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Editorial: From an ethic of sufficiency to its policy and practice in late capitalism

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Editorial on the Research Topic
From an ethic of sufficiency to its policy and practice in late capitalism

Introduction

The intuition that sufficiency is essential for a good life is an old one. It is an idea found across many philosophical, spiritual, and cultural traditions of the ancient world. The economist Amartya Sen opens his book *Development as Freedom*, by recounting a conversation between Maitreyee and her husband Yajnavalkya narrated in the *Brihadaranyaka Upanishad* (7th—6th Century BCE). Maitreyee asks her husband if possessing the wealth of the whole world would give her immortality. No, was Yajnavalkya's prompt response! Reassured, she asks rhetorically, then "what should I do with that by which I do not become immortal" (Sen, 1999). Sen proceeds to suggest that this story is often used in Indian religious philosophy to point to the inevitable entropy of human life, and the limited utility of the material possessions. Inherent in Maitreyee's probing rhetorical question is the generative ethical intuition of living sufficiently or living well with a sense of enoughness. A couple of centuries later the sentiment is seen again in Aristotle's *Nicomachean Ethics*, where he distinguishes between the proximate, contingent nature of wealth as a partial means toward something else, some other good—the good life—that lay beyond.

We live today, many centuries later, urgently seeking to redress the despoilation of the biophysical world, engendered by what we will call the Promethean interlude. For about five centuries, moderns have believed, unlike Maitreyee, Yajnavalkya or Aristotle, that the wealth of the world, once commodified, monetized, and made fungible, was infinite and could indeed deliver us to immortality, or something approximating it—"life, liberty and the pursuit of happiness" unhinged from entropy. However, keeping entropy aside for a moment, modernity's promise of emancipation through economic productivity was believed to be able to break the yoke of feudal and other forms of elite and aristocratic rule that became corrupted. Our reference to the deliberations of Maitreyee, Yajnavalkya, and Aristotle, needs to be read alongside this acknowledgment. By doing so, we take note of the common criticism that talking of sufficiency is an elite proclivity and that the pursuit of production and productivity was emancipatory politics.

However, despite the mindboggling growth in economic productivity over the past five centuries the promise of emancipation for the average individual has fallen short.

Inequality, injustice, and atomization remain very much with us and blight and destitute too many lives. We must concede that the utility of productivity for an emancipatory politics, has proven to be limited. And bringing entropy back into the discussion, we notice that the evidence of social-ecological despoilation, in pursuit of productivity and growth, accumulated now over many decades of scientific research, has forced moderns to begrudgingly acknowledge an intuition like that of the ancients. The evidence forces us to take cognizance, in modern vocabulary, of the limited low entropy matter and energy available for human appropriation.

These trends have culminated in a growing recognition of sufficiency or enoughness as a species of environmentalism within modern secular communities. Human wellbeing is to be pursued not despite biophysical limits, but by working with such inevitable limits (e.g., Mathai, 2004; Jackson, 2009). There is a veritable scholarly production line that has emerged around sufficiency, limits, planetary boundaries, wellbeing corridors, de-growth and post-growth, among many others. As Princen acknowledges, in this volume, sufficiency is a very old idea but efforts to construct it as a social organizing principle is really a 21st century concept necessitated by the inevitable encounter with what Daly (2015) famously framed as the "full-world."

Despite these efforts, large and powerful swathes of economic and environmental policy and practice continue to resist this idea. Or at best, ignore it. They believe, almost as a matter of faith, that modernity's immense technological capacities to deliver energy and material efficiencies and to substitute biophysical resources between themselves, as they are found individually to be economically scarce, will preclude the arrival of ultimate limits. Yet, we have also known, for some decades now, that the rebound effect, within a political economy that channels improving efficiency and economic productivity to more economic growth and accumulation, belies this belief (e.g., Wilhite and Norgard, 2004). Consider, for example, that when the "planetary boundaries" framework was introduced (Rockström et al., 2009), we learned that humanity had pushed three out of nine earth systems beyond a safe operating space. In their 2023 update, these scientists have reported that it's now six out of nine (Richardson et al., 2023).

Flawed though it is in a system limited by entropy, economic expansion is powerfully entrenched. For example, the provisioning of social welfare, or projection of national power, the creation of employment and livelihoods, in nearly all states of the world, rests on continued and accelerating economic growth. Even the promise, in this worldview, of redressing entrenched income, wealth and social inequality is premised on accelerating economic growth (e.g., SDG 8) and the throughput of matter and energy it inevitably implies.

In this context, the problem that invites our attention is how to effect sufficiency, *and* deal with the challenge of inequality and injustice within and between countries. This framing of the problem is generative of several questions that were shared with potential contributors to this volume. The questions range from the design and implementation of development interventions to those about geopolitics and international relations. A complexity arises when we ask about sufficiency in the context of vast, highly consequential, and historically generated differences between the Global North and Global South. How to advance sufficiency when stark material deprivation and overabundance coexist between countries and within them too? Further, how to talk about sufficiency while international relations are entering another century of churn that is unsettling key geopolitical equilibria of the twentieth century? Can economies oriented to sufficiency sustain powerful, domestically legitimate, and geopolitically assertive states? Is the norm of competing nation-states a feasible idea given our entropic biophysical world?

The papers in this volume address some dimensions of these questions that have tended to be less visible in the scholarship so far. The contemporary scholarship on sufficiency seems to lack historicity (e.g., see Jungell-Michelsson and Heikkurinen, 2022). Crucial currents from the 20th century that grappled with the idea of sufficiency within the political economic struggles against imperialism and colonialism (e.g., Kumarappa, 1945, also see Govindu and Malghan, 2016), and then subsequently in debates about the post-War Development project and its then already emergent environmental consequences [e.g., The World Commission on Environment and Development (WCED), 1987; Sachs, 1992] are missing. The absence of such historicity is a lost opportunity because the political economic questions of organizing production-consumption continue to manifest but remain generally overlooked in discussions on sufficiency.

A good example of the consequences of overlooking political economy is the Induction Effect. In their contribution to this volume, "*The Induction Effect: Environmental Impacts of Technologies Beyond the Rebound Effect*" Lange et al. deepen and clarify the characterization and the mechanisms underlying the rebound effect. They observe multiple effects such as economic, psychological and time rebounds associated with technology change. They also show however that visibility into the underlying rebound mechanisms is clouded by the absence of clear distinctions between what is a rebound, and what is not. To resolve this problem, they propose a distinction between the rebound effect and the induction effect. The mechanism underlying the former is efficiency improvements associated with technology change. The latter is "caused or enabled by the emergence of new options arising from technological change." The isolation of a distinct causal mechanism other than the broad category of efficiency improvements—one that operates through novelty of options—is of particular interest. Under present conditions of limited social oversight, production-consumption systems are shaped by competition among a broad array of capitals in search for profitable investment opportunities (Meadway, 2016). In this context, delimiting the consequence of technology change beyond efficiency driven rebound effects, points to what we call "the perpetual production of novelty" to create myriad avenues for consumerism and to pursue opportunities for accumulation. From the vantage of sufficiency then, the challenges are multifaceted. For the Global North the question appears to be how this production of new options, for novelty's sake, might be curbed. In the Global South, the question of bending the production of novelty to socially valuable ends—the common good—is imperative. Ultimately for both, the social control of production-consumption—the subsuming of technology innovation and change to the common good—as social-ecologists like Patrick Geddes, Lewis Mumford, Radhakamal Mukherjee, J. C. Kumarappa and others in that tradition, have long argued (see Guha, 2006) is essential.

Voices from the Global South, such as Barkin in this volume, who have "seen this movie before" and *know* the limited reach of modern efficiency and innovation, offer foundational critiques and proposals for organizing production-consumption. In "*Shaping a Communitarian Ethos in an Era of Ecological Crisis*," Barkin writes from both Latin America and from the world of indigenous peoples. These worlds have lived for centuries under conditions of inequality, colonial oppression, and devastation of their ecosystems, yet they maintained attachment to and pride in their traditions. This rootedness has allowed conditions and innovations favorable to sufficiency, especially among indigenous peoples. What emerges, according to Barkin, is that sufficiency can only flow from a collective commitment to welfare of all members of an indigenous community, and not from the provisioning of an adequate basket of satisfiers for needy, atomized, individuals. A web of connections to each other and reciprocal social relations which find expression in various ceremonies and cosmovisions of indigenous peoples, is essential. Also essential, is the attachment to territory, to the geographical space they occupy, a space that has a meaning that transcends the Eurocentric concept of property. The accompanying cosmovisions of indigenous peoples, require them to also care for all elements in the natural world—flora and fauna as well as physical and geological features—just as they care for one another. This essential connectedness to people and place makes acute the awareness of the challenges of organizing production-consumption that is not destructive of nature-society and search for social processes and technical approaches attuned to the possibilities of their territories. Barkin's proposal is that sufficiency can only exist on the level of a community. And unless there are communities in resistance against capitalist modernity, sufficiency cannot flourish. This formulation of sufficiency as not necessarily about having enough, but rather, about community, care and reciprocity leading to production-consumption arranged without violence to nature-society, challenges contemporary sufficiency scholarship and practice.

The value of this challenge is brought out by Hayden and Dasilva in their paper, "*The Wellbeing Economy: Possibilities and limits in bringing sufficiency from the margins into the mainstream*." By pointing to the limited success of sufficiency policies framed within the individualist welfare state, the paper lends support, we think, to alternative proposals that are radically different, such as those offered by Barkin. Essentially, Hayden and Dasilva study New Zealand, Scotland and Iceland, admittedly small affluent countries, that all subscribe to the Wellbeing Economy Alliance. These governments supposedly move policies beyond GNP, the conventional metric for economic success, helping to create a Wellbeing Economy. They ask if this growing support for a wellbeing economy represent the long-sought breakthrough for a sufficiency-oriented, post-growth environmental approach? Their findings are mixed. On the one hand, governments attempt to move beyond GNP by launching investments in supporting the less well-off and in preventing ecological breakdown. On the other hand, governments are still holding on to the imperative of economic growth as a means to realize non-economic goals. They exhibit a "weak post-growth approach," dependent as they are on economic growth to achieve employment creation and provisioning of welfare state services in the name of wellbeing. Moreover, regarding sufficiency, such governments tend to be concerned with the floor rather than the ceiling by providing enough means to the poor and to shore up the fragile environment as opposed to confronting the well-to-do and the environmental misconduct of the rich. In contrast, a "strong post-growth approach" would imply disentangling employment and the welfare state from their growth dependency by providing universal basic services and some sort of basic income. The funds for doing so, the authors suggest, would come in part from taxes on wealth, inheritance, and property, including taxes on luxury consumption and a levy on air travel, SUVs and meat consumption. Such policies could move the wellbeing economy, they argue, from dependence on growth to options beyond economic expansion and a rise in consumption.

In his essay "*Sufficiency and The State: A Prospective Project*," Princen argues that the state is umbilically tethered to growth. Could it be, we ask, if a "weak post-growth approach" described by Hayden and Dasilva, is perhaps as far as the state can go? Princen argues that imagining a sufficiency-inflected society needs to have the state as its "analytical focus and interventionist leverage" because it is the state that proscribes the options that individuals, organizations, governments and civil society can exercise. Yet, the state is an "encompassing social structure" that is "organized for surplus where the goal of that organization is the concentration of wealth and power (for which capitalism is only a recent manifestation)." This "perennial wealth seeking" is a positive feedback loop, where more wealth requires even more to manage it and defend it. This predisposition of the state form, as it has evolved over 6,000 years, constitutes the fundamental contradiction for organizing societies under the non-negotiable condition of entropy. Thus, without reanimating this form of social organization with sufficiency as an organizing principle, Princen argues that efforts to advance sufficiency directed at individuals, organizations and economies is of limited use. By placing the state form as the unit of analysis, the essay points to new political spaces for experimentation and social change generated through questioning its permanence. Princen acknowledges that experimentation will inevitably face resistance. But he believes that an imaginative politics of sufficiency is emerging through varied experimental practice—the Communitarian Ethos for example—and will continue, given the reality of a finite planet. He is cautious however, noting that the success of this politics remains to be seen.

In keeping with the theme of varied experimental practice, Klinkenborg and Rossmoeller, open for debates on sufficiency an important space that scholarship tends to shy away from. Their essay "*Connecting Sufficiency, Materialism and the Good Life? Christian, Muslim and Hindu Perspectives*" seeks a way to take the vocabulary of sufficiency and the good-life from its long presence in religion and moral philosophy and make it available to the secular-modern living in late capitalism. It reminds us that faith and religion remain potentially powerful actors that can influence individuals and collectives. In other words, not only do faith and religion shape individual behavior, but given their ability to mold shared values and beliefs and to create shared norms, they are structural forces too, even in late capitalism. Whether these forces will aid the advance of sufficiency is the empirical question these authors shed some light on from the European context. They report on how Christian, Muslim and Hindu Faith Based Associations

(FBAs) based in Europe relate to sufficiency and the idea of a good life. While the word sufficiency isn't widely used in the literature surveyed, all the three religions shared a rejection of overconsumption and excessively materialistic lifestyles as the route to a good life. The interesting differences arise in how the FBA's texts and their interpretations of scripture don't necessarily translate into the actions of individual followers or into policy positions adopted by governments. It would be an error however to discard religion, yet again, from sufficiency debates. While actions and outcomes fall short, it is worth holding onto religion's discursive alignment with sufficiency. In his inquiry into modernity and the contemporary environmental movement, Latour (1993) famously argued that "we have never been modern" to indicate that the absolute separation between nature and society, imagined as constitutive of modernity, has never really been observed in fact. Reality presents itself as a hybrid ontology of networks that freely "translates" back and forth through the imagined rigid separations of nature and society. Thus, while the secular-modern imagines religion and faith as premodern or primitive attributes, they remain potentially enmeshed within the discourse and practice of sufficiency that weaves back-and-forth between purportedly distinct domains of the mundane and the divine. While Klinkenborg and Rossmoeller are writing from a European context, their inquiry into sufficiency, religion and the good life presents an approach to social change that can, and dare we say should, be explored in other geographies and religions as well.

In "*Sufficiency and transformation—A semi-systematic literature review of notions of social change in different concepts of sufficiency*," Lage tries to typologize the process of social change engendered by different concepts of sufficiency. He identifies three different approaches to sufficiency-oriented social change: a bottom-up-approach, a policy-making-approach and a social-movement-approach, each of which differs regarding the role of conflicts and the conceptualization of behavior and social practices. Within the sufficiency concept of the bottom-up approach, Lage subsumes those where a reduction in consumption by changing consumer behavior, new business models and grassroots-movements are central. In concepts of the policy-making approach, the social embeddedness of social practices is emphasized and reductions in consumption are pursued by changes in political framework conditions. Those two concepts dominate the sufficiency discourse, Lage finds. Still, he identifies an emerging third stream of sufficiency concepts considering a social-movement approach where sufficiency is conceptualized as a critical perspective on the nexus of unsustainability, growth dependency, externalization, exploitation, and discrimination calling for a new organizing principle for society. This more radical approach sheds light on structures of power and domination and describes social movements as relevant subjects for transformation. While the three approaches differ regarding the role of conflicts and the conceptualization of behavior and social practices synergies can be observed as well. As Lage summarizes: in an idealized and simplified way, grassroots movements may develop new sufficiency-oriented social practices, which might be supported, mainstreamed, and further developed by political decisions on changing infrastructures and institutions, and social movements may fight for shifting public discourse and other power relations and thereby render a deep shift toward sufficiency possible. It would be useful to learn if the Communitarian Ethos alive among some indigenous communities, or the appeal to faith and religion, which precedes contemporary discussion sufficiency, can be captured in this typology. Is there room in this modern typology to capture a transformation in cosmovisions?

In "*How to make more of less: Characteristics of Sufficiency in Business Practices*," Beyeler and Jaeger-Erben, focus on the practice of sufficiency in business. They address a domain that intuitively, it might appear, cannot align with the notion of sufficiency. After all, the raison d'etre of business is to make and sell more commodities. However, from an admittedly small sample of 14 European businesses, the authors add nuance to this story. Based on three dimensions, or three "rethinkings," needed for sufficiency business practices, the authors identify many practical strategies. These rethinkings are "relation to consumption," "relation to others" and "own social meaning of the organization." The authors find that each of these dimensions is translated into strategies applied by the businesses. For example, these include understanding needs in consultation with customers and employees and using these to co-design products; or production of long-standing products with sufficiency by design, among many other strategies. However, these practices are often undermined by corresponding "ambivalences." They point out for instance, that there is often a lack of knowledge about needs among producers or customers. Similarly, all businesses remain focused on viability and this makes it difficult to limit production or marketing without risking the generation of sufficient revenue—which is a precondition in the dominant political economy of competitive commodity production and exchange.

The study by Sahakian and Rossier, "*The societal conditions for achieving sufficiency through voluntary work time reduction: Results of a pilot study in Western Switzerland*" situated near Lake Geneva focuses on sufficiency as a personal choice, rather than on sufficiency as a technical design principle or as an institutional arrangement. What motivates people to live a rather sufficient life, what are the implications, and what are the conditions? The article explores sufficiency in one of the most affluent economies. The admittedly small sample of 14 respondents, from a particular context, almost all parents with children, have voluntarily chosen to shorten paid working time. In this definition, sufficiency means less income, less power to consume, but more free time. It implies furthermore a dual mandate: respecting environmental boundaries when it comes to consumption patterns, but also maintaining high levels of human wellbeing. In the study, in-depth interviews with people, where men have voluntarily engaged in work time reduction, reveal that some respondents who are limiting consumption and ecological impact, simultaneously enjoy a high level of wellbeing. However, these are almost exclusively couples with high cultural and social capital who have adopted non-consumerist and gender egalitarian norms, despite the "culture of affluence" that dominates in Swiss society. But respondents with low salaries and less education tend to disengage from sustainable consumption. Moreover, reducing work hours and at the same time achieving a high level of wellbeing, would require the provision of public services, such as access to renewable energy in more energy efficient homes, and adequate public transport services, but also the provision of childcare and elderly care. These enabling collective conditions are the product of specific political economic negotiations, could culminate in living well within limits, as a form of sufficiency, to be accessible to more people. Extending Lage's typology allows us to consider the possibility that such micro experiments might grow into grassroots movements promoting sufficiency-oriented social practices. These might then be further encouraged by political decisions on changing infrastructures and institutions, and these would be entrenched by social movements that shift public discourse and power relations for a deep shift toward sufficiency. But two caveats need recognition. As far as Switzerland is concerned, despite marked successes in reducing per capita ecological footprints, the country still needs a 67% reduction to reach the global average (Swissinfo, 2022). Secondly, options like the voluntary reduction of workdays or hours in one of the most affluent economies of the world, that perhaps benefits the most from global financial capital markets, is likely to have limited resonance with households in most parts of the world. Yet, for the "cultures of affluence" that dot the world, there are likely useful lessons to be learned.

Suski et al. in their contribution, "*Sufficiency in social practices: An underestimated potential for the transformation to a circular economy*" focus on sufficiency as a social practice. They make the connection to the Circular Economy, a theme that has not been discussed so far in this Research Topic. The authors elaborate on the sufficiency potential for a circular economy using a specific example of urban gardening. Data and insights were gathered from a neighborhood project in Germany. In the case researched the concept of "over-availability" was brought into question and replaced with enoughness by the social practice of "farm-boxes," an aquaponic system to grow food. The authors explicitly highlight sufficiency, in line with other recent scholarship (e.g., Figge and Thorpe, 2023), as an essential principle to achieve a sustainable circular economy. Especially circular economy terms like refusal, rethinking, and reduction, they argue, need to be understood as sufficiency strategies and not limited to product design concepts. The reader will see that these strategies may be like the "ambivalences" that Beyeler and Jaeger-Erben highlight above that tend to undermine the viability of businesses given the dominant political economy of competitive market exchange.

Writing in 1958 and trying to understand the age of mass consumption that emerged in post-war America and Western Europe, John Kenneth Galbraith characterized the "affluent society," in his book by the same name, as one characterized by "preoccupation with productivity and production" and a population that desires for "more elegant cars, more exotic food, more erotic clothing, more elaborate entertainment" (Galbraith, quoted in Guha, 2006, p. 220). He captures succinctly a certain individual proclivity for more, ad infinitum, that is also to an extent manufactured to align with the structural need for overall production growth at accelerating rates of productivity. Collectively these forces constitute the policy and practice of late capitalism that staves off economic and political crises through constant economic expansion, even while simultaneously exacerbating these crises through socio-ecological degradation! The challenge then of building "sustainable structures of living together" is still very much with us.

We conclude this introduction by noting an important limitation of this Research Topic. Galbraith's "affluent society" has globalized over the decades and is the norm now across affluent corners of the globe, including many in the so-called "developing world." Yet both the conceptual and empirical papers in this Research Topic are limited, except for one, to authors writing broadly from and about European and North American contexts. This apparent scarcity of studies on sufficiency from the so-called "developing world" is striking and needs correction. Low average per capita resource use or ecological impacts should not hide the extreme inequality and the accompanying tendency of excessive production-consumption for some (i.e., "cultures of affluence") and deprivation for the many that is seen in many "developing countries" (e.g., Bhar, 2023). No doubt grappling with sufficiency in such contexts is more complicated than that in the so-called "developed world." But that only underscores the importance to study and to understand these countries, and we hope more researchers and practitioners take up this challenge.

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References

Bhar, S. (2023). Sustainable consumption and the Global South: a conceptual exposition. *Front. Sustain.* 4, 965421. doi: 10.3389/frsus.2023.965421

Daly, H. (2015). Economics for a Full World. *Great Transition Initiative*. Available online at: http://www.greattransition.org/publication/economics-for-a-full-world (accessed November 8, 2023).

Figge, F., and Thorpe, A. S. (2023). Circular economy, operational eco-efficiency, and sufficiency. An integrated view. *Ecol. Econ.* 204(Part B), 107692. doi: 10.1016/j.ecolecon.2022.107692

Govindu, V. M., and Malghan, D. (2016). *The Web of Freedom: J.C. Kumarappa and Gandhi's Struggle for Economic Justice* (online ed).Oxford: Oxford Academic. doi: 10.1093/acprof:oso/9780199460816.001.0001

Guha, R. (2006). *How Much Should a Person Consume: Environmentalism in India and the United States*. Berkeley, CA: University of California Press.

Jackson, T. (2009). *Prosperity Without Growth? The Transition to a Sustainable Economy*. Sustainable Development Commission. Available online at: https://www.sd-commission.org.uk/data/files/publications/prosperity_without_growth_report.pdf

Jungell-Michelsson, J., and Heikkurinen, P. (2022). Sufficiency: a systematic literature review. *Ecol. Econ.* 195, 107380. doi: 10.1016/j.ecolecon.2022.107380

Kumarappa, J. C. (1945). *Economy of Permanence: A Quest for a Social Order Based on Non-Violence*. Varanasi: Sarva Seva Sangh Prakashan.

Latour, B. (1993). *We Have Never Been Modern*. Translated by Catherine Porter. Cambridge, MA: Harvard University Press.

Mathai, M. V. (2004). "Exploring freedom in a Global Ecology: Sen's capability approach as a solution for environmental deterioration," in *Conference Paper 4th International Conference on the Capability Approach: Enhancing Human Security* (Pavia).

Meadway, J. (2016). "Degrowth and roots of neoclassical economics," in *Green Growth: Ideology, Political Economy and the Alternatives*, eds G. Dale, M. V. Mathai, and J. A. Puppim de Oliveira (London: Zed Books), 22–41. doi: 10.5040/9781350220553.ch-004

Richardson, K., Steffen, W., Lucht, W., Bendtsen, J., Cornell, S. E., Donges, J. F., et al. (2023). Earth beyond six of nine planetary boundaries. *Sci. Adv.* 9, eadh2458. doi: 10.1126/sciadv.adh2458

Rockström, J., Steffen, W., Noone, K., Persson, Å., Chapin, F. S., Lambin, E. F., et al. (2009). A safe operating space for humanity. *Nature* 461, 7263. doi: 10.1038/461472a

Sachs, W. (Ed.) (1992). *The Development Dictionary: A Guide to Knowledge as Power*. London: Zed Books Ltd.

Sen, A. (1999). *Development as Freedom*. New York, NY: Knopf Publishers.

Swissinfo (2022). *Switzerland Reduces Environment Footprint but Still Unsustainable*. Available online at: https://www.swissinfo.ch/eng/business/switzerland-reduces-environment-footprint-but-still-unsustainable/47990142 (accessed October 8, 2023).

The World Commission on Environment and Development (WCED) (1987). *Our Common Future*. Oxford: Oxford University Press.

Wilhite, H., and Norgard, J. S. (2004). Equating efficiency with reduction: a self-deception in energy policy. *Energy Environ.* 15, 991–1009. doi: 10.1260/0958305043026618