A Feasibility Study for Establishing an Ecosystem of Ancillary Industries by Utilizing the Petrochemical Potential of the Major Hydrocarbon Industries of Assam

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Abstract

Introduction: Assam, rich in oil and natural gas resources, has long been a hub for India's hydrocarbon sector. With major players like Oil India Limited (OIL), Indian Oil Corporation (IOCL), Numaligarh Refinery Limited (NRL), and Brahmaputra Cracker and Polymer Limited (BCPL), the state possesses substantial petrochemical potential. However, the downstream benefits in terms of industrialization, especially in the form of ancillary industries, remain significantly underutilized. Ancillary industries—those that support, supply, or depend on core industries—have the potential to stimulate regional economic development, generate employment, and enhance the value chain of hydrocarbon outputs. The absence of a coordinated ecosystem to harness these opportunities poses a missed opportunity for inclusive industrial growth in Assam. This research attempts to explore the feasibility of establishing such an ecosystem by analyzing the capacity of existing hydrocarbon units, identifying viable ancillary sectors, and assessing the infrastructural, economic, and policy frameworks necessary for sustainable development.

Literature Review: The development of petrochemical clusters has been widely studied as engines of industrialization, economic growth, and regional competitiveness. Porter's (1990) theory of industrial clusters emphasizes the importance of geographic concentration of firms, suppliers, and institutions in fostering innovation, cost efficiency, and export orientation. In India, Gujarat represents the most successful example, where large anchor industries such as Reliance, ONGC, and IOCL catalyzed thousands of ancillary units in plastics, fibers, packaging, and composites (Sharma & Mehta, 2018). This cluster effect was reinforced by strong infrastructure, policy incentives, and skill development institutions such as CIPET.

By contrast, Assam, despite being resource-rich in hydrocarbons, has lagged behind in downstream petrochemical development. Previous studies (e.g., Gogoi, 2019; AIDC reports, 2022) highlight structural challenges—poor logistics, limited industrial linkages, and lack of organized clusters—that prevent full utilization of its petrochemical potential. However, emerging literature on sustainable industrial ecosystems (Singh, 2021) suggests that latecomer regions like Assam may benefit from leapfrogging by integrating circular economy principles, renewable energy, and low-carbon practices at the foundation stage. Thus, existing scholarship on cluster development, sustainability transitions, and Northeast India's industrial policy context collectively frame the feasibility of building an ancillary ecosystem around Assam's hydrocarbon industries.

Methodology: This study adopts a mixed-methods approach to examine the feasibility of developing ancillary industries around Assam's hydrocarbon sector. Primary data were collected through semi-structured interviews with key stakeholders, including representatives from Assam Industrial Development Corporation (AIDC), Brahmaputra Cracker and Polymer Limited (BCPL), micro and small enterprise owners, and policy officials. These interviews helped capture on-ground perspectives on opportunities, barriers, and sustainability pathways. Secondary data were sourced from government reports, industrial policies, academic articles, and statistical databases, particularly focusing on Gujarat's petrochemical cluster model as a benchmark.

The analysis employs SWOT and PESTLE frameworks to systematically evaluate Assam's industrial ecosystem. SWOT highlights internal strengths and weaknesses of the region's hydrocarbon base, while PESTLE assesses external factors such as policy, economic conditions, and environmental constraints. A comparative case method is used to contrast Assam's emerging potential with Gujarat's established success. To ensure validity, data triangulation was applied by cross-checking stakeholder inputs with documentary evidence. The methodology thus integrates qualitative insights with structured analytical tools, offering a comprehensive basis to evaluate whether Assam can foster a sustainable, low-carbon ancillary industry ecosystem around its petrochemical assets.

Findings: The study reveals that Assam possesses a significant hydrocarbon base anchored by ONGC, OIL, NRL, BCPL, and IOCL, providing a strong feedstock foundation for downstream development. However, unlike Gujarat, where large-scale petrochemical complexes triggered dense networks of MSMEs, Assam's ancillary industries remain underdeveloped and fragmented. Interviews with AIDC and SME stakeholders indicate that high logistics costs, limited port access, and insufficient cluster-based infrastructure are major barriers.

On the positive side, Assam enjoys strong policy support under NEIDS 2017 and the Assam Industrial Policy 2023, which offer fiscal incentives for new investments. Stakeholders also emphasized the growing market potential for petrochemical-based products such as packaging materials, UPVC pipes, and construction plastics in Northeast India and neighboring Southeast Asia.