

# Science for Environment Policy

## Affluence drives unsustainable consumption of land and sea

**The amount of land and ocean** that a country uses in order to produce food and other commodities, or its land or ocean 'footprint', increases by over a third for each doubling of income, new research shows. Thus, as nations become richer, and lifestyles become more affluent, pressure on natural resources increases.

**Global demand for natural resources** is rising at an unprecedented rate, putting pressure on finite [resources](#), ecosystems and [biodiversity](#). To understand global patterns of consumption, the impacts of international trade must be carefully examined, since countries may 'displace' land and resource use through increased imports, i.e. they use land in other countries to help meet their own demand for food and materials.

In this study, partly conducted under the EU-funded One Planet Economy Network<sup>1</sup>, researchers modelled the use of land and oceans in 2004, tracing their consumption through international supply chains. UN databases were used to access information on the land use and production of agricultural and forestry products. Use of oceans was based on a global average of how much 'biomass' (e.g. weight of fish) a hectare of ocean could produce and human demand for fish biomass. The use of these primary products in other industries, such as food or furniture production, as well as trade between countries, was also considered.

The results suggest that the EU's land and ocean footprint was 2.5 hectares per person, compared to a global average of 1.2 hectares. This also far exceeded the estimated 'biocapacity' of Europe, that is, its ability to produce commodities, such as food and forestry products, within its own borders, which was 1.8 hectares per person.

Land and ocean use for each country rose with increasing income, growing by 35% for each doubling of income, but this only became evident when international trade was taken into account. The total global footprint which was 'displaced' by trade amounted to 1.8 billion hectares of land and sea. Even smaller countries, but with higher average incomes, imported relatively more resources, while the industrialised economies of Europe, Japan and South Korea required the largest amount of foreign land to sustain their consumption.

The researchers conclude that the use of all natural products increases with affluence, and they found that this effect was especially strong for forestry and seafood, with the demand for these products very dependent on income.

The researchers also highlight the importance of displacement of land and ocean use. In other words, consumption by individuals in one country often takes up land or ocean use in another, as a result of international trade. This is particularly important for international policymaking, because high income countries may need to take some responsibility for the loss of biodiversity and natural resources in low income countries.

Looking to the future, the results indicate that if consumption continues to follow the same patterns, the global land and ocean footprint will increase by 70% by 2050, compared to 2004. This is a major sustainability challenge caused by a combination of population growth and increasing affluence. The researchers suggest that 'sustainable intensification' may be needed to increase productivity to meet the rising demand. However, the researchers note that, for the sake of global biodiversity, our land and ocean footprints must stop growing, and may even need to decrease for some more affluent countries.



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