

An overview about Brazilian railway system – Part I: 1835-1930

Abstract

Background: This article deals about the implementation and expansion of the rail network in Brazil considering the first one hundred years, since the period of Portugal Regency, the role of the entrepreneur Baron of Mauá, the government of Getulio Vargas, the period of the dictatorship until the democracy and first results of the privatization. A general view of the Brazilian railways history was marked by scattered and isolated network without integration of regions, hindering the integration of the internal market and the economic development. This is the first part of a text that presents the Brazilian railway infrastructure until nowadays with the growth of private investments.

Keywords: railway, infrastructure, Brazil, urban development, privatization

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Introduction

The historical analysis of the rail network in Brazil may be divided in phases which coincide with policy modification periods^{1,2}

Phase I (1835-1873), during the Regency and the Second Empire, began the implementation of railways in Brazil and the development of this transport slowly through private companies.

Phase II (1873-1889), covering the Second Empire and characterized by a rapid expansion of the railway network through private entrepreneurs.

Phase III (1889-1930), comprises the old Republic, with an accelerated expansion of the system but with the government being forced to take control of several companies in financial difficulties.

Phase IV (1930-1960), comprises the “Vargas Era” with the slow expansion and the large control by government.

Phase V (1960–1990), over the period of a military regime, with the network consolidation by some public companies.

Phase VI (1990-2001), period of the New Republic, with emphasis on the privatization of the national system railway and the first results.

Phase VII (2001-actual), period of the results of the private investment obtained through concessions. Figure 1 summarizes these phases in numbers.

The reduction in the rail network was an attempt to eliminate lossy roads and uneconomical rail extensions. Approximately 8,000km of railway lines have been disabled since the 1960s.²

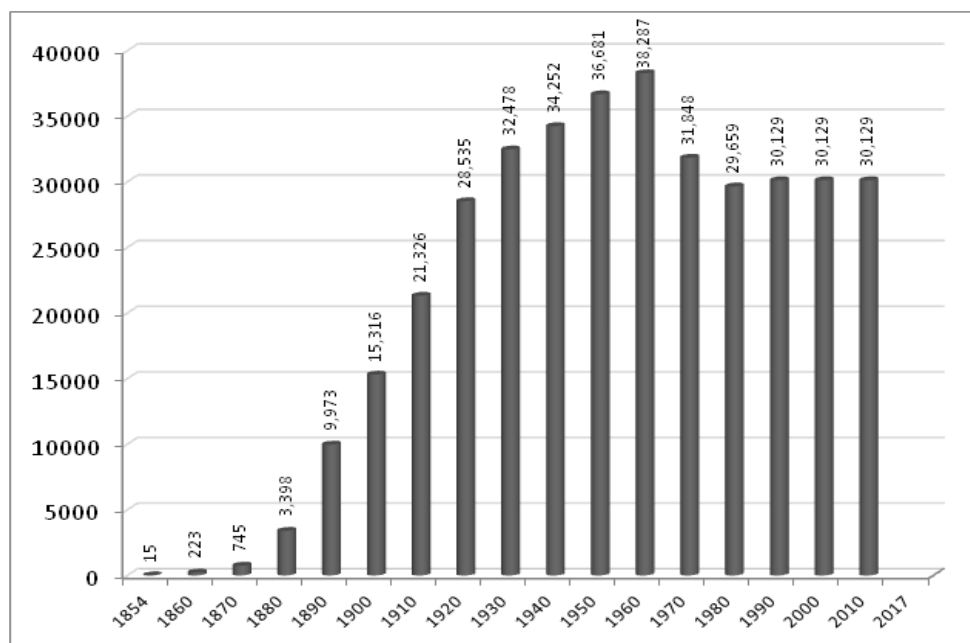


Figure 1 Evolution of rail network (km).¹⁻⁴



Figure 1 The Brazilian states.²

Material and methods

The article is developed through the narrative about the development of the Brazilian railway network, based on the bibliographic survey in transport yearbooks with varied spatial limitation, given the interest in the historical character of this expansion. The spatial delimitation is Brazil and Its States, as shown in Figure 2A, allowing an analogy with the following figures that show the expansion of the country's railways in different periods. The delimitation of the study is, in this first part, the period between 1835 and 1930.

Results

Phase I (1835 – 1873)

The Brazilian Imperial Government by Law number 101, of October 31, 1835, allowed the concession, with privilege for a period of 40 years, to the companies proposing to build railways, connecting the states of Rio de Janeiro, São Paulo, Minas Gerais, Rio Grande do Sul and Bahia.³ The great Brazilian entrepreneur, Irineu Evangelista de Souza, later Baron of Mauá, received in 1852, granting the Imperial Government for the construction and operation of the first railway line, in Rio de Janeiro, between "Porto Estrela", located at Guanabara Bay, in the direction of Petrópolis. Enthusiast of means of transport, especially railways, to him should be assigned the first rail released in Brazil inaugurated on 1854 and the first locomotive called "Baroness".⁴ It was built in 1852 by William Fair Bairs & Sons, Manchester (England), and is currently part of the collections of the Center for the Preservation of Railway History, located in the city of Rio de Janeiro. The second railway inaugurated in Brazil was "Recife to São Francisco" (1858). This railway although not reached its intended purpose - the river São Francisco - helped create and develop the cities wherever he went and was the first trunk of the future "Great Western". The third was Salvador to San Francisco (1861) (also in the state of Pernambuco).³

The fourth was the Railway Company "D. Pedro II" inaugurated in March 1858, with an initial stretch of 47.21 km, in Rio de Janeiro. This railway was formed in one of the most important works of railway engineering in the country, in passing up 412 meters of "Serra do Mar", including the "Túnel Grande" with 2,236 m extension, at the time the largest in Brazil, opened in 1864.⁴ Another important railway was built since 1860 by The São Paulo Railway Company Limited and linked cities of the São Paulo plateau ("Jundiaí" Station) to the coast (see Figure 2B). Financed with English capital, its construction began in 1860, facing many technical difficulties during the implantation, mainly in the section of the "Serra do Mar" unevenness, of more than 700 m, being completed in 1867. In south of the country, at the State of Rio Grande do Sul, was built in 1867 a railway between Porto Alegre to São Leopoldo and Novo Hamburgo and in 1871, from Novo Hamburgo to Porto Alegre.⁴

These railways appear on the Figure 3(A) highlighted in the five frames in red.

Phase II (1873 - 1889)

The Railway "D. Pedro II" became in 1889, the "Central Railroad of Brazil" (known in Portuguese as Estrada de Ferro Central do Brasil), one of the main axes of the country development.⁵

Until the late nineteenth century, other concessions were granted, using metric gauge, highlighting the following:⁴

- "Mogiana" Company, state of São Paulo (1875);
- "Sorocabana" Company, state of São Paulo (1875);
- "Central da Bahia", state of Bahia (1876);
- "Santo Amaro", state of Bahia (1880);
- "Paranaguá" to "Curitiba", state of Paraná (1883);

- “Porto Alegre” to “Novo Hamburgo”, state of Rio Grande do Sul (1884);

- “Dona Tereza Cristina”, state of Rio de Janeiro (1884)

- “Corcovado”, state of Rio de Janeiro (1884)

Another railroad was implanted from Paranaguá to Curitiba (state of Paraná), which was a landmark of excellence of Brazilian railway engineering at that time. In 1883 was opened to regular traffic to the stretch Morretes to Paranaguá (state of Paraná). In 1990 they already extinct, became a Historic Patrimony.³ In 1884, the country had 6,116km, 1,650km in addition to construction. In 1888 there were 9,200 km in operation and other and 9,000km under construction studies.³ The same holds true in 1910 with great evolution of the southeast, a small increase in the South, a small extension in the northern region, in the states of Amazonas and Pará.⁴ Figure 3(B) represents the increase in railways in 40years in the period 1870-1910, showing that its concentration continues in the southeastern region of the country, followed by the south and north.

Phase III (1889 - 1930)

In 1903, the “Treaty of Petrópolis” was signed between Brazil and Bolivia, for the construction of “Madeira – Mamore” to compensate for transfer to Bolivia, the current state of Acre area. It was built by American engineers.^{3,6} Figure 2 presents a scene of The São Paulo Railway (a) and the “Madeira-Mamore” construction (b).

The function was to allow the railway transport in parallel with Madeira River, which prevented the continuity of navigation, used to drain the latex rubber, produced in northern Bolivia. The route of the railway with 344km of line was completed in 1912, linking the cities “Porto Velho” to “Guajará-Mirim” (state of Rondônia), completely paralyzed in 2000 and classified in 2006 as Brazilian Cultural Patrimony.⁶ Another highlight is the construction of the “North West railway of Brazil”, started on 1905, for the use of “Porto Esperança” in 1914. Starting from the city of Bauru (state of São Paulo), this railroad crossed the state of São Paulo and the current state of Mato Grosso do Sul reaching up to city of Corumbá. This line became known as “Pantanal” train. In 1930, highlighting the branches in the Southeast, first branches in central - west region and an increase in extensions in the northeastern states.⁷ Figure 3(C) shows the railway net work in 1930.



(a)



(b)

Figure (2A&2B) represents a scene of (a) The São Paulo Railway (b) The “Madeira-Mamore” construction.^{3,6}



(a)

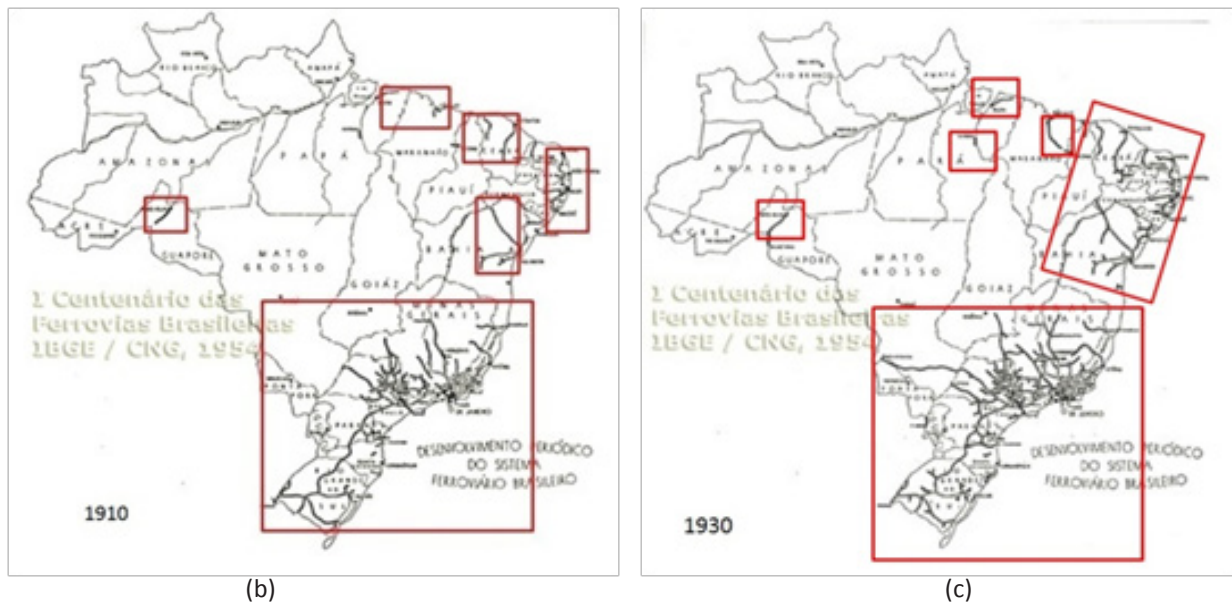


Figure 3 Brazilian railways in (a) 1870, (b) 1910 and (c) 1930.⁷

Discussion

During this period, the expansion was intensified in the southeastern and southern regions of the Country, which already concentrated at that time a larger population and greater movement of cargo. The Midwest and North regions received long lines crossing the “Pantanal” region and the “Amazon” region. Already the Northeast, received small stretches distributed throughout all the States that compose it, and largely bordering the coast,⁸ the main problems faced were the huge territorial extensions and the need to clear virgin forest and the different gauge between the different stretches.

Conclusion

In a Country with continent-sized, infrastructure supply, is a constant and complex work of civil engineering, overcoming critical level crossings; winding stretches, domain boundary problems and sharing the same infrastructure for cargo and passenger transport; however, the large cargo capacity and the possibility of wide coverage, made the railway modal an interesting alternative to transportation as will be seen in part II of this article.

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None

Conflicts of interest

The author declares that there are no conflicts of interest.

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