

## Environmental Impact of Cassava Chips Processing

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Cassava chips are fast moving ready to serve snack product made by frying raw cassava root slices in palm oil. The study was carried out to assess the environmental impact and identify the hotspots in the life cycle of cassava chips manufacturing. Life cycle analysis was conducted according to the method described by ISO 14040:2006 standards. Three separate but interrelated components: inventory analysis, impact assessment and interpretations were performed for the cassava chips life cycle using software package SimaPro 8.4.0.0 faculty version. Inventory data was collected through the use of structured questionnaires and personal communication. Data was collected on cassava farming, chips manufacturing, packaging and transportation. The impact assessment methodology chosen was ReCiPe2016 end point (H) method in SimaPro software. The results revealed that Life cycle environmental impacts of a cassava chip were dominated by activities in cassava farming, refined Palm oil, Liquid petroleum gas and Electricity using in cassava chips processing. High amount of NPK fertilizer usage in cassava farming caused the highest negative environmental impact. High chemical and water usage and high amount of effluent generation while refined palm oil production contributed mostly for global warming (37%), stratospheric ozone depletion (26%), Fine particulate matter formation (25.4%), Terrestrial ecotoxicity (28%), Marine ecotoxicity (26%), Mineral resource scarcity (30.7%) and Water consumption (62.1%). Fossil resource scarcity was dominated by cassava chips life cycle stage, liquid petroleum gas (LP gas) utilization. Electricity consumption mainly contributes for cassava chips' environmental impact categories of marine ecotoxicity, Human non carcinogenic toxicity and human carcinogenic toxicity due to emissions from fuel oil and coal combustion in electricity production in Sri Lankan National Grid. Tap water consumption, packaging material and transportation stages did not caused a significant effect on all the cassava chips' environmental impact categories.

**Keywords:** cassava chips; environment impact; inventory analysis; life cycle analysis; simapro software