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Cities, planetary boundaries, and degrowth

Jakub Kronenberg, Erik Andersson, Thomas Elmqvist, Edyta Łaszkiewicz, Jin Xue, Yaryna Khmara

Cities are the main hubs of human activity and the engines of economic growth. In pursuit of such growth, cities are transgressing their local environmental boundaries. Ongoing urbanisation increasingly contributes to the human pressure on planetary boundaries and negatively affects planetary health. In a telecoupled world, cities externalise impacts by shifting production and many other functions away from their boundaries. At the same time, urban inhabitants and people who follow urban lifestyles but live outside cities are increasingly disconnected from nature. This Viewpoint highlights the role of degrowth in keeping an urban planet within planetary boundaries and suggests areas for further research and policy. Degrowth calls for meaningfully connecting planetary boundaries with cities and ensuring everyone receives a fair share of their ecological capacity. Degrowth calls for lower use of existing resources, highlights political power asymmetries, and moves beyond pricing interventions. Degrowth addresses three key aspects that connect cities and urban lifestyles to planetary boundaries: reducing production and consumption, connecting people and nature, and including nature (to a more substantial extent) in the design of cities and in what is used and consumed in cities. A radical degrowth transformation of cities is necessary to stay within a safe operating space for humanity.

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Introduction

The effects of cities, urban populations, and urban lifestyles on the global environment make cities a crucial component in the relationships between human and environmental health and wellbeing.[1,2] It has long been recognised that cities' ecological footprints far exceed the area they occupy—that is, urban areas cannot be considered without the telecoupled hinterlands upon which they depend for resources.[3–5] Urbanisation should not be associated only with the growth of cities—planetary urbanisation also involves processes within cities and sociospatial and political–ecological transformations outside of cities, spanning different territories and landscapes.[5] Today's environmental crises are related to the growth of economic throughput (production and consumption),[6,7] driven primarily by decisions made in cities as hubs of socioeconomic activity and influencers of broader urban lifestyles. Indeed, despite covering only 3% of the Earth's land surface, urban areas accounted for 67–72% of combined global CO_2 and CH_4 emissions in 2020.[8] We suggest that there is a need for radical solutions to keep this urban or urbanising planet within planetary boundaries. Our objective is to investigate the role that degrowth can play in this context and to suggest areas for further research and policy.

Many cities, especially in high-income countries (HICs), have recently become showcases for sustainability—in particular, their central areas have become better suited to host so-called sustainable lifestyles. However, these sustainable lifestyles have mostly only been accessible to wealthy inhabitants,[9] with gentrification and health disparities ensuing.[10] Globally, urban lifestyles have become dominated by private motorised mobility, translating into highly consumptive, sedentary lifestyles that generate substantial environmental and health impacts.[11] Far too often, sustainability has become associated with a so-called sustainability fix agenda of electric cars, technology-driven smart cities, and green amenities mostly available only to privileged individuals.[9] Indeed, urban lifestyles tend to make cities landscapes of consumption through processes such as the commercialisation and commodification of public space, and conspicuous consumption and overconsumption; these are not only the result, but also simultaneously the driver of economic growth.[10,12] Contemporary urban lifestyles involve multiple additional issues related to health, such as haste and stress, overwork, lack of physical activity, individualism, and social isolation.[13–16] Moreover, people enjoy urban lifestyles outside of cities as well, benefiting from cultural and, most importantly, consumptive amenities in cities, which extends the distances that such amenities need to cover. Subsequently, the elusive sustainable cities have not alleviated the global problems of suburbanisation, informal settlements, and urban consumption that are fuelling environmental degradation.[17]

There is a growing recognition that the current economic system undermines human and planetary health,[6,18,19] and an increasing awareness of the need to connect local situations with the state of the planet and address the pressures, rather than merely treating the symptoms.[6] Instead of assuming that the Earth system will adjust to increased pressure, the production and consumption growth trends have to be reversed. This idea is captured by the concept of nine planetary boundaries that define a safe operating space for humanity based on a scientific understanding of the Earth system's functioning and the precautionary principle.[20] To keep an urban planet within such planetary boundaries, scientists are calling for a systemic change of the urban system, including changes in infrastructures, ecosystems, agency configurations, lifestyles, systems of service provision, urban innovation, institutions and governance, and addressing equity.[21] Six of the nine planetary boundaries have already been transgressed;[22] as such, degrowth seems to be an obvious solution to get back within the limits.

Degrowth explicitly calls for halting the growth of resource and energy throughput—especially in HICs—

in an attempt to keep the Earth within planetary boundaries.[23,24] As stipulated in the Degrowth Declaration, which set the scene for further research in this area, "the objectives of degrowth are to meet basic human needs and ensure a high quality of life, while reducing the ecological impact of the global economy to a sustainable level, equitably distributed between nations".[25] Degrowth posits that sustaining the human population requires fundamental changes to the organisation of society, most notably, substantial reductions in the production and consumption levels in HICs.[26] Here, we focus on what the degrowth perspective adds to the debates on the urban planet obeying the planetary boundaries. Although much has been written recently about degrowth and cities, there have been few attempts to operationalise urban degrowth.[27–29] This paper explicitly connects cities, degrowth, and planetary boundaries to envision how degrowth could transform a rapidly urbanising planet such that it remains within the planetary boundaries conducive to human life. We respond to other authors' calls that "radical changes are needed for transformations to a good Anthropocene"[30] or for a new narrative on cities that acknowledges global complexity.[31] Indeed, new issues need to be raised in this context to broaden the horizon and venture beyond the comfort zones.[32]

In the following section, we connect cities with planetary boundaries by highlighting three inter-related aspects driving various environmental impacts related to urban lifestyles and planetary boundaries: production and consumption, environmental disconnect, and novel environments and entities. We then address these aspects from the degrowth perspective, subsequently suggesting what degrowth adds to previous calls for a resilient urban planet. We conclude by identifying topics that warrant further attention in this context.

Cities and planetary boundaries

Steffen and colleagues[20] stated that the planetary boundaries framework was "not designed to be downscaled or disaggregated to smaller levels, such as nations or local communities" due to the interdependent nature of the Earth system's processes. Dillman and colleagues[33] noted that allocating the remaining planetary capacity to cope with the various barriers among countries and smaller units is morally and mathematically challenging. Yet, the downscaling of the planetary boundaries to the levels at which decisions are made and policies are applied has been one of the framework's most intensively investigated aspects.[34–37] Downscaling becomes particularly relevant when planetary boundaries are seen in connection with social ones, since social indicators depend on local policies and local environmental conditions at least as much as they rely on the health of the Earth system as a whole.[38] The local applicability and global relevance of the planetary boundaries concept involves investigating the processes of the urban planet that extend far beyond the areas that cities cover, involving their various political, economic, social, infrastructural, and metabolic impacts on the planet. Urbanisation is a truly global process that both directly and indirectly influences planetary boundaries.

From the Earth system's perspective, globally connected cities are novel entities, yet important enough to affect the functioning of almost all local, regional, and global social-ecological systems. As hubs of production and consumption, cities have often been seen as "growth machines"[39] or "engines of growth",[40] and economic growth—embodied in the continuous wastage of natural resources—has been a key driver in the transgression of planetary boundaries. Indeed, the growth imperative and neoliberal urbanism are among the ten key drivers of urban injustice or injustice in urban sustainability.[9] Changing production and consumption patterns clearly involves cities, where most material and energy consumption occurs and where production and consumption are most often tied into global supply chains.[41] The operationalisation of planetary boundaries typically follows consumption-based ecological-footprint accounting and benchmarking against planetary boundaries.[7,42] Operationalisation can be linked to the metabolic connections between cities and their hinterlands, including the flows of materials and energy[43–45] and, more broadly, urban lifestyles.[46] Urban lifestyles involve a disproportionate use of resources and an enormous waste of food, energy, and water—all of which push humanity beyond the safe operating space that can sustain it.[47] However, consumption does not only refer to how much is consumed, where it is sourced, and what it results in (ie, urban metabolism), but also to much broader issues such as values, worldviews, attitudes, and alternative capitals, which can be seen as the systemic drivers of urban lifestyles.

Urban lifestyles are characterised by a growing sense of environmental disconnect, driven by human hubris[48] and the seemingly self-sufficient nature of cities. The impression that people do not need the environment can be represented by a caricature-like view that whatever one needs can be found in a supermarket. Indeed, the fact that (in an evolutionary sense) cities are novel environments perpetuates the disconnect from nature in spatial, economic, and cognitive and emotional terms.[49] Spatial disconnect links to the invisible relations between cities and their hinterlands. Economic disconnect links to the exploitation of peripheries within the supply chains, and perpetuates the power and domination of the urban centres over the peripheries. Cognitive and emotional disconnect refers to the preferences and behaviour of urban inhabitants who tend to lose their sense of belonging to nature and knowledge of nature.[50] Although cognitive and emotional disconnect typically influences planetary boundaries indirectly, the impact is profound, permeating all decisions that people make. Cities and urban lifestyles have allowed people to prioritise specific aspects of human reality and human

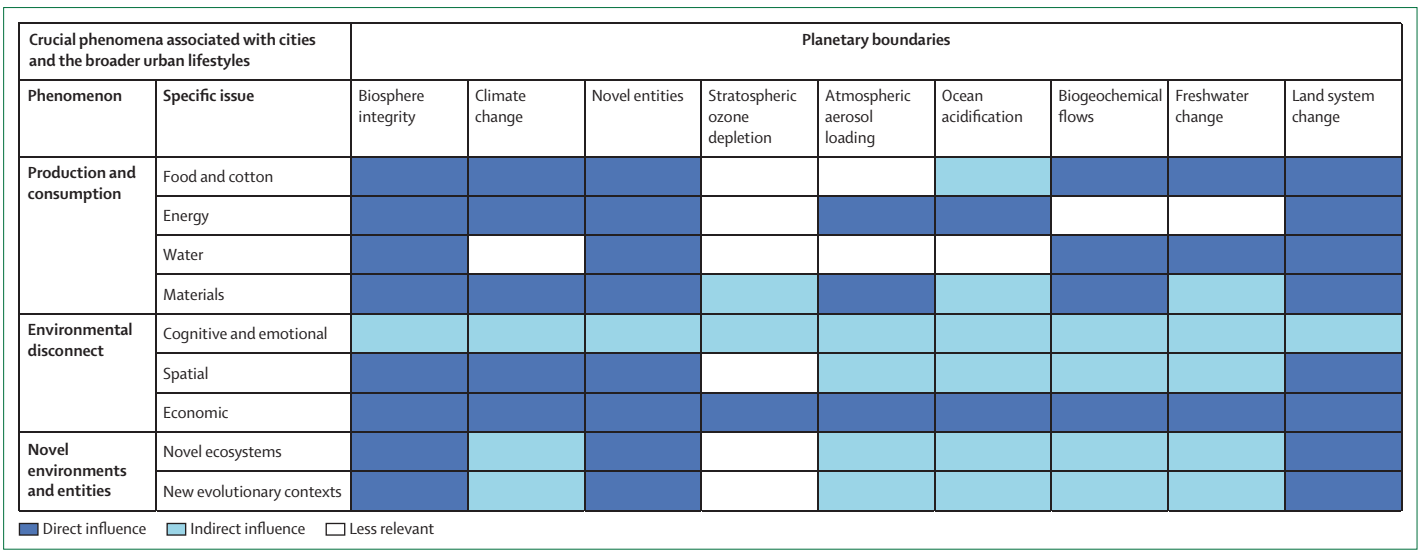


Figure: **Three critical phenomena associated with cities and broader urban lifestyles, with the related environmental effects and planetary boundaries**

life disconnected from nature. In light of prevailing ecological illiteracy, nature is pushed to the background and "the great intergenerational robbery" continues.[51]

The disconnect is partly related to the specificity of cities as novel environments or ecosystems that involve multiple ecological–technological–chemical features and effects, such as land optimisation (designating land for different purposes—permanent or temporary urbanisation), inequalities that push people outside of cities (eg, because of lower cost of living), building resilience to extreme events, new niches and habitats, and new technologies (eg, increasing use of technology within smart cities). Furthermore, urbanisation creates new evolutionary contexts with their own emergent diversity, including exposure to alternative food webs, species assemblages, and interactions. Similar to production–consumption and environmental disconnects, these novel environments and entities are related to economic activity and growth.

Cities and broader urban lifestyles affect all planetary boundaries, albeit to different extents (figure). Our overview suggests that climate change, biosphere integrity, novel entities, and land-system change are the boundaries most directly affected by cities and urban lifestyle—this means that human activity in urban areas exerts pressure on these planetary boundaries, at least in its current form. Additional indirect impacts mainly affect ocean acidification, freshwater change, atmospheric aerosol loading, and biogeochemical flows. Stratospheric ozone depletion is the least affected, even though the various refrigerants emitting them are used primarily in cities. The effects are related to the multiple inputs (resources) and outputs (emissions and pollution, land degradation, biodiversity loss, and eutrophication) of urban metabolism and the processes occurring within cities.

The novelty of urban environments and the related environmental disconnect translate into multiple health problems for urban inhabitants.[52] There are increasing calls to connect urban inhabitants with nature, at the very least by increasing the availability of urban green spaces to address human health and wellbeing.[53–55] Eventually, urban lifestyles might be even more problematic when dispersed into rural areas through urban sprawl, suburbanisation, and exurbanisation, which translates into increased demand for travel and expanded infrastructure that break up ecological connectivity. Additionally, in many HICs, even dispersed populations live similar lifestyles to globalised urban dwellers, which has become another feature of the globalised, urban planet.

The indirect social and ecological effects of pressures on planetary boundaries can be particularly severe in locations where these pressures are externalised, both the global context[35] and the urban–hinterland context. Cities are transgressing their local boundaries in every case, and they externalise effects by shifting production and many other functions away from themselves. Most importantly, similar to externalising impacts, cities have the influence and jurisdiction to reduce some of these effects—and this is where we connect cities to degrowth.

What does degrowth add to the debate on an urban planet?

Recent reports from the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) confirm an increasing consensus in the scientific community: technological progress must be complemented by social transformation. Social transformation requires changing the dominant economic models to address planetary boundaries and meeting basic needs and reducing inequality.[8,51,56,57] As part of their broader strategy for rethinking connections between

health and economics, WHO has called for a regenerative economy that serves all, and the use of indicators of socioeconomic progress other than gross domestic product.[58] Combined with the constraints of planetary boundaries, degrowth helps to refine the narrative on the sustainability of the urban planet by addressing complexity, systems thinking, and critical social science. So far, the political and institutional context of social relations and societal relations to nature has largely been missing from the debate on planetary boundaries.[38,59] Degrowth focuses on preventing climate change, biodiversity loss, and other planetary boundaries, and highlights equity and social justice.[59–61] In line with degrowth, political choices should prevent shifting or neglecting the hidden costs of human activity. Limits to growth must be tied to the accelerating environmental breakdown and inequalities, and to biophysical reality and social justice (both intergenerational and intragenerational).[62]

Degrowth targets economic growth—in contrast to the mainstream green growth approach, which assumes that technological and market innovations will improve the efficiency of human use of the environment, thereby enabling the increased human population to flourish within planetary boundaries.[63] Green growth disregards limits to growth that were originally linked to carrying capacity and depletion limits (eg, determined by finite stocks of resources) and are now primarily linked to planetary boundaries, thresholds, and tipping points (highlighting abrupt ecological transitions and risk thresholds).[62] Meanwhile, the planetary boundaries concept has made the limits to growth explicit;[64] one line of the mainstream criticism of the planetary boundaries framework has been that its implementation might constrain economic growth.[65] With its focus on economic growth as a source of the problem, degrowth differs from other approaches for fitting the economy within planetary boundaries that remain neutral to the concept of growth, such as a-growth or doughnut economics.[23,66] By remaining impartial to economic growth, these concepts do not address the full political context of growth dependence; thus, they are sometimes considered to be watered down versions of degrowth.[27] All of these concepts are part of a broader post-growth pluriverse, a collection of ideas on how to organise human societies in a world where further growth is no longer possible.[67] These different interpretations consistently raise the problems of excessive production and consumption (through the lens of social metabolism) and the related power and wealth asymmetries and injustices, and they promote the transition from a materialistic society to a convivial and participatory one.[41,67]

Degrowth offers opportunities to fit a growing human population within the social-ecological planetary and societal boundaries, which can also be associated with environmental and public health and a good life for all.[37,38] Degrowth highlights equitable access to planetary resources (including reducing global health disparities), emphasises co-creation, co-production, conviviality, and collaboration (thus adding to the co-evolutionary social-ecological perspective), and is particularly relevant from the point of view of urban resilience.[21] Building resilient cities involves continuously searching for alternative configurations of a complex system to adapt and transform in the face of disturbance.[21] In particular, degrowth is similar to urban tinkering, which aims to transform urban systems by addressing uncertainty, non-linearity, and design for multiple and shifting functions.[68] Degrowth includes efforts to change the urban design and form to encourage sustainable lifestyle choices in line with planetary boundaries.

To keep the ever-growing cities and expanding urban lifestyles—and the associated effects—within planetary boundaries, a degrowth transition must address the various metabolic connections between cities and their hinterlands and other types of indirect effects on those hinterlands. Doing so involves all three key aspects that connect cities and urban lifestyles with specific planetary boundaries (table). Different degrowth policies can help nurture urban societies that would consume less, feel more connected to nature, and be less dependent on novel environments (table).

Many of the degrowth proposals presented in the table go against the mainstream and are inhibited by path dependence—that is, a preference for solutions that cities have followed in the past. Furthermore, most degrowth proposals go against the dominant market logic by strengthening non-market values and interests and reducing the interests of those in power, such as preferring commons over private property, transforming the current price mechanisms that do not recognise external effects, or making explicit the human connection to nature.[59] Hence, economic systems are often stuck in institutional lock-ins maintained by powerful lobbies, such as developers or large agri-food companies. Meanwhile, keeping a striving human population within planetary boundaries requires achieving sufficiency in resource consumption and improved physical and social provisioning systems.[37] Even when degrowth strategies overlap with some eco-efficiency strategies, which are often used in a growth paradigm, the context and political intention to use these strategies differ between growth and degrowth discourses, and generate different outcomes.

Several debates regarding the broader urban social-ecological or social-ecological-technical systems align with degrowth. IPCC[8] highlighted that integrated spatial planning and compact and resource-efficient cities with mixed land use and transit-oriented development could reduce urban energy use by 23–26% by 2050 compared with the business-as-usual scenario. These strategies align with much of the degrowth debate on urban planning.[29,69–71] Echoing the degrowth discourse on urban mobility,[28,33,72] the IPCC[8] focused on modal shifts away from private motorised mobility to non-motorised

	Degrowth strategies
Production and consumption (dispersed supply, concentrated consumption)	
Food and cotton	Eliminate food waste; eliminate fast fashion waste generated by the garment industry; impose restrictions on advertising; encourage vegan and vegetarian diets, local and regional food production, community gardening, and regenerative agriculture (eg, reducing tilling and increasing carbon capture and biodiversity without reducing yields); encourage shorter supply chains, city-funded restoration in larger landscapes, and a circular economy; extract and reuse phosphorus and nitrogen from the sewage system
Energy	Eliminate energy waste and switch from fossil fuels to renewable energy; encourage vegan and vegetarian diets, low-carbon mobility, non-motorised mobility, building insulation, manufacturing products with longer lifetimes, urban polycentricity and compactness (to promote walkability and liveability), and refurbished housing stock (eg, reusing existing resources, including housing); develop local and regional production systems and new technologies; pursue city-funded restoration in larger landscapes
Water	Eliminate water and food waste; encourage vegan and vegetarian diets; manage water as commons and impose restrictions on freshwater use (especially for specific purposes, such as sanitation and watering golf courses); stop developers from using fresh water for sanitation; increase the use of grey water and rainwater; develop new technologies
Materials	Eliminate materials waste; produce products with longer lifetimes; impose restrictions on advertising; refurbish housing stock and reuse existing resources; implement a circular economy, shared ownership, and new technologies
Environmental disconnect (disconnection between society and nature)	
Cognitive and emotional	Reintroduce some biodiversity to homogenised landscapes; recognise other interests in land (away from human-centric rights and towards resources and land, intrinsic values, and Indigenous perspectives); find ways to make biodiversity relevant to human lives (eg, life values perspective, ecological literacy, and relating to nature as an entry point for discussing larger conservation issues); allow nature more voice (eg, legal rights to bring nature to the forefront and environmental justice)
Spatial	Encourage the decommodification of land; manage land as commons (locally); recognise other interests in land (away from human-centric rights); reintroduce some biodiversity to homogenised landscapes; develop green and blue infrastructure; implement nature-based solutions and city-funded restoration in larger landscapes, revitalise nature in cities; ensure that nature is seen as part of people's daily lives; position cities as hubs of alternative economies (socially useful production and industrial democracy)
Economic	Environmental justice; acknowledge not only the perspectives of different socioeconomic groups (including stakeholders whose role in the development of cities is rarely acknowledged, such as distant communities, downstream communities, and those suffering from urban externalities), but also non-human species as city stakeholders
Novel environments and entities (new artificial systems)	
Novel ecosystems	Reintroduce diversity to homogenised landscapes; recognise other interests in land (away from human-centric rights and towards resources and land); use only biodegradable and natural components and entities; avoid the introduction of novel entities
New evolutionary contexts	Use only biodegradable and natural components and entities; implement regenerative agriculture; avoid the introduction of novel entities

Table: **Degrowth approach to the three key phenomena associated with cities and broader urban lifestyles**

and public transportation. The IPCC,[8] IPBES,[56] and degrowth scholars address urban green and blue infrastructure and nature-based solutions. Looking at nature-based solutions from the degrowth perspective can help us to get back to the core of this idea—working with nature, drawing inspiration from nature, offering multiple co-benefits, and being driven by local community interest.[73]

Degrowth highlights autonomy and the democratic distribution of power that links to simple and convivial technologies.[61] The table shows that the simplest—and most powerful—solution is the elimination of wastage, which is related to ideas such as taxing excessive wealth and reforming the existing system of property rights to limit opportunities for the accumulation of material resources. Convivial solutions promoted by degrowth favour care and social work, investing in health care, education, and social relations.[74] Convival solutions might be reflected in how degrowth addresses health issues. For example, instead of treating overworked populations, degrowth suggests to reduce working hours and work-related stress. Instead of privatisation, deregulation, and liberalisation, degrowth calls for better prevention and a more caring and equitable society.[75,76] Indeed, lowering consumption (eg, of energy, meat, and motorised mobility) in HICs has been shown to bring not only environmental but also health benefits.[77]

All of these issues emphasise public health benefits[8,78,79] and highlight a critical dilemma that degrowth addresses: private benefits versus public costs, and private costs versus public benefits. Referring to the work of the Rockefeller Foundation–*Lancet* Commission on planetary health, Myers[6] called for integrating "environmental impacts with health impacts to explicitly evaluate how environmental changes might affect long-term health and how costs and benefits might be distributed across different populations over time", for linking health care with broader changes in our energy systems, food systems, construction and mobility, and, eventually, for "a renaissance in how we define our place in the world".[6] Degrowth has an important role to play in all of these areas, especially through its emphasis on reducing production and consumption while strengthening connection to nature.[59] Indeed, planetary health connects all the issues involved in the degrowth transition.

Degrowth proposals refer mostly to HICs and still need to align better with the respective movements in low-income and middle-income countries (LMICs),[80] and the operationalisation of degrowth needs to be different in cities depending on their wealth.[27] However, degrowth still

indicates opportunities to account for intragenerational justice. For example, for the sake of international accounts and agreements, the contribution by the different societies to the environmental impacts in the past seems to be one of the most promising approaches to attributing responsibility for excess use of the environment.[81] This approach needs to be combined with an overarching principle of reducing material consumption and production to meet decent living standards for all.[82] Many worldviews aligning with degrowth that originate from LMICs could provide useful alternatives to the global dominance of economic growth.[38]

Local and regional governments have a crucial role to play in reducing the political power of market actors that push for more consumption and injustice—consequently transgressing planetary boundaries—and in strengthening local communities in their struggle for quality of life rather than market success in terms of economic growth. Cities can lead by example, showing that alternative solutions are possible, thereby normalising and mainstreaming them. The leadership of cities was instrumental in protecting the planetary boundary of stratospheric ozone in the mid-1980s, when cities in the USA took action despite the lack of political support from the US federal administration, and they continue to take leadership roles in many other situations.[83] Ultimately, a degrowth transition requires changes at multiple levels, in line with the broader idea for adapting this concept to different scales (eg, regional, national, and global).[27,29]

Conclusions and recommendations for further research and policy

It is necessary to further operationalise degrowth by connecting it to specific planetary boundaries and urban phenomena, including cities and broader urban lifestyles. Although even the key international bodies dealing with the most pressing crises (eg, climate change and biodiversity loss) advocate the use of degrowth-related policies to address these challenges, not enough has been written on what these policies are, or should be, and what exactly they should build on.[61] Degrowth requires a far-reaching urban transformation, and urban degrowth strategies, in particular, can improve health and wellbeing and mitigate impacts on planetary boundaries. Although some planetary boundaries are easier to rescale (eg, emissions), others are more difficult (eg, biodiversity loss), and operationalising planetary boundaries at the local level requires more work. However, instead of focusing on cities alone, we highlight the diverse linkages between cities and their hinterlands, including the importance of urban lifestyles extending beyond cities. Indeed, urban lifestyles provide an important insight into how to address degrowth in an urban context. Given the scale of impacts that cities and urban lifestyles exert on the global environment, one clear implication for research and policy is how to establish planetary urban degrowth as the new dominant urban lifestyle.

Some degrowth-related proposals are already entering mainstream debates on an urban planet (eg, prioritising non-motorised mobility and proximity and reducing material consumption), whereas others are gaining prominence in current geopolitical circumstances (eg, eliminating energy waste and switching from fossil fuels to renewable energy). Diverse stakeholders should be involved in the degrowth debate; health and social care professionals are particularly relevant given the emphasis that degrowth places on human wellbeing. Researchers must investigate and dismantle different sectors' respective growth dependencies; as it pertains to the inclusion of health and social care professionals, this includes how to fund health care without relying on economic growth. The degrowth perspective connects to de-commodifying access to shared resources for basic needs and disrupting the extractive power of the most affluent. Likewise, to be more resilient, cities should increase their food sovereignty by regionalising food systems and decreasing their dependence on global production systems. This approach can increase the safe operating space for human activities by increasing the adaptive capacity with regard to source areas that people draw on to provide cities. The same concept of increased self-sufficiency applies to many other resources as well. Exploring such solutions ties into a need for further research on the connection between planetary boundaries and social and environmental justice, with a particular focus on relations between HICs and LMICs. There is a clear need to seek different degrowth strategies for HICs and LMICs, but perhaps the issue of planetary boundaries is one where both perspectives align: urban degrowth shows more similarities in both HICs and LMICs than degrowth in general.

Increasing people's connection to nature offers a crucial leverage point for changing the perspective of those who live urban lifestyles. Multiple means have been proposed for this end, including the degrowth perspective (ie, that less work and more time in nature is a simple solution to many complex problems of modern society) and an inclusive notion of who should be considered urban stakeholders. Indeed, there is a need for increased research and policy focus on the relationships between lowering consumption, increasing nature connectedness, and health. Research in planetary health needs to connect more directly to degrowth, expanding the interest in alternative, heterodox approaches to economics.[19,58,84] In addition to substantially reducing economic throughput in HICs, further debate is needed on how development can be reinvented in LMICs and their cities to improve health and wellbeing without undermining the ecological foundations.

Degrowth calls for halting aggregate economic growth and its drivers, which exacerbate inequalities and pressure on planetary boundaries. In particular, degrowth calls for eliminating the wastage of existing resources (including unused buildings and spaces in cities [eg, for hydroponic

gardening]) to reduce the pressure on external and global ecosystems along with changes in diets, mobility, and other consumption patterns. However, degrowth also highlights inequity and political power asymmetries related to consumption patterns and addresses inadequate pricing mechanisms that do not acknowledge environmental degradation. Degrowth ultimately entails collaboration, conviviality, equitable access, shared ownership, and other solutions that reduce consumption and increase ties between people and non-human stakeholders. Degrowth is often seen as a radical attempt to transform the capitalist economic system—and, indeed, a radical transformation is necessary to remain within the ideal planetary boundaries for humanity to persist and thrive.

Contributors

JK proposed the original idea for the Viewpoint and led the project. All authors contributed to the conceptualisation, analysis, and writing of the Viewpoint.

Declaration of interests

We declare no competing interests.

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