

The Environmental Impact of Human Needs

Topic: Environmental Policy I

Author: Ricardo Gibran Vita

Co-Authors: Edgar G. Hertwich, Konstantin STADLER, Richard WOOD

What do we need to live a decent life? This fundamental question has been the motor behind numerous studies and policies that play a central role in the development narrative. Currently, we face the pressing challenge of transforming our socio-economic system into one that can satisfy human needs without compromising natural resources and services. Surprisingly, so far environmental accounting ponders on the environmental burden of products but lacks the connection to the actual needs that are being satisfied through market consumption. Here we present a novel attempt to close that gap. We connect the human needs framework by Max-Neef (Max-Neef et al, 1991) with the consumption-based accounting of Environmental Extended Multi-Regional Input Output analysis (EE MRIO). Thus, we calculate the environmental footprints of satisfying human needs across nations. Furthermore, we are able to visualize a correspondence between the different industrial sectors and the different needs they fulfil in terms of the satisfiers that they provide.

We base the calculation on the data provided by the recently updated EE MRIO *EXIOBASE 2* (Wood et al, 2014). This EE MRIO exhibits a consistent sector classification of 163 industries / 200 products with more than 300 environmental satellite accounts for the base year 2007. This unique level of detail provides the necessary background information to investigate the impacts of satisfiers produced in a globalized economy with multiple environmental impacts. We calculate the environmental footprint of the satisfaction of human needs for the carbon, land, water and material perspective of EU countries and other major economies (USA, China, Australia, Japan, and Brazil). Our analysis includes the 43 largest economies, which encompass about 91% of global GDP and 65% of the world population (Tukker et al, 2014). In general, the highest resource use is associated with the fulfilment of the human needs of Identity, Freedom, Leisure and Subsistence. Protection and Creation can be satisfied with moderate resource use and Understanding, Participation and Affection only require minimal economic and environmental inputs. In detail, we find Subsistence and Identity depending heavily on land and water inputs. In contrast, Freedom and Creation are more carbon intensive. Another aspect of the analysis reveals the extent to which countries diverge in their resource efficiency for the fulfilment of human needs. Furthermore, by cross comparison with indicators on the level of need satiation from different sources (World Value Survey, European Social Survey, OECD, etc.) we are able to reveal trends between environmental impacts and the level of satisfaction or dissatisfaction of different human needs. Our study proposes a novel framework for connecting economic activity and its environmental impacts with human needs and their satisfaction. This allows assessing the eco-efficiency of need fulfilment across nations and provides a unique data source for human centred policy development.

References:

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