



A Decadal Analysis of Sri Lanka's Bunkering Industry (2016–2025)

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Sri Lanka is strategically located along major west shipping routes in the Indian Ocean and possesses strong potential to further develop its port and shipping sector. The bunkering services play a critical role in enhancing port competitiveness and supporting the national Blue Economy. However, Sri Lanka has not yet fully realized its potential as a regional bunkering hub, and limited studies have examined growth trends within the industry. Hence, this study analyzes the development and quantitative trends of the Sri Lankan bunkering sector using supply data obtained from seven major operators across key ports from 2016 – 2025. Trend analysis was conducted using Mann–Kendall test, which indicated a statistically significant upward trend in total bunkering volumes ($p < 0.05$). Sen's slope estimator further a gradual long-term increase in supply. Temporal variation revealed a short-term growth phase during 2017–2018, followed by a decline in 2020–2021, primarily attributed to disruptions caused by the COVID-19 pandemic. A subsequent recovery phase was observed after 2022, indicating market stabilization and renewed growth. The analysis also identified a structural shift in fuel composition, with a transition from High Sulfur Fuel Oil (HSFO) to Very Low Sulfur Fuel Oil (VLSFO) after 2021, likely driven by the enforcement of the International Maritime Organization (IMO) sulphur cap regulations implemented in 2020. Spatially, the Port of Colombo dominated the bunkering market, accounting for 75% of total market share, while the Port of Trincomalee emerged as a secondary hub with 10% share. The market structure remains highly concentrated, with two major companies controlling most of the supply. Seasonal analysis revealed a distinct monthly variation, with peak bunkering activity occurring between May and August. This pattern is likely influenced by Southwest Monsoon, which disrupt offshore operations in Indian ports and redirect vessel traffic to Sri Lankan ports. Overall, the findings highlight steady growth in Sri Lanka's bunkering industry, structural market concentration, and strong seasonal influences. These insights provide important implications for port policy development, environmental compliance, and sustainable expansion of the national Blue Economy.

Keywords: *Blue Economy, Bunkering, Colombo Port, Temporal Dynamics, Trend Analysis,*