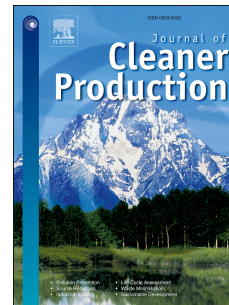


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Food waste consequences: Environmentally extended input-output as a framework for analysis

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2 Food waste consequences: Environmentally 3 extended input-output as a framework for analysis

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9 10 *Abstract*

11 This work presents a critique of the environmentally-extended input-output (EeIO) methodology for
12 analysing the environmental and socio-economic impacts of food systems in order to address food
13 waste problems. We applied EeIO analysis to estimate environmental and economic factors embodied
14 in Australian food waste. The scope of the study does not include the impacts of food use nor end-of-
15 life waste treatment. The impact of imported food was considered the same as Australian produced
16 food. Results indicate that Australian food waste represents 9% of total water use, 6% of GHG
17 emissions, 1% of surplus and 1% of compensation to employees. The analysis shows that the method
18 is adequate to analyse environmental and socio-economic aspects of food waste. The main benefits of
19 EeIO are that it provides inclusive information of all actors in the food supply chain, includes all
20 products available, enables analysis of environmental and economic indicators together, and provides
21 a consistent framework for analysis, consistently defining system boundaries. Through the exercise
22 we identify key aspects to consider when analysing food waste consequences.

23 *Highlights:*

- 24 - Food waste generated in Australia embodied 9% of total water use in Australia
- 25 - Australia's food waste embodied 1% of surplus generated in Australia
- 26 - EeIO analysis is suitable to analyse environmental and economic aspects of food

27 *Key words:* Food losses, Wastage, Australia, Footprint, Waste

28 1. Introduction

29 The aim of this study is to critique the environmentally-extended input-output (EeIO) methodology
30 for analysing environmental and socio-economic impacts of food systems in order to address food
31 waste problems. In doing so, we applied EeIO analysis to estimate environmental and economic
32 factors embodied in Australian food waste.

33 Considering that globally 30% of the food produced is wasted (Gustavsson et al., 2011) and that food
34 production is one of the major activities causing environmental damage (Rockström et al., 2009),
35 current literature seems to be in consensus that a reduction of food waste will produce environmental
36 benefits (Chapagain and James, 2011; Gustavsson et al., 2011; Kummu et al., 2012; Liu et al., 2013;
37 Reay et al., 2012). Furthermore, it is not only in academia that a reduction of food waste is believed to
38 deliver positive environmental outcomes, as the topic is gaining a high public profile in policy

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