
Guest editorial: Towards operationalizing sufficiency

Guest editorial

1

All the while our world is undergoing several transitions. Improvement of efficiency in resource use is one of them. With every passing day, with technological improvements, all the systems of the world, at every stage, are becoming more and more efficient. Consider, for example, our electricity system. The processes of fuel extraction, processing and transportation have become more efficient over the centuries and decades. Similarly, the efficiencies of power production units have increased over time. So have the power transmission and distribution efficiencies. Also, the efficiency of electrical devices has increased multifold over the years. For instance, LED lighting is ten times more efficient than traditional incandescent bulbs (US Department of Energy, 2024). So, the efficiency of the electricity system is on the rise as you read this editorial.

An increase in efficiency means that for the same output, one would consume less input. Hence, improvements in efficiency in different energy systems like that of the electricity system discussed above are expected to reduce the overall input of energy. Economic reasoning expects the income-primary energy relation of individual households and societies to follow an inverse-U path, with more avenues of energy use resulting in the initial increase, whereas efficient fuel/technology/process/device combinations resulting in a decrease in the later stage (Foster *et al.*, 2000; Kowsari and Zerriffi, 2011). However, in reality, there is hardly any evidence of an inverse-U curve. It has been observed that with higher income, energy consumption increases for households and societies (Mestl and Eskeland, 2009; Kowsari and Zerriffi, 2011). This increase can be explained by conspicuous consumption and rebound effects (Gillingham *et al.*, 2020). Conspicuous consumption has to do with our pursuit of positional goods, which indicate status: positional goods are valued for their relative abundance or scarcity, especially because they are those that are possessed by a few (Hirsch, 1976; Frank, 2008). In addition to conspicuous consumption, rebound effects manifest as overconsumption of efficient systems. For instance, with a fuel-efficient car, people tend to drive more; with LED lighting, people tend to use more lighting fixtures; or with an efficient computer monitor, people tend to have a larger screen size. Stated succinctly, it is clear that increases in resource efficiency have not led to decreases in our resource consumption. This calls for a paradigm shift in addressing resource consumption *vis-à-vis* resource efficiency.

Here we introduce sufficiency, the significance of which has not been hitherto adequately recognized in the economics of resources. The sufficiency paradigm focuses on reducing excess output, unlike the efficiency paradigm where the focus is on reducing excess input per output. More explicitly, sufficiency goes beyond efficiency, with the objective of reducing total resource consumption at all levels – household and higher levels (Thomas *et al.*, 2017). It calls for the design of businesses and societies that are committed to responsible production and consumption, which is key to achieving sustainable development. It is a shift in business models, where revenue is no longer the sole objective, but reducing total resource consumption (not only resource consumption per unit output) across the resource spectrum – energy, water, land, human resources, infrastructure and other vital resources – is the main objective.

The authors are grateful to Posina Venkata Rayudu for his comments on the earlier versions of the article.



Since 1950, the last three-quarters of the century, we have been living in the Anthropocene epoch in which there has been a great acceleration in terms of population growth, urbanization, primary energy use, fertilizer consumption, large dams, water use, transportation, global tourism, etc. and all these developments have had a drastic negative impact on the Earth and its ecosystems (Steffen *et al.*, 2015; Zalasiewicz *et al.*, 2019). This brings into figural salience for all to see the urgency of taking a U-turn: reversing the trending economic thought to focus on “better” instead of “more” (Spangenberg, 2018).

Sufficiency advocates reflecting on one’s reflexive urges and conscious choices with the express purpose of containing overconsumption. This might appear contrary to common sense as we are habituated by economic instruments and policies that incentivize more consumption. However, it is not difficult to appreciate the significance of sufficiency: consider Earth, given that it is the only known place in the universe supporting life, as a spaceship; now we can readily see that our economy, exactly like a spaceship economy, requires resource consumption to be minimized, rather than maximized (Boulding, 1966). Nevertheless, sufficiency may appear to restrict consumers’ freedoms; but, concepts of freedom of choice and consumer sovereignty make sense only within the limited space of sustainable lifestyles, i.e. the safe operating space of humanity (Spangenberg, 2018).

Sufficiency subsumes efficiency. Sufficiency in production and consumption makes them more sustainable, ensuring optimal resource utilization within planetary boundaries while promoting societal well-being (Jackson, 2005; Raworth, 2017; Wiedmann *et al.*, 2020). The concept of a “sufficiency economy,” which seeks to ensure sufficient resources for everyone sustainably (Alexander, 2012), presents a viable alternative to the prevailing efficiency economy with its narrow focus and short-sighted fixation on “more” at any cost. Profit-driven production and consumption of the efficient economy have resulted in unsustainability risks that affect the have-nots more adversely because of their lack of capacity: financial, technical and political. Operationalizing sufficiency reduces economic and carbon footprints while batting for an equitable society.

Bringing about corrections in production systems on account of climate change is the lowest-hanging fruit as far as the operationalization of sufficiency is concerned. Industrial production is a necessity that cannot be ignored for many of the basic needs of life. Undertaking such production activities within the limits of emissions and climate change will lead to restraints. A paper in this issue titled “Climate Change Management in Manufacturing Industry: A Greenhouse Gas Inventorization and Mitigation Approach” examines sustainable practices in the manufacturing sector to minimize environmental footprints. By taking the case of tire industry in Puducherry, India, the author(s) assessed greenhouse gas (GHG) emissions levels and explored strategies to reduce the industry’s climate impact through more environmentally friendly production methods such as GHG inventorying and mitigation. The findings suggested that the industry could reduce power consumption and save furnace oil, resulting in substantial reductions in carbon dioxide.

Resource conservation is key to sufficiency. Recycling waste is the first step in conservation. The ever-increasing consumption has resulted in a huge amount of waste. It is commonly believed that efficiency reduces waste. However, an increase in consumption undoes the waste reduction benefit of efficiency. For instance, an additional reduction of waste on account of an increase in efficiency from 70% to 75% gets nullified by a 20% increase in consumption. Currently, the world produces more than two billion tons of municipal solid waste annually, and it is expected to increase to approximately three and a half billion tons by 2050 (World Bank, 2024). India’s share in global solid waste generation is around 12% (Statista, 2024). This generated waste has a substantial adverse impact on the surroundings through dumping, local littering, large-scale marine littering, etc. leading to an unsustainable environment.

One of the strategies to minimize waste generation is to adopt the principles of circular economy: a production framework that represents a shift from the current linear “cradle to grave” approach to a “cradle to cradle” circular framework transforming production and consumption to such a level where waste gets completely reused. Though sufficiency goes beyond the circular economy (Spangenberg, 2018), the reuse of waste certainly prevents the use of additional resources, thereby contributing to sufficiency. Among the different sectors, the construction sector is one of the largest emitters of carbon dioxide and consumers of energy. The sector witnessed a significant rebound effect, with higher efficiency achieved in the buildings outpaced by an increase in building space, which called for a specific focus on achieving an overall reduced carbon footprint (UNEP, 2022; Gasparri *et al.*, 2023). In the paper titled “Assessing the Environmental and Economic Impacts of Adopting Circular Economy for Sustainable Resource Management in the Indian Construction Sector,” which has been included in this special issue, the author(s) investigated the sector’s environmental footprint as well as the potential benefits of adopting the instruments of the circular economy. The author(s) assessed and compared the environmental and economic impacts of different types of land transportation infrastructure, like roads, railways, tunnels and railways. The economic and environmental impacts of these infrastructures are analyzed using life cycle costing and life cycle assessment methods, respectively. The analysis of comparative environmental impacts and cost-savings associated with the adoption of circular economy approaches showed that railways, concrete roads and prefabricated structures are the most economically and environmentally effective infrastructures.

One of the most disturbing menaces among different types of waste is the nondegradable hazardous electronic waste (e-waste). It is the fastest-growing domestic waste, which is expected to double between 2014 and 2030, as a result of its higher consumption, shorter life cycles, and lack of repair (UNU, 2020). E-waste forms a large proportion of the hazardous waste that ends up in landfills and being nonbiodegradable is expected to remain there for centuries, which makes it a grave planetary concern. Globally, with 7.3 kg per inhabitant, the total e-waste generated in 2019 was 53.6 million metric tons (Mt) of which only 17.4% were recycled (UNU, 2020). In India, the annual production of e-waste is more than 1 Mt of which more than three-fourths are not collected or disposed of [The Hindu Business Line \(2022\)](#). Managing e-waste is crucial not only for reducing environmental degradation and the attendant adverse effects on health but also for achieving resource sufficiency. In the paper “Evolving a Conceptual Framework for Sustainable E-waste Management: A Consumer Typology based on Environmental Behavior,” included in this issue, the author(s) discussed the issues in defining e-waste and developed a comprehensive framework for circular consumption needed for sustainable e-waste management.

In transportation, advocacy of sufficiency coincides with the promotion of public transport. A prominent example of the promotion of public transport is the provision of separate lanes for buses (so that they do not get entangled in traffic) and wide footpaths (so that bus commuters can comfortably walk from home to bus stops and vice versa) (Peñalosa, 2013). This was successfully implemented in the city of Bogota, Colombia, by Gustavo Petro and Enrique Peñalosa, the former mayors, who are often credited with enlightening our collective consciousness: “A developed country is not a place where the poor have cars. It’s where the rich use public transportation” (Peñalosa, 2013; [Real Living, 2023](#)). In the debate between private and public transport, traditional research in transportation argued for more use of public transport and less use of private transport without compromising much on the ownership of private vehicles. Sufficiency goes a step further, taking into account the energy and resources consumed during the manufacturing of vehicles. Hence, not only low vehicle occupancy and increased travel trips but also an increase in the number of vehicles is a burden to the transportation

system, all of which leads to traffic congestion and local area pollution. This is one of the major challenges faced by India, which is abundantly clear from the precarious situation of increased air pollution levels in its cities: 63 Indian cities figure among the top 100 polluted cities in the world (IQAir, 2021). One of the ways to address these challenges in the transportation sector is to take sufficient measures, such as reducing vehicle ownership and increasing vehicle utilization. In this issue, we have two papers on this topic. In the paper “Ride-hailing Services and Vehicle Ownership: Evidence from Indian Metropolitan Cities,” the author(s) explored the relationship between ride-hailing services and vehicle growth in Indian metropolitan cities. In the paper “Understanding Indian Ride-Sharing Consumers: The Role of Psychographics and Perceived Value,” the author(s) examined the factors affecting consumers’ use of ride-sharing services in India. The sharing economy, in which both ride-hailing and ride-sharing services are part, insists on sharing resources to increase the utilization of end-use resources, thereby minimizing the need to produce more of the same and ensuring sufficiency.

Electricity consumption is an example of sufficiency at work. People consuming electricity at higher slabs pay a higher price per unit. This can be seen as a disincentivization to consume more. In contrast, for almost all consumer goods and services, the situation is exactly the reverse: a greater discount for higher level consumption, i.e. incentivization to consume more. For instance, in the case of apparel, as an illustration, there is a 20% discount on buying a shirt, a 30% discount on buying two, etc. The rationale for doing it differently for electricity when compared with all other consumer goods is that in the case of the former, there is a realization that there are hard limits to producing electricity. But is not that true for everything else, be it textiles, food and beverages, furniture or any other goods or services?

Sufficiency is the responsibility of both consumers and producers. Degrowth and sufficiency are both two sides of the same coin (Parrique, 2022). Downscaling, both production and consumption, is at the heart of sufficiency (Eisenstein, 2011). Overconsumption is a result of “planned obsolescence,” a lack of repair and “induced scarcity,” all deliberately manufactured through devious marketing and advertisements (Jenks, 2008). To contain and reverse the trend, from the consumers’ end, mindful consumption movement is a way forward (Parvatiyar and Sheth, 2023). From the producers’ or suppliers’ end, the mindful promotion of products or mindful advertisement can bring about mindful consumption. In the paper “Towards Customer-centric Sustainability: How Mindful Advertising Influences Mindful Consumption Behaviour,” included in this issue, the author(s) demonstrated the positive impact of mindful advertisement on mindful consumption. Through experimental design, the author(s) showed that exposure to mindful advertisements led to consumers’ preferences for recycled products and even consumers refraining from buying, which is in line with the sufficiency paradigm.

One of the practical and emerging applications of sufficiency lies in the idea of coliving and coworking. Sharing resources through coworking and coliving provides social security and a sense of community living and working, saves costs and promotes convenience through interdependencies. This also leads to less consumption of resources in terms of water, energy, land area, etc. There are infrastructures like educational institutions, office spaces and government buildings that remain unused for certain parts of the day. This leads to the underutilization of existing spaces. The general tendency is to create more infrastructure whenever there is a need, instead of looking for opportunities to use underused resources. In the case of personal housing space, coliving not only solves the problem of the housing crisis by making housing affordable but also addresses the serious public health issue of loneliness among both elderly and younger individuals (Corfe, 2019). In particular, “with co-living, interactions in communal spaces – such as in shared dining facilities, resident events, gym classes and/or lounge areas – can foster friendships,

conversations, entertainment and ultimately community spirit” (Corfe, 2019, p. 6). Similarly, coworking is a new form of social infrastructure that promotes a collective and community-based approach to creating a collaborative atmosphere and social relationships (Merkel, 2015). This line of thinking is reflected in one of this issue’s papers titled “Burgeoning of Coliving and Co-working Space for Indian Millennial- A Quiver or a Hunt for Novel Strategies.” In this study, situating the research in India, the author(s) identified persuasive factors in designing competitive advantage strategies for coliving and coworking. The author(s) note that these practices are increasingly popular in Europe and acknowledge that the roots of sustainable living and working are found in the Indian past. From the firsthand views of participants experiencing coliving and coworking spaces, the author(s) presented the needs of these contemporary business ideas.

Certain organizational structures have the characteristic of being aligned with sufficiency. Cooperative organizations, by design, are sufficient organizations as the governance and management of these organizations are member-based and have dual objectives: economic (profitability, diversification of business) and social (well-being of the members, disadvantaged members) (Franco and Chand, 1991; Singh and Pundir, 2000). Cooperatives are unlike corporate organizations, which are privately managed and only driven by revenues and profits. Therefore, the focus of corporate organizations is on improving efficiency or productivity to maximize profits, whereas this is not the sole goal of cooperatives. For instance, the business philosophy of the cooperative society Amul, the world’s largest producer of milk and milk products, is “value for money” (the consumer must get the value for the money spent) and “value for many” (the profit must go back to the farmers) (Parasar and Bhavani, 2018). Value for money prevents mindless advertising and overconsumption, and value for many prevents the accumulation of wealth in a few hands – all leading to sufficiency. Cooperatives provide the necessary bargaining power to small farmers through collective action (Prasad *et al.*, 2023). Recognizing this importance, the Government of India has promoted 10,000 Farmers Producer Organizations (FPOs) through a central scheme in 2020 (PIB, 2023). This issue includes an article titled “Managing Sustainable Transition through Farmer-owned Enterprises: The Case of Ram Rahim Pragati Producer Company,” in which the author(s) took the example of a female FPO and showcased how a cooperative embeds sustainability in its purpose and transforms both production and consumption toward a sustainable food system.

Organizations can transform from one kind to another over time. Green transformation is all about decarbonizing the economic system and mitigating climate change to ensure human well-being (Poulsen and Lema, 2017). The process requires moving the existing practices toward greener practices. Green practices are both complementary and supplementary to sufficient practices (in terms of reduction of use of energy, water, material, etc.) (Kovilage, 2021). All sectors can contribute to these transformations, with the health sector being of specific importance considering the adverse health impacts of nongreen practices (Berniak-Woźny and Rataj, 2023). Several government schemes are there to encourage such practices, both in small and large organizations. When incentives are provided, some organizations are ready to change, whereas others are not. In the paper titled “Readiness for Green Transformation Process in Healthcare Organizations,” included in this issue, the author(s) identified several readiness factors for the green transformation of the health-care industry in India. Considering different stakeholders: health-care administrators, managers, doctors and senior staff nurses, the author(s) concluded that awareness, leadership, management, information and communication technology and innovation space are some of the drivers of green transformation.

Summing it all up, the papers included in this special issue represent several avenues for operationalizing sufficiency. The common message of these papers is that walking faster does not help if we are walking in the wrong direction (Potocink, 2018). Although the notion of sufficiency is not new (Princen, 2005; Thomas *et al.*, 2015), its applications are too few, particularly in developing countries like India. This special issue fills this gap and is a much-needed contribution to bring about the desired paradigm shift in economies toward sufficiency.

Hippu Salk Kristle Nathan

Institute of Rural Management, Anand, India

Binilkumar Amarayil Sreeraman

*Department of Finance Economics and Strategy,
Indian Institute of Management Mumbai, Mumbai, India*

Lakshmikanth Hari

*Centre for Sustainable Development, K J Somaiya Institute of Management,
Somaiya Vidyavihar University, Mumbai, India, and*

Shrabani B. Bhattacharjee

Jagdish Sheth School of Management, Bangalore, India

References

- Berniak-Woźny, J. and Rataj, M. (2023), "Towards green and sustainable healthcare: a literature review and research agenda for green leadership in the healthcare sector", *International Journal of Environmental Research and Public Health*, Vol. 20 No. 2, p. 908.
- Boulding, K. (1966), "The economics of the coming spaceship earth", *Environmental Quality in a Growing Economy*, Johns Hopkins University Press, Baltimore, MD.
- Corfe, S. (2019), *Co-Living: A Solution to the Housing Crisis*, The Social Market Foundation, London.
- Eisenstein, C. (2011), *Sacred Economics: Money, Gift, and Society in the Age of Transition*, Evolver Editions, Berkeley.
- Foster, V., Tre, J.P. and Wodon, Q. (2000), *Energy Consumption and Income: An Inverted-U at the Household Level*, World Bank, Washington, DC.
- Frank, R.H. (2008), "Should public policy respond to positional externalities?", *Journal of Public Economics*, Vol. 92 Nos 8/9, pp. 1777-1786.
- Gasparri, E., Arasteh, S., Kuru, A., Stracchi, P. and Brambilla, A. (2023), "Circular economy in construction: a systematic review of knowledge gaps towards a novel research framework", *Frontiers in Built Environment*, Vol. 9, p. 1239757.
- Gillingham, K., Rapson, D. and Wagner, G. (2020), "The rebound effect and energy efficiency policy", *Review of Environmental Economics and Policy*, Vol. 10 No. 1.
- Hirsch, F. (1976), *Social Limits to Growth*, Harvard University Press.
- IQAir (2021), *World Air Quality Report 2021: Region and City PM2.5 Ranking*, IQAir, Amperestrasse.
- Kovilage, M.P. (2021), "Influence of lean-green practices on organizational sustainable performance", *Journal of Asian Business and Economic Studies*, Vol. 28 No. 2, pp. 121-142.
- Kowsari, R. and Zerriffi, H. (2011), "Three dimensional energy profile: a conceptual framework for assessing household energy use", *Energy Policy*, Vol. 39 No. 12, pp. 7505-7517.
- Merkel, J. (2015), "Coworking in the city", *Ephemera*, Vol. 15 No. 2, pp. 121-139.

- Mestl, H.E.S. and Eskeland, G.S. (2009), "Richer and healthier, but not greener? Choices concerning household energy use in India", *Energy Policy*, Vol. 37 No. 8, pp. 3009-3019.
- Parasar, R. and Bhavani, R.V. (2018), "Private business-driven value chains and nutrition: insights from India", *IDS Bulletin*, Vol. 49 No. 1, pp. 21-38.
- Parrique, T. (2022), *Sufficiency Means Degrowth, Economy, Resilience*, Post Carbon Institute, Corvallis, OR.
- Parvatiyar, A. and Sheth, J.N. (2023), "Confronting the deep problem of consumption: why individual responsibility for mindful consumption matters", *Journal of Consumer Affairs*, Vol. 57 No. 2, pp. 785-820.
- Peñalosa, E. (2013), "Why buses represent democracy in action, Enrique Peñalosa TED talk", Institute of Transportation and Development Policy.
- Potocink, J. (2018), *Forward, Sufficiency—Moving beyond the Gospel of Eco-Efficiency*, Friends of the Earth Europe, Brussels.
- Poulsen, T. and Lema, R. (2017), "Is the supply chain ready for the green transformation? The case of offshore wind logistics", *Renewable and Sustainable Energy Reviews*, Vol. 73, pp. 758-771.
- Prasad, C.S., Kanitkar, A. and Dutta, D. (2023), "Producer organisations as 21st-century farmer institutions", *Farming Futures*, Routledge, pp. 1-26.
- Press Information Bureau (PIB) (2023), "Constitution of farmer producer organizations", Ministry of Agriculture and Farmers Welfare, PIB, July 25.
- Princen, T. (2005), *The Logic of Sufficiency*, MIT Press, Cambridge.
- Real Living (2023), *How to Achieve Efficient Transportation for All, Neighbourhoods*, Real Living, Mandaluyong City.
- Singh, K. and Pundir, R.S. (2000), *Co-Operatives and Rural Development in India*, Institute of Rural Management Anand, Anand.
- Spangenberg, J. (2018), "Sufficiency: a pragmatic, radical visionary approach", *Sufficiency—Moving beyond the Gospel of Eco-Efficiency*, Friends of the Earth Europe, Brussels.
- Statista (2024), "Waste management in India – statistics and facts", available at: www.statista.com/topics/5586/waste-management-india/#topicOverview (accessed 29 January 2024).
- Steffen, W., Broadgate, W., Deutsch, L., Gaffney, O. and Ludwig, C. (2015), "The trajectory of the Anthropocene: the great acceleration", *The Anthropocene Review*, Vol. 2 No. 1, pp. 81-98.
- The Hindu Business Line (2022), "Around 78% of India's e-waste is not being collected or disposed by the government", The Hindu Business Line, May 12.
- Thomas, S., Brischke, L.A., Thema, J. and Kopatz, M. (2015), "Energy sufficiency policy: an evolution of energy efficiency policy or radically new approaches?", *Proceedings of First Fuel Now: ECEEE 2015 Summer Study; 1-6 June 2015, Toulon/Hyères, France*, pp. 59-70.
- UNEP (2022), "2022 Global Status Report for Buildings and Construction: Towards a Zero-emission, Efficient and Resilient Buildings and Construction Sector", UNEP, Nairobi.
- United Nations University (UNU) (2020), *The Global E-Waste Monitor 2020: Quantities, Flows, and the Circular Economy Potential*, UNU, United Nations Institute for Training and Research, International Telecommunication Union, and International Solid Waste Association.
- World Bank (2024), "Trends in solid waste management", available at: https://datatopics.worldbank.org/what-a-waste/trends_in_solid_waste_management.html (accessed 29 January 2024).
- Zalasiewicz, J., Waters, C.N., Williams, M. and Summerhayes, C.P. (Eds) (2019), *The Anthropocene as a Geological Time Unit: A Guide to the Scientific Evidence and Current Debate*, Cambridge University Press, Cambridge.