# Environmental Burdens of the EU's Consumption: An MRIO-Based Assessment

Topic: Environmental IO models 1
Author: Kjartan Steen-Olsen
Co-Authors: Jan Weinzettel

Environmental footprints are used to indicate the total, life-cycle environmental stress of certain kinds that is induced by individuals, organizations or nations through their consumption of goods and services.

Based on the GTAP7 database we created an environmentally extended multi-regional input-output (EE-MRIO) model for the year 2004, to assess three such footprints:
• Carbon Footprint: Measures anthropogenic contributions to global warming potentials through greenhouse gas emissions
• Blue Water Footprint: Measures consumption of blue water, which is freshwater withdrawn from rivers, lakes or aquifers. Water is consumed directly by households, by companies for industrial purposes, or for irrigation in agriculture.
• Ecological Footprint*: Measures the area of appropriated biologically productive land. The asterisk denotes a modified version of the traditional Ecological Footprint as used by the Global Footprint Network; we excluded the carbon uptake land since CO2 emissions are already accounted for in the Carbon Footprint.

The environmental extensions are based on statistics on production and international trade of agricultural and forestry products; total blue water requirements for individual agricultural crops, industries, and households; and greenhouse gas inventories.

In this paper we quantify and compare the environmental footprints of the EU27 member states. Furthermore we analyze how, and to what extent, footprints are embedded in trade among member states and with the rest of the world. The results of our analysis generally show high per-capita footprint levels for the EU27 region compared to global averages, but with significant variations among individual member states.