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"KOKSARA BAKAR" – FROM VISION TO DECLINE

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UDK: 669 (497.5Bakar)
502/504(497.5Bakar)
Original Scientific Paper
Ur.: 2024-09-07

This paper presents the first comprehensive analysis of the business operations of the Bakar Coke Plant, examining the reasons behind its launch, the invested capital and construction investments, key performance indicators through the analysis of coke production, and the plant's impact on the town of Bakar. In the end, the paper briefly touches on the collapse of the coke plant and its legacy in Bakar.

Keywords: Bakar, coke plant, Sisak Steelworks, industry

Introduction

"Koksara Bakar" (the Bakar Coke Plant) is arguably one of the most controversial industrial facilities in recent Croatian history. On the one hand, in the eyes of investors, it was a grand infrastructure project, significant not only for its parent company, "Željezara Sisak" (the Sisak Steelworks) but also for the entire Yugoslavian industry. On the other hand, in the eyes of the local public, it was often seen as an imposed project that caused massive pollution and inflicted significant harm to the Bay of Bakar. Research that would comprehensively evaluate the coke plant and its operations is still lacking, with most existing studies primarily focused on the environmental and health aspects of the problem. These studies have certainly provided important data and have opened up discussions about the plant's impact on the lives and health of residents. However, a more complete understanding of this topic is still missing.

This paper, therefore, aims to re-examine the operations of the Bakar Coke Plant, from its inception to its ultimate collapse and closure, answering questions about its profitability, competitiveness, production quality, and the unavoidable integration into the local community and environment of Bakar.

The paper primarily draws on archival sources from the State Archives in Sisak, to which the author owes a great debt of gratitude, as they provided access to a collection that is currently being processed, making previously unknown sources available for this analysis.¹ Additionally, the paper uses newspaper articles from the researched period as well as the literature published to date.

The Coke Plant – the link between Bakar and Sisak – a brief historical context

The area of today's town of Bakar has been inhabited since prehistoric and ancient times.² It reached its "golden age" during the 19th century, riding on the waves of trade and maritime activities. In addition to road transportation, Bakar relied heavily on sailing ships, with around 60 such ships in the town during the 19th century.³ Due to the strong "maritime spirit" prevailing in Bakar, the authorities even allowed the opening of a nautical school. As a well-connected town that benefited from the abolition of the Venetian Republic's monopoly, Bakar remained the leading port on the northern Adriatic until the end of the 19th century,⁴ and for a period, it was the largest Croatian city.⁵ However, in 1880, the town suffered a significant blow when Bakar lost its status as a free port, leading to a decline in traffic and trade. Bakar gradually began losing its race against its main competitor, the city of Rijeka.⁶ After the dissolution of the Austro-Hungarian Empire, the National Council briefly took control in Bakar, but following the Italian occupation, it remained the only port on the Croatian coast, which once again contributed to the port's development in the early 1920s.⁷ At the beginning of the 20th century, Bakar was still a lively port town, with most of its residents earning a living from maritime activities⁸ and the beginnings of tourism,⁹ although the population was modest, numbering around 2,000 inhabitants.¹⁰ After World War II, Bakar's development was marked by

¹ For this reason, in some references to sources from the State Archives in Sisak, it was not possible to specify a more precise reference, such as the box number, series, etc., and only the signature of the collection was used.

² V. ANTIĆ, 1982, p. 33.

³ V. ŠVOGER – J. TURKALJ, 2016, p. 478.

⁴ B. MILIĆ, 2003, p. 19.

⁵ V. ŠVOGER – J. TURKALJ, 2016, p. 478.

⁶ T. ČULINA, 2014, p. 296.

⁷ V. ANTIĆ, 1982, p. 38.

⁸ R. DORIČIĆ *et al.*, 2020, p. 92.

⁹ R. DORIČIĆ, 2019, p. 8.

¹⁰ T. ČULINA, 2014, p. 297.

industrialisation, with the creation of the so-called "Rijeka Ring." For Bakar, this initially meant the modernisation of its port, followed by the construction of large industrial plants, including a cement factory, a soot factory, an oxygen plant, a metallographic complex, and most notably – the Refinery, the Thermoelectric Power Plant, and the Coke Plant. It is fair to say that the town's life in the second half of the 20th century was shaped by industry, and among the industries, the Coke Plant stood out both locally, becoming practically synonymous with Bakar's industry, and nationally, due to its economic impact.¹¹

Similarly, the Sisak area had had a long and great industrial history. Traces of metallurgy in and around Sisak can be found as far back as prehistoric and ancient periods when iron, lead, and silver ore mines were exploited in the Banovina region.¹² At the dawn of World War II, Miroslav Tomac saw a business opportunity in the war preparations and the high demand for iron. Building on a long tradition of mining, he proposed the establishment of the Mining Company – Smelting Plant Caprag, the predecessor of "Željezara Sisak" (the Sisak Steelworks).¹³ The location in Caprag, a suburb of Sisak, was chosen partly due to the proximity of ore and partly due to Sisak's strategic position on rivers, allowing for quick and easy transportation. Additionally, Sisak had a sufficient labour force to work in such facilities.¹⁴ In 1938, construction began on the blast furnace, which started production in August of the following year, with a capacity of 40 tons of pig iron. However, from the beginning, the Smelting Plant faced financial problems. Cheaper, second-hand equipment was used, and the workers were mostly unskilled, leading to higher costs and the inability to produce more profitable grey pig iron. Nevertheless, due to the high demand just before the war, the Smelting Plant operated relatively successfully, which led to new investments in 1940 and an increase in capacity to 60 tons of iron per day.¹⁵

During the Independent State of Croatia period, the Smelting Plant faced problems with a shortage of both labour and raw materials, resulting in a significant drop in production.¹⁶ Since one of the founders, Vladimir Radan was Jewish, the Smelting Plant was partially nationalised. Due to the shortages of ore and coke, production was first suspended, and eventually, the plant was closed in June 1945.¹⁷ In 1946, all private enterprises were nationalised,¹⁸ which

¹¹ R. DORIČIĆ *et al.*, 2020, p. 93.

¹² I. MAMUZIĆ, 2004, p. 6.

¹³ I. MAMUZIĆ, 2004, pp. 6–7.

¹⁴ L. LAZIĆ – Z. ZOVKO BRODARAC, 2019, p. 262.

¹⁵ D. FRANIĆ, 2016, p. 178.

¹⁶ L. LAZIĆ – Z. ZOVKO BRODARAC, 2019, p. 263.

¹⁷ D. FRANIĆ, 2016, pp. 178–179.

also affected the Smelting Plant, whose name was changed to "Narodna talionica Caprag" (the Caprag National Smelting Plant).¹⁹ Towards the end of the same year, the decision was made to construct a new steel mill, "Željezara Sisak," opposite the old smelting plant. From 1948 to 1956, the major construction of the steel mill took place, after which it became the first producer of seamless pipes in Yugoslavia, as well as other products in which it would become a leader, both in domestic production and in exports.²⁰ This development should certainly be viewed in the context of the rapid industrial growth occurring across the entire country.²¹

The development of the Sisak Steelworks occurred in three phases. The first reconstruction phase lasted from 1960 to 1967 and involved the reconstruction of two blast furnaces, increasing their capacity and raising the temperature of the preheated air, along with other improvements. Other facilities were also modernised, including the capacity expansion of Siemens-Martin furnaces, along with the construction of entirely new elements, such as a new electric furnace. The second reconstruction phase lasted from 1968 to 1973, during which the capacity of many facilities was further increased, and the imbalance between steel production and factory capacity was addressed. These changes were necessary to meet the ever-growing market demands.²² The third reconstruction phase, included in medium-term development plans for metallurgy at the republic and federal levels, lasted from 1975 to 1991. It once again envisaged a series of modernisations and production improvements, as well as the construction of some capital projects, one of which was the Coke Plant in Bakar.²³

Reasons for the establishment and location selection

From 1950 to 1973, Croatia experienced its highest GDP growth, with the global growth rate being slightly below 3%, while Croatia's was nearly 5%. By the early 1970s, Croatia had surpassed some Central European countries.²⁴ Croatia also fared well compared to other Yugoslav republics, with its GDP in the 1970s being 25-30% higher than the Yugoslav average,²⁵ which, however,

¹⁸ Z. RADELIĆ, 2022, p. 285.

¹⁹ L. LAZIĆ – Z. ZOVKO BRODARAC, 2019, p. 263.

²⁰ D. FRANIĆ, 2016, pp. 179–180.

²¹ Z. RADELIĆ, 2022, pp. 286–287.

²² M. GOJIĆ, 2021, pp. 566–567.

²³ M. GOJIĆ, 2021, p. 567.

²⁴ N. PETROVIĆ, 2018, p. 6.

²⁵ I. GOLDSTEIN, 2008, p. 601.

lagged behind that of other European capitalist and some socialist countries.²⁶ Despite this, there was a general atmosphere of progress, both domestically and in foreign policy.²⁷ Consequently, during almost the same period, the demand for steel and other raw materials in Yugoslavia grew at a rate of 8.3%, faster than in many developed industrial countries. From 1950 to 1975, the demand for steel in Yugoslavia grew at a rate of 8.3%, which was faster than in many developed industrial nations. This growth trend slowed during the second half of the 1970s, and by the early 1980s, the rate had dropped to just over 2%.²⁸ In accordance with favourable market conditions for the distribution of Sisak Steelworks' products up to 1975, a 20% increase in production was noted.²⁹ Production could have been even higher if it hadn't been for disruptions in raw iron production, which were caused by insufficient supplies of high-quality ore and a shortage of coke.³⁰

In early 1970, the shortage of coke was a major issue. Engineers at the steelworks' blast furnace described it as "the most serious situation that can occur in a steel plant" as a lack of coke not only halts the operation of blast furnaces but can also paralyse the entire steelworks.³¹ After the end of World War II, coke shortages were a recurring problem. For example, the first firing of the blast furnace after renovations in 1946 had to be postponed due to a lack of coke.³² Additionally, coke consumption was sometimes so high that it exceeded the amount of raw iron being produced. It became clear that the steelworks needed a reliable and permanent source of coke to meet its increasing production demands.³³ Compounding the issue, all the largest Yugoslav steelworks were sourcing coke from the same place – Lukavac.³⁴ The situation worsened in April 1970 when the Lukavac coke plant announced it was halting deliveries to the

²⁶ Z. RADELIC, 2022, pp. 288–289.

²⁷ I. GOLDSTEIN, 2008, p. 578.

²⁸ HR-DASK-918, Osvrt na polazne osnove dugoročnog razvoja crne metalurgije Jugoslavije do 1990. godine s posebnim naglaskom na razvoj crne metalurgije u SR Hrvatskoj, p. 2.

²⁹ HR-DASK-918, Izvješća o poslovanju 1974., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1974., February 1975, p. 10.

³⁰ HR-DASK-918, Izvješća o poslovanju 1974., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1974., February 1975, p. 24.

³¹ Tko je kriv za nestašicu Koksar?, *Željezarin vjesnik*, February 14th, 1970.

³² D. FRANIĆ, 2016, p. 180.

³³ D. FRANIĆ, 2016, p. 183.

³⁴ Lukavac is an industrial town in the eastern part of Bosnia and Herzegovina, home to numerous industries. Since 1952, a coke plant (koksara) has also been in operation. (LUKAVAC, *Hrvatska enciklopedija*, mrežno izdanje, URL: <https://enciklopedija.hr/clanak/lukavac> (2024-10-14))

Sisak Steelworks due to the failure to sign a new contract.³⁵ The new contractual conditions from Lukavac were strict, requiring the steelworks to purchase coke from them for the next 15 years, with the price and delivery schedule to be negotiated annually.³⁶

In the broader context of Yugoslav industrial development plans, there was a firm belief that the country's black metallurgy should be based on domestic raw materials.³⁷ This perspective was reflected in a study that was critical in deciding the location for the new coke plant.³⁸ The authors of the study argued that the establishment of domestic coke production capacities was economically viable, especially since the medium-term development plan for 1971-1975 projected that demand for coke would rise annually, with consumption increasing from just over 115,000 tons to approximately 150,000 tons per year over five years.³⁹ Given this context, it made perfect sense that on December 24th, 1970, the Sisak Steelworks' Workers' Council made the decision to build a coke plant in collaboration with the United Company of Slovenian Steelworks. The initial plan was to have a production capacity of 700,000 tons per year, effectively eliminating the need for imports.⁴⁰ The Steelworks entrusted the task of preparing the aforementioned study to the Metallurgical Institute in Ljubljana, which collaborated with the Bureau for Development and Design of the Sisak Steelworks in Zagreb. In July 1970, they completed the *Study on the Construction of a Coke Plant on the Adriatic Coast*. The author of the study was Ciril Rekar, a renowned Slovenian metallurgist who worked alongside several other experts. The study analysed the market, the technological and technical aspects of the project, location-dependent factors, and, finally, the calculation of the most favourable site for the coke plant. The potential locations considered were Koper, Plomin, Bakarac, and Split. It should be noted that although the study refers to the potential construction site as Bakarac, the description of the location, which mentions the nearby INA Refinery and the planned construction of the Urinj Thermal Power Plant, makes it clear that the actual location was Bakar. The study pointed out that the land preparation costs were high at all locations, but they were lowest in Bakar, as were the transportation costs. The total construction cost was also the

³⁵ Lukavac obustavio isporuku koksa našem kombinatu, *Željezarin vjesnik*, April 11th, 1970.

³⁶ HR-DASK-918, Sklapanje dugoročnog ugovora, 12-10-4/70.

³⁷ HR-DASK-918, Osvrt na polazne osnove dugoročnog razvoja crne metalurgije Jugoslavije do 1990. godine s posebnim naglaskom na razvoj crne metalurgije u SR Hrvatskoj, 2.

³⁸ HR-DASK-918, Študija o izgradnji koksare na jadranskoj obali, July 1970.

³⁹ HR-DASK-918, Srednjoročni planovi razvoja, Srednjoročni plan razvoja 1971-1975., Table no. 8.

⁴⁰ Izgradnja Koksare u Bakru, *Željezarin vjesnik*, December 25th, 1970.

lowest in Bakar, making it the top choice, followed by Koper, Split, and finally Plomin.⁴¹ Reports from the time described the chosen location for the coke plant as "land taken partly from the sea and partly from the mountain," reflecting the challenging nature of the terrain.⁴²

"Samoupravni sporazum" (a Self-Management Agreement) on Pooling Funds and Repayment of Foreign and Domestic Loans for the Construction of the Coke Plant was signed by the Basic Organisations of Associated Labour (OOUR): Blast Furnaces, Steelworks, Strip and Billet Rolling Mill, Seamless Pipe Rolling Mill, Processing Plant, and Foundry.⁴³ Based on this agreement, each OOUR had its representatives in the Business Council for the Construction of the Coke Plant, which was subsequently formed on January 30th, 1976.⁴⁴ The pooling of funds was certainly necessary, as the construction of the Coke Plant was the largest investment project undertaken by the Sisak Steelworks following the completion of the second phase of reconstruction. A budget of 1.3 billion dinars was planned for the project.⁴⁵ Six bids were received for the construction of the Coke Plant – three from Germany and one each from France, England, and the USA.⁴⁶ The construction was entrusted to the German company DR Karl Otto from Bochum,⁴⁷ with one of the reasons for choosing this company being the satisfaction with its environmental protection solutions, as reported by the Sisak Steelworks' media outlets.⁴⁸ In 1974, the Workers' Assemblies within the Sisak Steelworks approved the Programme for the Construction of the Coke Plant in Bakar, allowing the project to commence. Interestingly, part of the decision also included authorising the management to make changes within the necessary funding amounts for the project.⁴⁹

With the formation of the Basic Organisation of Associated Labour (OOUR) "Koksara Bakar u izgradnji" (the Bakar Coke Plant under construction), preparations for the Coke Plant's construction intensified. Land was purchased, a contract with the Port of Rijeka was signed, and future collaboration with the

⁴¹ HR-DASK-918, Študija o izgradnji koksare na Jadranskoj obali, July 1970.

⁴² HR-DASK-918-III, Box 24, Div iz Bakarskog zaljeva, *Jedinstvo – tjednik SSRN Zajednice općine Sisak*, no. 1503, April 6th, 1978, p. 6.

⁴³ Z. ČEPO, 1974, p. 190.

⁴⁴ HR-DASK-918, Zapisnik sa 1. sjednice Poslovnog odbora za izgradnju Koksare.

⁴⁵ Z. ČEPO, 1974, p. 211.

⁴⁶ Koksara – velik investicioni zahvat, *Željezarin vjesnik*, December 13th, 1973.

⁴⁷ Z. ČEPO, 1974, p. 211.

⁴⁸ Puna pažnja zaštiti čovjekove okoline, *Željezarin vjesnik*, May 28th, 1976.

⁴⁹ HR-DASK-918-III, Box 2, Zaključci s zborova radnih ljudi koji su održani od 26. 3. do 27. 3. 1974.

Thermal Power Plant was agreed upon. Additionally, contracts were signed with contractors responsible for building housing for the relocation of residents who lived in the area designated for the future Coke Plant.⁵⁰ In 1976, during the opening of a hotel in Bakar, the then-president of the local community, Franjo Kopač, stated that despite the local community's initial scepticism, the now-relocated citizens were living in comfortable apartments, unlike their old, dilapidated homes that the local community had been unable to renovate.⁵¹ It is also worth noting that the Sisak Steelworks invested 18 million dinars in housing construction in Bakar during the first phase of the Coke Plant's construction.⁵²

Construction of the Coke Plant

It was announced that construction of the Coke Plant would begin at the end of 1973, with production expected to start as early as 1975 or 1976.⁵³ According to a decision by the Rijeka Municipal Assembly, the future Coke Plant was to occupy an area of 317,744 square metres, and construction eventually commenced in mid-August 1974.⁵⁴ The project immediately garnered attention, and during its construction, several interested investors came forward. For example, the Yugoslav Maritime Agency proposed contributing 5 million dinars to the construction without seeking a share of the Coke Plant's profits but instead to secure a role in the transportation of the coal and coke.⁵⁵

During the construction of the Coke Plant, as many as 60 structures were built,⁵⁶ and the documentation divides them into two groups. The first group consisted of those that were part of the technological core of the Coke Plant, such as coal preparation plants, coking units and similar facilities. The second group included structures that connected the Coke Plant with the existing infrastructure, such as those linked to the port, railway, etc. Due to their size, the structures in the first group required extensive construction work, which often resulted in delays.⁵⁷ On the other hand, the complexity of the construction work on the

⁵⁰ Koksara – velik investicioni zahvat, *Željezarin vjesnik*, December 13th, 1973.

⁵¹ Otvoren hotel u Bakru, *Željezarin vjesnik*, December 10th, 1976.

⁵² HR-DASK-918, Skraćeni investicioni program II faze izgradnje Koksare, March 1978, p. 28.

⁵³ HR-HDA-2031, Box 3625, N. PRELOG, Industrijska oluja nad Kvarnerom, *Vjesnik u srijedu*, March 7th, 1973, p. 17.

⁵⁴ Počinje gradnja Koksare, *Željezarin vjesnik*, August 8th, 1974.

⁵⁵ HR-DASK-918, Dopis Jugoslavenske pomorske agencije, November 13th, 1975.

⁵⁶ Z. ČEPO 1978, pp. 211–212.

⁵⁷ HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

second group of structures sometimes exceeded the demands of those within the technological core of the Coke Plant, leading to significant delays in the project's completion and the involvement of additional contractors.⁵⁸

Among all the structures, several stand out. The first was the underwater tunnel, which was 395 metres long and served to transport coal from the port to the Coke Plant. The tunnel had the capacity to transport up to 2,500 tons of coal per hour, making it unique even on a global scale. Interestingly, the construction of the tunnel was primarily handled by a domestic company, Pomgrad from Split.⁵⁹ The construction of the large plateau was entrusted to multiple companies, including Mavrovo from Skopje, Konstruktor from Rijeka, and Geotehnika from Zagreb. This was a massive undertaking, as approximately one million cubic metres of rock and soil had to be excavated for the construction of the Coke Plant, 700,000 of which were used for land reclamation and the creation of the plateau to house the facility.⁶⁰

Coal was unloaded from the port using three cranes, which could discharge 2,600 tons of coal per hour. The coal was then transported by an internal conveyor system, over 1.2 kilometres long, with a belt speed of 4.5 m/s. The system could store up to 1,500 tons of coal per hour. The "heart" of the Coke Plant was the coke battery, consisting of 65 high-capacity OTTO ovens. The plant was designed to produce coke in three sizes: 0-10 mm, 10-20 mm, and 20-50 mm.⁶¹ Additionally, a "mini-refinery" was established within the plant to process the by-products generated from coking coal, the most valuable of which was gas.⁶² One of the main reasons for delays in the construction was the 250-metre-tall chimney, which was described as "imposed by the sanitary inspection."⁶³ The author has written extensively about the construction of the chimney in a previous issue of the *Senjski Zbornik*.⁶⁴

The construction of the Coke Plant was overseen by a specially formed Council, which was responsible for reporting progress both to the Sisak

⁵⁸ HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

⁵⁹ HR-DASK-918-III, Box 24, Div iz Bakarskog zaljeva, *Jedinstvo – tjednik SSRN Zajednice općine Sisak*, no. 1503, April 6th, 1978, p. 6.

⁶⁰ Počinje gradnja Koksare, *Željezarin vjesnik*, August 8th, 1974.

⁶¹ HR-DASK-918, Brošura MK Željezara Sisak – Koksara Bakar

⁶² HR-DASK-918-III, Box 24, Div iz Bakarskog zaljeva, *Jedinstvo – tjednik SSRN Zajednice općine Sisak*, no. 1503, April 6th, 1978, p. 6.

⁶³ HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

⁶⁴ B. RAGUŽ, 2022, pp. 401–402.

Steelworks and to the Rijeka Municipality. It is important to emphasise that the monitoring was conducted for two different purposes: the Sisak Steelworks was primarily interested in the construction progress, while the Rijeka Municipality was focused on environmental protection and the impact on the town of Bakar. Reports prepared for the Sisak Steelworks revealed that the main issue with the foreign contractors was related specifically to the Otto Company. According to the director of the Coke Plant, the company based its plans on poor and incomplete geological and geomechanical assessments, which led to delays and project changes. For instance, the load plan for the boiler room had to be revised three times. Moreover, all such projects required nostrification, which often took a long time and delayed the start of construction.⁶⁵ Issues were also observed with domestic contractors, including poor work organisation, a lack of machinery, an insufficient workforce, delays in the delivery of material, a high number of workers quitting after receiving their wages, workers taking extended time off during holidays, and a lack of willingness to work on weekends despite good weather. Additionally, contractors frequently missed deadlines, unreliable subcontractors were chosen, collaboration with the Basic Organisations of Associated Labour (OOUR) was weak, and there was a shortage of protective and technical equipment necessary for the harsh winter conditions.⁶⁶ These problems caused significant delays, as the scope of the work was extensive. For example, the foundation of the coke battery alone required 15,000 cubic metres of gravel and 3,500 cubic metres of reinforced concrete.⁶⁷ By December 1976, all work by the foreign contractors had been completed, while the domestic contractors had finished around 80% of their tasks. However, it should be noted that some of the unfinished parts, such as the boilers and the foundation for the wastewater treatment plant, were critical for the operation of the Coke Plant.⁶⁸ In comparison, the wastewater treatment facility at the Sisak Steelworks was still in trial operation as late as the beginning of 1991.⁶⁹

During 1977, construction work intensified, and by September, all the tunnel elements were completed, with some already installed and others in the

⁶⁵ HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

⁶⁶ HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

⁶⁷ Koksara u brojkama, *Željezarin vjesnik*, May 28th, 1976.

⁶⁸ HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

⁶⁹ S. JOVANOVIĆ, Bolji radni uvjeti – veće uštede, *Jedinstvo*, Janury 31st, 1991, pp. 8–9.

process of being installed. The railway tracks for coal transportation and storage, along with other supporting elements, were also completed. Despite these advancements, significant delays persisted. Some of these delays were related to construction work, such as the installation of pylons, which could be made up for over time. However, delays in commissioning parts of the equipment for trial operations due to a lack of materials and adequate equipment could not be compensated for. Additionally, significant problems in work organisation remained, especially noticeable in large-scale projects such as the completion of the chimney.⁷⁰ Cost overruns also occurred due to the construction of additional facilities necessary for the plant's operation, such as expanding the electrical capacity during the final stages of construction.⁷¹ Furthermore, securing loans from banks was neither quick nor easy. This was primarily due to the long wait for approvals and final opinions, which caused work to slow to a minimum during certain periods.⁷² Regarding the project's financing in this phase, it's important to mention that due to significant delays and unsatisfactory quality of work, an agreement was reached with the main contractors, Otto and EPI, under which they would bear part of the losses caused by the lack of equipment for the chemical plant installers.⁷³

The final budget revision occurred in 1977, and according to the latest plans, the total construction cost of the Coke Plant was projected to be as high as 2,715 billion dinars. Given this amount, further borrowing was necessary. The financing was expected to come from 40% foreign loans, 35% domestic bank loans, 3% loans from domestic contractors, and a little over 21% from internal funds.⁷⁴ For comparison, in 1978, the OOUR "Čeličana" (Steel Mill) planned to refurbish the Siemens-Martin furnaces and reconstruct part of them to increase production and reduce maintenance costs, with the project expected to cost over 14.7 million dinars, entirely funded by the OOUR itself.⁷⁵ To provide a clearer picture of the construction process, the table below lists the major contractors and their roles in the project:

⁷⁰ HR-DASK-918-III, Box 4, Mjesečni izvještaj o stanju radova za mjesec rujan 1977.

⁷¹ HR-DASK-918-III, Box 26, Odobranje dodatnih sredstava za dovršenje Koksare Bakar, June 28th, 1978.

⁷² HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

⁷³ HR-DASK-918-III, Box 4, Mjesečni izvještaj o stanju radova za mjesec rujan 1977.

⁷⁴ Z. ČEPO 1978, p. 211.

⁷⁵ HR-DASK-918-III, Box 29, Tehno-ekonomska analiza – Rekonstrukcija troskovanja SM-2 peći, May 1979.

Table 1. List of Contractors

Company	Role
Dr. C. Otto, Bochum, Germany	Designer, Equipment supplier
Hoch-Tief, Essen, Germany	Designer
R. Končar, Zagreb, Yugoslavia	Designer, Project certification, Equipment supplier, Assembly works
Plan, Zagreb, Yugoslavia	Designer
IPZ, Zagreb, Yugoslavia	Designer
Geoexpert, Zagreb, Yugoslavia	Designer
Railway Design Bureau, Zagreb, Yugoslavia	Designer
Projekt, Zagreb, Yugoslavia	Designer
Rijekaprojekt, Rijeka, Yugoslavia	Designer
Hidroprojekt, Zagreb, Yugoslavia	Designer
INA Engineering, Zagreb, Yugoslavia	Designer
Vatroshtalna, Belgrade, Yugoslavia	Designer, Project certification, Construction works
Energoinvest TTU, Tuzla, Yugoslavia	Designer
Čelik, Križevci, Yugoslavia	Designer, Equipment supplier
Metalprojekt, Zagreb, Yugoslavia	Designer
Vlado Četković, Zagreb, Yugoslavia	Designer
Dalekovod, Zagreb, Yugoslavia	Designer
Faculty of Civil Engineering, Zagreb, Yugoslavia	Project certification
IPZ, Zagreb, Yugoslavia	Project certification
Tehprojekt, Rijeka, Yugoslavia	Project certification
Mavrovo, Skopje, Yugoslavia	Construction works
Tehnika, Zagreb, Yugoslavia	Construction works
Industrogradnja, Zagreb, Yugoslavia	Construction works
Pomgrad, Split, Yugoslavia	Construction works
Konstruktor, Rijeka, Yugoslavia	Construction works
Geological Institute, Ljubljana, Yugoslavia	Construction works
Palilula, Belgrade, Yugoslavia	Construction works
M.K. Željezara Sisak, Sisak, Yugoslavia	Construction works, Assembly works
Monting, Zagreb, Yugoslavia	Assembly works
Hidromontaža, Maribor, Yugoslavia	Assembly works
Vlado Četković, Zagreb, Yugoslavia	Assembly works
Elektroprimorje, Rijeka, Yugoslavia	Assembly works
Croatian Institute of Civil Engineering, Zagreb, Yugoslavia	Technological and construction controls
Đuro Đaković Institute, Zagreb, Yugoslavia	Technological and construction controls
Transjug, Rijeka, Yugoslavia	Transportation

(HR-DASK-918, Koksara Bakar, brochure)

The second group of problems that emerged was only just becoming apparent and was highlighted in the report about construction for the Rijeka Municipality, specifically in the section dedicated to environmental protection. It was noted that although the Coke Plant was being placed in an already highly industrialised area, great attention was being given to environmental protection. Various tests were conducted by the relevant scientific institutions, and all investments aimed at environmental protection were detailed. For example, nozzles were installed to wet the coal to prevent dust, as coal with 6% moisture content does not create dust, and the Coke Plant was committed to working with coal containing 9% moisture, which would completely eliminate any dust. Additionally, wagons for coal handling were purchased, and the unloading of coal would be carried out in enclosed spaces with extra filters, with particular attention given to the construction of the chimney. The report also covered the handling of wastewater and compensation for properties located on the Coke Plant's plateau.⁷⁶

The construction of the Coke Plant faced other challenges as well. For example, the Local Road Maintenance Fund of Rijeka sued the Coke Plant for damage to the roads caused by heavy trucks and machinery passing on the way to the plant. The Sisak Steelworks did not deny this but pointed out that other vehicles also caused damage to the Bakar-Vitoševo road and that it had already reached an agreement with the "Self-Managed Community of Interest"⁷⁷ and paid for earlier road repairs. However, the District Commercial Court in Rijeka did not consider this relevant and ordered the Coke Plant to pay an additional 7 million dinars to the "Self-Managed Community of Interest" for road repairs.⁷⁸

In October 1978, "Služba društvenog knjigovodstva" (State Accounting Service) requested that the Sisak Steelworks conduct a review of 20 projects, including the Coke Plant. However, since the Coke Plant was nearing completion and was expected to be finished within the allocated budget, it was decided that a review of the project was unnecessary,⁷⁹ allowing construction to proceed to completion.

The construction of the Coke Plant took four years, and the planned budget was exceeded by more than double, leading to revisions of investment plans. Several factors contributed to this. Firstly, changes in the foreign exchange rate significantly increased foreign debt. Additionally, customs duties and the prices

⁷⁶ HR-DASK-918, Informacija o izgradnji Koksare u Bakru, July 1976, pp. 4–6.

⁷⁷ "Samoupravna interesna zajednica".

⁷⁸ HR-DASK-918, Presuda: P-829/78-7.

⁷⁹ HR-DASK-918-III, Box 5, Revizije investicionih projekata, October 4th, 1978.

of domestic equipment and assembly services increased by over 30%. Finally, the scale of the work itself far exceeded the original plan. Extra work was required on the plateau, which needed further reinforcement, and much stronger foundations had to be built. As a result, an additional 631 million dinars were spent on these works.⁸⁰

Discussions regarding the financing of the Coke Plant continued even after it was put into trial operation. The Workers' Councils of the Steelworks unanimously supported the approval of additional funds to complete the plant, as well as additional borrowing to secure permanent working capital for its operation.⁸¹ The reason for such a decision was primarily the overrun of the budget allocated for construction, which required adjustments in the contributions of each individual Basic Organisation of Associated Labour in accordance with the previously mentioned Self-Management Agreement.⁸²

Production at the Coke Plant

The OOUR "Koksara Bakar" (the Bakar Coke Plant Basic Organisation of Associated Labour) listed coal processing and coke production as its primary activities upon registration. The secondary activities included the production of coke oven gas, raw tar from coal, and the production of crude benzol and naphthalene oil.⁸³ The Coke Plant hired its first 11 workers from the Sisak Steelworks in 1974,⁸⁴ followed by an additional 15 workers during the first quarter of 1975.⁸⁵ The workforce continued to grow, reaching 52 employees in 1976 and 171 workers by the following year,⁸⁶ with an average salary ranging from 5,100 to 5,462 dinars.⁸⁷ However, from the very start of staffing, the Coke Plant

⁸⁰ Z. ČEPO, 1978, p. 211.

⁸¹ HR-DASK-918-III, Box 26, Poziv na sastanak Radničkog savjeta OOUR-a Čeličana, July 28th, 1978.

⁸² HR-DASK-918-III, Box 26, Odobravanje dodatnih sredstava za dovršenje Koksare Bakar, July 28th, 1978.

⁸³ HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1982., March 1983, p. 4.

⁸⁴ HR-DASK-918, Izvješća o poslovanju 1974., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1974., February 1975, p. 53.

⁸⁵ HR-DASK-918, Izvješća o poslovanju 1975., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-III. 1975., May 1975, p. 28.

⁸⁶ HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak od I. do XII. mjeseca 1977., February 1978, p. 93.

⁸⁷ HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak od I. do XII. mjeseca 1977., February 1978, p. 100.

encountered challenges. Due to the high employment rate in the Rijeka region, there was little interest in jobs for both qualified and unqualified workers. As a result, the HR department at the Sisak Steelworks was forced to send workers from Sisak and Banovina for retraining. Around 70 workers were employed by the Steelworks during the plant's construction in 1976, with an additional 30 workers undergoing retraining.⁸⁸ Some workers voluntarily chose to relocate from Sisak to Bakar. For example, a story was published about one worker who could not obtain an apartment in Sisak, as he was low on the housing priority list, but solved his housing issue by moving to Bakar.⁸⁹

On January 19th, 1978, a ceremony was held to fire up the coke battery, initiating the technological process that was intended to last over 25 years.⁹⁰ The Coke Plant in Bakar officially began operations with a grand opening ceremony on May 31st, 1978, inaugurated by the President of the Presidency of the Socialist Republic of Croatia, Jakov Blažević.⁹¹ Production in 1978 started modestly and fell short of expectations. The plan was to produce 450,000 tons of coarse coke, but only 227,779 tons were produced. Similarly, the production of fine coke and tar was below target. The production of coke oven gas was the exception, exceeding the plan by more than 20,000 cubic metres.⁹²

A quality test was conducted in early June 1978 to ensure the quality of the coke at the start of production. As a result, June 5th, 1978, can be considered the date when coke from Bakar began to be used in the Sisak Steelworks. The results were compared with coke from the Lukavac Coke Plant, which had been the Steelworks' regular supplier. Representatives from two of the largest steelworks, those from Jesenice and Smederevo, also observed the testing, showing interest in coke from Bakar.⁹³ The test results confirmed that the coke from Bakar met all the necessary parameters and, in some respects, such as consumption and temperature development, was even of higher quality than its competitor. On the downside, it produced more ash than expected, which was attributed to potential production issues, such as insufficient quenching of the coke on the coke ramp.⁹⁴

⁸⁸ HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976.

⁸⁹ Kad bi svi..., *Željezarin vjesnik*, April 27th, 1979.

⁹⁰ Potpaljene peći koksne baterije, *Željezarin vjesnik*, January 27th, 1978.

⁹¹ HR-DASK-918, Pozivnica na svečano puštanje u rad Koksare Bakar.

⁹² HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak za 1978. godinu, March 1979, p. 21.

⁹³ HR-DASK-918, Box 45, Izvještaj o uporabi koksa proizvedenog u Koksari Bakar, July 19th, 1978, pp. 1–2.

⁹⁴ HR-DASK-918, Box 45, Izvještaj o uporabi koksa proizvedenog u Koksari Bakar, July 19th, 1978, p. 8.

With the launch of the first phase of production, the Coke Plant ensured a sufficient supply of coke for Yugoslavia's needs, thereby completely eliminating the necessity for imports,⁹⁵ thanks to its annual capacity of 850,000 tons.⁹⁶ Unfortunately, the business analysis for 1978 did not provide specific data about the number of Coke Plant workers. Instead, they were grouped within the Workforce Organisation for Metallurgical and Rolling Mill Production, to which the Coke Plant belonged according to the 1978 organisational system.⁹⁷ This Workforce Organisation had a little over 4,000 employees, making it the largest within the Sisak Steelworks Combine, which had slightly over 11,000 employees in total.⁹⁸ However, other sources indicate that the Coke Plant was expected to employ 435 workers upon its opening.⁹⁹

Table 2. Production of coke, tar, and coke gas in the early years of operation

Year	Coke production (tons)	Tar production (tons)	Coke gas production (000 Nm ³)
1978	259,231	9,189	0
1979	668,228	29,000	16,148
1980	795,149	32,000	28,139
1981	834,232	33,193	57,883
1982	854,000	33,907	66,705
1983	856,500	32,683	51,811
1984	857,147	37,782	31,534

(HR-DASK-918, Izvješća o poslovanju 1984., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1984., March 1985, p. 49)

According to Table 2, it is evident that the medium-term coke production plan was exceeded in 1982, yet production continued to face challenges. The primary issues were related to the untimely delivery of coal and its moisture content. As a result, the moisture content of the coke often exceeded the normative value of 6%, fluctuating between 6.5% and as high as 11%.¹⁰⁰ Despite meeting the

⁹⁵ HR-DASK-918-III, Box 24, Div iz Bakarskog zaljeva, *Jedinstvo – tjednik SSRN Zajednice općine Sisak*, no. 1503, April 6th, 1978.

⁹⁶ HR-DASK-918-III, Box 24, Div iz Bakarskog zaljeva, *Jedinstvo – tjednik SSRN Zajednice općine Sisak*, no. 1503, April 6th, 1978.

⁹⁷ HR-DASK-918.IX, Box 23, Statut radne organizacije Metalurške i valjaoničke proizvodnje, September 1978, art. 2.

⁹⁸ HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak za 1978. godinu, March 1979, pp. 69-71.

⁹⁹ Koksara u brojevima, *Željezarin vjesnik*, May 28th, 1976.

¹⁰⁰ HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1982., March 1983, p. 47.

production plan for 1982, coke production was identified as one of the activities experiencing "fatigue" in the business analysis, as the Sisak Steelworks as a whole fell short of its overall production target by just over 4%.¹⁰¹ On the other hand, the export of coke was the main driver of increased "external realisation," which rose by 23% in the domestic market and by a remarkable 112% in the international market in 1982.¹⁰² Production continued to grow in the following years, and in 1984, the Coke Plant achieved 101.4% of its plan.¹⁰³ However, given that the plant was already operating beyond full capacity, significant growth in the future was unlikely.¹⁰⁴ The major issue in production development was the coke oven gas, which faced increasing problems with market demand.¹⁰⁵ The demand for coke on the domestic market also declined in the second half of the 1980s, further contributing to the negative trends and sales challenges faced by the Steelworks' products.¹⁰⁶ Simultaneously, production began to decrease, and for the first time since 1981, production fell below the target, amounting to 653,145 tons in 1987.¹⁰⁷ In 1988, the Coke Plant produced slightly over 740,000 tons of coke,¹⁰⁸ and the following year, production reached 778,783 tons, even exceeding the annual plan.¹⁰⁹ Despite this, the Coke Plant continued to report negative business results, primarily due to inadequate selling prices for coke and other products, difficulties in collecting receivables, and ongoing issues with loans.¹¹⁰ In 1989, production at the Steelworks increased by more than 5%, partly due to the improved utilisation of the Coke Plant's capacities.

¹⁰¹ HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1982., March 1983, p. 188.

¹⁰² HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1982., March 1983, p. 190.

¹⁰³ HR-DASK-918, Izvješća o poslovanju 1985., Poslovni izvještaj SOUR MK "Željezara Sisak" za 1985. godinu, May 1986, p. 105.

¹⁰⁴ HR-DASK-918, Izvješća o poslovanju 1984., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1984., March 1985, p. 49.

¹⁰⁵ HR-DASK-918, Izvješća o poslovanju 1984., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1984., March 1985, p. 50.

¹⁰⁶ HR-DASK-918, Izvješća o poslovanju 1987., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1987., March 1988, pp. 118–119.

¹⁰⁷ HR-DASK-918, Izvješća o poslovanju 1987., Poslovni izvještaj SOUR MK "Željezara Sisak" 1987, March 1987, Prilog 1.

¹⁰⁸ HR-DASK-918.IX, Box 17, Izvršenje plana proizvodnje za IV kvartal I.-XII. 1989. godine, January 26th, 1989, p. 3.

¹⁰⁹ HR-DASK-918., Box 216, Izvještaj o poslovanju SOUR MK "Željezara Sisak" za I.-XII 1989. godine, March 1990, 3 - Proizvodnja i produktivnost.

¹¹⁰ HR-DASK-918, Informacija o provođenju zaključaka sa 112. sjednice po pitanju Analize uzroka negativnog rezultata OOUR Koksare Bakar, May 30th, 1989.

Additionally, adjustments in procurement values made the Coke Plant one of the Basic Organisations of Associated Labour (OOUR) with the highest growth.¹¹¹

During most of the production, although the coke met standards in terms of sulphur and ash content, its high moisture levels caused a 0.5% drop in the productivity of blast furnaces and a 0.3% increase in fuel consumption during its initial years of use.¹¹² However, even more than the decline in productivity, the poor quality of the coke impacted the quality of products, reducing the proportion of those that could be classified as first class.¹¹³

The coal used for coke production was imported, with the majority coming from the USSR and a smaller, higher-quality portion from the USA.¹¹⁴ Annually, more than 1,100,000 tons of coal were imported, typically with a ratio of about 85% from the USSR and 15% from the USA.¹¹⁵ In years when more coal from the USSR was used, the quality of the coke decreased, resulting in less efficient coal usage, though it had a positive impact on tar production.¹¹⁶ In addition to the previously mentioned coke quality testing, other tests were conducted at the Coke Plant, particularly in the areas of energy utilisation and raw material savings. One of the proposed procedures was the mixing of coals of different qualities, which would save on the higher-quality coal while maintaining a sufficient overall quality of the blend that could be used in production.¹¹⁷

Operations of the Coke Plant from the start of production until 1990

The year 1978 marked a recovery for both domestic and international economic activities, which had a positive impact on the growth rates at Sisak Steelworks, resulting in an increase of over 16%, largely due to the activation

¹¹¹ HR-DASK-918, Izvješća o poslovanju 1989., Analiza poslovanja SOUR MK "Željezara Sisak" za I-XII. 1989. godine., March 1990, p. 10.

¹¹² HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I-XII. 1982., March 1983, p. 47.

¹¹³ HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I-XII. 1982., March 1983, p. 50.

¹¹⁴ HR-DASK-918, Izvješća o poslovanju 1985., Poslovni izvještaj SOUR MK "Željezara Sisak" za 1985. godinu, May 1986, p. 105.

¹¹⁵ HR-DASK-918, Izvješća o poslovanju 1984., Analiza poslovanja SOUR MK "Željezara Sisak" za I-XII. 1984., March 1985, p. 51.

¹¹⁶ HR-DASK-918, Izvješća o poslovanju 1984., Analiza poslovanja SOUR MK "Željezara Sisak" za I-XII. 1984., March 1985, p. 50.

¹¹⁷ HR-DASK-918, Box 45, Predgrijavanje uloška (mješavine) za koksnu bateriju, February 1984, pp. 1–2.

of the Coke Plant.¹¹⁸ However, despite this, the Coke Plant recorded losses as early as 1978.¹¹⁹ These losses were significant, with the Coke Plant generating a revenue of 437,630,354.40 dinars while incurring expenses of 582,104,205.56 dinars, resulting in a total loss of 144,473,851.16 dinars.¹²⁰ As a result, in May 1979, the first plan for loss recovery was adopted. The plan called for more careful utilisation of the Coke Plant's capacities, improved technological and technical processes, adjustments in wages based on work efficiency, and a better assessment and adaptation to market conditions to allow for quick responses. Additionally, external support from entities such as the Joint Reserves Fund and banks was sought.¹²¹ According to the recovery plan, the Steelworks would cover 60 million dinars, the Republican Joint Reserves Fund would cover another 60 million dinars, while the Joint Reserves of the Rijeka region would contribute 3 million, and the Joint Reserves of the Sisak region would provide 2 million dinars. The remaining amount of 172,704,274 dinars would be covered through bank loans. In line with the earlier Self-Management Agreement on pooling resources for the construction of the Coke Plant in Bakar, the funds that the Sisak Steelworks needed to secure were sourced from individual Basic Organisations of Associated Labour (OOUR). The largest burden fell on the OOUR "VTG" and "ŠC," which contributed almost 31% of the funds, or 18,558,000 dinars. The OOUR "VBC" contributed 25.8%, the OOUR "Čeličana" 22.23%, the OOUR Cold Processing 13.40%, and the OOUR Blast Furnaces contributed the least at 7.64%.¹²²

Over time, these negative business trends began to change, and in the first half of the 1980s, the Coke Plant began to operate profitably.¹²³ In 1981, the Coke Plant generated a revenue of 4,733,285,000 dinars, and the revised plan for the following year projected a revenue of 6,038,881,000 dinars,

¹¹⁸ HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak za 1978. godinu, March 1979, p. 20.

¹¹⁹ HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak za 1978. godinu, March 1979, p. 84.

¹²⁰ HR-DASK-918, Izvješća o poslovanju 1977-1978, Poslovni izvještaj uz Završni račun za 1978. godinu, February 1979, p. 57.

¹²¹ HR-DASK-918, Radna verzija analitičke osnove za izradu sanacijskog programa OOUR-a Koksara Bakar – III razrada, February 1979, pp. 37–39.

¹²² HR-DASK-918-III, Box 7, Odobrenje sredstava za sanaciju gubitaka OOUR-a Koksara Bakar, May 31st, 1979.

¹²³ HR-DASK-918, Srednjoročni planovi razvoja, Prijedlog plana razvoja SOUR MK "Željezara Sisak" za razdoblje 1986.-1990. godina – Dokumentacijska osnova, December 1986, Table 9.1.

however, a revenue of 6,618,674,000 dinars was actually achieved.¹²⁴ In this analysis, the operations of the Coke Plant need to be contextualised within the larger framework of the steel mill, as well as within the broader economic trends in Yugoslavia during the 1980s. This period was marked by an inability to agree on the country's future development, leading some experts to warn of the emergence of "political factories," false capacities and norms, and further market destabilisation. At the same time, industries and the economy were expected to allocate increasing amounts of money to the state.¹²⁵ According to I. Goldstein, this was essentially a way of buying social peace, which was always teetering on the brink of disaster. Additionally, the unsustainability of foreign borrowing became increasingly evident.¹²⁶ This situation also affected the steel mill, which, from the early 1980s, began struggling with poor liquidity, primarily attributed to its failure to meet obligations to commercial banks. These debts were largely related to loans for the construction of the Coke Plant, for which foreign currency funds were not secured in time to repay debts or to purchase coal.¹²⁷ This issue persisted into the second half of the decade, as significant declines were recorded, and 1989 was a year of very poor liquidity for the Sisak Steelworks. This was caused by both collection issues – only 65% of receivables were collected – and by taking on additional loans, exacerbated by rampant inflation.¹²⁸ In the first quarter of 1989, 21 OOURs recorded a decline, including the Coke Plant.¹²⁹ The Coke Plant's losses were particularly significant, exceeding the planned loss for 1989 by 188%. Several factors contributed to this, including the fact that coke prices were too low to cover production costs, low international market prices for tar, and the processing for the Western market. In addition, revaluation costs, interest rates, and exchange rate differences had a significant impact.¹³⁰ This trend continued throughout the year, and by the end of the first half of 1989, 10 OOURs were

¹²⁴ HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1982., March 1983, p. 77.

¹²⁵ I. ŠIFTER, 1984, pp. 60–62.

¹²⁶ I. GOLDSTEIN, 2008, p. 595.

¹²⁷ HR-DASK-918, Izvješća o poslovanju 1983., Poslovni izvještaj SOUR-a MK "Željezara Sisak" za 1983., April 1984, p. 217.

¹²⁸ HR-DASK-918, Analiza financijskog položaja kombinata u 1989. godini, April 1990.

¹²⁹ HR-DASK-918, Izvješća o poslovanju 1989., Analiza poslovanja SOUR MK "Željezara Sisak" za I. kvartal 1989. godine., May 29th, 1989, p. 2.

¹³⁰ HR-DASK-918, Izvješća o poslovanju 1989., Analiza poslovanja SOUR MK "Željezara Sisak" za I. kvartal 1989. godine., May 29th, 1989, p. 3.

still recording losses, with the Coke Plant accounting for approximately 92% of the total losses.¹³¹

It is interesting to note, in the context of evaluating the Coke Plant's performance, that the Rijeka Chamber of Commerce nominated the Coke Plant for the City of Rijeka Award in 1984. This nomination was based, on the one hand, on the plant's exceptional production results, which managed to overcome numerous challenges. On the other hand, the Coke Plant greatly supported the local economy and the companies with which it collaborated.¹³²

Development plans for the Coke Plant

The Coke Plant was incorporated into the overall development plans and projections of the Sisak Steelworks very early on. In fact, as early as 1976, two years before it began trial operations, the Coke Plant was already included in the projections of the Workers' Health Protection Programme, which allocated funds for worker vaccinations, meals at the infirmary, and similar provisions.¹³³

In 1976, the Hotel Metalurg, owned by the Sisak Steelworks, was opened in Bakar. The hotel was intended to house workers and builders of the Coke Plant, as well as tourists. The Sisak Steelworks paid 530 million old dinars for the purchase and 470 million dinars for its renovation.¹³⁴ The Hotel Jadran, which had contracts with the Coke Plant for employee meals, saw the contracts unilaterally terminated by the Coke Plant in 1989, as noted in a hotel memorandum, because of issues regarding meal preparation.¹³⁵ There were also plans for the construction of a health station, which was to be jointly funded by the local community and the Coke Plant, although there were disputes over the station's location.¹³⁶

It is important to note that investments in the Coke Plant continued even after its completion. From 1981 to 1985, a total of 84,337,000 dinars were invested,¹³⁷ with 55,038,000 dinars allocated to the construction of a gas pipeline

¹³¹ HR-DASK-918, Izvješća o poslovanju 1989., Analiza poslovanja SOUR MK "Željezara Sisak" za I. polugodište 1989. godine., July 29th, 1989, p. 2.

¹³² HR-DASK-918, Zaključak Privredne komore Rijeke, February 29th, 1984.

¹³³ HR-DASK-918-III, Box 20, Prošireni program zdravstvene zaštite radnika, February 6th, 1972.

¹³⁴ Otvoren hotel u Bakru, *Željezarin vjesnik*, December 10th, 1976.

¹³⁵ HR-DASK-918, Dopis broj: 637/89-6020, July 26th, 1989.

¹³⁶ HR-DASK-918, Izgradnja zdravstvene stanice u Bakru, August 17th, 1977.

¹³⁷ HR-DASK-918, Izvješća o poslovanju 1985., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1985., March 1986, Table 1.1.

connecting the Coke Plant to the Urinj Refinery.¹³⁸ This pipeline, which began trial operations in 1983, was co-financed by INA to allow coke oven gas to be used in the refinery's facilities.¹³⁹ In the second half of the 1980s, investments exceeding 207,000,000 dinars were planned. These projects led to cost overruns in maintenance budgets in 1986, and the work continued into 1987.¹⁴⁰ In 1988, additional coke storage facilities and a service station were activated, resulting in a significant increase in the overall capital growth of the Steelworks.¹⁴¹

The largest unrealised planned investments in the Coke Plant were related to its expansion. Shortly after the Coke Plant began operations in the late 1970s, discussions started about increasing production capacity, specifically focusing on a second phase of construction.¹⁴² These were serious talks held with foreign partners. The second phase was intended to double the plant's productivity from 850,000 tons to an impressive 1,700,000 tons of coke annually,¹⁴³ with the creation of an additional 200 jobs.¹⁴⁴ Such negotiations were entirely logical, as the second phase was planned to focus on producing and processing coke for foreign markets. Additionally, the second phase would further increase the production of by-products, which also required identifying potential buyers.¹⁴⁵ The foreign investor that the Sisak Steelworks was actively seeking was expected to fully participate in the construction of the second phase, while the Steelworks would contribute the facilities built during the first phase.¹⁴⁶ The Steelworks management engaged in numerous discussions and official trips to neighbouring countries to find a potential investor, and they also established contacts with companies from the USA and elsewhere. However, finding an investor was not easy, as demonstrated by the withdrawal of one of the most interested parties,

¹³⁸ HR-DASK-918, Izvješća o poslovanju 1985., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1985., March 1986, p. 15.

¹³⁹ HR-DASK-918, Izvješća o poslovanju 1983., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1983., March 1984, p. 1.

¹⁴⁰ HR-DASK-918, Izvješća o poslovanju 1986., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1986., March 1987, p. 128.

¹⁴¹ HR-DASK-918, Izvješća o poslovanju 1988., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1988., March 1989, p. 10.

¹⁴² HR-DASK-918, Zapisnik sastanka – Druga faza izgradnje Koksare Bakar, July 26th, 1976.

¹⁴³ HR-DASK-918, Skraćeni investicioni program II faze izgradnje Koksare, March 1978, p. 3.

¹⁴⁴ HR-DASK-918, Skraćeni investicioni program II faze izgradnje Koksare, March 1978, p. 28.

¹⁴⁵ HR-DASK-918, Informacija – Mogućnosti proizvodnje nusprodukata u Koksari Bakar, April 1980.

¹⁴⁶ HR-DASK-918, Koksara Bakar – 2. faza izgradnje, January 18th, 1982.

the company Voest. Voest pulled out just before the final agreement, opting instead to modernise its coke plant in Linz, making the second phase of the Bakar Coke Plant less attractive.¹⁴⁷ Despite this setback, the efforts did not stop. It was decided to commission a study to evaluate the feasibility of constructing the second phase of the Coke Plant. Partners from the USA were found to help finance the study, contributing \$475,000, and the study itself was to be conducted by the Pittsburgh-based company Dravo.¹⁴⁸ The Steelworks development plan for 1986 to 1990 also included the Coke Plant. It was planned that between 1986 and 1988, a facility for extracting raw benzene from coke oven gas would be built, with the intention of selling it on the international market. Additionally, a facility for extracting sulphur from coke oven gas was planned, which would allow for broader use of the gas. A new coke battery with a capacity of 850,000 tons per year was also planned, with completion set for 1992. By 1995, the construction of a direct reduction iron ore facility was expected, with financial participation from the Yugoslav railways.¹⁴⁹ The workforce projection was constantly rising. In 1985, there were 572 employees, and it was expected that the number would exceed 600 by 1990.¹⁵⁰

Another project, about which little is known, was the plan to supply Rijeka with gas and heating using coke oven gas from the Coke Plant in Bakar. A study was conducted to assess the viability of this project, and it revealed that coke oven gas, in terms of both composition and calorific value, was superior to city gas. After basic cleaning, it could be used for industrial boilers and heating plants, and after fine purification, it could serve as a form of "remote gas," which has all the characteristics of city gas, similar to how it was used in other European cities. The study also highlighted the need for the construction of the necessary infrastructure and coordination with other industries, particularly the Urinj Thermal Power Plant. It also stressed that, given the plans for the second phase of the Coke Plant's construction, a decision on the gasification

¹⁴⁷ HR-DASK-918, Bilješka o saopćenju predstavnika VOEST-a u vezi s izgradnjom II. faze Koksare Bakar, January 18th, 1980.

¹⁴⁸ HR-DASK-918, Ugovor o izradi studije o tehnološko-ekonomskoj opravdanosti proširenja Koksare i Luke

¹⁴⁹ HR-DASK-918-III, Box 16, Prijedlog Zajedničkih osnova za pripremu i realizaciju SP razvoja OOUR-a i SOOUR-a MK "Željezara Sisak" Sisak za razdoblje od 1986. do 1990. godine, p. 5.

¹⁵⁰ HR-DASK-918, Srednjoročni planovi razvoja, Prijedlog plana razvoja SOUR MK "Željezara Sisak" za razdoblje 1986.-1990. godina – Dokumentacijska osnova, December 1986, Table 7.1.

and heating project could not be delayed for too long.¹⁵¹ A meeting was held between representatives from the Coke Plant and the company Voplin from Rijeka to discuss the potential plans for using the gas. While representatives of the company generally supported the idea, they raised some concerns, the most significant being that the gas from the Coke Plant would need to be used continuously and in approximately the same quantities.¹⁵²

The Coke Plant as a central environmental issue

As early as 1973, even before construction began, media reports about the Coke Plant started to surface. An article titled "Industrial Storm over Kvarner" was published in *Vjesnik u srijedu*, sparked by the opposition of the local Bakar community to the construction of the Coke Plant and their generally negative attitude towards industrial development. The local population had different ideas for the economic development of Bakar. The president of the local community, Ivan Pintar, expressed the views of Bakar's residents in the article, noting their scepticism towards the Coke Plant due to previous negative experiences with the port and the former soot plant (Čadara). Pintar also highlighted the proximity of industrial plants to the city centre and other facilities, such as the student dormitory. Bakar's citizens found support in some politicians, including Ivo Margan, president of the Republican Conference of SSSRN (Socialist Alliance of Working People) and a native of Bakar. In his article *Reconsider the Coke Plant Project in Bakar*, Margan expressed concerns about pollution, particularly highlighting the coke oven gas, which he said absorbs large amounts of oxygen, making life in Bakar unbearable. Margan also emphasised in another appearance that the local population, both in Bakar and the neighbouring municipalities, had not been consulted, nor had their opinions been taken into account. There were also politicians with different views. For example, Neda Andrić, president of the Municipal Assembly of Rijeka, pointed out that a special assembly commission had been formed to monitor the construction of the Coke Plant. She mentioned that the investor had already been asked to submit previous environmental studies and would be required to conduct comprehensive environmental impact assessments in the future. Andrić emphasised that, globally, such industries are built near the sea for ease of transportation, and the Coke Plant should be viewed beyond individual or personal interests. Additionally, Rijeka was one of the first

¹⁵¹ HR-DASK-918, Studija mogućnosti plinifikacije i toplifikacije grada Rijeke pročišćenim koksanim plinom, May 1980.

¹⁵² HR-DASK-918, Zapisnik sa sastanka održanog 11. studenog 1980, November 11th, 1980.

municipalities to establish a commission for environmental protection, which Andrić saw as a corrective measure.¹⁵³ On the other hand, the public in Sisak were informed that the Coke Plant would be one of the most modern facilities in terms of environmental protection and that great attention had been paid to this issue from the very beginning of construction, with contracts already signed for studies and works.¹⁵⁴ This focus continued in the following years, and it was noted that "environmental protection has been at the forefront since the start of the Coke Plant's construction. Much has been done, in fact, more than what is typical for such projects, to prevent any potential issues of air, sea, or land pollution."¹⁵⁵ Vilim Mule, who was president of the Municipal Assembly of Rijeka during the Coke Plant's launch in 1978, expressed his gratitude to the Sisak Steelworks and emphasised that all challenges, particularly environmental ones, had been successfully overcome. He concluded that the Coke Plant was a production facility of great value for the entire Rijeka region.¹⁵⁶ To further appease the public, the Coke Plant, in agreement with the Republican Institute for Nature Protection, undertook reforestation efforts between the plant and Bakar.¹⁵⁷

In 1986, the Coke Plant once again faced legal action, this time due to air pollution. In its defence, the Sisak Steelworks argued that even though there had been faults in the design and the quality of materials used for the facility, particularly in the equipment for ammonia burning and biological wastewater treatment, the contractor responsible for the work, Dr C. Otto, had been notified of these issues and had subsequently rectified the deficiencies. The Sisak Steelworks also pointed out that air pollution levels had not worsened and that the Coke Plant was investing 50 billion "old" dinars in environmental protection, with additional plans to further enhance its environmental safeguards.¹⁵⁸

Eleven years after Vilim Mule's statement, the Rijeka Municipality, through the Executive Council and the Committee for the Protection and Improvement of the Environment, submitted a request to all municipal councils for the closure of the Coke Plant. This decision was based on the findings of a special working group that had conducted an exhaustive analysis of the situation at the Coke Plant. The group concluded that while significant technical changes

¹⁵³ HR-HDA-2031, Box 3625, N. PRELOG, 1973, pp. 17–20.

¹⁵⁴ Počinje gradnja Koksare, *Željezarin vjesnik*, August 8th, 1974.

¹⁵⁵ Puna pažnja zaštiti čovjekove okoline, *Željezarin vjesnik*, May 28th, 1976.

¹⁵⁶ Značajno uveličavanje ekonomskih potencijala Rijeke, *Željezarin vjesnik*, June 9th, 1978.

¹⁵⁷ Puna pažnja zaštiti čovjekove okoline, *Željezarin vjesnik*, May 28th, 1976.

¹⁵⁸ HR-DASK-918, Pismena obrana okrivljene pravne osobe, June 18th, 1986.

could improve conditions, the plant would still remain a major polluter. The Coke Plant was blamed not only for air pollution but also for water pollution and waste disposal issues.¹⁵⁹

A month before these opinions were issued, the Sanitary Inspectorate of the Republican Committee for Health and Social Welfare ordered the Coke Plant to implement several changes, such as using chemical agents for coal transportation and storage, ensuring the proper functioning of the ammonia burning plant, and more.¹⁶⁰ Additionally, in October 1989, the gas holder at the plant experienced a structural failure, causing gas to escape. Although repairs were made, a dispute arose between the Coke Plant and fire safety inspectors, who claimed that the repairs were inadequate.¹⁶¹ This incident underscored the ongoing misunderstanding between both sides and the difficulty in reaching a mutual agreement.

The joint decision by the Executive Council and the Committee concluded that air pollution levels in the municipality remained unsatisfactory, that inspections were insufficient, and that even if the Coke Plant implemented the required environmental measures, its technological processes would continue to make it a significant polluter of the Rijeka region. Therefore, as the first point of the Air Quality Improvement Program for the Rijeka Municipality, the Executive Council of the Parliament of the Socialist Republic of Croatia was asked to pass a decision to shut down the Coke Plant by December 31st, 1991. Interestingly, none of the other points in the programme proposed such drastic measures. For instance, point 5 called for relocating the facilities of INA and the Metallographic Complex from the city centre, but there was no mention of shutting them down.¹⁶² The difference in criteria may have had multiple reasons. For example, *Novi list* reported that INA had not yet been relocated from central Rijeka because it was suing the state for \$22 million in losses.¹⁶³ What is particularly surprising in this situation is the lack of interest from the public and media in Sisak. The Sisak daily newspaper reported about the issue with only a brief article in the left corner of the front page, titled *Surprised in Sisak*.¹⁶⁴

¹⁵⁹ HR-DASK-918, Informacija Radne grupe za ocjenu stanja u "Koksari" s prijedlogom mjera, October 9th, 1989.

¹⁶⁰ HR-DASK-918, Rješenje broj: UP/I-034-03/89-03, September 28th, 1989.

¹⁶¹ HR-DASK-918, Izvještaj o sanaciji plinospreme, October 5th, 1989.

¹⁶² HR-DAS-918, Program mjera o poboljšanju kvalitete zraka na području općine Rijeka, October 16th, 1989.

¹⁶³ HR-DASK-918, B. MIJIĆ, Koksara pred zatvaranjem?, *Novi list*, October 17th, 1989, pp. 2–3.

¹⁶⁴ U Sisku iznenađeni, *Jedinstvo*, October 26th, 1989, cover page.

On October 20th, 1989, the Workers' Council of Coke Plant passed a resolution in response to the situation. In their meeting, they acknowledged the concerns of the citizens of Bakar and called on all responsible parties in the Sisak Steelworks to work towards preventing pollution, ensuring that emissions do not exceed the levels outlined in the project documentation. However, they also criticised the actions of the Rijeka Municipality, labelling them as unilateral and premature. The Workers' Council argued that the Coke Plant was neither the sole nor the largest polluter in the region, and they demanded equal treatment to that of other industries. They emphasised that they, too, were citizens of the Rijeka Municipality with a vested interest in living in a healthy environment. They also repeated that as early as 1985, the Workers' Council had initiated efforts to secure additional funds for environmental protection.

In their address, the Council also raised concerns about the potential consequences of shutting down the plant, particularly the need to secure employment for the workers and find funds to repay the loans. The workers requested a postponement of the discussion regarding the decision before the Municipal Assembly while also expressing two very troubling sentiments. The first was that they did not feel they were being treated equally as other citizens, and the second was the implication that "the proposal to close the Coke Plant seems to serve a purpose beyond ecological concerns."¹⁶⁵ The Sisak Steelworks echoed this sentiment, warning of a potential "non-ecological" agenda in their letter to the Rijeka Municipal Assembly. The Steelworks deemed the proposal to amend the Municipal Spatial Plan, which called for changing the land use designation of the area where the Coke Plant was located – essentially removing its industrial zoning – illegal, especially since the municipality sought to implement the changes urgently.¹⁶⁶ In response to the situation, the Workers' Council of the Steelworks accepted Rijeka Municipality's Air Quality Improvement Programme, along with the findings and recommendations of the relevant inspections. However, given the assessment from the Institute for Medical Research in Zagreb, which stated that the health of the residents of Bakar Bay was not endangered, the Council proposed that Rijeka Municipality delay its decision to close the plant.¹⁶⁷ To further address the situation, a Working

¹⁶⁵ HR-DASK-918, Zaključci Radničkog savjeta OOUR-a Koksara doneseni na 31. sjednici, October 20th, 1989.

¹⁶⁶ HR-DASK-918, Izmjena prostornog plana, November 6th, 1990.

¹⁶⁷ HR-DASK-918, Rasprava o zahtjevu Izvršnog vijeća Skupštine Općina Rijeka za zatvaranje Koksare Bakar, October 23rd, 1989.

Group was established to protect the rights and interests of the OOUR Bakar Coke Plant and the Steelworks, led by Antun Čavčić.¹⁶⁸

The Sisak Steelworks responded to the ongoing controversy by issuing letters and public statements aimed at both its workers and the general public, insisting that the public was being misinformed. One article to which the Steelworks reacted strongly was published in *Novi list* on November 14th, 1989, titled *Poisoners as Falsifiers*. The Sisak Steelworks deemed the article full of attacks and insults without any evidence, as it described the Steelworks and its management as "violent-minded falsifiers" and labelled their policies as "perfidious and aggressive political games played by the Sisak lobby."¹⁶⁹

In one of its statements, the Steelworks emphasised that the Coke Plant had already adopted an Environmental Protection Measures Programme in 1980 and had since made several improvements. These included the reconstruction of the ammonia removal facility, improvements to the combustion regulation system, and upgrades to the sewage system.¹⁷⁰ The Steelworks also reflected on the entire "lifespan" of the Coke Plant, from its construction and adherence to all standards to its significant contribution to employment in the Rijeka region.¹⁷¹ The *Novi list* article also pointed out that the Coke Plant was a relatively minor contributor to pollution, accounting for only 12% according to some estimates, far behind the Refinery, the Thermal Power Plant and others. The article questioned why the Rijeka Municipality did not apply the same standards to other polluters and whether the campaign against the Coke Plant was simply "flirting with the public."¹⁷²

The Coke Plant was even cited in professional literature at the time as an example of the notion that it is permissible to degrade the quality of life to generate income, which could then be used to mitigate the damage. However, as the evidence shows, this was not the guiding principle behind the Coke Plant's construction.¹⁷³ This view persists to this day, with some authors suggesting that the media coverage following the plant's opening marked the beginnings of environmental activism.¹⁷⁴ The basis for such a view can partly be found in the

¹⁶⁸ HR-DASK-918, Odluka Poslovnog odbora Kombinata, November 10th, 1989.

¹⁶⁹ HR-DASK-918, Dopis Novom listu, November 27th, 1989.

¹⁷⁰ HR-DASK-918, Saopćenje Poslovnog odbora Kombinata povodom zahtjeva Izvršnog vijeća Skupštine Općine Rijeka za zatvaranjem Koksare Bakar, October 20th, 1989.

¹⁷¹ Neprihvatljiv zahtjev, *Željezarin vjesnik*, November 3rd, 1989.

¹⁷² E. STOJČIĆ, Koksara je riječko čedo, *Novi list*, November 3rd, 1989.

¹⁷³ F. VANČINA, 1982, p. 16.

¹⁷⁴ W. KRAŠIĆ, 2017, p. 139.

fact that the mid-1980s was generally marked, on the one hand, by a legitimacy crisis of the system at nearly all levels and, on the other, by the rise of the environmental movement.¹⁷⁵ The activists at the time were primarily focused on the anti-nuclear movement but also on spontaneous protests and the organisation of citizens, with a particular emphasis on the role of young people in addressing the increasingly accumulating environmental problems.¹⁷⁶ This periodisation would certainly support the argument that the Coke Plant played a significant role in raising environmental awareness, at least at the local level. However, it is important to note that there have not yet been studies focused on environmental activism in Bakar, the wider Rijeka area, or broader regions that could confirm this view. Such a situation is not surprising, as research into the environment, its protection, and environmental movements in Eastern Europe is still in its very early stages.¹⁷⁷

Supporting the questioning of environmental activism's engagement in this case is the fact that, even when it came to the potential closure of the Coke Plant ("Koksara"), at least through inspections, nothing happened. As of 1991, no legal basis had been found that would allow inspections to close the plant. This situation also led to certain tensions within the relevant ministry.¹⁷⁸ The story ultimately culminated in a legal case in 1993, during which the first trial for environmental pollution in the Republic of Croatia was held. The Coke Plant was once again brought before the District Commercial Court in Rijeka, where it was accused of air pollution. This time, the accusations extended to a much broader area, including claims that the plant had polluted the air as far as Gorski Kotar.¹⁷⁹

The Coke Plant on the path to closure

During the 1980s and 1990s, neoliberal policies were adopted worldwide, including in Southeast and Eastern Europe. However, the economies in these regions struggled to adapt and failed to recover the strong economic performance of earlier periods.¹⁸⁰ Some countries, like Poland and the then Czechoslovakia, managed these changes more successfully, while others, such as the Baltic states

¹⁷⁵ Z. OŠTRIĆ, 1992, p. 84.

¹⁷⁶ Z. OŠTRIĆ, 1992, p. 87.

¹⁷⁷ J. E. AULT, 2019, p. 151.

¹⁷⁸ HR-DASK-918, Predstavka Saboru Republike Hrvatske, April 15th, 1991.

¹⁷⁹ V. PAJTLAR, Koksaru optužili za zagađenje okoline, *Sisački tjednik*, June 3rd, 1993, p. 7.

¹⁸⁰ D. DALE – J. HARDY, 2011, p. 251.

and Hungary, faced a much more difficult path.¹⁸¹ Croatia and its industries also experienced significant challenges. By the late 1980s and especially the early 1990s, the steel mill (Željezara) in Sisak faced a period of major changes and uncertainty. In 1989, the SOUR MK Željezara Sisak was restructured into a complex enterprise, "Željezara Sisak," giving the Metallurgical and Rolling Production Workers' Organisation the status of a limited liability company.¹⁸² In 1991, Croatia passed a law regulating the transformation and privatisation of companies, but the outbreak of war and the dissolution of Yugoslavia soon led to the introduction of a war economy,¹⁸³ which became a crucial factor in the economic transformation during that time.¹⁸⁴ The war had several extremely negative effects on Željezara. First, the domestic market shrank, the remaining market consumption decreased, and exports became significantly more difficult. Additionally, raw material shortages arose as iron ore deposits in Bosnia were cut off, and facilities in Croatia suffered extensive damage from bombing. Finally, there was a significant loss of workforce, causing further production problems. These factors led to a reduction in production, and some processes were completely halted.¹⁸⁵ The severe impact of the war on the steel mill is understandable, as it was located on the front lines, along with a few other enterprises, preventing it from adapting to new circumstances. As N. Petrović pointed out, the transformation of the steel mill in Sisak cannot be compared to other steel mills, such as those in Slovenia.¹⁸⁶ Amid these transformation processes, in April 1991, Metaval d.o.o. was established for the production of welded and seamless pipes. The former Metallurgical and Rolling Production Workers' Organisation continued to operate within Metaval, which was also expected to include the Coke Plant. On December 16th 1993, a decision was made to privatise the Sisak Steelworks holding, which was completed on April 29th of the following year, after which the Steelworks became a joint-stock company. As part of these changes, on January 10th, 1991, a decision was made to establish the Sisak Steelworks–Koksar Ltd. Bakar. Interestingly, in Article 4, which was supposed to define the company's activities, a blank space was left. Other parts of the decision were also left incomplete, including the section for listing the

¹⁸¹ D. DALE – J. HARDY, 2011, p. 255.

¹⁸² HR-DASK-918.XVIII.1.2.1, Box 1, Zapisnik o primopredaji dužnosti v.d direktora poduzeća ŽS "Metalval" doo., May 31st, 1991.

¹⁸³ I. PENIĆ, 1996, p. 200.

¹⁸⁴ I. SEVER – V. KANDŽIJA – M. BILJAN-AUGUST, 1996, p. 226.

¹⁸⁵ M. MALINA, 2003, p. 69.

¹⁸⁶ N. PETROVIĆ, 2018, p. 31.

funds needed for its establishment and operation, and the section for naming the acting business officer as well as the president and members of the Board of Directors.¹⁸⁷ As early as 1990, the Organisation Work Design Department began preparing feasibility studies for both the Coke Plant and the hotel in Bakar.¹⁸⁸ Despite the challenges, the Coke Plant continued to sign new contracts in 1990. A notable agreement was made with the Trieste-based steelworks Alti Forini for service coking. The five-year contract stipulated that the Italian steelworks would receive between 200,000 and 250,000 tons of coke annually, making it the plant's largest single customer.¹⁸⁹ By the end of 1990, the supply of water to the plant was jeopardised due to debts owed to the waterworks. The Coke Plant requested a payment deferral, warning that a halt in operations would result in a loss of \$300 million and pose a risk to workers' safety due to the unsafe shutdown of the facilities.¹⁹⁰ In 1991, Metaval experienced a realisation shortfall of 75.6%,¹⁹¹ and 2,265 workers were laid off.¹⁹² The worker-related issues continued in 1992, as Metaval had 517 fewer employees than projected in its plan.¹⁹³ The workforce reduction had been planned across the entire Steelworks since 1990 when a Programme of Measures for Reducing Employment was adopted.¹⁹⁴ The situation worsened in the following years. Several factors contributed to this situation, including the war, which led to market contraction, significantly lower prices on foreign markets compared to domestic ones, and a lack of funds to finance investments. Additionally, the company faced high debt and interest rates, which further strained its already weak financial structure.¹⁹⁵ The Steelworks also had to contend with ongoing accusations and media criticism, with sensationalist

¹⁸⁷ HR-DASK-918, Odluka o osnivanju Željezare Sisak – Koksara, društvo s ograničenom odgovornošću, Bakar.

¹⁸⁸ HR-DASK-918.1.8., Box 217, Poslovni izvještaj za SP MK "Željezara Sisak" Sisak za 1990. godinu, April 1991, p. 53.

¹⁸⁹ Suradnja počinje s koksom, *Jedinstvo*, October 11th, 1990, p. 4.

¹⁹⁰ HR-DASK-918, Dopis Komunalnom poduzeću vodovod i kanalizacija, December 21st, 1990.

¹⁹¹ HR-DASK-918.XLVII.1.5.2., Box 3, Analiza poslovanja poduzeća "Metaval" za VI-XII mjesec 1991, March 1992, p. 28.

¹⁹² HR-DASK-918.XLVII.1.5.2., Box 3, Analiza poslovanja poduzeća "Metaval" za VI-XII mjesec 1991, March 1992, p. 32.

¹⁹³ HR-DASK-918.XLVII.1.5.2., Box 3, Analiza poslovanja poduzeća "Metaval" za I-XII mjesec 1992, March 1993, p. 63.

¹⁹⁴ HR-DASK-918.1.8., Box 217, Poslovni izvještaj za SP MK "Željezara Sisak" Sisak za 1990. godinu, April 1991, p. 38.

¹⁹⁵ HR-DASK-918.XLVII.1.5.2., Box 5, Izvješće o poslovanju "Metaval" d.o.o. za razdoblje I-XII 1994. godine, March 1995, p. 1.

claims suggesting it was the "centre and stronghold (or some claimed 'breeding ground') of Serbian personnel policies."¹⁹⁶ All these factors led to a significant reduction in the workforce. By 1992, the Steelworks employed only 6,297 workers from a peak of nearly 14,000.¹⁹⁷

The Coke Plant faced not only external but also internal challenges. On April 19th, 1991, workers held a one-hour strike to draw attention to the plant's difficult situation, insufficient collection of receivables, and to demand the removal of the plant's management.¹⁹⁸ This was not the first time the Coke Plant had shown "defiance." In 1985, the Workers' Council of the Coke Plant decided to increase wages by more than 31% despite the plant's poor business performance and in violation of legal regulations. This decision was halted by the director of the Coke Plant and the relevant authorities in Rijeka.¹⁹⁹ Later, the Workers' Council of the entire Sisak Steelworks Combine condemned such behaviour and, in a printed brochure, informed Coke Plant workers of the situation. They urged responsible behaviour and re-evaluated the role of the Coke Plant's Workers' Council, particularly highlighting that the council had been warned that the decision was incorrect, yet it was made regardless.²⁰⁰

Analysing the condition of the Coke Plant after 1990 is quite challenging due to missing data in the reports. For example, in the report on inventory status for the first six months of 1991, no data for the Coke Plant was recorded.²⁰¹ However, the report for the following month mentioned a stock of 5,000 tons of coke at the plant.²⁰² These reserves continued to decline, and by 1992, the plant held only around 1,400 tons of coke, which further dropped to 1,127 tons in the first six months of 1993.²⁰³ Coke production also steadily decreased. In 1991, 441,554 tons of coke were produced, while the following year saw production

¹⁹⁶ V. PAJTLAR, Velikosrpski kružoci u "Vjesniku Željezare", *Sisački tjednik*, May 7th, 1992, p. 4.

¹⁹⁷ S. JOVANOVIĆ, Radnici strahuju od pretvorbe, *Sisački tjednik*, March 27th, 1992, p. 8.

¹⁹⁸ HR-DASK-918, Izvještaj s jednosatnog štrajka upozorenja, April 19th, 1991.

¹⁹⁹ HR-DASK-918, Obustava odluke o akontaciji osobnog dohotka za travanj 1985. godine, May 22nd, 1985.

²⁰⁰ HR-DASK-918, Informacija radnicima OOUR-a Koksara Bakar o odlukama i postupcima Radničkog savjeta OOUR-a Koksara Bakar.

²⁰¹ HR-DASK-918.XLVII.1.5.2., Box 4, Izvršenje operativnog plana za 6. mj. 1991., August 9th, 1991, p. 56.

²⁰² HR-DASK-918.XLVII.1.5.2., Box 4, Izvršenje operativnog plana za 7. mj. 1991., August 9th, 1991, p. 57.

²⁰³ HR-DASK-918.XLVII.1.5.2., Box 4, Izvještaj o poslovanju I-VI. 1993., July 1993., Table 1.3.1.

drop to 407,458 tons, well below the plan of 650,000 tons out of a possible 850,000.²⁰⁴ Production slightly increased in 1993 to 421,569 tons, but this was still far below the planned target and even below the revised target of 450,000 tons.²⁰⁵ The Coke Plant continued to operate at a loss.²⁰⁶ In the foreword of the 1994 business report, the then-chairman of the board of directors of the Sisak Steelworks joint-stock company and the prefect of the Sisak-Moslavina County referred to the Coke Plant as "an unprofitable technology for coke production in Bakar."²⁰⁷ The "abandonment" of the Coke Plant (Koksara) by both its owners and the authorities should be viewed in the context of the narrative promoted to the public and professionals, which portrayed privatisation and transformation as difficult but inevitable processes without alternatives.²⁰⁸ However, an alternative did exist, at least for the Željezara as a whole. In 1995, assistance was sought from the United Nations Industrial Development Organisation (UNIDO), which concluded that closing Željezara Sisak would essentially be a "gift" to European steel producers. UNIDO also determined that Željezara had real chances for survival with a comprehensive reorganisation, similar to other industries of its type, along with improved marketing strategies.²⁰⁹

During those years, the decision-makers responsible for the fate of the Coke Plant did not share this optimistic view. In its final year of operation, 1993, the Coke Plant ended with a loss of 132,825,000 Croatian dinars and still faced significant debt, both from short-term and long-term loans.²¹⁰ On September 1st, 1994, the Government of the Republic of Croatia issued a decision to cease operations of the then-limited liability company Koksara Bakar, which was executed on September 26th of the same year. In January of the following year, the Assembly of Sisak Steelworks passed a retroactive decision, effective from December 31st, 1994, to separate the Coke Plant from the Sisak Steelworks

²⁰⁴ HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1992. godinu, March 1993, p. 2.

²⁰⁵ HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1993. godinu, March 1994, p. 5.

²⁰⁶ HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1993. godinu, March 1994, p. 4.

²⁰⁷ HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1994. godinu, June 1995.

²⁰⁸ I. PENIĆ, 1996, p. 205.

²⁰⁹ M. MALINA, 2003, p. 70.

²¹⁰ HR-DASK-918, Izvješće o obavljenoj reviziji temeljem financijskih izvještaja za 1993. godinu, July 1994.

system, with all of its capital transferred to the Republic of Croatia for the purpose of loss recovery.²¹¹

The news of the Coke Plant's closure was reported in a brief article at the bottom of a page in the local Sisak newspaper, signed by the director of the Coke Plant himself. The article primarily emphasised the safe completion of production and the shutdown of the facilities while also highlighting the need to ensure proper arrangements for both workers and creditors.²¹² The Coke Plant, with its 570 workers, officially ended production on September 26th, 1994.²¹³

To sum up, if we compare the closure of the Coke Plant with the theoretical model for privatisation and transformation, which requires several key conditions to be met – namely: 1) returning part of the social capital to former owners, 2) distributing part of the social capital to workers and citizens, as they functioned as de facto owners under the self-management system, and 3) selling part of the social capital where feasible given certain constraints,²¹⁴ it can be said that the closure of the Coke Plant met almost none of these theoretical principles. Instead, it fits into the broader picture of the transformation of Croatia's economy, particularly Rijeka's, which was significantly affected by the negative consequences of privatisation and restructuring. Rijeka, home to several large economic systems, felt these effects acutely.²¹⁵ Even vital enterprises of national importance were put in a disadvantaged position,²¹⁶ leaving the Coke Plant, already burdened with numerous issues, with little chance of recovery. The Coke Plant thus became another example of how, while neither transition nor privatisation were "inventions" unique to the post-Yugoslav context, in these regions, they produced outcomes that were often the opposite of what was expected.²¹⁷ Finally, while many transitional processes across Eastern Europe were carried out with relatively little resistance,²¹⁸ the case of the Coke Plant is particularly interesting because its closure was met with almost enthusiastic approval from the local community.

²¹¹ HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1994. godinu, June 1995, p. 2.

²¹² Nitko neće biti oštećen, *Sisački tjednik*, September 8th, 1994, p. 3.

²¹³ B. NADILO – M. SOJČIĆ, 2005, 901.

²¹⁴ I. SEVER – V. KANDŽIJA – M. BILJAN-AUGUST, 1996, p. 216.

²¹⁵ I. SEVER – V. KANDŽIJA – M. BILJAN-AUGUST, 1996, p. 226.

²¹⁶ I. SEVER – V. KANDŽIJA – M. BILJAN-AUGUST, 1996, p. 225.

²¹⁷ I. BOČINA, 2018, pp. 62–63.

²¹⁸ G. DALE – J. HARDY, 2011, p. 259.

The Coke Plant after production ended

The responsibility for the remediation of the site was taken over by Koksar Ltd., which was in receivership. Around ten buildings were demolished, the factory grounds were completely levelled,²¹⁹ and the symbol of the Coke Plant – its chimney – was demolished between May and November 2005, when it finally disappeared completely.²²⁰ In 2015, after the contamination on the former Coke Plant site had been fully remediated, achieving the company's intended purpose, the liquidation of Koksar Ltd. was initiated, primarily funded by the state budget.²²¹ This nearly fulfilled the humorous remark made by President Stjepan Mesić in 2004 during a visit to Bakar, when he commented that the remediation of the Coke Plant should not take longer than its operation.²²² The removal and demolition of the Coke Plant were part of a larger plan by the Ministry of Environmental Protection, Physical Planning, and Construction to eliminate nine "black spots." In addition to the Coke Plant, this plan included the ferroalloy plant in Dugi Rat, parts of the Salonit factory, the Glinica plant in Obrovac, and several other facilities.²²³ According to the Town of Bakar's 2024 Spatial Plan, the plateau of the former Coke Plant is designated as a construction zone with a special purpose within a protected coastal area.²²⁴ It is categorised as a business area²²⁵ reserved for strategic projects of the Town of Bakar.²²⁶ Whether one of these projects is the Business Zone, which was conceived in 2023 on the former Coke Plant's site and reportedly has the support of the government, the town, and the citizens, remains to be seen.²²⁷ Such land repurposing is not uncommon, as demonstrated by the earlier example of the Glinica plant in Obrovac. After a challenging and, at times, uncertain remediation process,²²⁸ a solar power plant was installed on the site. During its opening, it was highlighted as conveying an

²¹⁹ Ibid.

²²⁰ Ibid., p. 904.

²²¹ Prijedlog Plana upravljanja državnom imovinom u vlasništvu Republike Hrvatske za 2016. godinu, June 2016, pp. 228–229.

²²² B. NADILO – M. SOJČIĆ, 2005, p. 905.

²²³ J. SAMOKOVILJA DRAGIČEVIĆ, 2004, p. 645.

²²⁴ Prostorni plan uređenja Grada Bakra (pročišćeni tekst), *Službene novine Grada Bakra*, n. 5, 2024, art. 7.

²²⁵ Ibid., art. 60.

²²⁶ Ibid., art. 64.

²²⁷ Bakar dobiva novu poslovnu zonu na mjestu bivše koksare, *HRT vijesti*, URL: <https://vijesti.hrt.hr/gospodarstvo/bakar-dobiva-novu-poslovnu-zonu-na-mjestu-bivse-koksare-11399363> (2024-08-24)

²²⁸ J. SAMOKOVILJA DRAGIČEVIĆ, 2004, pp. 646–648.

"important message of transformation."²²⁹ This reflects a clear shift among both Croatian citizens and authorities away from traditional industries and a desire to transform these industrial spaces, though not necessarily the workers and activities, into new, modern frameworks.

In the end, a brief reflection can be made on the analysis of industrial heritage conducted by S. Potkonjak and N. Škrbić Alempijević. They rightly compare Sisak and Bakar as two towns with similar industrial backgrounds but with entirely different approaches to industry in the post-industrial period. In Sisak, the collapse of industry led to massive unemployment, and it now evokes nostalgic memories. In contrast, in Bakar, industry was seen as a major environmental threat and an obstacle to tourism development.²³⁰ This contrast is not surprising, given the differing perceptions of industry during its existence. In Sisak, industry – particularly the Sisak Steelworks – was viewed as the "mother" or "a town within a town," and the workers took pride in their roles.²³¹ In Bakar, the industry, embodied by the Coke Plant, was perceived very differently. One local resident even referred to it as the "devil" that caused massive changes to Bakar, polluting the town and hindering its future development.²³² To these reflections, we should add the assessment of I. Bočina, who analysed the transition of the textile industry in Croatia. She concluded that part of the negative perception of the industry stemmed from the fact that it did not align with the illusions of building an economy based on service industries.²³³ These sectors, especially in the 1980s, experienced a rapid rise, driven primarily by the significant growth in tourism.²³⁴ As seen in the case of the Coke Plant in Bakar, this shift "pushed" workers out of the economic and public focus. However, the question remains – why, as a social phenomenon, did the entire industry in the micro-location of the Bay of Bakar become personified by the Coke Plant alone?

Conclusion

After the analysis was conducted, it can be concluded that the Coke Plant was undoubtedly one of the largest investments in the history of the

²²⁹ Na području bivše tvornice glinice u Obrovcu otvorena najveća sunčana elektrana u Hrvatskoj, *Nacional*, URL: <https://www.nacional.hr/na-podrucju-bivse-tvornice-glinice-u-obrovcu-otvorena-najveca-suncana-elektana-u-hrvatskoj/> (2024-10-14)

²³⁰ S. POTKONJAK – N. ŠKRBIĆ ALEMPIJEVIĆ, 2023, pp. 9–10.

²³¹ *Ibid.*, p. 15.

²³² *Ibid.*, pp. 18–19.

²³³ I. BOČINA, 2018, p. 176.

²³⁴ Z. RADELIĆ, 2022, p. 300.

Sisak Steelworks, as well as a very significant project for the entire Yugoslav industry, which could ensure uninterrupted and high-quality production through it. However, on the other hand, the Coke Plant was plagued with problems practically from its inception and the start of construction until its closure, which is why it can be said that the idea of such a facility quickly failed and almost immediately began to struggle for its survival. Despite very solid production indicators of coke and other derivatives, the Coke Plant faced economic losses and production halts. Ultimately, due to justified environmental concerns, it became a symbol of all the ecological problems that the local community was dealing with. Overlooking its potential, the Coke Plant, due to a lack of dialogue and readiness to find timely and coherent solutions primarily related to economic and environmental issues, began to disappear in the gap between the Steelworks, the local community, and increasingly dissatisfied employees, until it finally collapsed, with no real attempt made to prevent it during the turbulent times of Yugoslavia's dissolution. This was followed by job losses, missed development opportunities that it could have enabled – many of which are barely known of today – and a long process of addressing environmental hazards, which have today remained almost the only legacy of the Coke Plant in Bakar. Therefore, the Bakar Coke Plant remains yet another "monument" to an unsuccessful transition that, despite its great potential, failed to survive under the new socio-economic conditions.

References

I Archival sources

- HR-DASK-918, Študija o izgradnji koksare na jadranskoj obali, July 1970.
HR-DASK-918, Sklapanje dugoročnog ugovora, October 12th, 1970.
HR-DASK-918-III, Kutija 20, Prošireni program zdravstvene zaštite radnika, February 6th, 1972.
HR-DASK-918-III, Kutija 2, Zaključci s zбора radnih ljudi koji su održani od 26. 3. do 27. 3. 1974., March 27th, 1974.
HR-DASK-918, Izvješća o poslovanju 1974., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1974., February 1975.
HR-DASK-918, Izvješća o poslovanju 1975., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-III. 1975., May 1975.
HR-DASK-918, Dopis Jugoslavenske pomorske agencije od 13. studenog 1975., November 13th, 1975.
HR-DASK-918, Informacija o izgradnji Koksare u Bakru, June 1976.

- HR-DASK-918, Zapisnik sastanka – Druga faza izgradnje Koksare Bakar, July 26th, 1976.
- HR-HDA-918-III, Box 4, Informacija o izgradnji Koksare u Bakru za period lipanj – prosinac 1976., December 1976.
- HR-DASK-918-III, Box 4, Sjednica Zbora radnih ljudi održana od 15. do 17. veljače 1977., February 17th, 1977.
- HR-DASK-918, Izgradnja zdravstvene stanice u Bakru, August 17th, 1977.
- HR-DASK-918-III, Box 4, Mjesečni izvještaj o stanju radova za mjesec rujan 1977., September 1977.
- HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak od I. do XII. mjeseca 1977., February 1978.
- HR-DASK-918, Skraćeni investicioni program II faze izgradnje Koksare, March 1978.
- HR-DASK-918-III, Box 24, Div iz Bakarskog zaljeva, u: Jedinstvo – tjednik SSRN Zajednice općine Sisak, no. 1503, April 6th, 1978.
- HR-DASK-918, Box 45, Izvještaj o uporabi koksa proizvedenog u Koksari Bakar, June 19th, 1978.
- HR-DASK-918-III, Box 26, Odobravanje dodatnih sredstava za dovršenje Koksare Bakar, June 28th, 1978.
- HR-DASK-918-III, Box 26, Poziv na sastanak Radničkog savjeta OOUR-a Čeličana, June 28th, 1978.
- HR-DASK-918-III, Box 5, Revizije investicionih projekata, October 4th, 1978.
- HR-DASK-918, Radna verzija analitičke osnove za izradu sanacijskog programa OOUR-a Koksara Bakar – III razrada, February 1979.
- HR-DASK-918, Izvješća o poslovanju 1977-1978, Analiza poslovanja Metalurškog kombinata "Željezara Sisak" Sisak za 1978. godinu, March 1979.
- HR-DASK-918-III, Box 7, Odobrenje sredstava za sanaciju gubitaka OOUR-a Koksara Bakar, May 31st, 1979.
- HR-DASK-918, Bilješka o saopćenju predstavnika VOEST-a u vezi s izgradnjom II. faze Koksare Bakar, January 18th, 1980.
- HR-DASK-918, Informacija – Mogućnosti proizvodnje nusprodukata u Koksari Bakar, April 1980.
- HR-DASK-918, Studija mogućnosti plinifikacije i toplifikacije grada Rijeke pročišćenim koksnim plinom, May 1980.
- HR-DASK-918, Zapisnik sa sastanka održanog 11. studenog 1980., November 11th, 1980.
- HR-DASK-918, Koksara Bakar – 2. faza izgradnje, January 18th, 1982.
- HR-DASK-918, Izvješća o poslovanju 1982., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1982., March 1983.
- HR-DASK-918, Box 45, Predgrijavanje uloška (mješavine) za koksnu bateriju, February 1984.
- HR-DASK-918, Zaključak Privredne komore Rijeke, February 29th, 1984.

- HR-DASK-918, Izvješća o poslovanju 1983., Poslovni izvještaj SOUR-a MK "Željezara Sisak" za 1983., April 1984.
- HR-DASK-918, Izvješća o poslovanju 1984., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1984., March 1985.
- HR-DASK-918, Obustava odluke o akontaciji osobnog dohotka za travanj 1985. godine, May 22nd, 1985.
- HR-DASK-918, Izvješća o poslovanju 1985., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1985., March 1986.
- HR-DASK-918, Izvješća o poslovanju 1985., Poslovni izvještaj SOUR MK "Željezara Sisak" za 1985. godinu, May 1986.
- HR-DASK-918, Pismena obrana okrivljene pravne osobe, June 18th, 1986.
- HR-DASK-918, Srednjoročni planovi razvoja, Prijedlog plana razvoja SOUR MK "Željezara Sisak" za razdoblje 1986.-1990. godina – Dokumentacijska osnova, December 1986.
- HR-DASK-918, Izvješća o poslovanju 1987., Poslovni izvještaj SOUR MK "Željezara Sisak" 1987, March 1987, Prilog 1.
- HR-DASK-918, Izvješća o poslovanju 1987., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1987., March 1988.
- HR-DASK-918, Radno-socijalna struktura radnika SOUR-a MK "Željezara Sisak", November 1988.
- HR-DASK-918, Izvršenje plana proizvodnje za IV kvartal I-XII. 1989. godine, January 26th, 1989.
- HR-DASK-918, Izvješća o poslovanju 1988., Analiza poslovanja SOUR MK "Željezara Sisak" za I.-XII. 1988., March 1989.
- HR-DASK-918, Informacija o provođenju zaključaka sa 112. sjednice po pitanju Analize uzroka negativnog rezultata OOUR Koksare Bakar, May 30th, 1989.
- HR-DASK-918, Izvješća o poslovanju 1989., Analiza poslovanja SOUR MK "Željezara Sisak" za I. kvartal 1989. godine, May 29th, 1989.
- HR-DASK-918, Dopis broj: 637/89-6020, July 26th, 1989.
- HR-DASK-918, Odluka Poslovnog odbora Kombinata, November 10th, 1989.
- HR-DASK-918, Program mjera o poboljšanju kvalitete zraka na području općine Rijeka, October 16th, 1989.
- HR-DASK-918, Rasprava o zahtjevu Izvršnog vijeća Skupštine Općina Rijeka za zatvaranje Koksare Bakar, October 23rd, 1989.
- HR-DASK-918, Dopis Komunalnom poduzeću vodovod i kanalizacija, December 21st, 1990.
- HR-DASK-918.1.8., Box 217, Poslovni izvještaj za SP MK "Željezara Sisak" Sisak za 1990. godinu, April 1991.
- HR-DASK-918, Predstavka Saboru Republike Hrvatske, April 15th, 1991.
- HR-DASK-918, Izvještaj s jednosatnog štrajka upozorenja, April 19th, 1991.

- HR-DASK-918.XVIII.1.2.1, Box 1, Zapisnik o primopredaji dužnosti v.d direktora poduzeća ŽS "Metalval" doo., May 31st, 1991.
- HR-DASK-918.XLVII.1.5.2., Box 4, Izvršenje operativnog plana za 6. mj, 1991., July 9th, 1991.
- HR-DASK-918.XLVII.1.5.2., Box 4, Izvršenje operativnog plana za 7. mj, 1991., August 9th, 1991.
- HR-DASK-918.XLVII.1.5.2., Box 3, Analiza poslovanja poduzeća "Metaval" za VI-XII mjesec 1991, March 1992.
- HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1992. godinu, March 1993.
- HR-DASK-918.XLVII.1.5.2., Box 4, Izvještaj o poslovanju I-VI. 1993., July 1993.
- HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1993. godinu, March 1994.
- HR-DASK-918, Izvješće o obavljenoj reviziji temeljem financijskih izvještaja za 1993. godinu, July 1994.
- HR-DASK-918.XLVII.1.5.2., Box 5, Izvješće o poslovanju "Metavala" d.o.o. za razdoblje I.-XII 1994. godine, March 1995.
- HR-DASK-918.1.8., Box 217, Izvještaj o poslovanju Željezare Sisak za 1994. godinu, June 1995.
- HR-DASK-918.XVIII.5.3.1.1., Box 25, Dopis broj 33-0-FM/AP-70, August 6th, 2001.
- HR-DASK-918, Zapisnik sa 1. sjednice Poslovnog odbora za izgradnju Koksare
- HR-DASK-918, Osvrt na polazne osnove dugoročnog razvoja crne metalurgije Jugoslavije do 1990. godine s posebnim naglaskom na razvoj crne metalurgije u SR Hrvatskoj.
- HR-DASK-918, Srednjoročni planovi razvoja, Srednjoročni plan razvoja 1971-1975., Table no. 8.
- HR-DASK-918, Brošura MK Željezara Sisak – Koksara Bakar
- HR-DASK-918, Presuda: P-829/78-7
- HR-DASK-918, Pozivnica na svečano puštanje u rad Koksare Bakar
- HR-DASK-918, Ugovor o izradi studije o tehnološko-ekonomskoj opravdanosti proširenja Koksare i Luke
- HR-DASK-918, Odluka o osnivanju Željezare Sisak – Koksara, društvo s ograničenom odgovornošću, Bakar
- HR-DASK-918, Informacija radnicima OOUR-a Koksara Bakar o odlukama i postupcima Radničkog savjeta OOUR-a Koksara Bakar

II Periodicals

- Tko je kriv za nestašicu Kokska?, *Željezarin vjesnik*, February 14th, 1970.
- Lukavac obustavio isporuku koksa našem kombinatu, *Željezarin vjesnik*, April 11th, 1970.
- Izgradnja Koksare u Bakru, *Željezarin vjesnik*, December 25th, 1970.

- HR-HDA-2031, Registrator 3625, N. PRELOG, Industrijska oluja nad Kvarnerom, *Vjesnik u srijedu*, March 7th, 1973.
- Koksara – velik investicioni zahvat, *Željezarin vjesnik*, December 13th, 1973.
- Počinje gradnja Koksare, *Željezarin vjesnik*, August 8th, 1974.
- Koksara u brojkama, *Željezarin vjesnik*, May 28th, 1976.
- Puna pažnja zaštiti čovjekove okoline, *Željezarin vjesnik*, May 28th, 1976.
- Otvoren hotel u Bakru, *Željezarin vjesnik*, December 10th, 1976.
- Potpaljene peći koksne baterije, *Željezarin vjesnik*, January 27th, 1978.
- Značajno uveličavanje ekonomskih potencijala Rijeke, *Željezarin vjesnik*, June 9th, 1978.
- Kad bi svi..., *Željezarin vjesnik*, April 27th, 1979.
- HR-DASK-918, B. MIJIĆ, Koksara pred zatvaranjem?, *Novi list*, October 17th, 1989.
- U Sisku iznenađeni, *Jedinstvo*, October 26th, 1989.
- Neprihvatljiv zahtjev, *Željezarin vjesnik*, November 3rd, 1989.
- Suradnja počinje s koksom, *Jedinstvo*, October 11th, 1990.
- S. JOVANOVIĆ, Bolji radni uvjeti – veće uštede, *Jedinstvo*, January 31st, 1991.
- S. JOVANOVIĆ, Radnici strahuju od pretvorbe, *Sisački tjednik*, March 27th, 1992.
- V. PAJTLAR, Velikosrpski kružoci u "Vjesniku Željezare", *Sisački tjednik*, May 7th, 1992.
- V. PAJTLAR, Koksaru optužili za zagađenje okoline, *Sisački tjednik*, June 3rd, 1993.
- Nitko neće biti oštećen, *Sisački tjednik*, September 8th, 1994.
- Prostorni plan uređenja Grada Bakra (pročišćeni tekst), *Službene novine Grada Bakra*, no. 5, 2024.

III Books and Articles

- Vinko ANTIĆ (ur.), *Povijest naselja od postanka do 1980.*, Povijesno društvo Rijeka, Rijeka, 1980.
- Julia E. AULT, *Protesting Pollution, Nature and the Iron Curtain – Environmental Policy and Social Movements in Communist and Capitalist Countries 1945-1990*, University of Pittsburgh Press, Pittsburgh, 2019, pp. 151–168.
- Ivana BOČINA, *Proizvedeno u Hrvatskoj – Tranzicija hrvatske tekstilne industrije*, Naklada Jesenski i Turk, 2018.
- Zlatko ČEPO, *Željezara Sisak 1938.-1973.*, Željezara Sisak, Sisak, 1974.
- Tatjana ČULINA, Public health services and healthcare workforce in Bakar of the 18th and 19th centuries, *Liječnički vjesnik*, 136, 9-10, 2014, pp. 296–299.
- Gareth DALE – Jane HARDY, *Conclusion: The 'Crash' in Central and Eastern Europe, First the Transition then Crash – Eastern Europe in the 2000s*, Pluto Press, London, 2011.
- Robert DORIČIĆ, *Utjecaj industrijskog onečišćenja na obilježja smrtnosti na području Grada Bakra i Grada Malog Lošinja u periodu od 1960. do 2012. godine*, Medicinski fakultet u Rijeci, Rijeka, 2019. (PhD Thesis)



Photo 1 The view of Bakar²³⁵

Robert DORIČIĆ – Tanja ĆORIĆ – Morana TOMLJENOVIĆ – Danijela LAKOŠELJAC – Amir MUZUR – Branko KOLARIĆ, Mortality Characteristics of Two Populations in the Northern Mediterranean (Croatia) in the Period 1960-2012: An Ecological Study, *International Journal of Environmental Research and Public Health*, 20, 15, 11, 2018, 2591.

Dario FRANIĆ, Željezara Sisak – Visoke peći: Djelovanje i organizacijski ustroj (1946.-1955.), *Arhivski vjesnik*, 59, 2016, pp. 177–206.

Mirko GOJIĆ, Metalurški kombinat Željezara Siska, *Kemijska industrija*, 70, 9–10, 2021, pp. 563–580.

Ivo GOLDSTEIN, *Hrvatska 1918. – 2008.*, Znanje, Zagreb, 2008.

Wolffy KRAŠIĆ, Ekološke teme na stranicama časopisa Arena, *Ekonomska i ekohistorija*, 13 (1), pp. 128–146.

Ladislav LAZIĆ – Zdenka ZOVKO BRODARAC, Povijesni pregled metalurških aktivnosti na tlu Republike Hrvatske, *Godišnjak Akademije tehničkih znanosti Hrvatske*, 2019, pp. 251–267.

²³⁵ BAKAR, *Wikipedija*, URL: <https://hr.m.wikipedia.org/wiki/Datoteka:Bakar-4.JPG> (accessed2024-09-05)

- Marijan MALINA, Tranzicija u Željezari Sisak, *Metalurgija*, 42, 2003, pp. 69–73.
- Ilija MAMUZIĆ, Hrvatska metalurgija – prošlost, sadašnjost, budućnost, *Metalurgija*, 1, 2004, pp. 3–12.
- Bruno MILIĆ, *Bakar – Drevni grad na valovima stoljeća*, Grad Bakar, Bakar, 2003.
- Branko NADILO – Marija SOJČIĆ, Rušenje armiranobetonskog dimnjaka Koksare u Bakru, *Građevinar*, 57, 2005, pp. 901–905.
- Zoran OŠTRIĆ, Ekološki pokreti u Jugoslaviji - Građa za proučavanje razdoblja 1971-1991, *Socijalna ekologija*, 1, 1, 1992, pp. 83–104.
- Ivan PENIĆ, Proces i iskustva pretvorbe i privatizacije u Hrvatskoj, *Tranzicija gospodarstva: zbornik radova znanstvenog skupa*, Ekonomski fakultet Sveučilišta u Mostaru, Mostar, 1996, pp. 197–212.
- Nikola PETROVIĆ, Hrvatska ekonomija između europske periferije i poluperiferije: nalazi iz povijesti hrvatskih visokotehnoških poduzeća, *Revija za sociologiju*, 48, 1, 2018, pp. 5–47.
- Sanja POTKONJAK – Nevena ŠKRBIĆ ALEMPIJEVIĆ, Rethinking the city in the industrial aftermath: socio-industrial memory and environmental fallouts, *Narodna umjetnost: hrvatski časopis za etnologiju i folkloristiku*, 60, 2023, pp. 9–24.
- Zdenko RADELIĆ, *Gospodarstvo nakon 1945., Prijelomna vremena: Hrvatske zemlje nakon 1918.*, Matica hrvatska, Zagreb, 2022.
- Bruno RAGUŽ, Problematika zaštite okoliša u Bakru prilikom osnivanja Koksare u prvoj polovici 70-ih godina 20. stoljeća, *Senjski zbornik*, 49, 2022, pp. 391–408.
- Jadranka SAMOKOVLJA DRAGIČEVIĆ, Uklanjanje bivše tvornice glinice Jadral u Obrovcu, *Građevinar*, 56, 2004, pp. 645–648.
- Ivo SEVER – Vinko KANDŽIJA – Maja BILJAN-AUGUST, Privatizacija kao temeljna značajka tranzicije u Hrvatskoj – Privatizacija u Gradu Rijeci, *Tranzicija gospodarstva: zbornik radova znanstvenog skupa*, Ekonomski fakultet Sveučilišta u Mostaru, Mostar, 1996, pp. 213–229.
- Franjo VANČINA, *Čovjekova okolina – oblici i načini ugrožavanja i zaštite*, Stručna biblioteka, Zagreb, 1982.
- Ivan ŠIFTER, Mjesto privrede u društvu, *Politička misao*, 21, 1984, pp. 56–63.
- Vlasta ŠVOGER – Jasna TURKALJ, *Temelji moderne Hrvatske. Hrvatske zemlje u "dugom" 19. stoljeću*, Matica hrvatska, Zagreb, 2016.

IV Internet Sources

- Bakar dobiva novu poslovnu zonu na mjestu bivše koksare, *HRT vijesti*, URL: <https://vijesti.hrt.hr/gospodarstvo/bakar-dobiva-novu-poslovnu-zonu-na-mjestu-bivse-koksare-11399363> (accessed 2024-08-24)
- LUKAVAC, *Hrvatska enciklopedija, mrežno izdanje*, URL: <https://enciklopedija.hr/clanak/lukavac> (accessed 2024-10-14)

Na području bivše tvornice glinice u Obrovcu otvorena najveća sunčana elektrana u Hrvatskoj, *Nacional*, URL: <https://www.nacional.hr/na-podrucju-bivse-tvornice-glinice-u-obrovcu-otvorena-najveca-suncana-elektrana-u-hrvatskoj/> (accessed 2024-10-14)

KOKSARA BAKAR – OD VIZIJE DO NAPUŠTANJA

Sažetak

Rad donosi prvu cjelovitu analizu poslovanja Koksare analizirajući razloge pokretanja, uloženi kapital, investicije i izgradnju, osnovne pokazatelje rada Koksare kroz analizu poslovanja i proizvodnje Koks te utjecaj Koksare na sam Bakar. Na kraju se rad kratko osvrće i na kraj Koksare, odnosno njezinu ostavštinu u Bakru.

Ključne riječi: Bakar, Koksara, Željezara Sisak, industrija