitter of GHGs in the state, maintaining high levels over time and, despite small fluctuations, showing a tendency to stabilize, but since 2017 it has been undergoing a slight process of reducing its emissions.

Emissions from the energy sector showed considerable growth until 2013, when they reached their peak (26,120 MtCO2e). Since then, there has been a slight reduction, but it remains the second largest source of emissions, which reflects the increase in energy demand in the state.

The land use change sector, on the other hand, has shown sharp variations over time, with peaks and troughs, but since 2021 its emissions have been significantly decreasing, with a 113.2% reduction in net emissions from 2021 to 2023, mainly due to removals by secondary vegetation, with negative net emissions in this last year, being the lowest volume recorded in the historical series, *(SEEG, 2024).* This indicates that the sector has started to act as a carbon sink, probably due to good soil management, reforestation and deforestation reduction policies in recent years, standing out as the main factor responsible for reducing emissions in the state.

Evolution of net CO2e emissions from 2000 to 2023 (MtCO2e



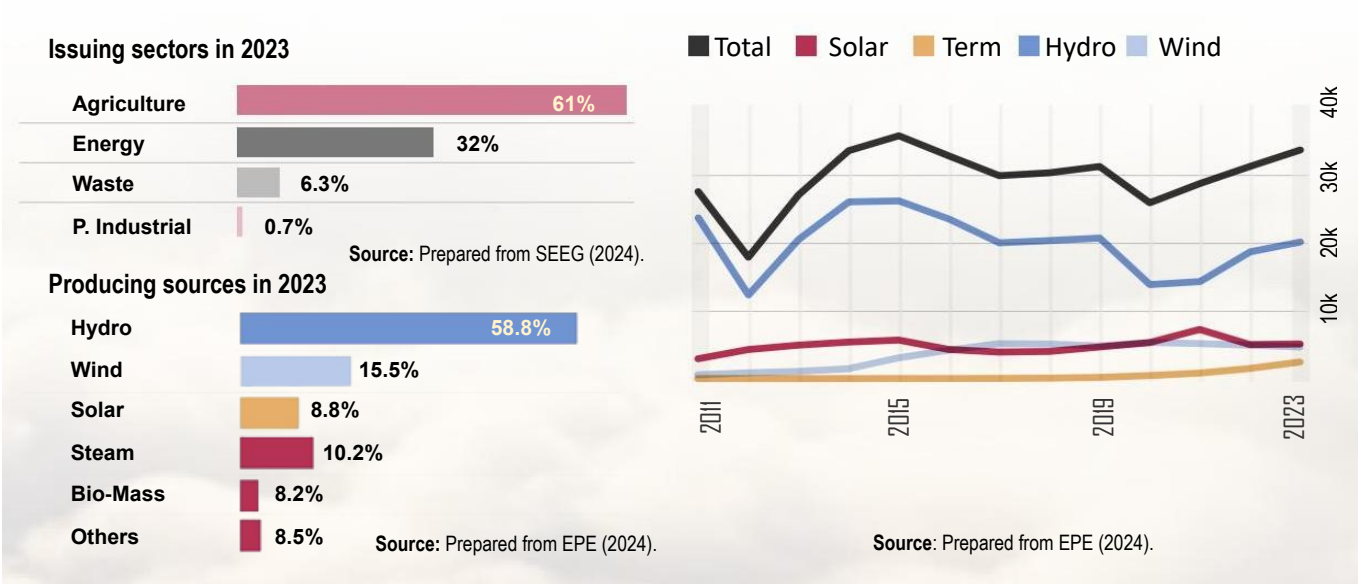
Acre's total GHG emissions vary greatly depending on land use changes and the pace of deforestation. Between 2003 and 2012, the state managed to curb deforestation, which increased again and reached a historic peak between 2021 and 2022. From 2022 onwards, deforestation in the amount of Acres decreased significantly and, consequently, its emissions also decreased (90.7% reduction in net emissions from the land use change sector from 2022 to 2023).

Source: Prepared from(SEEG) (2024).

ELECTRICITY PRODUCTION

Rio Grande do Sul has 83% of its electricity matrix from renewable sources, being a pioneer in the development of renewable energy, but coal still represented 10% of this matrix in 2023. Coal exploration in the state is used mainly for the generation of electricity and as raw material for the steel industry. However, most of the state's electricity comes from hydroelectric plants (59%) and wind sources (16%), *(EPE, 2024).*

Evolution of the electricity matrix from 2011 to 2023 (GWh)

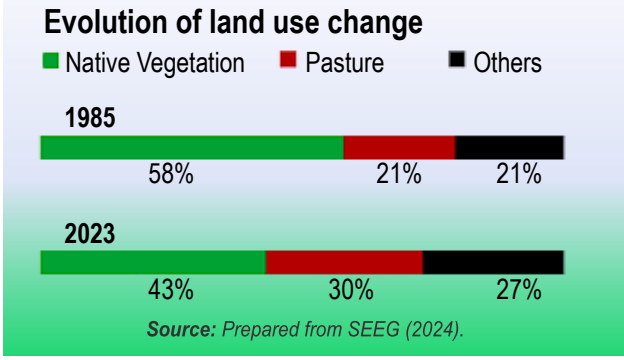


Since 2006, with the Osório Wind Complex, RS has been developing other alternative energy sectors and technologies for storage capacity. It is currently the 5th largest state in the country in installed capacity (more than 1,900 MW) (ABEEólica, 2024), with other new onshore projects in the environmental licensing phase (Governo RS/FEPAM, 2024). At the same time, it is a leader in the production of biodiesel (B100) (ANP, 2024) and stands out in the generation of solar energy (8.8% of its electricity matrix in 2023). In addition, it presents a promising scenario in the development of offshore wind energy, with around 30 offshore projects in the environmental licensing phase (IBAMA, 2024).

The Wind Atlas of Rio Grande do Sul (2014), the Biomass Atlas (2016), the Solar Atlas (2018) and the Hydro energetic Atlas (2024) serve as important instruments to support public policies and investments in these sources (Governo RS/SEMA, s/d). The Port of Rio Grande stands out in the implementation of energy production, with partnerships and technical cooperation agreements with Brazilian and international investors for the H2V-RS Program, where technical teams work to execute green hydrogen and derivative projects (Grupo Oceano, 2023).

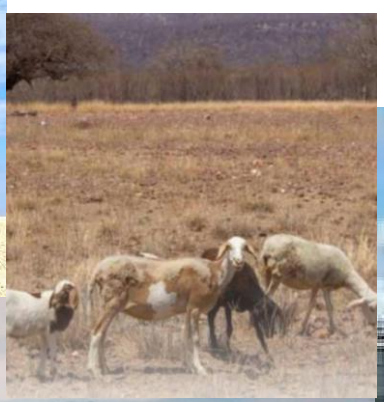
The state plans to develop the Just Energy Transition Plan, a plan to gradually “phase out” the use of coal. This allows structural adaptations to be implemented to minimize social and economic impacts, especially in the Baixo Jacu and Campanha regions (ProClima/RS) 2050). Some national environmental and economic measures, such as the Program for Sustainable Use of National Coal, promotes replacing old gas-fired thermoelectric plants with new and modern (less polluting) ones. The Fair Energy Transition Law (Law No. 14,182/2021) will eliminate federal subsidies for coal plants from 2027. Rio Grande do Sul has 83% of its electricity grid from renewable sources, being a pioneer in the development of renewable energy with 61% of its energy grid, but coal still represented 10% of this grid in 2023.

AGRICULTURE AND LAND USE CHANGE



From 1985 to 2023, the area of native vegetation was reduced by 15% in the state, while areas designated for pasture increased by 9%, *(MapBiomas, 2024).* However, there was a reduction in deforestation rates from 2022 to 2024. In the period from July 2023, to June 2024, 1,688.3 hectares were deforested, a reduction of 66% compared to the same previous period (July 2022 to June 2023), when 4,968.4 hectares were deforested. In the periods analyzed, in relation to the biomes that affect the state, there was a 55.6% reduction in the deforested area in the Pampa biome, and an 82.2% reduction in the deforested area in the Atlantic Forest biome *(MapBiomas Alerta, 2024).* Although the ABC+ Plan prioritized the recovery of degraded pastures, there is still room for progress in this area, but the state has higher average costs (R$/hectare) than other biomes*, (FGV, 2022).*

Since the creation of the ABC Program, Renovagro and Pronaf ABC+ credit lines for rural producers in Rio Grande do Sul have financed R$4,161,297,072 in credit lines and 10,283 contracts. This has resulted in an expansion of approximately 1,274,299 hectares of land and the integration of sustainable technologies, *(Governo RS/SEAPI, 2024)*. Thus, it can be seen that rural credit is essential to achieving the sector's decarbonization goals. According to Embrapa, in Rio Grande do Sul more than 85% of the agricultural area is dedicated to the Crop-Livestock Integration, (ILP) system. In almost 9 million hectares (of which 70% are soybean crops, 10% corn, 10% rice and 10% corn silage and others), alternating winter crops and fallow in 80% of the area, or is used for cover crops such as black oats and rye grass, and are also used for grazing dairy cows and fattening heifers. The Crop-Livestock-Forest Integration (ILPF) and Livestock-Forest Integration (IPF) systems use eucalyptus, black acacia, pine, yerba mate and citrus (ILPF Network, 2024). According to the National Registry of Organic Producers (MAPA, 2025), RS is the second largest producer of organic products in Brazil, and has laws to encourage agroecological, organic, and bio input production (Law 14,486/2014). The State Program for the Recovery of Native Vegetation in Rio Grande do Sul (PRO-VEG), from 2022, has the goal of restoring 12 million hectares by 2030 (Governo RS/SEMA, 2022). The Gaucho Program for Environmental Services rewards the landowners who have adopted state environmental conservation, protection, and recovery practices.

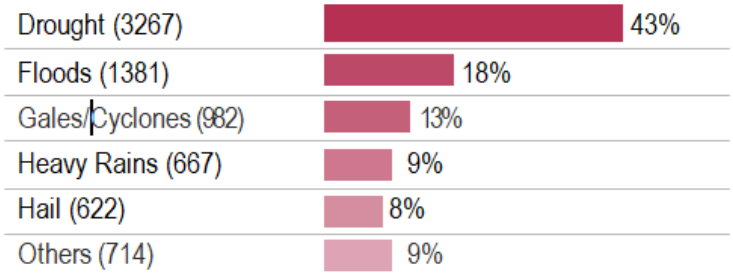


With the state's conservation and environmental management actions, the Campos do Sul Program stands out, which supports rural landowners in implementing sustainable management practices that preserve the biodiversity and ecosystems of the Pampas; the Certified Management Seal, a pioneer in Brazil in enabling the regularization of the sustainable and commercial use of native flora; and the Long-Distance Trails, which are paths planned to connect Conservation Units and create ecological corridors, playing a fundamental role in the integration between protected natural areas.

CLIMATE CHANGE VULNERABILITIES AND ADAPTATION ACTIONS

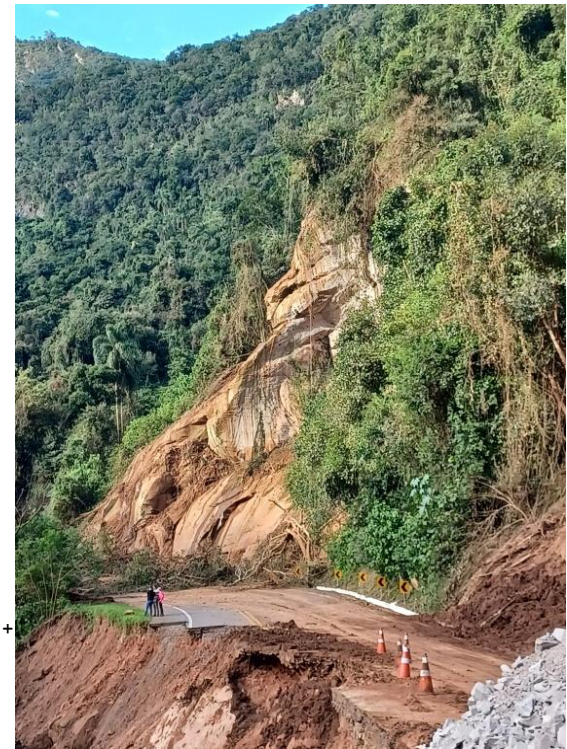
Disaster records from 2000 to 2023

According to the Digital Atlas of Disasters in Brazil, the accumulated data concerning disaster records that occurred in the period from 2000 to 2023 in Rio Grande do Sul show that 21.92 million people were affected. The state suffered public losses, especially in water supply, energy distribution, and sanitation, and private losses, especially in agriculture. During this period, there was a greater occurrence of droughts and dry spells.



Source: *Prepared from MIDR (2024).*

There were 153 deaths, more than 886.5 thousand people displaced, R$8.82 billion in material damages, R$3.52 billion in public losses, and R$121.54 billion in private losses, not counting the great flood that occurred in 2024 (MIDR, 2024). Between April and May 2024, the state faced the worst calamity in its history, with 96% of its municipalities impacted, totaling more than 183 deaths and billions in losses (Governo RS/Casa Militar/Defesa Civil, 2024; Metró-poles, 2025), which highlighted the state's climatic fragility to face events of this magnitude, never before reported in the history of RS. After the historic floods, the state received several federal financial aids to help with its reconstruction, in addition to a package of measures. The considerations would include suspension of payment of the state's debt with the Union, exempting the payment of interest on stock during that period (totaling R$23 billion). Maintenance of ICMS credits, credit lines with subsidized interest to help individual micro-entrepreneurs (MEIs), microenterprises and small businesses affected by the floods (Banrisul), prioritization in income tax refunds, and extraordinary resources for the health area, among others.

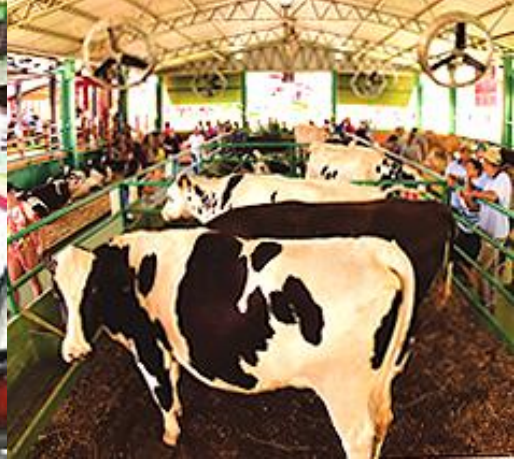


Photos: May 2024, damages to roads and bridges along the major mountain route 116 between Caxias do Sul to Nova Petropolis presented a real cause for concern.



The various initiatives announced by the federal government for the reconstruction of the state totaled more than R$100.4 billion (Ministry of Finance, 2024). The Rio Grande Plan, created for the reconstruction, adaptation, and climate resilience of the state, proposes measures to mitigate the impacts caused by the 2024 flood. The plan articulates emergency actions, such as strengthening the early warning system, and reconstruction actions and long-term climate resilience initiatives, such as nature-based actions, drainage projects, etc…, (Governo RS/SERG), 2024). For this purpose, the Secretariat for Rio Grande do Sul Reconstruction (SERG) was created, in addition to the Scientific Committee for Climate Adaptation and Resilience, with the Planning Council's governmental participation. There is also a special public fund to finance the Plan's actions through (FUNRIGS). Since 2020, a collaborative project between the World Bank and the Southern Regional Development Bank (BRDE) has sought to increase the resilience of cities in the states of Paraná, Santa Catarina, and Rio Grande do Sul. The initiative has faced several obstacles, such as the pandemic, difficulties in the Senate, and in defining viable projects (World Bank, 2022). As of June 2024, the project was in the subproject selection phase, with Porto Alegre, Chapada, and Torres as possible candidates.

Photos: Prior to May 6th throughout the next following 7 day period of torrential rainfall would expanded the levels of sedimentation from the mountains' runoff. The remainder of the month and in to the next, rain would rotate on a 7 day and 2 -3 days rain over an extend area reaching Porto Allegra and the Airport in the day's bringing murky muddy waters and debris as the rivers and streams would make their downhill descent to the ocean.

THE CITIES & INDUSTRIES TO BE TRANSFORMED

1. André da Rocha
2. Antônio Prado
3. *Bento Gonçalves
4. Bom Jesus
5. *Canela
6. Carlos Barbosa
7. Casca
8. *Caxias do Sul
9. Coronel Pilar
10. Cotiporã
11. Dois Lajeados
12. Fagundes Varela
13. *Farroupilha
14. *Flores da Cunha
15. Garibaldi
16. Gramado
17. Guabiju
18. *Guaporé
19. Ipê
20. Marau
21. Montauri
22. Monte Belo do Sul
23. Nova Alvorada
24. Nova Araçá
25. Nova Bassano
26. Nova Pádua
27. Nova Petrópolis
28. *Nova Prata
29. Nova Roma do Sul
30. Paraí
31. Pinto Bandeira
32. Protásio Alves
33. Santa Tereza
34. Santo Antônio do Palma
35. São Domingos do Sul
36. São Francisco de Paula
37. São Jorge
38. São José dos Ausentes
39. São Marcos
40. *São Sebastião do Caí
41. São Valentim do Sul
42. São Vendelino
43. Serafina Corrêa
44. União da Serra
45. *Vacaria
46. Veranópolis
47. Vila Flores
48. Vila Maria
49. Vista Alegre do Prata
50. *Campi da UCS








10. FINANCIALS

BUDGET USAGE ITEMS	QUANTITIES	COST in USDs
Cargo Wagons, Construction of railway superstructure bed, & solar/wind array Construction of passenger and cargo depot stations.	300 438 Km of railway bed 14 passenger & 4 cargo	**1,374,997,041** Bil
Freight Locomotives, & Passenger VLT Compartments	03 Engines / 50 Tram Cars	**320,967,180** Mil
Engineering, Social Environmental Attributes and Elaboration of specifications for project's deliverables.	01	**149,993.399,** Mil
Indemnities for land acquisition, 2000 land owners payment	(1. Hector), & (2. 2 Hectors)	**150,000,000** Mil
TOTALS: CapEx Est. from 06/2024 1,570,000,000.00 Bil	**TOTAL: 2025**	**1,995,957,624 Bil**

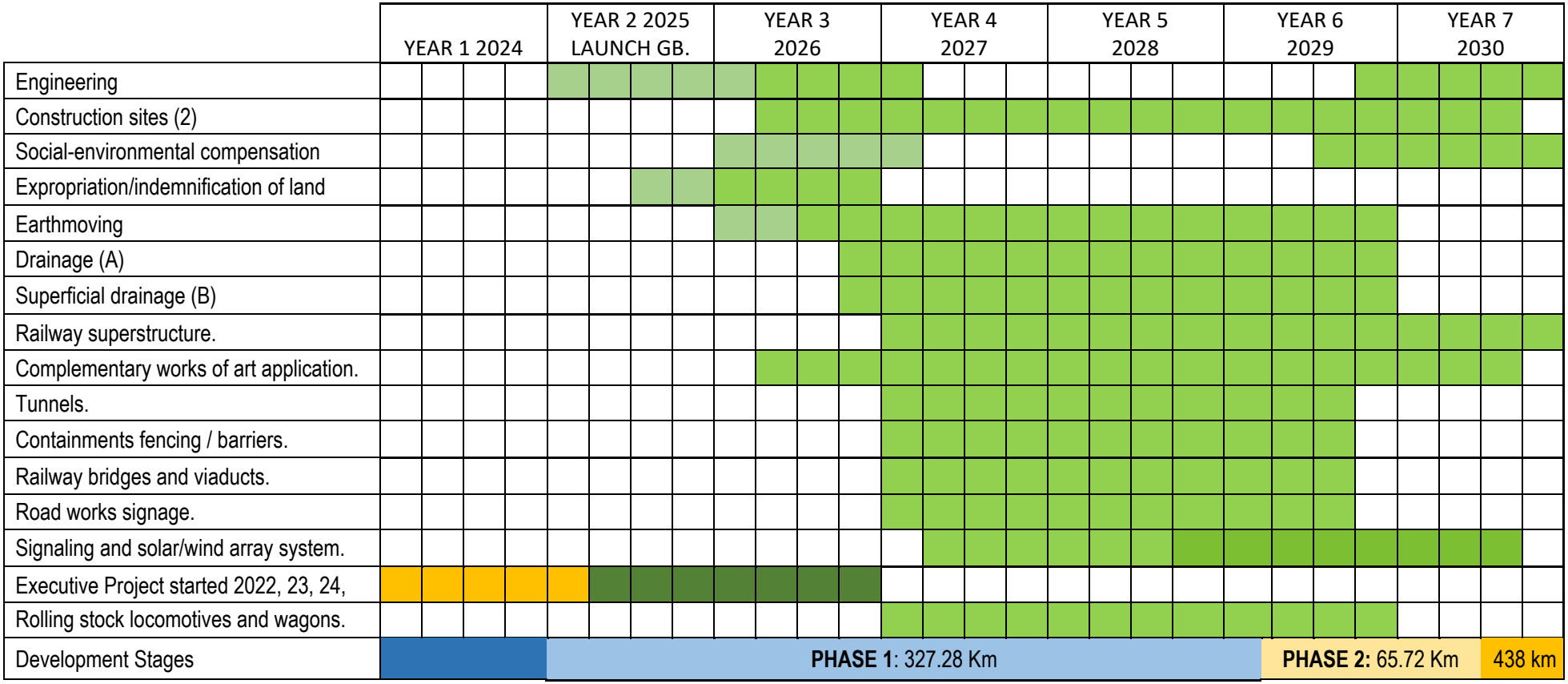
The cost to develop the total train works has been estimated at US $1.995, 957,624.00 billion from the initial projection of $1.570, 000,000 billion from 2022 until 2024 requiring a re-engineering and after the 2024 devastation. The breakdown of Capital Expenditures (CapEx) values are delineate in the delivery schedule below. The 14 passenger stations, the tunnels, the bridges, the lighting of the entire route, the local access roads, and the solar/wind array. The rail path also includes the planting of forests to generate carbon credits in the form of a double green belt along the first 372.28 km.

150 Mil. Indemnification of land owners, from eminent domain in the areas of the train line,
300 Mil. Construction of 14 terminal stations, 4 cargo bays, parking and loading zones,
836 Mil. The excavation of the land, electrification and laying 438 Km of tracks
300 Mil. Construction of warehouses, utilities, and access on 100 hectares of land, and
320 Mil. 3 locomotive engines, 300 freight cars, and 50 Marcopolo VLTs passenger compartments.
TOTALS: 1,570,000,000, as projected from 12/2024 for 372 Km), an increase of **$425,957,624.00**

BUDGET SUMMARY OF DELIVERABLES TIME SCHEDULE

	Cost (BRL)	Cost (USD)	TIME LINE
Engineering	347,903,268.90	60,086,920.36	10
Construction sites (2)	232,531,396.16	40,160,862.89	18
Social-environmental compensation	275,668,711.38	47,611,176.40	6
Expropriation/indemnification of land	868,900,015.24	150,069,087.26	4
Earthmoving	2,119,727,680.59	366,101,499.24	14
Drainage ducks A	120,306,080.17	20,778,252.19	13
Superficial drainage B	342,608,745.83	59,172,494.96	13
Railway superstructure bed	1,606,274,625.70	277,422,215.15	16
Complementary works of art	1,431,910.92	247,307.59	18
Tunnels	856,961,965.04	148,007,247.85	11
Containments: fencing / barriers	946,990,665.28	163,556,246.16	11
Railway bridges and viaducts	1,315,064,211.22	227,126,806.77	11
Road works signage	6,854,284.34	1,183,814.22	11
Signaling/Solar/wind array systems	653,297,002.00	112,831,951.99	14
Executive project/working capital/	2,640,000.00	455,958.55	12
Rolling stock locomotive/wagons	1,858,400,000.00	320,967,184.80	12
Total	**$ 11,556,594,643.83**	**$ 1,995,957,624.15**	

SCHEDULE OF DELIVERABLES FOR DEVELOPMENT STAGES



Executive development
Resources accusation & development
Duration period for completion of aspects

1. Bento Goncalves	Switching Yard End Station
5. Caxias do Sul	Construction Yard site 1
11. Vacaria	Switching Yard End Construction site 2
14. Jaquirana	Switching Station
	Switching tracks between railway stations Nos.: 9. Cambará do Sul, 12. São José dos Ausentes. and 10. Bom Jesus to 15 Porto de Arroio do Sal

The proposed schedule of delivery for the first 327.28 km will be accelerated by the instillation of 2 construction sites to ensure the projected construction delivery schedule within 3.5 years from the ground breaking in 2025.

Total: 438 Km, for the completed railway system's deliverables.

REVENUE RESOURCES AND PROJECTIONS

	RUMO [1]		Serra Gaúcha Train - Rumo		SGT Realistic - 2035 [2]		SGT Optimistic - 2035 [2]	
	R$	US$	R$	US$	R$	US$	R$	US$
TKU (UTK)/year	12.072.000.000		748.464.000		700.000.000		1.100.000.000	
Rail network (km)	6.000		372		372		372	
TKU(UTK)/km of network	2.012.000		2.012.000		1.881.720		2.956.989	
Earnings/km of network	R$ 359.000,00	$ 62.982,46	R$ 359.000,00	$ 62.982,46	R$ 359.000,00	$ 62.982,46	R$ 359.000,00	$ 62.982,46
Earnings	R$ 2.154.000.000,00	$ 377.894.736,84	R$ 133.548.000,00	$ 23.429.473,68	R$ 122.290.000,00	$ 21.454.385,96	R$ 192.170.000,00	$ 33.714.035,09
Average fee ($/TKU x 1000)	R$ 174,70	$ 30,65	R$ 174,70	$ 30,65	R$ 174,70	$ 30,65	R$ 174,70	$ 30,65
Truck fee ($/TKU x 1000)	R$ 500,00	$ 87,72						

TKU (UTK) - Tonelada quilômetro útil (Useful Ton Kilometer) Refers to one ton of cargo over one kilometer (cargo x distance)
1 ton transported over 100 km is 100 TKU (UTK)

Rumo's information
[1] https://ri.rumolog.com/informacoes-financeiras/fundamentos-e-planilhas/ [2] BRASIL, Brazilian's National Logistics Plan 2035

Serra Gaúcha Train - Rumo
Is the earning and volume estimations based on the averages collected in the Rumo's balance sheet.

SGT Realistic
Is the earning and volume estimations based on the cargo movements estimated by the Brazilian Federal Government in [2]

SGT Optimistic
Is the earning and volume estimations based on the cargo movements estimated by the Brazilian Federal Government in [2

	Caxias do Sul - Bento Gonçalves		Restante		Total	
	R$	US$	R$	US$	R$	US$
Short distances	R$ 18.813.333,33	$ 3.300.584,80	R$ 56.666.666,67	$ 9.941.520,47	R$ 75.480.000,00	$ 13.242.105,26
Medium distances	R$ 37.740.000,00	$ 6.621.052,63	R$ 113.333.333,33	$ 19.883.040,94	R$ 151.073.333,33	$ 26.504.093,57
Long distances	R$ 56.666.666,67	$ 9.941.520,47	R$ 170.000.000,00	$ 29.824.561,40	R$ 226.666.666,67	$ 39.766.081,87
					R$ 453.220.000,00	$ 79.512.280,70

CRITERIA DELINEATION

Half of the passengers in the Caxias do Sul - Bento Gonçalves segment (based on the [1]) Total passengers equally divided by distances. Prices stablished from Hyperloop study from Caxias do Sul - Gramado and kept the proportion in comparison to bus ticket pricing.

Station	Rental		Number stores	Earning		TRA	Earning/TRA	
	R$	US$		R$	US$		R$	US$
Caxias do Sul	R$ 12.000,00	$ 2.105,26	20	R$ 2.880.000,00	$ 505.263,16	900	R$ 3.200,00	$ 561,40
Bento Gonçalves	R$ 12.000,00	$ 2.105,26	20	R$ 2.880.000,00	$ 505.263,16	900	R$ 3.200,00	$ 561,40
Farroupilha	R$ 12.000,00	$ 2.105,26	20	R$ 2.880.000,00	$ 505.263,16	900	R$ 3.200,00	$ 561,40
Carlos Barbosa	R$ 12.000,00	$ 2.105,26	20	R$ 2.880.000,00	$ 505.263,16	900	R$ 3.200,00	$ 561,40
Vacaria	R$ 10.000,00	$ 1.754,39	20	R$ 2.400.000,00	$ 421.052,63	900	R$ 2.666,67	$ 467,84
Garibaldi	R$ 10.000,00	$ 1.754,39	20	R$ 2.400.000,00	$ 421.052,63	900	R$ 2.666,67	$ 467,84
Gramado	R$ 15.000,00	$ 2.631,58	20	R$ 3.600.000,00	$ 631.578,95	900	R$ 4.000,00	$ 701,75
Canela	R$ 12.000,00	$ 2.105,26	20	R$ 2.880.000,00	$ 505.263,16	900	R$ 3.200,00	$ 561,40
São Francisco de Paula	R$ 10.000,00	$ 1.754,39	20	R$ 2.400.000,00	$ 421.052,63	900	R$ 2.666,67	$ 467,84
Nova Petrópolis	R$ 12.000,00	$ 2.105,26	20	R$ 2.880.000,00	$ 505.263,16	900	R$ 3.200,00	$ 561,40
Bon Jesus	R$ 10.000,00	$ 1.754,39	20	R$ 2.400.000,00	$ 421.052,63	900	R$ 2.666,67	$ 467,84
Cambará do Sul	R$ 10.000,00	$ 1.754,39	20	R$ 2.400.000,00	$ 421.052,63	900	R$ 2.666,67	$ 467,84
São José dos Ausentes	R$ 10.000,00	$ 1.754,39	20	R$ 2.400.000,00	$ 421.052,63	900	R$ 2.666,67	$ 467,84
Jaquirana	R$ 10.000,00	$ 1.754,39	20	R$ 2.400.000,00	$ 421.052,63	900	R$ 2.666,67	$ 467,84
Total			**280**	**R$ 37.680.000,00**	**$ 6.610.526,32**	**12600**	**R$ 2.990,48**	**$ 7.345,03**

TRA - Total Rentable Area

Total amount of area available for rental in each station

TRA comparison https://abrasce.com.br/numeros/setor/

https://ri.allos.co/informacoes-financeiras/central-de-resultados

	Revenue	
	R$	US$
Cargo	R$ 125.000.000,00	$ 21.929.824,56
Passanger	R$ 450.000.000,00	$ 78.947.368,42
Rental	R$ 40.000.000,00	$ 7.017.543,86
Total	R$ 615.000.000,00	$ 107.894.736,84

ANNUAL PROJECTIONS

NOTE: A computation of the project's projections of expenses Profit & Loss Statements and returns on Investments, (ROI) will be presented in a separate financial document.

OPERATIONAL EXPENSES (OPEXP) PROJECTIONS

EMPLOYEES SALARIES AND WAGES			
Number of Employees	**Number Of**	**Value/month**	**$US**
Salaried Employee	20	R$ 4000,000	69,084.00
Wages Employee	300	R$ 10,800,00.34	1,865,285.00
Contracted Employees	1,000	R$ Contractors Expense	

At the conclusion of the construction period the total of employees for the train's operations will be 320 persons

Employees Tax	**Number Of**	**Month/Ann.**	**$US**
Federal/State	320	R$ 10,000.00	1,923.80
TOTALS	**320**	R$ 11,210,000	1,992,269

OVERHEAD	**Office Lease**	**4 Years Lease**	**$US**
	1	R$ 43,300.00	7,426.75
UTILITIES		**Monthly**	**$US**
Gas/Electric		R$ 11,000,38	1,899.89
Telecom		R$ 18,860.34	3,257.40
Supplies		R$ 40,000.00	6,908.46
Miscellaneous		R$ 10,000.00	1,923.80
TOTALS		R$ 132,863.00	13,989.55
GRAND TOTALS		R$ 11,332,863.00	1,957,316.60

11. PROJECTS' EQUITY, FUNDS USAGE, PROPOSED FUNDS DISTRIBUTION & SCHEDULING OF CAPEX

$US MILLIONS

PRIVATE/PUBLIC EQUITY

08 M$ - Founders'/Officer's Equity
250 M$ - Equity Bond
10 M$ - Canela Airport & CDL
36 M$ - Land Acquisition Equity
450 hectares for Airport
170 M$ - Federal Investment
Caxias Regional Airport
05 M$ - State Environmental
License for development
Projects Equity (263,000,000)
TOTAL $263,000,000.00

PROJECT'S EQUITY/DEBUT

Total $263,000,000.
Train's Funding Requirements
Total $1.995, 957,624.
Total Train's Investments
Total $2,258,957,624
Airport's Funding Requirements
Total $1,740,000,000
Airport investments
Total $956,000,000
Total Infrastructure Investments
Total $3,771,000,000

Regional Train Requirements (*Funding Delineated in Millions (MI USDs)*

150 MI – indemnification to land owners, via eminent domain or offers for sale of land for the train line,
300 MI - Construction of 14 terminal stations, 4 cargo bays, parking and loading zones,
687.3 MI - Land excavation, electrification & solar/wind array, laying 438 KM of tracks and 3 collection/storage units,
538.7 MI - Construction bridges, viaducts, utilities, and access on 100 hectares of land,
320 MI - 3 Locomotive engines, 50 Passenger trains compartments,
426 MI - Executive Project started 2022, 23, 24,
TOTAL: *(06/2024 estimated* ***CAPEX****)*: **$1,570,000,000**. (12/2025 estimated ***CAPEX):*** **$1.995,957,624.**

Airport Requirements (*Funding Delineated in Millions USDs)*

50 MI - Construction of the parking facilities,
50 MI - Acquisition of an additional 150 hector of land,
50 MI - The reengineering for adaptation to climate change measurers,
150 MI - The project's conversion and expansion of the local energy sources,
400 MI - Construction of the main terminal buildings of the airport,
300 MI - CDL's Logistic Distribution Center inland customs at the airport for cargo,
Construction of warehouses, surroundings and accesses, and
Integration of equipment to develop and maintain the airport's runway and logistic systems
Total $1,740,000,000

Ratios of Projected Returns On Investments Offers To Be Determined at:

05% of Development Invested **(15 Years 600 Mil and Above)**
07% of Institutional Invested **(10 Years 200 Mil and Above)**
12% of Private Invested **(5 Years 25 Mil and up to 75 Mil)**

Tranche Schedule for Train

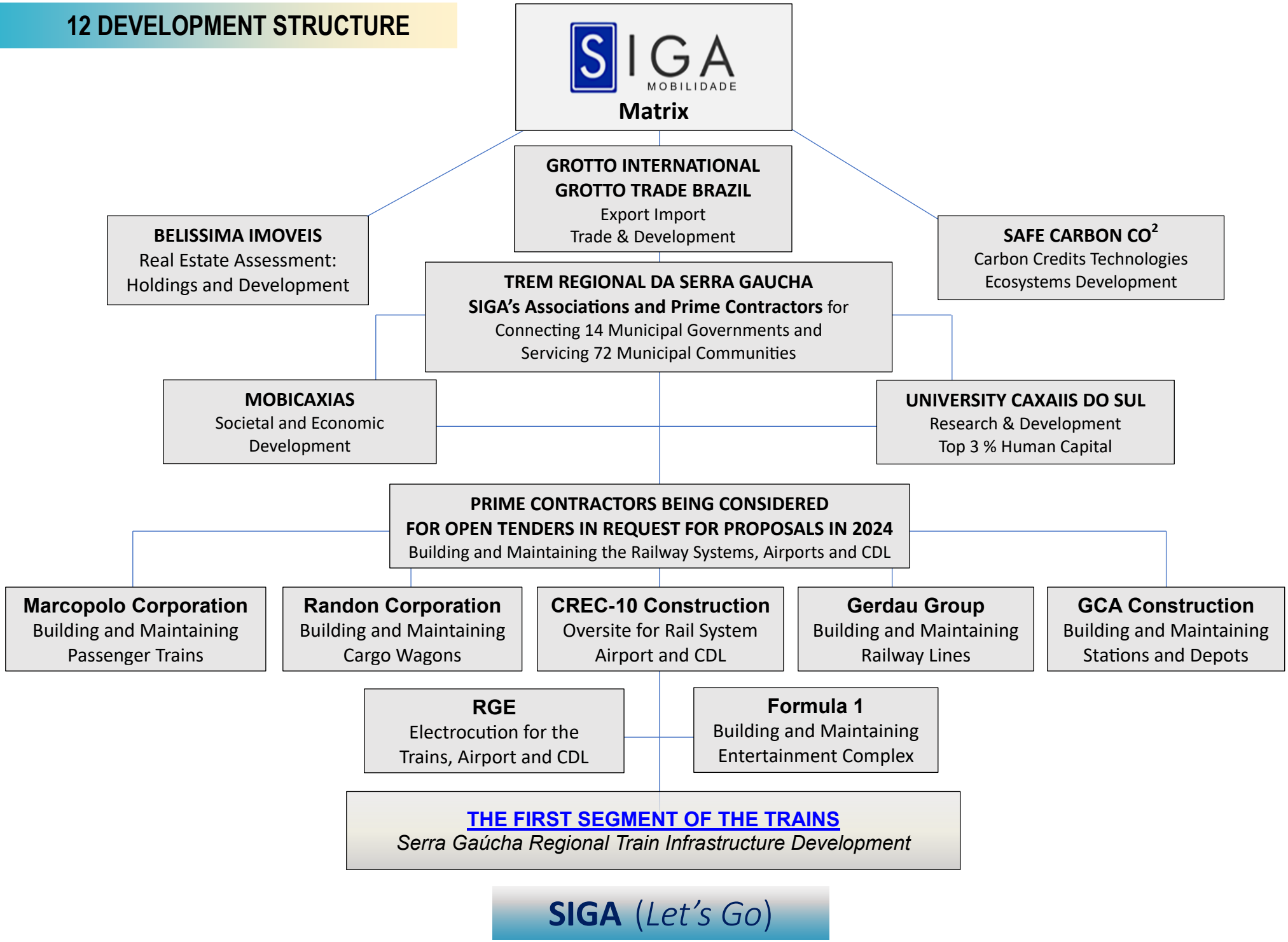
100 MI $ – Working Capital 95 MI / Remunerations 5 MI	04-25
150 MI $ – Indemnification	-25
200 MI $ – Land excavation	-25
300 MI $ – Laying tracks and electrification	
200 MI $ – 1st Stage of passenger stations, depots, roads & utilities	-25
300 MI $ –14 train stations depots, roads & utilities completion	-25
195 MI $ – Deposit for locomotives, freight cars, & passenger train	-25
155 MI $ – Balance to train's engines and passenger compartments	-28

Tranches for Airport

250 MI $ – 1st Stage construction land acquisition, parking, upgrade energy	06-25
250 MI $ – 2nd Stage construction main terminal and runway	0-26
250 MI $ – 3rd Final construction of main airport terminal	0-26
300 MI $ – 1st Stage construction CDL's and inland cargo costume	0-26
300 MI $ – 2nd Stage construction of warehouses, surroundings and accesses	0-27
300 MI $ – Integrated stages of equipment to develop, and maintain the airport	
275 MI $ – Operations maintenance equipment the airport's runways and CDL systems	

Projected Opening Dates: Train 08-2028 • Airport 11-2028

12 DEVELOPMENT STRUCTURE



SIGA (*Let's Go*)

OUR AFFILIATIONS AND CONSORTIUMS

SIGA MOBILIDADE

GROTTO — RIO GRANDE DO SUL • SUSTAINABLE GOALS — GRAND RIVER SOUTH • PRODUCT LINES, S.A. — BRAND IS BRAZIL one for Life

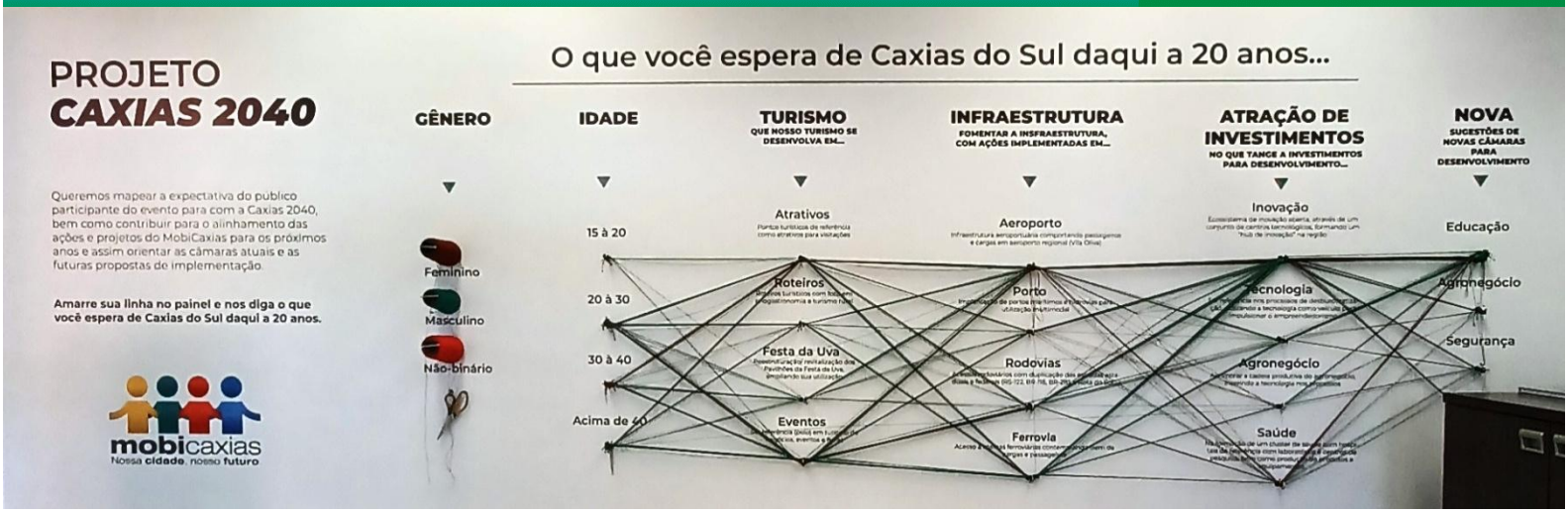
Infrastructure Development: responsible for the Serra Gaúcha Train, Airport, Sea Shipping Port, EcoSystems and the Import/Export of products.

mobicaxias
Nossa cidade, nosso futuro.

UCS
UNIVERSIDADE DE CAXIAS DO SUL

Instituto safeweb

Research and Development: Technology Commercialization, EcoSystems Development, Certification of Sustainable Product Lines and Carbon Credits.



The Association for Mobilization of Caxias (MobiCaxias), addresses and aids in the development of its 5 pillars for the region for 2024, the University of Caxias Do Sul, and with 14 of the regional Municipal Governments representing an estimated 120 cities. Our principle investigations have been relegated to:

- Technology Proliferation
- Networking and Market Entry Assistance
- Project Evaluation, Execution, and Exchanges
- Infrastructure Building Projects, with Extended Services
- Coordination and Exchange via Trade Missions
- Business Representation, Advocacy and Promotion.

OUR TRADING CONSORTIUMS

GROTTO BRAZIL EXPORTTRADE...*Conectando Mercados*

www.sdggrotto.ga/products

GROTTO BRAZIL EXPORTTRADE
Distribution Networks

Global Business Corridors

ASIA, Americas, Euro, & MENA

GROTTO's Brazilian Market Place

China, Southeast Asia, The Americas N.& S., European Union, Middle East North Africa (MENA)

CONSORTIUM: US/BR Businesses est. in 2024

Expansion

- Brazilian Companies Members in Lylee Enrico LLC, dba GROTTO;
  - SIGA Mobilidade International, **(SIGA),** and
  - Safeweb-Nzeru Consultoria em Seguranca da Informacao, **(NZERU},**.
- Supply chain distribution throughout the United States.
- Technology Commercialization, US/BR Technology Patients.
- Information Security, Product Certification & CO_2 Verification.
- Development of premium and exclusive GROTTO products.

CONSORTIUM: China • EuroAsia • India • MENA

Expansion *Moving Forward…*

- GROTTO business Consortiums and Team Leaders.
- Supply chain distribution throughout Global Sovereign States.
- Technology Manufacturing, Commercialization and BRANDING.
- Information Security, Product Certification & Co2 Verification.
- Development of premium and exclusive GROTTO products.

13. CORPORATE STRUCTURE

SIGA's OFFICERS OF DIRECTORS

Arnildo Schildt – CEO – President of SIGA
Paulo Tomasini – Director of the Board CCO – Airport/Train Superintendent SIGA
Lyle E Dennis – COO Director of Operations – Public Relations/International Affairs SIGA
Cristian Bertin – CIO Chief Information Officer – Chief Engineer/Secretary SIGA
Fabiano Faes – CFO Chief Financial Officer – Civil Attorney SIGA

SIGA's BOARD OF DIRECTORS

Ary de Carvalho – (Commercial and Residential Real Estate Developments)
Luiz Carlos Zancanella. D.Sc. – Safe Carbon CO_2
Anand Hemnani – (CGLA/USA)
Christian Wagner – (International Relations and Tourism Train)
Claiton Gonçalves – (Former Mayor of Farroupilha)
Elir Domingo Girardi – (Former President Famurs)
Inês Moschen – (Real Estate Agent)
Luis Eduardo Araújo – (Marketing, IT)
Milton Soares – (Legal Counselor)
Rogerio Rodrigues – (MobiCaxias)
Tarsi Pires – (International Trading Company)
Marcopolo – (Manufacturer of Passenger Buses & Trains)
Randon – (Train's Wagons & Metal Works)
Gerdau – (Railway Tracks)
GCA Construction – (Railway Stations and Depot Construction)
Simone N Messias – (Doctor, POA).

SIGA CUSTODIAL ORGANIZATIONS

Banco do Brasil SA – (Luiz Hennique Tesser, Manager)
Boff Accounting – (Caroline Boff, Account)
KPMG – (Paula Paim, Compliance & Verification)
RGE – (Electric Energy for Trains)
Irapuru Group – (Transport/Trucks)

OFFICER'S BIOGRAPHICAL SKETCH

Arnildo Schildt, CEO Chief Executive Officer – Founder and President

Arnildo, is a visionary who launched his career as a translator and teacher in several primary and secondary schools and subsequently as a University Professor. He began to utilize his linguistics skills as a translator to initiate opportunities for corporate expansion plans with a few of the larger national corporations and as a governmental representative for the State of Rio Grande do Sul, Brazil. He is the founder of Schildt Assessoria Ambiental LTDA which has been in operation for over the past 30 plus years. Through his firm, and independently, he has aided in securing funding resources and programming directed towards Pro Guaíba for Rio Grande do Sul, with the World Bank and other development bank resources. Mr. Schildt has helped to create the Pro Renda project in Vale do Cai, which refers to the planting of viticulture. He has been instrumental in establishing Rio Grande do Sul's Carbon Credit Pilot Project in the municipality of São Francisco de Paula para Florestas. Furthermore, he has initiated projects that will serve as the Carbon Credit Prototype in the Atlantic Forest of Rio Grande do Sul in Maquina.

There are other projects related to energy cogeneration projects through the burning of domestic and industrial waste and the cleaning of the sea with oil, a project initiated by the Brazilian Volunteer Firefighters. From this endeavor, there are hundreds of projects related to the remediation and protection of the environment. He has been an Ambassador from Brazil to the International Non-Olympic University (INOU) and a delegate at COP26. He has aided in identifying procedures and methodologies to implement measures for the potential usage of carbon credits for the state of Rio Grande do Sul and international consortiums in Brazil seeking to utilize the potential opportunities. Furthermore, he has led negotiations with Brazil's farmers and forestry associations, governments, the United Nations, international banks, academia and industry partners, as well as investors. Through these endeavors, he has participated nationally and internationally at thousands of events relative to the development and edification of his interest in sustainable development.

Over the past 15 years, he has built alliances and been an active participant with organizations such as Interpersonal Dynamics Inventory (IDI), Sul Brasil CG/LA Infrastructure, Microempa, and Digital Twin technology. Working to leverage a dynamic perspective for the appointments, he has oversight as President of the Serra Gacha Regional Railway Consortium and as Executive Director of the Canela International Airport. All of the aforementioned accomplishments combined with his background as an educator with a military indoctrination to serves has provided his enthusiasm for sustainable development for his community and country from an international perspective and to which he is a tenable founder CEO Chief Executive Officer/President of SIGA Mobilidade Urbana Mobility.

Paulo Tomasini, CCO Chief Conselho Officer – Superintendente Airport/Trem

Paulo Tomasini is an Entrepreneur and Civil Servant with over three decades of experience in business and civil service. His experience spans both the private and public sectors, reflecting a versatile career dedicated to contributing to the progress of the community. As a civil servant, he presided as the Vice Mayor and former City Councilor of Canela. He served for multiple terms, on the City Council, contributing to local governance and community development.

As the Municipal Secretary of the Environment in Canela, he led initiatives for sustainable development and local environmental preservation. He has successfully implemented policies focusing on natural resource conservation, waste management, and the promotion of eco-friendly practices. He established protocols and strategies for partnerships, fostering community awareness and active participation in sustainable actions.

He has demonstrated effective collaboration with fellow council members and engaged in legislative initiatives aimed at enhancing the overall well-being of the community. Tomasini has developed a deep understanding of local governance, legislative processes, and community needs during his tenure, showcasing a commitment to public service and effective representation.

Tomasini's business experiences have been formulated through his family's endeavors in the business of transportation and manufacturing. He has operated a manufacturing facility that produces a wide variety of product lines for food storage and transportation devices for wholesale and retail establishments regionally and nationally. All of this has required a presence of hands-on operations in the management of personnel, logistics, resources, and Inventory.

These combinations of backgrounds are the amalgamation of his responsibilities as SIGA Mobilidade Urbana's Chief Counsel Officer and Superintendente of the Airport/Trains. Through his investments in SIGA and the political landscape, he has demonstrated his strong leadership skills in strategic management. His commitment to the local and regional infrastructure developments is the context that he brings to the organization that will manifest in the communities of the Serra Gaúcha Region sustainable ecosystems.

Lyle Enrico Dennis, COO Chief Operations Officer – Public Relations & International Affairs

Lylee is an artisan designer, with Four Decades of business and professional experience formulated through having managed three corporations, in conjunction, with international programming initiatives and publishing for social reengineering. Mr. Dennis's" skill sets and methods of operation have been honed in a variety of interconnected career paths, with expertise in the applied arts and sciences of advertising, industrial and graphic design, publishing, public relations, and several disciplines within the creative fine arts. His expertise has been applied to addressing the nuances, pros and cons and advancements of innovation, and the economic impact to foster the development of Sustainable Eco Systems. He has maintained offices in, and around the epicenter of metropolitan Washington, DC, among the "international influencers,' and global policymakers." He has held US White House Press Clarence and has had full access throughout the US Federal Government Departments and Agencies across Four US Presidents and Six World Bank President's administrations. He has created and conducted international technology research initiatives in capital cities throughout North and South America States, the Caribbean, Middle East, and in West Africa where operations and events have been requested.

He has managed Logical Expression In Design, (LED) and the Saint Dennis Group of corporate' services of advertising, graphics and industrial design, publishing, public relations, and content development for; market access, research and development, funding acquisition, and economic development retooling campaigns. In orchestrating the firm's services ranging from creating public-private relations campaigns to conducting full-on trade missions for economic development as a certified US Government Contractor.

He has coordinated social reengineering initiatives, with an emphasis on Government's and Universities R&D laboratories, and Businesses for technological innovations, and commercialization. Collectively, the University & Business Technology Summit, (UB&T Summits), the Global Trade Guide, and the Green Renewable Oceanic Technology Transfer Outpost (GROTTO) publishing and programming initiatives have been conducted for over 28 years all in coordination with the US Federal Government's Departments, and Agencies such as: USDA, DOC, DOE, NASA, US Patent and Trademarks, the Federal Laboratory Consortium and the US. Library of Congress coordinated with NASA along with 14 Nation States from Europe, the Middle East, Southeast Asia, and the Caribbean addressing concern with mitigating the effects of Climate Change.

In 1993, LED debuted in conjunction with The Library of Congress's, Danial A. P. Murray Association in the publishing of "The Murray Resource Directories." The directories were an annual series of publications that identified higher educational opportunities at Minority Serving Instructions. Mr. Dennis has served as a co-curator for the Library of Congress's, Danial A. P. Murray exhibition revival of the Library of Congress's pavilion at Paris World's Fair and has served as an advisor for cataloging and assessing the Amistad Research Center's collection art housed at Tulane University in New Orleans, Louisiana.

Mr. Dennis has served as an apprentice at the Corcoran Gallery and School of Art, employed in a security capacity at the National Gallery of Art, and as a docent at the Society of Cincinnati, all in Washington, DC. In 1997, Lyle received NASA's Technology Assessment Certification and was bestowed an Honoree Professor of Lithography at the La Paz School of Art, La Paz Bolivia in 1997. He graduated the Corcoran School of Art and Design in 1993, with a Diploma, in both Fine Arts and Graphic Design. He has a Professional Certification in Commercial Arts, Photography, and Printing. These combined experiences and his levels of professionalism have led to collaborations with SIGA Mobilidade for Public Relations and International Affairs.

Cristian Bertin, CIO Chief Information Officer – Chief Engineer/Secretary SIGA

Cristian Bertin, a seasoned mechanical engineer with an impressive 15-year track record in industrial design, boasts diverse expertise across sectors like telecom, automotive, capital goods, maintenance, elevators, and agriculture. Throughout his career, Cristian consistently melds innovation and elegance, showcasing a unique ability to develop cutting-edge products.

His academic journey commenced at Universidade de Caxias do Sul (UCS), laying the foundation for his engineering prowess. Seeking to broaden his horizons, he has pursued an enriching exchange program at Technische Universiteit Eindhoven (TU/e) in the Netherlands. Here, he immersed himself in the intricacies of mechanical systems design, contributing to a project involving a carbon fiber suspension system for a student Formula car. Armed with a robust educational background, Cristian refined his skills through international projects, collaborating across borders. From tech hubs in the USA to historic landscapes in Italy and the innovative realms of the Netherlands, Cristian partnered with global companies and universities.

A linguistic virtuoso, Cristian is fluent in Portuguese, English, and Italian, facilitating seamless communication with stakeholders of diverse cultural backgrounds. This versatility has proven instrumental in fostering successful partnerships and transcending geographical boundaries. Cristian holds a specialization in Principles and Practices of Project Management from the University of California, Irvine, equipping him with the tools for navigating complex projects with finesse and efficiency.

Beyond his professional achievements, Cristian passionately contributes to his community. As a volunteer at Mobicaxias, a non-governmental organization dedicated to developing the Caxias do Sul region, he actively fosters economic and social growth. Since 2020, Cristian has lent his expertise to this noble cause, embodying dedication to creating a lasting impact beyond engineering.

In conclusion, Cristian Bertin stands as a testament to the power of knowledge, experience, and a global perspective. His journey, from academia to the forefront of international industrial design, is one of resilience, innovation, and a passion for creating solutions that transcend borders. As a mechanical engineer, linguist, and community advocate, Cristian continues to shape the world of industrial design with a commitment to excellence and a vision for a better future for the development of sustainable eco-systems and infrastructure systems for SIGA.

Fabiano Faes – **CFO Chief Financial Officer** –Treasurer Train SIGA

Fabiano Faes, Esq. JD, is an attorney with over 13 years of experience, having served in various capacities. He has engaged notably and continues to serve as counsel for the Municipal Chamber of Canela. He currently holds the position of Treasurer at the Gaúcho Institute of Electoral Law, actively contributing to the development and enhancement of legal practices in the field. His professional journey is marked by dedication and expertise in legal matters, reflecting a commitment to excellence and diligence in the field of law.

As Prosecutor at the Municipal Chamber of Canela, he plays a crucial role in advising council members in the analysis of municipal legislation projects. His responsibilities include a meticulous evaluation of local laws, and providing specialized legal guidance to ensure legal compliance and the effectiveness of proposed projects. In this position, he has honed his skills in legal research, legislative interpretation, and effective communication, directly contributing to well-informed decision-making within the municipal legislative framework.

Mr. Faes's, responsibilities as, Chief Financial Officer for SIGA Mobilidade Urbana's Serra Gaúcha Train Projects, place him in a strategic role of oversite for the various aspects of the financials that measure the development of the projects. His tasks include overseeing and managing budgetary processes, financial planning, contract procurement, and ensuring the operations' fiscal integrity. His role in developing and implementing the planned financial strategies contributes to the project's many details. This role requires and represents a command of financial analysis; budget management, contract procurement, and strategic financial decision-making with SIGA's Officers and Board Members matrix align with the financial objectives of the overall project (s) goals.

He continues to serve as Chief Financial Officer of the Gaúcho Institute of Electoral Law, with a pivotal role in overseeing the organization's financial landscape. In this capacity, he helps in the consistent development and implementation of robust financial strategies, contributing to the effective functioning and growth of the organization. Collaborating with the institute's overarching financial goals, and fostering a financially sound environment conducive to the pursuit of excellence in Electoral Law analysis to ensure the fiscal health and sustainability of the institute.

14. INVESTMENT OPPORTUNITIES WITH SIGA MOBILIDADE URBANA AND ITS SERRA GAÚCHA REGIONAL PROJECTS, IN RIO GRANDE DO SUL, BRAZIL

Proposed Ratios for Projected Returns on Investments in USDs for:

Development Bank Institutions at: 05-07% of Total Invested **(15 Years 500M and Above)**

Private Equity Institutions at: 07-10% of Total Invested **(10 Years 200M and Above)**

Individual Private Investments at: 12% of Total Invested **(5 Years 25M up to 75M)**

ASSURANCES FOR RETURNS ON INVESTMENT (ROI) IN SOUTH BRAZIL

As of March 2023, the infrastructure projects were presented in the request for securing public and private investments. Please note that by Brazilian law, all Foreign Investments must file an application to CDNR (Cadastro Declaratório de Não Residente) CDNR-SISBACEN must be applied for before the banks can receive funding from outside the country. The requirements are established to ensure that foreign investments are held safe and to monetize via the Central Bank, to this matter, all foreign investments are guaranteed and the returns on investments ROIs are assured.

For details, please reference to web link https://www.bcb.gov.br/estabilidadefinanceira/capitaisestrangeiros for the foreign investor to do the CDNR-SISBACEN. This is a must for those who do not reside in Brazil and wish to make direct investments in companies or carry out any financial transactions. This matter is the first line of security for eligible investors and investments.

A second line of security will be in the form capital insurance bond guarantees on each project's investment requirements. Upon verification of the addition Carbon Credits, the sale of the first 35 Million Credits will be places against loans to the value of the credits to be applied to the infrastructure and economic developments in the region. These measures will ensure a safe environment for the security of investments while providing viable instruments for healthy returns on investments. Details of the stock options will be available in 2025 along with tenders to be offered, financial projections, draw downs, and Returns On Investments (ROIs). Finally, as a method of operations, public tenders will be considered for concessions to Build-Operate-Transfer (BOT) and Design-Build-Operate (DBO).

15. SIG'S OFFERINGS, IN PROJECT DEVELOPMENT AND CONTRACTS

SIGA Mobilidade Urbana (SIGA) is a Brazilian corporation in the deployment of sustainable infrastructure development and International trade. SIGA is a conduit to enterprise-level businesses having a vested interest in the development of sustainable ecosystems of infrastructure, energy, economic and social development, and international trade. SIGA is providing market access to address market demands for products. SIGA, with its corporate headquarters in Caxias do Sul, Rio Grande, Brazil, with an international office in Metropolitan Washington, DC, USA to conduct operations for market access to global markets.

SERRA GAÚCHA REGIONAL TRAIN: This infrastructure project is being instituted to accommodate the projected demographics for an expansion of the region's GDP index. This project is being developed in conjunction with the Canela Hortênsias Regional Airport and CDL. This infrastructure development project will support a multipurpose transportation system for the transport of products produced in the Serra Gaúcha Region. The transport of an indigenous workforce is required for an expansion of the region's GDP, which is capable of expanding in the continental and international markets. Additionally, the tourism industry will benefit from this expanded passenger transportation system.

These infrastructure requirements are to accommodate the demographic expansion that has been slated for the 2040 projected growth in the state of Rio Grande Do Sul. From the projections in 2021, an estimated budget of 1,450,000,000, the requirements from the project's current estimated budget of **$1,995,957,624.00** that will be applied as designated for the following. The first application of seed capital will be applied towards verification of Carbon Credits, which in turn will be applied towards securing additional resources for the infrastructure development. The second application will be applied to make payments for compensation, completion of the engineering specifications for the rail lines, and development of the first station.

The third is to initiate guarantees for state access roads, utilities for energy, and other vital elements for the development of the train. The fourth is for expanded offices and facilities in Brazil and the United States to accommodate the needed personnel, equipment, and technologies for the promotion and logistical operations for the movement and distribution of products.

The objective, (s) is to stabilize the transport and delivery systems of the supply chain for delivery of goods to proposed export facilities. Secondly, this endeavor will ensure more timely deliveries and volumes of products, many of which would be categorized as perishable. Third, the development will minimize the degradation and fatalities of the current road infrastructure by decreasing the number of heavy transport vehicles carrying goods over the road systems. Lastly, with a diminished carbon emission from the current mode of supply chain operations, there will be a stable foundation for implementing viable regional ecosystems. The proposed railway system is being designed to obtaining the following results:

- Sustaining the projected demographics of the population in the region, accommodating a greater influx of tourism, and minimizing the carbon footprint from everyday activities via a matrix of interconnected ecosystems of infrastructure, industries, and societal and environmental adaptations.
- It is an integral component to accommodate the tourist industry as an attraction that will motivate and tourists to circulate throughout the region.
- It will reduce the cost of transporting natural raw materials, from forestry, mining, agriculture, and industrialized value-added products from the region.
- It will increase the industrial and commercial competitiveness of companies in the region.
- It will reduce the flow of vehicles on the region's roads, whether cargo or passengers.
- It will reduce the emission of greenhouse gases emitted by the transport network in the region.
- It will reduce the travel time between cities.

HORTÊNSIAS INTERNATIONAL AIRPORT: This project has been sanctioned to be included in the State's network to meet the tourist demand of the municipalities of Canela and Gramado. Thus, an airport site is proposed that allows for meeting this portion of the demand. In this context, the Airport to be implemented was classified as Tourist and must be capable of serving large non-regular aviation, starting from the first planning phase. However, it should be noted that, in addition to the tourist activity, the operation of regular and oversized cargo aviation is being planned for this development. In September 2001, the Civil Aviation Institute (IAC) prepared the Airport Development Plan for the Hortênsias Region, and approved it by Ordinance No. 1340/DGAC, on September 17, 2001.

Studies must be redeveloped to accommodate the recent atmospheric changes for adaptation to climate changing. In accordance with this document, its proposed speciation's are separate as indicated in the Proposed Configuration of Infrastructure Plans. The Airport plays an important role in the international, national, and regional air transport systems, especially when evaluating the domestic and international components and for projecting demand. Its geographic location, its role in terms of commercial service and traffic, and its origin and destination base give the airport the role of the hub (concentrator) of connection. Although passenger traffic is also a result in part of the decisions related to the transport network routes taken by the airlines that use it. It should also be noted that the airport infrastructure plays a relevant role in the economic, political, and social context of a given region.

It concentrates a large part of the traffic of people and goods over medium and long distances, with positive impacts on the country and on the regional economies. In addition, a productive supply chain for the exchange of export and importation of goods, machinery, equipment, technologies, parts, and various components is being developed. This helps to promote national, regional, and local development, as they attract companies and expand activities in industrial, commercial, and service sectors, in addition to generating taxes, employment, and income.

CANELA/CAXAIS MULTIMODAL LOGISTICS CENTER, adjacent to the Airport, will provide platforms that allow for National and International distribution as an integrative ecosystem project to a logistical axis. The center will be inclusive of; a Dry Port (Inland Customs Station), full Rail & Bus transport (Freight and Passenger), Government offices, Banks, Stores and Shops, Restaurants, Automotive Services, Museums, Recreational Facilities. As a broader incentive to attract the international tourists sector a designation for the proposal Formula 1 developments for a racing venue along with museums and added tourists attractions are being planned.

SIGA/GROTTO has formally engaged, through contractual and M.O.U. agreements, for Marketing, Public Relations, and Market Access for the various associations and prime contractors identified within this document. All the agreements are vital to establishing the infrastructure, trade, and development aspects of the various state-wide implementations of ecosystems. These relationships are inclusive of the intellectual Research and Development (R&D) initiatives at the University of Caxias do Sul, and MobiliCaxias for verification of the demographic shifts in the social structure requirements state wide. Also, the alliances made with the various state associations for Agricultural and Forestry development to facilitate conservation and for exportation of the product lines to increase the state's GDP through a holistic approach. These alliances are crucial to the sustainability and advancement of the Regional Train, Airport, and eventually the Seaport at Santa Catarina. The latter consideration of the train's extension and development of the seaport are planned to come on line in the next five to seven years. All of the corporative arrangements are designed to increase the production within the region and support expansion of the rise in the demographics

CARBON SAT is a technology base that stands out as a revolutionary innovation in tackling climate change, offering an advanced technological solution for the accurate measurement, certification, and automatic generation of carbon credits. The project has the potential to make a significant impact on the global market due to its accuracy, efficiency, automation, and ease of adoption as previously stated in the section of Carbon Sat Technology for measuring Carbon Credits. With the recent turn of events with the Verra Corporation's suspension for issuance of carbon credit vouchers for development projects after police closed their offices on June 10, 2024. This has created a void in the Brazilian and global market place for voluntary Carbon Credits. We anticipate and expect that this void will be filled by safe carbon CO_2 verification process, and being complemented by the Carbon Sat technology for accurate measurements.

- Verra, was reported as the largest certifier in the voluntary carbon market, and suspended projects that were the target of Federal Police operations in the Brazilian Amazon.
- The "extraordinary action" prevents the sale of new credits, verification of Carbon credit offsets is imperative.

In light of Verra's developments, a wider void has been created in the requirements of the UNFCCC for viable methods to measure carbon emissions for the 154 Nations that convened on Climate Change during the 2015 Paris Agreement which now has near universal adherence with 198 member countries. The CarbonSat technology for measuring Carbon, coupled with the Safeweb certification procedures, will provide a secure means for the validation and sale of carbon credit offsets for sustainable development. The CarbonSat technology has been verified by a Brazilian Patent Certificate and a US patent issue in the attached

The COP-29 Summit in November 2024 has provided an invaluable case study from the networking, presentations, and marketing of the CarbonSat technologies capabilities. Its debut to an audience of international stakeholders has facilitated an array of other potential applications that will not only give measure to the Co2 emissions, but also provide the lithest test to aid in the mitigation of climate impact. These stakeholders will play a role in the testing of CarbonSat's proof of concept over a variety of regions and terrains to initiate the manufacturing, commercialization, and potential franchising of the technology.

The CERILUZ Group, "are progress and electricity generation necessarily related to predation and the suppression of the environment? 'It depends on the viewpoint." Considering the majority of companies in the field operating in Brazil, it can be said that inevitably yes. However, in the midst of this scenario, the CERILUZ Project emerges, as an innovative idea born from an extremely respected cooperative from Rio Grande do Sul, (RS) with more than 50 years of know-how in its operations and civic activities. CERILUZ, having many years of experience in its field, saw the possibility and need for change in its evolution and expansion in the business of connectivity.

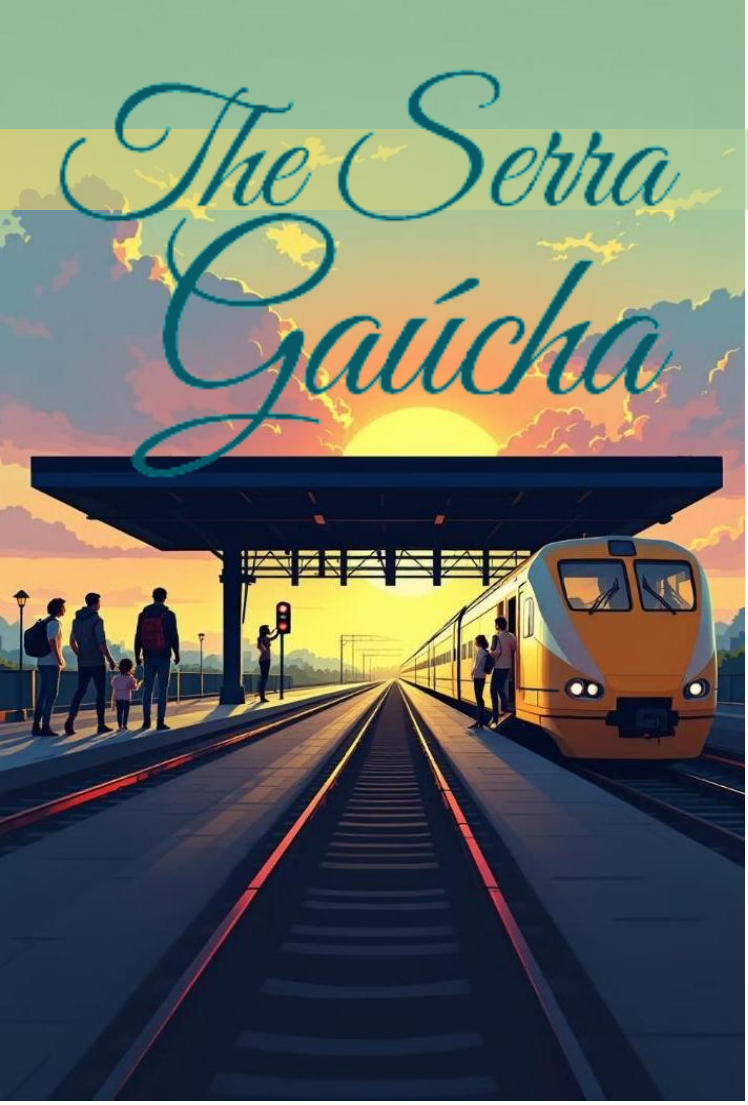
CERILUZ Projects aims to implement the development of a Pequena Central Hydroelectric) (PCH), i.e that is to say, (Small Hydroelectric Power Plants, in the Municipality of Coronel Barros, in the state of Rio Grande do Sul. Also, the expansion of its existing fiber optic data transmission network consolidates a buyout of an old debt of the cooperative, so that all of its divisions may expand their development simultaneously. The proposed expansion and consolidation will follow the same five core foundations of transparency, ethics, competence, union, and citizenship, to which CERILUZ always applies in all its undertakings. The CERILUZ Group is a composite of several companies that manage the power generation and distribution plants, in addition, to a consolidation of its fiber optic data transmission network. Within the marketing and preparation of CERILUZ's business plan there is a consideration for passive participate in the management until the end of the loan's repayment

ORDEM E PROGRESSO - SIGA DENTRO DO PRAZO

(*ORDER AND PROGRESS - FOLLOW ON TIME*
EVEN IN THE FACE OF ADVERSITY)

We are establishing the Serra Gaúcha Regional Train, Airport, and Sea Port in the development of South Brazil's Sustainable Ecosystems.

"The beauty of our Trains, Airports, and Seaports is their ability to connect the communities of the Serra Gaúcha Region. Together, these 3 infrastructure developments will collectively provide greater access to a world of opportunities, and broader cultural exchanges."



16. CONCLUSION & NEXT STEPS

1 DETAILED STUDY

We have initiated both the feasibility and environmental impact studies.

2 PUBLIC ENGAGEMENTS

We have engaged and conduct public consultations with each of the 14 initial Municipal governments and the State Legislature establishing channels of communication within each of the governing bodies and the communities.

3 PARTNERSHIPS AND FINANCING

We have identified strategic partnerships and diversified funding and underwriting sources.

4 EXECUTIVE PLANNING

We have developed timelines for phase of the planned implementation for the multimodal rail line between Bento Gonçalves to Vacaria railway and stations to transform the region and state of Rio Grande do Sul. Our investigations, planning, public participation, with a commitment towards sustainability, we will create a transportation infrastructure and ecosystems beneficial for the next 7 to 10 years, and future generations to come.

CONSIDERATIONS

- **A.** Environment integrity,
- **B.** Cost of lands expropriation,
- **C.** Acquisition of capital, and sale of the natural resources from the development's excavation,
- **D.** Integration of the regional ecosystems,
- **E.** Carbon Credits assessments for development,
- **F.** Logistics for utilities & ground transportation,
- **G.** Installation of 14 passenger stations, along with four 4 loading depots to serve an estimated 42 surrounding communities, increasing their capable of expanding production of products for market access to export, creating an increase in the regional GDP.
- **H.** Assessments of rail engineering, and maintenance variables.

Trem Regional da Serra Gaúcha

- Updates to completing technical and engineering.
- CCs initiated for infrastructure development.
- Documented for 99 years of operation of the train.

17. SUMMERY

The occurrences of atmospheric acts from 2000 to 2023 and most recently the catastrophic event of May 2024 brought devastation to Rio Grande do Sul, is concrete evidence of Climate Change that is destined to happen again. Unless early warning systems, climate modeling, and innovative technologies are implemented, the next atmospheric event will once again affect an unprepared population. By not accepting the potential for rapidly changing environmental conditions or incorporating innovative technologies and engineering techniques required for mitigation, any community will succumb to the negative effects in any region. These disastrous and unpredictable occurrences have become our greatest concern for developing sustainable infrastructure and ecosystems.

The investments required to address the planned developments are not only paramount to the Serra Gaucha Region, but also to the Nation of Brazil and the world. We make this statement based solely on the fact that Brazil is credited as the world's largest exporter of food with products that are part of the diets of 1 in every 7 persons. Brazil's food supply is largely produced in the Serra Gaucha Region which provides for 35% of Brazil's food exports. Among the other products, Brazil is renowned for its exportation of iron ore, ranking 2nd globally, and 9th in sawn woods for exportation given its vast forestry. This brings us to several disputed and undisputed facts.

The Amazon Forest is the largest ecosystem in the world, which has been verified to help mitigate the carbon greenhouse effects attributed to the negative aspects of Climate Change. Disputes in recent years have sparked aggression toward Brazil for its deforestation. This is due to naysayers not understanding the importance of Brazil to the earth's sustainability. This notion of inadequacies has proven not to be true!!! To these matters, our proposal will utilize the sale of carbon credits from the Amazon Region and the South Brazil Atlantic Forest to support our sustainable development objectives.

This proposal is presented to consider the potential and requirements to advance the Serra Gaúcha Regional transportation infrastructure. The initial objective was to aid in expanding the region's GDP, to what is now a recovery for the region. There is now a consideration from the World Bank to provide an estimated $200 million in financial aid.

SIGA's corporate participation at the 2024 COP 29, also known as the 29th United Nations Climate Change Conference in Baku, Azerbaijan venue proved to be an invaluable exchange of best practices. COP 29 prioritized negotiations on new collective climate finance targets. This conference also expanded discussions on accelerating the energy transition. The next climate change conference COP 30 will be held in the city of Belém do Pará, Brazil, in November 2025. This event will be a prime opportunity for the investment community to better understand the climatic impact Brazil has globally, with a locally driven propose for economic sustainability, environmental conservation, societal reengineering, technological innovation, and re-energizing the quality of life.

We would like to thank the international community for their aid and assistance during the 2024 time of crisis. Specially thanks are given to the Sister Cities Program, which several of the Serra Gaúcha cities are a part. We welcome any inquires and are willing to negotiate with potential investment instruments, both public and private, to address the requirements for developing sustainable infrastructure and viable ecosystems throughout South Brazil.

18. APPENDIX I: INDEXING OF DOCUMENTS & SOURCES

1. The 14 Municipalities Corporation Document
2. Formula 1 Letter of Intent
3. Banco Pactual BTG Pactua
4. Brazilian and US Patients for Carbon Sat Technology

SOURCE INDEX:

ABEEólica - Brazilian Wind Energy Association. Infovento Bulletin.Issue 35. October 2, 2024. Available at: https://abeeolica.org.br/wp-content/uploads/2024/10/424_ABEEOLICA_INFOVENTO_ED35_Digital_V3 pdf. Accessed: November 2024.

ANP - National Petroleum Agency. Brazilian Statistical Yearbook of Petroleum, Natural Gas and Biofuels 2024. Base Year 2023. (Table 4.10) August 2024. Available at: https://www.gov.br/anp/ pt-br/centrais-de-conteudo/ publications/statistical-yearbook/brazilian-statistical-yearbook-of-petroleum -natural-gas-and-biofuels-2024# Section4. Accessed on: January 10, 2025.

Atlas of Human Development in Brazil. HDI-M Ranking. 2022. Available at: http://www.atlasbrasil.org.br/ ranking. Accessed:September, 2024.

World Bank. Implementation Status & Results Report (6) for Southern Brazil Urban Resilience Program (Sul Resiliente - P170682). Published on December 20, 2022. Available at: https://documents.worldbank.org/en/publication/documents reports/documentdetail/099245512232218179/p17068211165af0a3180191f64153bf3e99?_gl=1*ukgdg4*_gcl_au*MTMxMDE5NDg3Ni4xNzE3NjgzOTU0. Accessed on: August 15, 2024.

Brazil. Civil House Federal Government details investments of R$7.4 billion for Rio Grande do Sul in the New PAC Selections. Published on July 30, 2024. Available at https://www.gov.br/casacivil/pt-br/assuntos/noticias/2024/july/federal-government-details-investments-of-r-7-4-bi-for-rio-grande- do-sul-in-the-new-pac-selecoes. Accessed on: August 15, 2024

Brazil. Ministry of Finance. Resources allocated to Rio Grande do Sul. at:https://brasilparticipativo.presidencia.gov.br/processes/unidospelors/f/120/?component_id=120&locale=pt-BR&participatory_process_slug=unidospelors#:~:text=As%20medidas%20totalize%20R%24%2023,of%20Rio%20Grande%20do%20Sul. Consolidated. 2024. Accessed on: January 6, 2025.

Government of Rio Grande do Sul. SERG - Secretariat for the Reconstruction of Rio Grande do Sul. FUNRIGS - Rio Grande Plan Fund. 2024a. Available at: https://reconstrucao.rs.gov.br/funrigs Accessed on: January 21, 2025.

Oceano Group. Partnership between the ports of Rotterdam, in the Netherlands, and Rio Grande promotes knowledge and business exchange. By Guilherme Rajão. May 5, 2023. Available at: https://www.grupooceano.com.br/noticias/rio-grande/partnership-between-the-ports-of-rotterda-in-the-holland-and-of-rio-grande-promotes-exchange-of-knowledge-and-business-29776/. Accessed on: August 15, 2024.

IBAMA - Brazilian Institute of the Environment and Renewable Natural Resources. Map of offshore wind farms under licensing in Brazil.

CENEF/CGTEF- Licensing Directorate, April 4, 2024 (pdf) Available at:https://www.gov.br/ibama/pt/br/assuntos/laf/consultas/arquivos/20240507_Usinas_Eolicas_Offshore.pdf. Accessed on: August 15, 2024.

IBGE - Brazilian Institute of Geography and Statistics. IBGE Cities and States. 2023. (Platform). Available at: https://www.ibge.gov.br/cidades-e-estados/. Accessed: September 2024.

IBGE - Brazilian Institute of Geography and Statistics. SCR - System of Regional Accounts. GDP from the Production Perspective (2010-2022). Available at: https://www.ibge.gov.br/estatisticas/economicas/contas-nacionais/9054-contas-regionais-do-brasil. html? edicao=41862&t=resultados. Accessed: September 2024.

IBGE - Brazilian Institute of Geography and Statistics. SIDRA - IBGE Automatic Recovery System. Gini index of per capita household income. Available at: https://sidra.ibge.gov.br/tabela/7435#resultado. Accessed: September 2024.

MapBiomas. MapBiomas Project – Annual Mapping of Land Cover and Use in Brazil - Collection 9. Available at: https://brasil.mapbiomas.org/wp-content/uploads/sites/4/2024/08/Fact_Colecao-9_21.08-OK.pdf . Accessed: September 2024.MapBiomas. MapBiomas Alert Project – System for Validating and Refining Deforestation Alerts with High-Resolution Images (Platform). Available at: https://plataforma.alerta.mapbiomas.org/mapa . Accessed: January 2025.

Brazil. MAPA - Ministry of Agriculture and Livestock. National Register of Organic Producers. January 14, 2025. Available at: https://www.gov.br/agricultura/enus/subjects/sustainability/organics/national-register-of-organic-producers Accessed on: January 17, 2025.

BUILDING VIABLE ECOSYSTEMS AND SUSTAINABLE INFRASTRUCTURE

FOR TRADE AND ECONOMIC DEVELOPMENT IN SOUTH BRAZIL

RIO GRANDE DO SUL • SUSTAINABLE GOALS
GROTTO
GRAND RIVER SOUTH • PRODUCT LINES, S.A.

SIGA MOBILIDADE URBANA

safe carbon CO2 neutral

Instituto safeweb

UCS UNIVERSIDADE DE CAXIAS DO SUL

mobicaxias
Nossa cidade, nosso futuro.

BOM JESUS 1879 1913

INDUSTRIA CANELA-28-12-1944 TURISMO

REPÚBLICA RIO-GRANDENSE 20 DE SETEMBRO DE 1835
LIBERDADE IGUALDADE HUMANIDADE

GRAMADO JARDIM DAS HORTENSIAS

25.9 CARLOS BARBOSA 1959

FARROUPILHA 11-12-1934

22-10 VACARIA 1850

1870 GARIBALDI 1900

BENTO GONÇALVES A CAPITAL BRASILEIRA DO VINHO

1916 JAQUIRANA 1987

NOVA PETRÓPOLIS 28-02-55

1857 SÃO FRANCISCO DE PAULA 1943

19. APPENDIX II: PARTNERS & SUPPORTING ORGANIZATIONS

CG/LA INFRASTRUCTURE

RIO GRANDE DO SUL • SUSTAINABLE GOALS
GROTTO
GRAND RS BRAZIL for Life
GRAND RIVER SOUTH • PRODUCT LINES, S.A.

SIGA MOBILIDADE

Agassis & Sibemberg
Gestão Jurídica Empresarial

PROJECT BLUE WORLD

IDI International Development Institute

IRAPURU OPERADOR LOGÍSTICO

ORA ET LABORA
SOARES & KURY ADVOCACIA

BELISSÍMA IMÓVEIS
CRECI 23034-J

EVR EXPRESSO VALE REAL

Sūrya PROJETOS

UVERG

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FARRAPO TRAVEL

GEOCULTIVA

Câmara de Comércio Brasil Paraguai

safe carbon CO2 neutral

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ALOISE Consultoria e Projetos

Ecoss SOUTH BRAZIL MOBILITY

CNM MERCOSUL

SolluS

GENESYS DESENVOLVIMENTO E NEGÓCIOS