Boxer Industrial Tanzania Limited

Annual Production and Supporting Facilities Project Plan

Target: 100,000 Tons of Liquid Detergents and 50 Million Cans of Disinfection Products

Investment: USD 5 Million

Date: June 2025

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1. Project Overview

- **Project Title**: Annual Production and Supporting Facilities for 100,000 Tons of Liquid Detergents and 50 Million Cans of Disinfection Products
- **Implementing Company**: Boxer Industrial Tanzania Limited
- **Investment**: USD 5 million
- **Location**: Service trade Industry at Vumilia Ukooni, Kigamboni Municipality in Dar Esa Salaam, Tanzania.

2. Project Background

Detergents play a very positive and effective role in health and hygiene. With rapid economic development, people’ s awareness of health and civilization has been constantly improving, driving dramatic changes in the detergent market. Currently, there is a wide variety of detergent products in the market, and new product forms continue to emerge. Global detergent market grows at 4% annually; liquid detergents are leading this growth.

The laundry powder market is stabilizing, while the liquid detergent market is growing rapidly. Among all detergent types, liquid laundry detergent has the most development potential.

In the United States, liquid laundry detergent accounts for more than 70% of the laundry detergent market. In China, laundry powder holds 36% of the market share, while liquid laundry detergent has reached 64%.

In Africa, the liquid detergent market is just beginning but growing rapidly. Heavy-duty detergents make up 70% of the market, while functional liquid detergents account for 30%, and aligns with global trends of:

1. Energy efficiency
2. Phosphate-free formulations
3. Multifunctional properties (cleaning, softening, antibacterial)
4. High-concentration products

Liquid detergents have a modern appearance, excellent performance, are convenient to use, and come in many varieties. These advantages are gaining wide acceptance and have great development potential in Africa.

In the context of global energy saving and emission reduction trends, building a low-investment, high-output, low-consumption, low-emission, recyclable and sustainable economic system and resource-efficient, environmentally friendly society is particularly important.
The production and use of liquid detergents align well with the goals of global energy saving and emission reduction.

Specifically, the advantages of liquid detergents include:

1. Aligning with the trend of detergents shifting from powders to liquids, which are more energy-efficient, convenient to use, highly adaptable, and have better comprehensive performance. This is the direction of development in detergent industries of developed countries.
2. Complying with the trend towards phosphate-free detergents to reduce water eutrophication. This project' s liquid detergent products are phosphate-free.
3. Matching the trend of multifunctional detergents that combine cleaning, softening, anti-static, and antibacterial effects saving time, labor, electricity, and water, and meeting the fast-paced modern lifestyle.

- The project’ s liquid detergents use proprietary improved formulations with enzyme stabilizers that maintain enzyme activity and ensure concentrated, stable products.
- The product contains multiple enzymes: protease for protein stains, amylase for starch stains, lipase for oily stains, and cellulase for fabric care and color protection.

4. Supporting the trend toward concentrated detergents, which reduce packaging, transport costs, and storage space while lowering environmental impact.

According to the American Detergent Association, the era of concentrated detergents has arrived, and more consumers are adopting them. This project will enhance innovation capacity, promote detergent industry development, optimize product structure, and expand production scale.

In 2020, global aerosol production reached 24 billion cans. Although Africa lacks industrialized production, demand is very high, especially for insecticide aerosols, which account for over 30% of global sales in Africa.

Products like air fresheners, body sprays, automotive aerosols, and sealant aerosols are also entering the market and being welcomed by consumers.

With rising living standards, aerosol products have become part of daily life in all aspects: clothing, food, housing, transportation, and healthcare.

Since the outbreak of COVID-19, global economies have suffered, and globalized trade has been severely disrupted. High shipping costs have driven up the price of essential goods like insecticide aerosols in Africa.

Therefore, launching localized industrial aerosol production in Africa is urgently needed to resolve supply-demand imbalances.

3. Project Objectives and Development Plan

3.1 Overall Objective

Through the implementation of a dual-drive and diversified development strategy, within three to five years, strengthen the manufacturing sector of disinfection products, foster emerging industries, and achieve the overall goal of becoming a strong enterprise group with significant influence in Africa. Strategic sub-goals include industry leadership, first-class management, strong brand appeal, and independent innovation capability.

Maintain a compound growth rate of over 25% in the disinfection products industry and strive to achieve a total scale of USD 50 million by the end of the planning period.

Production volumes for major products (businesses) from 2026 to 2030 (rolling five-year plan):

3.2 Strategic Goals (2025–2030)

No.	Product	Unit	2026	2027	2028	2029	2030
1	Liquid Detergents	10,000 tons	5	8	10	10	10

2	Insecticide Aerosols	10,000 cans	800	1200	1800	2300	3000
3	Other Aerosols	10,000 cans	200	400	800	1200	2000

4. Project Plan and Process Technology

Relying on service trade industry located at Vumilia Ukooni, Kigamboni Municipality in Dar Esa Salaam, Tanzania a land measuring 24,334 square meter for factory construction.

With a total investment of USD 5 million, the project will establish production and supporting facilities for 100,000 tons of liquid detergent and 50 million cans of disinfection products annually.

Renovate four production workshops, one transfer warehouse, and one testing center.

Use liquid detergent and disinfection products as the core to expand into related industries such as can manufacturing and plastic products.

4.1 Principles for Technology Selection

Selection Principles of Process Technology Scheme:

Automation and safety, Cost-efficiency, Energy efficiency/saving and environmental compliance, High precision, low emissions, and resource recycling.

- For production technology, the principles of automatic control, safety and reliability, stable operation, cost-effectiveness, and comprehensive resource utilization are followed.

- Adopt advanced distributed control systems for unified computer control of all process parameters to ensure high product quality and reduced material consumption.
- Equipment selection is based on energy-saving principles, prioritizing new energy-efficient and environmentally friendly equipment to meet product specifications.
- The selected process flow must meet the project product requirements. Strengthen staff training and quality management to improve product yield.
- Follow the principles of 'high starting point, high quality, specialization, and economic scale'. Adopt new technologies, processes, and high-efficiency specialized equipment to produce high-value-added products.
- The project will implement the 'three simultaneities' principle, focusing on environmental protection, occupational health and safety, fire safety, and energy conservation.

4.2 Process Technology Scheme

4.2.1 Plastic Bottle Liquid Detergent Production Process Flow

The production process primarily involves proportioning and mixing externally purchased raw materials and packaging them a purely physical mixing and packaging operation at normal temperature and pressure, without any chemical reactions.

All raw materials are procured externally by the construction unit. Equipment uses electric or steam heating.

Process Description:

- Deionized water is measured and added to the mixing tank. The motor is started to stir, and the measured borax and calcium chloride are added.
- After stirring for 10 minutes, the measured fatty alcohol polyoxyethylene ether is added and stirred for 20 minutes.
- Then cocamidopropyl betaine and AES are added until completely dissolved and uniform.
- Next, a mixture of propylene glycol, alcohol, compound enzymes, optical brightener, and fragrance is added and stirred for 10 minutes.
- Then Kathon and colorant are added and stirred for another 10 minutes before filtering and filling.
- Products that pass inspection are released. Unqualified products can be reprocessed, and filter residue can also be fully reused.

4.2.2 Deionized Water Production Process Flow

Explanation:

The project uses reverse osmosis water treatment equipment to produce deionized water. Tap water is filtered through quartz sand and activated carbon systems, then enters the reverse osmosis unit.

- Reverse osmosis is a pressure-driven separation process that removes solutes from solvents using a semi-permeable membrane.

- It's widely used for liquid purification and concentration, especially in water treatment, to remove inorganic ions, bacteria, viruses, organics, and colloids, resulting in high-purity water.
- Its advantages include high-quality output, low operating cost, no pollution, ease of operation, and reliability, making it the most efficient and convenient technology for seawater desalination and pure water preparation.
- **Reverse osmosis principle:** When pure water and saline are separated by a semi-permeable membrane, water flows into the saline side due to osmotic pressure.
- If external pressure greater than the osmotic pressure is applied on the saline side, water flows back to the pure water side—this is reverse osmosis.
- RO membranes typically have pore sizes around 10Å, operating pressures of 1.0–10.0 MPa, and can remove 96–99% of salts or small organic molecules.
- Polluted membranes are returned to the supplier for recycling.

4.2.3 Aerosol Can Packaging Process Flow

Process Description:

- Before preparation, all measuring instruments, containers, and raw material handling should follow the detergent production procedure.
- Deionized water is added to a sanitized stainless steel batching tank and stirred while adding sodium benzoate until completely dissolved.
- Other raw materials are added in order and stirred until fully dissolved.

- QC checks pH levels and adjusts to 6.5–7.0 using triethanolamine or citric acid.
- After passing inspection, the mixture is ready for filling.

4.3 Main Process Equipment and Selection

Equipment Configuration Principles

To meet production and testing needs and ensure product quality, complete technical equipment must be configured. Equipment must be advanced, mature, and reliable, both domestically and internationally.

- Main equipment must match the production process and scale, be advanced, practical, economical, and environmentally friendly.
- Selected equipment must be proven reliable by users and capable of producing high-quality products.
- Equipment must offer high performance-to-cost ratio, ensuring efficient investment for quality production.
- Equipment must be economically sound and energy-efficient with low operation costs for long-term sustainability.
- Based on experience and technical strength, most key process and testing equipment will be domestically sourced from top-tier manufacturers.
- Critical equipment selection follows principles of high precision, flexibility, efficiency, and forward compatibility.

4.4 Equipment Configuration Plan

Based on scale and process, the project compared several equipment suppliers and selected energy-saving, eco-friendly, and multi-product adaptable equipment.

A total of **94 sets** of main equipment are expected to be purchased and installed, with an investment of **USD 3.2 million**.

Refer to the 'Main Production Equipment Investment List' and 'Main Testing Equipment Investment List' for details.

4.5 Liquid Detergent Production Flow (Summary Format)

1. **Raw Material Mixing (No chemical reaction)**
2. **Steps:**
    - Add deionized water to mixing tank
    - Add borax and calcium chloride
    - Stir, then add fatty alcohol polyoxyethylene ether
    - Add cocamidopropyl betaine and AES
    - Add propylene glycol, alcohol, enzymes, fragrance, optical brighteners
    - Finish with Kathon and colorants
    - Filter and fill
3. **Reuse:** Unqualified products and filter residues are reprocessed.

4.6 Deionized Water Production (Summary Format)

Process: Tap water → Quartz sand filter → Activated carbon → RO system

Benefits:

- Removes salts, bacteria, and organic matter
- High purity, low cost, minimal waste

RO Membrane:

- Pore size 10Å
- 96–99% salt removal

4.7 Aerosol Can Packaging Process (Summary Format)

1. Follow detergent production prep steps
2. Add deionized water → Sodium benzoate → Other raw materials
3. Adjust pH (6.5–7.0)
4. Fill after QC approval

4.8 Equipment Configuration Summary

- **Total Equipment:** 94 sets
- **Investment:** USD 3.2 million
- **Selection Basis:** Energy efficiency, environmental standards, local and international certification
- **Suppliers:** High-grade domestic and international brands

4.9 Raw Materials Overview

Liquid Detergents:

- Fatty alcohol polyoxyethylene ether, AES, cocamidopropyl betaine, enzymes, borax, fragrance, colorant, propylene glycol, alcohol, calcium chloride, water, packaging

Aerosol Products:

- Alcohol, butane, propane, Kathon, borax, fragrance, sodium benzoate, cans, surfactants

5. Project Construction Content

5.1 Hardware Investment and Construction

The project plans to lease a 5,500-square-meter facility in Lekki Industrial Park, Nigeria, using proprietary liquid detergent formulas to produce disinfection and related products.
The project will purchase 58 sets of equipment including plastic machines, electromagnetic heaters, feeders, coding machines, gas filling machines, reactors, conveyors, aerosol high-speed filling lines, and chromatographs.

The project will reach an annual production capacity of **100,000 tons of liquid detergent** and **50 million cans of disinfection products**.

New facilities will include aerosol filling workshops, plastic workshops, gas station warehouses, office buildings, and service facilities.

Total planned investment is **USD 5 million**, including:

- **USD 3.2 million** for equipment,
- **USD 0.5 million** for plant investment,

- **USD 1.3 million** for working capital.

Workshop design is based on production process, equipment layout, and functional needs, considering spatial structure, hygiene, fire safety, and aesthetics.

Workshops include:

- Detergent filling
- Disinfection product production
- Can-making
- Injection molding
- Testing center
- Offices

5.2 Workshop Layout and Design

Design is based on production process, spatial requirements, hygiene standards, fire safety, and aesthetics.

No.	Workshop/Facility	Dimensions	Area (sqm)	Features
1	Detergent Filling Workshop	60m × 20m	1,200	2 filling lines
2	Aerosol Filling Workshop	60m × 20m, 8m H	1,200	2 automated lines (80 cans/min)
3	Can-making Workshop	60m × 20m	1,200	1 automatic line (200 cans/min)
4	Injection Molding Workshop	8m × 40m	320	1 molding line
5	Transfer Warehouse	60m × 20m	1,200	Logistics and storage
6	Testing Center	8m × 20m	160	Equipped with gas chromatograph
7	Office Area	8m × 4m × 5 rooms	160	5 offices (32 sqm each)
8	Tank Area	10m × 10m	100	For LPG and kerosene storage tanks

5.3 Facility Layout Summary Table

Building	Area (sqm)	Description
Detergent Filling Workshop	1,200	2 filling lines
Aerosol Workshop	1,200	2 lines (80 cans/min)

Can-Making Workshop	1,200	1 line (200 cans/min)
Injection Molding	320	1 molding line
Transfer Warehouse	1,200	Storage
Testing Center	160	GC-equipped
Offices	160	5 rooms (32 sqm each)
Tank Yard	100	Butane & kerosene tanks

5.4 Tank Construction Details

5.4.1 Tank Capacity and Equipment

- 1 × 50m³ Horizontal Butane Tank
- 1 × 30m³ Deodorized Kerosene Tank
- 1 × 0.28m³ Gas-Liquid Separator
- 1 × 0.28m³ Stabilizer Tank
- 4 × Pumps (Model YQ15-5)

5.4.2 Site Layout

- Located at the northeast corner of the facility
- **Total Area**: 100 sqm
- Surrounded by a 1.5-meter-high retaining wall
- **Entry/Exit**: Southwest

- **Arrangement (East to West)**: Butane tank area → Kerosene tank area

5.5 Buildings and Fire Safety Design

5.5.1 Main Buildings Table

No.	Name	Area (sqm)	Floors	Structure	Fire Category	Fire Resistance Grade
1	Butane Tank Area	100	—	—	Class A	—

5.5.2 Fire Safety Distance Compliance

Building Name	Direction	Nearby Structure	Required Distance	Actual Distance	Notes
Butane Tank Area (A)	East	Empty Land	—	—	Compliant
	South	Aerosol Production Workshop	30m	30m	Compliant

	West	Empty Land	—	—	Compliant
	North	Empty Land	—	—	Compliant

5.6 Tank Operations – Process Description

- **Unloading**: Butane delivered via tank truck and pumped into the horizontal tank
- **Supply**: Butane is pumped through pipelines into the aerosol workshop
- Kerosene follows a similar system for stable feed to aerosol production

5.7 Material Storage and Transport

5.7.1 Storage Table

Material	Hazard Code	Annual Usage (t/a)	Storage Method	State	Max Storage (tons)	Storage Location
Butane	21012	1,200	Tank	Liquid	25	Butane Tank
Deodorized Kerosene	33501	1,200	Tank	Liquid	25	Kerosene Tank

5.7.2 Transport

- **External Transport**: By certified hazardous chemical transport companies
- **Internal Transport**: By pipeline to production areas

5.8 Main Equipment List

Equipment	Quantity	Specification
Butane Tank	1	0.8 MPa / 50m³
Kerosene Tank	1	30m³
Gas-Liquid Separator	1	1.2 MPa / 0.28m³
Stabilizer Tank	1	1.2 MPa / 0.28m³
Pumps (YQ15-5)	4	For transfer and circulation

5.9 Hazard and Risk Analysis

5.9.1 Chemical Hazard Table

No.	Name	Code	Hazard Category	Fire Class	Flash Point (°C)	Explosion Range (%)	Toxicity	Exposure Limit (mg/m³)	Hazard Level
1	Butane	21012	Class 2.1 Flammable Gas	Class A	-60	1.5–8.5	LC50: 658,000 mg/m³ (rat, 4h)	—	Mild Hazard

Notes:

• MAC – Maximum Allowable Concentration

• TWA – Time-Weighted Average (8 hours)

• STEL – Short-Term Exposure Limit (15 minutes)

5.9.2 Hazard Category Identification

No.	Chemical	Code	Highly Toxic	Precursor	Supervised	Explosive	Notes
1	Butane	21012	No	No	Yes	No	Compliant

6. Software Construction and R&D Plan

6.1 Innovation Strategy

- **R&D budget** = 3% of sales
- **In-house development** + partnerships with universities

- **Target** new patents and product innovation
- **Sustainable design**: multifunctional, eco-packaging

V. Software Investment and Construction

3.1 Independent Innovation and R&D Plan

To promote long-term competitiveness and product innovation, the project includes a comprehensive innovation strategy, focusing on both technology and human capital:

1. Innovation Incentives and Talent Attraction

- Establish and improve incentive systems for attracting and retaining technical talent.
- Provide a favorable working environment and competitive compensation to stimulate innovation and ensure recognition and rewards for achievements.

2. Increased R&D Investment

- Allocate **3% of annual sales revenue** to technological innovation.
- Prioritize independent research on core technologies and critical components.

3. Partnerships and Applied Innovation

- Leverage internal resources and form partnerships with universities and tech firms.
- Address structural and product development challenges collaboratively, sharing risks and returns.

4. Technology Integration

- Accelerate the use of modern science, new materials, and advanced production equipment.
- Focus on enhancing product quality, reducing resource consumption, and maximizing value addition.

5. Design and Product Development Strategy

- Follow **green**, **minimalist**, **multifunctional**, and **innovative design principles** for aerosol and hygiene products.
- Aim for **mid-to-high-end** product positioning in the market.

6. Intellectual Property and Innovation Management

- Promote **IP protection**, streamline innovation management processes, and implement **phased R&D plans**.
- Allocate clear funding and personnel, targeting the development of **new patents** during the planning cycle.

7. Integration of Technological and Managerial Innovation

- Align **IT systems** with **management frameworks** to foster continuous innovation.
- Build **sustainable business models** based on intelligent decision-making and digital systems.

3.2 Information System Development Plan

To support production, logistics, R&D, and sales, the following digital infrastructure and IT systems will be implemented:

3.2.1 Central Database and Website

- Build a **high-speed centralized database platform** for the group and its subsidiaries.
- Enhance the structure and content of the **group’ s official website**.

3.2.2 Business and Financial Systems

- Implement **centralized financial and capital management systems**.
- Expand **K3 Enterprise Management Software** applications.
- Build databases for:
    - Customer and market information
    - Contracts and resource allocation
    - Budget and cost control
- Support **analytical tools** for strategic planning and decision-making.

3.2.3 Marketing System

- Upgrade the marketing management subsystem:
    - Integrate **video transmission** and **call platforms**
    - Monitor **customer feedback** and **product complaints**
- Launch an **e-commerce platform** and explore **innovative sales models**.

3.2.4 Computer-Aided Design (CAD)

- Enhance CAD capabilities:

- **Database-driven product modeling**
- **Visual simulations** and **intelligent design tools**
- Optimized product design schemes

3.2.5 Internal Communication and Documentation

- Strengthen **internal LAN infrastructure**.
- Expand **ERP** and **OA (Office Automation)** systems.
- Complete IT systems for **management**, **technical**, and **quality control**.
- Digitize the full **archive management system** to ensure traceability and efficiency.

7. Main Technical and Economic Indicators

7.1 Profit Estimation

(Figures in USD ×10,000)

Year	Sales Revenue	Total Cost	Sales Tax/Admin	Raw Material Tariff	Total Profit
2026	1,430	1,072	28	86	243
2027	1,600	1,200	30.8	97	272.2
2028	2,600	1,950	47	160	443
2029	3,500	2,625	60.5	210	604.5
2030	5,000	3,750	83	300	867

7.2 Profitability Analysis

- **Return on Investment (ROI)**:

  ROI = Net profit in full production year / Total investment × 100%

  ROI = 243 / 500 × 100% = **48.6%**

- **Return on Tax-Inclusive Investment**:

  Return = Total tax in full production year / Total investment × 100%

  Return = 86 / 500 × 100% = **17.2%**

- **Break-even Point (BEP) Analysis**:

  BEP = Fixed Costs / (Sales Revenue – Variable Costs – Sales Tax) × 100%

  BEP = 500 / (1430 – 568 – 86) = **64.4%**

  This means the project reaches break-even when operating at **64.4% capacity**.

7.3 Economic and Social Benefits

- **Gross Margin**: Estimated at **35%**
- **Net Profit Margin**: Estimated at **25%**
- **Annual Net Profit (at full production)**: USD **2.43 million**
- **Annual Tax Contributions**: USD **860,000**
- **Local Jobs Created**: **80**
- **Payback Period**: **Within 2 years**

7.4 Financial Analysis Conclusion

The projected high internal rate of return (IRR) and relatively low break-even threshold indicate a **robust financial outlook**. The project demonstrates:

- Strong economic feasibility
- Efficient use of investment capital
- High potential for stable revenue and sustainable growth
- Positive regional impact through employment and localized production

Therefore, the project is **financially viable**.

8. Conclusion

The **Boxer Industrial Tanzania Limited Annual Production Project** stands as a beacon of sustainable industrialization in Africa, combining **financial viability**, **technical excellence**, and **meaningful social impact**.

With a strategic focus on modern hygiene needs and environmentally responsible production, this initiative is positioned to play a **transformative role** in the region' s economic landscape.

Leveraging a robust investment of **USD 5 million**, the project will establish a **cutting-edge facility** capable of producing **100,000 tons of liquid detergents** and **50 million cans of disinfection products** annually. It is guided by innovation, precision engineering, and a commitment to quality that aligns with international standards and market trends.

From a **financial standpoint**, the project exhibits:

- Strong profitability indicators
- A short investment payback period
- High resilience to operational risks

Its **environmental orientation**, featuring **phosphate-free formulations** and **reduced packaging waste**, responds to global sustainability demands, while the integration of **intelligent systems** and **advanced process technologies** ensures operational efficiency and product consistency.

Socially, the project is a catalyst for:

- Local employment
- Skills development
- Industrial empowerment

With over **80 direct jobs created**, **partnerships with local suppliers**, and **collaboration with academic and research institutions**, it fosters **inclusive growth and knowledge transfer**.

In sum, this project is not merely a production venture,
It is a **visionary step toward building a resilient, self-reliant, and innovation-led industrial ecosystem** in Africa.
Boxer Industrial Tanzania Limited is poised to lead the next generation of hygiene manufacturing in the region delivering products that are **effective**, **affordable**, **sustainable**, and **socially responsible**.