



# A South American interoceanic network: bioceanic corridors and the role of connecting states

## Background

The world economy has undergone major changes over the past two decades. Particularly visible have been the ascent of China and East Asia, the shift of the dynamic centre from the North Atlantic to the Asia-Pacific region, and the increasing debate about climate and environmental challenges. Inevitably,



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In recent years, the external sector of the state of Mato Grosso has shown impressive growth rates. The state's exports per capita are three times higher than those of China. This phenomenon seems to be on the verge of overcoming one of the main obstacles to South American integration: the Atlantic-Pacific barrier. The hypothesis analysed in this issue of the *FAL Bulletin* is that certain ongoing exogenous and endogenous "tectonic changes" in five Brazilian states that have been intensifying for some time will finally make bioceanic corridors viable. The challenge is to form an interoceanic network connecting the different corridors with waterways and coastal shipping in the South American Pacific.

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Brazil has been impacted by these changes, and in turn, within the country, important transformations are taking place, including with respect to production on the country's western border and on the fringes of the Amazon region from where exports are moving westward and northward.

The external sector of the state of Mato Grosso has shown impressive growth rates in recent years. The state's exports per capita are three times higher than those of China. This phenomenon seems to be on the verge of overcoming one of the main barriers to South American integration: the Atlantic-Pacific barrier. Brazilian production is becoming increasingly removed from the traditional Atlantic ports, moving closer to the Andes and, therefore, to the Pacific ports and their main buyers.

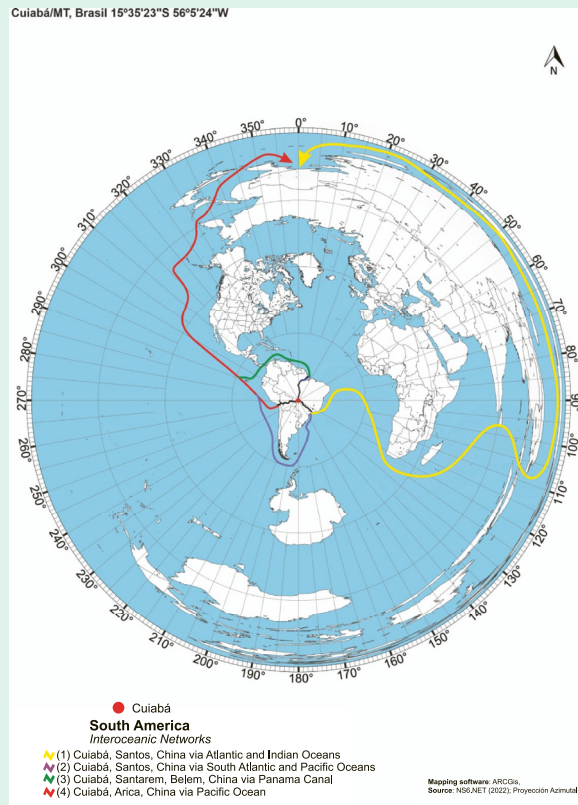
This new reality highlights both new possibilities for overcoming South America's historical challenges (infrastructure development, adding value to exports and promoting intra-regional trade), and the need to overhaul regional governance by giving centrality to environmental and social issues.

The hypothesis analysed in this issue of the *FAL Bulletin* is that certain ongoing exogenous and endogenous "tectonic changes" that have been intensifying for some time will finally make bioceanic corridors viable. The challenge is to form an interoceanic network connecting the different corridors with waterways and coastal shipping in the South American Pacific. The various bioceanic corridors are complementary do not compete with each other. On the contrary, the creation of one increases the possibilities of success of the others. Map 1 shows the world centred on Cuiabá, capital of the state of Mato Grosso and geodetic centre of South America, with four alternative routes to China. The least structured route is precisely the one that could be possible with an interoceanic network.

The paper is divided into four parts. The first presents the exogenous and endogenous "tectonic changes" that open up the unique possibility for the creation of an interoceanic infrastructure network in South America. The second looks at Brazil's connecting states, characterizing them and analysing their recent development. The third part discusses the institutional framework for infrastructure integration and the need to update it. The fourth presents three of the main integration projects involving five landlocked connecting states in Brazil (that, in turn, border other South American nations and are notable for their export growth) and the ports of neighbouring countries. The paper also proposes a new approach to regional governance based on interoceanic network infrastructure.

## Map 1

Azimuthal projection from the geodetic centre of South America



Source: Prepared by the authors.

## I. Tectonic changes

Today's world has been undergoing accelerated geoeconomic transformations that encompass multiple issues, including environmental, scientific, political, military, social, technological and productive ones. The shifts taking place include exogenous and endogenous "tectonic changes" that stand out for their scale and impact (ECLAC, 2016; Barros and others, 2021a).

One transformation in full swing is the debate on environmental issues and the drive to move past productive development models based on disharmonious, predatory and unsustainable exploitation of available resources (Mathias and others, 2021). Associated with development are pandemic-exacerbated socioeconomic challenges, difficulties in planning and implementing effective public policies for recovery and the return to growth of Latin American economies in the post-COVID-19 world. East-West polarization and uncertainties stemming from a possible escalation of the conflict in Ukraine are worsening the situation.

Another major exogenous change underway, also identified by ECLAC (2016) and which has become more marked in the last three decades, is the increase in the economic and commercial importance of Southeast Asia on the global stage and the consequent shift of the most dynamic axis of the world economy from the North Atlantic to the Asia-Pacific region.

The Pacific region has been growing in geo-economic importance at least since as far back as the 1970s, and in recent years has become the most buoyant area of the world economy. As its economic performance has gone from strength to strength, the region has become a stage for political disputes and the projection of military power. The economic growth and technological progress of the Southeast Asian economies, massive trade and investment

flows, the establishment of international agreements and the geographical shift of economic and productive activities have made the Asia-Pacific region a bigger player.

These exogenous changes with a global impact have led to endogenous transformations in Brazil's interior. Asia's strong economic growth has exerted an undeniable power of attraction. In 2000, less than 2% of Brazil's exports, amounting to a total of US\$ 1.1 billion, went to China. In 2021, that Asian country accounted for 31.3% of total Brazilian sales abroad, equivalent to US\$ 87.9 billion.<sup>1</sup>

The state of Mato Grosso, which supplies a significant portion of China's demand for agricultural products, continues to be —by a wide margin in relation to the other states— the most productive in terms of Brazilian agribusiness. Its importance is such that it strongly affects the economic dynamics of nearby states, as happened most recently in the case of Rondônia.

Demographically and economically, especially in the export sector, Brazil is advancing westward. The strong agricultural performance in parts of Brazil's western border transcends national boundaries and impacts a number of provinces and departments in neighbouring countries. Undoubtedly, some economies, such as Argentina's and Paraguay's, are also benefiting from the growing demand from the Asia-Pacific region.

In recent decades, Brazilian agricultural output has experienced a major geospatial realignment. Among other factors, this is the result of the westward expansion of productive areas of the country and, consequently, of the growing distance of farm crops from the traditional Atlantic ports. At the same time, this productive march westward brings the Brazilian products nearer to logistic alternatives available on the Pacific coast, just as for 20 years it has been bringing the grain production of Brazil's Centre-West closer to the multimodal routes of the Amazon.

Of course, the debate on Amazon integration infrastructure has its own unique issues. The problems, possibilities and multiple intraregional dependencies of physical integration in the Amazon, particularly the orbits of intraregional circulation and the national and subnational scales are addressed by Virga, Miranda do Nascimento and Consolmagno de Marchi (2021). It is also important to consider, in the environmental context, the challenge of developing sustainable economic activities, such as the circular bioeconomy, in the Amazonian environment, an issue raised by Denny, Martins and Burnquis (2022).

Twenty-five years ago, few questioned the near exclusivity of port movement and the flow of national output through the ports of the South and Southeast regions of Brazil. However, despite initial misgivings, the allure of the logistics infrastructure of the Northern Arc ports, including Porto Velho-RO, Manaus/Itacoatiara-AM, Santarém-PA, Itaituba/Miritituba-PA, Barcarena-PA, Belém/Vila do Conde-PA, Santana-AP and Itaqui-MA, has been growing. The Northern Arc comprises the transportation infrastructure leading to the ports of the North and Northeast regions located on the 16°S parallel (Chamber of Deputies, 2016).

This scenario for the distribution of agricultural output underlines the need to promote infrastructure investment and adopt public policies for regional development in the Centre-West and North of Brazil, both areas with high logistical potential associated with Pacific growth.

Maps 2 and 3 provide an indication of the fast growth in exports from the western states of Brazil, which will play a central role in linking of the interoceanic infrastructure network.



<sup>1</sup> The data are from Comex Stat, of the Ministry of Industry, Foreign Trade and Services (MDIC), currently part of the Brazilian Ministry of Economic Affairs.



**Map 2**  
South American interoceanic network



**Source:** Prepared by the authors.

The planning and execution of physical integration projects to create an interoceanic multimodal network comprising complementary bioceanic corridors, would make it possible to connect the most dynamic region in Brazil with the most dynamic region in the world: the Asia-Pacific. By potentially solving the age-old problem of overcoming the Andes mountain range at different latitudes, this complex web of non-competing roads

will connect Centre-West South America to the world market, expanding the possibilities of productive complementarity, intra-regional circular trade and energy integration.<sup>2</sup>

### Map 3

Change in Brazilian exports, by state, between 2010 and 2021  
(Percentage growth)



Source: Prepared by the authors, on the basis of information from Comex Stat-MDIC.

## II. Connecting states: Mato Grosso, Mato Grosso do Sul, Rondônia, Acre and Roraima

Before 1500, the so-called Qhapaq Ñan was a complex network of pre-Inca roads used for the transport of goods and the movement of people. It was consolidated as the Tahuantinsuyo network of roads, which comprised a sophisticated system of trails that covered enormous distances. The roads had retaining walls, canals, drains and stone walls. They ran for thousands of kilometres, crossing deserts, high grasslands, mountains, valleys and jungles (Beltrán, 2016).

The connection to Brazil was via the Peabiru road network, which played an important role in communications between the southern coast of Peru and the Atlantic Ocean. According to Colavite and Barros (2009), these roads were the most important transcontinental route in South America, passing through latter-day Bolivia, Paraguay, Mato Grosso do Sul, Paraná and São Paulo. Along their 3,000-kilometre length, the trails linked the Peruvian cities of Arequipa, Moquegua and Tacna with the Brazilian cities of Corumbá, Guaira, São Paulo and Santos.

In addition, according to Beltrán (2016), the Spaniards, using the existing structures, established outlet roads from the lands of the Altiplano to the Pacific, the so-called silver

<sup>2</sup> The work done by the Centre-West South American Integration Zone (Zicosur) is noteworthy.

roads, in the sixteenth century, and the fish roads, in the eighteenth century. The colonizers also reinforced the interconnections between the poles —the silver-producing areas— and the regions that guaranteed the supply of necessary inputs: food, beverages, clothes, shoes and pack animals. Those poles played an important role as multipliers of economic activities and functioned as the “suns” of a system (Furtado, 1970, p.35; Mello Franco, 1958, p.24). Towards the south of the continent, the Argentine provinces of Jujuy, Salta, Tucumán, Santiago del Estero, Córdoba and Buenos Aires, as well as regions of Chile, acted as “satellites” of the Bolivian pole of Potosí. To the north and east were Lake Titicaca, the mercury mines of Huancavelica and the ports of Arica and Callao, the latter in Lima.

Since the beginning of the twentieth century, scholars of regional geopolitics have considered that Centre-West Brazil plays a fundamental role both for Brazilian national integration —as an area of interconnection between the Amazon and River Plate basins— and its projection into the rest of South America and its location between the Pacific and Atlantic oceans. According to Travassos (1935, p.129), the former territory of Mato Grosso stood out for its ability to attract neighbouring countries to the Brazilian Atlantic ports,<sup>3</sup> extending the territories of São Paulo and Paraná and expanding their power of penetration. The territory of Mato Grosso also has the potential to be a platform of Brazilian projection towards the Pacific, through the central party of South America,<sup>4</sup> as well as attracting neighbours towards the Atlantic Ocean.

Given this situation, the author proposed the construction of bioceanic routes connecting the Brazilian Atlantic ports to South America’s Pacific ports, including rail links from Santos and Corumbá, which would reach the Pacific coast via Santa Cruz de la Sierra in Bolivia. At that time, Travassos (1935, p. 203) had already identified the region between the modern-day cities of Corumbá, Campo Grande and Ponta Pora as a “landlocked Santos”.

Opinions about the importance of the region continued to emerge. Couto e Silva (1965) referred to a “Continental Geopolitical Fusion Area” (Área de Soldadura Geopolítica Continental) that encompassed Paraguay, Bolivia and the Brazilian states of Mato Grosso, Mato Grosso do Sul and Rondônia (Freitas, 2004, pp.49–50). Almost two decades earlier, Ostria Gutiérrez (1946) had already expressed himself in very similar terms, even using the term “fusion” (soldadura). The landlocked countries and areas of South America, including Centre-West Brazil, Bolivia and Paraguay, are located in the heart of the continent. Despite the disadvantages of being landlocked and far from the sea, the geographical position of these “fusion zones” (zonas soldadoras) gives them huge potential roles to play as platforms for productive interconnection and regional and bioceanic trade, and for becoming logistical and production hubs in regional chains (Couto and Silva, 1965).

In the Centre-West of South America there are geographic barriers associated with the region’s three great geological features: the Andes Mountains, which split the continent from East to West, and the Amazon and Plata basins, which create a division between North and South. Thus, parts of the territories of the Brazilian Centre-West, Bolivia and the Paraguayan Chaco unite and tie together the North, South, Atlantic and Pacific slopes (Severo, 2012, page 154).<sup>5</sup> For Mendoza (1935), the so-called Bolivian Massif constitutes the thickest and most powerful link in the Andean chain, stretching eastward towards the heart of South America, as if to join hands with the Brazilian massif.

Therezinha de Castro (1994, p. 86) points out that in this region, considered a “transition area”, the headwaters are located of three tributaries of the Amazon basin: the Madre de Dios, Mamoré and Guaporé. At the same time, the Bolivian altiplano adjoins the Paraguay River, which offers direct access to the Plate basin.

<sup>3</sup> The territory that currently comprises the state of Mato Grosso do Sul officially broke away from the state of Mato Grosso on 1 January 1979.

<sup>4</sup> In publications concerned with regional geopolitics, this area is also referred to as the South American Heartland, the South American Centre-West or Fusion Area (Área de Soldadura).

<sup>5</sup> In addition to Brazilian geopoliticians, several authors of other nationalities have also offered analyses about the importance of the South American Centre-West. In the case of Paraguay, Philip Kelly and Julia Velilla de Arellaga. On Bolivia, Jaime Mendoza, Alipio Valencia Vega, Alberto Ostria Gutiérrez, Guillermo Francovich and Valentin Abecia Baldivieso. For Chile, see Generals Ramón Cañas Montalva and Julio Canessa Robert. For more reflections on the Amazon in Brazilian geopolitical thought, see Padula and Brozoski (2021).

Over the past two decades, Chinese and Southeast Asian production, finance and trade have driven global demand for food, raw materials and commodities. This, combined with government policies to spatially deconcentrate Brazil's economy and population, the internal displacement of rural producers, the technological development of the Brazilian Agricultural Research Enterprise (Embrapa), and technological advances, allowed Cerrado and other areas to become highly productive, triggering profound geoeconomic transformations in some Brazilian states and making them central players in the expansion of the country's agricultural frontier (Embrapa, 2020). This is especially true of Mato Grosso and Mato Grosso do Sul and, to a lesser extent, Rondônia, Acre and Roraima. It is also necessary to consider the negative environmental costs of this expansion—to some extent the result of years of weak state oversight and preservation—and to consolidate a green recovery plan for the Amazon in which subnational governments play a strong role (Alvares, Rodrigues and Narita, 2022).

After examining the characteristics of the 27 units of the Brazilian Federation, it was decided to divide them into three groups: (1) 17 states bathed by the Atlantic Ocean (Amapá, Pará, Maranhão, Piauí, Ceará, Rio Grande do Norte, Paraíba, Pernambuco, Alagoas, Sergipe, Bahia, Espírito Santo, Rio de Janeiro, São Paulo, Paraná, Santa Catarina and Rio Grande do Sul); (2) four landlocked states that do not border neighbouring countries, i.e., non-Atlantic and non-border states (Goiás, Minas Gerais, Tocantins and the Federal District); and (3) six landlocked states that border other South American nations (Mato Grosso do Sul, Mato Grosso, Rondônia, Acre, Roraima and Amazonas).

This document focuses mainly on five of those six frontiers, connecting, landlocked states, which have of late been seeing major transformations in terms of population, production and foreign trade. The state of Amazonas was not included because of its industrial history and a riverine connection to the Atlantic that crosses through only one neighbouring state.<sup>6</sup>

Their frontier location means that the productive model of these Brazilian states transcends national borders and generates a similar impact in contiguous areas of neighbouring countries. The westward expansion of soybean production, which crossed Brazil's borders into Bolivia and Paraguay, is a prime example. A similar dynamic could be repeated with pulp in Paraguay; with cotton in northern Paraguay and eastern Bolivia; and beef in northern Bolivia and southern Peru, bringing Brazil's production frontier closer to the Pacific and away from the Atlantic.

Brazil's connecting states are, therefore, constituted by the grouping of non-Atlantic states that form the border strip between Brazil and its South American neighbours, with the exception of Amazonas. These areas are fundamental for overcoming the geopolitical barriers that divide South America. The group comprises Mato Grosso, Mato Grosso do Sul, Rondônia, Acre and Roraima. Despite the fact that these five states have accumulated high socioeconomic growth in recent years, there are great disparities between them, whether from the point of view of territorial and population size, scale and type of production, their stage in the value chain or growth in international trade.

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