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Estimating carbon footprint: Case study of University of Kelaniya

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According to GHG protocol, in 2011 Sri Lanka emitted 45 million metric tons of carbon dioxide equivalent (MtCO_{2e}). In order to identify the organizational impact on carbon dioxide emission leading to global warming, an analysis was carried out using planned CO₂ inventory for the University of Kelaniya, with setting Dalugama premises as organizational and operational boundary. Estimates were limited for the scope 1 and scope 2 emissions. Reporting period is for 12 months and ideally corresponding with 2016 financial year since this allows easier comparison of financial performance with other aspects of carbon footprint analysis. The four main faculties namely Faculties of Science, Social Science, Finance and Management Studies and Humanities were considered. As activity data, monthly water bills and electricity bills of year 2016 were gathered. Total consumption of fuel used in transportation from internal vehicle pool was collected for the year 2016 from the Transport Division of University of Kelaniya. Further information was collected to understand the, “Exact mode of transportation, type of vehicles (engines) used” and, “how often transport is used”. Total consumption of fugitive fuels for air conditioner and refrigerator refilling were also collected for the year 2016. In addition, amount of diesel used in diesel generator to produce electricity for the year was considered. After the collection of data direct and indirect carbon footprint was calculated separately using guidelines given in the DEFRA data base. Conversion factors widely accepted are used in conversion of electricity, water, transportation into CO_{2e}. Emissions of other greenhouse gases were converted into equivalent emissions data in MtCO_{2e}, using the global warming potential factors published by DEFRA. According to the analysis, the total carbon emission of the University of Kelaniya, Dalugama premises under scope 1 and 2 was 42,383.8 tons CO_{2e} in year 2016. To calculate the per capita carbon footprint, the total carbon footprint was divided by the number of the permanent staff considered in this case study. The per capita carbon footprint by considering scope 1 and 2 was 4.7093 tons CO_{2e} during 2016 at University of Kelaniya.

Keywords: Carbon footprint calculation, emission scope, greenhouse gases, operational boundary, University of Kelaniya