

Sufficiency as a Value Standard: From Preferences to Needs

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Abstract

This paper outlines a conceptual framework for a *sufficiency economy*, defining sufficiency as the space between a generalisable notion of human *wellbeing* and ungeneralisable *excess*. It assumes an objective and universal concept of human needs to define a ‘floor’ and the concept of planetary boundaries to define a ‘ceiling’. This is set up as an alternative to the dominant preference satisfaction theory of value. It begins with a brief survey of the potential contributions of sufficientarianism and limitarianism to this endeavour before outlining a theory of objective, universal human need. This recognises the contextual variable nature of need satisfiers and the distinct methodology required to adjudicate *necessities*. It then turns to the planetary boundaries literature and utilises a sequence of causal and normative reasoning to derive an operational ceiling and the concept of ungeneralisable *luxuries*. The final section addresses how the concepts of floors and ceilings might be operationalised via forms of dialogic democracy, but noting the absence of any such institutions at the global level. Its policy conclusion is that a safe climate cannot be achieved through supply-side mitigation alone, and that fair demand-side mitigation necessarily requires a clear distinction between necessities and unnecessary luxuries, between which (hopefully) lies a space of sufficiency.

So distribution should undo excess
 And each man have enough.
 (Shakespeare, *King Lear*, 4.1.66)

1. Introduction

The dominant paradigm in economics – termed neo-classical - has no place for the idea that some preferences are better or worse than others, that some labour is more essential or harmful than others, that some levels of income, wealth or consumption are undesirable. If we want to ‘value what matters’ we have no choice but to replace contemporary value theory: what philosophers call preference neutrality, or what in economics was associated with the title of a famous paper, “*De gustibus non est disputandum*” – there is no arguing about tastes (Stigler and Becker 1977). This paper intends to develop a quite distinct alternative theory of value based on universal human needs.

Preference satisfaction theory, the dominant conception of wellbeing within neo-classical economics, assumes that all individuals have ‘given and complete preference functions’ and that all seek to maximise their individual utility (Hodgson 2013). In an ideal economy, what is produced and consumed is then determined by the private consumption and work preferences of individuals. Preferences become the ultimate basis for normative evaluation: what Bowles (2017) calls ‘letting pricing do the work of morals’. Notwithstanding the critiques of behavioural economics, the neo-classical paradigm effectively places the idea of better-or-worse values out of bounds for public debate and policy (Bowles and Carlin, 2020).

This framework has been challenged, criticised and modified by many economic theorists over the last two decades, as illustrated above and as I have tried to summarise (Gough 2015; Fine 2013). Yet it remains the dominant paradigm in undergraduate teaching of economics and in public understanding of economics. And it does so because there is no coherent alternative within the neo-classical paradigm. To move on we must break with preference satisfaction conceptions of wellbeing. This is now urgent in the age of the Anthropocene, when the recognition of planetary boundaries requires limiting the satisfaction of endless desires.

We now need a different value standard, one of *sufficiency* or *enough*. I define *sufficiency* as a space: the space above the floor of necessity but below the ceiling of excess, as shown in the Figure 1 below.

Figure 1 (revised version of Gough 2021 and Bärnthaler and Gough 2023)

| | Wellbeing | Wealth/Income | Consumption | Production |
|--------------------|-------------|------------------|---------------------|----------------------------------|
| | Excess | Riches | Luxuries | Waste, excess |
| Ceiling | | | | |
| Sufficiency | Flourishing | Moderate incomes | Conventional goods | ‘In-between’ production |
| | Needs met | Decent minimum | Necessities | Foundational production |
| Floor | | | | |
| | Deprivation | Poverty | Lack of necessities | Weak/absent foundational economy |

This has parallels with Kate Rowarth’s (2017) ‘doughnut’ – the ‘safe and just space for humanity’. But it places more emphasis on distribution and a clear delineation of minimum

and maximum standards - or 'floors' and 'ceilings' in the terminology used below. My central argument in *Heat, Greed and Human Need* (Gough 2017) is that inequality, and the capitalist system of 'legitimised greed' that regenerates it, cannot be separated ontologically or politically from the drivers of planetary overshoot. Decarbonisation thus logically entails reducing inequality, between and within nations. This means addressing explicitly the idea of ceilings to wealth, income, production and consumption.

Figure 1 brings together the four domains of wellbeing, wealth, consumption and production and illustrates the intention to apply the idea of floors and ceilings to all four. An ideal economy of sufficiency would be one where both poverty and riches no longer exist, where necessities are guaranteed and luxuries are shrunk, where provisioning of essentials is prioritised and excess production and unproductive labour is minimised. Note that in all three domains there is a space for human flourishing above levels of need satisfaction, for the consumption of conventional goods beyond necessities, and for sectors of production beyond essentials.

Turning to the domain of consumption, this draws on the idea and literature of 'consumption corridors': defining consumption minima (allowing every individual to live a good life) and maxima (ensuring a limit on the use of natural and social resources). 'The space between the floor of minimum consumption standards and the ceiling of maximum consumption standards produces a sustainable consumption corridor' (Fuchs et al. 2021). (this is discussed further below).

But critiquing consumption preferences and inequality must also entail critiquing systems of provision / production. Consumer preferences are not generally free-floating impulses but wants shaped by the system of corporate capitalism and social infrastructures and the historical development of these. To this end, Ricahrd Richard Bärnthaler and I (2023) have published a paper on provisioning sufficiency and the idea of a 'production corridor' to fill out the third column of the figure. For reasons of space this paper explores only the first two domains of wellbeing and consumption.

Sections 2, 3 and 4 provide a framework for theorising sufficiency. Since at least Rawls, theories of justice have challenged the desirability of real world distributions of resources and proposed alternative patterns of just distribution. But challenging the preferences of economic actors has until recently been out of bounds. Now new frameworks of *sufficientarianism* and *limitarianism* have begun to question this neglect. Section 2 of this article briefly summarises this new debate and its relevance for an ethic of sufficiency, concluding that both concepts rely on some idea of human need.

In section 3 I outline our Theory of Human Need (Doyal and Gough 1991) and cognate eudaimonic frameworks that together enable us to question preferences, develop new socio-economic goals and frame eco-social policy proposals. Such need theories provide powerful support for more just and egalitarian goals and contemporary international agreements, such as the Sustainable Development Goals (SDGs). They provide powerful support for the concepts of *enough*, of minimum floors of necessity.

However by itself this is not an adequate framework for conceiving justice in the Anthropocene. Section 4 explores the ideas of planetary boundaries and the accompanying imperative for *ceilings* above these floors. Daly (1977) distinguishes two broad arguments for limits to inequality: ethico-social and biophysical. The case for sufficiency and an upper limit beyond which lies *excess* is based both on planetary limits and on common human

needs (Gough 2017). This section makes a link, using both normative and descriptive/causal reasoning, between planetary boundaries and upper limits to consumption.

Section 5 then moves to the consumption domain and begins to consider how to operationalise the floors and ceilings that surround sufficient consumption. Identifying necessities and luxuries raises philosophical, political and practical questions that cannot properly be addressed here. The section sketches some issues in identifying floors and ceilings in, first, the global North and then at a global level.

The conclusion returns to questions of human needs, limits and sufficiency. It reiterates the urgent need to replace a moral framework in which all preferences are considered equally valid and ascribed the same normative status with an alternative value standard of sufficiency.

2. Recent approaches to sufficiency: sufficientarianism and limitarianism

The need framework clearly has affinities with two recent schools of thought within normative theories of distributive justice: Sufficientarianism and Limitarianism. Sufficientarianism is a principle of distributive justice according to which it is important that everyone has *enough* of some relevant form of advantage (Fourie 2016). At the other end of the scale, Robeyns (2017) makes the case for ‘limitarianism’ – an upper limit to the amount of goods (money, resources, welfare or capabilities) that people can permissibly have.

Both also have affinities and differences with Egalitarian principles of justice. The key contrast is that both are *qualitative* and *absolute* whereas Egalitarianism is necessarily *comparative* – whether or not justice has been achieved is fundamentally concerned with whether some have more or less than others’ (Fourie 2016).

Sufficientarianism

This concept raises a series of questions. First, how much is enough? The sufficiency view seems least controversial, and often garners widespread agreement, when it claims that everyone should have their *basic needs* covered, or something similar, such that they should not suffer deprivation. However, it is remarkable that the nature of basic need is rarely questioned. It is often assumed that this indicates a low sufficiency threshold, and it then seems particularly implausible to claim that this is all that justice requires (Fourie 2016). It is notable that *all* theories of human need extend way beyond ‘bread and water’ subsistence, which relates to the next criterion.

Second, sufficientarianism usually implies pluralism. It is commonly observed that the most important aspects of a human life are not commensurable in terms of any single quantitative standard (O’Neill 2017). Indeed this is a starting point for many critiques of utilitarian and resource-based concepts of wellbeing. To be able to lead a flourishing human life, then a person must have enough in certain key aspects of life. Axelsen and Nielsen (2016: 113) usefully distinguish three here:

1. Aspects related to biological and physical human needs
2. Aspects related to fundamental interests of a human agent
3. Aspects related to fundamental interests of a social being.

All three are absolute concepts and must be secured to a certain degree, a theme returned to below.

This raises a third issue: the relation between sufficientarianism and egalitarianism. As initially formulated by Frankfurt (1987:21) inequality above the sufficiency level is not a concern of social justice: 'If everyone had enough, it would be of no moral consequence whether some had more than others'. The positive thesis of sufficientarianism – ensuring everyone has enough - is here coupled with a negative thesis – a lack of concern with inequality above this level. Since then, however, a number of approaches have rejected this formulation and propose ways of combining support for a floor with concerns over the inequality of the whole distribution.

Casal (2007:315) for example, contends it is hard to imagine a sufficiency threshold low enough to make plausible the positive thesis, and high enough to make plausible the negative thesis. Citing both Shakespeare's *Lear* and Marx's dictum "from each according to his abilities, to each according to his needs", she stresses not only the value of achieving sufficiency but also the importance of doing so by taking more from those who have most. A robust sufficientarianism seeks also to undo *excess*. Brock (2018) agrees: the issue is not whether we should prefer equality to sufficiency. There is scope for both comparative and non-comparative approaches in working out what distributive justice requires (but see Huseby 2020 for a critique).

Limitarianism

Ethico-social arguments for limits to inequality can be traced back to Plato and Aristotle and have more recently emerged from different disciplines. As previously argued (Gough 2020), they include political economists, such as Thorstein Veblen (1899), political scientists such as Donald Hirsch (1977), sociologists such as Wilkinson and Pickett (2009) and eudaimonic psychologists such as Ryan and Sapp (2007). But none of these helped identify specific limits or ceilings until the emergence of Limitarianism. Ingrid Robeyns (2017, 2019) defines and advocates Limitarianism: 'in the world as it is, no one should have more than a certain upper limit of valuable goods, in particular, income and wealth' (Robeyns 2022: 249). 'Limitarianism claims that one can theoretically construct a riches line and that a world in which no one would be above the riches line would be a better world' (2019: 258, 253).

She is careful to distinguish instrumental from intrinsic limitarianism, and makes the case only for the first. Here, upper limits are not intrinsically valuable, but rather necessary in our non-ideal world to realise other intrinsic values. By focusing on the top of the distribution two important justifications can be made. First, the democratic argument: excessive wealth distorts the democratic process by delivering undue power, direct and indirect, to further the interests of the wealthy. It severely undermines political equality. The second argument is that excessive wealth corrals vast resources that could be used to meet 'urgent unmet needs', such as hunger, destitution and disadvantage. This argument emphasises the financial capacities of the rich to rectify wrongs and injustices. It asks who holds the duties of justice, who has responsibilities to redistribute resources?

However, she extends the idea of "unmet needs" in two radical directions, to include extreme global poverty; and urgent collective action problems such as climate change and biodiversity loss (Robeyns 2022). But saving the planet and the global commons, I would argue, entails such a spatial and temporal stretch that it is better regarded as a distinct, indeed overriding, case for Limitarianism. I shall argue in some detail in section 4 that luxury consumption by the rich directly harms the bulk of the world's population, and that restricting the consumption and thus the wealth/income of the rich would directly benefit others.

These two normative perspectives are in broad terms mirror images. Sufficiency starts at the bottom end and Limitarianism at the top end. Sufficiency allows for inequalities above the minimum threshold and Limitarianism allows for inequalities below the maximum threshold. It is interesting that both Sufficiency and Limitarianism ultimately turn to some conception of human needs. Need is an essential element in defining sufficiency thresholds. And the reality of 'unmet needs' is central to the definition of unjust upper thresholds to wealth and income. It is time to turn directly to human need theory.

3. Human needs and the necessary

Len Doyal and I contend that any coherent evaluation of the human condition requires a notion of *universal* and *objective* human needs (*A Theory of Human Need*, Doyal and Gough 1991, subsequently THN). In the 1980s when developing this idea it was far from accepted. Indeed across the political spectrum, from economics, anthropology, sociology, Marxism, political theory, feminist theory the dominant view was that needs are always relative to time and space, context and culture. Nowadays, with the limits of the Anthropocene increasingly understood and experienced, is there perhaps a renewed acceptance of a universal vision of humankind?

Our theory was published in 1991 and has been elaborated subsequently (Doyal 1993; Gough 2014, 2015). It built on the prior work of scholars such as David Wiggins (1987, 2005) and David Braybrooke (1987) and has been developed by subsequent scholars, such as Des Gasper (1996, 2009), Soran Reader (2007) and Gillian Brock (2009). Holden et al (2018, ch2) provide a concise summary.

Universal human needs

THN develops a two-stage procedure to define and identify human needs. The first stage uses neo-Kantian arguments to develop a 'thin' theory of human need. 'Need' refers to a particular category of goals that are believed to be universalisable. The universality of need rests on the belief that if needs are not satisfied then serious harm of some objective kind will result (Wiggins, 2005). We define serious harm as 'fundamental disablement in the pursuit of one's vision of the good, whatever that vision is' (THN, p 50). THN deliberately seeks the lowest common denominator of universalisable preconditions for human action and social participation. These we identify as health and autonomy. Such *human needs* are universal. They must be met in order for people to avoid harm, to participate in society, and to reflect critically upon the conditions in which they find themselves (cf the threefold distinction in Axelsen and Nielsen 2016 above).

There are similarities to the capability approach of Martha Nussbaum who recognises the existence of universal 'human functional capabilities'. Initially, she derived this concept from neo-Aristotelian reasoning, but subsequently following field research in India based it on the Rawlsian idea of an emerging 'overlapping consensus'. It is notable that more recently Nussbaum relies ultimately on the language of 'need' (Nussbaum 1993, 2000, 2006; Brock 2009). She identifies ten universal functional capabilities, but regards three as 'core': affiliation, bodily integrity and practical reason. Another important contributor to need theory is eudaimonic psychology, notably the self determination theory of Ryan and Deci (2001). This enables them to discern three universal psychological needs: for competence, autonomy and relatedness.

Table 2 demonstrates the close agreement on core human universals between these three theoretical approaches.

| | Theory | Core elements | | |
|--------------------------|---------------------------------------|-----------------------|------------------|------------------------|
| Doyal and Gough 1991 | Universal human needs | Participation | Health | Autonomy |
| Nussbaum 2000 | Central human functional capabilities | Affiliation | Bodily integrity | Practical reason |
| Ryan and Deci 2000, 2001 | Universal psychological needs | Relatedness/belonging | | Competence Autonomy |

Need satisfiers

Whilst needs are universal, *need satisfiers* are variable and context-specific. The distinction between needs and need satisfiers is critical to *A Theory of Human Need*, and indeed to all scholarly theories of need. Need satisfiers comprise the goods, services, activities, and relationships that contribute to need satisfaction in any particular context. The needs for food and shelter apply to all peoples, but there exist wide varieties of cuisines and forms of dwelling that can meet any given specification of nutrition and protection from the elements. Without a sharp distinction between universal needs and specific satisfiers, all need theories could justly be accused of being paternalist, intrusive, and insensitive to context and culture.

Identifying need satisfiers requires a quite distinct methodology, which we call the *dual strategy*. This draws on two forms of knowledge: the codified knowledge of experts and the experientially grounded knowledge of ordinary people in everyday lives (Doyal and Gough 1991, Chap.14; Nussbaum 2000; Gough 2014). We conclude that any rational and effective attempt to resolve disputes over need satisfiers “must bring to bear *both* the codified knowledge of experts and the experiential knowledge of those whose basic needs and daily life world are under consideration. It requires a *dual strategy of policy formation* which values compromise, provided that it does not extend to the general character of basic human needs and rights” (Doyal and Gough 1991, 141). In the real world, interests, institutions, and power imbalances will thwart this. In implementing the dual strategy one can only insist, following Habermas (1987), that the debate is as informed, participatory, and free of vested interests as is possible.

Intermediate needs

Between needs and need satisfiers we go on to distinguish a set of *universal satisfier characteristics* (USCs): those characteristics of need satisfiers which apply to *all* cultures. Universal satisfier characteristics are thus those properties of goods, services, activities, and relationships which enable social participation, health and human autonomy in all cultures. For example, calories a day for a specified group of people constitutes a characteristic of (most) foodstuffs which has transcultural relevance. Similarly, “shelter from the elements” and “protection from disease-carrying vectors” are two of the characteristics which all dwellings aim to have in common (though to greatly varying degrees). Applying this method, we group these USCs, or ‘intermediate needs’, in the following eleven categories (not necessarily a final list): nutritional food and clean water, protective housing, non-hazardous living and work environments, safe birth control and child-bearing, appropriate health care; significant primary relationships, security in childhood, physical and economic security, and

appropriate education. In this way the initial parsimonious list of basic needs can be 'thickened out' (Gough 2014).

Human needs and sufficiency

Universal human needs have six theoretical features that aid us in identifying sustainable wellbeing or the space of sufficiency (detailed and referenced in Gough 2015, 2017).

First, human needs are *objective*. The truth of the claim that a person needs clean water or some minimal level of security in childhood depends on the objective physiological and psychological requirements of human beings and the nature of the satisfier, including its capacity to contribute to the health, autonomy and participation of the person. In contrast, the truth of the claim that a person prefers Bowie to the Beatles depends on the nature of the person's beliefs about and attitudes towards the objects. The idea that human needs can be planned for and protected is an important feature of an economy of sufficiency.

Second, human needs are *plural*; they cannot be added up and summarised in a single unit of account. Our list of intermediate needs illustrates this. Other need theories arrive at similar lists. Sabina Alkire (2002 ch.2) surveys over 30 lists of 'dimensions of human fulfilment' and demonstrates a broad overlap of components. It is notable that all such lists include not only material goods but psychological goods, activities and relationships.

Third, needs are *non-substitutable*: one domain of need-satisfaction or objective wellbeing cannot be traded off against another. More education is of no immediate help to someone who is ill through lack of vitamin C. Thus certain *packages* of need satisfiers are necessary for the avoidance of harm. This is quite different from consumer preferences in economic theory where substitutability is the default assumption: given a bundle of two goods it is always possible – by reducing the amount of one fractionally and increasing the amount of the other fractionally – to define a second bundle between which a consumer is 'indifferent' (O'Neill, 2011).

Fourth, needs are *satiabile*. It can be shown that the amount of intermediate needs required to achieve a given level of health and autonomy diminishes as their quantity increases, eventually plateauing. Thus the contribution of calories, dwelling space, even levels of childhood security, to basic needs can be satiated. In the case of the basic needs of health and autonomy, thresholds can be conceived where serious harm is avoided such that acceptable levels of social participation can take place (Doyal and Gough 1991, ch.8).

Fifth, needs are *cross-generational*. This is of great importance since global warming is already imposing dilemmas of intergenerational equity. We can assert with much confidence that the basic needs of future generations of humans will be the same as those of present humans. To avoid serious harm and to participate and act within future human societies people will require the same preconditions: not just survival, but health and autonomy. Future people will have needs for affiliation, health, cognitive and emotional expression, understanding and critical thought. Until the genetic make-up of *Homo sapiens* changes significantly, our successors will need specific amount of the full range of intermediate needs.

Together, this amounts to a remarkable – and pretty obvious – degree of knowledge about the constituents of future peoples' wellbeing. Compared to the indeterminacy of future

generations' preferences or happiness¹ a theory of need provides some firm foundations on which to build sustainability targets for public policy (Gough 2017). The abilities to provide these components of objective welfare should be made available to future generations. In O'Neill's (2011, p. 33) words: 'Each generation needs to pass down the conditions for livelihood and good health, for social affiliation, for the development of capacities for practical reasoning, for engaging with the wider natural world and so on'.

Finally, human needs have a sound ethical grounding that preferences do not: they come along with claims of justice and equity in tow. As Henry Shue (1993: 55) writes: 'For standard economic analysis everything is a preference: the epicure's wish for a little more seasoning, the starving child's wish for a little water, the collector's wish for one more painting, and the homeless person's wish for privacy and warmth, all are preferences'. Universal needs imply ethical obligations on individuals and claims of justice - universal rights and obligations - on social institutions. An important corollary of the moral import of human need is that meeting needs should be given priority over meeting wants, whenever the two conflict or if resources are scarce. It is important to stress that this does not amount to a rejection of all preferences, whatever that would mean. It is a critique of a moral framework in which all preferences are considered equally valid and ascribed the same normative status.²

In assessing need theory Gillian Brock (2018: 21) concludes 'There is essential work that it does well and no other concept does better'.

4. Sufficiency in the Anthropocene: boundaries and ceilings

A central theme of my book (Gough 2017) was that In the Anthropocene meeting people's basic needs should be the first priority of justice. Human need theory and allied concepts provide the tools to define *floors* - minimum standards of necessities. But more needs to be said about *ceilings*. To do so we turn to the science of entropy, finitude, ecological interdependence and planetary biophysical limits.

Human needs should be met for all peoples now without compromising their achievement by future generations. The definition of the Brundtland Report remains relevant: 'Sustainable development is development that meets the needs of the present without compromising the ability of future generations to meet their own needs' (Brundtland Report, WCED 1987: 43). In the era of the Anthropocene this second form of universalisability – across generations – begins to bite. We will need to pursue the sufficiency space very soon in order not to compromise meeting basic needs in the near future. 'The dawning of the Anthropocene shifts sufficiency from 'a good idea' to an 'imperative'' (Princen, 2021).

The goal of this section is to trace a robust link between a) the biophysics of ecological limits, b) normative interpretations of planetary boundaries, c) documented inequality of consumption and emissions, and d) the normative case for ceilings on consumption emissions. It thus moves from biophysical science to normative claims about a just transition, and thence to policy imperatives concerning levels and composition of consumption, starting in the global North. This is not a new task, and this paper builds

¹ Or of Sen's capabilities – see Gough 2015.

² I am grateful to George Boss for this clarification.

especially on Fergus Green’s paper (Green 2021).³ My approach is summarised in a simplified form in Table 2 below.⁴

Table 2: From tipping points to consumption ceilings

| CLAIMS: DESCRIPTIVE/ CAUSAL v NORMATIVE | KEY CONCEPTS | APPLICATION TO CLIMATE CRISIS |
|--------------------------------------------------|-----------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| Bio-physical science | Physical tipping points | Climatic tipping points, eg. oceanic circulation |
| Normative | Planetary boundaries | Determination of ‘safe’ aggregate CO2e levels: eg. ‘net zero’ by 2050 |
| Biophysical + social science | Secure policy route to a safe climate: supply-side plus demand-side transitions | <i>Demand-side</i> climate mitigation an essential supplement to supply-side mitigation, starting in rich countries |
| Normative | <i>Fair</i> demand-side policies require a distinction between necessities and luxuries | <i>Fair</i> demand side mitigation requires distinction between necessities and luxuries |

4.1. From tipping points to planetary boundaries

The idea of ‘planetary boundaries’ was developed in a series of influential papers by Johan Rockström, Will Steffen and colleagues (2009, 2015). They have argued that there exist a series of biophysical ‘tipping points’ or thresholds where environmental systems undergo a non-linear transition which are likely not recoverable (Green 2021). Thus some level of global heating would trigger ‘highly non-linear, possibly abrupt and irreversible’ changes, such as the collapse of thermohaline circulation. This would threaten the bases of social development that have persisted throughout the Holocene for the last ten millennia.

To prevent such a disaster they advocate ‘planetary boundaries’ (PB): ‘human-determined values of the control variable set at a ‘safe’ distance from a dangerous level’ (2009: 473). Thus PBs do not follow directly from biophysical tipping points; rather they are informed by normative judgements, such as what is an acceptable degree of risk to human development of crossing a threshold, given scientific uncertainty over the precise location of the threshold’ (Green 2021: 3). Rockström et al recognise that such boundaries are always socially constructed and normatively influenced: the ‘critical’ *climate* boundary will depend on the relative risks apportioned to, for instance, 1.5C, 1.6C, 1.7C... etc of global atmospheric heating.⁵

4.2. From planetary boundaries to agreed climate targets

Accepting the validity and necessity of recognising some boundary to future global heating, the next step is to specify what global policy targets these might entail. Given the uncertainty over modelling such complex variables, and scientific disagreement over what

³ The large literature includes Caney 2012, 2018, Shue 1993, 2014, Raworth 2017, di Giulio and Fuchs 2014. See also Schramme in this issue.

⁴ To simplify the analysis I analyse only climate mitigation here, not climate adaptation.

⁵ For further reflections on the PB see Frank Biermann and Rakhyun Kim (2020), Ulrich Brand and 28 other scholars (2021), and Alcott (2022). These issues are revisited in section 5.2 below.

constitutes safe or precautionary targets, I use here the 2022 IPCC Reports (2022a, 2022b) as the most authoritative and legitimate source of scientific consensus on these issues. Of course the IPCC Reports are subject to fierce negotiations by representatives of all nations. The result is often circumlocution or worse. But this is the best agreed evidence we have at present.

The IPCC judgements are becoming more stark and the consensus on safe emissions levels is moving downwards. Volume II of the recent 2022 IPCC Report is on *Impacts, Adaptation and Vulnerability* demonstrates that global warming of 1.5°C represents the maximum that can be ensiaged to avoid irreversible global harm (Press release 28.02.2022). Others dispute this consensus as too modest and quite unsafe and propose an even tougher path of decarbonisation to *absolute zero by around 2040* (Allwood et al 2019; Anderson et al 2020, Hoffmann and Spash 2021).

4.3. From climate targets to demand-side mitigation

This in turn would mean “rapid and deep” emissions reductions in “all sectors” of the global economy. It will be “impossible” to stay below 1.5°C with “no or limited overshoot” without stronger climate action this decade. But this will not be possible simply by ‘decoupling’ or supply-side technologies. For the first time, this IPCC report recognises that ‘demand-side mitigation’ will also be needed: some absolute cuts in production and consumption will be required. Such demand-side reductions could extremely effective, reducing emissions by ‘40-70% by 2050’ (III, 5-3).

4.4. From demand-side mitigation to fair distribution of consumption burdens

Once the necessity for demand-side mitigation is recognised, issues of justice and fairness are raised. Whose consumption should be cut? Arguments of need theorists and sufficientarians meet here with limitarian concerns. The distinction between necessities and luxuries moves to centre stage. It is profoundly unjust to reduce the consumption of necessities by the poor whilst allowing the consumption of luxuries by the rich (Shue 1993; Schramme in this issue). Ecological limits press down on the consumption space from above. Given the close link between personal income/wealth and emissions, this requires compressing economic inequality starting at the top.

Again for the first time, the 2022 IPCC report recognises this in Volume III, Chapter 5. It argues that a) demand-side measures to restrain consumption must be fair, and b) that this entails prioritising universal needs over consumer preferences in some circumstances. A core concept here is that of ‘Decent Living Standards’ (DLS), including ‘the dimensions of nutrition, shelter, living condition, clothing, health care, education, and mobility’ (III, 5-5). ‘High potential for mitigation lies in using low carbon energy for new basic needs satisfaction while cutting emissions of those whose basic needs are already met (III, 5-19). In particular, the idea of *maximum consumption* intrudes. ‘The challenge then is to address the upper limits of consumption. [The distinction between necessities and luxuries helps to frame a growing stream of social sciences literature with climate policy relevance...There is high confidence in the literature that addressing inequities in income, wealth, and DLS not only raises overall well-being and furthers the SDGs but also improves the effectiveness of climate change mitigation policies’ (III, 5-33).

There are echoes here of the limitarian case for a maximum consumption line, where the luxury consumption of the rich directly harms other people. In short, the the idea of a sufficiency space at last enters global official discourse (see also Yamina Saheb 2021). Starting with planetary boundaries it makes the case for consumption-based accounting of emissions, for demand-side climate mitigation, for the recognition of human needs to

qualify the pursuit of preferences, for floors and ceilings to the consumption space, and for redistribution (alongside a suite of other climate policies). It marks a considerable shift in thinking from prior IPCC Reports.

5. Operationalising floors and ceilings: some notes and dilemmas

This section offers some preliminary thoughts on achieving areas of consensus around the concepts of floors and ceilings. This can be undertaken in the domain of wealth/income, production or consumption. In the following I consider floors and ceilings in the consumption domain. For one thing this directly relates to the need theory proposed above. It also follows the emphasis on demand-side transitions and the associated notion of a fair consumption space.⁶

But how to achieve any form of democratic agreement on floors and ceilings in a capitalist, hyper-marketised and -individualised, high-carbon social formation? The following is a brief and inadequate answer to such a large question. We begin with the distinction between universal needs and contextual need satisfiers outlined earlier. Defining floors and ceilings in any specific context is about conceiving and if possible seeking consensus on *need satisfiers*. It is at the level of need satisfiers that much writing on the ‘politics of needs’, ‘the construction of needs’ and ‘felt needs in context’ becomes relevant. Some, such as Hamilton (2003), argue that this discourse refutes the concept of universal human needs. But, as remarked above, the need/satisfier distinction is common to all need theories.

The essential requirement is a more robust form of deliberative democracy. This means developing the ‘dual strategy’ approach which brings expertise into democratic deliberation, as argued above and below in 5.2. Determining need satisfiers entails ‘a problem-solving process rather than a preference-aggregating one’ (Özkaynak et al. 2012). It would entail forms of extended dialogue and consensus-building in public forums at different levels of decision-making. A flurry of climate assemblies have been established in recent years and there is an emerging appreciation of the contribution these can make to climate policy (Cherry et al 2021, Elstub et al 2021).

However, critics persuasively argue these exercises in deliberative democracy are insufficient (Hodgson 2021, ch.9). First, establishing a link with existing forms of representative democracy is both necessary and difficult. Deliberation, ‘mutual communication that involves weighing and reflecting on preferences, values and interests’, is a very different ideal to representative democracy (Bachtiger et al 2018). In practice, it will be essential to combine both mechanisms, but this will necessarily vary from nation to nation (Boswell, Dean and Smith 2022).⁷ Other critics question the ‘orientation toward

⁶ It is also important to note that the discussion below focuses on ‘protected needs’ where ‘governments and other collective actors have an obligation to provide the preconditions for their satisfaction’ (Di Giulio and Défila (2019). As they note, some needs could not form a legitimate obligation of government or any collective organisation, for example a need to be loved.

⁷ Di Giulio and Defila(2021) propose a ‘societal debate’ to operationalize the concept of consumption corridors in Switzerland. Building on the tradition of popular referenda it proposes to simulate a deliberative form of politics by confronting a large representative sample of Swiss citizens with a series of polar opposing views on beliefs relevant to consumption corridors, such as enabling government to limit individual freedoms to achieve

consensus' in existing citizens' assemblies and are concerned that gross power differences are assumed away (Machin 2023). For example Bärnthaler (2023) argues that a viable eco-social transformation must rely on a compromise-based consent in the terrain of civil society *and* a form of coercion exercised in the terrain of political society.

These large questions cannot be pursued further here. The sections below describe what has been learned so far about deliberation on need satisfiers in the global North. However, no forum currently exists at the global level where this dialogue and consensus-building can take place. Thus researchers into global floors and ceilings have perforce tracked back to the level of universal intermediate need categories, and devised thresholds for their level of satisfaction. The remainder of this section is thus in four parts:

- Floors in the global North: necessities and necessary emissions in rich countries
- Ceilings in the global North: defining luxuries
- Global floors: the satisfaction of basic and intermediate needs
- Towards global ceilings: contract and converge

5.1. Floors in the global North: determining minimum need satisfiers

A considerable stock of social policy research on 'poverty' exists, some of which incorporates experiential knowledge and dialogue with experts and democratic representatives, thus providing a sounder basis for identifying necessities in any particular social context (Gough 2017). One notable example is the MIS (Minimum Income Standard) study in the UK. Since 2008 this has involved a set of focus groups in which members of the public from a range of social backgrounds were tasked with producing lists of items that households would need in order to reach 'an acceptable minimum standard of living' (Davis et al 2015). An impressive consensus has built up on what this consumption bundle comprises.

In the EU, the Doyal-Gough dual strategy methodology has been explicitly applied in the Research Budgeting Framework (RBF) to estimate 'decent living' standards across many EU member states (Goedeme et al 2015; Gough 2017, chapter 7). Both the RBF and MIS have in common that a consensus is achieved on a complex bundle of goods and services deemed to ensure an adequate minimum standard of consumption. They differ in the respective role of experts and citizens – the former lead in the EU research, the latter in the UK research – though neither properly respects the need for informed deliberation enjoined by the dual strategy.

These exercises recommend minimum consumption bundles considerably more generous than current official minimum income standards and legislation. But this just intensifies the *global* dilemma. The emissions embodied in the minimum income standards in rich countries far exceed what is generalisable on a world scale. If the entire UK population were living on the MIS budget it has been calculated that emissions would be cut by only 37 per cent. Average per capita emissions in the UK would still amount to 7.3 tonnes per person (Druckman and Jackson 2010). Yet to move quickly to 1 tonne of CO₂e emissions per person within existing sociotechnical structures would deprive citizens of a vast range of goods and services - cars, imported foods, a range of clothing and diets etc - that they have agreed (in the MIS groups) are necessary for effective participation in modern life.

a 'sufficiency strategy'. However, they recognize that the results may apply only to Switzerland, a country where the climate of political discourse is relatively consensual.

In other words, the agreed ‘necessities’ reflect the infrastructures and practices of current unsustainable forms of production and consumption. To move towards an economy of sufficiency this static notion of necessities must be ‘dynamised’. The concept of ‘consumption corridors’ does just this: the word ‘corridor’ indicates that such a sustainable economy cannot be achieved overnight – it entails a long and difficult process over time. Or rather a twin process – of shrinking the total of material consumption and redistributing it to achieve a decent minimum level for all. This concept means that consumption cannot be properly understood by studying individual consumer choices but needs to be interrogated by engaging with “the structures in which they are embedded” (Di Giulio & Defila 2021: 122). Rather than aiming at reproducing given social structures, what is ‘essential’ must be re-assessed against the aim of *transforming* them to be compatible with sustaining human life on Earth.

One route to engage with this issue would be to run expanded, more demanding citizens’ climate assemblies, where sustainability experts provide indicators of the carbon and GHG footprints of different consumption items to inform and guide citizen discussions on what is and is not sustainable. Several real-life assemblies provide some guidance here, for example the French Citizens’ Convention on Climate, which reported in June 2020. Comprising 150 randomly selected but representative citizens, the Convention met for nine months. It was tasked to decide on policies to achieve a reduction of at least 40% of France’s GHG emissions by 2030. The Convention agreed on 149 proposals, some of which entail a collective critique of contemporary preferences and the imposition of rules to implement some notion of sufficiency in consumption.⁸ More research is needed on the potential and problems of the citizen assembly approach to determining sustainable necessities.

5.2. Ceilings in the global North: defining ‘luxuries’

Can we establish some guidelines to define a *riches* line or a *luxury* consumption standard, beginning in the global North? Following the arguments of (so-called) ‘positive’ sufficientarians, the burden of consumption cuts should begin at the top and move downwards. Can the concept of limitarianism be operationalised? I consider three possibilities here: using income elasticities to define high carbon luxuries, implementing ‘Medeiros’ redistribution, and dialogic democracy - citizen assemblies to identify a riches line.

The income elasticity of essentials and luxuries

Consumer expenditures that fall as a proportion of income are commonly defined as necessities and those that rise as a share of income, luxuries. The degree of ‘income elasticity of demand’ can measure this (Gough 2017; Oswald et al 2020). Plotting income elasticities against their carbon content reveals a swathe of unsustainable luxury activities in modern capitalist economies, notably in transport and especially in flying. Because inequalities are so wide the extent of ‘wasted’ energy and emissions is huge. In the UK the energy used for flying by the average adult in the top 10% of earners is more than the average person in the bottom fifth of earners used for everything in an entire year (Baltruszewicz et al 2022; Carbon Brief 14.12.2022).

⁸ For example: a ban on high-emission vehicles by 2025; a mandate to display GHG emissions in all retail, consumer places and advertisements for brands; prohibiting the advertising of high GHG products; and limiting the use of heating and air conditioning in housing, public spaces and buildings, commercial and industrial buildings.

Medeiros redistribution

The arguments of ‘positive’ sufficientarians, that the burden of consumption cuts should begin at the top and move downwards, can be operationalised using Medeiros’s (2006) elegant *redistributive* method to calculate a maximum income line. Beginning with the minimum income line it calculates what sum of money it would take to move everyone above the acceptable income threshold, and then considers at what salary all higher earnings would provide that sum. Using this method a recent estimate for the UK by Hirsch (2017 note) arrives at a riches line of about £150,000 per person per year. If all incomes above this rate were taxed at 100% the money raised would be sufficient to bring all UK citizens up to the minimum income standard discussed above. Further research applying this method to emissions would be useful. However, it could not provide realistic measures of the sustainable maximum line in a carbon-constrained near-future.

Citizen juries

Citizen juries can be tasked with deciding what consumption items constitute ‘luxuries’ or ‘riches’. A pilot project in London provides some hints of a potential consensus, though only in a specific place and time (Davis et al 2020; Hecht et al 2022). Common indicators of “luxury” or “wealthy living” were a second property (whether in the UK or abroad), a wealth manager and significant savings, “expensive hobbies”, club membership; five or more holidays a year, private health insurance, a personal trainer, and a housekeeper.

Defining and agreeing a luxury standard line in hyper-consumption, growth-oriented societies is not easy. These are example only, and do not tackle the radical transformation needed. Nor do they provide counter-arguments to common concerns about incentive or second-order effects.

5.3. Global floors: the satisfaction of basic and intermediate needs

At the global level, no forum exists where even the tentative moves towards the dual strategy or dialogic democracy discussed above can be entertained. To operationalise sufficiency floors researchers must perforce turn to indicators of the satisfaction of basic and intermediate needs). Fortunately there exists now a growing body of research to do just this. These began with Dr Narasimha Rao’s pioneering work to identify *decent living standards* on a world scale today (Rao and Min 2017). Building explicitly on THN, their goal is to define ‘the basic material requirements that are instrumental (but not sufficient) to achieve physical, and to an extent social, dimensions of human wellbeing’. They distinguish the following need categories: Nutrition, Shelter, Hygiene, Clothing, Health Care, Education, Communication/ Information, and Mobility. In all cases default levels of satisfaction are specified, based on research in India, China, Brazil and South Africa (Rao et al 2019).

Research to determine the *final energy* requirements for a world of 10 billion people of these wellbeing targets has been undertaken by Prof Julia Steinberger’s team at the LiLi research programme (Millward-Hopkins et al, 2020; cf D.O’Neill et al 2018; Oswald et al 2020; 2021). The assumptions involved in this research are too numerous to discuss here, but they include full calculation of the capital infrastructure costs as well as the current costs of each sector. They apply only to material aspects of wellbeing. These ‘bottom-up’ calculations assume both advanced technology and much reduced demand among richer populations.

On this basis they calculate a Decent Living Energy (DLE) requirement per person of 13-18.4 gigajoules per person per year of final energy consumption. This is a remarkably low level -

current energy consumption varies across nations from between under 5 GJ to over 200 GJ. The final energy requirements for such sufficiency levels in 2050 could be more than 60% lower than consumption today. It would thus benefit several billions of people in the world, but would require energy cuts of up to 95% by today's highest per capita energy consumers.

The conclusion of this research can stand as a convincing portrayal of minimum material sufficiency in today's world (Millward-Hopkins et al 2020: 8-9):

'The current work offers a response to the clichéd populist objection that environmentalists are proposing that we return to living in caves. With tongue firmly in cheek, the response roughly goes "Yes, perhaps, but these caves have highly-efficient facilities for cooking, storing food and washing clothes; low-energy lighting throughout; 50 L of clean water supplied per day per person, with 15 L heated to a comfortable bathing temperature; they maintain an air temperature of around 20°C throughout the year, irrespective of geography; have a computer with access to global ICT networks; are linked to extensive transport networks providing ~5000–15,000 km of mobility per person each year via various modes; and are also served by substantially larger caves where universal healthcare is available and others that provide education for everyone between 5 and 19 years old. And at the same time, it is possible that the amount of people's lives that must be spent working would be substantially reduced''

However, it refers only to material sufficiency and says nothing about the other basic needs for autonomy, participation and democracy.

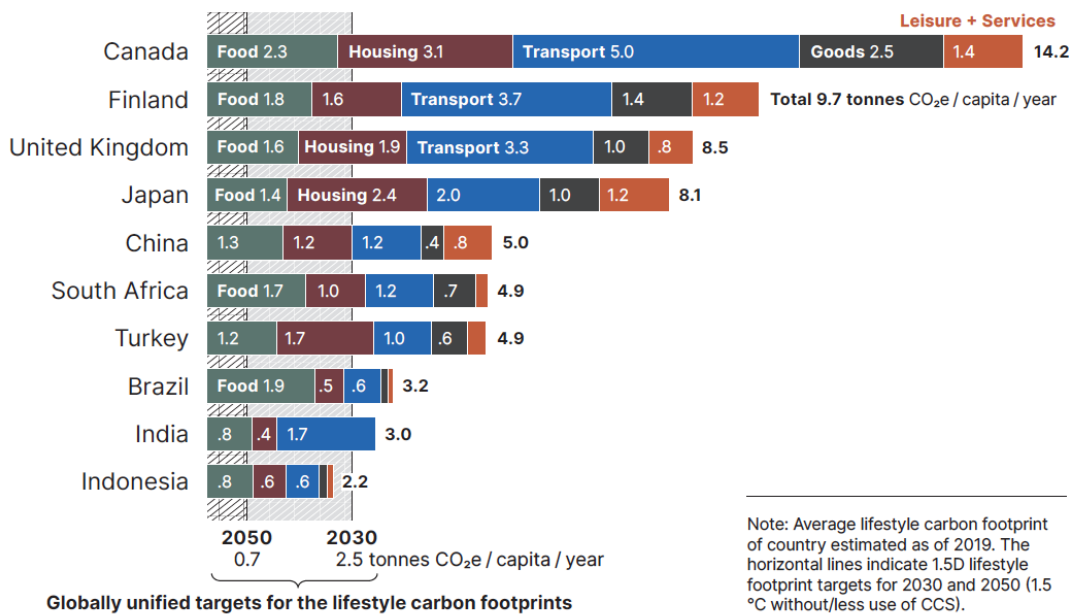
5.4. Towards global ceilings: contract and converge

The gulf between that vision and the world today is obvious. Figure 1 presents current levels of per capita emissions for ten populous countries today divided into five sectors of consumption (Akenji et al 2021). It also estimates the remaining global carbon budget to achieve a reasonable chance of achieving 1.5°C heating by 2050 and the per capita emissions this entails: 2.5 tonnes of CO₂ equivalent per person by 2030 and 0.7t CO₂e by 2050 (illustrated by the shaded areas on the left). This report, like others, reveals the stark gap between high-income countries' carbon footprint and any reasonable target level to achieve net zero by 2050.

The Contraction and Convergence strategy, conceived three decades ago by Aubrey Mayer and the Global Commons Institute (1990), remains alarmingly relevant: overall emissions of greenhouse gases must be reduced to a safe level (contraction), resulting from every country bringing its [emissions per capita](#) to a level which is equal for all countries (convergence). Interpreted in a radical but realist way by Jason Hickel (2020), it implies an extremely steep consumption corridor for the global North. Of course, a great deal can be achieved by technological, supply-side improvements that improve the carbon efficiency of production. But without radical transformations of demand the achievement of a safe climate, let alone wider environmental sustainability, is a fantasy.

Figure 1.

Figure C. Carbon footprint and its breakdown between consumption domain and globally unified targets for the lifestyle carbon footprints.



Source: Akenji et al 2021: Figure C, p.15.

6. Conclusion: The sufficiency space

A strong conclusion is that emissions cannot fall equally (as a percentage of current emissions) for every income group, whether within countries or at the global level. Thus reducing economic inequality is a critical, central part of reducing emissions to a safe level. From this we can see that there are actually two downward pathways necessary for effective climate mitigation: a falling aggregate emissions pathway and a falling 'inequality pathway'.

A theory of human needs provides a powerful normative support for sufficiency, for prioritizing needs over excessive wants, and for distributing resources more equally. These merits are all strengthened in the presence of dire anthropic pressures on the planet. The safe and just space for humanity is being squeezed. The zone between the upper and lower limits of global sufficiency is shrinking fast. A theory of universal human needs provides a firm philosophical foundation for the idea of global sufficiency.

Putting together need-based sufficientarian arguments and ecological-based limitarian arguments a space of sufficiency can be conceived between a floor and a ceiling. The procedures suggested above to identify consumption floors and ceiling in practice display fact-sensitive theorising, a recognition of the non-ideal world we inhabit. The sufficiency space will differ greatly to begin with when calculated at the rich national or global level. But to transition towards a global safe space will necessarily involve critiquing consumer preferences alongside inequality.

Uncritical regard for the satisfaction of consumer preferences will have to be replaced as the fundamental measure of human value by one based on universal needs. This alone will of course not achieve the eco-social transformation required; but the transformation would be

aided by a frank re-appraisal, rejection and replacement of our contemporary theory of value.

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References

- Akenji, Lewis, Magnus Bengtsson, Viivi Toivio, Michael Lettenmeier, Tina Fawcett, Yael Parag, Yamina Saheb, Anna Coote, Joachim H. Spangenberg, Stuart Capstick, Tim Gore, Luca Coscieme, Mathis Wackernagel, Dario Kenner, and Jari Kolehmainen. 2021. *1.5-Degree Lifestyles: Towards A Fair Consumption Space for All*. Aalto University.
- Alcott, Blake. 2022. "Comment on Ulrich Brand et al., 'From Planetary to Societal Boundaries.'" *Sustainability: Science, Practice and Policy* 18(1):443–50. doi: [10.1080/15487733.2022.2082124](https://doi.org/10.1080/15487733.2022.2082124).
- Alkire, Sabina. 2002. *Valuing Freedoms: Sen's Capability Approach and Poverty Reduction*. Oxford University Press.
- Allwood, Julian M., Jose Azevedo, Adam Clare, Christopher Cleaver, Jonathan Cullen, Cyrille Dunant, Teppo Fellin, William Hawkins, Ian Horrocks, Philippa Horton, Tim Ibell, Jianguo Lin, Hamish Low, Rick Lupton, James Murray, Mohammad Salamanti, Andre Cabrera Serrenho, Michael Ward, and Wenbin Zhou. 2019. *Absolute Zero*. Apollo - University of Cambridge Repository. doi: [10.17863/CAM.46075](https://doi.org/10.17863/CAM.46075).
- Anderson, Kevin, John F. Broderick, and Isak Stoddard. 2020. "A Factor of Two: How the Mitigation Plans of 'Climate Progressive' Nations Fall Far Short of Paris-Compliant Pathways." *Climate Policy* 20(10):1290–1304. doi: [10.1080/14693062.2020.1728209](https://doi.org/10.1080/14693062.2020.1728209).
- Axelsen, David, and Lasse Nielsen. 2016. "Essentially Enough: Elements of a Plausible Account of Sufficiency." Pp. 101–20 in *What is Enough?: Sufficiency, Justice, and Health*, edited by C. Fourie and A. Rid. Oxford: Oxford University Press.

- Baltruszewicz, Marta, Julia K. Steinberger, Jouni Paavola, Diana Ivanova, Lina I. Brand-Correa, and Anne Owen. 2023. "Social Outcomes of Energy Use in the United Kingdom: Household Energy Footprints and Their Links to Well-Being." *Ecological Economics* 205:107686. doi: [10.1016/j.ecolecon.2022.107686](https://doi.org/10.1016/j.ecolecon.2022.107686).
- Bärnthaler, R. 2023. "Towards Eco-Social Politics: A Case Study on Transformative Strategies to Overcome Form-of-Life Crises." *Environmental Politics*.
- Bärnthaler, Richard, and Ian Gough. 2023. "Provisioning for Sufficiency: Envisaging Production Corridors." *Sustainability: Science, Practice and Policy* 19(1):2218690. doi: [10.1080/15487733.2023.2218690](https://doi.org/10.1080/15487733.2023.2218690).
- Beachtiger, Andrae, John S. Dryzek, Jane J. Mansbridge, and Mark Warren. 2018. *The Oxford Handbook of Deliberative Democracy*. Illustrated edition. edited by A. Bächtiger, J. S. Dryzek, J. Mansbridge, and M. E. Warren. OUP Oxford.
- Biermann, Frank, and Rakhyun E. Kim. 2020. "The Boundaries of the Planetary Boundary Framework: A Critical Appraisal of Approaches to Define a 'Safe Operating Space' for Humanity." *Annual Review of Environment and Resources* 45(1):497–521. doi: [10.1146/annurev-environ-012320-080337](https://doi.org/10.1146/annurev-environ-012320-080337).
- Boswell, John, Rikki Dean, and Graham Smith. n.d. "Integrating Citizen Deliberation into Climate Governance: Lessons on Robust Design from Six Climate Assemblies." *Public Administration* n/a(n/a). doi: [10.1111/padm.12883](https://doi.org/10.1111/padm.12883).
- Bowles, Samuel. 2017. *The Moral Economy*. Yale UP.
- Bowles, Samuel, and Wendy Carlin. 2020. "The Coming Battle for the COVID-19 Narrative." *VOX EU: CEPR Policy Portal*. Retrieved (<https://voxeu.org/article/coming-battle-covid-19-narrative>).
- Brand, Ulrich, Barbara Muraca, Éric Pineault, Marlyne Sahakian, Anke Schaffartzik, Andreas Novy, Christoph Streissler, Helmut Haberl, Viviana Asara, Kristina Dietz, Miriam Lang, Ashish Kothari, Tone Smith, Clive Spash, Alina Brad, Melanie Pichler, Christina Plank, Giorgos Velegrakis, Thomas Jahn, Angela Carter, Qingzhi Huan, Giorgos Kallis, Joan Martínez Alier, Gabriel Riva, Vishwas Satgar, Emiliano Teran Mantovani, Michelle Williams, Markus Wissen, and Christoph Görg. 2021. "From Planetary to Societal Boundaries: An Argument for Collectively Defined Self-Limitation." *Sustainability: Science, Practice and Policy* 17(1):264–91. doi: [10.1080/15487733.2021.1940754](https://doi.org/10.1080/15487733.2021.1940754).
- Brand-Correa, Lina I., Giulio Mattioli, William F. Lamb, and Julia K. Steinberger. 2020. "Understanding (and Tackling) Need Satisfier Escalation." *Sustainability: Science, Practice and Policy* 16(1):309–25. doi: [10.1080/15487733.2020.1816026](https://doi.org/10.1080/15487733.2020.1816026).
- Braybrooke, David. 1987. *Meeting Needs*. Princeton, NJ: Princeton University Press.
- Brock, Gillian. 2009. *Global Justice: A Cosmopolitan Account*. Oxford; New York: Oxford University Press.
- Brock, Gillian. 2018. "Sufficiency and Needs-Based Approaches." *The Oxford Handbook of Distributive Justice*. Retrieved July 27, 2021 (<https://www.oxfordhandbooks.com.gate3.library.lse.ac.uk/view/10.1093/oxfordhb/9780199645121.001.0001/oxfordhb-9780199645121-e-6>).
- Caney, Simon. 2012. "Just Emissions." *Philosophy & Public Affairs* 40(4):255–300. doi: [10.1111/papa.12005](https://doi.org/10.1111/papa.12005).
- Caney, Simon. 2018. "Climate Change." Pp. 664–88 in *The Oxford Handbook of Distributive Justice*, edited by S. Olsaretti. Oxford: Oxford University Press.
- Casal, Paula. 2007. "Why Sufficiency Is Not Enough." *Ethics* 117(2):296–326. doi: [10.1086/510692](https://doi.org/10.1086/510692).

- Cherry, Catherine, Stuart Capstick, Christina Demski, Claire Mellier, Lucy Stone, and Caroline Verfuert. 2021. *Citizens' Climate Assemblies: Understanding Public Deliberation for Climate Policy*. Cardiff: The Centre for Climate Change and Social Transformations.
- Daly, Herman E. 1977. *Steady-State Economics: The Economics of Biophysical Equilibrium and Moral Growth*. San Francisco: W.H. Freeman.
- Davis, Abigail, Donald Hirsch, Matt Padley, and Lydia Marshall. 2015. *How Much Is Enough? Reaching Social Consensus on Minimum Household Needs*. report. Loughborough University.
- Di Giulio, A., & Fuchs, D. 2014. "Sustainable Consumption Corridors: Concept, Objections, and Responses." *Gaia* 23:184–92.
- Di Giulio, Antonietta, and Rico Defila. 2021. "Building the Bridge between Protected Needs and Consumption Corridors." *Sustainability: Science, Practice and Policy* 17(1):117–34. doi: [10.1080/15487733.2021.1907056](https://doi.org/10.1080/15487733.2021.1907056).
- Doyal, Len. 1993. "Thinking about Human Need." *New Left Review* (201):113–28.
- Doyal, Len, and Gough, Ian. 1991. *A Theory of Human Need*. Basingstoke: Palgrave Macmillan.
- Druckman, Angela, and Tim Jackson. 2010. "The Bare Necessities: How Much Household Carbon Do We Really Need?" *Ecological Economics* 69(9):1794–1804. doi: [10.1016/j.ecolecon.2010.04.018](https://doi.org/10.1016/j.ecolecon.2010.04.018).
- Elstub, Stephen, David M. Farrell, and Patricia Mockler. 2021. "The Scope of Climate Assemblies: Lessons from the Climate Assembly UK." *Sustainability* 13(11272):101–17. doi: <https://doi.org/10.3390/su132011272>.
- Fine, Ben. 2013. "Economics: Unfit for Purpose." *Review of Social Economy* 71(3):373–89. doi: [10.1080/00346764.2013.799969](https://doi.org/10.1080/00346764.2013.799969).
- Fourie, Carina. 2016. "The Sufficiency View: A Primer." in *What is Enough?: Sufficiency, Justice, and Health*, edited by C. Fourie and A. Rid. New York: Oxford University Press.
- Frankfurt, Harry. 1987. "Equality as a Moral Ideal." *Ethics* 98(1):21–43. doi: [10.1086/292913](https://doi.org/10.1086/292913).
- Fuchs, Doris, Marlyne Sahakian, Tobias Gumbert, Antonietta Di Giulio, Michael Maniates, Sylvia Lorek, and Antonia Graf. 2021. *Consumption Corridors: Living a Good Life within Sustainable Limits*. London: Routledge.
- Gasper, Des. 1996. *Needs and Basic Needs - a Clarification of Foundational Concepts for Development Ethics and Policy*. The Hague.
- Gasper, Desmond. 2007. "Conceptualising Human Needs and Wellbeing." in *Wellbeing in Developing Countries: From Theory to Research*, edited by I. Gough and A. J. McGregor. Cambridge: Cambridge University Press.
- Goedeme, T, B. Storms, S. Stockman, T. Penne, K. Van den Bosch. 2015. *Pilot Project for the Development of a Common Methodology on Reference Budgets in Europe: The Development of a Methodology for Comparable Reference Budgets in Europe - Final Report of the Pilot Project*. Vol. Contract no. VC/2013/0554. Luxembourg: Publications Office of the European Union.
- Gough, Ian. 2014. "Lists and Thresholds: Comparing the Doyal-Gough Theory of Human Need with Nussbaum's Capabilities Approach." Pp. 357–81 in *Capabilities, Gender, Equality: Towards Fundamental Entitlements*, edited by Martha Nussbaum and F. Comim. Cambridge, UK: Cambridge University Press.

- Gough, Ian. 2015. "Climate Change and Sustainable Welfare: The Centrality of Human Needs." *Cambridge Journal of Economics* 39(5):1191–1214. doi: [10.1093/cje/bev039](https://doi.org/10.1093/cje/bev039).
- Gough, Ian. 2017. *Heat, Greed and Human Need: Climate Change, Capitalism and Sustainable Wellbeing*. Cheltenham, UK and Northampton, MA: Edward Elgar Ltd.
- Gough, Ian. 2020. "Defining Floors and Ceilings: The Contribution of Human Needs Theory." *Sustainability: Science, Practice and Policy* 16(1):208–19. doi: [10.1080/15487733.2020.1814033](https://doi.org/10.1080/15487733.2020.1814033).
- Green, Fergus. 2021. "Ecological Limits: Science, Justice, Policy, and the Good Life." *Philosophy Compass* 16(6):1-n/a. doi: [10.1111/phc3.12740](https://doi.org/10.1111/phc3.12740).
- Habermas, Jürgen. 1987. *Knowledge and Human Interests*. Cambridge, UK and Malden, MA: Polity Press.
- Hamilton, Lawrence A. 2003. *The Political Philosophy of Needs*. Cambridge: Cambridge University Press.
- Hecht, Katharina, Tania Burchardt, and Abigail Davis. 2022. "Richness, Insecurity and the Welfare State." *Journal of Social Policy* 1–22. doi: [10.1017/S0047279422000617](https://doi.org/10.1017/S0047279422000617).
- Hickel, Jason. 2020. "Quantifying National Responsibility for Climate Breakdown: An Equality-Based Attribution Approach for Carbon Dioxide Emissions in Excess of the Planetary Boundary." *The Lancet Planetary Health* 4(9):e399–404. doi: [10.1016/S2542-5196\(20\)30196-0](https://doi.org/10.1016/S2542-5196(20)30196-0).
- Hirsch, Fred. 1995. *Social Limits to Growth*. Routledge.
- Hodgson, Geoffrey, Hodgson, Geoff. 2021. *Liberal Solidarity*. Edward Elgar Ltd.
- Hodgson, Geoffrey Martin. 2013. *From Pleasure Machines to Moral Communities: An Evolutionary Economics without Homo Economicus*. Chicago: University Of Chicago Press.
- Hoffmann, M., Spash, C.L. 2021. *The Impacts of Climate Change Mitigation on Work for the Austrian Economy. The Impacts of Climate Change Mitigation on Work for the Austrian Economy*,. Vienna: SRE - Discussion Papers.
- Holden, Erling, Kristin Linnerud, David Banister, Valeria Jana Schwanitz, and August Wierling. 2018. *The Imperatives of Sustainable Development: Needs, Justice, Limits*. London and New York: Routledge.
- Huseby, Robert. 2020. "Sufficiency and the Threshold Question." *The Journal of Ethics* 24:207–23. doi: <https://doi.org/10.1007/s10892-020-09321-7>.
- Huseby, Robert. 2022. "The Limits of Limitarianism*." *Journal of Political Philosophy* 30(2):230–48. doi: [10.1111/jopp.12274](https://doi.org/10.1111/jopp.12274).
- IPCC. 2022a. *Climate Change 2022: Impacts, Adaptation and Vulnerability*.
- IPCC. 2022b. *Climate Change 2022: Mitigation of Climate Change*.
- IPCC. 2022c. "IPCC Press Release." Retrieved (<https://www.ipcc.ch/report/ar6/wg2/resources/press/press-release>).
- Machin, Amanda. 2023. "Democracy, Agony, and Rupture: A Critique of Climate Citizens' Assemblies." *Politische Vierteljahresschrift*. doi: [10.1007/s11615-023-00455-5](https://doi.org/10.1007/s11615-023-00455-5).
- Medeiros, Marcelo. 2006. "The Rich and the Poor: The Construction of an Affluence Line From the Poverty Line." *Social Indicators Research* 78:1–18. doi: [DOI 10.1007/s11205-005-7156-1](https://doi.org/10.1007/s11205-005-7156-1).
- Meyer, Aubrey. 2000. *Contraction & Convergence: The Global Solution to Climate Change*. Devon: Green Books.

- Millward-Hopkins, Joel, Julia K. Steinberger, Narasimha D. Rao, and Yannick Oswald. 2020. "Providing Decent Living with Minimum Energy: A Global Scenario." *Global Environmental Change* 65:102168. doi: [10.1016/j.gloenvcha.2020.102168](https://doi.org/10.1016/j.gloenvcha.2020.102168).
- Nussbaum, Martha C. 1993. "Non-Relative Virtues: An Aristotelian Approach." Pp. 242–69 in *The Quality of Life*, edited by M. C. Nussbaum and A. Sen. Oxford: Clarendon Press.
- Nussbaum, Martha Craven. 2000. *Women and Human Development: The Capabilities Approach*. Cambridge: Cambridge University Press.
- Nussbaum, Martha Craven. 2006. *Frontiers of Justice: Disability, Nationality, Species Membership*. Cambridge, Mass.: The Belknap Press : Harvard University Press.
- O'Neill, Daniel W., Andrew L. Fanning, William F. Lamb, and Julia K. Steinberger. 2018. "A Good Life for All within Planetary Boundaries." *Nature Sustainability* 1:88–95. doi: <https://doi.org/10.1038/s41893-018-0021-4>.
- O'Neill, John. 2011. "The Overshadowing of Needs." Pp. 25–43 in *Sustainable Development*, edited by F. Rauschmayer, I. Omann, and J. Frühmann. London: Routledge.
- O'Neill, John. 2017. "Pluralism and Incommensurability." Pp. 227–36 in *Routledge Handbook of Ecological Economics: Nature and Society [Spash, Clive L. ed.]*. Taylor and Francis Group.
- Oswald, Y., J. K. Steinberger, D. Ivanova, and J. Millward-Hopkins. 2021. "Global Redistribution of Income and Household Energy Footprints: A Computational Thought Experiment." *Global Sustainability* 4(e4):1–13. doi: [10.1017/sus.2021.1](https://doi.org/10.1017/sus.2021.1).
- Oswald, Yannick, Anne Owen, and Julia K. Steinberger. 2020. "Large Inequality in International and Intranational Energy Footprints between Income Groups and across Consumption Categories." *Nature Energy* 5(3):231–39. doi: [10.1038/s41560-020-0579-8](https://doi.org/10.1038/s41560-020-0579-8).
- Özkaynak, Begüm, Fikret Adaman, and Pat Devine. 2012. "The Identity of Ecological Economics: Retrospects and Prospects." *Cambridge Journal of Economics* 36(5):1123–42. doi: [10.1093/cje/bes021](https://doi.org/10.1093/cje/bes021).
- Poulantzas, N. 1978. *State, Power, and Socialism*. London: NLB.
- Rao, Narasimha D., and Jihoon Min. 2017. "Decent Living Standards: Material Prerequisites for Human Wellbeing." *Social Indicators Research* 138:225–44. doi: [10.1007/s11205-017-1650-0](https://doi.org/10.1007/s11205-017-1650-0).
- Rao, Narasimha D., Jihoon Min, and Alessio Mastrucci. 2019. "Energy Requirements for Decent Living in India, Brazil and South Africa." *Nature Energy* 4:1025–32. doi: <https://doi.org/10.1038/s41560-019-0497-9>.
- Raworth, Kate. 2017. *Doughnut Economics: Seven Ways to Think Like a 21st-Century Economist*. London: Random House.
- Reader, Soran. 2007. *Needs and Moral Necessity*. 1 edition. London ; New York: Routledge.
- Robeyns, Ingrid. 2017. "Having Too Much." *Nomos* 58:1–44.
- Robeyns, Ingrid. 2019. "What, If Anything, Is Wrong with Extreme Wealth?" *Journal of Human Development and Capabilities* 20(3):251–66. doi: [10.1080/19452829.2019.1633734](https://doi.org/10.1080/19452829.2019.1633734).
- Robeyns, Ingrid. 2022. "Why Limitarianism?*" *Journal of Political Philosophy* 30(2):249–70. doi: [10.1111/jopp.12275](https://doi.org/10.1111/jopp.12275).
- Rockström, Johan, Will Steffen, Kevin Noone, Åsa Persson, F. Stuart Chapin, Eric F. Lambin, Timothy M. Lenton, Marten Scheffer, Carl Folke, Hans Joachim Schellnhuber, Nykvist Björn, Cynthia A. de Wit, Terry Hughes, Sander Van der

- Leeuw, Henning Rodhe, Sverker Sörlin, Peter K. Snyder, Robert Costanza, Uno Svedin, Malin Falkenmark, Louise Karlberg, Robert W. Corell, Victoria J. Fabry, James Hansen, Brian Walker, Diana Liverman, Katherine Richardson, Paul Crutzen, and Jonathon A. Foley. 2009. "A Safe Operating Space for Humanity." *Nature* 461(7263):472–75. doi: <https://doi.org/10.1038/461472a>.
- Ryan, Richard M., and A. R. Sapp. 2007. "Basic Psychological Needs: A Self-Determination Theory Perspective on the Promotion of Wellness across Development and Cultures." in *Wellbeing in Developing Countries: From Theory to Research*, edited by I. Gough and J. A. McGregor. Cambridge: Cambridge University Press.
- Shue, Henry. 1993. "Subsistence Emissions and Luxury Emissions." *Law & Policy* 15(1):39–60. doi: [10.1111/j.1467-9930.1993.tb00093.x](https://doi.org/10.1111/j.1467-9930.1993.tb00093.x).
- Shue, Henry. 2014. *Climate Justice: Vulnerability and Protection*. Oxford, UK: Oxford University Press.
- Steffen, Will, Katherine Richardson, Johan R ockstrom, Sarah E. Cornell, Ingo Fetzer, Elena M. Bennett, Reinette Biggs, Stephen R. Carpenter, Wim de Vries, Cynthia A. de Wit, Carl Folke, Dieter Gerten, Jens Heinke, Georgina M. Mace, Linn M. Persson, Veerabhadran Ramanathan, Belinda Reyers, and Sverker S orlin. 2015. "Planetary Boundaries: Guiding Human Development on a Changing Planet." *Science* 347(6223). doi: [DOI: 10.1126/science.1259855](https://doi.org/10.1126/science.1259855).
- Stigler, George J., and Gary S. Becker. 1977. "De Gustibus Non Est Disputandum." *The American Economic Review* 67(2):76–90.
- WCED. 1987. *Our Common Future - Brundtland Report, Commission on Environment and Development*. Oxford Paperbacks.
- Wiggins, David. 1987. *Needs, Values, Truth: Essays in the Philosophy of Value*. Oxford, UK: Oxford University Press.
- Wiggins, David. 2005. "An Idea We Cannot Do Without: What Difference Will It Make (Eg. to Moral, Political and Environmental Philosophy) to Recognize and Put to Use a Substantial Conception of Need?" *Royal Institute of Philosophy Supplements* 57:25–50. doi: [10.1017/S1358246105057024](https://doi.org/10.1017/S1358246105057024).
- Wilkinson R and Pickett K. 2009. *The Spirit Level: Why More Equal Societies Almost Always Do Better*. Allen Lane.