

Accepted Manuscript

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PII: S0959-6526(16)30577-7

DOI: [10.1016/j.jclepro.2016.05.105](https://doi.org/10.1016/j.jclepro.2016.05.105)

Reference: JCLP 7287

To appear in: *Journal of Cleaner Production*

Received Date: 21 August 2015

Revised Date: 17 May 2016

Accepted Date: 18 May 2016

Please cite this article as: Mogensen L, Nguyen TL, Madsen NT, Pontoppidan O, Preda T, Hermansen JE, Environmental impact of beef sourced from different production systems - focus on the slaughtering stage: input and output, *Journal of Cleaner Production* (2016), doi: 10.1016/j.jclepro.2016.05.105.

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Environmental impact of beef sourced from different production systems - focus on the slaughtering stage: input and output

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Abstract

The aim of the present study was to examine the environmental performance of ten Danish beef production systems covering the entire chain from the farm until the edible products and side streams leave the slaughterhouse and to explore the potential of mitigation related to the slaughtering process. The functional unit was 'kg edible product' including meat products and edible by-products that are used in human nutrition. Primary production accounts for a major share of the impact, leaving only a minor share to the slaughtering, where savings due to slaughterhouse by-product recovery are more than enough to offset the impact of the slaughtering process. The carbon footprint was 10-13 kg CO₂-eq/kg edible product from dairy based calves and cows of all types and 30-45 kg CO₂-eq/kg edible product from young animals of specialized beef breed systems. The use of non-renewable energy per kg edible product shows a relatively small variation among systems. Improving the utilization of the carcass by producing new edible products not conventionally produced represents an opportunity for reducing the environmental impact per kg edible product.

Keywords: Slaughtering; Edible products, Beef production system; Greenhouse gas emissions; Non-renewable energy

1. Introduction

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