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Estimation of Local Community and Global Externalities from Rice Processing Industry: A Case Study in North Central Province of Sri Lanka

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Abstract

Rice processing industry generates solid waste, waste water, fugitive dust and boiler emissions. Particulate matter and NO_x are the main air pollutants generated from rice mills which impact on surrounding communities in the North Central Province of Sri Lanka. Emission of CO₂ from boilers contributes to global warming. Present study attempts to evaluate cost to surrounding communities due to local air pollutants and aims to estimate global damage cost due to CO₂ emissions. Three large scale (with production capacity of 100-175 Mt/d), 2 medium scale and 5 small scale rice mills were selected from North Central Province. Replacement cost approach and preventative expenditure approach was adopted to estimate community nuisances and 418 households were selected from each distance zone (250, 500, 750 and 1,000 m) away from the selected mills. Information on additional cleaning activities carried out by the households and the expenditure on preventive strategies against air pollutants were collected from the households using a structured questionnaire. The global damage cost was estimated using benefit transfer approach and using the data on CO₂ emissions from each mill. Results revealed that that houses need cleaning additionally two days per week due to milling dust. The total cost of preventative and replacement expenditure for 990 affected households around the 10 mills is LKR 20.6 million. If the mills are operating 20 days per month, 25,216 Mt are released into the atmosphere annually and the global damage cost is LKR 35 million. The study emphasizes the need to provide incentives for pollution control of rice processing industry.

Keywords: Rice mill, Replacement cost, Boiler emissions, Global damage cost