Carbon emissions and embodied energy as tools for evaluating environmental aspects of tap water and bottled water in Brazil

Pablo Dias, Andréa Moura Bernardes*

Programa de Pós-Graduação em Engenharia de Minas, Metalúrgica e de Materiais (PPGE3M), Universidade Federal do Rio Grande do Sul (UFRGS), Av. Bento Gonçalves, 9500, 91509-900: Porto Alegre, RS, Brazil, Tel. 55 51 33089428; emails: pablo.dias@ufrgs.br (P. Dias), amb@ufrgs.br (A.M. Bernardes)

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ABSTRACT

This paper has the purpose of evaluating the environmental impact of the consumption of bottled water rather than tap water in the city of Porto Alegre (Brazil) using carbon emission and embodied energy calculations for both possibilities. The calculations took into account the bottled water production, transport, and waste generation. In addition, the quality of tap water was tested in key restaurants to evaluate whether the tap water of the city was drinkable (potable). Six key restaurants were interviewed throughout the city to collect data regarding the water bottle consumption, and to obtain water samples. The results revealed that bottled water is less environmentally friendly since it uses more energy inputs than tap water (respectively, equal to 4,640 and 1.66 MJ/m³). Results also shown 100% (6 out of 6) of the tested waters were drinkable (potable). The key conclusions are that energy and carbon footprints are important tools to determine sustainability issues, and can be applied by researchers and policy-makers to evaluate environmental aspects of water consumption.

Keywords: Drinking water; Tap water; Bottle water; Carbon footprint; Energy footprint

*Corresponding author.