

A SHORT PRIMER ON THE ECOLOGICAL FOOTPRINT

Edited from Lewan and Simmons (2001).

What does the ecological footprint measure?

Footprinting essentially accounts the use of the planet's renewable resources (its 'interest' rather than its 'capital'). Non-renewable resources are accounted for only by their impact on, or use of, renewable, bioproductive capacity.

The footprint deals only with demands placed on the environment. It does not attempt to include the social or economic dimensions of sustainability.

The footprint is a 'snapshot' estimate of biocapacity demand and supply usually based on data from a single year. Both available biocapacity and the eco-efficiency of the economy can change over time which is why it is not possible to forecast or 'backcast' footprints from current data although it is possible to make assumptions about future consumption and thus create informative, but speculative, scenarios.

The use of bioproductive area as an aggregate unit makes it a powerful and resonant means of measuring and communicating environmental impact and sustainability. In this sense it is comparable to many economic indicators such as the Retail Prices Index (RPI) and GDP.

The Bathroom Scales and Footprints

The footprint has been compared to measuring ones own weight. You can find out how heavy you are, and the difference from your ideal weight, but the process of measuring does not tell you how to lose weight. However, you can speculate that if you do certain exercises and eliminate certain calorific foods from your diet you will shed a certain number of kilos.

An Additive Model

The basic ecological footprint is an additive model. It sums several mutually exclusive uses of bioproductive area; arable, forest (for both wood products and carbon sequestration), pasture, degraded or built land, and sea space. Exceptions to the additive model have been made for footprinting certain types of pollution and water catchment where spatial uses overlap.

A key issue in the calculation of ecological footprints and biocapacities is the method used to aggregate areas of different quality facilitating international comparisons. Areas of generally different productivity (arable, pasture, forest, sea) are 'normalised' by multiplying them by equivalence factors relating to their bioproductivity. The equivalent areas are then expressed as standardised hectares of world average productivity (more recently referred to merely as 'area units').

Use of fossil fuel-derived energy is typically accounted for in terms of its carbon dioxide emissions although it is also possible to assess ecological footprints of energy use in terms of the land area required to sustainably derive biofuel alternatives. The

former results in a more conservative estimate of the impact of fossil fuel use and have thus been the more common method.

Biocapacity

For calculation of national/regional biocapacity, local yield factors are introduced. These factors show how much higher or lower the yield per local ha is compared to the yield per area unit. There is always the possibility of converting ha of unit area into ha of national/regional average productive space for both supply and demand. Thus it is possible to answer two questions; *How many planets would it take to if everyone consumed as much as the average resident of Region X* and *How many Region X's would it take to satisfy the current demands of that Region*. This calculation was performed for the Isle of Wight (Chambers et al 2000). Using local yield values it was shown that two additional Islands would be needed to sustainably support consumption. Using global yield factors it was shown that, if everyone lived like the average Islander, 1 ½ extra planets would be required. The approach of using local yields is also favoured by a number of the studies reviewed in this report.

Some biocapacity must be set aside for non-human use. The necessary amount of pristine habitat is not known but, as a general rule in footprint calculations, not more than 88% of the existing biocapacity is considered 'available' for human use. The Living Planet Report 2002 accounts for biodiversity as a percentage of the footprint (demand). Previously biodiversity area has been subtracted from the available regional supply.

References and further reading

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