Carbon Footprinting and Mitigation Strategies for the USP Marine Campus

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Jeanette Mani[1], Francis Mani[2], Srikanth Subbarao[3], Atul Raturi[4]

Abstract

The quest for a low carbon footprint (CF) has prompted many institutions around the world, such as universities, among others, to take stock of their greenhouse gas (GHG) emissions. The CF assessment and its reporting are seen as a first step towards sustainability through planning for anthropogenic carbon emissions reduction. Carbon emissions–related activities of The University of the South Pacific (USP) Marine Campus) were investigated and then evaluated for potential reduction opportunities. A CF model for the campus's CO_2e emissions was developed. The results from the model estimated the USP Lower Campus CO_2e emissions to be 2665.8 tCO_2e. The Lower Campus per capita emissions for 2015 amount to about 1.1 tCO_2e per equivalent full-time student (EFTS) and 0.07 tCO_2e per square meter. Scope 3 emissions held the largest share of the emissions (96%). The emissions within scope 3 were largely from student and staff commuting. Besides commuting category, the largest contributor to the overall campus emission was electricity consumption and was recognized as an important source category. A 50kWp Photovoltaic (PV) rooftop system is proposed as an emission reduction strategy for the base case. This would make the campus electricity 100% renewable and entail an annual emission reduction of 12.9 tCO_2e. Other strategies that support environmental and GHG management within the campus are also proposed in this paper.

Keywords: carbon footprint; greenhouse gases; renewable energy; sustainability; The University of the South Pacific

[1] Corresponding author: School of Physics and Engineering, University of the South Pacific, Laucala Campus, Fiji, email: jeanette93.jm@gmail.com
[2] Senior Lecturer, School of Biology and Chemical Sciences, University of the South Pacific, Laucala Campus, Fiji
[3] Subbarao Consulting Services Ltd, Dunedin, New Zealand
[4] Corresponding author: Associate Professor, School of Physics and Engineering, University of the South Pacific, Laucala Campus, Fiji, email: atul.raturi@usp.ac.fj