

CARBON FOOTPRINT OF SELECTED SRI LANKAN TEA INDUSTRIES

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Tea production has significant effects on the environment, including habitat conversion, reduction in biodiversity and ecosystem function, high energy consumption, and high use of pesticides and fertiliser. The impact of the tea industry on climate change and the best mitigation measures are still up for debate. This study was conducted to identify the parameters to quantify the greenhouse gas emission associated with fertiliser, material and energy usage in the tea sector in Sri Lanka and calculate the estimated value for Greenhouse Gas (GHG) emission in the tea sector. The Life Cycle Analysis (LCA) approach was used to estimate the carbon footprint across the life cycle of goods and services, including GHG emissions and other environmental impacts. Emissions were calculated based on resource consumption for the main processes in the tea life cycle in two major tea-producing companies from April 2019 to March 2020 in Sri Lanka, and total emissions were calculated using the average carbon footprint per 1 kg of tea and total tea production in Sri Lanka. Agrochemical application (>55%) is recognised as a major carbon-emitting activity in the tea manufacturing process. Water boiling is the highest carbon-emitting and high energy-consuming activity in the consumption phase. In the Sri Lankan context, tea consumption accounts for 66% of the overall carbon footprint, whereas tea manufacturing accounts for 34% of total GHG emissions per cup of tea. However, the overall estimated carbon footprint of tea production (cradle to gate) is 812,857 tCO₂e (51% of total), and the carbon footprint for local consumption is 784,788.76 tCO₂e (49% of total carbon footprint), and the estimated total carbon footprint (cradle to grave) for Sri Lankan tea sector is 1,597,646.26 tCO₂e per year.

Keywords: Climate change, Greenhouse gas emission, Life Cycle Assessment, Sri Lanka, Tea