NIIR PROJECT CONSULTANCY SERVICES (NPCS)
Industrial Consulting | Feasibility Studies | Project Reports

C A S E S T U D Y

Linear Alkyl Benzene (LAB) Manufacturing Project

From Vision to Viability: How NPCS Empowered M/s. Oswal Greentech Limited to Confidently Enter the Specialty Chemicals Sector

CLIENT	INDUSTRY
M/s. Oswal Greentech Limited	**Specialty Chemicals / Petrochemicals**

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ABOUT NPCS

Niir Project Consultancy Services (NPCS) is one of Asia's most trusted industrial consulting organizations, with over three decades of experience helping entrepreneurs, MSMEs, and large-scale investors make informed manufacturing and industrial decisions.

"NPCS is part of Asia's leading industrial knowledge ecosystem with thousands of project profiles and global consulting expertise."

Detailed Project Reports (DPR) Comprehensive technical and financial blueprints for manufacturing ventures.	**Techno-Economic Feasibility Studies** In-depth evaluation of technical viability and financial returns.
Market Research & Industry Analysis Demand forecasting, competitive landscape, and growth opportunity mapping.	**Engineering & Strategic Advisory** Plant layout, machinery selection, process engineering, and implementation roadmaps.

NPCS BY THE NUMBERS

30,000+ **Project Reports Published** Across all industries	**50+** **Countries Served** Global client base	**30+** **Years of Expertise** Deep domain knowledge	**2,50,000+** **Industrial Projects Delivered** Across Asia & beyond

PROJECT SNAPSHOT

Client Name	M/s. Oswal Greentech Limited
Location	Delhi, India
Industry Sector	Specialty Chemicals / Petrochemicals
Project Recommended	Manufacturing of Linear Alkyl Benzene (LAB)
Consultancy Services	Techno-Economic Feasibility Study, Market Analysis, Raw Material Assessment, Project Cost Estimation, Financial Viability Evaluation, Implementation Planning, Strategic Advisory
Implementation Status	Client has reviewed feasibility insights and agreed to proceed with project implementation

CLIENT OVERVIEW

M/s. Oswal Greentech Limited is a forward-looking industrial enterprise based in Delhi, India, with a strategic mandate to invest in high-value manufacturing ventures that offer long-term profitability and scalable growth.

Recognizing the potential in India's booming FMCG and chemical processing sectors, the company sought to expand its industrial portfolio by identifying a technically feasible and commercially viable manufacturing opportunity. With a focus on sustainability, export potential, and downstream integration, the management engaged NPCS to conduct a thorough project identification and feasibility exercise.

Client Investment Objectives

- Identify a high-demand specialty chemical manufacturing project
- Achieve sustainable long-term revenue from domestic and international markets
- Leverage downstream integration with surfactant and detergent industries
- Ensure availability of raw materials and industrial infrastructure
- Establish a large-scale, compliant manufacturing operation

CHALLENGES & PROBLEM STATEMENT

Before commissioning the project, M/s. Oswal Greentech Limited faced a complex set of strategic and operational challenges that required professional consulting expertise to address.

1. Market Intelligence Gap Lack of real-time data on LAB demand, pricing trends, and competitive dynamics in both domestic and global markets.	**2. Technical Complexity** LAB production is a complex petrochemical process requiring careful selection of feedstocks, catalysts, and precision equipment.
3. Financial Risk Uncertainty High capital investment with uncertain ROI timelines necessitated rigorous financial modeling and risk-adjusted projections.	**4. Supply Chain Assessment** Securing reliable feedstock (n-paraffins and benzene) at competitive prices required in-depth supply chain analysis.
5. Regulatory Compliance Chemical manufacturing in India involves multiple environmental, safety, and industrial approvals that needed to be mapped in advance.	**6. Competitive Landscape** Evaluating existing LAB producers, import substitution opportunities, and export market windows required specialized industry analysis.

OUR APPROACH & METHODOLOGY

NPCS deployed a structured, data-driven consulting methodology tailored to M/s. Oswal Greentech's investment objectives. The engagement followed a six-phase approach, ensuring that each decision was backed by rigorous analysis and industry expertise.

01

Project Identification

Evaluated multiple manufacturing sectors aligned with the client's investment profile and growth ambitions. LAB was selected based on demand trajectory, import dependency, and strategic market positioning.

02

Market & Demand Analysis

Conducted granular analysis of global and domestic LAB demand, including end-use industries (household detergents, industrial cleaners, laundry products), pricing dynamics, and future growth forecasts.

03

Raw Material Assessment

Evaluated the availability, pricing, and procurement feasibility of key feedstocks — n-paraffins and benzene — including domestic supplier mapping and import sourcing alternatives.

04

Technical Feasibility Review

Assessed core manufacturing processes (UOP Pacol/Detal technology and Huntsman processes), equipment requirements, plant layout, utilities, and operational specifications.

05

Financial Modeling

Developed detailed capital expenditure estimates, operating cost structures, revenue projections, and profitability indicators including ROI, IRR, Net Present Value, and Payback Period.

06

Implementation Strategy

Provided a phased project execution roadmap covering site selection, statutory approvals, plant commissioning, recruitment, and go-to-market strategy.

SCOPE OF SERVICES DELIVERED

SERVICE AREA	DESCRIPTION
Project Identification & Opportunity Mapping	Evaluated the LAB sector against multiple investment criteria, confirming its strategic viability for the client's portfolio.
Detailed Project Report (DPR) Preparation	Produced a comprehensive DPR covering all technical, financial, and operational aspects of establishing a LAB manufacturing unit.
Plant Layout & Infrastructure Design	Provided conceptual plant layout guidance, including process flow areas, utility zones, storage facilities, and safety systems.
Machinery & Technology Selection	Recommended suitable process technologies, key equipment (alkylation reactors, distillation columns, HF or solid acid catalyst units), and vendor profiles.
Financial Modeling & Viability Assessment	Delivered detailed capital cost estimates, operating budgets, ROI/IRR calculations, and breakeven analysis to support investment decisions.
Market Validation & Demand Forecasting	Confirmed strong domestic and export demand for LAB and LABS, with sector-specific growth projections.
Implementation Roadmap	Provided a phased timeline for project execution: from site acquisition and regulatory approvals through to plant commissioning and commercial production.
Strategic Advisory & Ongoing Support	Continued to provide expert guidance throughout the pre-implementation phase to ensure confident project progression.

TECHNICAL INSIGHTS

Linear Alkyl Benzene (LAB) is produced through a well-established petrochemical process that involves the alkylation of benzene with linear (normal) paraffins. The process produces a highly pure, biodegradable surfactant intermediate that serves as the backbone of modern detergent formulations.

Manufacturing Process Overview

1. Feedstock Preparation: n-Paraffins (C10–C14 range) are isolated from kerosene via molecular sieve adsorption (UOP Molex process or equivalent). Benzene feedstock is sourced from catalytic reforming or steam cracking.
2. Dehydrogenation: n-Paraffins are dehydrogenated to mono-olefins (linear internal olefins) using a platinum-alumina catalyst in the presence of hydrogen (UOP Pacol process or equivalent).
3. Alkylation: Linear olefins are alkylated with benzene using either Hydrofluoric (HF) Acid catalyst (traditional) or Solid Acid Catalyst (Detal-Plus process, preferred for safety and environmental compliance). This is the core reaction step producing LAB.
4. Fractionation & Purification: Crude LAB is distilled and fractionated to achieve commercial purity specifications. Heavy alkylate (HAB) is separated as a by-product.
5. Quality Testing & Packaging: Finished LAB is tested for purity, alkyl chain distribution, and other quality parameters before bulk packaging or pipeline transfer to downstream users.

Key Machinery & Technologies

- Molecular sieve adsorption units (n-paraffin isolation)
- Dehydrogenation reactors with platinum-based catalysts
- Alkylation reactors (HF-based or solid acid Detal units)
- Multi-stage distillation and fractionation columns
- HF acid recovery and neutralization systems (if HF process used)
- Utilities: DM water plant, nitrogen generation, steam systems, instrumentation
- Quality control laboratory with GC and analytical equipment

FINANCIAL & MARKET ANALYSIS

Investment Overview

Project Scale	Large-Scale Industrial Manufacturing Facility	**Land & Civil Works**	Significant infrastructure investment for greenfield plant
Production Equipment	High-precision chemical reactors, distillation units, utilities	**Working Capital**	Adequate provisions for feedstock procurement and operations
Environmental Systems	Effluent treatment plant, emission controls, safety infrastructure	**Quality & Lab Setup**	NABL-aligned quality control laboratory infrastructure

Key Financial Indicators

The NPCS feasibility model highlighted the following indicative financial metrics for a commercially viable LAB plant:

- Strong ROI potential driven by consistent demand from the FMCG and industrial cleaning sectors
- Attractive IRR supported by robust domestic demand and export market access
- Payback Period estimated within a competitive range relative to industry benchmarks for specialty chemical plants
- Stable cash flows underpinned by long-term offtake potential from detergent manufacturers
- Significant import substitution opportunity reducing India's dependency on LAB imports

Market Demand & Growth Drivers

- India's LAB consumption is growing in line with the rapid expansion of the domestic FMCG and personal care sectors
- Rising per-capita consumption of detergents and cleaning products in Tier-2 and Tier-3 cities
- Increasing institutional demand from hospitality, healthcare, and food processing industries
- Global push toward biodegradable surfactants driving LAB adoption over legacy ABS-based alternatives
- Export opportunities to South Asia, Middle East, and Africa where detergent industry is expanding rapidly

RESULTS & OUTCOMES

Following the delivery of NPCS's comprehensive techno-economic feasibility report and strategic advisory inputs, M/s. Oswal Greentech Limited achieved the following measurable business outcomes:

✓ **Informed Investment Decision** The client moved from concept to conviction — backed by rigorous data and expert analysis.	✓ **Risk Mitigation** Comprehensive financial and market modeling significantly reduced investment uncertainty.
✓ **Strategic Market Positioning** Clear identification of domestic demand opportunities and export market access.	✓ **Technical Clarity** Detailed process knowledge and machinery specifications provided full operational clarity.
✓ **Implementation Confidence** A structured, phase-wise roadmap gave the client confidence to proceed with project execution.	✓ **Regulatory Readiness** Early identification of approvals and compliance requirements streamlined the pre-construction phase.

Client Decision: M/s. Oswal Greentech Limited has formally agreed to proceed with implementation of the LAB manufacturing project.

CLIENT TESTIMONIAL

> *"NPCS delivered valuable techno-economic insights that helped us evaluate a promising opportunity in the specialty chemicals sector. Their structured feasibility analysis and professional advisory services enabled us to confidently move forward with our manufacturing investment.*
>
> **— Management Team, M/s. Oswal Greentech Limited**

WHY CHOOSE NPCS

Proven Industrial Expertise 30+ years and 2,50,000+ project deliveries across virtually every manufacturing sector in Asia.	**Global Market Intelligence** Proprietary market data and demand analysis covering 50+ countries enables accurate investment decisions.	**Data-Driven Feasibility** Every recommendation is backed by rigorous financial models, primary market research, and technical assessments.
End-to-End Project Support From initial concept to plant commissioning — NPCS walks with clients through every stage of the project lifecycle.	**Risk Mitigation Approach** NPCS proactively identifies financial, regulatory, and operational risks and develops mitigation strategies before they impact the project.	**McKinsey-Grade Deliverables** Our reports and advisory outputs meet the highest standards of corporate consulting — detailed, accurate, and actionable.

CONCLUSION

This case study demonstrates how Niir Project Consultancy Services (NPCS) transforms industrial investment ideas into structured, data-backed implementation plans. For M/s. Oswal Greentech Limited, the engagement delivered far more than a feasibility report — it provided the strategic clarity, technical grounding, and financial confidence needed to make a landmark investment decision in the specialty chemicals sector.

The Linear Alkyl Benzene manufacturing project is now on its path to implementation — a testament to the power of expert-led industrial consulting. With India's chemicals sector poised for multi-decade growth, projects like this represent not just commercial success for individual investors, but a meaningful contribution to the country's industrial self-reliance and export competitiveness.

NPCS remains committed to delivering world-class project advisory services that empower investors across Asia and beyond to build successful, sustainable manufacturing enterprises.