

# The Degrowth Opportunity

**Reshaping business  
for a needs-satisfying,  
resource-wise economy**

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# 1. EXECUTIVE SUMMARY

- # The aim of degrowth is to provide assets, goods and services to satisfy everyone's needs, everywhere, with a fraction of the resources and pollution we see today.
- # Throughput degrowth is a potential policy lever for climate mitigation; it would reduce nature loss from resource extraction and ecosystem exploitation; and it would respond to the energy decline of a lower EROI renewable energy sector.
- # Structural and societal shifts toward degrowth would create a resilience issue for business, suggesting the need to build adaptive and transformative capacities.
- # Resource and energy degrowth would catalyse opportunities to achieve social purpose and environmental sustainability through transformation of cities, value chains and businesses and through policies to strengthen social provision.
- # Businesses would reorient toward social needs, making only things that are needed, making just enough, using resources wisely and regenerating their footprint, equipping society to operate within social and planetary boundaries.
- # To thrive with a lower throughput and regenerative footprint, businesses would have to adopt degrowth-compatible traits. Business ownership would trend from shareholders to cooperatives. Operations would trend from globalisation to localisation. Sustainability would trend from incremental and internal to absolute and contextual.
- # The degrowth agenda calls for aggregate, but not blanket, downscaling of business throughput - there will always be some sectors, geographies and stages of business that are in an expansion mode, while others are contracting or are in a steady state.
- # Degrowth economy businesses would be profitable. Investment would be needed for start-ups, displacement growth, investment in transformation and R&D, but investors would have to exit responsibly and expect a mix of financial and non-financial returns, since businesses will want to reinvest largely in their workers, R&D and the commons.
- # Consumers, business value chains and government must change together. The business sector can aid alignment through reframing around meeting wellbeing needs, embedding local biocentric perspectives in regional business networks, advocating for degrowth policy settings and normalising new consumer behaviours.
- # Green growth businesses are prone to greenwash. With a sectoral refocus on satisfying social needs, we should expect a new phenomenon, needswash.
- # Degrowth is a trending topic because green growth isn't working. Green growth is an undisruptive, canny, palatable economic vision based on the unproven theory of absolute decoupling, with nature loss and inequality as afterthoughts. Degrowth accounts for climate, ecological and social outcomes, it will inspire innovation and it can be positioned as aspirational. It is a real opportunity to create long term value for future generations.

## 2. PREFACE

### **This is the second of two papers that aim to translate degrowth ideas for business people, investors and policymakers.**

A previous white paper, *Investing in Degrowth*<sup>2</sup>, published in December 2021, was a collaboration between impact investor Bill Murphy<sup>3</sup> and me. It has been downloaded more than 1000 times and was promoted by both the Centre for Sustainable Finance and the Impact Investing Network in New Zealand. This level of interest genuinely surprised us given that investing in degrowth was simply not a 'topic'. One person who searched online for the published paper reported that the Google algorithm asked, 'Did you mean: "investing in growth"?', returning our paper and just three other search results. What surprised us more was that feedback on the paper was extremely positive and introduced us to a number of people who are steeped in, or stepping into, degrowth, looking for ways to open up new avenues of discourse and make connections. Although it was written for a niche audience of impact investors in New Zealand, the paper was strongly picked up in the UK, the US, the Netherlands, Australia, Canada, France and India, seemingly by a broad range of sustainability professionals. It became clear that there is a small but significant global business group that is hungry for applied degrowth discourse.

The purpose of this second paper, *The Degrowth Opportunity*<sup>4</sup>, is to introduce business practitioners to degrowth thinking through a business lens and to provide foresight about a world that could, in the near future, be in a state of flux, with growth and degrowth forces swirling simultaneously. Some degree of economic degrowth does seem inevitable, by design or by crisis. Crucial systems, such as food, healthcare and lifeline utilities, must be radically and justly transformed so that all people's needs, everywhere, are provisioned using a fraction of the resources and emitting a fraction of the pollution we see today.

For many businesses, especially corporates, this will be an existential challenge. There are some firms whose products and services are frivolous, whose product life cycles are wasteful and polluting, whose practices are grossly unfair or whose governance is immutably focused on shareholders. This paper may not appeal to them and they will likely continue to prepare only for futures in which the economy grows.

There are businesses that meet real needs, that are working hard to become more sustainable and that behave responsibly toward the people whose lives they impact. These businesses have capabilities and motives that are valuable to society and it is crucial that they build adaptive and transformative resilience to comprehensive change. As we accelerate through the first half of the 21st century, we need good businesses to keep providing in ever new ways to equip society to operate within social and planetary boundaries. If you work in such a business, this paper is for you, to inform conversations about degrowth.

I am deeply grateful to climate adaptation scenario analysis specialist Dr Stefan Gray<sup>5</sup> for his help with Section 6.2 *Adapting to Degrowth*, including development of an illustrative 'disorderly' climate scenario with degrowth assumptions. I am indebted to intellectuals Giorgos Kallis, Jason Hickel, Arturo Escobar, Kate Raworth and numerous others whose passionate, methodical work on degrowth, critiques of development and explorations of alternative economies form the knowledge landscape from which I build my bridging work to the business world, where there so clearly exists a receptive community willing to see things differently in order to flourish in the future. I also thank the Greek philosophers, whose wisdom seems eternal.

As a white, Global North researcher and writer on business sustainability issues, I acknowledge the cultural and sectoral biases of my worldview and the limits of my knowledge on so many things. I apologise in advance for the unintended errors and omissions that no doubt exist.

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<sup>2</sup> <https://heliocene.org/reports/investing-in-degrowth/>

<sup>3</sup> [www.purposecapital.co.nz/project/bill-murphy/](http://www.purposecapital.co.nz/project/bill-murphy/)

<sup>4</sup> <https://heliocene.org/reports/the-degrowth-opportunity/>

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### 3. INTRODUCTION

**The Degrowth Opportunity presents the degrowth imperative, explores the degrowth ideal, articulates degrowth as a risk and an opportunity for business and discusses the potential attributes of businesses that could operate within social and environmental boundaries.**

Degrowth is a vision of an alternative political economy that is finding its feet in the mainstream. Academics are writing accessible paperbacks to explain degrowth ideas in layman's terms; the IPCC has signalled the need for climate scenarios that use degrowth assumptions; degrowth-aligned policy experimentation is happening in many countries; politicians at surprisingly high levels are surreptitiously introducing degrowth thinking into political campaigns; and small shifts in consumer behaviour are normalising elements of a degrowth-compatible lifestyle.

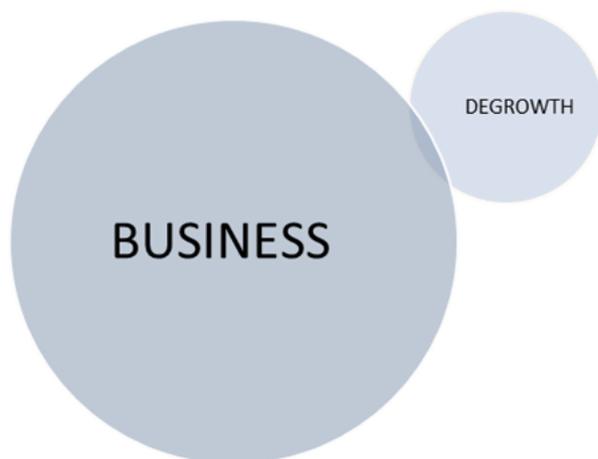
In the Venn diagram of 'how the Global North thinks', the business and degrowth bubbles have suddenly touched. Direction of travel means they will soon overlap. This paper is an introduction to that overlap, to inform and encourage prescient conversations in business.

There are many gaps in the conceptualisation of degrowth, not least how a shift toward a degrowth economy would affect existing businesses. Yet, there is a lot that we do know. In this paper, degrowth ideas are presented simply, using plain English and business communication formats to speak clearly to an audience of sustainability-informed business people.

The main deliverables are:

- A summary of the degrowth imperative – what it aims to solve and how it has developed.
- A theory-of-change analysis of the degrowth ideal, comprising:
  - an aspiration,
  - a transition agenda and
  - an implementation strategy.
- An examination of the resilience issues facing business as a degrowth economy becomes more of a reality, including:
  - a scenario describing a pathway to 2050 in which degrowth is a change driver,
  - an analysis of the trait differences between green growth and degrowth-compatible businesses and
  - suggestions for influencing contextual transformation.
- A call to action.

These help build a mental picture of degrowth as an ideal, as a change driver influencing the future business context and as a business imperative for firms that wish to build resilience through transforming themselves and the world around them.



**Those who love wisdom  
must investigate many  
things.**

Heraclitus

## 4. THE DEGROWTH IMPERATIVE

### 4.1. WHAT PROBLEM DOES DEGROWTH ADDRESS?

We have an economic design problem that ESG practices and SDGs cannot fix.

**The problem with growth:** Projections suggest the economy will double by 2050 (PwC 2017) with per capita output growth far outstripping population growth of 27% (IISD 2020). Since the 1950s, the global economy has been doubling in size every few decades, demanding more resources and energy every day, appropriating and degrading more and more places and spewing ever-mounting pollution into ecosystems and the atmosphere. Growth economy systems cause climate change and nature loss.

**The problem with green growth:** The orthodox solution is to absolutely decouple GDP growth from environmental degradation through technological innovation. However, the theory of decoupling<sup>6</sup> has no empirical foundation - evidence of GHG decoupling is spotty and small scale; purported evidence of energy use decoupling can be attributed to offshoring; there is no evidence of decoupling from materials or water use or from impacts on land use, biodiversity loss and water pollution (Parrique et al. 2019). This indicates a risk that promised negative emissions technologies (NETs) will not be feasible, effective or deployable at the speed and scale required to halt global emissions, and there do not appear to be credible technologies in the pipeline that could halt other forms of environmental degradation on a global scale. The opinion that we will need NETs in future relies on the assumption that prosperity will grow (despite climate change) because of value to be created through continuing to use fossil fuels for some time, making NETs appear to be, on paper, a more cost effective option in future than decarbonising now - and this is becoming a self-fulfilling prophecy as emissions continue at dangerously high levels (Guenther 2022).

**The problem with renewable energy:** Assuming NETs remain infeasible and deforestation and afforestation balance each other out, ie there is no significant increase in sinks, to have a chance at achieving the Paris goal of keeping global warming to no more than 1.5°C, we must reach 80% renewable energy production by 2050. Total energy production would decline by about half due to the much lower EROI<sup>7</sup> of renewables, demanding significant energy efficiencies and energy use avoidance. Only essential economic activities would have access to the 20% of energy that would be from fossil fuels. Which activities are so essential that they can be allowed to continue contributing to climate change - agriculture, the military? All sectors need to be weaned off fossil fuels as much, and as soon, as possible so that the remaining 1.5°C carbon budget lasts longer and is available for essential activities (Krumdieck 2020).

**The problem with capitalism:** Capitalism is a growth driver that generates economic gains that are not shared evenly. Trillions of dollars skew toward rich nations and the elite, depriving the majority, while billions of hours are spent per day in care work, mostly by women, unpaid. Capitalism is a root cause of wealth and income inequality.

**The problem with socialism:** Socialism produces fairer economies, but climate change and nature loss persist because socialism, like capitalism, drives growth.

**How do we redesign the global economy to provide for 9.8 billion people by 2050 with only half of today's energy, while addressing nature loss and inequality?**

<sup>6</sup> The theory of absolute decoupling posits that an economy can grow without increasing environmental degradation.

<sup>7</sup> Energy prosperity depends on a high energy return on energy invested (EROI) and producing enough energy to serve business and consumers and replace infrastructure. Fossil fuels have a high EROI (~25), supporting high consumption. Global policies support a shift to a green economy based on wind, solar, biofuels and storage (EROI ~4), but high consumption would leave insufficient energy for maintenance and replacement of infrastructure, leading to economic decline. To return to energy prosperity, the EROI would need to improve to ~15 by increasing the percentage of higher EROI renewables in the energy mix, such as existing hydropower assets, and reducing end-use consumption by ~70% from today (Krumdieck 2020).

## 4.2. HOW DOES DEGROWTH ADDRESS THIS?

### 4.2.1. THE DEGROWTH IDEA

**Degrowth is the idea to redesign human wellbeing provisioning systems to reduce throughput to a level of materials and energy use that the planet can perpetually accommodate and to redistribute wealth so that everyone, everywhere, can meet their basic needs with dignity, as a human right.**

#### WHAT WILL IT TAKE?

- **A reorientation of the focus of sustainable development from the deficiencies of poor countries to the excesses of rich countries.** Tunisia and Costa Rica meet almost all human needs thresholds with minimal biophysical overshoot. If poorer nations were to adopt their models, the global footprint would grow by 29-35%. To counterbalance this, richer nations would need to reduce their biophysical footprints by 41-46% (Hickel 2018). Rich nation household material consumption for nutrition, housing, household goods, mobility, leisure activities and other purposes needs to reduce from an EU average of 13.4 tonnes per person (Eurostat 2021) to at most 8 tonnes per person (Lettenmeier, Liedtke & Rohn 2014).
- **A 70% reduction in global end-use consumption of energy by 2050 to accommodate 80% renewable energy production** (Krumdieck 2020). It is possible to achieve this and universal decent living standards for up to 10 billion people with homes that '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; [maintaining] an air temperature of around 20°C throughout the year, irrespective of geography; [computer] access to global ICT networks; [and links] to extensive transport networks providing ~5000-15,000 km of mobility per person each year via various modes' (Millward-Hopkins et al. 2020).
- **A reorientation of business from a supply mindset to a demand mindset to support demand-side mitigation strategies** (avoid, shift, improve) that have the potential to reduce global emissions by 40-70% by 2050. The greatest avoidance potential comes from avoiding long haul flights and providing low carbon, short distance urban infrastructure. The greatest shift potential comes from switching to plant-based diets. The greatest improvement potential comes from end-use energy efficiencies and passive housing (IPCC 2022b).

### 4.2.2. THE DEGROWTH MOVEMENT

#### GLOBAL SOUTH

Degrowth is a Global North movement that struggles for relevance in the Global South<sup>8</sup>. Southern environmental justice movements are wary of alliances that might 'unintendedly create new forms of intellectual domination'. Myriad tensions arise from Global South perspectives on degrowth, including that: austerity is a degrowth strategy for poor people; 'growing' is a healthy principle; degrowth is too anthropocentric; the issues are framed differently to how Global South groups organise them; degrowth is Eurocentric and individualistic; and it is not radical enough. But there are many areas of potential unity,

<sup>8</sup> *Global South is a newer term in world politics that came into popular use from 2010. It has been used to refer to poorer nations, the United Nations G77 or nations that resist neoliberal capitalism. It is often used to delineate Africa, Asia and Latin America from Europe and North America, which are then, by default, the Global North (Hachani 2021). Global South nations, generally, are challenged in satisfying their citizens' wellbeing in three key ways: by their debt obligations to Global North lenders, which are 24 times the aid they receive (Hickel 2017), by asymmetric global trade agreements that unfairly undervalue their labour and resource outputs, draining \$10.8 trillion per year from South to North (Hickel et al. 2022) and by the costs of environmental degradation caused by resource extraction, pollution and climate change to satisfy Global North consumption (Irfan 2021).*

including: living well and enabling active societal roles for people; fair distribution of environmental burdens; a preference for basic-needs infrastructure over mega-projects; the need to impose capital controls, strengthen climate finance, nationalise financial assets and diversify currencies; community energy projects; production based on local needs and materials; equal access to basic resources; food and energy sovereignty; and the need to rebuild the consumer imaginary (Rodríguez-Labajos et al. 2019). Another reason why degrowth has not resonated in the Global South is the success that new growth economies have had in alleviating poverty, including in Vietnam, China and Brazil.

Whereas Global North lifestyles are materials and energy intensive, Global South lifestyles are ecologically sufficient. Indigenous cultures take sufficiency a paradigmatic step further, adding a biocentric dimension that has inspired the development of Global North degrowth values and goals. Global North academics often refer to *eco-ubuntu*, which is the ethic of mutual care between people and with nature in South Africa, and *sumak kawsay*, an Andean idea of collective good living through harmony between individuals, community and nature, also known as *buen vivir*. *Buen vivir* is a 'lived practice against commodification [...and] a strong criticism of the discourse of sustainable development', repoliticising environmentalism, a debate the UN effectively quashed with the three-pillared sustainable development agenda (Salazar 2015). Leading Global South proponents include Colombian anthropologist Arturo Escobar, Indian scholar and activist Vanda Shiva and the late Mexican social activist Gustavo Esteva, among many others.

## GLOBAL NORTH

It is the indigenous peoples of the Global South who lead on living the values of non-growth economies, and the task of Global North degrowth advocates is to translate those ideas to northern systems. For some this means following Gandhi's teaching to 'live simply so that others may simply live', but it is incumbent on the Global North to ensure that its own indigenous communities' worldviews are embraced.

Global North degrowth is a nascent mix of academic discourse, activism and pockets of experimentation, including Transition Towns, solidarity economy networks and alternative communities, such as Freetown Christiania. The first International Degrowth Conference took place in 2008; the eighth and most recent was in 2021. The word degrowth is a translation of the French word *décroissance*, an activist slogan from the early 2000s used to spark debate on economic growth. The movement's genesis was the convergence of ideas from ecology, anthropology, bioeconomics, voluntary simplicity, democracy and justice (Demaria et al. 2013). Degrowth ideas most obviously chime with those of the climate movement, but also significantly overlap the ideas of the feminist, racial and labour rights movements, although any of these may advocate growth. Not all that is anti-growth is degrowth. Degrowth is 'socialism without growth but with wellbeing' (Parrique & Kallis 2021). The movement's leaders expressly reject anti-capitalist groups that are racist or xenophobic and any groups that support population reduction (Demaria et al. 2013).

Academic study of degrowth is new, about 10 years old. Degrowth Journal is an academic, peer-reviewed, online journal to be published on a rolling basis, currently calling for its first round of submissions. The leading seat of Global North degrowth learning is the Institute of Environmental Science and Technology at the Autonomous University of Barcelona. Other tertiary institutions with strength in degrowth include the London School of Economics and the University of Leeds. Research and Degrowth, the field's central academic association, is currently most active in Barcelona and France. Leading proponents include Giorgos Kallis, Federico Demario, Giacomo D'Alisa, Jason Hickel and Dan O'Neill. They are Europe-based ecological economists who pose a direct challenge to the orthodoxy. Several are prolific writers, including Giorgos Kallis (*In Defense of Degrowth*, 2018; *The Case for Degrowth*, 2020) and Jason Hickel (*The Divide*, 2017; *Less is More*, 2020), the latter of whom writes to be more accessible to the mainstream. Prominent research themes have been energy, limits to growth, ecological limits, policy, institutions and laws, environmental impact, distribution conflicts, Global North and inequalities. There are calls for new research to address questions on Global South and gender equality issues (Hanaček et al. 2020).

Some advocates prefer to use the terms post growth, steady state or prosperity without growth, but degrowth is most preferred because it denotes a changing state - and also because it is provocative to the mainstream. The movement must agitate because it is a small force opposing the mighty status quo. Think of it as a chip in the windscreen as we hurtle into the future. Even while agitating, a key challenge for the Global North degrowth movement is to reach across the ideological divide to spark a radical behavioural shift among OECD consumers, reorganise the business sector around social needs and gain political viability for policies that would support and enforce change.

**The soul never thinks  
without a mental picture.**

Aristotle

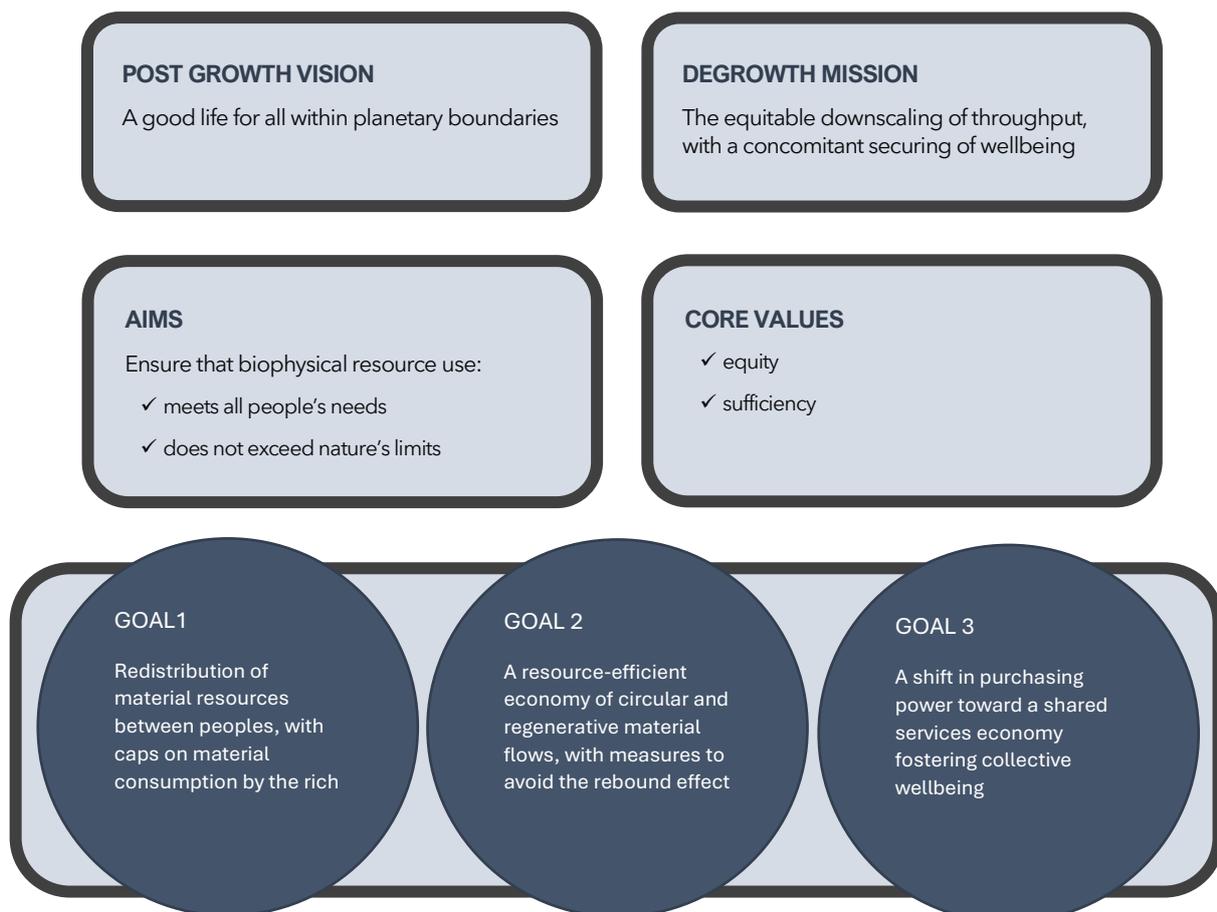
## 5. IMAGINING DEGROWTH

Degrowth is a radical plan to reach a post growth economy. Convincing a critical mass of people, businesses and governments to catalyse this change demands that degrowth advocates articulate an aspiration, develop a transition agenda and generate an implementation strategy.

### 5.1. DEGROWTH ASPIRATION

The degrowth vision - **a good life for all within planetary boundaries** - is the Utopian destination of the degrowth movement and a focal point from which to backcast for transition strategizing. A degrowth economy aims to ensure that biophysical resource use does not exceed nature's limits and is used to meet all people's needs. No country is currently achieving this aim when accounting for seven biophysical boundaries and eleven basic social outcomes, indicating that global systems for distributing resources and provisioning people's needs must be revolutionised (O'Neill et al. 2018). Degrowth goals therefore focus on systemic transformation founded on the values of equity and sufficiency.

*The Degrowth Aspiration:*



*Vision, Foramitti et al. 2019; mission, Kallis 2018a; aims, O'Neill et al. 2018; goals, Akenji et al. 2021*

## 5.2. DEGROWTH TRANSITION AGENDA

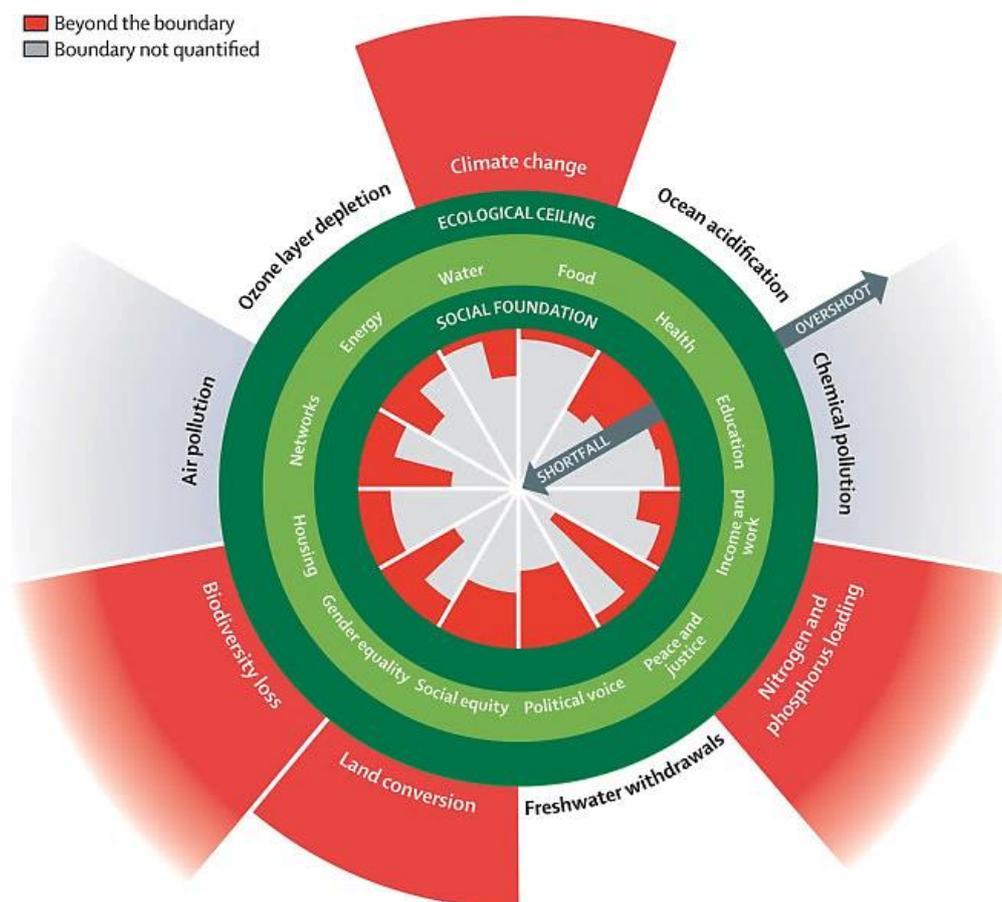
### 5.2.1. ESTABLISHING THE AGENDA

#### DIMENSIONS

The model that underpins the degrowth agenda is the Doughnut of Social and Planetary Boundaries, which theorises limits for a safe and just space for humanity between an ecological ceiling across nine Earth systems and a social foundation across 12 basic human needs (Raworth 2012). **An economy operating entirely within these limits would be strongly sustainable** (in the sense that critical environmental and social stocks would be maintained).

This model is agnostic to growth and is also used by the green growth community because we all want a sustainable economy, even if we disagree on what it would look like and how to get there. But the Doughnut model's ambiguity on growth suits the degrowth agenda, which calls for downscaling business throughput **in aggregate, not on a blanket basis**, recognising that there will always be some sectors, geographies and stages of business that are in expansion mode, while others are contracting or are steady, with cyclical variations.

*Doughnut of Social and Planetary Boundaries:*



Source: Raworth 2017 (based on Rockström et al. 2009)

## THRESHOLDS

Degrowth agenda targets are **thresholds**, ie an acceptable minimum standard based on the principle of adequacy. Degrowth thresholds are **context driven**, focused on what is perceived *needs* to be done for people or place at a particular time (which can require a mission mindset), as opposed to targets that are entity driven, that settle for what is perceived *can* be done by an entity (which can lead to incrementalism).

### SOCIAL OUTCOME THRESHOLDS

The Doughnut model does not set targets for social objectives, but degrowth academics have identified eleven needs satisfaction/wellbeing indicators and judged a threshold value for each one to quantify a 'good life'. Thresholds and measures are shown in the table below, where N is the number of countries for which data was available and C is the percentage of countries above the threshold. Eight of eleven thresholds are being met in less than half of countries measured (see the blue and dark blue rows), demonstrating that global provisioning systems are operating inadequately. It was also found that in countries where most social needs are being met, use of nature is in overshoot, and in countries where use of nature is within ecological limits, most social needs are not being met (O'Neil et al. 2018).

*Thresholds For A 'Good Life':*

NEED / WELLBEING SATISFIER	THRESHOLD VALUE	N	C
Life satisfaction	6.5 on 0-10 Cantril ladder scale	134	25%
Healthy life expectancy	65 years	134	40%
Nutrition	2,700 kilocalories per person per day	144	59%
Sanitation	95% of people have access to improved sanitation facilities	141	37%
Income	95% of people earn above US\$1.90 a day	106	68%
Access to energy	95% of people have electricity access	151	59%
Education	95% enrolment in secondary school	117	37%
Social support	90% of people have friends or family they can depend on	133	26%
Democratic quality	0.80 (approximate US/UK value)	134	18%
Equality	70 on 0-100 scale (Gini index of 0.30)	133	16%
Employment	94% employed (6% unemployment)	151	38%

Source: O'Neill et al. 2018

KEY:	76-100% of countries are above the threshold	51-75% of countries are above the threshold
	26-50% of countries are above the threshold	0-25% of countries are above the threshold

### BIOPHYSICAL OUTCOME THRESHOLDS

The Doughnut model does not set targets for biophysical objectives, but the Planetary Boundaries framework on which it is based does. Each of the framework's nine interrelated Earth systems has one or more control variables. Each variable has a quantitative threshold that deems a safe global boundary for humanity (see table, next page).

Valuation of the control variables measures the global impacts of human activities on nature through use resources, creation of pollution and generation of emissions, and establishes whether those impacts are safe for humanity. We should, over time, see the effects of policies introduced to reduce these impacts. Currently, five of the nine planetary boundaries have been exceeded, two of them beyond uncertainty\*: climate change, biosphere integrity\*, biogeochemical flows\*, land-system change and novel entities (see the blue and dark blue rows) - ie, most of nature is being impacted in ways that are unsafe for people.

## Planetary Boundaries, Variables And Values:

EARTH SYSTEM	CONTROL VARIABLE	PLANETARY BOUNDARY	VALUE 2015
Climate change	Atmospheric CO <sub>2</sub> concentration, ppm	350 ppm CO <sub>2</sub>	398.5 ppm CO <sub>2</sub>
	Energy imbalance at top-of-atmosphere, W m <sup>-2</sup>	+1.0 W m <sup>-2</sup>	2.3 W m <sup>-2</sup>
Change in biosphere integrity	Genetic diversity: Extinction rate	< 10 extinctions per million species-years	100-1000 E/MSY
	Functional diversity: Biodiversity Intactness Index (BII)	BII ≥ 90%	84%, applied to southern Africa only
Stratospheric ozone depletion	Stratospheric O <sub>3</sub> concentration, DU	<5% reduction from pre-industrial level of 290 DU	Only transgressed over Antarctica in Austral spring (~200 DU)
Ocean acidification	Carbonate ion concentration, average global surface ocean saturation state with respect to aragonite (Ω <sub>arag</sub> )	≥ 80% of the pre-industrial aragonite saturation state of mean surface ocean	~84% of the pre-industrial aragonite saturation state
Biogeochemical flows: Phosphorous and Nitrogen cycles	P Global: P flow from freshwater systems into the ocean	11 Tg P yr <sup>-1</sup>	~22 Tg P yr <sup>-1</sup>
	P Regional: P flow from fertilizers to erodible soils	6.2 Tg yr <sup>-1</sup> mined and applied to erodible (agricultural) soils	~14 Tg P yr <sup>-1</sup>
	N Global: Industrial and intentional biological fixation of N	62 Tg N yr <sup>-1</sup>	~150 Tg N yr <sup>-1</sup>
Land-system change	Global: Area of forested land as % of original forest cover	Global: 75%	62%
	Biome: Area of forested land as % of potential forest	Biome: Tropical: 85%; Temperate: 50%; Boreal: 85%	
Freshwater use	Global: Maximum amount of consumptive blue water use (km <sup>3</sup> yr <sup>-1</sup> )	Global: 4000 km <sup>3</sup> yr <sup>-1</sup>	~2600 km yr <sup>-1</sup>
	Basin: Blue water withdrawal as % of mean monthly river flow	Basin: Max monthly withdrawal as % of mean monthly river flow. Low-flow: 25%; Intermediate-flow: 30%; High-flow: 55%	
Atmospheric aerosol loading	Global: Aerosol Optical Depth (AOD), but much regional variation Regional: AOD as a seasonal average over a region (using South Asian Monsoon as a case study):	Regional: anthropogenic total AOD over Indian subcontinent of 0.25; absorbing (warming) AOD less than 10% of total AOD	0.30 AOD, over South Asian region
Introduction of novel entities	Possible control variables: Trend in production of novel entities Trend in release of novel entities Unwanted impact of novel entities on Earth system processes	Safe operating space exceeded when annual production and releases increase at a pace that outstrips global capacity for assessment and monitoring	Exceeded (first assessed 2022)

Sources: Steffen et al 2015; Persson et al. 2022

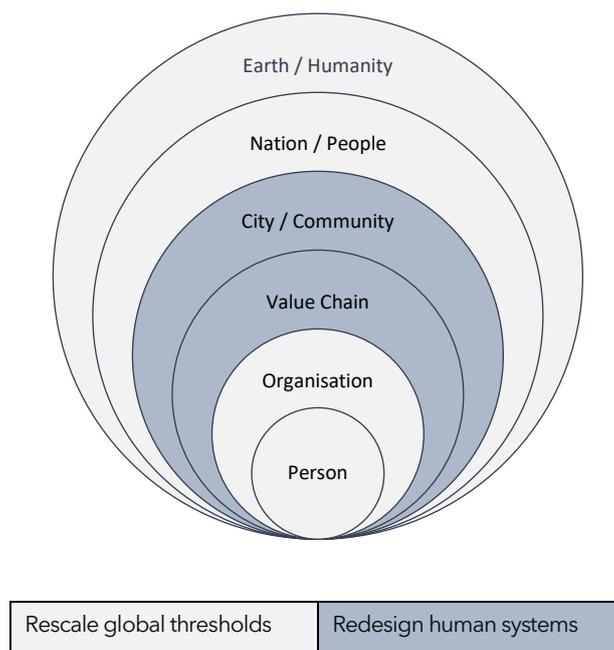
KEY:	Values that have yet to be quantified	Values within the safe boundary
	Values that have exceeded the safe boundary and are in a zone of uncertainty	Values that have exceeded the safe boundary beyond uncertainty

## 5.2.2. OPERATIONALISING THE AGENDA

There are two simultaneous approaches needed to operationalise the degrowth agenda:

- **Rescale planetary boundaries** to make them meaningful at country, organisation and individual levels. This would help avoid the issue of ineffective uptake, as seen in the poor translation of SDGs into business strategy.
- **Redesign human systems**, such as cities and value chains, to equip society and business to operate within social thresholds and environmental boundaries.

*Operationalising The Degrowth Agenda:*



### RESCALE GLOBAL THRESHOLDS

Planetary boundaries are anthropocentric thresholds for entire Earth systems. Rescaling these requires methodologies to downscale or disaggregate global level thresholds to granular levels and to upscale granular data to compare to higher level thresholds. Downscaling is very difficult due to variations in the impact of human activities in different places at different times. Localised targets need to consider not only the best available science, but also fairness principles and local indigenous knowledge. See Appendix A for discussions on downscaling to country, corporate and per capita levels.

The Planetary Boundaries framework is a work-in-progress, first introduced in 2009 (Rockström et al. 2009) and updated in 2015 (Steffen et al. 2015). Additional work has established and evaluated a safe boundary for novel entities, ie plastics and other man-made substances (Persson et al. 2022).

There are limitations inherent in the framework. Scientists point out that it uses single control variables to represent entire natural systems, and it omits the marine environment, which means that a significant Earth system, ocean circulation patterns, and significant impacts, such as seabed change, are not accounted for.

A political criticism is that thresholds have been set by Global North scientists rather than being 'normative judgments of how societies choose to deal with risk and uncertainty' developed through globally inclusive and participative means. Some boundaries embed existing Global North advantages, such as maintaining 75% of original forest cover, which would not impact European nations that had cut down their forests and converted them to agricultural land many centuries ago, but would impact forested nations in the Global South that need to develop some of their land (Biermann & Kim 2020).

## REDESIGN HUMAN SYSTEMS

'No country meets basic needs for its citizens at a globally sustainable level of resource use' (O'Neil et al. 2018). In other words, current global provisioning systems are unsustainable because they equip humanity to operate *outside* social and/or planetary boundaries. Sustainability efforts that are incrementalistic, which is the case for most business sustainability initiatives, are merely improving a badly designed system. To achieve the aims of the degrowth agenda, we must redesign human provisioning systems to operate within the boundaries, equipping communities to live in absolutely sustainable ways, noting differences in access to natural resources and local cultures (O'Neill et al. 2018; Fanning, O'Neill & Buchs 2020).

- **Basic social needs** are food, health, education, income and work, peace and justice, political voice, social equity, gender equality, housing, networks, energy and water. Basic social needs are universal and non-substitutable. They refer to principles of adequacy and are not the same as wants or improvements to wellbeing. Raworth developed the 12 universal social needs of the Doughnut model normatively from a review of submissions from national governments to the Rio+20 Conference on Sustainable Development (O'Neil et al. 2018).
- **Provisioning systems** satisfy human needs by mediating the relationship between biophysical resource use and social outcomes. They comprise physical elements (infrastructure networks and technologies) and social elements (institutions, communities, and markets).
- **Needs satisfiers** are the 'deliverables' of provisioning systems, including nutrition, sanitation, income, access to energy and education (which tend to rely on physical resources), and social support, equality, democratic quality, employment, life satisfaction and healthy life expectancy (which tend to rely less on physical resources).

**Degrowth transition will reorient infrastructure, technologies, institutions, communities and markets toward ensuring that all people have affordable, reliable access to culturally appropriate assets, goods and services that satisfy their basic needs, using materials and energy within local and global planetary boundaries. This systemic transformation applies to cities and to business value chains.**

### SYSTEMIC TRANSFORMATION OF CITIES

Cities are not becoming sustainable at sufficient pace because they lack transformative capacity. The most commonly met transformation criteria, participation/inclusiveness and meeting social needs, are observed in only one third of cities. Transformative capacity is rarely found in energy and transport initiatives or in cities with a techno-efficient vision. It is more prevalent in housing, land-use planning, water and sanitation initiatives and in cities that link outcomes to a city-wide vision (Castán Broto et al. 2018). Suggested ways of improving city transformative capacity include fostering inclusion and empowerment, strengthening the role of local academia, reinventing urban planning and the adoption of novel frameworks for self-assessment (Wolfram, Borgström & Farrelly 2019).

C40 ([www.c40.org](http://www.c40.org)) is a global network of mayors of cities that are collaborating on an intersectional approach to climate, social and economic justice - the Global Green New Deal. They are applying science-based approaches to halve the emissions of member cities by 2030 to meet the goal of the Paris Agreement to keep global warming below 1.5°C, while improving equity and building resilience.

A novel framework is the City Portrait methodology, a transformation tool downscaled from the Doughnut Economics model by the Doughnut Economics Action Lab.<sup>9</sup> It was piloted in Amsterdam, Philadelphia and Portland, with Melbourne, Sydney, Brussels and Barcelona also adopting it. Future iterations of the tool will focus more on Global South cities. The methodology asks: How can our city be a home to thriving people in a thriving place, while respecting the wellbeing of all people and the health of the whole

<sup>9</sup> <https://doughnuteconomics.org/tools-and-stories/92>

planet? It examines how a city can provide a good life for its citizens based on their own vision, and how far they are from that today. It also asks how different the city's physical environment is from its surrounding natural environments and how the city's physical infrastructure could be changed to match the living world, to become more resilient. This local aspiration is set in the context of global responsibility. How can the city manage the global resource use and human toll of its consumption, including imports and waste? This is a four-dimensional examination of a city: social, ecological, local and global, so that solutions in one dimension are considered in ways that enable them to also satisfy other dimensions.

A multi-dimensional approach to city transformation is the 15-minute city concept, which is an urban chrono-theory and hyper proximity model based on universal human needs. It calls for the redesign of cities so that everyone can access their constellation of needs – work, school, supplies, green spaces – within 15 minutes' walking or cycling. The concept, developed by Carlos Moreno, has been promoted by the C40 and is being implemented in Paris and other cities, including Buenos Aires, Melbourne, Chengdu and Bogotá under a variety of names, such as 20-minute neighbourhoods. It is thought to be easier to implement in cities that were built prior to the advent of the car since the foundational urban planning qualities may already exist. But rather than harking back to the past, the 15-minute city embraces the realities of today and tomorrow, including changes in how people work, resilience to climate change and nature loss, the sharing economy and digitalisation to bring about high quality social life (Moreno 2019).

### **SYSTEMIC TRANSFORMATION OF BUSINESS VALUE CHAINS**

Human needs are satisfied through assets, goods and services that are produced and managed in business value chains that are subsystems of global provisioning systems. They deliver the offerings that satisfy needs: nutrition, sanitation, income, access to energy, education, social support, equality, democratic quality, employment, life satisfaction and healthy life expectancy.

For example, the global food system provisions people with what they need to satisfy their nutritional needs. This particular global system is failing to meet the nutritional needs of everyone, everywhere, making poor use of resources and damaging ecosystems and the climate (see Appendix B). Several of the SDGs target these failings, but discrete targets like these can lead to merely incremental improvements in the outcomes of badly-designed, existing systems.

#### *SDGs That Target Failures Of The Global Food System:*



By 2050, the global food system must provide nutrition to an extra 2 billion people (United Nations 2018). It must also help mitigate climate change and biodiversity loss, adapt to climate change and nature loss, and ensure that other human needs, such as equality and decent employment, are not jeopardised.

We can compare an incrementalistic BAU response with a systemic transformational response.

- The BAU response to meeting increased food demand for a growing global population is expansion and intensification, using the same systems that cause mismatched production and consumption, food waste and environmental degradation. Mainstream environmental, social and governance (ESG) management approaches may deliver incremental improvements, but businesses use ESG practices, ultimately, to protect capital, not to transform human systems.
- A better way forward would be to reimagine the food system, so that Global North consumers demand far less, Global South consumers gain improved economic access, the system moves toward lower-impact, less-intensive food sources, land is allocated to food over non-food production, smallholder productivity is improved, fairtrade pricing protects livelihoods and security of supply, expansion and intensification are capped, food waste is minimised and R&D investment in sustainable agriculture is increased (Gladek et al. 2020).

**Global provisioning systems, the value chains they comprise and the businesses within those chains, must collaboratively transform to equip society to operate within a social foundation and ecological ceiling.**

There is no prescription for redesigning provisioning systems; a principles-based approach is suggested. Two key systemic transformation principles are regenerative by design and distributive by design (Raworth 2017). A number of business models are emerging, aligned with these two design principles.

**Regenerative design** is founded on the idea that we are falsely separated from nature and we need to not only repair nature or integrate with nature, but also design as nature (biomimicry). This is particularly applicable to product design, agriculture, architecture, urban design, infrastructure and ecosystem regeneration. Regenerative designs are adapted to their locale, yet can affect Earth systems through the interconnectedness of nature. (Wahl 2016). Being regenerative by design means connecting humans and nature in socioecological systems that mimic nature, such that the system can restore or renew its own sources of energy and materials. A project can establish goals based on a wilderness reference site and through cultural participation, setting performance targets that are scientifically and ethically defensible.

- Regenerative agriculture rejuvenates soil fertility, increases water retention, replenishes aquifers and stores carbon.
- The Living Building Challenge is an aspirational standard for regenerative architecture across place, water, energy, health and happiness, materials, equity and beauty.
- Regenerative infrastructure connects communities with safe, walkable, digitally connected, resource-rich environments and uses nature-based solutions that increase community resilience.

**Distributive design** refers here to a distribution of resources to address socioecological inequalities. Being distributive by design means creating economic ownership and value sharing structures that ensure the benefits of assets are shared equitably upfront, rather than flowing to an elite then trickling to others later, such as through taxes.

- Shared enterprise value - worker cooperatives, where workers own the business, govern it and manage it; retail cooperatives, where consumers use their collective bargaining power to supply their needs; producer cooperatives that market and distribute produce; and service cooperatives that provide specific services to a community that they control, such as healthcare and childcare.
- Shared land value - community land trusts, which develop land to meet community needs, so that homebuilders pay a lease for the land and own the building that they live in, which is cheaper than purchasing a freehold property.
- Shared property value - housing cooperatives, where residents are shareholders in the body that owns the development; housing trusts, which are not-for-profit organisations that provide low cost housing; social housing, provided by government; and co-housing, where residents collaborate to develop a community of individual homes and shared facilities.
- Shared energy value - multiple trading relationships that provide customers the option to contract for buying and selling power with more than one supplier, useful for distributed energy resources, such as roof solar; and through community-owned energy networks, which provide renewable energy and use profits to support local social programmes.
- Shared knowledge value - design repositories, open source software and Massive Open Online Courses (MOOCs); returning government-funded intellectual property to the commons, such as relinquishing drug patents.
- Shared use value - as-a-service (flexible consumption) models that provide a service on a non-ownership basis, including cars, software, clothing and buildings systems; and residential rates, sharing the use of municipal services between residents.
- Shared money value - community currencies, which can only be used at enterprises within a certain locale, to encourage spending in the local economy.

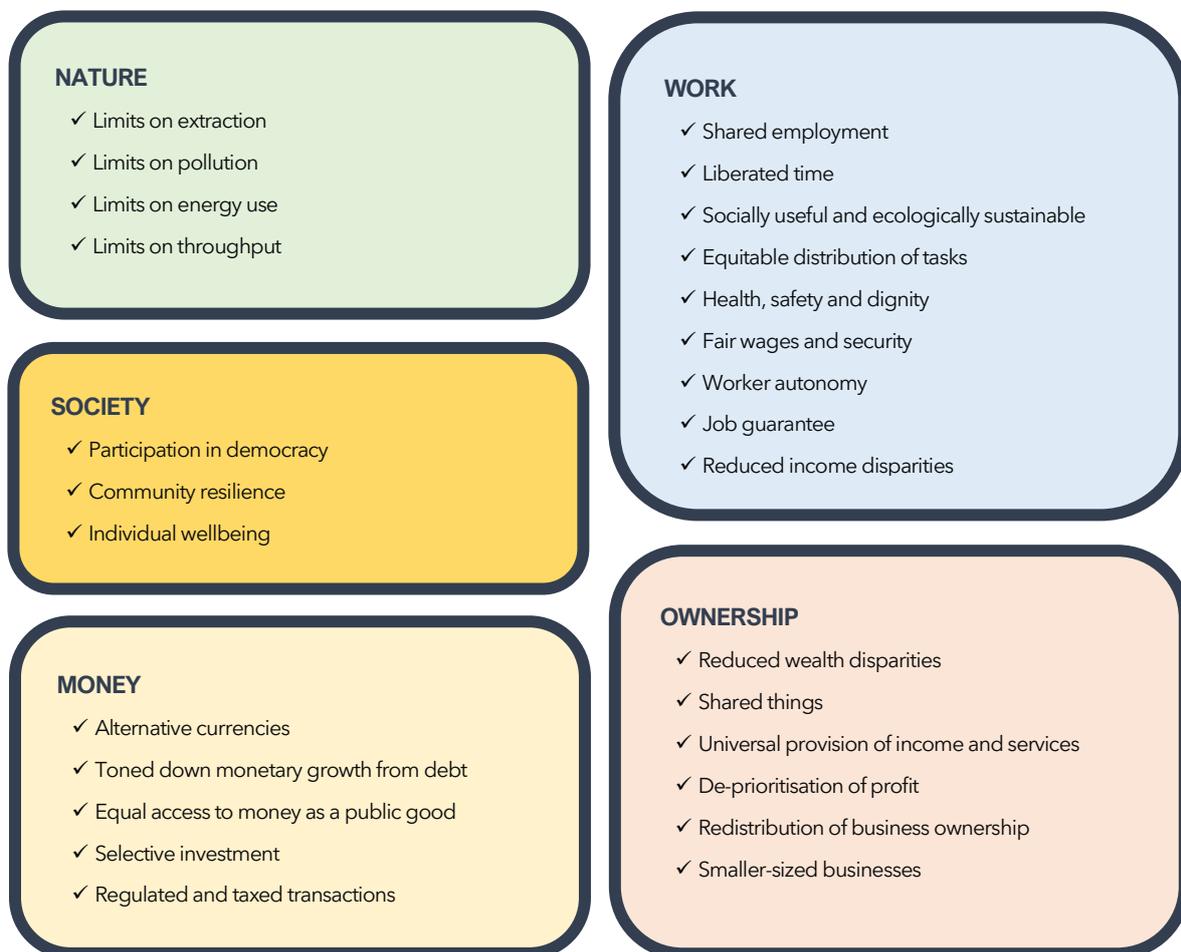
## 5.3. DEGROWTH IMPLEMENTATION

High income countries could significantly reduce their resource and energy use per capita while maintaining standards of living, but these reductions could trigger a recession without a number of socioeconomic shifts and supportive policy reforms (Kallis et al. 2018). Degrowth transition, therefore, demands a strategic plan to implement actions and policies in key areas in a timely way that assures co-dependencies, so that consumers, businesses and governments can move together.

### 5.3.1. PILLARS AND OBJECTIVES

The model below is indicative of the core ideas to implement a degrowth agenda, with five strategic pillars for transformation: nature, work, society, ownership and money. Some example objectives are given.

*Five Pillars For Transformation To A Degrowth Economy:*



*Based on Parrique 2019 and Kallis 2018a*

### 5.3.2. AGENTS AND INITIATIVES

Change can occur at five levels of agency: individual, community, enterprise, market and state. At each level, transition can be implemented in three distinct ways: oppose the status quo, reform the existing system from within or build alternatives to replace existing structural elements that are incompatible with the degrowth vision (Parrique 2019). The IPCC uses similar dimensions (avoid, shift and improve) to articulate mitigation options (IPCC 2022b). The table below shows some of the possible initiatives to meet degrowth objectives across the various levels of agency and approaches to creating change. Initiatives are colour-coded against the five pillars of transformation shown on the previous page.

*Degrowth Initiatives:*

	OPPOSE STATUS QUO (Stop doing)	REFORM EXISTING SYSTEM (Do more or less of)	BUILD ALTERNATIVES (Do differently)
INDIVIDUAL	Don't own a car Buy very few new items Rarely fly	Work fewer hours Share transport Self-limit energy consumption Run a zero waste household Take staycations Buy second-hand goods Rent or borrow rarely used items	Eat a plant-based / locavore diet Cycle / walk to most places Live in an eco-home / tiny house Live in co-housing Keep a food garden Repair belongings Multiple trading relationships
COMMUNITY	Meat free Mondays Car free Sundays Clothing swaps	Car sharing cooperatives Community supported agriculture Communal kitchens and gardens Maker spaces / repair stations	Decentralised renewable energy cooperatives Ethical banks, credit co-ops Community currency
ENTERPRISE	Avoid surplus output Don't buy back shares	Shorter working days/week Work sharing Salary minimum and maximum No frills goods and services Circular economy	Distributive ownership Regenerative approaches Place-focused approaches Transition engineering Contextual targets Open source knowledge
MARKET	Constrain ability of banks to create money through reserve ratios Divestment	Limit interest rates Taxes - eco (carbon, waste) and throughput Customs tariff Tobin tax on spot conversions Displace unsustainable products	Fair trade products Not for profit companies Social enterprises Public interest companies Producer cooperatives
STATE	Extraction moratorium Pollution cap Debt jubilee Advertising ban Prohibition of some financial instruments Closure of tax havens Planned obsolescence ban	Capital gains tax Inheritance tax Cap and trade carbon market Publicly funded electoral campaigns Free access to quality public services Direct democracy	Universal basic or care income Job guarantee Resource sanctuaries Expansion of commons Wellbeing economy indicators Conversion of car infrastructure to walking, biking and open spaces International currency

Sources include Parrique 2019, takethejump.org and Hickel 2021

NATURE	WORK	SOCIETY	MONEY	OWNERSHIP
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### 5.3.3. GLOBAL TRANSFORMATION

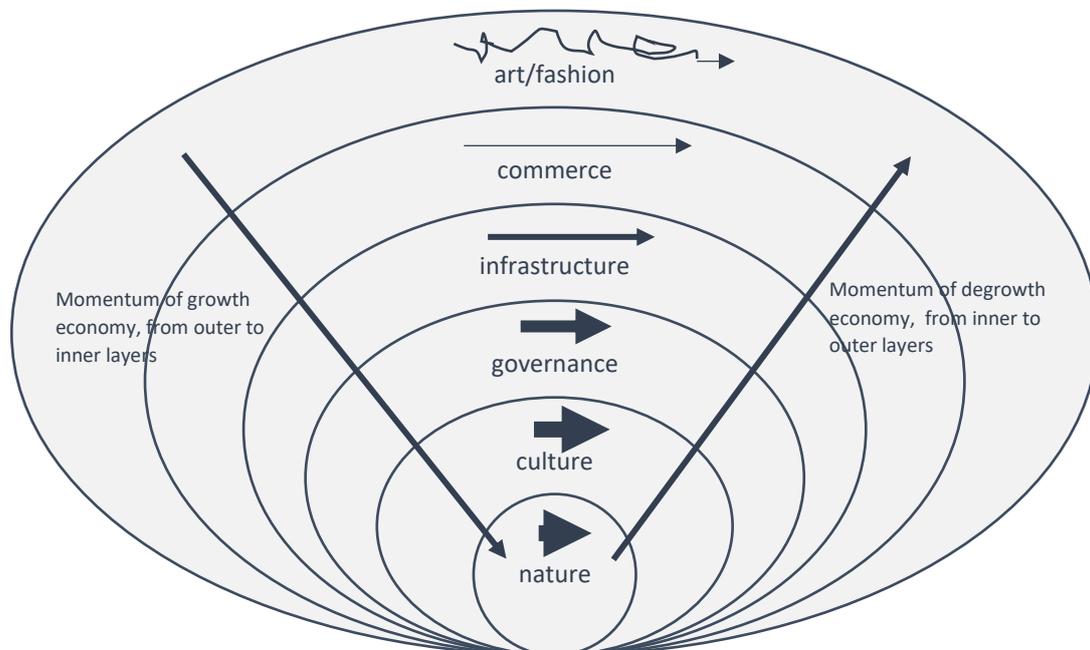
#### INEVITABILITY OF CHANGE

Greek philosopher Heraclitus (540 BCE - 480 BCE) is remembered for his explanations of the world around us. He argued that the world is a coherent system in which everything is connected, although we may not be aware of those connections, and that the unity of the whole system is due to balance between opposites. He is attributed with the first use of the word kosmos, meaning world order, and is famously quoted as saying that the only constant in life is change.

If nothing is immutable, then the growth economy, too, must change. Many people see the future growth economy as a human imperative, harnessing technological progress to advance human welfare while reducing our impact on nature - the theory of decoupling. On the other hand, future direction of change in the growth economy may not be a human imperative at all, but rather something that 'stands to reason', that follows a universal logic. Using Heraclitus's idea of world order being maintained through the balancing of opposites, it could be that degrowth is the opposite of growth and has begun to exert a rebalancing force. Under this perspective, our global political economy is in a state of tension moving from one state of semi-equilibrium to another.

The Pace Layers model (below) helps us conceptualise growth and degrowth as action and reaction moving through different layers of the world (as we perceive them) as they change through time. The outer layers are fast moving, possibly erratic, and innovative; the inner layers are slow moving, wise and stabilising. The growth economy is a commercial construct that has impacted all other layers, including the deepest layers - culture and nature. These powerful innermost layers have catalysed a correcting force through climate change, nature loss, civil unrest and geopolitical turmoil. We are experiencing the turn of growth right now as peak oil, peak energy and soon, we hope, peak emissions. The direction of change is beyond human control; the role of global and local governance is to make as orderly a transition as possible. The greater the social and structural support for degrowth, the less disorderly the change will be.

*Pace Layers Model Showing Directions of Growth and Degrowth Economic Forces:*



*Based on the Pace Layers concept by Stewart Brand*

## SOCIAL TRANSFORMATION

Degrowth and green growth are both untested solutions for a future sustainable economy, each founded on a belief system. Green growth is an orthodox solution, largely unquestioned in a society that believes in growth as progress. Even international sustainability policies, such as the SDGs and the Convention on Biological Diversity, advocate economic growth on the basis of future decoupling (Otero et al. 2020).

The green growth belief system is challenged by degrowth scholars. Decoupling has no empirical foundation (Parrique et al. 2019), raising doubts that emerging technologies can meet global climate goals, especially as the economy continues to grow. At 3% growth per year (20th century BAU), the global economy would double by 2045 and quadruple by 2100, demanding similar multiples of materials and energy. Efficiency gains (relative decoupling) help in the short term, but then growth often rebounds (Jevon's Paradox).

Even if technology could decouple growth from climate impacts, we don't actually need higher levels of GDP to achieve a thriving society. Costa Rica matches the US on wellbeing outcomes with only 20% of the GDP per capita. In fact, growth in global GDP has, since the 1970s, correlated with a decline in human progress as measured by the Genuine Progress Indicator (Hickel 2021). Happiness and welfare correlate with economic growth only up to a level and after that growth yields diminishing returns, and more and more growth does not improve them (Kallis 2018b).

The heterodox option is a degrowth transition to a post growth economy, calling for 'a planned reduction of energy and resource use designed to bring the economy back into balance with the living world in a way that reduces inequality and improves human wellbeing' (Hickel 2020). Global systems must radically change to provision universal welfare using a fraction of today's resources and energy.

### THE OVERTON WINDOW

Radical change! People are afraid of change. They are afraid of climate change, but they are also afraid of economic change that would affect their accumulated wealth and lifestyle expectations. Green growth appeals to many people because it promises palatable economic change that does not disrupt their lifestyle, such as replacing their ICE vehicle with an EV without fully understanding the impact of EVs.

The degrowth movement needs to compete against the easy answers offered by green growth because the political viability of a new idea as a basis for policy setting depends on it achieving popularity in the mainstream. The diagram below models how ideas move through degrees of acceptance toward political viability (known as the Overton window). This model can be used to build a strategy for shifting public policy - 'making the previously unthinkable, thinkable' (Astor 2019).

*Degrees Of Acceptance Of Political Change:*



*Based on the ideas of Treviño and Overton*

**Moving the discourse on degrowth from being radical (circulating among activists and academics) to being acceptable (circulating among consumers, businesses and the media) is an essential step to making degrowth ideas politically feasible.**

### **LESSONS FROM THE CLIMATE MOVEMENT**

As the climate movement has discovered, 'it's not enough to be right'. Even when supported by science, society and global goals, change can be frustratingly slow. Climate change is not a scientific problem, it is a political problem, one of many, and wider adoption of climate initiatives means engaging people who are not interested in climate issues. Even people who are interested in the issues can demonstrate a knowledge-action gap because action involves adopting what appear to be extreme behavioural changes, against societal norms. Existing wealth and power structures, which can be mutually stabilising, obstruct political change and discourage behavioural change (Pohlmann et al. 2021).

The critical lessons for the climate movement are:

- Move on from the single why (ie the science says we're right ) to plural hows (ie let's discuss the various pathways forward), legitimising other perspectives
- Generate many different strategies - democratic, legal, activist, social innovation and business experimentation - to question norms and negotiate pathways on the short term political agenda in ways that are binding
- Generate broad societal support by integrating strategies across disadvantaged groups, dovetailing climate protection with the interests of other movements to disentangle existing power structures

These critical lessons are being absorbed by the degrowth movement:

- Leading degrowth proponents are trying to make it clearer to green growth supporters - Green New Deal advocates, in particular - that, 'despite important tensions', there are significant overlaps in the two sets of ideas. The degrowth movement supports growth in efficient, clean renewable energy sources to displace fossil fuels, decarbonisation of the economy, public ownership of the energy sector and expansion of the welfare state - degrowth is a 'Green New Deal without growth' (Mastini, Kallis & Hickel 2021).
- The degrowth movement is also making clearer their acknowledgement that there will always be areas of the economy where growth is desirable. All kinds of business may grow at times, such as at start up, to reach an economy of scale for a new technology or when displacing an unsustainable product in the market, although this growth must occur within planetary boundaries. Low income nations that are operating within planetary boundaries have ethical headroom to increase their economic activity to meet their citizens' social needs.

### **AGENDA PRESENTATION**

Mainstream understanding and support of the goals of degrowth could be advanced through the well-communicated presentation of a broad agenda, analogous to the United Nations 2030 Sustainable Development Agenda, which has 17 Sustainable Development Goals (SDGs), 169 targets and 231 indicators. Its marketing collateral - the three-bubbled Venn diagram of economic growth, social progress and environmental protection and the colourful chart of SDGs (next page, top) - are instantly recognisable due to their strong graphic design and global promotion.

The SDGs will be renegotiated before 2030 to build a new 2050 agenda and ideas are already being presented to engage the public and policymakers. For instance, Awesome Anthropocene Goals (AAGs), (next page, bottom) have been proposed by a change consultancy to replace current SDGs with new goals that 'we could strive for once the SDG has been reached' (Futerra 2022a). The AAGs do not represent a degrowth-based agenda. They are shown here merely as visual inspiration.

The degrowth movement contests the sustainable development agenda for its depoliticisation of socio-environmentalism and does not aspire to be adopted by the UN, the OECD or the European Commission,

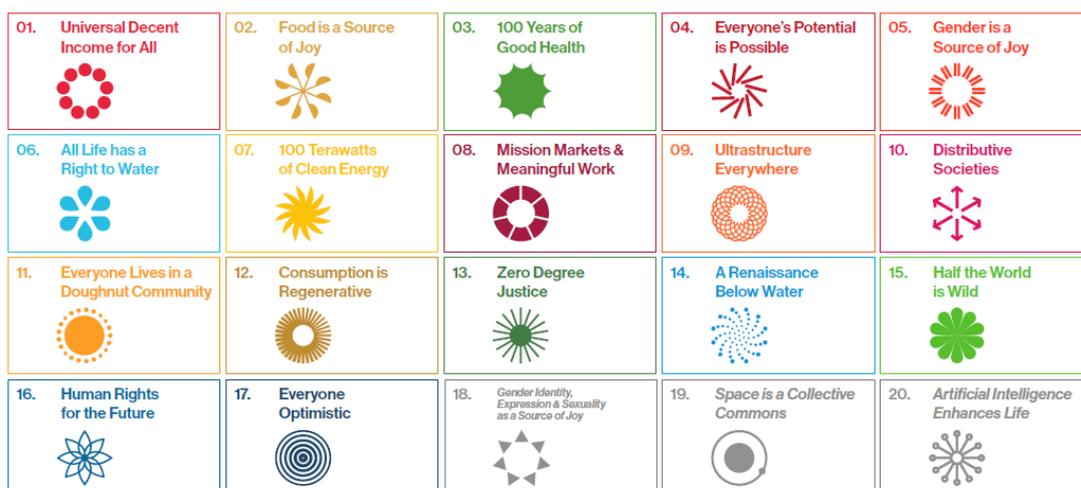
which would be a false consensus (Demaria et al. 2013). Whereas the SDGs are top-down, non-binding global goals agreed governmentally, a degrowth agenda would have to 'be developed at multiple levels through an inclusive policy framework, where citizens' participation is crucial in order to push towards the construction of a degrowth society' (Gautam 2022). Despite reluctance to presuppose an alternative agenda without first building it from the bottom up, the next half-decade is a window of opportunity for the degrowth movement to communicate collectively to the Global North mainstream by presenting a cohesive platform of core ideas in a way that is creatively appealing and memorable. With the rich Global North mainstream popularly behind them, many degrowth policies could find traction.

*Sustainable Development Goals:*



Source: United Nations

*Awesome Anthropocene Goals:*



Source: Futerra 2022b

## STRUCTURAL TRANSFORMATION

### POLITICS

**Degrowth is a provocative word; political change agents may not say it, but they may be working on it.**

A US poll found that the percentage of younger adults, aged 18-34, with a favourable view of capitalism has dropped in the last two years from 58% to 49%, with an even larger drop among young Republicans from 81% to 66%. The percentage of young adults with a favourable view of socialism has also dropped, from 55% to 51% (Manchester 2021). Could a small but growing percentage of younger Americans be seeking an alternative to both capitalism and socialism? Andrew Yang seems to think so. Noting 'a gap in the political market' (Daniels 2020), he ran as a candidate for the 2020 Democratic party presidential primaries. His campaign was based on degrowth-compatible policies, including: a universal basic income for all American adults; a market shift to human-centred capitalism, in which the units of growth are human welfare outcomes, not money; reducing student debt; introducing VAT; and controlling the cost of prescription drugs (Yang n.d.).

The world's first millennial leftist national leader, Gabriel Boric, president of Chile, was elected in 2021 on degrowth-compatible policy ideas, including radical reforms to the free market economy, increasing taxation on large companies and the rich, expanding social rights, reforming Chile's pension and healthcare systems, including universal health insurance, reducing the work week from 45 to 40 hours and boosting green investment. Boric also promised to block a mining project that would damage the environment and affect communities. Upon his election, the stock market fell by 10% due to an expected drop in profits through higher taxation and greater regulation (BBC News 2021). Boric is representative of a new wave of leftist millennial politics in Latin America characterised by union, green and feminist support and 'an unwillingness to compromise with capitalism' (Hartman 2017).

The Wellbeing Economy Governments partnership (WEGo) is a group of governments (currently including Wales, Scotland, New Zealand, Iceland, and Finland) that are collaborating around transferable, innovative policy practices to advance a shared ambition of building economies that deliver human and ecological wellbeing. They are supported by the Wellbeing Economy Alliance (WEAll), which provides information on the wellbeing economy agenda. The WEAll envisions a future in which policy is framed in terms of human and ecological wellbeing, not simply economic growth; in which businesses provide dignified lives for their employees and exist to meet social needs and contribute to the regeneration of nature; and in which the rules of the economy are shaped by collaboration between government, business and civil society.

The Global Alliance for a Green New Deal ([www.globalgreennewdeal.org](http://www.globalgreennewdeal.org)) is an alliance of lawmakers around the world who are committed to a number of reforms, including: a redesign of financial systems to serve people and planet, major changes to taxation, investment in renewable energy and energy conservation and policies to reduce resource use in the Global North – recognising that this will require transformation of the ways in which we travel, grow food, manage land, work and value people who work in caring roles. Founding members include Paola Vega Rodriguez (Costa Rica), Ilhan Omar (US), Clive Lewis (UK), Joenia Wapichana (Brazil), Caroline Lucas (UK) and Manon Aubry (France).

### POLICY

Degrowth policies have been in place, are in place or are being trialled in a number of jurisdictions around the world.

Free public transport	Nearly 100 cities around the world offer some or all their public transport for free. Estonia's public transport network is free outside the capital, Tallinn. Luxembourg provides free public transport on buses, trams and trains throughout the country. Lowering public transport fares does not cause a significant number of motorists to
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	<p>shift, so car use also has to be regulated to reduce congestion; but it does improve mobility options for diverse groups (Papa 2020).</p>
Free public education	<p>Sixteen countries offer free or very low cost tertiary education to domestic students and, in some cases, also to international students. They are Morocco, Egypt, Kenya, Malaysia, Panama, Uruguay, Brazil, Argentina, Norway, Sweden, Germany, Denmark, Finland, Austria, Greece and France (Lynch 2020).</p>
Free public health	<p>More than 30 countries, mostly in Europe, provide universal health coverage at no cost or very little cost. Universal health coverage is a target of the UN 2030 Agenda (SDG 3.8) because people in developing countries are spending on average \$80 per person per year out of their own pockets to access health services (World Bank 2017).</p>
Universal basic income	<p>The world's largest and longest universal basic income (UBI) test is currently underway in Kenya at a cost of US\$30 million, delivering cash transfers to 197 rural villages for two or 12 years, studying economic, social and macroeconomic wellbeing, health and financial preferences. Other UBI studies are currently happening in Alaska, North Carolina and California in the US, and in Germany and the Netherlands in Europe (Basic Income Kenya Study 2019).</p>
Job guarantee scheme	<p>The world's first job guarantee scheme experiment is running in a town in Austria at a cost of €7.4 million, offering a universal guarantee of a properly paid job for three years to every resident who has been unemployed for more than 12 months (about 150 people). Participants will be paid at least minimum wage, which is higher than social security payments. The research is examining the scheme's effects on unemployment, health, welfare and social interaction levels, and its wider economic impact (University of Oxford 2020).</p>
Income insurance	<p>Unemployment insurance schemes are legislated in 26 countries. The New Zealand government is currently proposing a scheme to support workers with 80% of their income for up to seven months if they lose their job through no fault of their own. The scheme would be funded by levies on wages and salaries, with both workers and employers contributing (MBIE 2022).</p>
Shorter working days / week	<p>The United Arab Emirates government has introduced a 4.5 day working week for government entities to boost work-life balance and enhance social wellbeing and is reportedly the first country in the world to implement a work week shorter than 5 days (<a href="http://www.aljazeera.com">www.aljazeera.com</a> 2021). A 3-year pilot program in Spain is trialling a 32-hour or 4-day working week across 200 companies, with a €50 million investment from the government to make up the salary difference.</p>
Planned obsolescence ban	<p>France banned planned obsolescence through the Energy Transition for Green Growth Act in 2015, making it a criminal offence punishable by a two-year prison sentence and a fine of up to €300,000 or 5% of the company's average turnover.</p>
Non-renewable resource sanctuaries	<p>An initiative to address climate change was launched by Ecuador at the UN General Assembly in 2007, asking the international community to donate US\$3.6 billion in return for keeping oil in the ground in Yasuni, an area of natural and cultural heritage that holds 20% of the nation's estimated oil reserves. The plan was scrapped six years later when less than 10% of the target figure was raised, and the first oil field opened for oil extraction in 2016 (Brown 2019).</p>
Debt jubilee	<p>The Jubilee 2000 Coalition led a pressure campaign, signed by 24 million people worldwide, that resulted in the cancellation of more than US\$100 billion of debt owed by 42 low income nations (Advocacy International 2013).</p>

**The secret of change is to focus all your energy, not on fighting the old, but on building the new.**

Socrates

## 6. BUSINESSES IN DEGROWTH

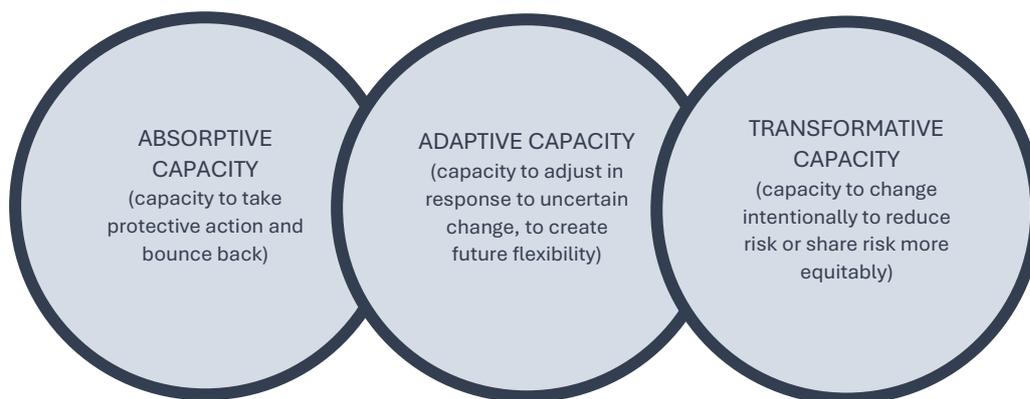
**The future is unknown. The global economy by 2050 could be an evolving hybrid of growth and degrowth forces as public sentiment and political viability shift in response to global and local events and conditions. Most businesses aren't ready for degrowth, lacking the resilience needed to respond effectively. But they can build it.**

Degrowth-related change is a highly plausible assumption about our collective macroeconomic future. The degrowth agenda includes a wide variety of voluntary and policy initiatives that would support and enforce a downshift in materials and energy use. In particular, degrowth is a powerful climate change mitigant; hence, degrowth assumptions are becoming an important element in climate scenarios. Many social initiatives are already in action and policy initiatives are being trialled. Businesses must build their capacity to respond effectively as a matter of resilience.

### 6.1. TYPES OF RESILIENCE

There are three types of resilience to change: absorption, adaptation and transformation, measured in terms of capacity to act (Jeans, Castillo & Thomas 2017).

*Three Types Of Resilience:*



*Based on Jeans, Castillo & Thomas 2017*

The business sector is a network of socioecological systems exhibiting varying degrees of resilience:

**Absorptive systems** can withstand stressors, such that the system essentially maintains its structure and functions (Gunderson & Holling 2002). Businesses may rely on cash reserves and their brand reputation to pull through difficult episodes and remain structurally unchanged.

**Adaptable systems** can reconfigure without significant changes in crucial functions. Whereas adaptive capacity in ecological systems is related to diversity, in socioecological systems it is associated with learning and storing knowledge and experience, flexibility in problem solving and balancing power among interest groups. Consideration of scenarios helps a business build the capacity to change in the future. 'The purpose and power of scenarios does not lie in predicting the future but in identifying and interrogating the assumptions that underpin critical decisions today' (KPMG 2020). Adaptive capacity, ie the capacity to incrementally adjust to uncertain change, can be achieved through continually making '**no regrets**' strategic decisions that make sense whether or not a specific risk or opportunity actually materialises in the future. Businesses that lack adaptive capacity would experience loss of opportunity and constrained options during periods of change (Gunderson & Holling 2002).

**Transformability** is ‘the capacity to create a fundamentally new system (including new state variables, excluding one or more existing state variables and usually operating at different scales) when ecological, economic and/or social conditions make the existing system untenable’ (Walker & Salt 2006). Transformative businesses can transform themselves and their context to create a new system.

## 6.2. ADAPTING TO DEGROWTH

Businesses are becoming more familiar with climate change adaptation, which involves a process of adjustment to actual or expected climate and its (physical and transition) effects, to moderate harm or exploit beneficial opportunities. Doing so typically involves the analysis of plausible future scenarios of change to evaluate the resilience of their business model and strategy. This analysis is informed by insights from the systems theory, resilience and futures literatures to facilitate robust adaptation strategy development. The introduction of disclosure regimes, such as that of the Taskforce on Climate-related Financial Disclosure (TCFD), has gone some way toward bringing climate change mitigation, transition and adaptation planning into mainstream financial planning and reporting functions.

### 6.2.1. DEGROWTH ASSUMPTIONS IN CLIMATE SCENARIOS

Climate projections are the outputs of data rich Earth system models that follow the laws of physics to simulate part or all of the climate system over the whole planet. These outputs can be downscaled using statistical or dynamical methods for greater granularity at regional scale. Integrated assessment models (IAMs) employ interlinked climate, energy, land use, social and economic modules to project the outcomes of differing assumptions which can inform how socioeconomic changes could combine to impact climate change, in turn informing policy choices (Carbon Brief 2018).

IAMs carry numerous, significant limitations, but nevertheless can help policymakers and planners structure their thinking in response to complex and uncertain challenges.

An important step in normalising the use of degrowth assumptions will be the introduction of degrowth IAMs into IPCC reports. To date, IPCC reports have included climate modelling outputs only from IAMs that use growth assumptions. These have included the five Shared Socioeconomic Pathways (SSPs), which all assume NETs later this century, and the 1.5°C Low Energy Demand (LED) scenario, which assumes substantial energy and material efficiencies without NETs.

Interest is sparking around the development of IAMs that use degrowth as a mitigation lever. Degrowth assumptions for a climate scenario would describe a plausible competitive, social, environmental, regulatory and political context in the medium term future in which a number of degrowth policies have been established in the economy, affecting energy use and GHG emissions. The journal *Economic Systems Research* has invited contributions on this topic for a special issue to be published in mid-2022.

Just a few degrowth climate studies exist, at present:

- Fuel and energy degrowth was found to be a feasible option to reduce GHG emissions to meet 1.5°C climate goals without having to use NETs and meet environmental and social sustainability goals (Keyßer & Lenzen 2021).
- A broad system dynamics model compared three sustainability transition scenarios: ‘BAU’ with no new policies, ‘green growth’ with policies in line with the Paris Agreement and ‘post growth’ with no GDP growth. The green growth scenario would face downsizing of output and could not achieve 2°C, while the post growth scenario could achieve climate goals. This indicates that degrowth economic policies are an option for achieving climate goals and that degrowth IAMs need to develop further to include political assumptions (Nieto et al. 2019).

The IPCC WGII full report *Climate Change 2022: Impacts, Adaptation and Vulnerability*, released in March 2022, introduced degrowth language to IPCC literature for the first time (Parrique 2022), describing degrowth as one of the possible ‘pathways for pursuing deliberate transformations’ to climate-resilience (IPCC 2022a).

The IPCC WGIII full report *Climate Change 2022: Mitigation of Climate Change*, released in April 2022, is heavily peppered with degrowth ideas, including that ‘prosperity and the ‘Good Life’ are not immutably

tied to economic growth'. Importantly, it notes that societies must shift onto new pathways, which 'entails fundamental changes in energy, urban, building, industrial, transport, and land-based systems [as well as] changes in behaviour and social practices' and that 'degrowth pathways may be crucial in combining technical feasibility of mitigation with social development goals' (IPCC 2022b).

## 6.2.2. ILLUSTRATIVE CLIMATE SCENARIO WITH DEGROWTH POLICIES

Use of degrowth assumptions in climate scenarios makes business sense because degrowth actions and policy experimentation are already taking place, and if such actions grow further, they could affect the resilience of business models and strategies. The Network for Greening the Financial System (NGFS) has developed six representative climate scenarios (below) for central banks that are also useful to business. Degrowth policy assumptions could be readily included in any of these scenarios.

*NGFS Representative Climate Scenarios:*

DISORDERLY	TOO LITTLE TOO LATE
<p><b>Divergent Net Zero</b> 1.5°C Policy reaction immediate but divergent Fast technology change Low use of CDR Medium variation in regional policy</p> <p><b>Delayed Transition</b> 1.8°C Policy action delayed Slow/fast technology change Low use of CDR High variation in regional policy</p>	
ORDERLY	HOT HOUSE WORLD
<p><b>Net Zero 2050</b> 1.7°C Policy reaction immediate and smooth Moderate technology change Medium use of CDR Low variation in regional policy</p> <p><b>Below 2°C</b> 1.7°C Policy reaction immediate and smooth Moderate technology change Medium use of CDR Low variation in regional policy</p>	<p><b>NDCs</b> ~2.5°C Policy reaction - NDCs Slow technology change Low use of CDR Low variation in regional policy</p> <p><b>Current Policies</b> +3°C Policy reaction - current policies Slow technology change Low use of CDR Low variation in regional policy</p>

*Source: NGFS 2020*

To illustrate how this might feasibly be undertaken, the Late Reaction Degrowth 2050 Scenario (next page) builds on the NGFS Disorderly Delayed Transition Scenario to describe a plausible pathway to the year 2050, by which time carbon dioxide removal (CDR) technologies (or NETs) have not been feasible to a significant extent, degrowth and other climate-related policy action has been delayed and there is high variation in regional policy, with global warming expected to reach 1.8°C by 2100. While these economic conditions are suboptimal, degrowth is envisaged as a guiding force for moving toward achieving socioecological states that fall within survivable planetary boundaries.

<b>LATE REACTION DEGROWTH 2050 SCENARIO<sup>10</sup> - A forced transformation poorly aligned with societal goals.</b>	
<b>Endpoint:</b> 1.8°C by 2100	<b>Emissions pathway:</b> Delayed transition
<p><b>Narrative:</b> Prevarication and disunity on the global stage sees emissions fail to decline before 2030, by which time the accelerating physical impacts of climate change are estimated as causing a 5% reduction in global GDP. Coupled with growing socioeconomic upheaval caused by increasingly divergent distribution in wealth, physical security and opportunity, contraction of the global economy creates conditions for divergent but radical policy choices. A severe reduction in emissions post-2030 is required to have any realistic chance of limiting warming to below 2°C by 2100, and while there is little agreement within or between nations regarding how to manage the transition, a recognition that the status quo is increasingly untenable sees forms of degrowth policies enacted globally. Developed nations reluctantly and reactively embark on a degrowth pathway.</p> <p>Polices enacted among several larger OECD nations include petrol rationing, taxes on luxury goods, rent controls and cancelation of student debt, relieving civil unrest for several years. Corporates successfully lobby against rapid introduction of a worldwide obsolescence ban, delaying legislation until the late 2030s. Wet-bulb temperatures in excess of 35°C through the mid-2030s cause more than twenty million deaths across several continents, mandating a breakaway group of smaller OECD nations, now led by former youth climate leaders of the 2020s, to coalesce around a shared set of rigorous policy measures, including materials extraction 'cap, fee and dividend', a ban on nitrogen and phosphorous fertilisers, a 24-hour working week, a CEO/worker wage ratio cap of 10:1 and a goal to lower GDP per person to no more than US\$30,000(2010), and to invite other countries to join a 'degrowth' trading block. Many nations are unable to participate, locked into geopolitical siloes following the Eastern European wars and Oceanic battles of the late 2020s.</p> <p>Following the extinction of the western honey bee in 2040, followed by food shortages and a Europe-wide mice plague, a large multinational enterprise in the food sector pioneers degrowth by disaggregation, splitting into geographically networked, worker-owned cooperatives operating on fair trade rules, beginning a structural reset of the business sector. As the costs of biodiversity loss mitigation and adaption mount in equatorial nations, the G77 collectively refuses to cooperate in other global negotiations without first securing a Global South debt jubilee. None of the sustainable development goals set in 2030 for 2050 are achieved.</p>	
<p><b>Policy assumptions:</b> Severe emissions reduction measures are adopted post-2030 via degrowth measures in many states, in others via the imposition of rationing and top-down controls, with increasingly inequitable results.</p>	<p><b>Macroeconomic trends:</b> Disruptive economic contractions due to global imbalances in emissions reduction approaches rock the global economy of the 2030s and 2040s. Emissions prices climb through US\$700(2010)/tCO<sub>2</sub> by 2050, embedding the inequities of the global economy ever deeper where alternatives to emissions-intensive lifestyles remain elusive. Crystallisation of stranded asset risks in fossil energy and petrochemical economies leads to instability and conflict. Inequality and a failure to realise SDGs or wellbeing outcomes provide the window for creative re-combination of the global economy along degrowth lines.</p>
<p><b>Technology assumptions:</b> Early scramble for solutions and competition among states for emissions reduction technologies. Failure to develop open-source solutions early delays development and uptake of emissions reductions measures.</p>	
<p><b>Nature-based solutions:</b> Disparate approaches across regions, association of human wellbeing with re-wilding of wetlands, forest landscapes and coastal margins sees growing carbon sequestration as a positive externality.</p>	<p><b>Energy pathways:</b> Energy demand remains steady through the 2020s, and the decoupling of emissions per unit of GDP fails to reach the approximate 8% per annum rate required to achieve net zero by 2050. A growing crisis-management framing of energy provision nevertheless provides a window of opportunity for reconfiguration of the relationship of energy system expansion with societal wellbeing. Demand-side measures are initially the focus, but shorter working weeks, reductions in throughput intensity and fewer private and commercial vehicle journeys, substantially reduce energy demand .</p>
<p><b>Sequestration assumptions:</b> Low access to CDR options but increasing afforestation efforts post-2030 to bolster disparate global efforts to reduce emissions at source.</p>	
<p><b>Sources:</b></p> <p>Climate scenarios for central banks and supervisors (NGFS 2020) and IIASA NGFS Scenario Explorer Chapter 3: Mitigation Pathways Compatible with Long-Term Goals (IPCC 2022b)</p> <p>Degrowth, green growth, a- growth and post-growth: The debate on ways forward from our growth addiction - An annotated bibliography (Roberts &amp; Henderson 2020)</p> <p>Can climate change be tackled without ditching economic growth? (Lenaerts, Tagliapietra &amp; Wolff 2021)</p> <p>1.5 °C degrowth scenarios suggest the need for new mitigation pathways (Keyßer &amp; Lenzen 2021)</p> <p>Less is More: how degrowth will save the world (Hickel 2021)</p> <p>Ministry For The Future (Robinson 2021)</p>	

<sup>10</sup> The Late Reaction Degrowth scenario description follows the guidance of the Aotearoa New Zealand Climate Standard 1: Climate-related Disclosures (NZ CS 1) consultation document. This scenario was jointly prepared by Dr Stefan Gray and the author for illustrative purposes only - the assumptions described have not been modelled to an emissions pathway.

## 6.3. TRANSFORMING FOR DEGROWTH

Transformative capacity is bolder than adaptive capacity. It is intentional action to create significant change in order to reduce or share risk and create opportunities.

**Businesses that see climate change, nature loss and inequality as risks stemming from growth and capitalism and see degrowth as an opportunity to improve socioecological outcomes can catalyse degrowth by transforming their own enterprise and by helping transform their context.**

The climate clock is ticking, so business evolution needs to occur at a relatively fast pace, yet businesses must maintain resilience, keeping an eye on multiple horizons. The business operating context is increasingly volatile, uncertain, complex and ambiguous (VUCA). Degrowth adds another dimension (VUCA squared). Rather than a 'no regrets' approach that can be incremental, a **'few regrets'** approach to decision making can help a business take faster strides into degrowth. This includes making decisions with built-in optionality that may have a larger opportunity cost for some future options.

### 6.3.1. ENTERPRISE TRANSFORMATION

A priori, we know that some businesses will flourish in a degrowth economy and, due to very different policy settings and economic goals, their traits will necessarily be quite different to those of a business that flourishes in the growth economy. Businesses that support degrowth values will wish to intentionally transform, shifting from one set of traits to the other. Typical traits of a for-profit, green growth-compatible business are compared to the potential traits of a for-profit, degrowth-compatible business<sup>11</sup> in the tables below, along with some transformation considerations. Transitioning businesses equipped to operate in a hybrid growth/degrowth economy will exhibit a mixture of traits. A degrowth-compatible business would exhibit most of the degrowth traits.

#### PURPOSE AND OWNERSHIP

DIMENSION	GREEN GROWTH TRAITS	DEGROWTH TRAITS
PURPOSE	Long term value creation considering the needs of key stakeholders and society at large	Long term value evolution considering social and environmental thresholds and expansion of the commons
OWNERSHIP	Listed, unlisted, public benefit, cooperative, state-owned	Unlisted, cooperative, state-owned
FUNDING	Debt, equity	Impact investing with planned exit (eg transfer ownership to employees), government funding, crowdfunding, new financial instruments
GROWTH	Growth sought as desirable to increase wealth; intensification, expansionism	Growth sought at times, including during start up, to reach economy of scale or to displace unsustainable assets, products and services; steady state thereafter with cyclical variations
STRATEGY	Make profit and create economic value	Sustain multiple capitals to create holistic value
PROFIT/ SURPLUS	Distribute to shareholders, who expect a risk-adjusted market return	Distribute to impact investors, invest in R&D and workers, donate to local commons

<sup>11</sup> Sources of growth-compatible traits include Porter's Diamond model, McKinsey's 7-S framework, Business Model Canvas, TCFD disclosure guidance, Integrated Reporting guidance, GRI standards and B Impact Assessment. Sources of degrowth-compatible traits include Hinton 2021, Vandervoort 2018 and Puhakka 2018.

- **Growth economy businesses** exist to grow capital for shareholders and achieve societal outcomes. Growth is a constant imperative of capitalism (Gordon & Rosenthal 2003) because it creates more certain profits, at least for mature firms (Lee 2014), overcoming large scale volatility in actual profits in the short term. Green growth businesses practice stakeholder capitalism, which replaces a singular focus on short term value for shareholders with the pursuit of long-term value creation by considering the needs of all stakeholders and society at large. Growth can be intensive, eg use of fertiliser, or expansionist, eg land appropriation.
- **Degrowth economy businesses** exist to serve societal needs within environmental limits. They may grow at times, such as at start up, to reach an economy of scale for a new technology or when displacing an unsustainable product. These growth periods are opportunities for impact investment, with a planned exit. Funding can also come from government and direct from the public, through crowdfunding. Financial instruments to fund business projects in a degrowth economy are an area for future innovation. Profit is distributed to a variety of stakeholders, including to the commons, and reinvested in the business.
- **Key transformation considerations include:**
  - *Purpose, as defined in a company's constitution, and the directors' fiduciary duty to act in the 'best interests of the corporation', which is perceived to mean shareholders, and is defined in law.* Enterprise à Mission law in France allows a business to define a social or environmental purpose within its articles of association. The benefit corporation legal framework is an alternative for-profit corporate form that expands the legal definition of 'best interests of the corporation' to include positive social and environmental impacts, and has been adopted in most US states, British Columbia (Canada), Colombia, Ecuador, Puerto Rico and Italy. The UK Companies Act has been amended to require directors to promote the success of the company for the benefit of shareholders along with regard for the long term consequences of decisions and impacts on stakeholders and the environment. Lobbyists are pushing for similar legislative change in other countries, including New Zealand.

## STRUCTURE AND CULTURE

DIMENSION	GREEN GROWTH TRAITS	DEGROWTH TRAITS
SIZE	Any size, but can become large MNCs; can achieve vertical integration	SME, localised
STRUCTURE	Larger businesses can tend to be hierarchical and mechanistic	Flatter, organic
GOVERNANCE	Board of directors	Participative collaboration, worker self-management, representative
VISION	Executive-led, top down idea of the business achieving its purpose	Participatively developed idea of the business achieving its purpose
VALUES	Efficiency, innovation, competitiveness, accumulation	Sufficiency, inventiveness, collaboration, equity

- **Growth economy businesses** have a board of directors that sets strategic direction to drive performance that will deliver value to the owners. Businesses tend to grow large because three main strategies for creating profit encourage growth: reduce costs (through verticalized control of the supply chain and economies of scale through larger throughput), grow the market (develop new products and new customers) and grow market share (take share from, or acquire, a competitor). Larger growth businesses may have an organising structure that is mechanistic (siloes by division, geography or process) with multiple layers of management in the hierarchy. CEOs and their executive teams are expected to bring a vision and embed it top down. For example, Toyota will 'lead the future mobility society, enriching

lives around the world with the safest and most responsible ways of moving people.' Profitmaking requires tight control of costs and prices, encouraging inherent values of efficiency (including eco-efficiency), accumulation to control supply, innovation and competitiveness.

- **Degrowth economy businesses** will tend to be small and medium sized because they have a socioecological purpose that is easier to promote when contextual boundaries are well understood, such as local planetary boundaries and local social needs. The board will include representatives from key stakeholder groups, who will set a strategic direction that aims for safe and just outcomes for all. Cooperatives, in particular, may have an organic organising structure that provides workers feelings of equity and participation in decision making, with a short chain of command. Within a participatory culture, businesses may convene teams to agree on vision and develop strategic planning.
- **Key transformation considerations include:**
  - *Whether the organisational belief system has a propensity for reorientation.* Organisations that are more likely to implement radical change include those with a more elaborate belief system (narrow, complex and consistent) that makes differences between themselves and their context more easily noticed; those that are confident in their strategic capability and can see how to use those capabilities to respond to change; those that have more internal diversity within their belief system enabling them to leap into new ideas; and those that have more integrative structures that team build and encourage the circulation of ideas (Björkman 1989).
  - *Split-up of a larger business into smaller separately run entities, where investors choose which of the new companies' shares that they would like to retain.* This requires disaggregation of valuable assets, such as IT and IP.

## PRODUCTION AND SALES

DIMENSION	GREEN GROWTH TRAITS	DEGROWTH TRAITS
COMMERCIALITY	Exchange value	Use value
THROUGHPUT	Driven by economies of scale; supply led	Just in time, sufficient to meet needs, no surplus; demand led
RESOURCE USE	Larger firms use global procurement; efficient use of resources, waste management, recycled inputs; company-set environmental targets	Local procurement, ethical, renewable, minimal use, no waste, sequestering, recycled inputs; contextually-set environmental targets
OFFERINGS	Goods and services with sustainability attributes	No frills, second-hand, refurbished, modular, sharing models, design global / make local
PRODUCT LIFE CYCLE	Linear, potentially recyclable elsewhere, obsolescence built in	Repairable inhouse, recyclable inhouse, reused, built to last
MARKETING	Intensive business development and advertising, discount sales periods	No advertising in public places, ethical, encourage fewer purchases and stronger stewardship of belongings

- **Growth businesses** decide which products to make based on their market exchange value compared to cost. They aim to maximise return on investment in plant through maintaining high levels of throughput, addressing bottlenecks, downtime, rejects, quality and worker training and efficiency, and taking advantage of automation and real time monitoring. Resource procurement is often the single largest cost item in a business. Larger businesses have more purchasing power and are able to extract savings through pressure on suppliers to agree lower cost contracts, standardisation of components and low-cost global procurement. Technologies may not work effectively with recycled inputs or offcuts, reducing productivity (the ratio of output to input), which is to be avoided. This fosters linearity in product life cycles and causes waste. The marketing function uses a number of strategies, including differentiating the brand through product variation and bundling-in services,

expanding to new markets and increasing the number of sales channels. Firms use intensive advertising to sell high volumes of goods at a low price or they may restrict flows of product to the market, creating artificial scarcity, and use influencers to increase desirability, to sell goods at a high price.

- **Degrowth businesses** decide which products to make based on use value. They are oriented to meeting social needs without creating a production surplus, ie throughput is organised around sufficiency of supply to the market. Procurement uses local and renewable resources as far as possible, with an emphasis on ethical stewardship and regeneration of stocks - a responsibility shared with other parties. Firms practice extreme resource wisdom so that raw material extraction is minimised, including making more effective use of waste and recycled materials, increasing the circular economy; modularity of products and open source 3-D printable components, enabling consumers to incrementally create and repair the product they need rather than disposing and replacing; and a design focus on durability, functionality and aesthetic desirability of products to lengthen and intensify use. Consumer purchase terms include repair rights with the manufacturer, which is a cost to business, thus encouraging product robustness. Retailers stock old and used goods together, with a consumer preference for well-maintained and reconditioned used goods. Shared service models provide consumers rental or subscription access to items they use infrequently, such as a personal vehicle. As-a-service businesses own, maintain and recycle leased assets, such as building systems. Marketing is ethical, excluded from younger people's environs, and consumers can freely opt out of advertising online and on streaming services, preferring to actively search online for the items they need. Sellers' descriptions are limited to product specifications, functions and reviews.
- **Key transformation considerations include:**
  - *Downsizing facilities and phasing out surplus production capacity.* As equipment and buildings age or plant becomes unproductive, rather than upgrading, a firm can reduce its throughput capacity by selling off assets to be dismantled or reconfigured for other needs-satisfying purposes.
  - *Reduction in batch size.* Smaller batches aren't necessarily less economical to produce, and have advantages in that operators become more skilled at variations, creating greater opportunities for work satisfaction, while customisation to meet specific customer needs encourages craftsmanship and resurrection of guilds and enables experimentation and innovation in product design.
  - *Professional retraining.* The engineering field has begun its transformation in both the educational and professional services spheres with the development of a new field, transition engineering, 'to develop ideas and projects to implement the transition of engineered systems [...] in response to the mega-issues of global climate change, the decline in the world's supply of oil, and the scarcity of key industrial minerals and local environmental constraints' (Krumdieck 2020). Other professions must follow suit.

## STAKEHOLDERS AND EMPLOYEES

DIMENSION	GREEN GROWTH TRAITS	DEGROWTH TRAITS
STAKEHOLDERS	Disparate groups, keep transactional stakeholders close, keep non-transactional stakeholders remote	Network, local, inclusive of scope 3 upstream and downstream
EMPLOYMENT	Full-time, part-time, gig, career steps	Short days/week, job sharing, guarantees, meaningful
REMUNERATION	Market-based, individually negotiated	Minimum, maximum, closed gaps, collective bargaining for fair pay

- **Growth businesses** recognise a typology of stakeholders, including suppliers, customers, employees, community and regulators, each of which has discrete interactions with the firm.

Stakeholder relevance depends on the power balance in their transactions with the firm. Employees are a key stakeholder and firms recognise the value of talent attraction and retention, yet the labour force is also seen as a large cost and is frequently required to increase productivity or to increase or reduce in size to meet profitability goals.

Remuneration is individually negotiated based on a market value for the processes or skills involved in the role. A 40-hours paid, 5-day working week is normal. Hourly-paid, unskilled full-time workers may earn less than a living wage, and may have to work two jobs. Career-driven workers may feel compelled to work unpaid overtime, which can equate to an hourly rate that is less than minimum wage. White, older men earn, on average, more than other people for the same work and are more likely to be promoted. Executives may earn tens or hundreds of times the lowest worker's pay, or thousands of times in extreme cases.

- **Degrowth businesses** see themselves and their stakeholders as a network with multiple overlapping, mostly local, interests. The value chain, which extends from raw material and scope 3 upstream providers to consumers and scope 3 downstream recyclers and includes competitors and regulators, represents part of a provisioning system oriented to satisfying a social need while operating within planetary boundaries. Inclusive collaboration and knowledge sharing across the value chain helps to synergise opportunities and share risks evenly. Employees are local people with a vested interest in the firm's longevity; likewise, the firm is localised and depends on local labour and talent. This mutually reliant relationship leads to longer tenures and better conditions. Low production volumes require only 24-hour working weeks. Job sharing provides jobs for more people, sharing career opportunities and freeing time for other aspects of life, such as caring and community roles, which receive a universal care income from the government, and socialising and leisure, which utilise a rich commons of facilities and spaces. Wages are 'fair pay' agreed through collective bargaining, with no tolerance for pay gaps. Minimum wages are set at the local living wage and maximum wages for executives are a reasonable multiple (<10) of the firm's lowest wage.
- **Key transformation considerations include:**
  - *A just transition relating to the impact of wage changes and working hours, with a need for policy settings that provide social support.* Higher earners may be more impacted than lower earners. Company engagement in community endeavours can introduce workers to community roles (paid and unpaid) that are stimulating, increase social networks, provide cultural enrichment and build community assets, such as biodiversity regeneration projects. A just transition to degrowth also entails retraining and reemploying people who currently work in industries and sectors that do not serve needs or cannot operate within planetary boundaries and are expected to decline.

## RISKS AND OPPORTUNITIES

DIMENSION	GREEN GROWTH TRAITS	DEGROWTH TRAITS
RISK	Map risk/return and select a risk threshold	Collectively reduce and share risks appropriately across the value chain
EXTERNALITIES	Maximise; mitigate reputational damage with CSR	Internal pricing for carbon, nature and social externalities
INNOVATION	Enclosed intellectual property	Open source

- **Growth businesses** set a risk threshold that they are comfortable with. Above market returns arise if risks are managed better than a competitor. Firms can reduce their risks by contracting them to other parties. Firms can keep costs low through externalisation, such as polluting rivers up to permitted levels or more than is permitted if fines are likely to be less than the cost of changing to less polluting technologies. Corporate social responsibility is a mitigation function, lowering the impact of exposed externalities on the firm's reputation.

Innovation is monetised through enclosure via intellectual property rights, such as copyright, patents and trade secrets.

- **Degrowth businesses** use the power of their value chain network to distribute risks more evenly to those who are best placed to absorb or adapt to each risk, and reduce risks by changing the system itself. Negative externalities are priced into company decision making to encourage changes in the way business is done that will lead to reducing the externality. Positive externalities are encouraged and celebrated as an expansion of the commons, such as improving the physical resilience of the community through the redesign of business property landscaping using regenerative design principles. Business innovation is recognised to be a flow from public funding and academic work, so it is shared back in open source form so that many parties can make use of it and develop it further.
- **Key transformation considerations include:**
  - *The opportunity to use transition engineering principles to reduce risks and create opportunities.* Transition engineers engage in 'shift' projects to reduce fossil fuel use by at least 80% in order to help secure energy prosperity since total primary energy production will decline as we shift to renewables. A seven-step process enables practitioners to flip perspective in order to understand complex systems in new ways; in particular, backcasting from a 2100 forward operating environment to explore concepts for shift projects that could deliver feasible change today and still be providing benefits at the end of the century (Krumdieck 2020).

## SUSTAINABILITY AND DISCLOSURE

DIMENSION	GREEN GROWTH TRAITS	DEGROWTH TRAITS
MATERIALITY	Issues affecting enterprise value and /or stakeholders	Issues that cause operations to fall outside socioecological boundaries
ENVIRONMENTAL	Operate within regulations; reduce footprint	Regenerate footprint, socioecological stewardship
SOCIAL	Operate within regulations, eg modern slavery; corporate social responsibility	Meet needs, active community role model, ethics led
METRICS AND TARGETS	Business input, output and outcome indicators and internally-set targets (ESG)	Contextual indicators and allocation of allowable impact within a threshold
PRODUCT ATTRIBUTES	Second party certification	Third party certification
DISCLOSURE	As regulated, including TCFD/TNFD reporting standards and sustainability reporting standards with limited assurance, use of integrated reporting principles	As regulated; preferably triple bottom line, with assurance; developed through stakeholder multiplicity

- **Growth businesses** are concerned with sustainability matters that are judged by a materiality panel to be impactful to the businesses and /or its key stakeholders. Environmental management is the set of processes to comply with regulations and make relative improvements to the environmental footprint. Social sustainability is a mix of corporate social responsibility, such as philanthropic gestures and community engagement, and adherence to human and labour rights legislation, such as due diligence on modern slavery in the supply chain. Monitoring, measuring and managing sustainability is achieved through a set of metrics relating to environmental and social inputs, outputs and outcomes and the governance in place to oversee good practice (ESG). Products may be certified as sustainable but often this is by second parties with whom the business has a transactional relationship, such as being a member of the certifying body. Disclosure guidance and regulation is extensive, with limited assurance, driven by the need to protect capital from sustainability risk and to reduce greenwash in corporate reporting.

- **Degrowth businesses** view sustainability as an absolute condition based on operating within a social foundation and ecological ceiling. Targets are contextual, not set by the business, but agreed by the business as their fair allocation of resource use or social provision expectation against a threshold established through a scientifically, ethically and locally negotiated process. Issues are material if the business is a significant user of a resource or provider of deliverables to meet needs and is operating significantly outside the boundaries. Environmental sustainability focuses on renewing resources through careful stewardship and regeneration. Social sustainability is a primary purpose of the business through delivering useful, long lasting, repairable, recyclable, desirable goods and related services that satisfy a basic human need. Products are third party certified by publicly funded bodies. Disclosure is on a triple bottom line basis, including data, analysis and interpretation on material financial, environmental and social issues, as well as governance, with third party assurance. The approach to disclosure includes stakeholder multiplicity, showing whether the organisation is operating within boundaries, as well as telling a numerical story.
- **Key transformation considerations include:**
  - *The difficulty, time and collaboration involved in establishing and agreeing an allocation of allowable impact within a contextual boundary and ensuring that allocation is used to produce goods and services that are needed.*
  - *The ultimate degrowth transition metric is an accounting value that is third party assured - throughput (tonnes, units, dollars). This would be expected to halt, then decline over time to reach a steady state where operations are demonstrably within planetary boundaries.*

### 6.3.2. CONTEXT TRANSFORMATION

**Degrowth-focused businesses can catalyse external change that will support their internal change, thereby reducing their risk and creating opportunities.**

#### REFRAME BUSINESSES AND VALUE CHAINS AROUND PROVISIONING NEEDS

The business sector is classified by industry – eg agriculture, forestry and fishing, mining, manufacturing, construction, retail trade and so on.<sup>12</sup> The degrowth economy business sector would be defined by provisioning systems - a human-needs perspective. Cross-sectoral (public-private) missions could be organised around a typology of provisioning services.<sup>13</sup>

In its WGIII report, the IPCC uses a demand-side service typology for the first time, pairing end-use sectors with wellbeing services, eg the food sector provides nutrition, the industrial sector provides manufactured products, the land transport sector provides mobility and the buildings sector provides shelter. Demand-side mitigation (reduction in GHG emissions) is achieved through changes in sociocultural factors, infrastructure design and use and end-use technology adoption, while electrification of business sectors impacts demand for electricity generation (IPCC 2022b).

The IPCC's ideas are expanded upon in the table on the next page for a number of basic needs and wellbeing services (not an exhaustive list), with consideration of demand for resources and energy.

- Basic human needs are universal and non-substitutable. Everyone needs food, but having food does not lessen other basic needs. Satisfying all basic needs leads to wellbeing.
- People fulfil their wellbeing with services that satisfy their needs. For instance, mobility satisfies people's needs to connect to others in their interpersonal network.

<sup>12</sup> Based on ANZSIC Industrial Classification (Divisions)

<sup>13</sup> This is somewhat similar to Mariana Mazzucato's idea in her book *Mission Economy of 'a close partnership between government and business: a partnership with a purpose'*. Mazzucato, however, is focused, not on degrowth, but on restoring capitalism through socialism, with governments conferring with citizens to define problems and set missions to solve them in partnership with business.

- End-use sector businesses deliver the offerings that fulfil wellbeing. For instance, transport businesses deliver mobility, food businesses deliver nutrition and housing providers deliver shelter. How they operate drives demand for resources and energy.
- Sociocultural factors reflect variations in how people choose to satisfy their needs. For instance, a vegan would not satisfy their nutritional needs with meat products. Shifts in consumer behaviour that affect choice of offering ultimately change demand for resources and energy. The IPCC refers to *avoidance* potential (eg avoiding long haul flights), *shift* potential (eg switching to plant-based diets) and *improvement* potential (eg end-use energy efficiencies and passive housing) (IPCC 2022b).
- Support sector businesses procure, finance, design and build infrastructure, institutions, markets and technologies. They influence the resource and energy demands of the end use sector. For example, there is huge opportunity to influence avoidance potential in transport infrastructure - if infrastructure is largely roads, then the transport industry will provision mobility with personal vehicles; if transport infrastructure has more mixed-use paths and rail networks, the transport end-use sector will provision mobility to fit with those options.
- Resources and energy sector businesses meet the shifting demands of other sectors. For example, if food distribution networks, food processors and households are less wasteful with food, then fewer resources and less energy are required.

*Demand-led Industry Framework Around Provisioning Needs:*

PEOPLE	have basic needs	Food	Water	Housing	Work	Networks	Health	Education
SERVICES	fulfill wellbeing by satisfying needs	Nutrition	Sanitation	Shelter	Products	Mobility	Healthcare	Education
END-USE SECTOR	delivers wellbeing offerings (driving resource and energy demand)	Foods	Waters	Buildings	Industry	Transport	Medical	Education
SOCIO-CULTURAL FACTORS	affect choice of offering (and resource and energy demand)	Cultural traditions Shifting behavioural patterns						
SUPPORT SECTOR	influences end-use offerings (and resource and energy demand)	Hard infrastructure (physical networks) Soft infrastructure (institutions and markets) Technology						
RESOURCES AND ENERGY SECTOR	meets resource and energy demands of delivering wellbeing	Electricity generation Resource extraction Primary production						

*Based on IPCC 2022b*

### **NEEDSWASH – A NEW PHENOMENON TO EXPECT**

With a shifting sectoral focus to social needs, we could expect a new phenomenon: needswash. How many sugary drinks manufacturers will add ingredients to claim their products meet nutritional needs? How many clothing manufacturers will claim that their utility-inspired fashion line is a must-have, when people already have wardrobes full of clothes? How many retailers will claim that some multi-purpose gadget is ‘all you’ll need’ – hands up if you own a Swiss army knife you’ve never used – or that everyone needs to spoil themselves and each other on Christmas Day, Mother’s Day and Valentine’s Day. We are tired of the words eco, green and sustainable. We will no doubt tire of the words needs and wellbeing.

### **EMBED LOCAL BIOCENTRIC PERSPECTIVES IN REGIONAL BUSINESS NETWORKS**

Local worldviews, traditions and wisdoms within a region can help bring shared meaning into ways of doing business and this can support the shift to a degrowth economy. Exploration of local perspectives can help recover, maintain and share the valuable traditional knowledge and biocultural heritage that is held within indigenous and local communities. Applying this knowledge can help loosen the Western worldview that dominates the business sector and governments (Simpson 2004). This is important to decolonisation of Global South nations, but it is also important in Global North nations as they, too, need to unravel embedded power structures and reimagine how business works in order to equip society to operate within social and ecological boundaries.

Of particular importance are viewpoints that emphasise the symbiosis of humans and nature and prioritise nature as the realm on which we depend for life itself (biocentricity). Indigenous people<sup>14</sup> account for only 5% of the global population but safeguard 80% of the world’s biodiversity, which they have relied upon for subsistence and autonomy for millennia (Amnesty International 2019). Local perspectives on stewardship of biodiversity, customary laws, traditional extractions from, and occupations of, lands and waters and cultural and spiritual values can be embedded into local business networks to enable them to operate with a shared mindset and under collectively established rules. This encourages inclusivity and participation. It helps differentiate regions, rebuilding unique, authentic geographical identities, which is an important step in deglobalisation and re-localisation.

The dominant worldview of nature is dualist, founded in Western science, which seeks to comprehend reality through finding, qualifying and quantifying knowledge to establish order and truth. But other knowledge systems are valid, too. In New Zealand, for instance, mātauranga Māori is a body of knowledge of the natural world explained through the Māori world view, which includes intergenerational continuity, belonging and intuition (Hikuroa 2018). More complex thinking allows for ‘the web of relationships among different perspectives [that may be] fundamentally incommensurable, yet they can complement each other and be part of a constructive network [...] building a cognitive universe [that] can disclose a more complete picture of reality’ (Mazzocchi 2006). This combinatory approach is crucial to establishing local level planetary boundaries that are scientifically and ethically defensible.

### **ADVOCATE FOR DEGROWTH POLICIES**

A degrowth economy cannot come about without policy change. Businesses that want to reduce the risks around their own degrowth journey will need to influence the development of supportive policy. Many policies are evidence-led (evidence-based or evidence-informed), but there are several other inputs to policy decision making, including political and social culture, financial concerns, timing and relationship to other priorities. This openness to other sources provides a window of opportunity for business leaders to become policy entrepreneurs, in the sense that they invest resources into policy innovation in the hope of a future ‘return’. This strategy involves problem framing, using and expanding networks, working with advocacy coalitions, leading by example and scaling up change processes (Mintrom 2019).

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<sup>14</sup> Indigenous people are those who self-identify as such, whose ancestors have lived in a place for thousands of years forging a strong link to a territory, who have unique social, economic or political systems, who have a distinct language, culture and beliefs and who maintain their ancestral systems as distinct peoples (Amnesty International 2019). About 70% of indigenous peoples live in Asia. Indigenous peoples of the Global North include Aboriginal and Torres Strait Islander peoples of Australia, First Nations peoples of Canada and the US, native Hawaiians, Sámi people of Europe’s far north and Māori peoples of New Zealand – a somewhat short list that indicates a loss of culture.

Degrowth policies of importance to business transformation include (Hickel, 2021):

- capping resource and energy use at existing levels and reducing the cap every year until planetary boundaries are reached within a scientifically established timeframe
- shorter working week
- cap on CEO/worker wage ratio
- wealth tax
- reform of central banks
- alternative money policies
- rent controls
- universal basic services
- universal basic income
- banning planned obsolescence
- cancelation of student debt

## HELP NORMALISE NEW CONSUMER BEHAVIOURS

If a business wants to help catalyse the degrowth economy to reduce their degrowth risk as they transform (ie the risk of being different), they must nudge consumer behaviour toward buying only what is needed and buying responsibly. At the moment, most people don't consume this way and more than two thirds of people would never shift their behaviour unless the new pathway was made unavoidable by regulation or easier by others - they need not be vehemently opposed to a particular change, they may simply prefer to live 'normally'. If a critical mass of 10-30% of Global North citizens were to move onto a low-carbon lifestyle, this would establish new norms that would make it much easier for the majority of people to 'Take the Jump' into a low consumption lifestyle (see Appendix A, Box A3). Not everyone has to be convinced at first. It takes less than 5% of a population to mobilise change (IPCC 2022b).

Businesses can educate consumers about buying less through information campaigns. Plenty of activists are trying to achieve the same outcome. This is an opportunity to consider a strategic partnership with an NGO that has a degrowth transition mindset and a track record of working with business. It is vital that company messaging on degrowth fits with company goals and actions to reduce total throughput, year on year, as part of an overall degrowth strategy.

Patagonia started the trend among sustainability-conscious businesses of shutting up shop on Black Friday with an advertisement in The New York Times in 2011 that showed an image of a Patagonia jacket under the banner 'DON'T BUY THIS JACKET'. The ad said: 'The environmental cost of everything we make is astonishing. [This jacket] is exceptionally durable, so you won't have to replace it as often. And when it comes to the end of its useful life, we'll take it back to recycle into a product of equal value. But as is true of all the things we can make and you can buy, this jacket comes with an environmental cost higher than its price. [...] Don't buy what you don't need.' However, businesses that have used anti-consumption campaigns like this have fallen foul of activists because, although they forego sales during periods of consumer frenzy, such as Black Friday, and are committed to reducing their environmental impacts, their anti-consumption marketing is, in fact, making them even more popular among a growing base of sustainability committed customers, and they are growing, not degrowing. Circular economy principles (reduce, re-use, repair, recycle and regenerate) are essential to degrowth, but are not sufficient because they are just as relevant to a growth economy. More sustainable products can displace unsustainable ones. Businesses, such as Fairphone, are supplying no frills, refurbished, high recycled content, modular, durable, repairable, recyclable products and resource-minimal services. But the total market continues to grow.

The real challenge for a degrowth-aligning business is in convincing enough people to buy far less of almost everything, including their own and their competitors' products, to shrink the whole market. Competing to dominate a reducing market with ethical outputs while degrowing throughput and energy use presents a fierce intellectual challenge to existing businesses, the larger ones, in particular.

**The potential for a degrowth economy is a call of duty to board members and executives to profoundly reconsider business purpose and build strategies that are radically different to enable society to flourish within social and ecological boundaries.**

**Hope is the most universal  
of human possessions.**

Thales

## 7. CALL TO ACTION



### **KNOW THE ISSUES**

The BAU economy is projected to double by 2050. Growth is causing climate change and nature loss. Capitalism is causing wealth and income inequality. Moving to 80% renewable energy by 2050 to meet Paris goals will cause total energy production to reduce by half.



### **UNDERSTAND THE DEGROWTH SOLUTION**

Redesign human wellbeing provisioning systems to reduce industrial throughput to a level of materials and energy use that the planet can perpetually accommodate and redistribute wealth so that everyone, everywhere, can meet their basic needs with dignity, as a human right.



### **REDEFINE SUCCESS**

- Business throughput stops growing, then declines steadily to a level that is ecologically tolerable, at a scientifically and ethically determined rate.
- Output is focused on delivering a sufficient supply of end-use goods and services to satisfy human needs, without creating a surplus.



### **CHANGE MINDSET**

Shift from a wants-generating, supply-leading mindset to a needs-servicing, demand-led mindset – people are going to change behaviour to buy less product and use less energy.



### **OPERATIONALISE DEGROWTH IN TWO WAYS**

- Collaborate locally to gauge the business's fair share of tolerable environmental impacts, assessed through science, ethics and local knowledge.
- Collaborate laterally to transform the business and its value chain through regenerative and distributive redesign, focus on products that are needed and divest from those that are unnecessary to society.



### **BRING GOOD SUSTAINABILITY PRACTICES INTO A DEGROWTH STRATEGY**

Dive deeply into circular economy, decarbonisation and energy efficiency, but avoid rebound by ensuring they are part of a strategy that has throughput degrowth at its heart.



### **LEARN FROM THE CLIMATE EXPERIENCE; FIRST TAKE 'NO REGRETS' STEPS**

A key lesson from climate action is the value of scenarios. There are many plausible futures with degrowth as a change driver. It is good business sense to start with 'no regrets' decisions that improve resilience whether the future brings degrowth-driven change or not. This is the first methodical step in a reorientation toward degrowth.



### **CATALYSE DEGROWTH OPPORTUNITIES: TAKE BOLDER 'FEW REGRETS' STEPS**

Businesses can take further transformative steps into degrowth by adopting a 'few regrets' approach, tactically absorbing shocks and building optionality for the long term. 'Shift' transition engineering projects, find radical change opportunities that are valuable now and in the long term future. Regenerative design projects share resilience locally.



### **ADVOCATE FOR DEGROWTH ACTION BY BUSINESS, GOVERNMENT AND CONSUMERS**

Reduce the risks of being different and create opportunities for your difference by catalysing contextual change – push for degrowth policy settings, embed local biocentric perspectives into business networks, advocate for a reframing of the business sector around needs and help normalise new consumer behaviours.

**The beginning is the most  
important part of the  
work.**

Plato

## 8. FINAL THOUGHTS

This paper looks at degrowth through a business lens and provides a comfortable starting point for conversations, at least in the corridors, if not in the boardrooms, of business.

It has scouted the opposing perspectives of degrowth intellectuals (anti-growth anti-capitalists) and business people (capitalists) to find territory between them that, while unfamiliar to both, is unstrange enough to unlock their commonalities, which is essential to finding a smoother way forward.

The ideas presented in this paper, if enacted, would be no more than a small beginning in the great journey of transformation that the 21st century demands of us - and offers to us. There is much, much more thinking to be done on the topic of businesses in degrowth.

Global North people, businesses and institutions have operated in excess of their fair share of global resources for far too long, and have substantial work to do to reshape how things are done. The business sector, including the swelling ranks of business sustainability professionals, must take further, more uncomfortable steps to self-examine through a degrowth lens - not only because climate change affects all of us and demands action, but because we are being ecologically and culturally impoverished by a 'patriarchal Western capitalist modernity' and the 'constitution of a single globalised world', to quote Colombian-American Professor of Anthropology Arturo Escobar (Escobar 2018).

Change begins with opening up to other perspectives. As Plato observed, 'the beginning is the most important part of the work'.

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## APPENDIX A: DOWNSCALING THRESHOLDS

### BOX A1: COUNTRY ‘PLANETARY’ BOUNDARIES

Downscaling planetary boundary indicators and thresholds to be operationalised at national level requires the latest science, judgements of fair share and local indigenous knowledge. In New Zealand, for instance, it is advised that environmental limits should be informed by mātauranga Māori, the knowledge system within te ao Māori (the Māori worldview), because environments are socioecological systems (McFarlane et al. 2020).

The Aotearoa New Zealand Ministry for the Environment commissioned a translation of the planetary boundaries framework to provide a perspective that could inform policy. The study explored New Zealand’s territorial and offshore environmental impacts due to consumption of domestically produced and imported products. Findings were clear – New Zealand exceeds its fair share of all five planetary boundaries that were measured: overshooting the global climate boundary by a factor of 6.5, the global land-use change boundary by a factor of 1.25, the global freshwater boundary by a factor of 2.1, the global nitrogen and phosphorous boundaries by a factor of from 4 to nearly 55 and the global biosphere boundary by a factor of 3.4 (Potsdam Institute for Climate Impact Research, Stockholm Resilience Centre & Mercator Research Institute on Global Commons and Climate Change 2020).

Work toward national or regional planetary boundary frameworks has also been done for Sweden, South Africa, Switzerland, the European Union and regions in China. This work is difficult due to the interdependence of Earth systems across geopolitical boundaries and the interaction of biophysical systems, social systems and ethics (Häyhä et al. 2016):

- Different biophysical disaggregation methods are required depending on how human activities affect each Earth system.
  - For climate change, ocean acidification, ozone and novel entities, it does not substantially matter where on Earth the perturbation occurs.
  - For atmospheric aerosol loading, loss of biodiversity, biogeochemical flows, freshwater use and land-system change, local scale activities alter Earth systems systemically, so perturbations that may not seem nationally impactful may be globally impactful.
- At global scale, the Planetary Boundaries framework does not account for the resource impacts of different countries. Country level planetary boundaries must ethically reflect the asymmetric impacts of countries on climate change and of climate change on countries.
- Socioeconomic drivers of environmental change have been dispersed through global trade, which means country level planetary boundaries should be consumption-based, including impacts associated with imports. For instance, the overall goal of Swedish environmental policy is to ‘hand over to the next generation a society in which the major environmental problems have been solved, without increasing environmental and health problems outside Sweden’s borders’ (Swedish Environmental Protection Agency 2018).

The Global Commons Stewardship Index is a pilot project to measure countries’ impacts on global planetary boundaries for 50 countries (SDSN, Yale Center for Environmental Law & Policy & Center for Global Commons at the University of Tokyo 2020). Local ecosystems serve the planet, and are therefore global commons whose protection demands an integrated global governance perspective with multilateral policy measures. This composite index builds a picture of how each country is affecting six Earth system dimensions: aerosols, biodiversity, climate change, land, oceans, and freshwater. There are 23 indicators for domestic impacts and 11 indicators for transboundary impacts (spillovers) that cross borders through physical flows or traded goods and services. Rather than accruing to the countries in which these impacts happen, spillovers are attributed to the country of final consumption. There are, however, major data gaps, particularly in relation to biodiversity loss, the phosphorus cycle, land degradation from agriculture, hazardous waste and water quality and scarcity (Wendling 2021).

## BOX A2: CORPORATE 'PLANETARY' BOUNDARIES

In a degrowth economy, businesses would be expected to respect the limits of their environmental context. Unfortunately, there are few methodologies for allocating corporates a fair share of meeting planetary boundaries. Such targets must combine science to establish thresholds, and judgement or ethics to establish an allocation. Allocation principles include grandfathering, per capita or cumulative per capita allocation, ability to pay and cost effectiveness.

The most methodologically advanced planetary boundary targets for business are climate science-based targets, which downscale global climate goals by disaggregating the global remaining GHG emissions budget to meet 1.5°C of global warming into company-specific targets. The Science Based Targets Initiative (SBTi) methodology offers a cross-sector pathway wherein companies set near-term targets that reduce emissions at a linear annual rate of 4.2%, which would equate to their fair contribution to reducing global GHG emissions 50% by 2030 from 2018 levels, and long term targets that contribute fairly to reducing global GHG emissions 90% by 2050 from 2020 levels. The methodology also offers sector-specific pathways for companies in the energy supply, transport, cement, steel, chemicals and buildings sectors and sectors with significant forestry, land, and agriculture emissions. The SBTi methodology is based on four top-down integrated assessment model (IAM) scenarios and five hybrid scenarios, all of which assume negative emissions technologies (NETs). Another climate science-based target setting methodology is a context-based carbon metric by the Center for Sustainable Organizations, based on two top down 1.5°C scenarios, one being the SSP1-1.9 scenario and the other being the CERC-LED-OECD scenario, which does not rely on assumptions around NETs and does assume that OECD nations will take a greater share of the burden to reduce GHG emissions.

Beyond carbon, degrowth-compatible businesses will need to establish science-based corporate targets for the other Earth systems that they materially impact. This is much more difficult. GHG emissions can occur anywhere on Earth at any time with the same climate effect and are measured using a single indicator, tCO<sub>2</sub>e. Perturbations of other Earth system are geographically and temporally specific and cannot be explained through single indicators. Key steps for setting science-based corporate targets for nature are to establish the boundary using science and ethical considerations; downscale the boundary to local resolution, which may be locally and/or temporally unique, such as setting different freshwater thresholds for a specific location for dry years and wet years; translate the actions of the firm into local impacts on the stocks and flows of the Earth system; and fairly allocate the rights to use a resource and the burden of meeting thresholds between actors - ie share responsibility for sustainability in a region (Metabolic 2019).

WWF, for instance, is developing context-based and science-based freshwater targets that account for corporate water risk exposure (WWF n.d.). The Science Based Targets Network (SBTn) aims to develop integrated science-based corporate targets for biodiversity, climate, freshwater, land and ocean, aligning them all to the goal of a 'nature-positive' world, with no net loss of nature from 2020, a net positive state of nature by 2030 and full recovery of nature by 2050 (SBTn 2020). Corporates involved in their development include Alpro (part of Danone), Kering and L'Oréal.

Context-based sustainability is an approach to business sustainability that takes social, economic and environmental thresholds explicitly into account, involving the management of impacts on vital capital resources that stakeholders rely on for their wellbeing. Context-specific targets can be ethically or scientifically established. Sustainability performance is a function of how impacts compare to norms, standards or thresholds of sustainability, expressed relative to the carrying capacities of vital capitals, ie the ratio of net actual impacts / net normative impacts. For example, climate action performance would be GHG emissions / science-based target tied to the safe planetary boundary for climate change (McElroy 2021).

Another approach, rather than downscaling global boundaries, is to upscale business actions to show how they would impact Earth systems if all companies in their sector adopted the same actions. An upscaling approach could encourage multi-benefit, regenerative solutions across sectors (University of Cambridge Institute for Sustainability Leadership 2019).

**BOX A3: PER CAPITA 'PLANETARY' BOUNDARIES**

4.4 billion people live in cities today, which is 56% of the global population of 7.8 billion people. This is projected to grow to 6.7 billion people, or 68% of 9.8 billion people, by 2050 (United Nations 2018). Downscaling the planetary boundaries to city level is a crucial sustainability tool.

A study into large cities in the Middle East and North Africa concluded that local policymakers should monitor urban footprints, use planetary boundaries within their urban sustainability agendas and build a 'coping capacity' within their societies to adopt new 'degrowth' consumption habits that impact their traditions (Hachaichi & Baouni 2020). A planetary accounting framework has been proposed based on 'planetary quotas' (limits for human activity derived from the Planetary Boundaries) and is intended to guide policy, technology design and behavioural changes (Meyer & Newman 2018).

To live responsibly in a degrowth economy, the global rich need to shift to a biophysically-fit lifestyle by living within fair consumption boundaries. This would mean reaching absolute personal sustainability, as opposed to relative personal sustainability through mainstream consumption levels of goods that are marketed as more sustainable (eg Allbirds or Veja shoes), or performative sustainability, such as minimalism through constantly turning over a small inventory of belongings.

Climate change is strongly linked with several other Earth systems; therefore, an important approach is to live in accordance with the Paris Agreement to limit global warming to 1.5°C. Carbon footprints are 7% lower in cities than in rural areas for comparable incomes, but this is compensated by the 6% higher average income in cities (Ottelin et al. 2019). Consumption-based emissions<sup>15</sup> of cities account for 10% of global GHG emissions. To limit global warming to 1.5°C, high-income cities in North America, Oceania, Europe and East Asia would need to reduce per capita climate impacts by 50% by 2030 and 80% by 2050. Lower income cities in Latin America, South and West Asia, Southeast Asia and Africa would ideally avoid increases in per capita emissions above 2020 levels (C40 Cities, Arup & University of Leeds 2019).

Targets for a 1.5°C degree lifestyle are promoted in the Take The Jump campaign (takethejump.org), which encourages people to make six shifts:

- keep products for at least seven years
- avoid traveling by personal vehicle
- eat a plant-based diet with healthy quantities and no waste
- buy no more than three new items of clothing per year
- take no more than one flight every three years
- make at least one life shift, such as changing to a green energy supplier

By reaching these targets by 2030 and maintaining them thereafter, a person living in a high income city could reduce their food-related emissions by 60%, vehicle-related emissions by 55%, textiles-related emissions by 66% and flights-related emissions by 54% by 2050 compared to 2017 levels. If broadly achieved, substantial other effects could include: \$25 billion annual savings in supply chain food waste, avoiding 170,000 deaths per year from dietary-induced diseases, 19 billion m<sup>3</sup> of freshwater and 460 billion m<sup>2</sup> of land saved per year from reduced dairy production, 170 million m<sup>2</sup> of land saved from on-street parking that could be used for cycle lanes and street trees, \$15,500 per person saved on textile purchases over 20 years, and improved air quality and health and safety through aviation interventions (C40 Cities, Arup & University of Leeds 2019).

A number of online footprint calculators upscale personal consumption to compare to global goals, although results can vary due to differences in methodology. An example is the Footprint Calculator, which calculates the respondent's personal Earth Overshoot Day, as well as consumption loads for food, shelter, mobility, goods and services, and land footprint in hectares and carbon footprint in tCO<sub>2</sub>.

<sup>15</sup> Consumption-based emissions are production-based emissions, minus emissions of exported goods and services, plus emissions of imported goods and services.

## APPENDIX B: PROVISIONING SYSTEM ISSUES

### BOX B1: ISSUES WITH THE GLOBAL NUTRITION PROVISIONING SYSTEM

(Data below is sourced from Gladek et al. 2020, unless noted otherwise.)

Nutrition satisfies basic human needs for food and health, and is provisioned by the global food system.

The global food system is:

- not meeting basic human nutritional needs for everyone, everywhere:
  - The basic human nutritional need is 2,700 kcal/day/person and the average global consumption is 2,870 kcal/day/person (National Geographic 2011), but this average belies a highly uneven distribution, with considerable variations in accessibility and affordability of food around the world.
  - 811 million people do not have enough food, 690 million people go to bed on an empty stomach, 44 million people are on the edge of famine and 270 million people are living in famine conditions (World Food Programme n.d.). About 462 million people are underweight and 45% of deaths of children under the age of five are linked to undernutrition (World Health Organisation).
  - US consumers have four times more food and Europeans have three times more food than they need (Cooper et al. 2018). Around 1.9 billion people are overweight and 600 million are obese.
  - In the US and the UK, food constitutes 10% of household costs, whereas in Tanzania, it constitutes 70%.
- not making effective use of natural resources:
  - There is a global surplus in caloric production of over 20%.
  - Agriculture occupies half of all plant-habitable land on Earth, uses 69% of the world's extracted freshwater and 30% of the world's primary energy each year.
  - 80% of agricultural land is used for livestock production and fodder crops, although meat, dairy and eggs contribute only 17% of the average global diet by kcal (National Geographic 2011).
  - 30% of produced food is wasted. Global South food losses occur early in the value chain, in fields, storage and transport. Global North food losses occur later in the value chain, in retail and households.
  - 28% of embedded in energy in food is due to industrial food processing, with up to 1,000 calories of energy needed to produce 1 calorie of processed food.
- negatively impacting Earth systems:
  - The food sector produces 25-30% of global GHG emissions, of which animal farming accounts for 60%.
  - Livestock animals produce over 200 billion tonnes of manure annually, contributing to global nitrogen cycle overloading.
  - From 1961 to 2002, global fertiliser use annual growth rate was 3.75%, which means that the absolute global quantity used doubles every 19 years.
  - From 1990 to 2011, global pesticide use annual growth rate was 2%, which means that the absolute global quantity used doubles every 35 years.

In summary, the food system falls short for some people and over delivers for others, uses some resources unwisely and creates unnecessary waste, pollution and emissions that are degrading the environment. This is leading to hunger, malnutrition, inequality, loss of biodiversity and climate change.