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The Need for Environmental Indicators Coverage. The Ecological Footprint

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Abstract: Our paper's aim is to review some of the most relevant indicators describing the environmental damage and to affirm the need of better understanding and evaluating it. As a result we discuss the ecological footprint as an improvement in this field and as a more comprehensive and reliable descriptor for environmental interests.

Keywords: environmental indicators; CO_2; ecological footprint; environmental damage

Introduction

It is widely recognized the need of better understanding the complexity and amplitude of environmental damage (Agostinho, Pereira, 2013). Even if we are talking about greenhouse gases (CFCs (chlorofluorocarbons), HFCs (hydrofluorocarbons), PFCs (perfluorocarbons), SF_6 (sulfur hexafluoride)), deforestation or inappropriate water usage there is still an important amount of damage insufficiently assessed. This is important because the contingency measures cannot be taken if the risks are not fully evaluated. The ecological footprint is one of these new indicators developed as a response to this acute need of knowledge regarding the scale of the environmental damage (Wacckernagel et al., 2005).

Environmental Indicators - a Review

The variety of environmental indicators show the great interest of academics and decision makers to understand and acknowledge the critical sustainability issues of our time.

Nevertheless it is hard to choose one single indicator or a category of ecological variables for assessing the environmental issues. The complexity of environmental issues itself is the first big impediment for it. The human activity affects the quality of air, water, damages the ozone layer, contribute to natural resources depletion and so on. That is why a single complex index is hard to establish and use to describe all the damage we provoke to the environment.

Below is a selection of such indicators for different categories of environmental harm and coverage.

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Table 1. Environmental indicators - a review

Indicator	Category	Coverage
CO_2 emissions	Pollution	Climate change
CH_4 (methane) emissions	Pollution	Climate change
CFCs (chlorofluorocarbons) (commercial name: "Freon")	Pollution	Climate change
SO_x & NO_x emissions	Pollution	Air quality
Indices of apparent consumption of ozone depleting substances (ODS)	Pollution	Ozone layer
Waste generation intensities (urban; industrial)	Pollution	Waste
Waste water treatment	Pollution	Freshwater quality
Threatened species	Natural resources & assets	Biodiversity
Deforestation	Natural resources & assets	Forest resources
Intensity of energy use	Natural resources & assets	Energy resources
Area of degraded land	Natural resources & assets	Forestry
Decreased deforestation due to environmental education	Performance	Education
Home gardens contribute to income generation	Natural resources & assets	Income generation
Carbon footprint	Pollution	*Including carbon dioxide and methane emissions of individuals, industry or designated activity, calculated as "carbon dioxide equivalent" - CO_2e*
Ecological footprint	Pollution; Natural resources;	*Including carbon, food, housing, energy, goods and services. Calculated as "number of Earths" needed to sustain the world's total population at a given level of impact/consumption.* *Evaluated at any given level (individual, community, region, industrial sector, etc.)*

Own selection based on numerous sources (OECD, etc.).

The Ecological Footprint

The ecological footprint is a relatively new concept introduced basically to describe the way of life and the impact of it upon the natural environment as a whole (Rees, 1992; Wackernagel, 1994).

It was designed to include different aspects of human existence ad effects of it at different levels: carbon emissions, alimentation behavior, housing and energy usage, goods and services (including transportation) consumption. Assessing all these aspects the final result shows the "total number of Earths" needed to sustain the whole human population if behave such as the respondent.

Conclusion

As the ecological issues became more critical in the last decades, the academics and the professionals developed studies and researches trying to design proper indicators for assessing the impact of human activity upon the environment. These indicators covered a diversity of pollution or degradation factors but few were complex enough to properly explain the amplitude of the environmental damage. Our future research will be oriented in describing the correlation between the ecological footprint and other economic variables for the case of Romania.

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