Title

The Environmental Impact of Human Needs

Proposed Topics:

6: Theory, methods and practice of ecological economics

6.3. Indicators and modelling approaches

Alternative

1. Post-growth economics
   1.1. Degrowth and steady-state economics
   1.2. Green economy and ecological macroeconomics
3. Development, consumption and well-being
   3.1. Resource use, health and human well-being
   3.5. Patterns of trade, production, and consumption

Summary

Currently, we face the pressing challenge of transforming our socio-economic system into one that satisfies human needs in an environmental sustainable way. Surprisingly, so far environmental accounting concentrates on the environmental burden of products and lacks the connection to the actual needs satisfied through consumption.

Here we present a novel attempt to close that gap. We connect the human needs framework by Max-Neef with the consumption-based accounting of Environmental Extended Multi-Regional Input Output analysis. This allows us to calculate the environmental footprints of human needs.

We find the highest resource use associated with the fulfilment of the human needs of identity, freedom, leisure and subsistence. Another aspect of the analysis reveal that countries vary considerable in their resource efficiency of human needs fulfilment.

The presented framework enables the assessment of the eco-efficiency of need fulfilment across nations and provides a unique data source for human centred policy development.

Extended abstract

The satisfaction of human needs forms the basis of our well-being. Free-market economic theory seldom emphasizes the fact that the market is meant to satisfy these needs. Consequently, environmental accounting frameworks mainly focuses on the environmental (and social) consequences of production and consumption of goods and services (Tukker and Jansen 2006, Hertwich and Peters 2009). We lack an understanding about the actual environmental impacts of the satisfaction of our needs. The present study provides a first attempt to close that research gap.

Here we use the taxonomy of human needs developed by Max-Neef (Max-Neef et al 1991) which classifies needs into 9 categories: subsistence, protection, affection, understanding, participation, leisure, creation, identity and freedom. According to this framework, satisfiers are actions, things or settings. Largely, these satisfiers are provided by the economy and this allows for the connection of the human needs framework with resources and environmental impacts through an Environmental Extended Multi-Regional Input Output analysis (EE MRIO). Potentially, one satisfier can synergistically fulfil different needs and different satisfiers need can fulfil the same need. We account for that by allocating specific products or services as a simultaneous satisfier for different needs. We utilize information from consumer surveys to inform the proportion allocated to different market goods as satisfiers for different needs.

We base the calculation on the data provided by the recently updated EE MRIO EXIOBASE 2 (Tukker 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 calculated the environmental footprint of human needs for the carbon, land, water and material perspective of EU countries and other major economies (USA, China, Australia, Japan, and Brazil). For this study, we define the carbon footprint as the global warming potential (with a time horizon of 100 years) of total greenhouse gas emissions during the production and consumption phase. The land use footprint accounts for the use of cropland, pasture land and forestry. The material footprint summarises the use biomass, metal ores, non-metallic minerals and fossil fuels. Finally, the (blue) water footprint indicator includes water use for agriculture and livestock, manufactured products, electricity and the direct (final consumer) use of water.

Our results reveal that the most resource intensive human needs are identity, freedom, leisure, and subsistence. Protection and creation can be satisfied with moderate resource use and understanding, participation and affection require only minimal economic and environmental inputs. Noticeable, subsistence is rather land and water intensive (mostly due to food products). Identity shares a similar trend as subsistence since foods and diets are intimately related to cultural aspects, habits and even to status. Freedom and creation are more carbon intensive since they absorb a lot of the impact from direct mobility. Creation includes working and creating a livelihood and thus includes commuting to and from the working places. Additionally, freedom absorbs a portion of the transportation embedded in products since we consider the possibility to obtain foreign products as a consequence of free trade and free market. The material and carbon footprints are more evenly distributed among the resource intensive needs, since most economic goods require inputs of extracted material and energy throughout their life cycle, including agricultural as well as manufactured products.

Noteworthy no consumer goods function as a satisfier for affection. Accordingly, across cultures, manifested through songs, popular sayings and proverbs, there is a clear universal consensus that the need of affection and love can never be fulfilled through monetary means. Therefore, it is not surprising that in this exploratory exercise, we also could not relate any expenditure decision as a satisfier for affection.

The presented study proposes a novel framework for connecting economic activity and its environmental impacts with human needs. It follows the three pillars (3P) of sustainable development (Elkington 1997) by connecting the needs of People with its consequences on the Planet. However, it questions whether we should stop using the Profit pillar as a proxy for the fulfilment of human needs and instead directly assess the satisfaction of human needs as well as the associated environmental consequences. By placing human needs in the centre of our analysis, our framework aims to provide a unique data source and a novel perspective for future policy development.

References

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