

Carbon and land footprint time series of the Netherlands - integrating data from the GTAP and WIOD databases

Topic: Environmental input-output modeling I

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The paper presents the results of an analysis of the carbon and land footprints for the Netherlands from 1995 to 2011. A multi-region input-output (MRIO) model was used for the calculation of the footprints. In recent years, several MRIO databases have become available all with their specific characteristics, advantages and drawbacks. In the MRIO model used, data from two of these databases, WIOD and GTAP, were integrated. The WIOD database enables the calculation of a consistent year-to-year time series. The GTAP database has more detail in regions and sectors than the WIOD database. Therefore GTAP data were integrated into the WIOD data for a more detailed allocation of greenhouse gases and land use in agriculture. Furthermore, the regional detail in the GTAP database was used for allocating land use and greenhouse gas emission emissions in the WIOD rest-of-the-world region to continents.

Greenhouse gas emissions related to Dutch consumption rose slightly with an annual increase of 0.3% in the period 1995-2011 with the rise in CO₂ emissions as the main driver. Where the domestic emissions decreased the emissions related to imports for Dutch consumption rose. Especially the Chinese CO₂ emissions for Dutch consumption increased with 3.5% each year. The land footprint increased with 0.4% a year as a result of a higher demand for crop and pasture land. The forest land footprint decreased in the period considered. By integrating GTAP data into the WIOD data the contribution of African land use in the Dutch land footprint, which was in the order of 15%, became visible.