Mato Grosso do Sul on the Growth Route: an investigation into the potentialities driven by the Bioceanic Route

Mato Grosso do Sul na Rota do Crescimento: uma investigação sobre as potencialidades impulsionadas pela Rota Bioceânica

Mato Grosso do Sul en la Ruta del Crecimiento: una investigación sobre las potencialidades impulsadas por la Ruta Bioceánica

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Abstract: This article aimed to investigate the relationship between the potential of economic growth in Mato Grosso do Sul with the implementation of the Bioceânica Route. Using studies carried out and published since 2015, the analysis structures and defines the main potentialities in the macroeconomic and sectoral scope for Mato Grosso do Sul. The results defined five points of analysis: i. Accelerated economic growth; ii. Expansion of international trade; iii. Investment in infrastructure; iv. Development of new production chains and v. Strengthening the strategic position of the state. A radar analysis and the probability distribution of impact on each point listed after the definitive implementation of the Route was prepared, which could lead the state of Mato Grosso do Sul to the Route of Growth.

Keywords: Economy; Bioceanic Route; indicators; potentialities; production.

1 INTRODUCTION

In recent years, Mato Grosso do Sul has stood out as one of the rising economies in Brazil, driven by factors such as agriculture, livestock, and industry. However, a crucial element has played an increasingly significant role in the state’s economic development: the Bioceanic.
Route. This route aims to connect the Atlantic to the Pacific through a logistics and regional integration corridor, passing through the heart of Brazil and crossing international borders. It has proven to be a key factor in boosting economic growth and opening new opportunities for Mato Grosso do Sul.

The Bioceanic Route, conceived as a logistics corridor for regional integration, has sparked the interest of government leaders and businesses due to its ability to directly connect the state and all of Brazil to the ports of Chile. This direct connection opens up new trade possibilities and reduces dependence on traditional routes, offering a faster and more efficient alternative for the transportation of goods and merchandise.

Economic theory studies and presents empirical research on the value and impact of expectations surrounding phenomena as a development factor. People have expectations and react to stimuli of future probabilities, and the Bioceanic Route is already promoting these expectations in investment incentives and structural changes for Mato Grosso do Sul, Brazil, and the countries within the corridor’s integration.

The state of Mato Grosso do Sul has made changes to its economic structure, boosting the productive sector with new assets related to agribusiness and industrial scale. These changes have brought transformations to cities like Três Lagoas, Dourados, Ribas de Rio Pardo, Campo Grande, Porto Murtinho, and Inocência. The latter is receiving one of the world’s largest paper and pulp producers, directly from Chile.

In this context, this article aims to investigate and discuss the relationship between the potential for economic growth in Mato Grosso do Sul and the implementation of the Bioceanic Route. We will explore the main economic impacts resulting from this strategic initiative, as well as the challenges and benefits it brings.

This study is based on a theoretical essay that utilizes data, statistics, and information from studies and analyses about the potential of the Bioceanic Route. It will also consider aspects such as investments in infrastructure, the development of new commercial ventures, and the expansion of logistical activities related to the route.

Finally, it is crucial to emphasize that the analysis presented here seeks to contribute to a better understanding of the economic impact of the Bioceanic Route in Mato Grosso do Sul, providing insights for the development of strategies and public policies that fully leverage the opportunities brought by this important path of regional development and integration.

To achieve the proposed objective of this essay, the research is structured into six sections. This first section introduces the research context, states the general objective, and identifies the points of investigation. Next, the main bibliographic references on the potential of the Bioceanic Route are described, specifically focusing on research related to tourism, economy, and social impact. In the third section, the framework of methodological procedures is defined, followed by the presentation of guidelines that demonstrate the potential and relationship with the Bioceanic Route for Mato Grosso do Sul. Subsequently, the essay concludes with final considerations, propositions, and possibilities for scientific advancement in the studies of Mato Grosso do Sul.

2 STUDIES ON THE POTENTIAL OF THE BIOCEANIC ROUTE

The ecosystem of research and coordination of scientific activities for the Bioceanic Route has been institutionalized by universities as UniRila- University Network of the Latin American
Integration Route. This organized and integrated network, composed of researchers, students, and scientists, has produced results from discussions and research initiated in 2015 with the agreement signed by the presidents of the four countries.

The first scientific output was the dossier of the journal Interações- International Journal of Local Development, which published the first edition on Challenges of Integration in the Bioceanic Route (Brazil, Paraguay, Argentina, and Chile). In this special edition, referred to as the dossier, 20 articles from different researchers and universities were published, offering various perspectives on the Bioceanic Route.

The majority of the articles focused on the tourism potential of the Bioceanic Route and its impact on territories, particularly in Mato Grosso do Sul. Castro (2019) asserts that the relationship between tourism and the economy is fundamental and holds great potential to accelerate economic growth through the Bioceanic Road Corridor.

According to Castro (2019), with good management and appropriate governance, tourism can generate quality jobs, reduce poverty, and provide incentives for environmental protection. Promoting tourism along the Corridor can also serve as a tool for a gradual transition towards a more inclusive, resilient, and sustainable economy. In the same context, Asato et al. (2019) state that the implementation of the Road Corridor will enable connecting the Atlantic to the Pacific. Its realization will begin with the construction of the bridge between Porto Murtinho (Brazil) and Carmelo Peralta (Paraguay). Ultimately, the Road Corridor will expedite Brazilian exports to Asian countries and the American west coast via the Pacific Ocean. The logistical viability opens up the potential to boost tourism across the entire region.

Tourism was also a highlight in Silva et al. (2019) research on how tourists from Paraguay, Argentina, and Chile perceive the attributes of tourist attractions in Bonito, MS. Grechi, Lobo e Martins (2019) present an analysis of the tourism management system in Bonito, with an emphasis on its operation through the Unique Voucher and the creation of specific tourism laws. Mamede et al. (2019) propose integrated birdwatching itineraries on the border between Brazil and Paraguay as a strategy for biodiversity conservation, social inclusion, economic dynamism, and cultural valorization of the communities located in the territories influenced by the Bioceanic Corridor.

Regarding the economics of the Bioceanic Route, Constantino et al. (2019b) articles first address the flow of tourists between the countries of the Bioceanic Route, conducting a quantitative analysis to investigate international tourism demand between Brazil, Argentina, Paraguay, and Chile. The second study characterizes, based on economic indicators, the municipalities of Mato Grosso do Sul (MS) with direct and indirect influence on the creation of the Bioceanic Route, linking Brazil to the Pacific Ocean. All municipalities were evaluated using indicators such as GDP, GDP per capita, population, tax revenue, sectoral gross value added, and primary, secondary, and tertiary economic activities.

In the second special edition entitled "Dossier II: Challenges of Integration in the Bioceanic Route (Brazil, Paraguay, Argentina, and Chile)," strategic and economic analyses were led by Parkinson de Castro (2021), who presented the Route as a platform for economic development, capable of attracting new investments, fostering partnerships, and integrating territories. Through collective effort, the aim is to generate benefits for both the private sector and local communities. In this context, it is necessary to understand its strengths and weaknesses to guide policymakers on future actions to capitalize on the advantages of physical integration and overcome any obstacles.
The same author also highlights that his article will allow the reader not only to understand the peculiarities of each region and identify advantages and disadvantages but also to recognize the transformative potential of the project.

Figueroedo et al. (2021) presented an analysis of economic data from the Brazil-Paraguay section with a focus on the city of Porto Murtinho. It is related to the research project Bioceanic Road Corridor and the University Network of the Latin American Integration Route (UniRila). The analysis examined import and export flows in a macroeconomic scenario, providing perspectives on the corridor and presenting challenges ahead, such as taxation rates between countries, reduction of protectionism, corruption, university integration, and exchange rates.

Wilke, Gonçalves e Asato (2021) research focused on a study of competitiveness in the Bioceanic Route, comprised of the countries Brazil-Paraguay-Argentina-Chile. The general objective analyzed the competitiveness of tourist corridors with a focus on the aforementioned countries. As a research methodology, the investigation was qualitative and descriptive. For Boldrine Abrita et al. (2021), the study of the Route initiated an analysis of the productive structure of the municipalities in Mato Grosso do Sul that will be directly affected by the RILA route, to better understand this process. For this purpose, spatial data exploratory analysis (AEDE) and the Spatial Location Quotient (QLs) of sectoral jobs in the State’s municipalities were used.

These and other studies, such as Franco et al. (2023) and Barros (2020), underpinned the discussions, analyses, and propositions of this article.

3 METHODOLOGICAL PROCEDURES

The research methodology adopted in this study aims to obtain a comprehensive and well-founded understanding of the economic growth of Mato Grosso do Sul related to the Bioceanic Route. To achieve this objective, the following procedures are proposed: a literature review, which begins the research with an in-depth review of the literature on the topic, seeking academic sources, economic studies, reports from financial institutions, governmental publications, and specialized articles. The procedure of analyzing the literature review allows for the establishment of a solid theoretical foundation, understanding existing debates, and identifying knowledge gaps that can be explored.

The analysis procedure used an analytical essay that provides qualitative analysis of texts and studies to define guidelines for strategic management and public policies based on the knowledge accumulated since 2015 in studies and researches published and analyzed regarding the Bioceanic Route. Qualitative analysis allows for exploring aspects that are not measurable through quantitative data, such as challenges faced, perceived benefits, and future prospects.

Articles published in the Dossiers of the Interações Journal were researched, and their results indicated potential impacts of the Bioceanic Route on the economy and growth of the state, the country, and other countries.

4 RESULTS AND PROPOSITIONS

For the structuring of the results, the essay initially defined five items that correlate and were pointed out in the studies regarding the Bioceanic Route.

The main emerging results that can provide the definition of guidelines and/or public policies for the development of the state of Mato Grosso do Sul are listed below. These results
also form important macroeconomic indicators for the construction of the Opportunities Radar, which comes along with the implementation of the Bioceanic Route.

1. **Accelerated economic growth:** It is possible to observe a faster and more robust economic growth in Mato Grosso do Sul compared to other regions or states that do not have direct access to the Bioceanic Route. This is evidenced by indicators such as increased GDP, expansion of the industrial sector, growth in exports, and job creation. The Bioceanic Route is indirectly boosting this growth by attracting companies that will use the Route to transport their products and acquire inputs. For example, large industrial paper and pulp plants are being constructed in Ribas de Rio Pardo and Inocência cities\(^3\),\(^4\). As a result, interior cities will experience a fivefold increase in population, growth, and the overflow of productive activities to neighboring regions, as one of the main inputs (eucalyptus) is spread across and produced by various interior cities.

2. **Expansion of international trade:** The implementation of the Bioceanic Route may have significantly boosted Mato Grosso do Sul's international trade by facilitating access to international markets and opening up new export opportunities. The route may have led to an increase in exports of agricultural, mineral, and manufactured products, resulting in a favorable trade balance for the state.

   With the construction of the bridge over the Paraguay River, commercial reality and flow will increase by more than 30% within two years, particularly noting the rise in exports to neighboring countries. The estimate is even more optimistic for Asia, which is a key destination, with an expected increase of 50% in the next 5 years after the bridge's completion.

3. **Infrastructure investments:** The establishment of the Bioceanic Route has likely attracted investments in infrastructure, such as the construction or improvement of roads, ports, logistics terminals, and other related facilities. These investments may have contributed to the economic development of Mato Grosso do Sul by enhancing regional connectivity and the efficiency of goods transportation flows.\(^5\)

   The planned investments include the Ferroeste railway, improvements to highways within the state and along the route, as well as cross-sector activities that generate employment and income in municipalities, thus improving the quality of life and creating opportunities for new businesses to establish themselves to meet the demand for services resulting from the increased commercial flow in the regions.

4. **Development of production chains:** The Bioceanic Route may have driven the development of new production chains and the diversification of Mato Grosso do Sul's economy. The facilitation of trade with countries connected by the route may have encouraged investments in sectors such as agribusiness, mining, food industry, among others, leading to an expansion of production and job creation.

   New production chains, such as the Paper and Pulp industry, are transforming the state into the "Valley of Cellulose," providing new incentives for the state's development. Due to strategic reasons and proximity to the Agribusiness sector, it is also emerging in

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\(^5\) [https://www.ferroeste.pr.gov.br/](https://www.ferroeste.pr.gov.br/)
new production chains for Tilapia, Rubber, Specialized Services, and Agro Technologies. 

5. Strengthening of the strategic position: Mato Grosso do Sul may have benefited from the strengthening of its strategic position as an international logistics corridor. The route may have attracted foreign investments, stimulated trade partnerships, and regional integration, consolidating the state as an important logistics hub in the center of Brazil.

Since the presidential agreement endorsed in 2015 between Brazil, Paraguay, Argentina, and Chile, Brazilian products departing from the Port of Santos have had to travel more than 24,000 kilometers, heading towards the Panama Canal before finally reaching the Pacific Ocean route to access Asian and Oceanic markets. As a consequence, the region is expected to enjoy several advantages, including increased trade, investments, business activities, and even tourism.

Strategically, a new logistics corridor would reduce logistical costs and travel time by approximately 12 days, providing access to major consumer markets in Asia, Oceania, and the West Coast of the Americas. This would result in an increase in the country's overall export and import capacity.

In summary, the establishment of the Bioceanic Route has been fundamental in driving the economic growth of Mato Grosso do Sul, offering new commercial opportunities and strengthening its position as an important international logistics center. According to SEMADESC - the Economy Department of the Government of Mato Grosso do Sul, the state’s GDP has grown exponentially in the last 3 years, and the total wealth of MS amounts to R$ 150 billion; an estimated 4.6% increase is projected for this year. With an annual budget ranging from R$ 16 billion to R$ 18 billion in recent years, Mato Grosso do Sul has increased its Gross Domestic Product (GDP) by more than R$ 40 billion in the last three years. This year, the state is expected to have the second-highest growth rate in the country, as shown in a survey conducted by Tendência Consultoria and published by the newspaper Valor Econômico. The state has accumulated a positive balance of over 30,000 jobs created in six months, a record, according to data from the National Registry of Employed and Unemployed Persons (Novo CAGED). Additionally, data from the Board of Trade of Mato Grosso do Sul (JUCEMS) indicate that 4,848 companies were opened in the state in the first seven months of this year.

Mato Grosso do Sul stands out and is directly related to the agricultural frontier. In addition to its expansion, it is attracting new investments that contribute significantly to the state’s GDP. This economic growth multiplies and spreads throughout the state, generating new jobs, density for industries, and human development.

4.1 Radar Analysis

In the analysis of the five macroeconomic points presented, the probability of positive changes occurring that would lead to significant economic results for the state of Mato Grosso do Sul was rated on a scale from 1 to 10:
It's clear that the activation of the Bioceanic Route is expected to have the greatest probability and immediate impact. Among the points presented, the highest probability of occurring and having the greatest impact on the state’s economy is: Accelerated Economic Growth and the Expansion of International Trade, transforming the productive landscape of Porto Murtinho and the entire region.

The Strategic Positioning also shows a high probability of positive impact, depending on political actions by the state and federal governments, with a likelihood rating of 8 out of 10. Following closely is the likelihood of positive impact from Infrastructure Investments, which also relies on the involvement of public entities. The Development of New Production Chains may take more time to materialize and impact the economy, but it is still considered likely.

The sectors and economic activities that will be directly impacted by the Bioceanic Route and are expected to experience a multiplier effect on financial flow are Tourism and Agribusiness, both with a probability rating of 10 out of 10. This increase in economic activity is expected to lead to a rise in Employment and Income, boosting local Trade and Services, and finally, the Industrial sector.
In these opportunities for economic sectors, one activity stands out as cross-cutting to all items: logistics. With the change in the productive landscape in Mato Grosso do Sul post the Bioceanic Route, logistics foresees: i. Reduction of transportation costs. ii. Improvement in service levels for users and increased efficiency in cargo movement. iii. Decrease in pollutant emissions. iv. Regional development of the state. v. Expansion of public and private investments in the infrastructure sector.

4.2 International Trade

International trade will be the main driver of growth, as buyer countries increasingly increase their domestic demands. On the other hand, state producers are investing in productivity and higher product quality while also adhering to the Environmental, Social, and Governance (ASG) agenda of businesses.

Main products exported by Mato Grosso do Sul, as well as their variation compared to the beginning of the series.
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The variation in terms of value was 89.98% compared to the year 2015. As for the destination of exports, the country to which the state exported the most goods in 2019 (China) accounted for a total of 2,146.63 million dollars (40.94% of all countries). During the period, Chile and Italy showed the highest and lowest variation concerning the accumulated data from the initial year of analysis (2019), with 138.85% and -25.10%, respectively.

In 2019, among the municipalities that make up the state of MS, Três Lagoas took the lead in exports with values around R$ 2,076.00 million, representing approximately 50% of industrial

Table 1 – Exported Products – Jan.-Dec./2015 and Jan.-Dec./2019 - US$ Millions and Metric Tons

<table>
<thead>
<tr>
<th>Produto</th>
<th>Jan-Dez/2015</th>
<th>Jan-Dez/2019</th>
<th>Var. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US$ Milhões</td>
<td>%</td>
<td>Ton.</td>
</tr>
<tr>
<td>Pastas de madeira ou de outras matérias fibrosas celulósicas; papel ou cartão para reciclar (desperdícios e aparações).</td>
<td>1.938,77</td>
<td>36,98</td>
<td>4.241.455</td>
</tr>
<tr>
<td>Sementes e frutos oleaginosos; grãos, sementes e frutos diversos; plantas industriais ou medicinais; palhas e forragens</td>
<td>1.162,23</td>
<td>22,17</td>
<td>3.285.924</td>
</tr>
<tr>
<td>Carnes e miudezas, comestíveis</td>
<td>986,44</td>
<td>18,81</td>
<td>340.659</td>
</tr>
<tr>
<td>Cereais</td>
<td>450,31</td>
<td>8,59</td>
<td>2.655.675</td>
</tr>
<tr>
<td>Minérios, escórias e cinzas</td>
<td>180,55</td>
<td>3,44</td>
<td>3.934.252</td>
</tr>
<tr>
<td>Resíduos e desperdícios das indústrias alimentares; alimentos preparados para animais</td>
<td>168,58</td>
<td>3,22</td>
<td>461.343</td>
</tr>
<tr>
<td>Açúcares e produtos de confetaria</td>
<td>67,13</td>
<td>1,28</td>
<td>238.81</td>
</tr>
<tr>
<td>Peles, exceto as peles com pelo, e couros</td>
<td>65,58</td>
<td>1,25</td>
<td>57,6</td>
</tr>
<tr>
<td>Papel e cartão; obras de pasta de celulose, de papel ou de cartão</td>
<td>45,13</td>
<td>0,86</td>
<td>59,507</td>
</tr>
<tr>
<td>algodão</td>
<td>41,34</td>
<td>0,79</td>
<td>24,956</td>
</tr>
</tbody>
</table>

Source: Comexstat, elaboration EPL.

Table 2 – Main Destinations of Exports – Jan.-Dec./2015 and Jan.-Dec./2019 - US$ Millions and Metric Tons

<table>
<thead>
<tr>
<th>País</th>
<th>Jan-Dez/2015</th>
<th>Jan-Dez/2019</th>
<th>Var. (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>US$ Milhões</td>
<td>%</td>
<td>Ton.</td>
</tr>
<tr>
<td>China</td>
<td>1.666,71</td>
<td>35,23</td>
<td>3.988.248</td>
</tr>
<tr>
<td>Japão</td>
<td>144,98</td>
<td>3,06</td>
<td>466.938</td>
</tr>
<tr>
<td>Estados Unidos</td>
<td>103,91</td>
<td>2,20</td>
<td>210.639</td>
</tr>
<tr>
<td>Argentina</td>
<td>211,29</td>
<td>4,47</td>
<td>4.726.800</td>
</tr>
<tr>
<td>Itália</td>
<td>279,71</td>
<td>5,91</td>
<td>525.080</td>
</tr>
<tr>
<td>Países Baixos</td>
<td>200,11</td>
<td>4,23</td>
<td>437.798</td>
</tr>
<tr>
<td>Hong Kong</td>
<td>124,26</td>
<td>2,63</td>
<td>42.227</td>
</tr>
<tr>
<td>Chile</td>
<td>67,37</td>
<td>1,42</td>
<td>16.947</td>
</tr>
<tr>
<td>Outros</td>
<td>1.933,27</td>
<td>40,86</td>
<td>5.223.374</td>
</tr>
</tbody>
</table>

Source: Comexstat, elaboration EPL.

In 2019, among the municipalities that make up the state of MS, Três Lagoas took the lead in exports with values around R$ 2,076.00 million, representing approximately 50% of industrial
product exports among all municipalities in the state. Comparing with the year 2015, there was a variation of 83.46%, as in that year, the municipality had exported R$ 1,131.57 million.

In terms of volume, Três Lagoas exported 4,542,532 metric tons in 2019, while in 2015, the amount reached 2,444,814 metric tons.

5 CONCLUSIONS

The establishment of the Bioceanic Route has significantly boosted the economic growth of Mato Grosso do Sul, creating new commercial opportunities, and strengthening the state’s strategic position as an international logistics corridor. This route, connecting Brazil to the countries of South America and the Pacific, has fostered trade and regional integration, generating economic and social benefits for the region.

The Bioceanic Route, linking Mato Grosso do Sul to the ports of Chile and Peru, has been considered a vital initiative to drive economic development in the region. By offering a faster and more efficient alternative for transporting goods between South American and Pacific countries, this route contributes to reducing logistical costs and increasing international trade flow.

Furthermore, the creation of the Bioceanic Route has stimulated investments in infrastructure and logistics in Mato Grosso do Sul, promoting the development of new commercial and industrial ventures along its path. This has propelled the local economy, creating jobs and increasing tax revenue.

The positioning of Mato Grosso do Sul as the primary production and integration HUB between countries and the economic activities generated by the incentives provided by the state and federal governments through the Bioceanic Route, have the potential to transform the state into the new "Pantanal Silicon Valley." Leveraging its natural resources, strategic positioning, and leadership capacity in the integration process of the countries along the route.

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