

Contribution to Beyond GDP “Virtual Indicator Expo”

<http://www.beyond-gdp.eu>

Name of the indicator/method: **Ecological Footprint**

Summary prepared by (name; institution): Joy Larson, David Moore and Mathis Wackernagel, Global Footprint Network

Updated: September 4, 2011 (original: November 2007)

Why we need the Ecological Footprint

One fundamental requirement for sustainability is to use renewable resources at a slower rate than they are regenerated. Ecological accounting, such as with the Ecological Footprint, allows us to determine whether this requirement is met, by tracking both the extraction of renewable resources and the supply of these resources. When extraction exceeds supply, a situation of ecological overshoot occurs which may lead to degradation of natural capital and a consequent decrease in economic and social welfare.

Description of the Ecological Footprint

The Ecological Footprint is a measure of how much [biologically productive land and water](#) an individual, population or activity requires to produce all the resources it consumes and to absorb the corresponding waste, all using prevailing technology and resource management practices.¹

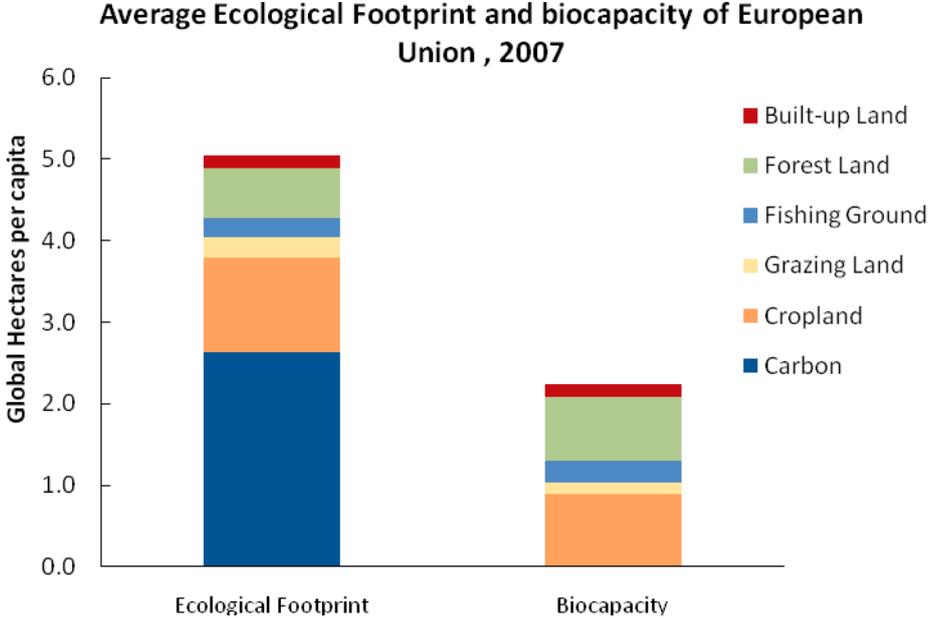
We obtain resources from forests, cropland, fisheries, and grazing land. Additional demand is placed on ecosystems both through their removal to support built infrastructure and their capacity to absorb and assimilate the carbon dioxide emissions from fossil fuel burning. The Ecological Footprint adds up these ecosystem areas to measure total human demand on nature. In other words, Ecological Footprint analysis builds on “mass flow balance,” and each flow is translated into the ecologically productive areas necessary to support these flows.

Ecosystems have a limited ability to supply us with natural resources (this is based on factors such as available water, climate, solar energy, technology and management practices). This is called biocapacity. When a population’s Ecological Footprint exceeds the biocapacity of its territory, it runs a biocapacity deficit. This deficit is balanced either through the use of

¹ Due to data constraints, the national Footprint accounts only include carbon dioxide emissions from fossil fuel use in the waste equation.

biocapacity from elsewhere, or local overuse, called 'ecological overshoot'. At the global level, deficit and overshoot are identical since there is no interplanetary trade.

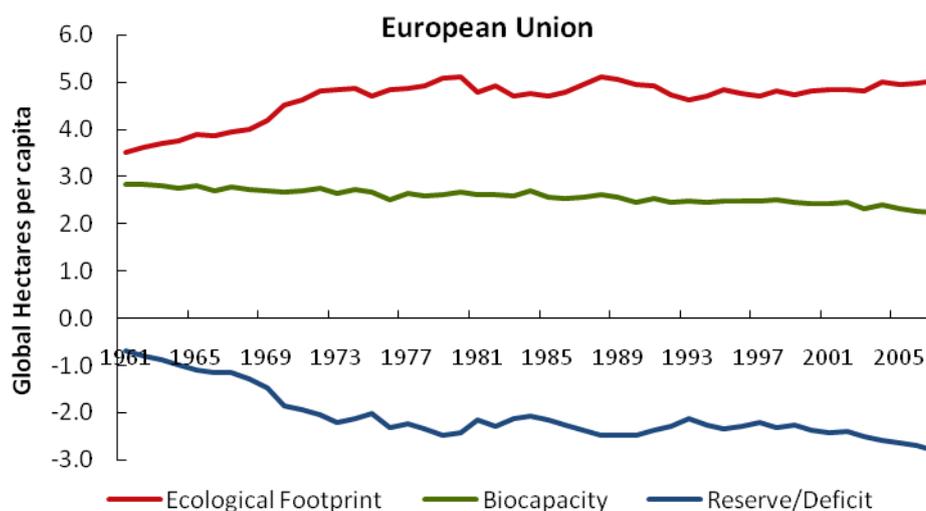
Global Footprint Network calculates the Ecological Footprint of nations on an annual basis. From these data we undertake global analysis. Overshoot measured on a global scale is an indicator of unsustainability. Data show that humanity's resource demands and carbon dioxide emissions began to exceed the regenerative capacity of the planet to meet this demand in the 1970s. Today humanity exceeds the planet's ability to provide biological resources by over 50 percent. In 2007, while the world average capacity was 1.8 global hectares² per person, the world average Ecological Footprint was 2.7 global hectares per person. In contrast, the average Footprint in EU-27 was 5.0 global hectares per person against a biocapacity of 2.2 global hectares³ per person.



National Ecological Footprint accounts can inform us about local or regional ecological performance. An Ecological Footprint Assessment of the European Union sponsored by the European Environment Agency and published by *WWF International* shows that the European Union has an Ecological Footprint more than twice its biocapacity. This means that more than half of the ecosystem area on which Europe depends is outside of Europe. Europeans have about twice the Ecological Footprint of what is available per person worldwide (and this available biocapacity also needs to support wild species that are competing with people for food and space). All of the EU members have per person Footprints above what is globally available. All but three—Sweden, Latvia, and Finland—are running a national ecological deficit by using more than what is available within their boundaries. The Ecological Footprint of Europe has increased by more than 40% per person since the 1960s (see figure below).

² A global hectare is a biologically productive hectare with world average productivity.

³ Two Footprint demands are put on forest biocapacity: the Carbon Footprint as well as demand for timber and firewood.



As underlined in many publications, the Ecological Footprint measures merely one aspect of sustainability: the availability of, and the human demand on, Earth's regenerative capacity. Other measures are needed to complement this tool for assessing social well-being, depletion of non-renewable resources, inherently unsustainable activities such as the release of persistent pollutants, or the degradation of ecosystems.

History of the concept

The original Ecological Footprint methodology resulted from collaboration between Dr. Mathis Wackernagel and Dr. William Rees at the University of British Columbia in Vancouver, Canada. The publication of their book '*Our Ecological Footprint: Reducing Human Impact on the Earth*' in 1996 made the concept more widely accessible.

Global Footprint Network was founded in 2003 with the goal of advancing the scientific rigor and practical application of the Ecological Footprint, and making the Ecological Footprint as prominent a metric as the Gross Domestic Product (GDP). Global Footprint Network is made up of a 23-member advisory board of leading scientists and politicians, an office in Oakland, and an office in Switzerland. More than 75 organizations, spanning six continents, have become formal Global Footprint Network partners. The Ecological Footprint is now in wide use by governments, communities, and businesses to set targets and monitor their ecological performance.

The adoption of the Ecological Footprint as a trusted sustainability metric depends upon the scientific integrity of the methodology, consistent and rigorous application of the methodology across analyses, and on results being reported in a straightforward and non-misleading manner. To meet these goals, Global Footprint Network and its partners have created a consensus-based committee process for improving the method and for developing international Ecological Footprint Methodology (<http://www.footprintnetwork.org/en/index.php/GFN/page/methodology/>) and Ecological

Footprint Standards (<http://www.footprintstandards.org>). The initial standards were launched in 2006, and updated in 2009.

Examples of current activities

The tool is getting increasingly popular: a simple Google search yields hundreds of thousands of websites discussing the Ecological Footprint. The effort of advancing this accounting tool is also increasingly recognized. For instance, Global Footprint Network is the recipient of a 2006 [Skoll Award for Social Entrepreneurship](#) and the [Zayed International Prize for the Environment](#) in 2011 in recognition of the most innovative and effective approaches to resolving critical social issues and promoting the central role of sustainability in maintaining healthy economies.

A number of government organizations have active Ecological Footprint initiatives, for instance: EPA Victoria in Australia (<http://www.epa.vic.gov.au/ecologicalfootprint>), the city of Calgary (<http://www.calgary.ca/footprint>), Wales (<http://www.footprintwales.org>) or Scotland (<http://www.scotlandsfootprint.org>), the Colombian Ministry of Environment, Housing and Territorial Development (<http://www.minambiente.gov.co/>), and Peru Ministerio del Ambiente (<http://www.ambiente.gov.ec/>).

The Ecological Footprint continues to enter new arenas. For instance, work with the Swiss Agency for Development and Cooperation applies Ecological Footprint analysis to human development in Africa (www.footprintnetwork.org/africa), and work with the UN Environment Programme Finance Initiative explores ways of incorporating Ecological Footprint and biocapacity trends into international credit ratings for sovereign bonds.

Global Footprint Network is also actively engaged with other inter-governmental agencies on developing strategies for including natural resource constraints in decision making, such as members of the European Commission about potential use of the Ecological Footprint in efforts to protect biodiversity. Global Footprint Network's Mediterranean Initiative, launched with UNESCO, Plan Bleu, Tour du Valat and WWF Mediterranean Programme, provides an ecological bank statement for Mediterranean countries, evaluating their use of local and global resources, and how this compares with nature's endowment (www.footprintnetwork.org/med).

Various countries have initiated research collaborations with Global Footprint Network to strengthen the Ecological Footprint analysis of their country: Indonesia, the Philippines, Luxembourg, the Czech Republic, China, Ecuador, Switzerland, Japan, Belgium, and the United Arab Emirates. Their reviews of the Footprint methodology are available on the internet (www.footprintnetwork.org/reviews). At the city level as well, Global Footprint Network has engaged in Ecological Footprint analysis for the city of Hong Kong in China, Querétaro in Mexico, and the cities of Campo Grande, Curitiba, and São Paulo in Brazil.

The World Business Council for Sustainable Development (www.wbcsd.org) used the HDI-Footprint framework extensively for its Vision 2050, and so did UNEP for its Green Economy initiative.

WWF International (www.panda.org), as one of its two institutional meta-goals, has committed to help humanity reduce its Footprint to below available biocapacity by 2050. One initiative to achieve this, in collaboration with Bioregional (www.bioregional.org), is the One Planet Living initiative.

Future possibilities

The method of calculating the Ecological Footprint continues to be refined under the scientific guidance of the National Accounts Committee, housed by Global Footprint Network. For detail regarding the key aspects of the methodology targeted for future work see Kitzes et al. (http://www.brass.cf.ac.uk/uploads/fullpapers/Kitzes_et_al_M65.pdf).

Updated and improved National Footprint Accounts are produced annually by Global Footprint Network.

In 2005, Global Footprint Network launched its “Ten-in-Ten” campaign with the goal of institutionalizing the Ecological Footprint in at least ten key nations by 2015. The aim of this program is to have ecological accounting become central to economic decision-making. This is necessary for nations to succeed in an increasingly resource constrained world. The longer-term goal is to make ecological accounting, as for example Ecological Footprint accounting, as significant, instrumental and prominent as the Gross Domestic Product (GDP).

