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Assessment of airborne emission and impact reduction potentials from Norochcholei coal power plant

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Despite the social resistances due to environmental consequences, Lakvijaya coal power plant, Norochcholai (LCPP) contributes for over 35% of national grid electricity in Sri Lanka. However, a quantitative emissions inventory and associated environmental impacts from LCPP have not been made publicly available. Hence, the objective of this study is to theoretically evaluate airborne emissions and associated environmental impacts from LCPP using a standard environmental impact assessment method. The results reveal that uncontrolled hourly airborne emission rates from LCPP are approximately 223.5 tonnes of CO_2, 2.6 tonnes of SO_2, 1.42 tonnes NO_x, and 30 tonnes of particulate matter. Three scenarios were compared for environmental impacts: with uncontrolled emissions (S1), emissions with current control techniques (S2), and emissions with proposed control techniques (S3). Impact results in the S1 are, climate change (745.16 kg CO_2,eq/MWh), terrestrial acidification (11.34 kg SO_2,eq/MWh), photochemical oxidant formation (5.44 kg NMVOC/MWh), and particulate matter formation (103.28 kg PM_{10},eq/MWh). Airborne emission levels and corresponding environmental impact reduction potentials in three scenarios were compared and discussed. The study would facilitate decision and policy making to mitigate future environmental impacts.

Keywords: airborne emissions, environmental impacts, impact reduction potentials and coal power plant

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