

# Chapter 4

## Unravelling the Impacts of Supply Chains—A New Triple-Bottom-Line Accounting Approach and Software Tool

Thomas Wiedmann and Manfred Lenzen

**Abstract** Companies wishing to realise broader societal and environmental objectives often choose Triple-Bottom-Line (TBL) accounting as a reporting approach. TBL accounting covers social, economic and environmental indicators and thus enables decision-makers to quantify trade-offs between different facets of sustainability. Two issues are critical when considering TBL accounting. Firstly, indicators must include both the direct (on-site, immediate) effects of the company as well as the indirect (off-site, upstream, embodied) effects associated with purchasing from a potentially large and distant web of suppliers. The incorporation of all indirect or upstream impacts removes problems related to the choice of boundaries. Secondly, it is important to address the question of how to assign responsibility for the indirect impacts as these are shared between partners in a supply chain and must not be double-counted.

The research question of this work is therefore how can corporate sustainability performance be quantified and compared in practice whilst taking into account the responsibility-sharing nature of trading and avoiding double-counting of impacts? We (a) describe the analytical approach to measure the indirect impacts of a comprehensive TBL account of a producing entity; (b) present a quantitative concept of shared responsibility as a solution to assigning responsibility to both producers and consumers in a mutually exclusive and collectively exhaustive way; and (c) demonstrate practical applications in examples of quantification of indirect impacts, supply chain contributions, and shared responsibility.

---

T. Wiedmann (✉)

Centre for Sustainability Accounting Limited, University of York, York, United Kingdom  
e-mail: tommy@censa.org.uk

M. Lenzen

Centre for Integrated Sustainability Analysis (ISA), The University of Sydney,  
NSW 2006, Australia  
e-mail: manni@physics.usyd.edu.au