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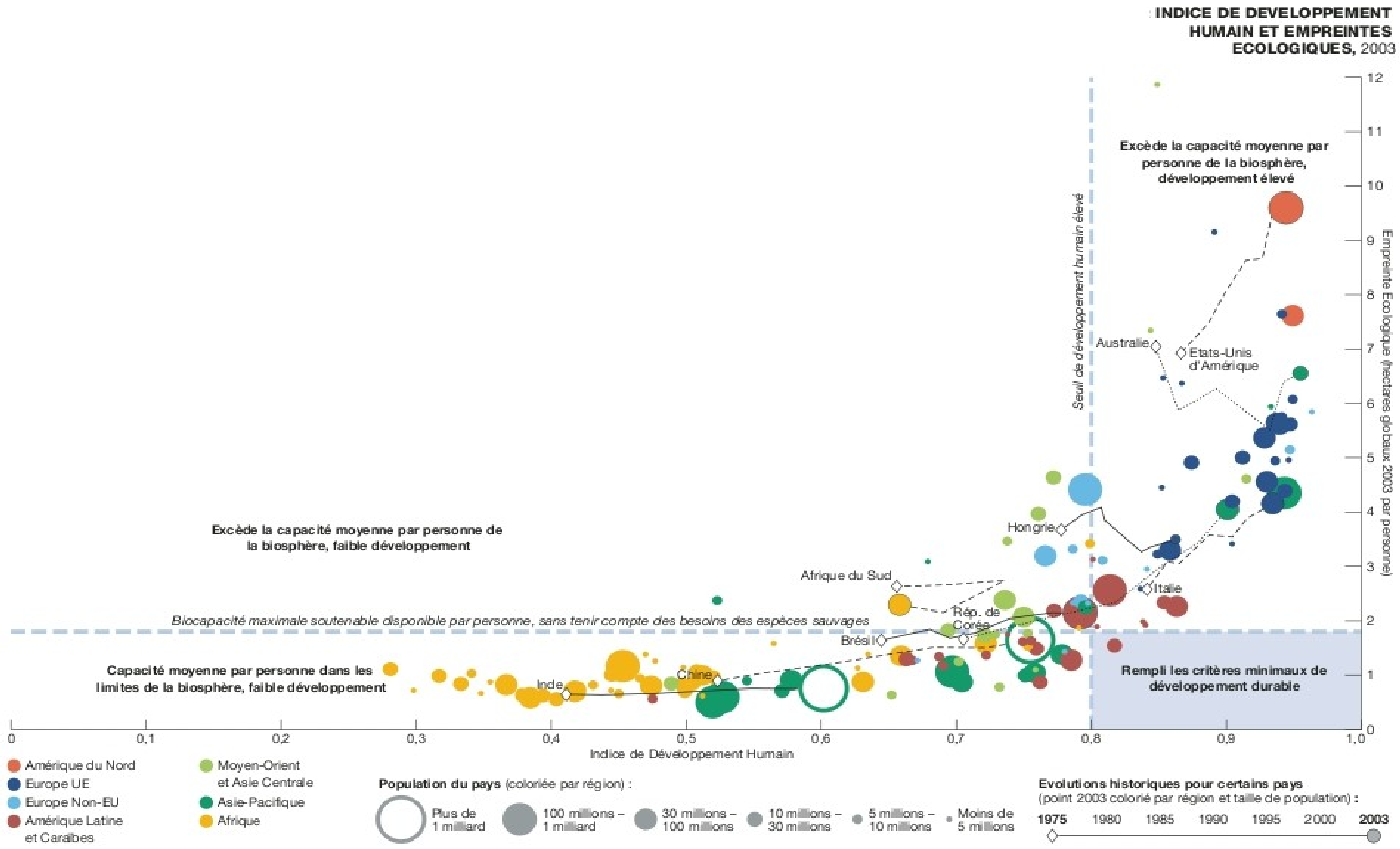

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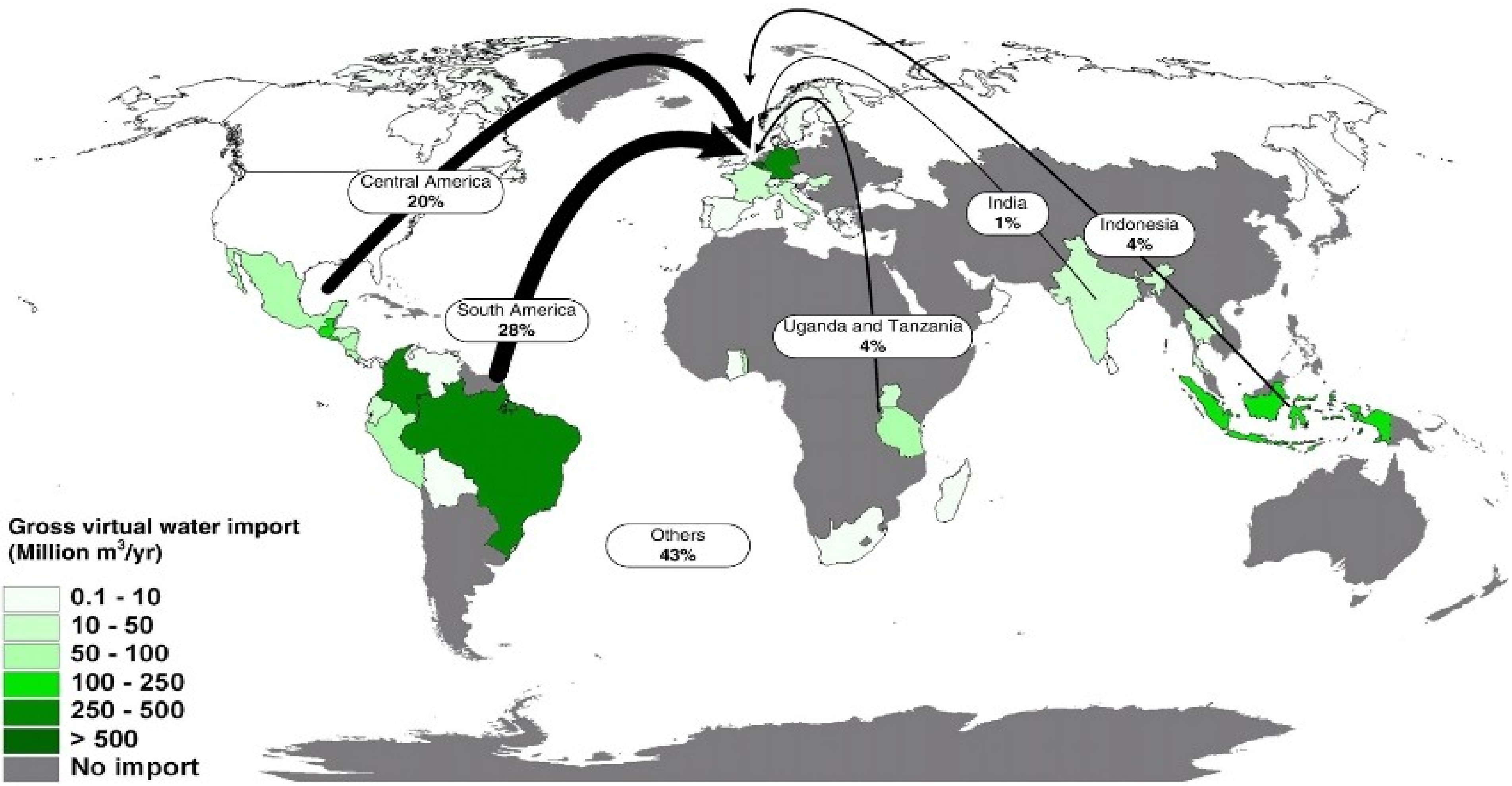

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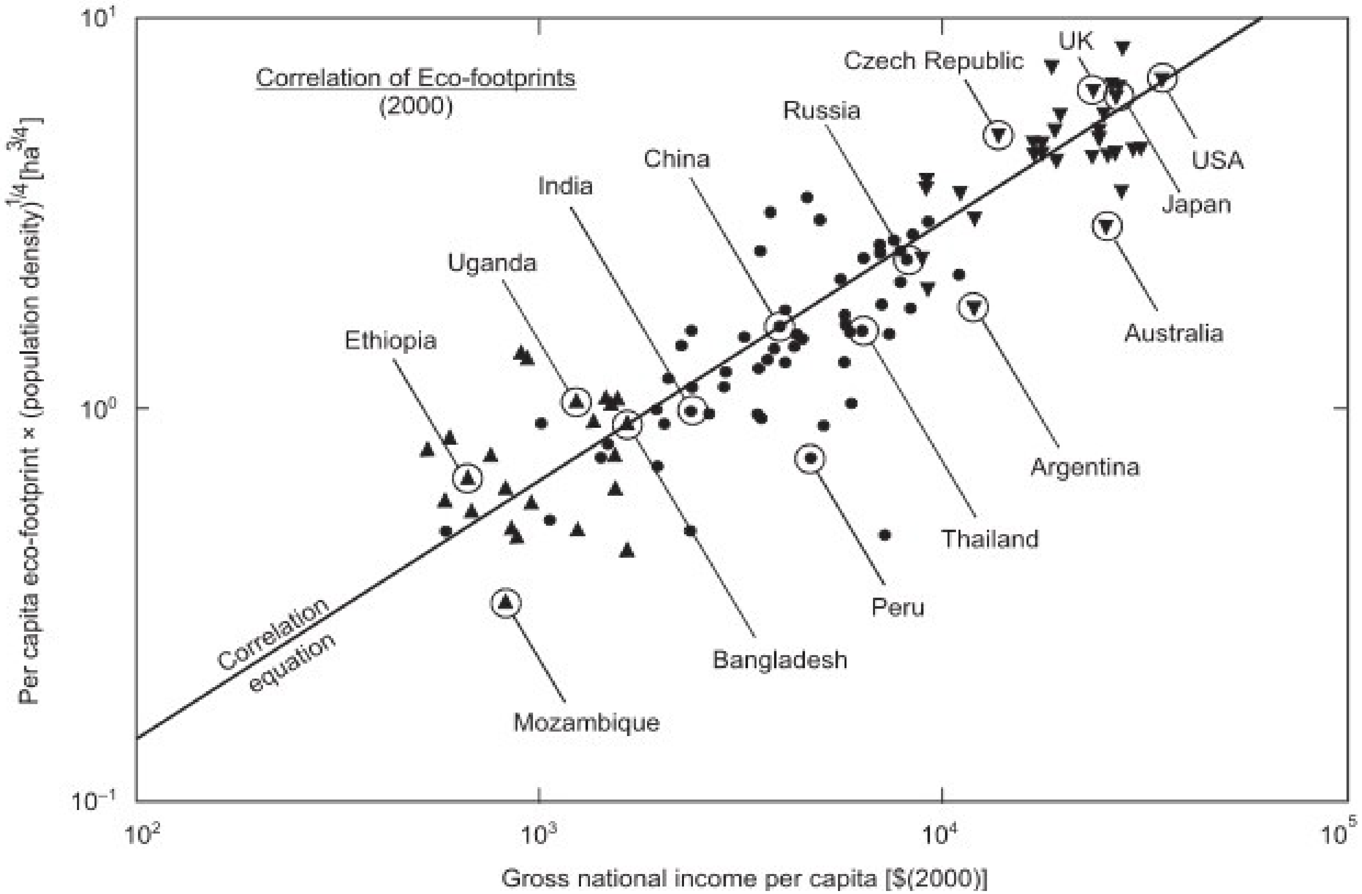

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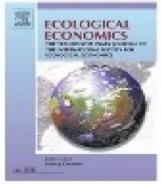

ANALYSIS

The water footprint of coffee and tea consumption in the Netherlands

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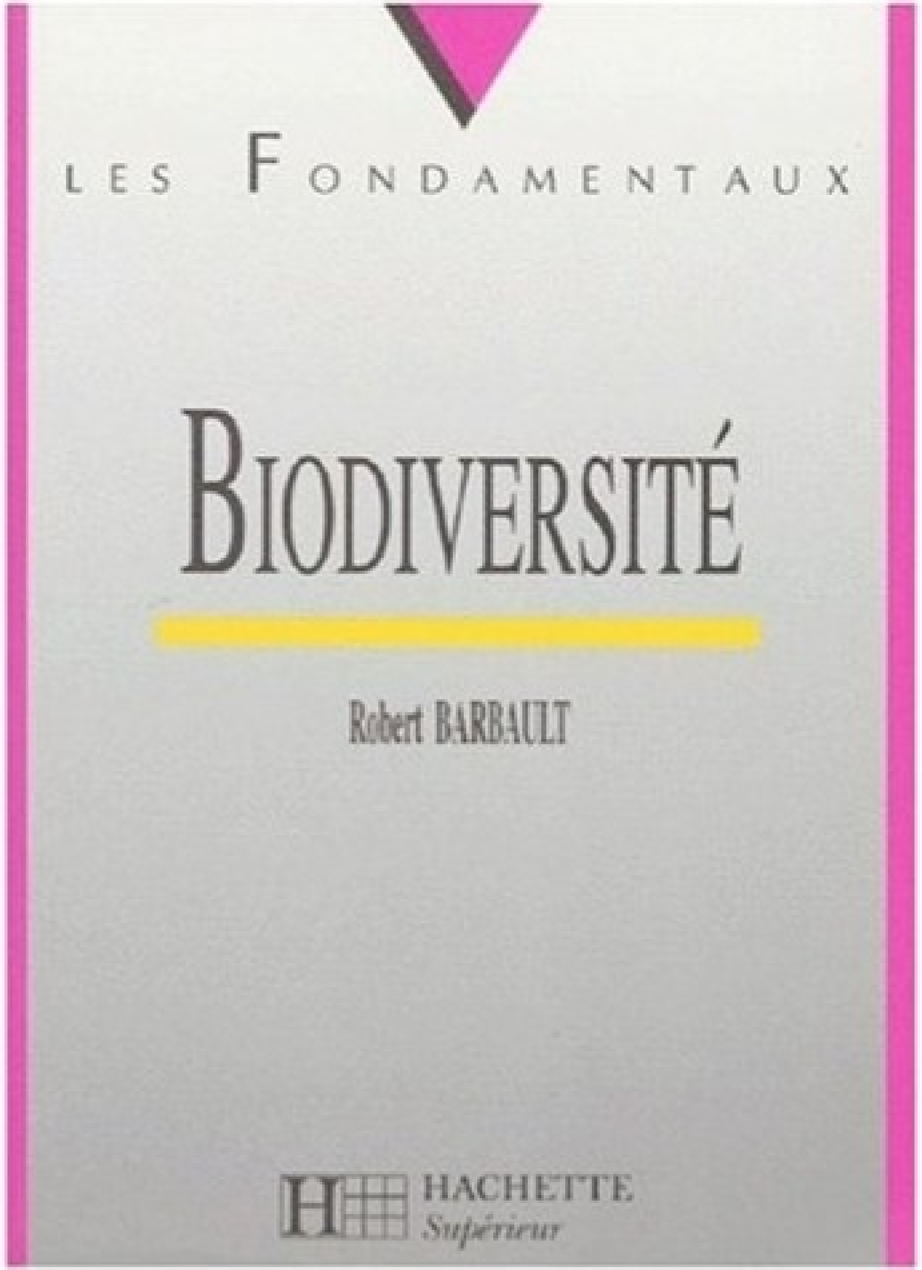
ABSTRACT

A cup of coffee or tea in our hand means manifold consumption of water at the production location. The objective of this study is to assess the global water footprint of the Dutch society in relation to its coffee and tea consumption. The calculation is carried out based on the crop water requirements in the major coffee and tea exporting countries and the water requirements in the subsequent processing steps. In total, the world population requires about 140 billion cubic metres of water per year in order to be able to drink coffee and tea. The standard cup of coffee and tea in the Netherlands costs about 140 l and 34 l of water respectively. The largest portions of these volumes are attributable to growing the plants. The Dutch people account for 2.4% of the world coffee consumption. The total water footprint of Dutch coffee and tea consumption amounts to 2.7 billion cubic metres of water per year (37% of the annual Meuse runoff). The water needed to drink coffee or tea in the Netherlands is not Dutch water. The most important sources for the Dutch coffee are Brazil and Colombia and for the Dutch tea Indonesia, China and Sri Lanka. The major volume of water to grow the coffee plant comes from rainwater. For the overall water need in coffee production, it makes hardly any difference whether the dry or wet production process is applied, because the water used in the wet production process is a very small fraction (0.34%) of the water used to grow the coffee plant. However, the impact of this relatively small amount of water is often significant. First, it is blue water (abstracted from surface and ground water), which is sometimes scarcely available. Second, the wastewater generated in the wet production process is often heavily polluted.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ANALYSIS

Toward a scenario analysis framework for energy footprints

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Received 12 March 2001; received in revised form 16 October 2001; accepted 19 October 2001

Abstract

There has been much improvement in calculation of the ecological footprint (EF) since 1996, when Wackernagel and Rees initially suggested it as a sustainable development index to evaluate human dependence on ecosystems in terms of land and water areas. However, despite the improvements the EF remains a static index, revealing only the current reality, so that it is criticized for its lack of use in policy formulation. This criticism is more concerned with the energy footprint because it dominates the estimated EF in many case studies, and its size would change almost simultaneously when alternative energy policies are implemented. One main reason for this deficiency is that the original calculation method does not explicitly take into account the linkages among the final consumption of goods and services, final energy consumption, and primary energy requirements. However, these linkages may contribute to scenarios and simulation of policy instruments for reducing energy footprints. This paper proposes a calculation framework to include the concerned linkages in order to: (1) estimate energy footprints according to the primary energies embodied in the goods and services consumed by a defined human population; and (2) develop scenarios and simulation of policy instruments for reducing energy footprints. This framework is then applied to Taiwan to illustrate how it works and what needs to be improved in future studies.

Keywords: Energy footprint; Scenario analysis; Input–output analysis

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METHODS

How to calculate and interpret ecological footprints for long periods of time: the case of Austria 1926–1995

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Received 11 September 2000; received in revised form 2 January 2001; accepted 3 January 2001

Abstract

In this paper we present calculations of the ecological footprint (EF) for Austria 1926–1995, based upon three different methodological approaches. Basically, EF calculations convert the use of selected materials in a country into the area needed to sustain this material flow. Therefore, biological productivity essentially determines the outcome of EF calculations, given a certain pattern of socioeconomic metabolism. In most EF calculations published thus far, material and energy flows are converted to area (hectares) using global yields of the respective year. In contrast, we analyze the effect different assumptions on yields have on the results of EF calculations by assuming: (1) constant global yields as of 1995; (2) variable global yields; and (3) variable local yields for domestic extraction and variable global yields for imported biomass. Fossil-energy footprint is evaluated on the basis of constant carbon sequestration rates published by Wackernagel. According to our results different assumptions on yields can influence the result of EF calculations by a factor of 2, at least. We conclude that further research is necessary with respect to biomass yields assumed in EF calculations. The purpose for which EF calculations are made, and the interpretation of their results, will determine future development of the EF methodology.

Keywords: Ecological footprint; Socioeconomic metabolism; Biological productivity; Biomass yield; Overshoot; Sustainability indicators

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promotes a sustainable economy by advancing the Ecological Footprint, a tool that makes sustainability measurable. Together with its partners, the Network coordinates research, develops methodological standards, and provides decision makers with robust resource accounts to help the human economy operate within the Earth's ecological limits.

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Natural Resources
FORUM

Natural Resources Forum 30 (2006) 27–36

'People, planet and prosperity': The determinants of humanity's environmental footprint

Geoffrey P. Hammond

Abstract

Environmental or 'ecological' footprints have been widely used in recent years as indicators of resource consumption and waste absorption on the basis of biologically productive land area required per capita with prevailing technology. Such footprints represent a partial measure of the extent to which the planet, its regions, or nations are moving along a sustainable development pathway. They vary between countries at different stages of economic development and varying geographic characteristics. The determinants of environmental footprints in some 113 countries from around the world have been evaluated. Dimensional analysis techniques from engineering and the physical sciences are employed to determine the relative significance of population density, economic wealth, and intensity of pollutant emission. Variations about the resulting 'power-law' correlation suggest the extent to which individual nations are currently frugal or profligate in terms of their resource use and environmental impacts. The scatter associated with footprints, or closely related parameters, also indicates the uncertainty inherent within the international datasets needed to compute them, as well as differences in local climate and terrain. Nevertheless, national footprints alert humanity to the necessity of living within the regenerative capacity of the biosphere in order to ensure 'environmental sustainability'.

Keywords: Environmental footprints; Resource use; Carbon emissions; International development; Sustainability

1. Introduction

Environmental or 'ecological' footprints — sometimes the World Wide Fund for Nature (WWF).[1] The Fund's influential *Living Planet Report 2002* (Loh, 2002) covered all nation States having populations greater than 1 million

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COMMENTARY

FORUM: THE ECOLOGICAL FOOTPRINT

The ecological footprint: measuring rod or metaphor?

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[b] *Free University, Amsterdam, Netherlands*

Environment and Urbanization

http://eau.sagepub.com

Ecological footprints and appropriated carrying capacity: what urban economics leaves out

William E. Rees

Environment and Urbanization 1992; 4; 121
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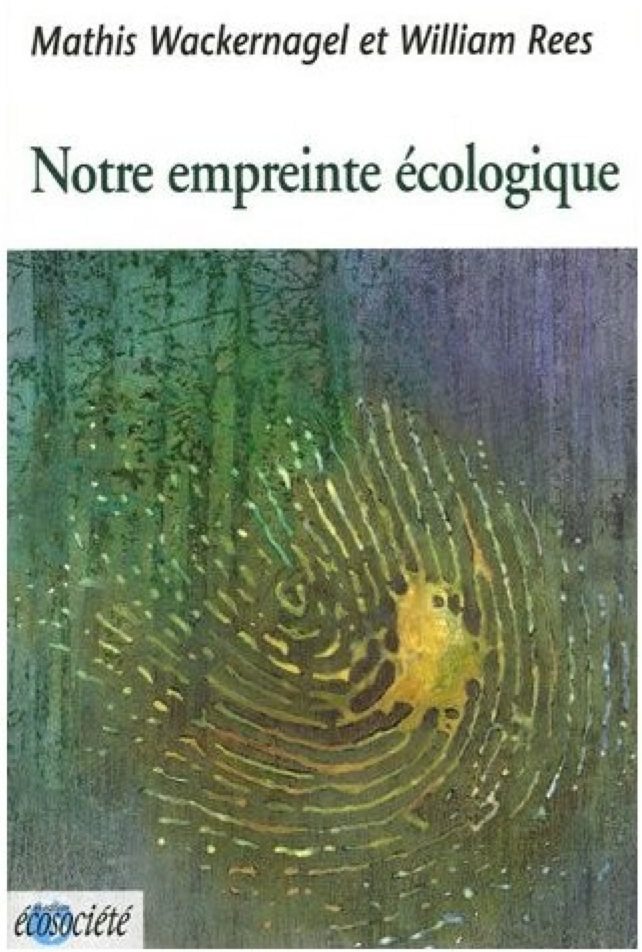
Mathis Wackernagel et William Rees
Notre empreinte écologique
écosociété

Tracking the ecological overshoot of the human economy

Mathis Wackernagel*†, Niels B. Schulz‡, Diana Deumling*, Alejandro Callejas Linares§, Martin Jenkins¶, Valerie Kapos¶, Chad Monfreda*, Jonathan Loh||, Norman Myers, Richard Norgaard††, and Jørgen Randers‡‡**

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Sustainability requires living within the regenerative capacity of the biosphere. In an attempt to measure the extent to which humanity satisfies this requirement, we use existing data to translate human demand on the environment into the area required for the production of food and other goods, together with the absorption of wastes. Our accounts indicate that human demand may well have exceeded the biosphere's regenerative capacity since the 1980s. According to this preliminary and exploratory assessment, humanity's load corresponded to 70% of the capacity of the global biosphere in 1961, and grew to 120% in 1999.

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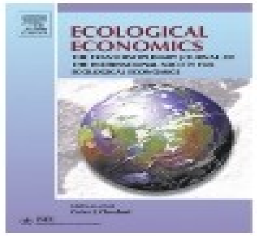

METHODS

Sharing resources: The global distribution of the Ecological Footprint

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A R T I C L E I N F O

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A B S T R A C T

This paper examines how the human demand on bioproductive lands, as measured by the Ecological Footprint, is distributed across the globe using methods commonly used to measure the distribution of income. Measuring the distribution of natural resource use will be necessary to achieve an economy that is sustainable, just and efficient. Currently, different nations place different demands on the environment, i.e. the Ecological Footprint is not evenly distributed across the globe. Calculation of the Gini coefficient for total Ecological Footprint and its components explains the sources of inequality in overall resource use. Calculation of the Atkinson index shows how inequality in the Ecological Footprint is related to the inequality of income, and environmental intensity.

Étude réalisée par le WWF-France et Redefining Progress, avec le soutien du Ministère de l'Écologie et du Développement Durable, et la collaboration des municipalités de Paris et de Besançon

L'empreinte écologique en France...

...a augmenté de 48% en moins de 40 ans. Dans le même temps, sa population n'a augmenté que de 27%.

Figure 1 : EMPREINTE ÉCOLOGIQUE FRANCE (DOM-TOM inclus)