RAUSP Management Journal
ISSN: 2531-0488
rausp@usp.br
Universidade de São Paulo
Brasil

Thøgersen, John
We need a sustainable consumption pattern
RAUSP Management Journal, vol. 57, núm. 3, 2022, Julio-Septiembre, pp. 347-353
Universidade de São Paulo
São Paulo, Brasil

ThinkBox

We need a sustainable consumption pattern

Introduction

Practically all consumption activities entail negative environmental impacts. Therefore, the total environmental impact of human activity depends on the size of the population, the average amount of consumption per person ("affluence") and the technology used to produce the consumed goods and services, as expressed long ago in Holdren and Ehrlich's (1974) IPAT formula. Private consumption is – directly or indirectly – responsible for a substantial share of anthropogenic impacts, including more than 60% of global "greenhouse gas" (GHG) emissions and between 50% and 80% of total land, material and water use (Ivanova et al., 2016).

Environmental impacts

Human impacts on essential planetary processes have become so profound that human activity now rivals geological forces in influencing the trajectory of the Earth system according to some Earth system scientists, who speak about a new geological epoch that they term "the Anthropocene" (Steffen et al., 2018). With human impacts on this profound, it is essential to estimate the "safe operating space" for the global human society and to identify levels of anthropogenic impacts below which the risk of destabilization of the Earth system is likely to remain low (Steffen et al., 2015). In this perspective, global production and consumption is unsustainable when they lead to environmental impacts that cross "planetary boundaries" (Steffen et al., 2018). Climate change is pointed out as one of the "core" planetary boundaries by Steffen et al. (2015). Deservedly, climate change attracts a lot of societal attention with yearly UN climate change conferences (the most recent being COP 26 in Glasgow in November 2021) and an international agreement signed by 196 countries in Paris in 2015. Growing global production and consumption lead to increasing emissions of CO_2 and other GHGs to the atmosphere, which leads to global warming and the risk of serious disruptions to ecosystems, society and economies. There is strong evidence that these disruptions could become catastrophic if the increase in global average temperature above preindustrial levels pass a certain threshold, which is currently estimated to be 1.5°C (IPCC, 2022).

The other planetary boundary that is labelled "core" by Earth system scientists is biodiversity loss or "biosphere integrity," as they now term it (Steffen et al., 2018). It has been estimated that the Earth contains approximately nine million types of plants, animals,

This paper is a slightly modified version of Chapter 2 of the author's book "*Advanced Introduction to Sustainable Consumption*", which will be published by Edward Elgar later this year.

RAUSP Management Journal
Vol. 57 No. 3, 2022
pp. 347-353
Emerald Publishing Limited
2531-0488
DOI 10.1108/RAUSP-05-2022-267

protists and fungi (Cardinale et al., 2012). Despite the recognition of the significance of biodiversity for human well-being at the Earth Summit in Rio in 1992 and most countries signing the Convention on Biological Diversity a decade later, committing to a significant reduction in the rate of biodiversity loss, genes, species and biological traits continue to be eliminated at an alarming rate (Butchart et al., 2010).

In addition to these two, Earth system scientists have identified several other planetary boundaries that may already have been crossed or are estimated to be in the risk zone, including stratospheric ozone depletion, ocean acidification, biogeochemical flows, land-system change and freshwater use (Steffen et al., 2018). The processes that are reflected in the planetary boundaries interact in ways that further amplify human impacts on the Earth system (Lade et al., 2020).

Population growth

Because of the growing amount of goods and services needed to satisfy the needs and demands of more people, population growth is a big contributor to environmental degradation and resource depletion in itself (Sulston et al., 2012). Historically, economic development, entailing improved health, nutrition and education as well as increased personal autonomy for women and access to effective birth control technologies, has first boosted population growth because of a decline in mortality and later reduced it because of a decline in the fertility rate (Belmin, Hoffmann, Pichler, & Weisz, 2022; Lee, 2011). In 2022, the world population has reached about 8 billion people, a doubling in the last 50 years and more than a quadrupling in the last 100 years [1]. The global population growth rate has been declining since the 1960s, but the world population is not expected to peak until the beginning of the next century, at about 11 billion people [2]. These projections are obviously uncertain and, among other things, based on the assumption of economic development benefiting the poor. Obviously, people are not intentionally contributing to overpopulation. Overpopulation is an unfortunate side effect of increasing life expectancy (Lee, 2011) and genetically based sex and reproduction urges (Ehrlich, 1978). Irrespective, population growth makes it harder to reach sustainable development goals and it increases the demands on the average consumer to reduce environmental impacts of consumption, by either reducing the volume of consumption or changing to less harmful products and services, or a combination.

Ecological footprint

Because of its complexity, communicating the (un)sustainability of human demand on nature to the general public is challenging. One of the most pedagogical concepts to do so is the ecological footprint (Wackernagel & Beyers, 2019). In a simple metric, comparing our demand on nature with what our planet can renew, the ecological footprint is an estimate of the amount of the Earth's regenerative capacity (or "biocapacity") that is demanded by a given activity (Wackernagel, Lin, Hanscom, Galli, & Iha, 2019). Estimates of the ecological footprint suggest that humanity has been operating in a state of "overshoot" for decades, with the amount that the global ecological footprint exceeds global biocapacity reaching 75% in 2021 [3]. Such a huge "overshoot" is obviously not sustainable, as we deplete the natural capital that human society depends on at an alarming rate. One of the useful ways the ecological footprint has been visualized and communicated to the public is by means of a free online calculator that individuals can use to calculate their personal "overshoot day" and how many planets would be needed to regenerate global biocapacity if everyone lived like them [4] (Collins, Galli, Hipwood, & Murthy, 2020).

Doughnut economics and the sustainable consumption corridor

Other pedagogical ways of communicating and personalizing the unsustainability of current consumption patterns emphasize that sustainable consumption has not only a maximum, but also a minimum (Di Giulio & Fuchs, 2014; Raworth, 2017). Raworth's (2017) "doughnut economics" metaphor takes its point of departure in the planetary boundaries identified by Earth system science (Steffen et al., 2015) in a critique of mainstream economics. The existence of an absolute ceiling to total economic activity that is defined by the planetary boundaries – illustrated by the outer edge of an imaginary doughnut – is ignored by conventional economics with its focus on economic growth. To this planetary upper bound, she adds a lower bound defined by the fulfillment of basic needs for everyone, like water, food or housing, which she illustrates by the inner edge of the doughnut, creating two concentric circles. The safe and just operating space for humanity, where everyone can live good lives and where we do not overshoot the planet's boundaries, lays between these two bounds. Di Giulio and Fuchs' (2014) "sustainable consumption corridor" metaphor expresses a similar understanding, but derived from a different origin. Based on concepts of a good life, they define minimum standards that allow everyone to live a good life and maximum standards that limit every individual's use of natural and social resources to a level that secures access to a sufficient level of resources for others, both in the present and in the future. Both of these two metaphors link the fact that we collectively operate outside planetary boundaries to individuals' overconsumption of natural and social resources (Wiedmann, Lenzen, Keyßer, & Steinberger, 2020), in some cases far beyond allowable maximum standards (Barros & Wilk, 2021). At the same time, they both emphasize the goal of lifting people out of poverty (World Bank, 2020), as expressed by the inner circle of the doughnut and the minimum standards of the sustainable consumption corridor.

Unequal environmental impacts and responsibilities

Because an individual's environmental impact increases with the level of consumption, which increases with income and wealth, the unequal distribution of income and wealth both within and between countries translates into an unequal environmental impact (Ivanova & Wood, 2020; Kartha, Kemp-Benedict, Ghosh, Nazareth, & Gore, 2020). In terms of country differences, according to most indicators, the average consumer's environmental impact deserves to be called sustainable only in the poorest countries of the world (Wackernagel & Beyers, 2019). The global, between countries inequality in emissions is an important theme on conferences attempting to reach international agreements on policies to mitigate harmful environmental impacts, such as the UN climate change conferences, the latest being COP 26 in Glasgow in November 2021. International agreements, such as the Paris Agreement on climate change, which was signed by 196 countries at COP 21 in Paris in 2015, generally recognize the inequalities between countries both in terms of responsibility for the current environmental problems and capabilities to correct them, but the implementation of this understanding in practice is obviously challenging and fraught with self-serving biases (Dooley et al., 2021).

A further complication is that the differences in incomes, consumption levels and environmental impacts are considerably bigger within than between countries (Ivanova & Wood, 2020; Kartha et al., 2020; Nielsen, Nicholas, Creutzig, Dietz, & Stern, 2021). For example, Barros and Wilk (2021) collected evidence on billionaires' carbon footprint revealing that it is hundreds to thousands of times higher than that of an average citizen, even in the most affluent countries, the biggest boosters being private airplanes, private yachts and multiple, often enormous homes. Obviously, if the same criteria of equity and fairness are used within countries as in international agreements, national policies should distribute the burdens and constraints needed to mitigate climate change and other

planetary pressures in proportion to the individuals' responsibility for the problems and their capability to do something about it (Dooley et al., 2021). Fairness in terms of responsibility and capability, for example, suggests taxes on emissions, such as a carbon tax, combined with redistribution policies wholly or partly compensating low-income groups (O'Mahony, 2020). The so-called "yellow vests" resistance in France in 2018, against a new tax on gasoline that was implemented at the same time as the income tax was reduced for the wealthiest, illustrates that ignoring fairness can lead to insurmountable public resistance (Ivanova & Wood, 2020).

Sustainable consumption pattern

Limited attention is a fundamental human characteristic (Kahneman, 2011). This implies that a deservedly strong societal focus on one environmental issue, such as climate change, may crowd out attention needed for other serious issues, such as biodiversity. In the worst cases, the resulting ignorance may lead to individual and collective actions directed toward solving the problem in focus that amplify other serious problems that are ignored – a phenomenon that has been called the "waterbed effect" (Torma & Thøgersen, 2021). For example, a strong focus on increasing food production per hectare of agricultural land, using chemical fertilizers and pesticides, may lead to ignoring the resulting loss of biodiversity (de Boer, 2003). Similarly, a strong focus on reducing packaging may lead to an increase in food waste (Aschemann-Witzel, 2016). Hence, it is important to adopt a holistic view on environmental impact mitigation, making sure to identify important direct and indirect effects of policies and interventions on all important planetary pressures.

Both because of limited human attention and limited resources, it is important to identify and target actions with the highest technical potential for impact reduction and which are most feasible to get implemented and adopted by the public (Nielsen et al., 2020). Not all types of consumption are equally taxing on the environment (Dietz, Gardner, Gilligan, Stern, & Vandenbergh, 2009). Hence, without ignoring others, it makes sense to focus most attention and effort on the consumption categories that are responsible for most of the environmental problems, which are food, mobility and housing (European Environment Agency, 2019; Ivanova et al., 2016). These three consumption categories correspond to basic human needs, which means that they cannot be avoided. Hence, the main focus should be on identifying and promoting substitutes to the most environmentally taxing consumption habits, which include eating red meat (Willett et al., 2019), driving a combustion-engine car (Haq & Weiss, 2016) and using fossil fuels for heating and cooling (Dahlstrøm, Sørnes, Eriksen, & Hertwich, 2012). Unfortunately, lots of the efforts to change consumption patterns to be more sustainable lack such a clear focus. For example, Moran et al. (2020) estimated the impacts of 90 behavior change proposals by various entities to reduce national carbon footprints, using a combination of existing microlevel studies and a multiregional input–output economic model. They concluded that 65 of these proposed behavior changes have no noticeable impact on the carbon footprint and, hence, are basically a waste of limited resources and attention (at least with regard to the carbon footprint).

It is well known from behavior change research that prevention is usually better than cure and that problems are usually better and more effectively solved "upstream" than "downstream" (Andreasen, 2006; Verplanken & Wood, 2006). An illustrative example is provided by Dahlstrøm et al. (2012). They made a life cycle assessment of the environmental and resource impacts of Norwegian single-family residences, designed to meet the national building code and the national passive house standard. One important finding was that the passive house standard, compared to the national building code, gave an impressive reduction of cumulative energy demand of 24%–40%, depending on the heating system,

and a reduction in GHG emissions of up to 30%. Another equally important finding was that, compared to the European electricity production mix (from year 2004), using the Norwegian mix, which is primarily based on hydropower, entails a reduction in GHG emissions of 80%–88%, depending on the building standard and the heating system. Hence, the study illustrates the primary importance of how the energy for heating the house is produced (i.e. "upstream") (cf. also IPCC, 2022).

Wrap up

Humanity is now so plentiful and technologically powerful that our activities are altering planetary systems. Some Earth scientists speak about a new, geological epoch that they term the Anthropocene. Hence, to avoid catastrophic changes in Earth systems that will seriously reduce the livability of the planet for all species, including our own, we urgently need to change the way we produce and consume, reducing both the extraction of resources and emissions to the environment. Each individual's contribution to the planetary pressures and capability to reduce it increases with their wealth and income. Therefore, a transition to a sustainable consumption pattern will need to include redistribution policies. On the one hand, the middle and upper classes need to accept their responsibility for reducing their own ecological footprint substantially. On the other hand, the poor need to be lifted out of poverty and therefore be allowed to also increase their ecological footprint, if needed. The latter also needs to remove the increasing planetary pressures from population growth, which all experience shows is firmly linked to economic security. Governments and others urgently need to implement policies to promote, facilitate and perhaps sometimes even force the necessary "green" transition, making low-pressure solutions mandatory (like energy-efficient standards for buildings and equipment) or the easy thing to do. The main focus should be on behavior changes with the biggest impacts as identified by research, including dietary changes away from red meat, transition to fossil-fuel free transportation and transition to renewable energy.

John Thøgersen
Aarhus University, Aarhus, Denmark

Notes

1. https://ourworldindata.org/world-population-growth and https://population.un.org/wpp/
2. https://population.un.org/wpp/
3. www.footprintnetwork.org, accessed 23 March 2022.
4. www.footprintcalculator.org

References

Andreasen, A. R. (2006). *Social marketing in the 21st century*, London: Sage.

Aschemann-Witzel, J. (2016). Waste not, want not, emit less. *Science*, *352*(6284), 408–409. doi: https://doi.org/10.1126/science.aaf2978.

Barros, B., & Wilk, R. (2021). The outsized carbon footprints of the super-rich. *Sustainability: Science, Practice and Policy*, *17*(1), 316–322, doi: https://doi.org/10.1080/15487733.2021.1949847.

Belmin, C., Hoffmann, R., Pichler, P.-P., & Weisz, H. (2022). Fertility transition powered by women's access to electricity and modern cooking fuels. *Nature Sustainability*, *5*(3), 245–253, doi: https://doi.org/10.1038/s41893-021-00830-3.

Butchart, S. H. M., Walpole, M., Collen, B., Strien, A. V., Scharlemann, J. P. W., Almond, R. E. A., … Watson, R. (2010). Global biodiversity: Indicators of recent declines. *Science*, *328*(5982), 1164–1168, doi: https://doi.org/10.1126/science.1187512.

Cardinale, B. J., Duffy, J. E., Gonzalez, A., Hooper, D. U., Perrings, C., Venail, P., … Naeem, S. (2012). Biodiversity loss and its impact on humanity. *Nature*, *486*(7401), 59–67, doi: https://doi.org/10.1038/nature11148.

Collins, A., Galli, A., Hipwood, T., & Murthy, A. (2020). Living within a one planet reality: The contribution of personal footprint calculators. *Environmental Research Letters*, *15*(2), 025008, doi: https://doi.org/10.1088/1748-9326/ab5f96.

Dahlstrøm, O., Sørnes, K., Eriksen, S. T., & Hertwich, E. G. (2012). Life cycle assessment of a single-family residence built to either conventional- or passive house standard. *Energy and Buildings*, *54*, 470–479, doi: https://doi.org/10.1016/j.enbuild.2012.07.029.

de Boer, I. J. M. (2003). Environmental impact assessment of conventional and organic milk production. *Livestock Production Science*, *80*(1-2), 69–77, doi: https://doi.org/10.1016/S0301-6226(02)00322-6.

Di Giulio, A., & Fuchs, D. (2014). Sustainable consumption corridors: Concept, objections, and responses. *GAIA – Ecological Perspectives for Science and Society*, *23*(3), 184–192, doi: https://doi.org/10.14512/gaia.23.S1.6.

Dietz, T., Gardner, G. T., Gilligan, J., Stern, P. C., & Vandenbergh, M. P. (2009). Household actions can provide a behavioral wedge to rapidly reduce U.S. carbon emissions. *Proceedings of the National Academy of Sciences*, *106*(44), 18452–18456. Retrieved from www.pnas.org/content/early/2009/10/23/0908738106.full.pdf+html doi: https://doi.org/10.1073/pnas.0908738106.

Dooley, K., Holz, C., Kartha, S., Klinsky, S., Roberts, J. T., Shue, H., … Singer, P. (2021). Ethical choices behind quantifications of fair contributions under the Paris Agreement. *Nature Climate Change*, *11*(4), 300–305, doi: https://doi.org/10.1038/s41558-021-01015-8.

Ehrlich, P. (1978). *The population bomb*, New York, NY: Ballantine.

European Environment Agency. (2019). *The European environment – State and outlook 2020: Knowledge for transition to a sustainable Europe*, Copenhagen: Publications Office of the European Union Luxembourg.

Haq, G., & Weiss, M. (2016). CO2 labelling of passenger cars in Europe: Status, challenges, and future prospects. *Energy Policy*, *95*, 324–335, doi: https://doi.org/10.1016/j.enpol.2016.04.043.

Holdren, J. P., & Ehrlich, P. R. (1974). Human population and the global environment: Population growth, rising per capita material consumption, and disruptive technologies have made civilization a global ecological force. *American Scientist*, *62*, 282–292.

IPCC. (2022). *Climate change 2022: Mitigation of climate change. Contribution of working group III to the sixth assessment report of the intergovernmental panel on climate change [P.R. Shukla, J. Skea, R. Slade, A. Al Khourdajie, R. van Diemen, D. McCollum, M. Pathak, S. Some, P. Vyas, R. Fradera, M. Belkacemi, A. Hasija, G. Lisboa, S. Luz, J. Malley, (Eds.)]*, Cambridge, UK, and New York, NY: Cambridge University Press.

Ivanova, D., Stadler, K., Steen-Olsen, K., Wood, R., Vita, G., Tukker, A., & Hertwich, E. G. (2016). Environmental impact assessment of household consumption. *Journal of Industrial Ecology*, *20*(3), 526–536, doi: https://doi.org/10.1111/jiec.12371.

Ivanova, D., & Wood, R. (2020). The unequal distribution of household carbon footprints in Europe and its link to sustainability. *Global Sustainability*, *3*, e18, doi: https://doi.org/https://doi.org/10.1017/sus.2020.12.

Kahneman, D. (2011). *Thinking, fast and slow*, New York, NY: Macmillan.

Kartha, S., Kemp-Benedict, E., Ghosh, E., Nazareth, A., & Gore, T. (2020). The carbon inequality era: An assessment of the global distribution of consumption emissions among individuals from 1990 to 2015 and beyond (1787486494). Retrieved from https://policy-practice.oxfam.org/resources/the-carbon-inequality-era-an-assessment-of-the-global-distribution-of-consumpti-621049/

Lade, S. J., Steffen, W., de Vries, W., Carpenter, S. R., Donges, J. F., Gerten, D., … Rockström, J. (2020). Human impacts on planetary boundaries amplified by Earth system interactions. *Nature Sustainability*, *3*(2), 119–128, doi: https://doi.org/10.1038/s41893-019-0454-4.

Lee, R. (2011). The outlook for population growth. *Science*, *333*(6042), 569–573, doi: https://doi.org/10.1126/science.1208859.

Moran, D., Wood, R., Hertwich, E., Mattson, K., Rodriguez, J. F. D., Schanes, K., & Barrett, J. (2020). Quantifying the potential for consumer-oriented policy to reduce European and foreign carbon emissions. *Climate Policy*, *20*(sup1), S28–S38, doi: https://doi.org/10.1080/14693062.2018.1551186.

Nielsen, K. S., Nicholas, K. A., Creutzig, F., Dietz, T., & Stern, P. C. (2021). The role of high-socioeconomic-status people in locking in or rapidly reducing energy-driven greenhouse gas emissions. *Nature Energy*, *6*(11), doi: https://doi.org/10.1038/s41560-021-00900-y.

Nielsen, K. S., Stern, P. C., Dietz, T., Gilligan, J. M., van Vuuren, D. P., Figueroa, M. J., … Wood, R. (2020). Improving climate change mitigation analysis: A framework for examining feasibility. *One Earth*, *3*(3), 325–336, doi: https://doi.org/10.1016/j.oneear.2020.08.007.

O'Mahony, T. (2020). State of the art in carbon taxes: A review of the global conclusions. *Green Finance*, *2*, 409–423, doi: https://doi.org/10.3934/GF.2020022.

Raworth, K. (2017). *Doughnut economics: Seven ways to think like a 21st-century economist*, London, UK: Penguin.

Steffen, W., Richardson, K., Rockström, J., Cornell, S. E., Fetzer, I., Bennett, E. M., … de Wit, C. A. (2015). Planetary boundaries: Guiding human development on a changing planet. *Science*, *347*(6223), 1259855, doi: https://doi.org/10.1126/science.1259855.

Steffen, W., Rockström, J., Richardson, K., Lenton, T. M., Folke, C., Liverman, D., … Schellnhuber, H. J. (2018). Trajectories of the Earth system in the Anthropocene. *Proceedings of the National Academy of Sciences*, *115*(33), 8252–8259, doi: https://doi.org/10.1073/pnas.1810141115.

Sulston, J. et al. (2012). *People and the planet*, London: The Royal Society.

Torma, G., & Thøgersen, J. (2021). A systematic literature review on meta sustainability labeling – What do we (not) know? *Journal of Cleaner Production*, *293*, 126194, doi: https://doi.org/10.1016/j.jclepro.2021.126194.

Verplanken, B., & Wood, W. (2006). Interventions to break and create consumer habits. *Journal of Public Policy & Marketing*, *25*(1), 90–104. doi: https://doi.org/10.1509/jppm.25.1.90.

Wackernagel, M., & Beyers, B. (2019). *Ecological footprint: Managing our biocapacity budget*, New Society Publishers.

Wackernagel, M., Lin, D., Hanscom, L., Galli, A., & Iha, K. (2019). Ecological footprint. In B. Fath (Ed.), *Encyclopedia of Ecology* (2nd Edition.), (pp. 270–282). Oxford: Elsevier.

Wiedmann, T., Lenzen, M., Keyßer, L. T., & Steinberger, J. K. (2020). Scientists' warning on affluence. *Nature Communications*, *11*(1), 3107, doi: https://doi.org/10.1038/s41467-020-16941-y.

Willett, W., Rockström, J., Loken, B., Springmann, M., Lang, T., Vermeulen, S., … Wood, A. (2019). Food in the Anthropocene: The EAT–Lancet Commission on healthy diets from sustainable food systems. *The Lancet*, *393*(10170), 447–492. doi: https://doi.org/10.1016/S0140-6736(18)31788-4.

World Bank (2020). Monitoring global poverty. In World Bank (Ed.), *Poverty and shared prosperity 2020: Reversals of fortune* (pp. 27–80). World Bank.

Corresponding author
John Thøgersen can be contacted at: jbt@mgmt.au.dk