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SUSTAINABLE DEVELOPMENT: A DEFINITION AND ASSESSMENT

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Abstract

The average Greek produces daily 0.8 kg of solid waste and 22.7 kg of CO_2. If he eats a 250 g beefsteak produced in Brazil, he has destroyed $5m^2$ of tropical forest. This amount of meat requires 750 L of water and 1.7 kg of grain. The list may go on almost ad infinitum. Is this behavior sustainable?
To answer this question a new model that defines and measures sustainability is introduced. It uses fuzzy logic to combine data about a host of indicators related to two basic components, Ecosystem and Human System. The former is the logical resultant of four elements, Air, Land, Water, and Biodiversity, whereas the latter results from the logical combination of Policies, Wealth, Health, and Knowledge. Each of the eight components results from the combination of any number of primitives (basic indicators). Sustainability is assessed on a 0 to 1 scale. Examples show that no country is sustainable in the sense of this model.

Keywords: sustainable development, indicators of sustainability, fuzzy logic

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