EDITORIAL

Tackling the environmental crisis: from shallow solutions to deep transformation

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In 1973, the Norwegian philosopher Arne Naess divided the then nascent environmental movement into 'shallow' and 'deep, long-range' ecology. Naess' characterisation of the shallow movement ran to just eighteen words – 'Fight against pollution and resource depletion. Central objective: the health and affluence of people in the developed countries' (Naess, 1973: 95) – while his exposition of deep, long-range ecology ran to several volumes.

At the time Naess was writing, environmental problems were largely perceived by the public and legislators as localised and amenable to technical fixes. Problems such as local air pollution and the pollution of rivers and land had been recognised as issues for centuries and tackled with local legislation and technical changes – some of which simply shifted the problem elsewhere (Markham, 2020). However, Naess highlighted more than the difference between short and long-termism; he pointed to the underlying value orientation of humankind toward nature. The historian of technology Lynn White Jr (White, 1967) had similarly singled out anthropocentrism – the notion that only human beings and their interests are morally relevant – as the root cause of humankind's environmental problems.

Despite the highly problematic conception of the relationship between orientation and action in this strand of environmental thought (Samways, 2023, 2025), its focus on deeply sedimented values and norms in socio-technical practices and the need for long-term thinking was crucial for understanding and tackling the environmental crisis. The movement toward sustainability therefore requires not only recognising that long-term human wellbeing depends on the stable

functioning of Earth's physical and ecological systems (as they have existed during the Holocene), but also cultivating the motivation to act on this understanding by revising the values and social norms implicated in environmentally unsustainable social practices – including those around fertility.

The complex drivers of the environmental crisis

As evidenced by the work of both the IPCC (Intergovernmental Panel on Climate Change) (IPCC, 2023) and IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Brondízio et al., 2019), population growth and economic expansion are the main indirect drivers of the environmental crisis. However, the relationship between these drivers, as well as other factors such as available technology, is complex.

Holdren and Ehrlich's I=PAT equation is frequently regarded as capturing the aggregate relationship between the major factors: environmental impact (I), population (P), affluence (A) – often taken as synonymous with consumption – and technology (T). In the case of climate change, technology refers to the carbon intensity of production. While IPAT remains a useful heuristic device, it does not capture the influence of social and individual values and norms on population size, consumption practices and technical choices.

Critically, it is the consumption of the rich world that is responsible for the largest proportion of emissions, both historically and at present. The IPCC estimates that the richest ten per cent of the global population are responsible for between 36 and 45 per cent of total emissions. Yet it is sobering to note that inclusion in the richest decile requires only a modest income by Western standards – in the UK, a disposable income of approximately £28,000 for the average sized household exceeds the threshold (Our World in Data, n.d.). Thus, what many middle-class families in wealthy nations consider an ordinary lifestyle actually places them among the world's highest emitters. It follows that addressing climate change cannot be framed simply as a problem of the ultra-wealthy; it requires lifestyle changes among the broad middle classes of developed countries who may not perceive themselves as particularly affluent or environmentally culpable.

The climate crisis is frequently framed as a technological problem that can be solved through cleaner energy and more efficient systems. Yet the fact that the

IPCC identifies growth in per capita consumption as the principal issue reveals that technology alone is insufficient. Instead, the deep entanglement of values and norms within social practices – cultural beliefs that equate prosperity with material accumulation, social expectations around consumption, and lifestyle patterns that prioritise individual gratification – becomes the critical factor driving environmental degradation.

Population, consumption and planetary boundaries

Gandhi famously said that 'the world has enough for everyone's need, but not enough for everyone's greed'. Recent modelling by O'Neill et al. (2018) and Schlesier et al. (2024) suggests that with changes to 'provisioning systems' – the social and technical means of transforming resources into welfare – Gandhi may well have been right, even for the UN's forecast peak population size. However, before abandoning our concern with population to concentrate solely on consumption, the definition of 'need' requires interrogation.

O'Neill et al.'s modelling suggests that, under current provisioning systems, the basic needs of 7 billion people – including the elimination of extreme poverty, sufficient nutrition, basic sanitation and access to electricity – could be met within planetary boundaries. Furthermore, with efficiency improvements in physical and social provisioning systems coupled with a focus on sufficiency, a sustainable 'good life' for all could be provided for a maximum of 7 billion people. This 'good life' includes more qualitative goals such as life satisfaction, healthy life expectancy and secondary education – standards taken for granted in the Global North.

The implications are significant: for populations exceeding 7 billion, even with improvements in provisioning systems, the life that can be provided to all within planetary boundaries shifts downwards along the qualitative scale between a good life and the meeting of basic needs. While even at the UN's projected peak population of 10.3 billion (UN, 2025) this would mean elevation for many billions to a better-than-basic-needs life, it would require global convergence toward a much lower standard of living than that currently enjoyed by populations of high and some middle-income countries.

Schlesier et al. (2024) adopt the Decent Living Standard approach, which includes meeting basic physical needs and more qualitative factors required for social

participation such as education and healthcare. They find that it would be possible to provide decent living standards to 10.4 billion people within planetary boundaries with the universal adoption of an 'essentially vegan diet', minimal consumption and complete defossilisation of energy systems.

Both models reveal that considerable transformation is required at technical and organisational levels, but substantial remoulding of values is also necessary – replacing consumerism with a focus on material sufficiency and abandoning economic growth as an intrinsic good. Moreover, both models require deeper changes in thinking, including expanding concern and sense of obligation toward culturally different and geographically distant populations, leading to resource transfer from the Global North to the Global South. This spatial expansion of concern must be accompanied by temporal expansion – a significant shift from short to long-term thinking to protect future generations' interests globally. These value shifts will be necessary at all levels of agency, from individuals to 'macro actors' such as governments and corporations.

However, even if such value shifts could be achieved, O'Neill et al.'s work suggests that providing a 'good life' for more than 7 billion people within planetary boundaries is unlikely. While Schlesier et al.'s modelling supports a much larger population, the required changes are far more ambitious. In particular, universal adoption of a vegan diet would challenge deeply sedimented habitual practices frequently intrinsic to personal and cultural identity. Meanwhile, worldwide meat consumption is rapidly growing, driven partly by population growth but most significantly by rising incomes (Ritchie et al., 2019).

Population growth thus remains a significant factor in the environmental crisis and presents a formidable challenge to providing a good life for all. How many people can be provided with a good life within planetary boundaries depends upon a complex of factors including norms and values shaping both consumption and technical choices. As Rachel Gould's contribution to this issue demonstrates, norms and values are also critical to fertility rates and population growth.

The time dimension: short-term crisis vs long-term solutions
While the longer-term mitigation effects of fertility reduction may be significant (Bongaarts and O'Neill, 2018; Wolf et al., 2021), population momentum means

that population growth is not responsive enough to available policy levers to tackle the immediate environmental crisis (Bradshaw and Brook, 2014).

George Martine's Perspective article in this issue concurs with this analysis. Martine contends that, while concerns about population growth and size remain relevant long-term, their policy significance is increasingly limited within the short-term window of opportunity presented by the current slide toward unsustainability. He notes that understanding of environmental threats has shifted beyond early debates about population growth to include complex demographic factors such as migration, aging and urbanisation – issues that have not received the same level of scrutiny regarding their environmental impacts.

Martine identifies the relentless expansion of economic throughput, driven by consumerism and a development model equating happiness with material consumption, as central to environmental degradation. This model has led to unsustainable resource exploitation and escalating environmental harm. He advocates addressing these challenges from a broad, global perspective, emphasising that climate change and other threats are deeply embedded in prevailing development paradigms and consumer culture. Without recognising consumerism's role in driving ecological damage, Martine argues, sustainability efforts will be ineffective. He further highlights how powerful economic lobbies and negationist propaganda, particularly in influential countries like the United States, entrench unsustainable practices and undermine environmental safeguards.

Martine calls for transformative increases in environmental awareness and policy action, including redefining development and societal happiness away from materialism. He warns that without bold action and global cooperation, humanity risks deepening environmental crises and facing a dystopian future marked by persistent decline and fractured governance.

Practical applications: health, resources, and inequality

While focused on averting the immediate environmental crisis, Martine's critique of growth-driven development and his call for shifting values aligns with O'Neill et al. (2018) and Schlesier et al. (2024) and their emphasis on reorienting social norms toward sufficiency. Echoing concerns that current economic paradigms fail to provide good lives for all while endangering the environment, Anastasia

Pseiridis' article explores how preventive and reversive medicine (PRM) might help address both resource and consumption challenges globally.

Pseiridis notes that, despite technological advances increasing total global biocapacity by 22 per cent since 1961, rapid population growth has led to a 54 per cent reduction in per capita biocapacity. In many low-income countries, per capita ecological capacity has fallen by over seventy per cent, even as these populations strive to escape deprivation. She argues that the dominant economic system misallocates resources, prioritising production for those with purchasing power, leading to consumption patterns that exceed planetary boundaries and create ecological deficits. Overconsumption and population growth together intensify resource scarcity and reduce per-person ecological space, complicating efforts to ensure well-being without further environmental harm.

In this context, Pseiridis explores the tension between medicine's ethical aim to reduce suffering and ecological-economic realities limiting the delivery of good lives for all. She observes that while wellbeing often improves with increased material means, rising income and consumption also generate negative health and environmental impacts. Defining a 'good life' in both moral and material terms, Pseiridis cites estimates suggesting global production would need to expand two- to ten-fold to achieve this for everyone.

Pseiridis argues that PRM can both augment the global resource base and shift consumption and production patterns toward more sustainable outcomes, positioning PRM as an accessible 'sustainability technology'. She highlights additional benefits, especially for aging populations: by increasing healthy life years, PRM supports more productive and dignified aging, eases pressures on tax and pension systems, and reduces caregiving burdens on families. Widespread PRM adoption also produces positive externalities, as improved health reduces costly disease management and helps make good lives more accessible, particularly in low-income communities. However, to neutralise 'rebound effects', Pseiridis advocates pairing PRM with pricing policies that reflect true societal costs. She concludes that PRM should be embraced as 'Consumption and Production Medicine' to support global sustainability and well-being.

Case studies: India and Israel

Aalok Chaurasia's contribution addresses one of the key qualitative indicators of a 'good life' – healthy life expectancy, measured by life expectancy at birth (LEB). Chaurasia observes that while increasing human longevity contributes to global population growth,[1] its uneven distribution across and within countries raises concerns for sustainable development. His study examines wide disparities in LEB gains across sixty mutually exclusive population groups in India between 1976 and 2020.

The findings show that LEB increases varied dramatically – from over 24 years among rural females in Uttar Pradesh to under 7 years among urban males in Punjab. While part of this variation may stem from a ceiling effect (where higher baseline LEB limits further gains), significant inequality persists even after adjusting for this factor. Comparison with the UN's medium model mortality trajectory shows that nearly two-thirds of groups gained less than expected.

Chaurasia demonstrates that 77 per cent of this heterogeneity is attributable to state-level and population sub-group factors, with the remaining 23 per cent due to group-specific factors. Despite general mortality improvements, some groups experienced increases in mortality at older ages – particularly in urban Punjab, Odisha, Gujarat, and Karnataka – dampening LEB gains. Conversely, most improvements were driven by reductions in child and young-age mortality, largely due to targeted maternal and child health programmes.

Chaurasia critiques India's health policies for overlooking internal disparities. While the 2017 National Health Policy aimed to raise national LEB to seventy by 2025 – a goal largely achieved – it failed to address uneven progress. India's mixed healthcare system, heavily focused on rural preventive care and under-serving urban and elderly populations, has contributed to this imbalance. He calls

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1   While increasing life expectancy at birth does lead to population growth, the contribution to that growth is dependent upon where in the life-course that increase falls. The rapid population growth experienced over the last 200 years has been almost entirely due to reduced child mortality and the multiplier effect of a larger number of children surviving to adulthood and having children themselves. In contrast, years added after family building have no multiplier effect and, in a hypothetical society with a stable replacement level of fertility, once the increase in longevity has reached a ceiling, population size will stabilise at a new higher level.

for decentralised, data-informed health planning, including population group-specific health goals, as a strategic pathway toward reducing disparities and accelerating national population health improvements.

This country-level analysis demonstrates how inequality in meeting key 'good life' indicators depends heavily on provisioning system details and delivery contexts. While preventative care has significantly impacted LEB in rural areas of India, rapidly urbanising populations require revised provision methods.

Shifting from health outcomes to reproductive behaviour, Rachel Gould's research article explores how values and norms influence fertility, focusing on Israel – a demographic outlier among developed nations where population growth is driven more by above-replacement fertility than immigration. While economic growth typically correlates with declining birth rates, Israel's total fertility rate (TFR) remains high – 2.9 in 2024 compared to the OECD average of 1.5 – despite sustained economic development.

Gould argues that social influences, including family expectations, peer group norms and community values, play more significant roles in reproductive behaviour than economic factors alone. Drawing on national survey data, she analyses how perceptions of ideal and community family sizes interact with demographic variables to sustain high fertility. She identifies social conformity within subpopulations and peer influence strength as central to explaining why large families remain normative in Israeli society. These dynamics can limit individual autonomy and hinder fertility decline, despite broader environmental and sustainability concerns.

Gould's research also highlights the long-term impact of pronatalist policies and the lack of political will to address demographic growth, which is projected to reach 20 million by 2065. While external threats often dominate national discourse, population expansion – and its implications for resources, infrastructure and environment – receives limited attention.

Gould calls for culturally sensitive, socially informed approaches to population policy, recommending focus on individual fertility motivations and social networks rather than relying solely on economic incentives. Her study contributes to

understanding how deeply embedded social norms shape reproductive choices and hinder demographic transition in Israel.

Critical perspectives and conclusions

Our final contribution is my own review of Robin Attfield's latest book, *The Ethics of the Climate Crisis* (2024), which draws on his decades-long contribution to environmental philosophy and offers a timely, rigorous ethical analysis of climate change. While the book provides valuable insights into climate ethics, it takes a notably different position from the contributions in this issue by giving a somewhat disappointing lack of attention to population growth as both a driver and potential mitigator of longer-term emissions.

Taken together, the contributions in this issue underscore a recurring theme: sustainability is not merely a technological or economic challenge — it is fundamentally a moral and cultural one. Addressing the environmental crisis requires rethinking the values intrinsic to our social practices, the systems that support our lives, and the assumptions that shape our collective future. From Naess's foundational distinction between shallow and deep ecology to contemporary analyses of consumption patterns, health provisioning and reproductive behaviour, the evidence consistently points toward the need for profound transformation in how we understand and organise human society in relation to planetary boundaries.

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