JNCC

Addendum to

JNCC Report No. 681

Towards indicators of the global environmental impacts of UK consumption: Embedded Deforestation – Addition of Livestock Data

Croft, S., West, C., Harris, M. & Way, L.

July 2021

© JNCC, Peterborough 2021

Evidence Quality Assurance:
This document is compliant with JNCC's Evidence Quality Assurance Policy
https://jncc.gov.uk/about-jncc/corporate-information/evidence-quality-assurance/

Contents

1   Background

Recently, a JNCC report was published presenting preliminary results and methodological details for an indicator aiming to measure the global environmental impacts of UK consumption (Croft *et al.* 2021). These preliminary results only included deforestation risk from crop-driven agricultural commodities. They therefore excluded deforestation linked to livestock, due to the scope constraints of Phase 1 of the project. This addendum releases preliminary data for livestock (cattle) deforestation risk embedded within UK consumption. This represents the important addition of a commodity that is widely recognised as one of the leading drivers of deforestation worldwide, in order to provide a more complete dataset. Addition of further commodities (including timber) are planned for subsequent phases of the project (see the main report for further detail on future plans). Please note that this addition only shows impact data for deforestation-linked results, it does not include the total land use data that were presented for other commodities in the main report.

2   Methodological Information for the Addition of Livestock Driven Deforestation Risk Data

The primary methodology (i.e. the application of a hybrid MRIO to compile commodity-specific consumption-based footprints) for the analysis of livestock (cattle) data is consistent with the methods used for commodities in the main report. Please refer to the main report for full details of the methodology. This document outlines only methodological information that is required for the integration of cattle into the modelling framework.

Cattle-linked commodities (meat, offal, fats and hides) are run through the indicator framework following the same logic as the crop commodities, and likewise indicators are joined to the modelled physical flows based on the same principles. The differences and nuances of their implementation relate to data availability and/or alignment, and the nature of the commodities and their production. The key area in which the inclusion of livestock data within the indicator framework differs from other commodities (crops) applied to date in the modelling framework is the handling and presentation of commodities associated with the primary resource (cattle).

Whilst the production of crops can be easily represented within the framework by the harvest of the raw primary commodity due to simple seasonal cycles, cattle "production" is a more complex matter. Herd sizes do not provide an appropriate analogy for annual output, and instead the mass of production of derived products from slaughter, from FAOSTAT, are used as the measure of material production (to which other indicators are also linked). As a result, it is not just one single commodity which is considered at the point of production (as with a crop), but rather a range of commodities linked to the production of cattle (meat, offal, fats and hides). This is also complicated further by the fact that products of cattle and buffalo are included in the Food and Agriculture Organization of the United Nations (FAO) data, with both needed for alignment with, e.g., Pendrill deforestation datasets (2020).

The modelling flow process for livestock, and associated impacts, is outlined below:

- Production data for livestock is taken as the production of meat, offal, fats and hides, both for cattle and buffalo from FAO.

- Pendrill deforestation data lists impacts associated with "cattle meat" and "leather" (including both cattle and buffalo).Within the indicator framework, the deforestation impacts associated with production are first aggregated over meat and leather (provided separately in Pendrill *et al.* 2020), and then split across the production of the cattle meat, offal, fats and hides in proportion to the relative mass produced (i.e. they are all produced from the same animals)

- Estimates of land use, taken as permanent meadow and pasture from FAO, is likewise distributed across the production of the individual commodities in proportion to relative mass produced.

The flows of the individual commodities are modelled independently through the trade stages and the MRIO within the indicator framework. In results presentation, they are then aggregated back together under a title of "Cattle and buffalo meat, plus associated co-products."

References

Croft, S., West, C., Harris, M., Otley, A. & Way, L. 2021. Towards indicators of the global environmental impacts of UK consumption: Embedded Deforestation. *JNCC Report No. 681*, JNCC, Peterborough, ISSN 0963-8091. Available from: https://hub.jncc.gov.uk/assets/709e0304-0460-4f83-9dcd-3fb490f5e676 [Accessed 17/06/2021].

Food and Agriculture Organization of the United Nations. FAOSTAT statistical database. Rome, FAO. Available at: http://www.fao.org/faostat/en/#data [Accessed 16/04/2021].

Pendrill, F., Persson, M. & Kastner, T. 2020. Deforestation risk embodied in production and consumption of agricultural and forestry commodities 2005-2017 (Version 1.0) [Data set]. Available at: http://doi.org/10.5281/zenodo.4250532 [Accessed 16/04/2021].