

Guideline for Glass Industry Development in Dankotuwa and Marawila, North Western Province, Sri Lanka

1. Executive Summary

This document outlines a strategic guideline for the development of the glass industry in the Dankotuwa and Marawila regions of the North Western Province, Sri Lanka. Leveraging regional resources, existing industrial infrastructure, and global best practices, this guideline aims to foster sustainable growth, attract investment, and enhance the value chain of the glass sector in the specified areas.

2. Introduction

The North Western Province of Sri Lanka, particularly the Dankotuwa and Marawila areas, possesses significant potential for the expansion and modernization of its glass industry. This potential is primarily driven by the availability of key raw materials, strategic location, and existing industrial frameworks. This guideline provides a roadmap for stakeholders, including government bodies, investors, and local communities, to collaboratively develop a thriving and sustainable glass manufacturing ecosystem.

3. Regional Context and Resource Assessment

3.1. Geographic and Economic Overview of Dankotuwa and Marawila

Dankotuwa, located in the Puttalam District, and Marawila, both within the North Western Province, are strategically positioned with access to transportation networks and a developing industrial base [1]. The region's economy is characterized by agriculture, manufacturing, fishing, and small-scale industries [2].

3.2. Raw Material Availability

Silica Sand: The North Western Province is a significant source of silica sand, a crucial raw material for the glass industry, with annual production reaching approximately 200,000 tonnes [1]. Specifically, the best-known silica sand deposits are found in the Marawila, Madampe, and Nattandiya areas [3]. High-purity silica sand, typically with SiO₂ content exceeding 95% and often above 99% for optical and specialty glass, is essential for glass manufacturing [4].

3.3. Existing Industrial Landscape

Dankotuwa hosts an Industrial Estate, which is a vibrant center for various industries, including textiles, plastics, coir, rubber, spices, and engineering [5]. While Dankotuwa

Porcelain PLC is a prominent ceramic manufacturer in the region, indicating a skilled workforce in related manufacturing processes, the direct presence of large-scale glass manufacturing in Dankotuwa itself is not explicitly highlighted in the initial search results [6]. However, PGP Glass Ceylon PLC is a significant glass manufacturer in Sri Lanka, located in the Western Province [7].

4. Policy and Investment Framework

4.1. Government Policies and Incentives

Sri Lanka's industrial policy has evolved to focus on industrial capacity development, with initiatives aimed at boosting industrialization through effective policy strategies [8] [9]. The Board of Investment (BOI) of Sri Lanka plays a crucial role in attracting high-quality investment by offering various incentive programs, including tax concessions and duty exemptions [10] [11]. The BOI acts as a "one-stop shop" for investors, offering approvals, incentives, and assistance [12]. Strategic Development Projects (SDPs) are entitled to corporate income tax holidays of five to ten years, with exemptions commencing from the date of commercial operations [13] [14].

4.2. Industrial Zones and Infrastructure

The Dankotuwa Industrial Zone is an established industrial area with existing infrastructure [5]. Further development of industrial estates and improved infrastructure, including road networks, are part of national development plans [15] [16].

4.3. Environmental Regulations

Environmental regulations in Sri Lanka, particularly concerning sand mining, are in place to minimize environmental impacts [17] [18]. The Central Environmental Authority (CEA) is responsible for enforcing these regulations [19]. Any glass manufacturing development must adhere to these environmental guidelines, including those related to silica sand extraction and processing.

5. Global Best Practices and Sustainable Development

5.1. Glass Industry Clusters

Industrial clusters, such as those in Firozabad, India, demonstrate how geographical proximity of interconnected companies and institutions can foster innovation and competitive advantages [20] [21]. Learning from such models, Dankotuwa and Marawila can develop a specialized glass industry cluster, promoting collaboration and shared resources.

5.2. Sustainable Manufacturing and Circular Economy

Cullet Utilization: Incorporating cullet (recycled glass) into the manufacturing process significantly reduces energy consumption (2-3% for every 10% of cullet) and carbon emissions [22] [23] [24]. Implementing efficient cullet collection and processing systems is crucial for sustainable glass production. AGC Glass Europe aims to increase cullet ratio to 50% by 2030, demonstrating a commitment to circular economy principles [25].

Energy Efficiency: The glass industry is energy-intensive. Best practices include optimizing furnace operations, waste heat recovery, and adopting energy-efficient technologies [26]. ISO 50001 certification for energy management systems can guide these efforts [27].

Quality Control and Standards: Adherence to international standards such as ISO 9001 for quality management and specific ISO standards for glass (e.g., ISO 695:1991, ISO 12775:1997) is vital for producing high-quality glass products and ensuring market competitiveness [28] [29] [30].

5.3. Value-Added Glass Products

Beyond traditional glass products, there is a growing global market for value-added glass, such as smart glass, which is projected to reach over \$10 billion by 2030 [31] [32] [33]. Exploring opportunities in specialized glass for pharmaceuticals, solar energy, and other advanced applications can enhance the industry's profitability and export potential.

6. Recommendations

6.1. Policy and Regulatory Framework

- **Streamline Investment Procedures:** Further simplify and expedite approval processes for glass industry investments through the BOI, potentially creating a dedicated desk for the sector.
- **Incentivize Sustainable Practices:** Offer additional tax breaks or subsidies for companies adopting cullet utilization, energy-efficient technologies, and environmentally friendly practices.
- **Enforce Environmental Regulations:** Strengthen monitoring and enforcement of environmental regulations related to silica sand mining and industrial emissions to ensure sustainable resource management.

6.2. Infrastructure and Resource Management

- **Develop Glass-Specific Industrial Zones:** Designate and develop specific areas within Dankotuwa or Marawila Industrial Estates with infrastructure tailored for glass manufacturing, including access to high-quality silica sand and efficient waste management systems.
- **Optimize Silica Sand Supply Chain:** Invest in advanced processing facilities for silica sand to ensure consistent quality and purity required for various glass

applications. Explore partnerships with local mining operations to ensure sustainable extraction.

6.3. Human Capital Development

- **Skill Development Programs:** Collaborate with vocational training institutes to develop specialized programs for glass manufacturing, including furnace operation, glass blowing, quality control, and maintenance of advanced machinery.
- **Research and Development:** Encourage partnerships between industry and local universities for R&D in new glass technologies, product development (e.g., smart glass, pharmaceutical glass), and sustainable manufacturing processes.

6.4. Market and Export Promotion

- **Promote Value-Added Products:** Focus on attracting investments in manufacturing high-value glass products with export potential, leveraging Sri Lanka's trade agreements.
- **International Partnerships:** Facilitate collaborations with international glass manufacturers for technology transfer, market access, and joint ventures.

7. Conclusion

The development of a robust and sustainable glass industry in Dankotuwa and Marawila holds significant promise for the North Western Province and Sri Lanka as a whole. By strategically leveraging local resources, implementing supportive policies, embracing global best practices in sustainability and technology, and investing in human capital, the region can establish itself as a competitive player in the global glass market.

8. References

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