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Beyond Commercial Failure: State Control, Structural Constraints, and the Decline of the Assam Cooperative Sugar Mill, Baruabamungaon

Pranab Jyoti Phukan^{1*}, Prof. Rajib Handique²

¹Assistant Professor, Furkating College Autonomous, Golaghat, Assam, India

²Professor, Department of History, Gauhati University, Guwahati, Assam, India

Email: pranabjphukan@gauhati.ac.in

Abstract: This paper argues that the decline of the Assam Cooperative Sugar Mill (A.Co.S.M.) Ltd. at Baruabamungaon cannot be explained simply as managerial or commercial failure. Established in the late 1950s as Northeast India's pioneering large-scale cooperative manufacturing enterprise, the mill represented a post-independence attempt to connect small cultivators with industrial processing, reduce dependence on intermediaries, and promote regional redistribution. Yet the institutional arrangements that enabled its creation also contributed to its later weakness. Persistent capacity underutilization, low sugar recovery, raw-material shortages, obsolete technology, rising labour costs, infrastructure constraints, and liquidity crises interacted with excessive bureaucratic control and political intervention. This paper therefore advances two related arguments. First, the mill's commercial decline was structurally produced rather than caused by a single administrative failure. Second, financial weakness did not erase its wider developmental significance. The enterprise supported cultivators, provided industrial employment, stimulated transport and ancillary trade, and became a regional economic anchor. Its history consequently reveals a central contradiction of state-supported agro-industrial cooperatives: they were expected to remain commercially viable while simultaneously performing redistributive and welfare functions. The Baruabamungaon experience suggests that sustainable cooperation required state support for finance and infrastructure, but greater professional, technical, and cooperative autonomy in everyday management.

Keywords: *Agro-Industrial Cooperatives, Distributive Justice, Capacity Underutilization, Capital Erosion, Regional Development Paradoxes*

1. Introduction

This paper argues that the history of the Assam Cooperative Sugar Mill (A.Co.S.M.) Ltd. is a conflict between commercial viability and developmental objectives. Established in the late 1950s, the mill sought to overcome fragmented production, dependence on intermediaries, weak processing capacity, and cultivators' vulnerability to market fluctuations. Cooperatives were central to post-independence plans for rural industrialization and distributive development (Bordoloi, 2002; Das, 2012). In Assam, state-backed enterprise appeared appropriate because private capital and infrastructure were limited.

Yet the intervention that made the mill possible also weakened cooperative autonomy. Government equity brought capital and support, but state-appointed managers, politically influenced boards, and frequent leadership changes obstructed continuity and long-term planning. Operational problems were equally

regional: dispersed cane cultivation, inadequate irrigation and inputs, long transport distances, power shortages, and an ageing 800–1000 TCD plant reduced utilization. Comparisons with Maharashtra and Andhra Pradesh reveal inefficiency, but also the importance of supportive agricultural and infrastructural systems (Medhi, 1978; Phukan, 1990).

Using annual reports, audit statements, government statistics, and oral histories, this study rejects two simple interpretations: that A.Co.S.M. was merely a failed business, or that its social contribution excuses its financial weaknesses. Its decline was real, but so was its regional developmental impact. The paper therefore argues that its failure resulted from an institutional imbalance among social obligations, state control, industrial requirements, and cooperative autonomy.

Research Questions and Objectives

Against this background, the study addresses four interrelated questions: (1) what institutional, agricultural, technological, and financial factors contributed to the decline of A.Co.S.M.; (2) how did the increasing role of the state affect the cooperative's managerial autonomy and operational performance; (3) to what extent did the mill contribute to employment, agricultural development, and the wider regional economy despite its financial difficulties; and (4) what does the Baruabamungaon experience reveal about the institutional conditions required for sustainable agro-industrial cooperation in Assam? The study consequently aims to move beyond a narrowly financial interpretation of institutional failure by examining the interaction between commercial performance, cooperative governance, and regional development.

Research Methodology and Sources

The study adopts a historical case-study methodology combining archival research, documentary analysis, quantitative examination of production and financial records, and oral-history evidence. The principal documentary sources comprise the annual reports and statements of accounts of A.Co.S.M., audit reports prepared by the Office of the Senior Auditor of Cooperative Societies, records of the Cooperative Department of the Government of Assam, and relevant published studies on the cooperative and sugar industries. Production, crushing, recovery, employment, wage, capital, liability, and working-capital figures are examined comparatively across the periods for which consistent archival data are available. The qualitative component draws on oral histories and interviews with local sugarcane growers, former employees, and community members in order to identify perceptions of the mill's regional economic and social significance. Documentary and oral evidence are treated as complementary sources and, where possible, quantitative claims are cross-checked against institutional records and published scholarship. Because the surviving archival material is uneven across periods, the analysis focuses particularly on the years for which sufficiently comparable financial and operational records are available.

2. Historical Trajectory

2.1 Post-Independence Cooperative Vision and Structural Transformation

In the post-independence framework of India's political economy, the cooperative model was adopted not merely as an alternative business organization, but as a crucial instrument for macro-level structural transformation, industrial decentralization, and socioeconomic distributive justice. For geographically isolated and structurally peripheral agrarian zones like Northeast India, state-backed manufacturing cooperatives emerged as a primary developmental strategy. These institutions aimed to mobilize fragmented rural savings, absorb underemployed agrarian workforces, and insulate primary producers from exploitative market intermediaries. By integrating local agricultural production directly with modern industrial processing, the cooperative framework sought to alter the subsistence nature of peripheral economies, converting them into self-sustaining regional industrial hubs (Bordoloi, 2002; Das, 2012; Goswami, 1988).

2.2 Institutionalization and Geo-Economic Realities in Assam

In the specific context of Assam, the institutionalization of the cooperative framework encountered unique geo-economic complexities. Colonial interventions in the early twentieth century had primarily introduced small-scale rural credit societies designed to mitigate peasant indebtedness, leaving the broader plantation-dominated and subsistence-based agrarian landscape intact. Following independence, the developmental mandates shifted toward processing, value-addition, and heavy manufacturing cooperatives. Agro-based industrial units held the highest strategic potential due to the state's natural endowments. The sugarcane sector, in particular, possessed deep historical and cultural roots in the region. The fertile agricultural tracts of the undivided Sibsagar district (comprising the present-day Golaghat and Dergaon regions) had been historically celebrated for robust sugarcane cultivation and traditional jaggery (gur) manufacturing since the era of the Ahom Kingdom. Despite these rich traditions, the absence of modern processing infrastructure left cultivators perpetually vulnerable to price volatility, supply shocks, and the exploitative credit structures of private trading cartels. (Sharma, 2011; Saikia, 2014)

2.3 The Genesis of the Baruabamungaon Experiment

To systematically address these persistent structural bottlenecks, the state government, in coordination with local agrarian leaders, established the Assam Cooperative Sugar Mill (A.Co.S.M.) Ltd. at Baruabamungaon. As the pioneer cooperative sugar processing venture in the entire northeastern landscape, its inception represented a major socio-economic and political experiment. Supported by substantial state equity and local agrarian capital, the mill successfully generated an extensive regional economic footprint during its opening decades. It provided direct employment, fostered ancillary tertiary commercial markets, stabilized volatile rural livelihoods, and redistributed processing surplus. Yet, across its lifecycle, the institution began to contend with severe structural friction, engineering bottlenecks, and cascading liquidity shortages that progressively degraded its commercial viability, bringing the cooperative into a protracted corporate crisis.

2.4 Review of Literature and Research Gap

Existing scholarship on Indian cooperatives has examined questions of cooperative governance, rural development, farmer participation, state intervention, and the political economy of cooperative institutions. Studies of sugar cooperatives, particularly in Maharashtra and other major sugar-producing regions, have demonstrated the importance of institutional organization, agricultural infrastructure, producer participation, technological modernization, and political leadership to cooperative performance. The broader literature also shows that cooperatives can simultaneously function as economic organizations and instruments of rural development. However, comparatively limited attention has been given to the historical trajectory of agro-industrial cooperatives in Assam and, more specifically, to the interaction between state ownership, regional agricultural constraints, industrial technology, and financial performance in the case of A.Co.S.M. This article

addresses that gap by combining institutional history with production and financial evidence to examine how structural constraints and administrative intervention interacted over time. Its principal contribution is therefore to interpret the decline of A.Co.S.M. not as an isolated episode of managerial failure but as the outcome of an institutional imbalance between cooperative objectives, state control, and the economic requirements of agro-industrial production.

3. Conceptual Foundations and Paradigms of The Cooperative Movement

3.1 Theoretical Definition and Socioeconomic Archetypes

Cooperation is defined as a democratic form of organization where individuals voluntarily associate on a basis of absolute equality to promote their mutual economic, social, and moral interests through honest and collective means. Unlike joint-stock corporations driven strictly by capital maximization, a cooperative society distributes its generated profits or operational surplus among its members based on their functional participation or transactional contributions. This framework provides people of limited and moderate means with the collective bargaining power required to counter monopolistic exploitation and volatile market dynamics.

3.2 Global Precedents: From Fenwick to the Rochdale Pioneers

The early origins of modern cooperative frameworks can be traced back to Fenwick, Scotland, where on March 14, 1761, a group of sixteen weavers formed the Fenwick Weavers Society, selling discounted oatmeal out of a local room to bypass inflated merchant costs. The model achieved corporate maturity following the Industrial Revolution in 1844 in the English town of Rochdale. Transformed into a factory town dominated by textile manufacturing, Rochdale suffered from severe urban overcrowding, poor sanitation, low wages, high disease prevalence, and a low life expectancy of twenty-one years. Factory owners controlled not only the industrial mills but also the grocery stores, forcing workers to purchase adulterated staples using restrictive corporate tokens at inflated prices. In response, twenty-eight factory workers saved and pooled an initial capital of twenty-eight pounds sterling to open a cooperative store on Toad Lane, stocking five staple groceries: butter, sugar, flour, oats, and candles. These 'Rochdale Pioneers' gave birth to the consumer cooperative archetype, proving that democratic enterprises could provide quality goods at fair prices while distributing surplus profits among shareholders.

3.3 The Credit-Centric Foundations of Assam's Cooperative Sector

While the European cooperative movement emerged primarily from urban industrial consumer grievances, the movement in India, and specifically in Assam, was fundamentally shaped by agrarian credit needs. The enactment of the Cooperative Societies Act of 1904 provided the first formal legal framework, though it restricted recognition exclusively to entities engaged in banking and finance. Consequently, the earliest cooperative institutions established in Assam were strictly credit-oriented.

In 1904, the Charigaon Gaonlia Bank and the Jorhat Cooperative Town Bank were registered in the Sibsagar District. By 1906, institutional expansion led to the registration of the Masimpur Gramya Mahajani Sabha and the Silchar Cooperative Town Bank in Cachar District, alongside the Gauhati Cooperative Town Bank Limited in Kamrup and the Dinjoy Gaonlia Bank in Lakhimpur. These credit societies provided a foundational framework, but they lacked the processing and industrial capabilities required to transform the underlying agrarian production systems.

4. Institutional Architecture, Foundation, and Capital Structure of A.Co.S.M.

4.1 Strategic Siting and Historical Rationale

The formal registration of the Assam Cooperative Sugar Mills Limited occurred under the Assam Cooperative Societies Act of 1949 on March 26, 1955. Physical construction of the production facilities began in September 1957 and reached completion in March 1958 at Baruabamungaon, a strategic site located within the Dergaon Circle of the Golaghat Subdivision in the undivided Sibsagar District. This location was chosen due to unique regional advantages: the area possessed highly favorable micro-climatic and soil conditions, alongside a deep historical heritage of sugarcane cultivation. Entire regional tracts—including Mishamara, Dergaon, Kakodonga, Dhekial, Rangamatti, Khoomtai, and the specific village of Gurjogania—had been dedicated to sugarcane farming for generations. The name 'Gurjogania' itself reflects this heritage, derived from traditional terms where 'Gur' signifies palatable molasses and 'Jogonia' translates to supplier, denoting the historical role of local communities in supplying jaggery to the Ahom courts. The entire Golaghat region produced a vast volume of sugarcane, consistently positioning Sibsagar at the top of the state's agricultural production lists. (Assam Cooperative Sugar Mill Ltd., 1984; Cooperative Department, Government of Assam, 1977)

4.2 Infrastructure and Logistics Network

The factory site at Baruabamungaon was integrated into regional transport networks to facilitate the mass movement of raw materials and finished sugar. The mill was located eleven miles north of Golaghat town and twenty miles southwest of Jorhat town, directly linked to National Highway No. 37 via two well-surfaced Public Works Department (PWD) roads. Furthermore, Baruabamungaon served as a railway station on the branch line connecting Furkating to Mariani. To optimize large-scale logistics, a dedicated sub-railway spur line was built connecting the factory site directly with the main railway station, complemented by a local road network connecting surrounding village clusters.

4.3 Capital Mobilization and the Skoda Erection

At the time of its erection, the project required a total capital expenditure of approximately Rs. 1.20 crores—a massive financial undertaking for the region in the late 1950s. The initial capital was raised through a hybrid institutional architecture. Funding combined share subscriptions from individual agricultural growers, the general public, independent

cooperative societies, and direct state equity, alongside substantial long-term loans provided by the State Government of Assam, the District Central Cooperative Bank of Sibsagar, and the Industrial Finance Corporation of India (IFCI). The initial debt architecture included an IFCI loan of Rs. 60.00 lakhs, a District Central Cooperative Bank loan of Rs. 2.25 lakhs, and a State Government loan of Rs. 17.57 lakhs disbursed in three tranches, all of which were successfully repaid with interest during the initial operational decades. This substantial capital pool allowed the mill to clear the high entry barriers of heavy manufacturing, notably through the procurement and commissioning of a specialized twelve-roller milling plant manufactured by SKODA in Czechoslovakia during the 1957-58 season. The machinery possessed an initial installed capacity designed to crush 800 to 1000 metric tons of sugarcane per diem. (Assam Cooperative Sugar Mill Ltd., 1984)

4.4 The State Equity Trap and Administrative Duality

Despite clearing early financial and mechanical hurdles, this hybrid architecture introduced an enduring institutional duality. Unlike corporate models such as the Woka Tea Estate, where state participation remained negligible, the State Government of Assam provided as much as 63% of the total share capital of the sugar mill by 1977. This high level of state equity automatically triggered intensive government oversight and bureaucratic intervention. According to the institutional bye-laws, the mill was officially managed by a twenty-one-member Board of Directors elected for a three-year term, with the right reserved for the state to nominate representatives and appoint a Managing Director as the Chief Executive. In practice, however, regular and timely general body meetings were rarely conducted. Instead, the management devolved into ad-hoc boards populated by state-selected officials. The position of Managing Director was drawn from the Assam Civil Service (ACS) Class I cadre at the mill's expense, with tenure and operational mandates dictated directly by the state government. Furthermore, the role of Board Chairman, intended as a grassroots elected position, was consistently filled by political appointees, including active or former Members of the Legislative Assembly (MLAs) aligned with the ruling political party. Consequently, operational control shifted away from grassroots cooperative autonomy toward centralized bureaucratic administration, entangling commercial operations in shifting political priorities. (Assam Cooperative Sugar Mill Ltd., 1984)

The significance of state participation should therefore be understood at several institutional levels. State equity provided essential capital and enabled the establishment and continued operation of the mill, but financial ownership also increased the government's influence over governance and executive appointments. The resulting arrangement created a distinction between formal cooperative ownership and practical administrative control. Producer-members remained central to the cooperative's stated objectives, yet their capacity to influence strategic decisions was constrained when elected institutions were replaced or supplemented by state-appointed boards and officials. The problem was therefore not simply the presence of government investment, but the institutional concentration of decision-making authority and its implications

for managerial continuity, producer participation, and long-term industrial planning.

5. Operational Targets, Aims and Structural Bye-Laws

According to Clause 2 of its official institutional bye-laws, the primary objective of the Assam Cooperative Sugar Mills Limited was to promote the economic interests of its members, specifically by encouraging sugarcane production and developing the sugar industry along cooperative lines to secure the scale economies of large-scale agricultural manufacturing. To fulfill these goals, the cooperative was mandated to introduce improved agricultural methods, distribute high-quality seeds, fertilizers, and modern implements, and promote agricultural and industrial education among its members while fostering habits of thrift and mutual self-help. (Assam Cooperative Sugar Mill Ltd., 1984)

The formal operational scope encompassed the entire State of Assam, dividing its membership into two distinct functional categories: Producer-Members and Ordinary Members. Producer-members comprised the active sugarcane cultivators within the catchment zones, while Ordinary members included non-producing individuals, private firms, cooperative credit societies, and public institutions contributing capital. The authorized share capital was fixed at Rs. 2 crores, divided into 10 lakh individual shares valued at Rs. 20.00 each, with an initial issued capital of Rs. 90 lakhs (equivalent to 4,50,000 shares). Within this capital structure, 2,25,000 shares (valued at Rs. 45 lakhs) were legally reserved for Redeemable Preference Shares issued exclusively to the Government of Assam, while 25,000 shares (valued at Rs. 5 lakhs) were set apart as Cumulative Preference Shares for public institutions and cooperative societies, guaranteeing a fixed dividend of 4 percent per annum. The institutional bye-laws also dictated strict surplus management: Clause 32 mandated that 25 percent of all annual net profits must be transferred to the statutory Reserve Fund, with an additional 10 percent directed to the Price Fluctuation Fund, restricting the capital available for direct dividend distribution.

6. Empirical Analysis of Production Performance and Technical Efficiency

6.1 Production Lifecycles and Crushing Deficits

The production history of A.Co.S.M. from its inaugural 1958-59 season through the 1979-80 financial year reveals persistent difficulties in capacity utilization. An industrial sugar mill equipped with an 800-1000 TCD crushing plant operating within a standard seasonal window should comfortably crush a minimum of 1.00 lakh metric tons (equivalent to 10.00 lakh quintals) of raw sugarcane annually. However, across its multi-decadal timeline, the mill achieved this baseline level of performance only once—during the 1969-70 crushing season, when it crushed 12.09 lakh quintals of cane to yield 1.03 lakh quintals of net sugar. In its initial 1958-59 season, the mill operated at a low level, crushing just 2.35 lakh quintals of cane. Production expanded during the mid-1965-66 cycle, reaching 9.94 lakh quintals of crushed cane and 90.3 thousand quintals of sugar, before experiencing a sharp contraction in 1967-68 to 4.28 lakh quintals. The late 1970s witnessed a brief operational

recovery, with crushing volumes reaching 10.38 lakh quintals in 1978-79, followed by a major decline in 1979-80 to 6.86 lakh quintals. (Assam Cooperative Sugar Mill Ltd., 1984)

6.2 National Benchmarking and Comparative Inefficiencies

A comparison with contemporary sugar cooperatives in other states highlights the operational inefficiencies at Baruabamungaon. For example, the Amadalavalasa Cooperative Agricultural and Industrial Society of Andhra Pradesh, operating a comparable 1000-ton capacity plant, crushed 1.61 lakh tons and 2.26 lakh tons of sugarcane during the 1976-77 and 1977-78 seasons, respectively. Similarly, the Sangamner Bhag Sahakari Sakhar Karkhana Ltd. of Maharashtra, operating with a lower daily capacity rating of 813 tons, successfully crushed 2.41 lakh metric tons in 1976-77 and 3.18 lakh metric tons in 1977-78. In contrast, A.Co.S.M. crushed only 0.83 lakh tons and 0.79 lakh tons during those identical periods. Furthermore, the sugar recovery percentage at the Baruabamungaon facility remained low. While the Sangamner cooperative achieved recovery rates above 10% (ranging from 10.52% to 10.94%) and leading national units like the Shri Warana Sahakari Sakhar Karkhana Ltd. in Maharashtra reached peaks of 12.36%, the recovery rate at A.Co.S.M. hovered near 8%, dropping to 7.69% in 1958-59 and 8.01% by 1979-80. This low recovery rate substantially reduced the total output generated per unit of raw material input. (Assam Cooperative Sugar Mill Ltd., 1984; Bordoloi, 2002)

6.3 The Mechanical and Material Crushing Bottleneck

This clear operational gap was driven by two main factors: a highly restricted crushing season and a high volume of lost operational hours. In a standard agricultural zone, a sugar mill runs continuously throughout a prolonged seasonal window. At A.Co.S.M., the average duration of the crushing season was limited to approximately 88 days per annum, compared to 154 days at Amadalavalasa and 222 days at Sangamner. This compressed timeframe was exacerbated by severe mechanical and material shutdowns. During the opening 1958-59 season, the mill logged 928 hours and 50 minutes of actual crushing, while losing 1,891 hours and 10 minutes—meaning lost time was double the active production time. Across the entire history of the mill, lost operational time consistently consumed one-third of the total seasonal window. For instance, in 1970-71, the factory worked 2,443 hours and 15 minutes but lost 965 hours and 45 minutes; in 1979-80, the mill logged 2,059 hours and 15 minutes of crushing against 1,131 hours and 23 minutes lost. These disruptions stem from two root causes: mechanical breakdowns within the aging Skoda plant and frequent interruptions in raw sugarcane supply. Because industrial overhead costs remained fixed regardless of active manufacturing, these idle hours significantly inflated the per-unit cost of production, lowering the mill's profit margins.

7. Financial Performance, Diurnal Balance Sheets, and Capital Erosion

7.1 Structural Balances and Working Capital Crises

A financial analysis of A.Co.S.M.'s consolidated balance sheets from the 1984-85 through the 1986-87 fiscal years reveals a

rapidly accelerating financial crisis. The paid-up capital rose from Rs. 1,43,57,809.75 in 1984-85 to Rs. 1,93,82,822.75 by 1986-87 through the issuance of new shares, but this capital expansion was outpaced by accumulating losses. Total accumulated losses grew from Rs. 2,01,82,278.42 in 1984-85 to Rs. 3,05,70,624.50 in 1985-86, reaching Rs. 3,87,23,125.32 by 1986-87, a sum that exceeded the total paid-up capital and reserves. Consequently, the net worth of the cooperative fell deeply into negative territory, dropping from minus Rs. 56,14,616.82 in 1984-85 to minus Rs. 1,09,90,090.00 in 1985-86, and reaching minus Rs. 1,90,87,926.27 by 1986-87. This progressive erosion of capital indicated that the mill was sustaining its daily operations by consuming its core asset base and expanding its liabilities. (Assam Cooperative Sugar Mill Ltd., 1985, 1986, 1987)

7.2 Gearing Ratios and Short-Term Insolvency

This structural decline is reflected in the mill's shifting debt-equity structure and current ratios. The debt-equity ratio moved from 1.8:1 in 1984-85 to 2.1:1 in 1985-86, indicating low-gear capital highly dependent on external debt. In 1986-87, the ratio shifted sharply to 0.3:1 due to a major restructuring of long-term unsecured loans, which fell from Rs. 3.48 crores down to Rs. 41,231.75, while short-term current liabilities expanded dramatically from Rs. 60.40 lakhs to Rs. 5.91 crores. This shift created a severe short-term liquidity crisis. The current ratio, which stood at a stable 1.8:1 in 1984-85 and a satisfactory 3:1 in 1985-86, collapsed to an unsustainable 1:2 (0.48:1) in 1986-87, with current assets of Rs. 2.87 crores overwhelmed by current liabilities of Rs. 5.91 crores. The net working capital fell to a deficit of minus Rs. 3,04,12,153.80. This net working capital deficit left the management unable to meet short-term obligations, leading to recurring delays in paying regular salaries, processing dues to sugarcane growers, and settling accounts with commercial creditors, which frequently disrupted active manufacturing.

7.3 The Price-Cost Structural Disconnect

The underlying driver of this financial decline was a persistent structural disconnect between manufacturing costs and regulated market prices. During its opening phase, the mill sustained net losses for seven consecutive years (1958-1964). In the 1958-59 season, production costs reached Rs. 197.99 per quintal against a selling price of Rs. 104.76, generating a loss of Rs. 93.23 per quintal and an annual deficit of Rs. 11.19 lakhs. While the introduction of a subsidiary distillery unit in 1969 allowed the cooperative to post profits during the 1970s—peaking at a total profit of Rs. 16.07 lakhs in 1976-77—the profit margin rarely exceeded ten percent of total operating costs, leaving insufficient reserves to cover the losses from the mill's initial years. By the late 1980s, high overhead expenses and inflation drove production costs well above market rates. In the 1986-87 season, the cost to produce one quintal of sugar rose to Rs. 527.00, while the regulated dual-pricing market returned Rs. 551.42 for free-sale sugar but only Rs. 341.61 for government-mandated levy sugar. By the 1987-88 cycle, production costs reached Rs. 509.28 per quintal, outpacing the free-sale market rate of Rs. 501.74 and the levy sugar rate of Rs. 331.53, ensuring operational losses on every quintal processed.

8. Human Resource Dynamics and Regional Socioeconomic Footprint

8.1 Demographic Segmentation and Grade Architecture

Despite its financial difficulties, A.Co.S.M. served as a major source of employment and livelihood in the region, maintaining a workforce of 883 individuals during peak crushing seasons. This human resource structure was divided into 446 permanent positions and 437 seasonal workers, supplemented by an average of 70 daily-wage laborers. Organizationally, the personnel were divided into four primary divisions: Office Staff, Field Staff, Factory Staff, and Distillery Staff. The Factory division, particularly the Engineering and Manufacturing sections, employed the largest share of personnel, maintaining 292 seasonal and 165 off-season workers in Engineering, alongside 305 seasonal workers in Manufacturing. A grade-wise breakdown for the 1985-86 period shows a highly stratified workforce: 2 top Executives, 60 Supervisory personnel (divided across Grades I, AI, AII, B, and C), 95 Clerical staff (spanning Grades I through V), 322 Skilled laborers (including 36 highly skilled technicians, 47 Grade A, 60 Grade B, 104 Grade C fitters/operators, and 75 semi-skilled personnel), 321 Unskilled factory workers, and 83 daily-wage staff. This large organizational structure provided stable, secure income streams for local families, but it created an inflexible, high overhead cost structure for the enterprise.

8.2 Incommensurate Wage Inflation and Productivity Decoupling

Over time, total expenditure on salaries, allowances, and statutory bonuses grew rapidly, decoupling from the mill's actual physical output. In the 1960-61 financial year, the mill's total annual salary expenditure stood at Rs. 4.08 lakhs. This figure rose to Rs. 17.31 lakhs in 1970-71, Rs. 47.44 lakhs in 1980-81, and reached Rs. 80.19 lakhs by the 1987-88 fiscal year. Additional financial outlays included rising overtime wages and annual bonuses, with overtime expenditures reaching Rs. 6,21,725.00 and estimated bonus payments matching Rs. 8,00,000.00 during the 1987-88 season. This steady wage growth was mandated by labor agreements and state regulations, but it occurred alongside a long-term decline in sugar production. This mismatch significantly inflated the cost of production, as the factory's expanding payroll expenses were distributed across a shrinking volume of finished output. (Assam Cooperative Sugar Mill Ltd., 1987)

8.3 The Regional Multiplier Effect

While this wage inflation weakened the mill's internal balance sheet, it had a strong positive impact on the surrounding regional economy. The factory served as a key financial anchor for thousands of primary sugarcane farming families across the undivided Sibsagar district. By establishing a guaranteed, institutional purchase point for raw cane, the cooperative insulated smallholders from seasonal price crashes, helping to improve living standards in rural communities. Simultaneously, the physical presence of the mill at Baruaabamungaon catalyzed a vibrant tertiary economy. The steady movement of raw materials and finished sugar triggered growth in local infrastructure, creating specialized transport contracts,

engineering workshops, supply cooperatives, and logistical networks. The immediate area around the factory transformed into a local commercial hub, supporting a variety of small enterprises including retail markets, housing arrangements for seasonal labor, and service-oriented businesses. This structural transformation demonstrated the cooperative's capacity to distribute wealth outward and stimulate regional capital circulation, even as its internal financial position deteriorated.

9. The Distillery Unit: A Critical Commercial Cushion and Waste Multiplier

9.1 Waste Valorization and Industrial Architecture

To improve the financial position of the core sugar refining operations, the management commissioned a secondary Distillery Unit in June 1969. This expansion represented a strategic approach to agro-industrial waste management and commercial diversification. The distillery required an initial capital outlay of Rs. 13.11 lakhs, supported by a state equity contribution of Rs. 9.80 lakhs. The plant was designed with an annual production capacity of 8,000 to 9,000 London Proof Litres (LPL) of country spirit, requiring approximately 75,000 quintals of molasses to run at full capacity for the year. By utilizing molasses, a relatively low-cost by-product of sugar processing, the distillery was able to reduce its dependence on comparatively expensive primary inputs.

9.2 Market Dynamics and Fiscal Contributions

The finished country spirit was distributed under government permit directly to state excise warehouses, where it was sold as country liquor to licensed vendors, providing a steady source of revenue for the state exchequer. The distillery also supplied refined spirit to pharmaceutical and chemical manufacturers for producing drugs and medicines, and exported high-grade spirit to the Kingdom of Bhutan for potable liquor production. This diversified market structure insulated the unit from standard consumer market volatility. To address potential regulatory shifts, such as encroaching state prohibition policies, the plant was designed to transition into manufacturing denatured methylated spirit for the regional industrial market. According to engineering estimates, the existing staff and machinery could produce five to six lakh litres of denatured spirit annually without requiring additional capital expenditure, positioning it to capture a market segment previously supplied entirely by producers outside the northeast.

9.3 Cross-Subsidization and Financial Mitigation

The consistent profitability of the distillery served as a vital financial cushion for the entire enterprise. Except for the 1972-73 season, when a shortage of sugarcane reduced molasses supply and caused a brief deficit of Rs. 20.8 thousand, the distillery posted consistent net profits. Profits grew from Rs. 17 thousand in its 1968-69 opening year to Rs. 4.48 lakhs in 1970-71, reaching Rs. 7.30 lakhs in 1976-77 and peaking at Rs. 8.72 lakhs by the 1979-80 financial year. These robust revenue streams helped absorb the escalating structural deficits and high manufacturing costs of the core sugar mill operations. For decades, this dual-production model offset the underlying vulnerabilities of the sugar unit, serving as a key financial

stabilizer that prolonged the mill's operational lifecycle and sustained its socioeconomic programs.

10. Comprehensive Strategic Problem Diagnostics

10.1 Raw Material Supply Vulnerabilities

The primary operational problem faced by A.Co.S.M. was a persistent shortage of raw materials, driven largely by the absence of organized and concentrated sugarcane cultivation. The mill's sourcing footprint was highly scattered, covering a wide geographic area with an operational radius exceeding 120 kilometers, while reliable, intensive supply lines were limited to a tight 30-kilometer zone around the facility. This fragmentation made field supervision and logistics coordination difficult for management. Production was further constrained by a lack of modern agricultural infrastructure, including reliable irrigation facilities, high-yielding seed varieties, and regular access to fertilizers and pesticides, forcing local growers to rely on traditional, low-yield cultivation methods. These limitations prevented early autumn planting in October and November, which requires regular irrigation. The resulting delay in planting reduced total cane yields, lowered sugar accumulation times, and led to poor crop nutrition. Furthermore, local farmers frequently harvested crops before full maturity, disrupting the standard November-to-April harvest window and reducing the volume of extractable sucrose. (Phukan, 1990; Assam Cooperative Sugar Mill Ltd., 1984)

10.2 Technical Obsolescence and the Scale Viability Imperative

The mill also faced severe technical challenges stemming from its low crushing capacity. In an environment of rising prices and increasing production costs, the original 800-1000 TCD plant design was no longer an economically viable unit. To achieve necessary economies of scale, the facility required an immediate expansion to a minimum capacity of 2500 TCD. As the physical machinery aged, routine repair and maintenance costs grew rapidly, exacerbated by price increases for specialized industrial spare parts and equipment. Because these heavy components were not manufactured within Northeast India, the mill had to import them from distant industrial zones outside the state, adding large logistical expenses and causing prolonged operational delays during mechanical breakdowns. This vulnerability was highlighted during the 1982-83 season, when a sudden failure of the primary power turbine halted all crushing operations, causing major financial losses that impacted the mill's long-term stability. (Assam Cooperative Sugar Mill Ltd., 1984, 1985)

10.3 Administrative Failures, Political Interference, and Ad-Hocism

These material and technical challenges were compounded by administrative inefficiencies and frequent changes in leadership. The state government routinely transferred Managing Directors for political reasons, appointing twelve different Chief Executives between 1958 and the late 1980s. The average tenure for a Managing Director was less than two and a half years, with many serving for eighteen months or less. These short tenures left executives with insufficient time to

understand the mill's complex operational patterns or implement long-term development programs, often leaving strategic initiatives unfulfilled in administrative files. This lack of continuity extended to the Board of Directors, where the position of Chairman was consistently filled by political appointees rather than through grassroots cooperative elections. These political leaders often lacked background knowledge in sugar technology or industrial management and frequently had limited time to dedicate to active oversight. This institutional ad-hocism led to poor field supervision, weak manpower planning, and deteriorating industrial relations, turning employee dissatisfaction into recurring grievances due to the absence of modern human resource management tools. (Assam Cooperative Sugar Mill Ltd., 1987)

10.4 Infrastructure Bottlenecks and Transport Subsidization Traps

Finally, the cooperative faced severe infrastructure bottlenecks, particularly regarding power supply and transport logistics. Sourcing a large share of its raw materials from distant zones like Borpathar and Sarupathar, located fifty to sixty miles away, forced the mill to provide substantial transport subsidies based on distance to remain competitive. Without these subsidies, distant growers would divert their raw cane to the nearby Nagaland Sugar Mills at Dimapur, leaving the Barubamungaon plant with a severe material deficit. An earlier attempt by management to operate a dedicated corporate transport fleet proved even costlier, adding a large financial burden to the mill's operating budget. Operations were further disrupted by recurring power shortages from the state electrical grid. These frequent blackouts forced the distillery unit to repeatedly halt production, preventing it from processing its targeted monthly volume of 6,000 quintals of molasses and generating unnecessary waste. The distillery's efficiency was also constrained by storage delays, as slow distribution allotments from the state excise commissioner forced finished spirit to sit in corporate warehouses for long periods. During the 1985-86 season, these storage constraints forced a complete production shutdown lasting sixty-five consecutive days. These infrastructure and regulatory bottlenecks, combined with the lack of modern marginal and absorption costing systems, left management without the clear financial information required for effective day-to-day decision-making and cost control. (Medhi, 1978; Assam Cooperative Sugar Mill Ltd., 1986)

10.5 Interacting Causes of Institutional Decline

The evidence suggests that the decline of A.Co.S.M. resulted from a cumulative interaction of constraints rather than from a single causal factor. Weak agricultural productivity reduced the availability of cane; irregular cane supply lowered factory utilization; low utilization increased unit production costs; mechanical breakdowns further reduced productive time; rising labour and transport expenditures increased the cost burden; and regulated sugar prices limited the cooperative's ability to recover these costs through higher market prices. At the same time, administrative instability weakened the continuity required to address these problems through sustained investment, agricultural extension, technological modernization, and organizational reform. Financial deterioration then

reinforced the operational crisis by limiting the cooperative's ability to purchase raw materials, maintain equipment, and retain effective working capital. The decline should therefore be understood as a cumulative institutional process in which agricultural, technological, financial, infrastructural, and governance constraints mutually reinforced one another.

12. Conclusion and Strategic Outlook

The history of A.Co.S.M. demonstrates that its decline cannot be explained by managerial incompetence alone. It resulted from weak cane supply, inadequate infrastructure, technological obsolescence, rising labour costs, financial fragility, and administrative intervention. The mill was therefore neither an uncomplicated success nor a simple failure: it was a developmental experiment whose social achievements were substantial but whose institutional structure could not sustain them financially.

The mill embodied a post-independence vision of cooperative rural industrialization. State support was important because private capital and infrastructure were limited. A.Co.S.M. connected cultivators to an organized processing market, created employment, and stimulated ancillary economic activity. Its historical importance therefore survives its financial decline. At the same time, low capacity utilization, poor sugar recovery, short crushing seasons, breakdowns, and rising costs eroded competitiveness. By the mid-1980s, accumulated losses exceeded paid-up capital and reserves, net worth became negative, and working capital turned sharply deficient (Assam Cooperative Sugar Mill Ltd., 1985, 1986, 1987).

The central lesson is that state support and cooperative autonomy are not opposites. State investment was necessary to establish the mill, but state domination weakened the autonomy needed for adaptation. The state should provide finance, infrastructure, agricultural extension, and technology while allowing professional managers and producer-members greater operational authority. The Baruabamungaon experience therefore shows that cooperation was not inherently incompatible with Assam; the institutional balance required for sustainable industrial cooperation was never successfully maintained.

Declaration

The authors declare that this manuscript is an original work and has not been published previously in its present form. The authors confirm that the manuscript has been prepared for scholarly publication and that all sources used in the study have been appropriately acknowledged and cited. Both authors have reviewed and approved the final version of the manuscript and agree to be accountable for the accuracy and integrity of the work.

Conflict of Interest

The authors declare that they have no conflict of interest, financial or otherwise, that could have influenced the research, analysis, interpretation of findings, or preparation of this manuscript.

Ethical Statement

The study was conducted in accordance with accepted academic and ethical standards for historical and qualitative research. The research primarily draws upon archival records, annual reports, audit statements, government records, and other historical documents. The qualitative component included oral histories and interviews with local community members, sugarcane growers, and former employees associated with the Assam Cooperative Sugar Mill. Participation in the interviews was voluntary, and appropriate measures were taken to protect the privacy, anonymity, and confidentiality of participants. No information identifying individual respondents has been disclosed without appropriate permission.

Author Contributions

Pranab Jyoti Phukon conceived and designed the study, conducted the archival research, collected and analyzed the quantitative and qualitative evidence, and prepared the initial manuscript. Prof. Rajib Handique supervised the research, provided critical intellectual guidance on the historical and political-economic dimensions of the study, and contributed substantially to the interpretation, revision, and editing of the manuscript. Both authors reviewed and approved the final manuscript and accept responsibility for its contents.

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Data Availability Statement

The primary historical data, annual reports, and audit statements supporting the findings of this study are derived from the internal archives of the Assam Cooperative Sugar Mill (A.Co.S.M.) Ltd. and the Office of the Senior Auditor of Cooperative Societies, Assam, which are cited within the manuscript. The qualitative field notes and oral history transcripts are not publicly shared to protect the privacy and confidentiality of the participants, but they are available from the corresponding author upon reasonable request.

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