

# TRANSFORMATIONS IN THE SUGAR SECTOR IN THE ZONA DA MATA OF MINAS GERAIS AND THE CONSTRUCTION OF THE RIO BRANCO CENTRAL MILL IN THE LATE NINETEENTH CENTURY

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## ABSTRACT

The installation of central mills in Brazil at the end of the century. The 19th century represented an attempt to modernize the sugar sector and also a search for the recovery of the world market. Thus, the article aims to highlight the structural changes in the Mata area of Minas Gerais, from 1830 onwards, their relationship with the growth of sugar production and the domestic market, and of these with the installation of the Engenho Central Rio Branco, in 1885. It also seeks, highlight the importance of small sugar mills, the modernization of the transport sector and state incentives for the sugar industry. In this way, it investigates the history of sugar in the Mata region of Minas Gerais and how the region became the largest producer of its kind, in the State of Minas Gerais, at the end of the 20th century. XIX.

**Keywords:** sugar agroindustry; Minas Gerais; Zona da Mata; central mill; modernization.

## RESUMO

A instalação de engenhos centrais no Brasil, no final do séc. XIX representou uma tentativa de modernização do setor açucareiro e também uma busca pela retomada do mercado mundial. Assim, o artigo visa destacar as mudanças estruturais na zona da Mata mineira, a partir de 1830, sua relação com o crescimento da produção açucareira e do mercado interno, e destes com a instalação do Engenho Central Rio Branco, em 1885. Procura ainda, destacar a importância dos pequenos engenhos, a modernização do setor de transportes e os incentivos estatais, à atividade açucareira. Dessa forma, investiga a história do açúcar na zona da Mata mineira e de como a região se tornou a maior produtora do gênero, no Estado de Minas Gerais, no final do séc. XIX.

**Palavras-chave:** agroindústria do açúcar; Minas Gerais; Zona da Mata; engenho central; modernização.

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The construction of central sugar mills (*engenhos centrais*) in Minas Gerais was linked to the government's policy of supporting the modernization of the sugar sector. Between 1875 and 1909, the imperial government promoted a series of incentive measures following the publication of Legislative Decree No. 2,687. The government's actions were characterized by state intervention and agricultural protectionism. However, in Minas Gerais, the publication of this decree resulted in few changes, due to the criteria used for distributing incentives within the sector, which were based on the amount of sugar exported abroad. Therefore, such conditions prevented the province of Minas Gerais from being included among the sugar-producing provinces that would benefit from the policy, as we can read in the decree below:

DECREE (L) 2,687, of 6 November 1875.

Authorizes the Government to grant, under certain conditions, to the Banco de Crédito Real—which is to be founded according to the plan established in Law No. 1,237 of 24 September 1864—a guarantee of interest and amortization on its mortgage notes, as well as to guarantee 7% interest to companies that propose to establish central mills for the manufacture of cane sugar.

I hereby sanction and order the execution of the following Resolution of the General Assembly:

Art. 2. The Government is authorized to guarantee 7% annual interest, up to a realized capital of thirty thousand contos de réis (30,000:000\$000), to companies that propose to establish central mills for the manufacture of cane sugar, through the use of the most perfected modern equipment and processes.

§ 2. In implementing this law, the Government shall ensure that the establishment of central mills is distributed among the provinces where cane is cultivated, and in accordance with the relative importance of each in this branch of industry, demonstrated by the quantity of sugar exported.<sup>2</sup>

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<sup>2</sup> Original version: DECRETO (L) 2.687, de 6 de novembro de 1875. Autoriza o Governo para conceder, sob certas cláusulas, ao Banco de Crédito Real que se fundar segundo o plano da Lei n. 1.237 de 24 de setembro de 1864, garantia de juros e amortizações de suas letras hipotecárias, e bem assim garantir juros de 7% às companhias que se propuserem a estabelecer engenhos centrais para fabricar açúcar de cana. Hei por bem sancionar e mandar que se execute a seguinte Resolução da Assembléia Geral: Art. 2º É autorizado o Governo para garantir juros de 7% ao ano, até o capital realizado de trinta mil contos de réis (30.000:000\$000) às companhias que se propuserem a estabelecer engenhos centrais para fabricar açúcar de cana, mediante o emprego de aparelhos e processos modernos os mais aperfeiçoados. § 2º Na execução desta lei o Governo procederá de modo que o estabelecimento de engenhos centrais se distribua pelas províncias em que se cultiva a cana, e segundo a importância relativa de cada uma neste gênero de indústria, demonstrando pela quantidade do açúcar exportado.

Government action in favor of modernizing the sugar sector—centered on granting and implementing central mills—modernized above all the industrial sector, rather than production and transport (Araújo, 2002).

Roberta Meira (2007), in examining the Imperial Government’s economic policy in the late nineteenth century, notes that the need for technical restructuring of sugar-producing units was an established reality. Yet many planters disagreed with the model of state-led reform, and many did not believe in the modernization of the sector through the construction of Central Mills. According to the author, what united the planters of the northeastern *açucarocracia* was political effort. Historiography diverges between the subordination and resistance of the Brazilian *açucarocracia* in the face of transformations in the international sugar market. Behind the resistance/submission dichotomy lie disagreements over the degree of political influence wielded by the planters (Barros, 2007), and an important point to be considered when analyzing the historical process of establishing central mills is the influence of regionalism on national politics.

In the researcher’s view, the differences among the major producing provinces—Pernambuco, São Paulo, and Rio de Janeiro—were related to the type of market, the capital invested in assembling central mills in accordance with the subsidies provided by the Imperial Government to each province, and the labor relations established in both factory and field, as well as the importance attributed by local governments to the production of cane-sugar derivatives.

With respect to production and modernization of the sugar sector in Minas Gerais in the late nineteenth century, Roberta Meira (2007) associates the development of this activity with certain major transformations occurring in the province, among which the following stand out: the expansion of the coffee economy, demographic growth, and changes in the transportation infrastructure. For the author, there is a correlation between the growth of the internal market in Minas, the predominance of the coffee economy in the southern region of the province, and the economic development of secondary activities.

Thus, the development of the sugar industry from the second half of that century onward was driven by the expansion of coffee production, which generated capital and promoted changes in the province’s infrastructure and demographic growth, gradually

transforming small *engenhocas* [small sugarcane mill] into more complex productive units (Barros, 2009). The author further states that the province of Minas Gerais—although concentrating nearly all of its production in small mills—nevertheless lived with an active discourse of modernizing production methods, shared among sugar producers, statesmen, technicians, and various segments of Minas society.

Pedro Ramos (1999), in his study of the modernization of Brazil’s sugar sector and its conservative nature, analyzes the international market and points to the difficulties faced by the sector in the nineteenth century and to attempts at modernization through central mills in the Northeast at the end of that period. According to the author, by the end of the colonial era the activity had lost its international monopoly on sugar and, throughout the nineteenth century, faced competition from new global producers of cane-sugar derivatives and from a new product as well: beet sugar.

Changes in the international sugar market displaced cane sugar from its hegemonic position. In this respect, Ramos (1999, pp. 45–47) explains:

This process, which led to the loss of Brazilian sugar’s leadership in the world market, was not, evidently, disconnected from the vigorous development occurring in countries that had benefited from mechanisms of primitive capital accumulation and were led by England. For these countries, the goal was to protect their markets, protect the formation and consolidation of their industries, reduce production costs in general—and particularly the costs of reproducing labor—generate and maintain employment, and find areas for investing their capital. [...] The point that must be stressed, however, is that no major technical modifications in sugar production occurred before 1870; those that did took place sporadically and, in most cases, without success. According to Peter Eisenberg, the explanation lay in “the combination of cheap land with cheap, uneducated labor, which produced a conservative, routine attitude toward technological innovation.” He then adds the costs of capital and market instability to conclude that “The risks and difficulties of modernization were such that the most modern mills of the nineteenth century were subsidized by the government.”<sup>3</sup>

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<sup>3</sup>Original version: Esse processo, que levou à perda da posição de liderança do açúcar brasileiro no mercado mundial, não estava, evidentemente, desvinculado do vigoroso desenvolvimento que se dava nos países que haviam se beneficiado do mecanismo de acumulação primitiva de capital, e que eram capitaneados pela Inglaterra. Tratava-se, para esses países, de proteger seus mercados, de proteger a constituição e a consolidação de suas indústrias, de baratear os custos de produção em geral, e os da reprodução da força de trabalho em particular, de gerar e manter empregos, de encontrar áreas para o investimento de seus capitais. [...] A questão que deve ser ressaltada, contudo, é a de que não ocorreram maiores modificações técnicas na produção açucareira antes de 1870; as que houve foram esporádicas e, na maioria das vezes, sem sucesso. A explicação que prendia-se, para Peter Eisenberg, na “combinação de terra barata com trabalho barato e não-educado (e que) produziu uma atitude conservadora, rotineira em relação à inovação tecnológica”. Logo em seguida, ele adiciona a isso os custos do capital e a instabilidade do mercado, para concluir que “Os

Thus, the modernization of the sugar sector brought together, within a single productive unit—the central mill—a significant portion of the technical improvements that had emerged over the course of the nineteenth century, requiring innovation in the organization of production in order to meet the considerable financial and technical capital it demanded.

When we examine the policies adopted by the Imperial Government in support of the sugar economy, it becomes clear that such measures to encourage the modernization of the cane agro-industry primarily served the developmental needs of the industrial sector, to the detriment of the productive sphere. We also observe that the first measures adopted by the Empire on behalf of the sugar economy initially benefited the agro-exporting provinces.

Accordingly, we can understand the importance of the actions taken by the Minas government in favor of modernizing sugar production in the province in the late nineteenth century. These actions had as their primary objective the compensation of Minas's production after the province was excluded from the Imperial list of those eligible for guaranteed interest payments. By adopting the volume of exported sugar as the criterion for determining which provinces would be benefited, the Empire failed to support production destined for the domestic market.

Marcelo Magalhães Godoy (2002) notes that, in 1830, the province of Minas possessed around 4,150 productive units engaged in processing sugarcane.

It is likely that the combined total of mills operating along the northeastern coast, in northern Rio de Janeiro, and on the São Paulo plateau—the principal regions producing sugar for external markets—did not amount to half the number found in Minas. For the same period, it is estimated that approximately 40% of Minas's enslaved labor force—more than 85,000 captives—were employed seasonally in the manufacture of sugar, *rapadura* [unrefined cane sugar blocks], and *aguardente* [sugarcane spirit]. There is a strong likelihood that, in no other cane-producing region, at any point in the history of slaveholding Brazil, was a contingent of this magnitude ever employed. Still in the fourth

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riscos e dificuldades da modernização eram tais que os engenhos mais modernos do século XIX eram subsidiados pelo governo”.

decade of the nineteenth century, Minas is estimated to have produced around 33,200 tons of sugar and *rapadura* and more than 22 million liters of *aguardente*. Available information suggests that sugar production in São Paulo did not exceed 8,500 tons; Pernambuco's stood around 27,000; sugar exports from Bahia did not reach 30,000 tons; those from Rio de Janeiro did not reach 17,000; and Alagoas and Sergipe together exported fewer than 6,000 tons.

The main characteristics of the cane economy in the province up to the mid-nineteenth century included the spatial dispersion of production across a technically diverse base. In this context, the labor force displayed significant diversity in both size and composition, while multiple scales of production were explored, and cane cultivation was associated with other economic activities. To this reality one must add the seasonality of production, oriented almost exclusively toward the domestic market (Godoy, 2002).

According to Maria do Carmo Salazar Martins and Helenice Carvalho Cruz da Silva (2002), the Population Maps were a requirement of the Government of Minas Gerais in the mid-nineteenth century. Through this measure, we can verify that, in 1860, the proportion of municipalities dedicated to the agro-industrial cultivation and processing of sugarcane reached 80% of the province's total.

Therefore, the technical transformations promoted by the province in the sugar sector between 1850 and the end of the nineteenth century proved insufficient and, to a certain extent, uncoordinated. Nonetheless, by encouraging the construction of Central Mills, the province demonstrated how significant this activity was for the internal market of Minas, even though sugar production was not the principal item in its export portfolio.

Prior to the Imperial modernization policy for the sugar sector in the late nineteenth century, Minas Gerais had undertaken, with limited success, several initiatives toward this goal. Such technological innovations—such as the use of steam as a source of motive power and the employment of centrifuges or turbines in treating cane juice—brought new possibilities to sugar production. Yet these innovations did not reach the fields, and they transformed the sugar sector only after changes in the transportation infrastructure.

Among these initiatives, in the transportation sector, the most significant was the construction and expansion of the railway system in Minas Gerais beginning in the third quarter of the nineteenth century. However, the role of the provincial government and its

incentives to mill owners should not be minimized. Regarding the new technical devices introduced into the sugar industry, the president of the province wrote the following in 1858, when presenting to the Legislative Assembly the centrifugal apparatus intended for purging and clarifying sugar:

This apparatus, already known in the Term of Campos, in the Province of Rio de Janeiro, where it was introduced only a few months ago, is so simple in its construction, and at the same time yields such advantageous results for sugar manufacture—as practice has demonstrated—that I deemed it an important service to Minas industry to introduce it also into this province. Thus, I have taken steps to purchase it directly in Paris, and as soon as it arrives it will be delivered to the intelligent farmer Dr. Francisco Martins da Silva, so that he may employ it in his reputable agricultural establishment and allow it to be examined by all who may wish to acquire one. Once its use and advantages become known, I deem it advisable to acquire additional units to disseminate them in other parts of the province.<sup>4 5</sup>

Alongside investments in technology, the agro-industry of Minas also received provincial government support for constructing agricultural schools. The director of the Agricultural School of Itabira, Domingos Martins Guerra, in his 1882 report on the school's operation, criticized the mindset of Minas's planters, which he believed should be more receptive to innovations. Guerra stated:

Our farmers and industrialists, in general, do not keep current accounts for their plantations and industries; the result is complete ignorance of the value or potential output of such enterprises. They continue along their way without concern, and many, even satisfied, deceive themselves into believing that they are making a profit. This is dreadful, for it contributes to the continuance of the backwardness in which we live.<sup>6 7</sup>

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<sup>4</sup> Report presented to the Provincial Legislative Assembly of Minas Gerais by the Provincial President Carlos Carneiro de Campos on March 25, 1858. Ouro Preto: Provincial Press, 1858.

<sup>5</sup> Original version: Este aparelho já conhecido no Termo de Campos, Província do Rio de Janeiro, onde faz poucos meses foi introduzido, é de tanta simplicidade em sua construção, e ao mesmo tempo de tão vantajosos resultados para o fabrico do açúcar, como a prática o tem demonstrado, que julguei fazer um importante serviço à indústria mineira, introduzindo-o também nesta província. Neste sentido, pois tenho dado providências para a compra direta em Paris, e logo que chegue, será entregue ao inteligente Fazendeiro Doutor Francisco Martins da Silva, para o fazer trabalhar em seu acreditado estabelecimento agrícola, e franquear o exame a todos, que do mesmo quiserem fazer aquisição. Conhecido o seu uso, e vantagens, julgo conveniente obter alguns mais para vulgarizar em outros pontos da província.

<sup>6</sup> Report submitted by the Director of the Agricultural School of Itabira, Domingos Martins Guerra, to the President of the Province of Minas Gerais, Dr. Theophilo Ottoni, on 28 June 1882. Ouro Preto: Carlos Andrade Press, 1882, p. 4.

<sup>7</sup> Original version: Os nossos fazendeiros e industriais, em geral, não abrem conta corrente com suas lavouras e indústrias; daqui resulta a completa ignorância do que vale ou pode produzir um serviço destes,

In addressing the farmers of the region, the director informed them of the need for the province of Minas to alter its prevailing agricultural routines, which were not yielding satisfactory results. In his report to the President of the Province, the director stated that he had presented to producers the technical advances in sugarcane cultivation. To do so, he combined the use of tools and machines with animal traction, which enabled him to prepare the soil and plant the seedlings with reduced labor and time. On this matter, Domingos Guerra reported:

I also spoke to them of the great advantage enjoyed by the worker who uses machines and implements powered by animals, and, in conclusion, I ordered that work begin with two plows drawn by two pairs of mules; I had the clods broken by a roller pulled by two yokes of oxen, and afterward a harrow was employed. Then a planter, with which furrows were opened in straight, parallel lines, six palms apart, into which five people placed the cane seedlings side by side, and a plow drawn by a mule covered them with earth. All of this was done in a single day.<sup>8 9</sup>

At the conclusion of his report, the director of the Agricultural School provided an assessment of the difficulties faced by the sugar economy in Minas, emphasized the importance of sugarcane cultivation for the country, and argued that the activity required modernization.

I am still studying, and with pleasure, the [cultivation] of cane, as it is one of the strongest branches of our agriculture, in which no other country can surpass us, provided that the rudimentary processes carried out by ignorant slaves—who have no stake in productivity—are improved. For this reason, this school, if equipped with the necessary means, without spending more than five or six *contos* beyond what has already been used in construction, could achieve great improvement and a profit of four to five percent, in addition to current returns. This surplus, multiplied across the thousands of sugar plantations in the province, would be immense. It is known that cane contains 20% sugar, yet only 4% is extracted—thus 16% is lost. It is certain that not all of it can be extracted; however, they say that 8 to 12% can indeed be

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e vão seguindo seu caminho sem desespero, e muitos até satisfeitos procuram iludir a si mesmas acreditando que percebem interesse, isto é horrível, porque concorre para continuação do atraso em que vivemos.

<sup>8</sup>Report submitted by the Director of the Agricultural School of Itabira, Domingos Martins Guerra, to the President of the Province of Minas Gerais, Dr. Theophilo Ottoni, on 28 June 1882. Ouro Preto: Carlos Andrade Press, 1882, p. 5.

<sup>9</sup>Original version: Falei-lhes também da grande vantagem que leva o trabalhador que usa de máquinas e instrumentos utilizando-se da força dos animais, e concluindo, mandei começar o trabalho com duas charruas tiradas por duas parelhas de bestas; mandei quebrar os torrões pelo rolo puxado por duas juntas de bois, e em seguida empregou-se a grade, depois do que, o plantador com o qual abriu-se sulco em linhas retas e paralelas, distantes seis palmos, nas quais cinco pessoas depositaram as mudas de cana unidas umas as outras, e um arado tirado por uma besta cobria-as de terra. Tudo isso se fez em um dia.

obtained by using rectangular evaporators of the Victor system, by carefully cutting the cane, separating for sugar the portion from the middle to the base, removing all impurities, reaching the correct concentration, and then transferring it from the cooling pan to the centrifugal turbine that separates the crystals from the molasses. The “Victor” mill, the evaporator by the same inventor, and a turbine—which is all we need—cost in America, according to the catalogue and letter I include, with freight to Rio de Janeiro, a little more than 3:000\$000, which is nearly the price of the usual mills with their copper tubing.<sup>10 11</sup>

From this document, the need to modernize the transportation sector in Minas Gerais generated various debates in the chamber of the Legislative Assembly and reflected the aspirations of the province’s agricultural and industrial sectors.

In the report submitted by the President of the Province, Francisco Diogo Pereira de Vasconcelos, in March 1854, we find an excerpt describing the condition of the bridges and roads connecting the province’s principal transportation routes for passengers and goods.<sup>12</sup> From this record, we gain an overview of the difficulties faced by transportation in the province. The document lists the Pomba, Chopotó, Muriaé, Carangola, Glória, and Casca rivers, which cross the municipality of Ubá and the district of Presídio. In the section devoted to comments from municipal councils—providing a brief description of transportation conditions in Ubá and its districts—we find the following summary:

It declared that its municipality is crossed in various directions by the aforementioned rivers, all of which are more or less navigable and have bridges built by private associations, and it pointed out the need for one over the Pomba River where it meets the São João Creek, including the

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<sup>10</sup>Idem, *Ibidem*, p. 8.

<sup>11</sup> Original version: Ainda estou explorando, e com prazer a [cultura] da cana por ser um dos ramos mais fortes na nossa lavoura, em o qual nenhum outro país nos poderá levar vantagem, desde que se aperfeiçoar os processos tão rudimentares executados por escravos ignorantes e sem interesse no rendimento; por isso, esta escola poderá, se for habilitada pelos necessários meios, sem despender mais de cinco a seis contos além do que já se tem gasto em obras, conseguir grande melhoramento e um lucro de mais quatro a cinco por cento, afora o que se tira: ora, este excesso em milhares de fazendas de açúcar que tem a província, avultara muito. Está sabido que contendo a cana 20% de açúcar, só se extrai 4% - por tanto ficam perdidos 16%. É certo de que não se poderá extrair tudo porem, 8 a 12% dizem que com certeza somente usando de evaporadeiras retangulares do sistema Victor, de grande cuidado na ação de cortar as canas, separando para açúcar a parte constante do meio para o pé, separando toda as impuridades, tomando ponto conveniente, e levando da esfriadeira para a turbina centrífuga que separa os cristais do melado. O engenho << Victor >> a evaporadeira do mesmo autor, e uma turbina que é só o que precisamos, custa na América, segundo catálogo e carta que remeto, e frete até o Rio de Janeiro – pouco mais de 3:000\$000, que é quase o preço dos engenhos usuais com suas taxas de cobre.

<sup>12</sup> The decree complied with Law No. 540 and with the circular of 16 November 1853.

road on either side for a distance of half a league; and another over the Chopotó River in the settlement of Sapé.<sup>13 14</sup>

In 1854, road conditions in the municipality of Ubá and its most important district, São João Batista do Presídio, were precarious. This demonstrates that the region's economic growth depended on infrastructure investments that should have been undertaken by the province of Minas.

However, the provincial government's delay in responding to the transportation needs of the central region of the Zona da Mata caused local landowners to assume responsibility for maintaining existing roads and even expanding them. This situation compelled them to build bridges and short stretches of roadway to facilitate transport and the expanding domestic trade. Consequently, this growth must be related, among other factors, to the region's population size. The number of inhabitants in the comarca of Pomba in 1855 was 90,479, of whom 30,800 belonged to the municipality of Presídio.<sup>15</sup> The comarca of Pomba was the third most populous in the province, with numbers slightly below those of Piracicaba (91,582 inhabitants) and Rio das Velhas (95,897 inhabitants).<sup>5</sup> These figures help explain the concern of various provincial presidents when discussing the region's economic development and its connection to the modernization of the transportation sector.

According to Ângelo Carrara (1993), the total number of sugarcane mills in the municipality of Ubá was 292 productive units, 62 powered by water and 230 by animal traction. Among the water-powered mills, 9 produced only *aguardente* and 53 produced sugar and *rapadura*. Among those dependent on animal traction, 84 produced *aguardente* and 146 produced sugar and *rapadura*. If we add to these totals the 20 mills located in the

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<sup>13</sup> Report submitted by the President of the Province of Minas Gerais, Francisco Diogo Pereira de Vasconcelos, to the First Vice-President of the Province of Minas Gerais, José Lopes da Silva Vianna, upon transferring the office of president to him in 1854. Ouro Preto: Tipografia do Bom Senso, 1854. The report contains data taken from the Archive Section of the Secretariat of the Presidency on 25 March 1854. Antonio José Ribeiro Bhering – Head of the Archival Section – Manoel da Costa Fonseca. Mariana: Episcopal Press, 1854.

<sup>14</sup> Original version: Declarou que o seu Município é cortado em diferentes direções pelos já mencionados Rios, que todos são mais ou menos navegáveis, e estão providos de pontes feitas por associações particulares, e fez ver a necessidade de uma sobre o Rio Pomba onde faz barra com o Ribeirão de São João inclusive a estrada a quem e além em distancia de meia légua; e outra sobre o Rio Chopotó na povoação do Sapé.

<sup>15</sup> Report submitted by the President of the Province, Francisco Diogo Pereira de Vasconcelos, to the Provincial Legislative Assembly of Minas Gerais in the 2nd ordinary session of the 10th legislature of 1855 – Statistics. Ouro Preto: Tipografia do Bom Senso, 1855, p. 36.

municipality of Rio Pomba, the number of cane mills in the region rises to 312 productive units (1993). This number is significant when compared to the figures reported by the president of the province of Minas Gerais in 1855, according to whom “33 municipalities contain 3,296 mills.” Thus, the municipalities of Ubá and Rio Pomba accounted for 9.46% of the mills listed by the provincial presidency. Of this percentage, Ubá alone was responsible for 8.85%.

The construction of the railway in the central region of the Zona da Mata altered the outlook of the sugar sector. According to the report of the President of the Province of Minas in 1857, the sector received a request from the Vice President of the D. Pedro II Railway Company on 13 December 1856. The vice president sought his opinion on the railway’s route and the importance of its reaching Minas territory. In response, the President of the Province stated that, in the contracts concluded between the company and the province of Rio de Janeiro, the latter guaranteed the company an additional 2% in interest on top of that provided by the General Government, for the capital invested, within the limits of that province.

Thus, the Vice President of the railway presented the President of the Province of Minas with a proposal that went beyond the technical issues involved in the railway’s layout. According to the President, the route could be redesigned to serve the interests of Minas producers. To that end, the province would need to offer the same guarantees of additional interest on the capital invested within its territory for the construction of the railway. In this regard,

Studies of the line recommend tracing part of it through Minas territory, and perhaps pushing it further inland, partially abandoning the banks of the Paraybuna, if such a route—avoiding the river’s bends—can provide better service. In this case, the productive lands of Minas Gerais will be better served, and over a greater extent. Should this occur, it seems reasonable to the Vice President of the Company that it request from the Provincial Assembly of Minas an additional 2% guarantee for the capital expended within its territory.<sup>16 17</sup>

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<sup>16</sup> Report submitted by the President of the Province, Herculano Ferreira Penna, to the Provincial Legislative Assembly of Minas Gerais, in 1857. Ouro Preto: Provincial Press, 1857, p. 44.

<sup>17</sup> Original version: Os estudos da linha aconselham traçar parte dela em território de Minas, e talvez penetrar para o interior, abandonando parcialmente a margem do Paraybuna, no caso de que um semelhante traço evitando as curvas do Rio possa prestar melhor serviço, ficam nessa hipótese mais bem consultados, e em maior extensão os terrenos produtores de Minas Gerais. Verificando-se este caso parece razoável ao

In the 1868 report, the President of the Province of Minas once again described the precarious condition of the roads in the region of Ubá, which needed to be repaired as soon as possible. For the rapporteur, such conditions delayed the region's economic development and, consequently, that of the entire province. he argued:

I understand that it is very important to begin at once the construction of the following roads: first, from Campelo to Ubá; [...] I have already ordered the estimate for the first four leagues and will endeavor, as soon as possible, to extend it to the city of Ubá. The farmers of those areas are in great need of this road. It is only just that attention be paid to the interests of those localities, not only because they lie near the União e Indústria and the D. Pedro II roads, but also because the lands there are very fertile and already contribute significantly to the province's revenues.<sup>18 19</sup>

A year later, a new prospect opened for the central region of the Zona da Mata with the arrival of the D. Pedro II Railway in the municipality of Mar de Espanha. The new enterprise was celebrated as a symbol of modernity and development. However, the rapporteur emphasized that the railway's route would necessarily have to serve the main production centers. Thus, the remaining interests and localities would depend on the construction of small roads that would converge toward the railway line, connecting it with the smaller settlements.

It is worth noting that during these years coffee cultivation was the region's principal economic activity. In a report, Dr. José M.<sup>a</sup> de Sá recognized the importance of the project:

I feel the greatest joy in informing you that on the 27th of June last, Their Majesties the Emperor and Empress, and His Highness the Duke of Saxe, departing from Juiz de Fora, arrived in the municipality of Mar de Espanha and attended the inauguration of the railway stations named "Santa Fé" and "Chiador." The railway already traverses Minas territory. This is a major event, the harbinger of a great economic

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Vice-presidente da Companhia que esta requeira à Assembleia Provincial de Minas a garantia adicional de 2% para os capitais despendidos dentro do seu território.

<sup>18</sup>Report submitted by the President of the Province, José da Costa Machado de Souza, to the Provincial Legislative Assembly of Minas Gerais, in 1868. Ouro Preto: J. F. de Paula Castro Press, 1868, p. 15.

<sup>19</sup> Original version: Entendo que desde já convêm muito proceder a fatura das seguintes estradas: 1<sup>a</sup> do Campelo a Ubá; [...] da 1<sup>a</sup> já mandei orçar 4 léguas, e hei de, quanto antes, procurar levá-la à cidade de Ubá. Muito precisam desta via de comunicação os fazendeiros daqueles lados. É de justiça que se olhe para os interesses daquelas localidades, não só porque se acham perto das estradas União e Indústria e de D. Pedro 2<sup>o</sup>, como porque as terras são muitos férteis, e já concorrem com bom contingente para as rendas da província.

transformation. It is to be expected, from the wisdom of the powers of the state, that the railway will seek out the province's best production zone; and it is to be expected from your wisdom that you will concentrate most of your resources on opening roads that will connect to the railway and on improving navigation in the rivers linked to it, for then you will pour torrents of prosperity upon this fertile soil, which asks only for means of communication [...]<sup>20 21</sup>

In the years that followed, the railway continued advancing over Minas territory. In 1875, the stations of Cedofeita and Retiro were inaugurated in the city of Juiz de Fora. Two years later, in 1877, the line reached the city of Leopoldina, and in 1879, Ubá. According to Ângelo Carrara, “The tracks advanced further toward Visconde do Rio Branco and São Geraldo in 1880, and from there, along a steep climb, to Coimbra and Viçosa in 1885 and to Ponte Nova in 1886” (1993, p. 38).

With regard to the construction of the railway in the Province of Minas Gerais, historiography dedicated to the Zona da Mata presents differing interpretations. For Carrara (1993), the tracks were concentrated mainly in the coffee-growing region, and the interest of farmers in the southern zone of the Mata in establishing railways was tied to the development of coffee cultivation, whose production could then be exported using a privileged mode of transport.

However, unlike this group, the representatives of the central region of the Mata defended the replacement of enslaved labor with free labor and regarded the railway as an instrument of economic development and a symbol of civilization. In the author's view (1993), the political efforts surrounding the installation of the railway—and the perspectives on the significance of the undertaking—shifted as one moved from one sub-region to another. In the southern zone of the Mata, the first stations built by the

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<sup>20</sup> Report submitted by the President of the Province, Dr. José Maria Corrêa de Sá e Benevides, to the Provincial Legislative Assembly of Minas Gerais, in 1869. Rio de Janeiro: Laemmert's Universal Press, 1870, p. 23.

<sup>21</sup> Original version: Sinto o mais vivo jubilo participando-vos que no dia 27 de junho último SS. MM. II. e S. A. o Sr. Duque de Saxe, partindo do Juiz de Fora, chegarão ao município de Mar de Espanha e assistirão à inauguração das estações da estrada de ferro denominadas de <<Santa Fé e Chiador.>> A estrada de ferro percorre já o solo mineiro. Eis um grande acontecimento precursor de uma grande revolução econômica. É de esperar da sabedoria dos poderes do estado que a estrada procure a melhor zona de produção da província, e é de esperar de vossa sabedoria que concentreis a maior parte de seus recursos na abertura de estradas, que se entronquem com a de ferro e na navegação dos rios que se prendam a ela, porque então derramareis torrentes de prosperidade sobre este ubérrimo solo, que só pede vias de comunicação [...].

Leopoldina Railway were located on large landowners' estates. These stations were Retiro, Cedofeita, Providência, São Martinho, and Mariano. This was not the case in the central region of the Mata, where the stations were situated in urban centers. Concerning the railway's arrival, Carrara writes (1993, p. 39):

In the Chamber of Deputies, while Carlos Peixoto attempted to justify the importance of the railway for the region of Ubá—which had no exportable economic production but “fertile soils”—Mariano Procópio spoke with the authority of one who participated actively in the coffee trade through the União e Indústria. The situation of the politicians of the northern Mata was even more complicated. Only after Nominato de Souza Lima had found a solution allowing the tracks to overcome the Serra de São Geraldo could the Leopoldina advance northward. And even so, this was due to the influence of the liberal deputy elected in the central Mata, Vaz de Melo, with the government, and of Cesário Alvim, with the Leopoldina's board of directors.<sup>22</sup>

For the author, prior to the arrival of the railway, the União e Indústria Highway—built by Mariano Procópio F. Lage in Juiz de Fora—had been, since its inauguration in 1861, the principal route for the exportation of coffee in the southern zone of the Mata. Its initial 144 kilometers connected the city of Juiz de Fora to Petrópolis, in the Province of Rio de Janeiro. It was precisely there that the Leopoldina Railway would later meet the D. Pedro II Railway. Indeed, even before the installation of the Leopoldina, the União e Indústria Highway, together with the D. Pedro II Railway, was already responsible for connecting Minas's market to the port of Rio de Janeiro.

In the words of Anderson Pires (2009, p. 55), the company became one of “the main examples of the realization of backward-linkage effects resulting from the coffee production of the Mata region of Minas.” Thus, the installation of the União e Indústria Highway and of the railways in the Zona da Mata during the 1870s demonstrated not only the transformations occurring in the transportation sector but also the presence of local capital in the region's major infrastructure initiatives.

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<sup>22</sup> Original version: Na Câmara dos Deputados, enquanto Carlos Peixoto tentava justificar a importância da estrada de ferro para a região de Ubá, que não tinha produção econômica exportável, mas “solos ubérrimos”, Mariano Procópio falava estribado na autoridade de quem participava ativamente do comércio de café pela União e Indústria. Mais complicada ainda era a situação dos políticos da Mata norte. Só após Nominato de Souza Lima ter encontrado uma solução para que os trilhos pudessem vencer a serra de São Geraldo, é que a Leopoldina pode avançar para o norte. E mesmo assim devido à influência do deputado liberal eleito pela Mata central, Vaz de Melo, junto ao governo, e de Cesário Alvim, junto à diretoria da Leopoldina.

Accordingly, a veritable railway network soon emerged. Of the twenty-five concessions authorized by the Province of Minas for the construction of railways, eleven were located in the Zona da Mata. In 1884, the region contained two-thirds of the province's rail lines. According to the author, the presence of local capital in the initial phase of these investments reveals the economic dynamism of the agro-exporting activity in the southern region and its capacity for capital accumulation and investment. In this regard, Pires writes (2009, p. 57):

[In] the first phase of the development of these enterprises, several elements—indeed applicable to other coffee-growing regions—have been emphasized by historiography, such as the predominant initiative of local planters, the presence of the State (at both provincial and central levels) through the concession of interest guarantees on invested capital, the disorganization of the lines for the benefit of politically influential landowners, the construction of networks with differing gauges, etc. Notably, among the initiatives led by local farmers and financed at least partially with local capital, we find in Juiz de Fora, among others, the Companhia União Mineira and the Companhia Juiz de Fora a Piau.<sup>23</sup>

However, regional disputes for privileges and concessions weakened regional interests, and many of the local railway companies were gradually acquired by external firms whose interests were centered in the Court. The Leopoldina Company, initially formed with local capital, became one such enterprise. Before long, by the mid-1880s, it shifted its interests and began to purchase local companies. By 1890, all railway lines located in the Zona da Mata had been acquired by the Leopoldina. However, with the crisis in coffee cultivation, the company encountered financial difficulties and, in 1897, declared bankruptcy. Reorganized, it reemerged in 1898 as an English company (2009, p. 58).

According to Andréa Casa Nova Maia, the arrival of the train in the interior—into small towns and villages—was a remarkable and extraordinary event. In little time, it

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<sup>23</sup> Original version: [A] primeira fase do desenvolvimento destes empreendimentos, diversos elementos (que de resto, podem ser estendidos para outras regiões cafeeiras) tem sido sublinhados pela historiografia, como a iniciativa predominante de fazendeiros locais, a presença do Estado (no âmbito provincial e central) com a concessão de garantia de juros sobre o capital empatado, a desorganização das linhas em função do benefício de fazendeiros com influência política, a construção de redes com bitolas diferenciadas, etc. De destaque, como iniciativa de fazendeiros da região e financiamento pelo menos parcialmente local temos em Juiz de Fora, entre outras, a Companhia União Mineira e a Companhia Juiz de Fora a Piau.

transformed people's lives and altered routes throughout the region. For many, the train was synonymous with modernity. Maia writes (2009, p. 45):

The railway network, by ensuring the transportation of travelers and goods, establishes connections among all regions of a nation—even of entire continents—and enables all forms of communication and exchange. In this sense, not only the locomotive is a symbol of a modern, industrializing country; the stations, their architecture, and the constant flow of travelers, foreign or not, also represent the arrival of modernity.<sup>24</sup>

In the author's view (2009, p. 45), the expansion of the railways was related not only to modernity but also to British capital, since, by the late nineteenth century, England sought to exercise stricter control over the basic sectors of the Brazilian economy. Thus:

England would control not only commerce but also transportation. It is well known that many of our railways were built with loans contracted in London. Others were unable to repay their debts and were taken over by the English, such as the Leopoldina Railway Company, founded by Brazilians in 1872 and mortgaged to British creditors in 1897. "It was not, however, through loans but rather through direct investment that English capitalists exerted their greatest influence on Brazil's transportation system."<sup>25</sup>

In this context of modernity, the Engenho Central de Aracati and the Engenho Central Rio Branco Companies were the first and foremost enterprises in the Zona da Mata of Minas Gerais and in the province as a whole to modernize the sugar manufacturing process. Due to the technical improvements implemented in the installation of their mills, both factories represented a shift in perspective for sugar production in Minas Gerais at the end of the nineteenth century.

Unlike the mill established in Aracati, the Engenho Central Rio Branco—since the approval of its project, complete with plans and drawings, by the Legislative Assembly—was conceived and built as a large-scale enterprise. Its construction marked a significant

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<sup>24</sup> Original version: A rede ferroviária, garantindo transporte de viajantes e mercadorias, estabelece ligações entre todas as regiões de uma nação, até de muitos continentes, e permite todas as comunicações e intercâmbios. Nesse sentido, não só a locomotiva é sinônimo de país moderno, industrializando-se como, as estações, a arquitetura, o ir e vir dos viajantes, estrangeiros ou não, também representam a chegada da modernidade.

<sup>25</sup> Original version: A Inglaterra controlaria não só o comércio, mas também o transporte. Sabe-se que grande parte de nossas estradas de ferro foram construídas com empréstimos feitos em Londres. Outras não puderam saldar suas dívidas e foram encampadas pelos ingleses, como a Companhia de Ferro Leopoldina, fundada por brasileiros em 1872 e hipotecada pelos credores britânicos em 1897. "Não foi, porém, com empréstimos, mas sim no campo dos investimentos diretos que os capitalistas ingleses exerceram sua maior influência no sistema de transportes no Brasil".

change in outlook for the central subregion of the Zona da Mata in Minas Gerais, even though sugarcane was not the main economic activity there, as that position had been held by coffee cultivation since the second half of the nineteenth century.

Nevertheless, sugarcane cultivation during this period remained a profitable and present activity in the economy of Minas, particularly in the central and northern subregions of the Zona da Mata. One of the first decrees enacted by the Imperial Government that benefited sugar production in the Province of Minas Gerais was issued at the end of the 1870s. Specifically, in October 1879, Decree No. 7,508 authorized the creation of the Companhia Engenho Central de Aracati. Its purpose was to establish a central mill for the production of sugarcane sugar, to be located on the banks of the Pomba River, in the municipality of Leopoldina, Province of Minas Gerais. The site was called “Aracati.”

Years later, following the publication of Decree No. 9,434 in June 1885, the Companhia Engenho Central Rio Branco also received authorization from the Empire to organize and install a central sugar mill in the central subregion of the Zona da Mata. However, the company had already obtained a concession from the provincial government of Minas on October 7, 1882, authorizing the incorporator and concessionaire Joaquim José Campos de Bittencourt to construct a central sugar mill in one of the following cities: Ubá, Visconde do Rio Branco (formerly Presídio), Muriaé, Carangola, or Ponte Nova.

According to Alice Canabrava (1974, p. 108), the concession granted by the Province of Minas in October 1882 was consistent with the laws promulgated by the Imperial Government. The action of the Minas government, therefore, can be justified as follows:

The law of 29 September and that of 6 November 1875 concerning central mills marked the advent of a government policy of financial assistance intended to promote the installation of a modern sugar industry in Brazil—a policy later strengthened by new legal provisions in 1888. In several provinces, the authorities had acted in advance. It appears that the initiative came from Pernambuco, which, in 1857, had legislated in favor of founding a “central sugar factory.” These were, however, merely aspirations. Only in 1871 did that province and the province of Rio de Janeiro grant interest guarantees to central mills that might be established; in 1874, with the same purpose, the provinces of Sergipe, Bahia, and Rio Grande do Norte enacted similar legislation. In

the following year, projects for the installation of central mills were approved in the provinces of São Paulo, Ceará, and Maranhão. In 1877, the first concession was granted to Paraná; in 1879, to Minas Gerais and Pará.<sup>26</sup>

It is worth noting that between 1879 and 1905, the Imperial Government issued twenty-three additional decrees and concessions pertaining to the construction of central mills in Minas Gerais. These documents addressed, among other matters, the approval of mill projects and installations, as well as the guarantee of interest payments, the transfer of headquarters, revocation of concessions, and amendments to the bylaws of concessionaires. The municipalities of the Zona da Mata listed in these concessions included: Leopoldina (Aracati), Visconde do Rio Branco (the former Presídio), Sete Lagoas (Jequitibá parish), Itajubá, Lavras, and Queluz.<sup>27</sup> However, only the Central Mills of Aracati and Rio Branco were actually built, and only the latter achieved long-term operational continuity, eventually becoming a sugar refinery in the early twentieth century.

The construction of the Engenho Central Rio Branco was a significant undertaking for both the Province of Minas Gerais and the Imperial Government. It must be emphasized that while, for the latter, the construction of central mills formed part of a state-led policy to modernize the sugar sector, for the former, beyond this motive, the endeavor represented the arrival of modernity within the interior of Minas Gerais, where the foremost symbol of industrialization—the factory—would take material form.

Even before the first central mill was built, however, the discourse of modernity was already resonating in Minas. In the 1876 report, the President of the Province sanctioned Law No. 2334, which exempted machinery and materials imported by industrial companies established in the province from taxation. In the same document, the government authorized the construction of several railways that would connect the

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<sup>26</sup> Original version: A lei de 29 de setembro e a de 6 de novembro de 1875 sobre os engenhos centrais marcaram o advento da política de ajuda financeira por parte do governo com o fim de incrementar a instalação de moderna indústria açucareira em nosso país, revigorada por novos dispositivos legais em 1888. Em várias províncias as autoridades tinham se antecipado. Ao que parece, a iniciativa partiu de Pernambuco que, em 1857, havia legislado em favor da fundação de uma „fábrica central de açúcar“. Tratava-se apenas de anseios. Somente em 1871, esta e a província do Rio de Janeiro concederam garantia de juros a engenhos centrais que viessem a ser montados; em 1874, com o mesmo propósito, legislaram as províncias de Sergipe, Bahia e Rio Grande do Norte. No ano seguinte, projetos de instalação de engenhos centrais foram aprovados nas províncias de São Paulo, Ceará e Maranhão. Em 1877 a primeira concessão foi dada ao Paraná; em 1879 a Minas Gerais e Pará.

<sup>27</sup> For further information on the Imperial Decrees pertaining to Minas Gerais, see Annex II, which lists the decrees grouped by locality/company and by date of publication.

Serraria station to the settlement of Espírito Santo do Mar de Espanha; the capital to the Rio Doce; Santana do Pirapetinga to the Volta Grande station; São João del Rey to Ponte do Miranda; and Santa Bárbara to the settlement of Santa Cruz do Rio Pardo.<sup>28</sup> For the government of Minas, these actions served clearly defined objectives: to diversify the economy, promote the growth of exports and the internal market, and boost state revenue.

In the 1880 report, at the end of his analysis of state finances, the President of the Province declared that the province could not rely on increasing taxes from a single taxable commodity. Instead, it was necessary to invest in the expansion of industry, the growth of commerce, and the extension of transportation routes as the means to increase wealth and, consequently, revenue.

In both reports, we see that the discourse of economic diversification and tax revenue was reinforced by an overarching commitment to modernity.

The concession granted by the Imperial Government to Joaquim José de Campos Bittencourt for the construction of a central mill originated in the Legislative Assembly of Minas Gerais, which enacted Law No. 2,900 on 7 October 1882. That law granted the mill—or the company organized by Bittencourt—a guarantee of 7% annual interest on capital of 800:000\$000 for a period of twenty-five years.<sup>3</sup> It should be noted that Joaquim Bittencourt maintained close ties to the province, since in 1869 he appears in the *Relação dos Exatores da Fazenda Provincial de Minas Gerais*, serving as municipal tax collector in the town of Piranga.<sup>29</sup> Upon assuming the post on 1 April 1869, he became responsible for an assessed amount of 6:000\$000, for which he provided his own assets as security. By requirement of the office, his guarantor was Manoel Ignácio da Silva Araújo Junior, a resident of the same town.

Bittencourt's project, approved in the Legislative Assembly of Minas, received the support of several deputies, including Henrique de Magalhães Salles, Antonio de Santa Cecília, Antonio Jacob da Paixão, José Antonio da Silveira Drummond, Antonio Cesário da Silva e Oliveira, Manoel Menelino Pinto, Olegário Dias Maciel, Chrispim Jacques

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<sup>28</sup> Report submitted by the President of the Province, the Baron of Vila da Barra, to the Provincial Legislative Assembly of Minas Gerais, in 1876. Ouro Preto: J. F. de Paula Castro Press, 1876, pp. 28–29.

<sup>29</sup> Report submitted by the President of the Province, Dr. Antonio Gonçalves Chaves, to the Provincial Legislative Assembly of Minas Gerais, in 1883. Ouro Preto: Tipografia do Liberal Mineiro, 1883, pp. 72–73.

Bias Fortes, José Candido Costa Senna, and José Pedro Xavier da Veiga (1952, p. 409). To formalize the authorization, a contract was signed between Bittencourt and the Province on 22 December of that year. Seeking to obtain capital abroad, the concessionaire consulted the Assembly, which denied the request on the grounds that exchange-rate fluctuations rendered such financing impractical, as the instability of Brazilian currency might inflate the amount fixed and guaranteed by law.

Economic difficulties faced by Joaquim José Campos de Bittencourt in assembling the enterprise eventually led him to transfer the concession to a group of investors (1952, p. 410). On 26 April 1884, in the city of Rio de Janeiro, the General Assembly that constituted the Companhia Engenho Central Rio Branco was convened. To this company were transferred all exemptions, benefits, and obligations related to Provincial Law No. 2,900 of 7 October 1882, as well as those stipulated in the contract of 22 December of the same year. After its establishment, the Assembly approved the company's bylaws and elected its first board of directors, composed of Drs. Antônio Paulo de Mello Barreto, José Arthur de Murinelly, and Lindolpho Martins Ferreira.

Following these initial steps, the company “made a deposit at the Banco Hipotecário e Rural of 80:000\$000, corresponding to 10% of the total subscribed capital.”<sup>30</sup> On 11 June, the Province of Minas, through an administrative order, approved the construction project for the central mill and a budget of 660:000\$000 for the cost of the work. The remaining capital, amounting to 140:000\$000, “would be used to compensate for the land needed for the mill, its facilities, and the cane supply contracts” (1952, p. 301). To oversee the work, the province appointed the mining engineer Luiz Marianno Rodrigues da Costa.<sup>31</sup>

According to Oiliam José (1952, p. 410), construction of the Engenho Central Rio Branco began with the laying of the cornerstone on 10 October 1884 in the municipality of Visconde do Rio Branco, formerly *Presídio*:

The ceremony was attended by public authorities, company directors, and the general populace. In blessing the cornerstone, Dom Antonio Maria de Corrêa de Sá e Benevides, Bishop of Mariana and an engineer

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<sup>30</sup> Report submitted by the President of the Province, Dr. Antonio Gonçalves Chaves, to the Provincial Legislative Assembly of Minas Gerais, in 1884. Ouro Preto: Tipografia do Liberal Mineiro, 1884, p. 72.

<sup>31</sup> Report submitted by the President of the Province, Dr. Antonio Gonçalves Chaves, to the Provincial Legislative Assembly of Minas Gerais in 1884 – Appendix to Annex B – Doc. No. 13 – Tables of Special Credits. Ouro Preto: Tipografia do Liberal Mineiro, 1884, p. 4.

trained at the Polytechnic School of Rio de Janeiro, offered words of encouragement for the initiative and, finding himself surrounded by rural landowners and slaveholders, reaffirmed his opposition to slavery.<sup>32</sup>

On 15 January 1885, the presidency of the Province of Minas approved the modifications presented by the Company, which consisted in the adoption of filters for sugar manufacture. On 30 June of that same year, the Companhia Engenho Central Rio Branco received 3\$589 referring to the payment of 7% interest accrued during the first six months of investment—that is, from January to June 1884.<sup>33</sup> The Company was still awaiting approval of its accounts and payment of interest relative to the investments made during the second semester, from July to December 1884. These calculations were under review by the General Directorate of Public Works and required further clarifications from the supervising engineer.

Construction of the central mill—which had begun on 10 October 1884—was completed in September 1885. On the 7th of that month, the Engenho Central Rio Branco was inaugurated, “the cost of its construction amounting to 626:781\$292”<sup>34</sup> *contos de réis*. According to Oiliam José (1952, pp. 412–13), the inauguration of the Central Mill received significant coverage in the Ouro Preto newspaper *A Província de Minas* on 24 September 1885:

Engenho Central Rio Branco: On 7 September this most important establishment was festively inaugurated, with the attendance of the respective board of directors, composed of the distinguished gentlemen Dr. Mello Barreto, Murinelly, and Lindolpho Martins, many gentlemen who had come from the Court by courteous invitation of the board—who took great care in hosting them—and a large gathering of the population of Rio Branco and Ubá. The inauguration was preceded by

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<sup>32</sup> Original version: A solenidade contou com a presença de autoridades, diretores da empresa e povo. Ao dar a benção a essa pedra, Dom Antonio Maria de Corrêa de Sá e Benevides, Bispo de Mariana e engenheiro formado pela Escola Politécnica do Rio de Janeiro, pronunciou palavras de estímulo à iniciativa e, vendo-se cercado de proprietários rurais e senhores de escravos, renovou seu posicionamento contrário a escravidão.

<sup>33</sup> Report submitted by the President of the Province, Judge José Antonio Alves de Brito, to the Provincial Legislative Assembly of Minas Gerais, in 1885 – Accounting Office of the Directorate of the Provincial Treasury of Minas Gerais, 30 June 1885. Annex 13. Ouro Preto: Tipografia do Liberal Mineiro, 1885, p. 2.

<sup>34</sup> Report submitted by the President of the Province, Dr. Carlos Augusto de Oliveira Figueiredo, to the Provincial Legislative Assembly of Minas Gerais on 5 June 1887. Sugar Factories. Ouro Preto: J. F. de Paula Castro Press, 1887, p. 74.

a religious ceremony performed by the Reverend and worthy vicar of Rio Branco, Father Severiano Anacleto Varella. On the eve, a splendid banquet was offered by the kindness of the distinguished engineers who built the mill, Drs. Lynchs, during which numerous toasts were raised, among them the following: to the distinguished members of the board of the central mill and of the Leopoldina Railway; to the esteemed citizen Joaquim José de Campos Bittencourt, the intelligent and dedicated initiator of the idea; to the said honorable engineers who built it; to the capable supervising engineer Dr. [Luiz Mariano] Rodrigues da Costa; to the enlightened Drs. Cesário Alvim and Mesquita Barros; to the representatives of the press from the Court and from this capital who were present (Valle Cabral, Capistrano de Abreu, Dr. Francisco Veiga, and J. P. Xavier da Veiga), all greetings being met with enthusiastic response. The Engenho Central Rio Branco, intended for large-scale sugar manufacturing, is a first-class establishment, equipped with the most perfected machinery and employing the most advanced processes of industrial mechanics. [...] The industrial celebration of the inauguration of the Engenho Central Rio Branco—to which citizens of all classes and political beliefs contributed—was surely one of the liveliest and most cheerful events ever witnessed in our province, and with good reason, as the event was so promising for that fertile region (ubérrima região), where each passing day labor achieves new and splendid civilizing conquests.<sup>35</sup>

The construction of the Central Mill—initiated by Provincial Law No. 2,900 of 7 September 1882 and by the contract signed between the concessionaire and the province

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<sup>35</sup> Original version: Engenho Central Rio Branco: A 7 de setembro foi festivamente inaugurado este importantíssimo estabelecimento assistindo ao ato a respectiva diretoria, composta dos ilustres Srs. Dr. Mello Barreto, Murinelly e Lindolpho Martins, muitos cavalheiros, vindos da Corte por delicado convite da diretoria, que esmerou-se em obsequiá-los, e grande concurso da população do Rio Branco e Ubá. Precedeu à inauguração a cerimônia religiosa pelo Revd. e digno vigário de Rio-Branco, padre Severiano Anacleto Varella.

Na véspera foi servido, por fineza dos ilustrados engenheiros construtores os Drs. Lynchs, um esplendido banquete no qual ergueram-se numerosos brindes, entre os quais os seguintes: – aos ilustres membros da diretoria do engenho central e da estrada de ferro Leopoldina; – ao prestante cidadão Joaquim José de Campos Bittencourt, inteligente e esforçado iniciador da idéia; – aos referidos e honrados engenheiros construtores; ao inteligente engenheiro fiscal Dr. [Luiz Mariano] Rodrigues da Costa; aos ilustrados Drs. Cesário Alvim e Mesquita Barros; aos representantes da imprensa da Corte e desta capital ali presente (Valle Cabral, Capistrano de Abreu, Dr. Francisco Veiga e J. P. Xavier da Veiga), sendo todas as saudações entusiasmaticamente correspondidas. O engenho central Rio-Branco, destinado ao fabrico de açúcar em grande escala, é um estabelecimento de primeira ordem, fundado com maquinismos os mais aperfeiçoados e empregando os processos mais adiantados da mecânica industrial. [...] A festa industrial da inauguração do engenho central Rio-Branco, para a qual contribuíram cidadãos de todas as classes e credos políticos, foi certamente uma das mais animadas e alegres de quantas se tem visto em nossa província, e havia razão para isso sendo o fato tão promissor para aquela ubérrima região, onde dia a dia o trabalho faz novas e esplendidas conquistas civilizadoras.

on 22 December of that same year—brought an important innovation to the province, and particularly to the central sub-region of the Zona da Mata. Article 2 of the document signed by the President of the Province, Dr. Theophilo Ottoni, introduced, in addition to the clauses commonly employed by the provincial government in regulating similar concessions, a series of new measures which, as stipulated by the provincial government, the company was required to implement. These measures were deemed necessary to ensure the economic and social development of the region, within a framework of modernity adopted by the provincial government for the industry in question. According to Perlatto (1997, p. 8):

**I.** The company shall settle, on lands adjacent to the mill, a colony of nationals or foreigners numbering no fewer than 500 people.

**II.** From the capital guaranteed to the company, one-tenth shall be reserved to constitute a special fund, to be loaned short-term, under the company's responsibility and at 8% interest, to planters and cane suppliers as an advance to assist with production costs. Such a loan to any planter may not exceed two-thirds of the estimated value of his harvest.

**III.** The company may connect the mill, by means of steam power, to the nearest railway line, and shall be guaranteed an equal-term privilege, without interest guarantee, for that railway line, whose gauge shall be whatever the company prefers.<sup>36</sup>

In addition to the clauses stipulated above, the contract required the concessionaire to build a central mill with a minimum daily capacity to grind 160,000 kg of cane and to produce at least 600,000 kg of sugar per year. Exceeding expectations, during its first harvest in 1885, the mill surpassed its minimum daily target, grinding 218,208 kg of cane—58,208 kg more than required by contract. Sugar output likewise exceeded the minimum stipulated, reaching 4.53%. Thus, the company surpassed the contractual percentage of 3.75%. The 1885 harvest lasted only twelve days. The following figures, compiled by the provincial government, allowed for the construction of the table below:

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<sup>36</sup> Original version: I. A empresa colocará em terras adjacentes ao engenho uma colônia de nacionais ou estrangeiros, nunca inferior a 500 pessoas.

II. Do capital garantido à empresa reservará a décima parte, que constituirá um fundo especial, destinado a ser dado por empréstimo, a curto prazo, sob sua responsabilidade e juro de 8%, aos plantadores e fornecedores de cana, como adiantamento para auxílio dos gastos da produção. O empréstimo assim feito a qualquer plantador não poderá exceder a dois terços do valor presumível da sua safra.

III. Poderá unir o engenho, por meio de vapor, à próxima via férrea, ficando garantido à empresa privilégio, por igual tempo, sem garantia de juros, para essa via férrea, cuja bitola será a que for preferida pela empresa.

Table 1 – Data for the 1885 Harvest

Companhia Engenho Central Rio Branco – 1885 Harvest	
Sugarcane ground	2.356.843 kg.
Juice extracted	1.676.856 kg.
Percentage in relation to the weight of the sugarcane processed	66,7%
Number of wagons used in sugarcane transport	576
Number of effective grinding hours	279
Sugar produced in the first extraction	85.560 kg.
Same in the second and third extractions	29.580 kg.
Total sugar yield	115.140 kg.
Percentage of sugar obtained from the cane ground	4,53%
Yield in aguardente (sugarcane liquor)	57.593 litros
Percentage in relation to the sugarcane	22,7 por 1000 kg. de cana

The data above were taken from the report presented by the President of the Province, Dr. Manoel do Nascimento Machado Portela, to the Provincial Legislative Assembly of Minas Gerais on April 13, 1886. Central Mills. Ouro Preto: Vinte de Agosto Typography, 1886. p. 102.

On 29 June 1886, the mill began grinding its second harvest. Unlike the results obtained the previous year, this harvest—which lasted until 19 November 1886—was marked by outcomes considerably more satisfactory than those of the first. Sugar production reached 621,660 kg, and to achieve such an abundant output, 10,232,200 kg of sugarcane were processed. During this harvest, the percentage of juice extraction reached 69.7%, whereas in the previous year it had been 66.7%. Juice extraction was a crucial indicator and was tied, first, to the quality of the cane employed and, second, to the calibration of the mills. Thus, when these figures are compared, they allow us to discuss not only the duration of the first two harvests—the first lasting a mere 12 days, the second five months—but also other significant elements concerning the operation of the mill in its second year of production.

Moreover, when we analyze the total quantity of cane crushed in the first two years, we observe an increase of 434% from the first to the second harvest. The extraction yield of the crushed cane followed the same trend, rising from 66.7% to 69%. This improvement may be explained by adjustments made to the mill and to the rollers between one harvest and the next. Nevertheless, the increase in juice production must also be related to the sucrose content of the cane as well as to its boiling efficiency.

Accordingly, we highlight the percentage yield of the crushed cane converted into sugar, which also increased—from 4.53% to 6.07%. These figures may be associated both

with the volume of juice produced relative to the amount of cane consumed and with the sucrose percentage of the cane itself. However, the numbers must also be considered primarily in light of production costs. In other words, the 1886 harvest distinguished itself above all by the profitability it achieved.

Table 2 – Data for the 1886 Harvest

Companhia Engenho Central Rio Branco – 1886 Harvest	
Sugarcane ground	10.232.200 kg
Number of wagons used for sugarcane transport	1.515
Total weight of juice extracted	7.060.080 kg
Average juice density	10° [Bauné]
Hectoliters of juice extracted	76.248 Hectoliters
Juice per 100 kilograms of sugarcane	69%
Number of clarification boilers	1.546
Volume of one clarification boiler	43 Hectoliters
Total weight of sugar obtained (10,361 sacks)	621.660 kg
Sugar yield	6,07%
Aguardente (sugarcane liquor) obtained	125.704 liters
Aguardente yield per 100 kilograms of sugarcane	1,22 litros
Weight of firewood consumed	2.098.720 kg
Weight of firewood consumed per 100 kilograms of sugarcane ground	20,51%

The data above were taken from the report presented by the President of the Province, Dr. Carlos Augusto de Oliveira Figueiredo, to the Provincial Legislative Assembly of Minas Gerais in 1887 – Annex 8 – Report of the General Directorate of Public Works of Minas Gerais. May 21, 1887 – p. 42. Ouro Preto, 1887. J. F. de Paula Castro Typography.

For the aforementioned President of the Province, during the second harvest, “the sugar produced by the mill was of good quality, with the average price per sack set at 13\$518, or 225.3 per kilogram.”. When we relate the average price to the mill’s total production, we find a revenue of 140:059\$998—an impressive figure compared to the 1885 harvest. However, in the years that followed, the Central Mill experienced successive periods of failure, ultimately leading to its closure.

## **Final Considerations**

Among the problems faced in the modernization of the sugar sector—and, consequently, in the implementation of the Rio Branco Central Mill in the central sub-region of the Zona da Mata Mineira—we may identify difficulties analogous to those of several other central mills in the country, many of which also failed. Among the challenges encountered in the province of Minas, we highlight the separation between the manufacturing system and the productive sector.

The regular supply of raw material was essential to the operation of a central mill. Yet, as prices became increasingly unattractive, the mill underwent successive periods of shortage. It must be recalled that it had been built in a region of the Zona da Mata Mineira densely occupied by small mills. In its first year of operation, it coexisted with 141 mills producing *rapadura* and 45 producing spirits. Thus, there was a total of 186 mills—representing 96.8% of the mills recorded in the municipal tax register for Industries and Professions, which paid municipal and state taxes on sugarcane derivatives. In other words, the productive structure of the region was not dismantled by the construction of the Central Mill.

Given the number of mills registered in the municipality of Visconde do Rio Branco, the central mill had contracts with only 13 of these producers—an extremely low number considering the capacity of its installation. In this respect, the Rio Branco Central Mill did not differ from the others. Its failure seemed inevitable in the context in which it operated. We believe that the refusal of small producers to become mere suppliers of cane, combined with the mill's separation of the manufacturing sector from the productive sector—which contributed to the producers' disinterest, as they could no longer control the entire productive process—led the Rio Branco Central Mill toward decline.

We must also consider the relationship between installed capacity—defined at the moment the mill machinery was purchased—and the need to expand production. Such expansion depended on increasing the supply of raw material, that is, the enlargement of arable land or sugarcane fields. In the central mills of the Northeast, this was feasible due to the abundance of land available at very low prices and the availability of cheap labor. This situation required central mills to invest in their own plantations, both as a strategy to weaken the influence and resistance of cane suppliers and as a means to reach the installed manufacturing capacity and possibly extend the harvest period. This strategy,

however, did not succeed in the province of Minas Gerais, for in addition to competition from small mills, there was intense competition for arable land to cultivate coffee and produce foodstuffs for subsistence and supply of the internal market. From this perspective, the Rio Branco Central Mill, attempting to avoid failure, sought to acquire land in the municipality of Visconde do Rio Branco—a strategy that did not function effectively.

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