

Nature conservation and agricultural production: An Integrated Assessment Model with land use

Authors and affiliation: Jonas Hass Bonné, Phd Student.

Department of Economics, University of Copenhagen

Environmental effects beyond temperature increases resulting from greenhouse gas emissions have received increasing attention in recent years. Among these, the effects on biodiversity and ecosystems have been identified as both important and as elements which have typically been left out of integrated assessment models, although some attempts have been made at incorporating them. This paper builds on the existing literature by revising and extending the GreenDICE model presented by [Bastien-Olvera and Moore \(2021\)](#) to explicitly include land use as a limited input for both agricultural production and the continued supply of ecosystem services provided by well-functioning ecosystems, which require sufficient space to maintain. Additionally, agricultural production is explicitly divided into plant-based and animal-based production systems to allow for different characteristics governing both the different types of agricultural products produced and resources required for production. This allows for an analysis of how the economy and ecosystems develop under various policy scenarios along with identifying which policies are required to ensure adequate conservation of nature while simultaneously ensuring a sufficient food supply at a global scale.