Science for Environment Policy

Measuring environmental pressures of consumption in EU countries

A tool for analysing and comparing environmental pressures from production and consumption in Europe is presented in a recent report. Its results suggest that the consumed products that exert the most pressure on the environment include construction goods and food products. The report also highlights the difficulty of assessing the true environmental impact of imported goods, which are often produced using less eco-efficient processes than those found in Europe.

The report, from the European Environment Agency (EEA), describes the tool in detail and illustrates how this kind of analysis can help policymakers engage with those parts of the economy that lead to highest global environmental pressures.

The tool combines two perspectives: production and consumption. The production perspective considers direct environmental pressures caused by European industries and services, for example, resource extraction by the mining and quarrying sector or fuel combustion in the transport services sector. The consumption perspective considers direct pressures that occur during the final use of a product, as well as indirect or embodied pressures accumulated during the product’s global production and distribution, such as the materials required to make a product or emissions from lorries used to transport goods.

According to the study, these indirect or embodied pressures are responsible for over three-quarters of the total pressures caused by European consumption and are therefore crucial to the design of sustainable consumption and production (SCP) policies.

The report’s authors collected economic and environmental data for the years 1995, 2000 and 2005 (from Eurostat and national statistics offices) in the form of ‘Environmentally Extended Input-Output Tables’ (EE-IOTs). EE-IOTs illustrate relationships between economic sectors (such as agriculture and energy production), environmental pressures and economic output, and allow ‘hotspots’ of environmental pressure to be identified.

Nine EU Member States with suitable EE-IOTs were included: Austria, the Czech Republic, Denmark, France, Germany, Italy, the Netherlands, Portugal and Sweden. The researchers focused on four types of environmental pressure: raw-material use, greenhouse-gas (GHG) emissions, acidifying air emissions, and air pollutants that lead to harmful ground-level ozone.

Of the 59 product groups analysed, four were disproportionately pressure-intensive. These were: construction, i.e. buildings and infrastructures; food products; agricultural, forestry and fishing products; and electricity, gas and water services. Despite only accounting for about 17% of consumption expenditure, they accounted for around 50% of acidifying emissions and nearly 40% of ground ozone precursors, for example, caused by consumption in the nine countries.

According to the authors, to significantly decouple consumption of such goods from environmental pressures, measures to encourage technological improvements, such as investments in innovation or increases in the price of materials, should be combined with behavioural change-oriented measures, such as information campaigns and economic incentives for consumers to redirect spending towards less pressure-intensive products.

One major difficulty with the method presented in this report lies in calculating the environmental pressures caused by production of goods imported from other countries. When using single region national EE-IOTs, as in this report, it is normally assumed that imports have the same environmental pressures as the same goods produced within the importing country. The environmental pressures caused by goods imported from developing countries are often significantly underestimated using this assumption, as they typically are produced using less eco-efficient processes than those in Europe.

The report briefly discusses methods for improving estimates of environmental pressures embodied in imports. The most accurate methods use so-called ‘multi-regional input-output tables’ that connect national EE-IOTs with one another, including all trade flows of goods and services. A number of such models have been developed in the EU through Commission-funded projects.

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