

*Policy, citizen engagement and corporate strategy to transition
to a sustainable world in the decisive decade*

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'In a few decades time we will look back, no doubt, and consider it bizarre that we once attempted to monitor and manage our complex planetary household with a metric so fickle, partial and superficial as GDP. The crises of our own times demand a very different goal and we are still in the early days of reimagining and renaming just what that goal should be'.

Kate Raworth, *Doughnut Economics*, 2017.

'There is a limit to the planetary warming that human civilization can tolerate and retain our humanity. It's impossible to predict with precision what that limit is, but it's possible we will exceed it on our current emissions trajectory. I don't want to find out. I don't want to witness the reversal of the long arc of history bending toward justice and watch it bend toward material and ecological impoverishment instead'.

Kimberley Nicholls, *Under the Sky We Make*, 2021.

'By some measures, based on science, the scale of energy revolution required is staggering.

If we had started in 2000, we could have hit the 1.5C objective by halving emissions every thirty years. Now, we must halve emissions every ten years. If we wait another four years, the challenge will be to halve emissions every year. If we wait another eight years, our 1.5C carbon budget will be exhausted.'

Mark Carney, *Values*, 2021.

1. Introduction

This study explores policy suggestions to tackle the world's urgent climate and biodiversity crises. Deep systemic changes to the world economy are critical if we are to avoid catastrophic and unstoppable climate disruption and ecological decline - both processes now well underway. Interlinked challenges of inequality, the digital revolution and international alignment are also addressed. The literature is mostly contemporary popular science and economics books, with selected additional studies in support.

2. Methodology

In the literature review (section 3), sustainability objectives, particularly those of policy and regulation, citizen engagement, and corporate and economic narratives, are presented. Section 4 reflects and concludes.

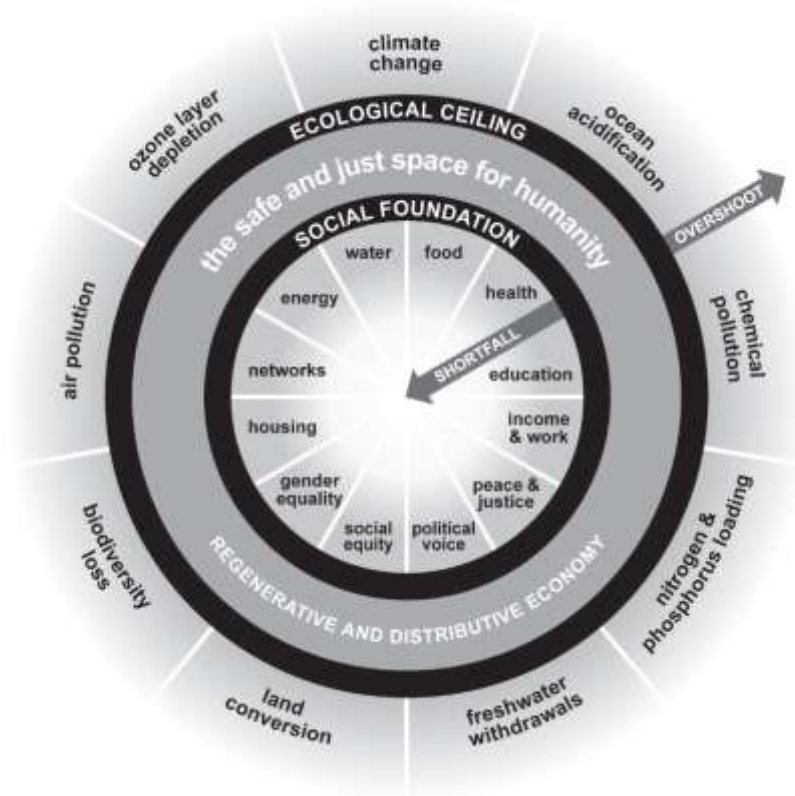
3. Literature Review

3.1 Doughnut Economics

Kate Raworth's 2017 book is included amongst others published only from 2020, for it has had something of a pathbreaking influence. In 2020 the University of Oxford published a new economics textbook, with history spanning Adam Smith in 1776 to Raworth's doughnut model.¹ The doughnut measures economic activity in relation to the nine planetary boundaries identified by Rockström et al. in 2009, boundaries which if transgressed, will result in eventual civilizational collapse.²

¹ *Breaking Boundaries* (2021).

² Raworth, K., *Doughnut Economics* (2017).



*The Doughnut: a twenty-first-century compass.
 Between its social foundation of human well-being and ecological ceiling of planetary pressure lies the safe and just space for humanity.*

Fig. 1.

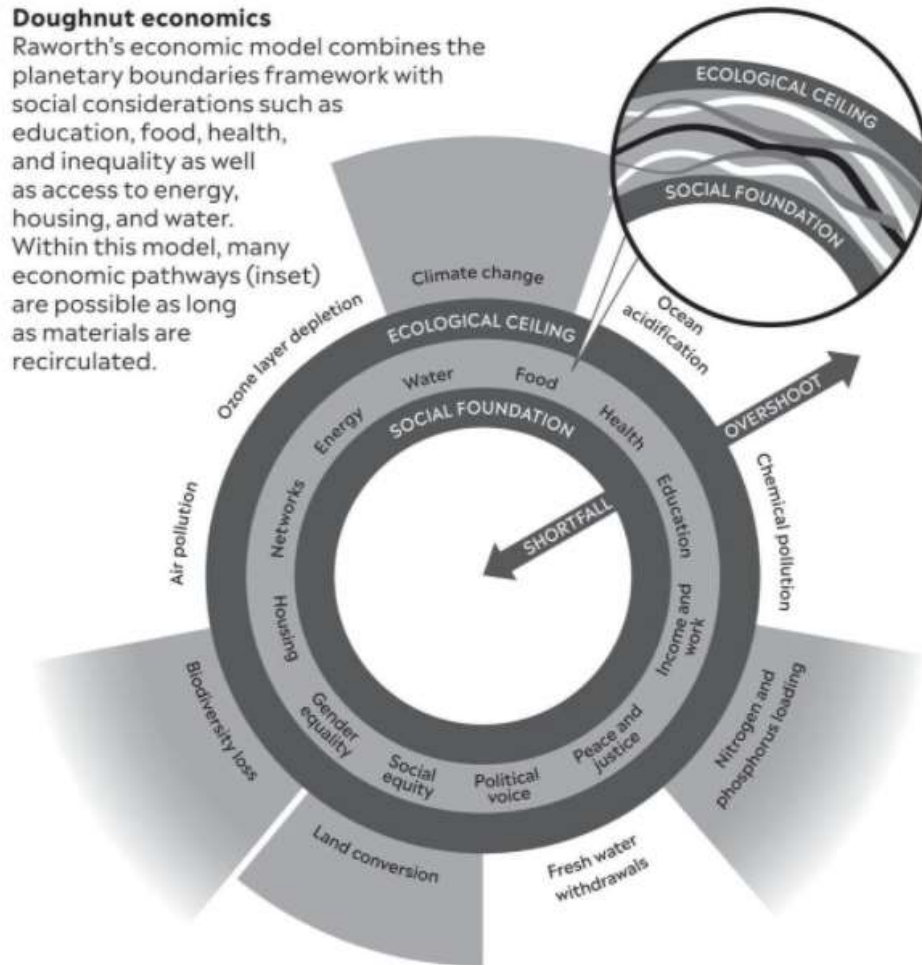


Fig. 2. Source: Breaking Boundaries.

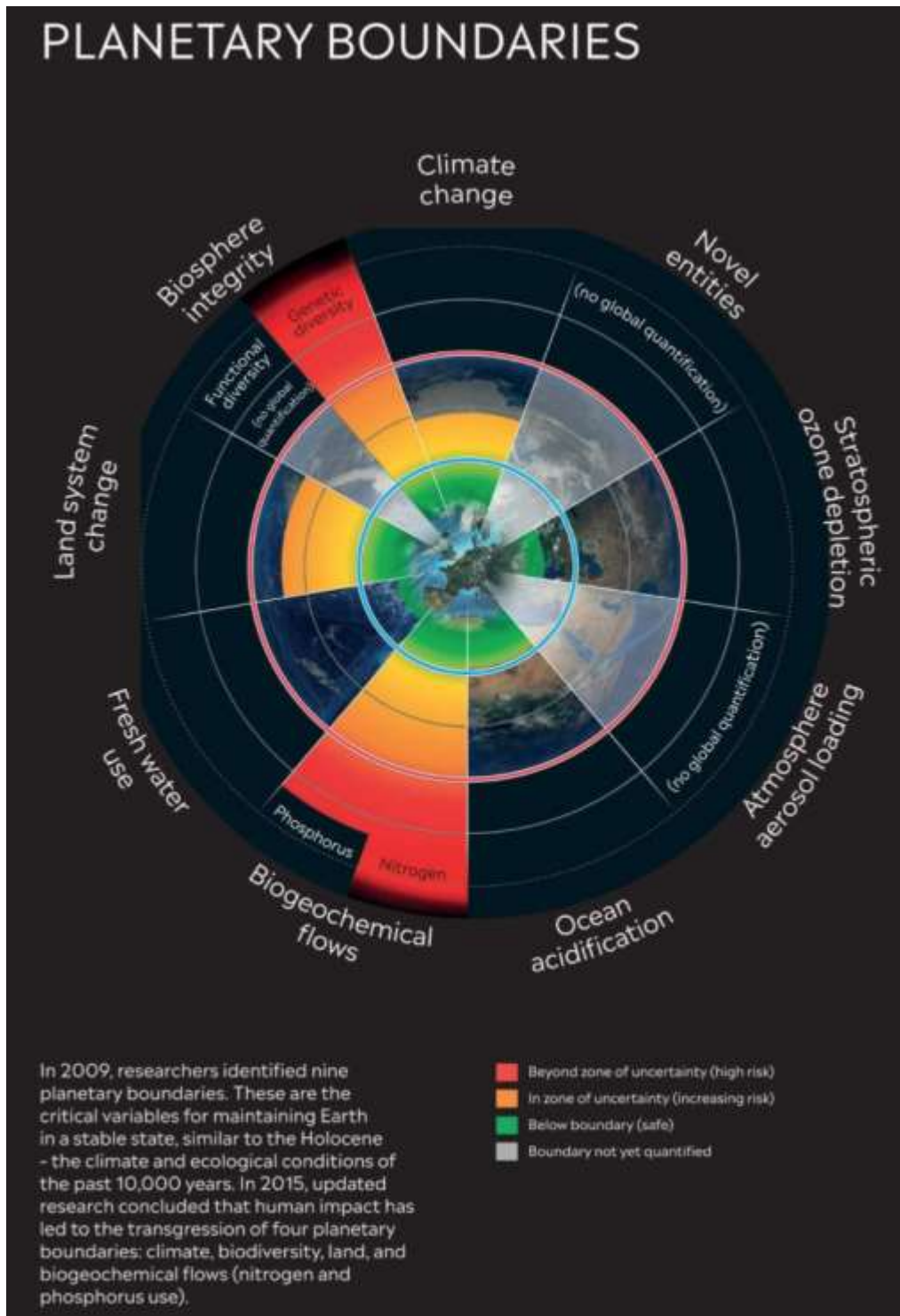


Fig. 3. Source: Breaking Boundaries.

(Figure 1 shows Raworth’s model in original publication, figure 2 an updated example highlighting global areas of ecological overshoot, and figure 3 greater detail of overshoots).

Obstacles to be overcome in order to make such a transformation:

- Continued dominance in university teaching of outdated economic models.
- Three political concerns locking nations into a growth addiction: hopes to raise revenue but not taxes, reduce unemployment, and compete as a member of the G20.
- Re-orienting consumerist societies, from negatives of status anxiety and materialism, to pursuits shown to increase well-being without requiring carbon emissions (socialising, being active, noticing the world, learning, and giving to others).

Policy suggestions:

- Wider distribution of profits to challenge rising inequality, with greater wealth taxation an important step. (Greater barriers to corporate tax avoidance have recently been proposed by the Biden administration and adopted by the G7).³
- Growth agnosticism, in pursuit of economies that 'thrive, whether or not they grow' - of particular importance in high-income nations.

A concluding remark underlines the importance of visual framing to support concepts.

3.2 Values: Building a Better World For All

Mark Carney's 2021 book has three sections. The first presents economic history from past to present. The second explains deficiencies of the financial system, with particular attention to the Global Financial Crisis, one-dimensional (monetary) determination of value, covid and climate crises, and short-term profit motivation (tragedy of the horizon). The third approaches corporate social responsibility, with suggestions for values-based leadership and investment, wider distribution of opportunity, and international solidarity.

The covid crisis highlights the importance of the state and consequences of its failure, and is a test for stakeholder capitalism.⁴

- Movement from a market economy to a market society in recent decades has meant that for an asset to be valued, it must be in a market: this may change more quickly than otherwise in covid recovery efforts.

³ *Twilight of the Tax Haven* (2021).

⁴ Carney, M., *Values* (2021).

- New technology is now adopted much faster than ever before, with the short-tail of the S-Curve (signalling initial R&D to mass adoption) now averaging ten years.
- Sectoral S-Curves in line with the sub-2C goals are being developed, which help markets and governments to make investment and policy interventions.
- Incorporating long-term decision-making to political systems is imperative, as is an acceleration of investment 'at a warlike pace, to fight what John Kerry has termed World War Zero'.

The physical urgency of the energy transition is also a great economic opportunity: capital-intensive after a long period of low investment, and job-creating while unemployment is rising. The core objective of climate politics is to value future generations, and the sooner we act, the easier the transition will be.

- Government policy central to climate objectives.
- Leading future-oriented companies have strategies to adjust to advancing policies (and public attitudes).
- Objectives are complex to achieve, yet essential for a sustainable future, and an excellent organizing principle for the work required.

A sustainable financial system funds private sector innovation and amplifies the efficacy of government climate policies. Its three building blocks:

1. Comprehensive reporting of climate-related financial impacts.
2. Transformed climate risk management.
3. Mainstreaming of net-zero investing.

In the 2015 Paris COP 21, the Financial Stability Board established the Task Force on Climate-Related Financial Disclosures (TCFD), which provides information enabling investors, lenders, insurers and other stakeholders to manage climate risks and seize opportunities.

- Their solutions have now been adopted by over 1300 large companies in the G20.
- World's largest asset managers are calling for mandatory TCFD-aligned disclosure from all companies.
- A virtuous circle is developing, with adoption spreading, and disclosure and efficiency improving.

- Greater public sector pressure for mandatory disclosure, including for investor portfolios, still required.

Emerging and developing economies are supported by the growth of the sustainable financial system in advanced economies in three ways:

1. Investment in sustainable infrastructure scales efficiencies in key technologies to be applied globally (simpler where economies have less installed fossil power generation).
2. Comprehensive emission reporting will encourage climate risk minimization and opportunity maximization across supply chains.
3. New market structures can substantially increase cross-border capital flows, given demand for clean development.

Efforts are underway to develop a reliable carbon market in advance of COP 26. And through public-private partnerships, billions of public investment can become trillions of private investment.

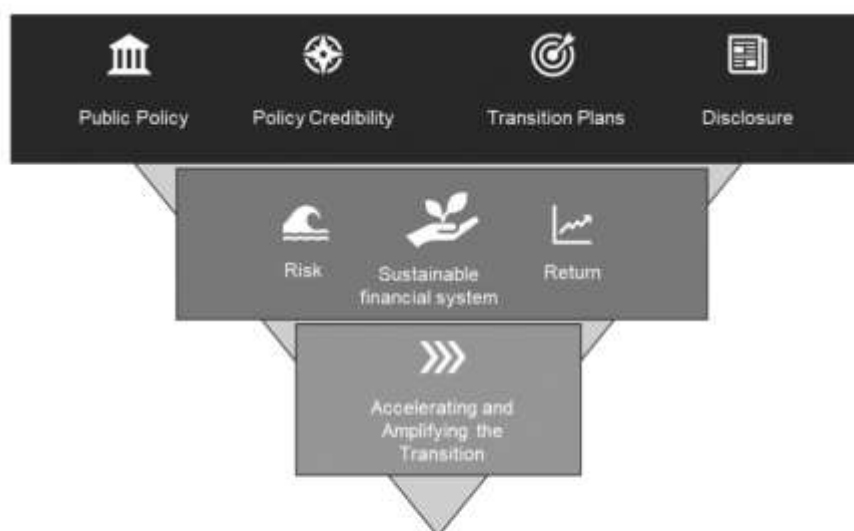


Figure 12.6 The public and private sectors' role in shaping the transition to a net-zero economy

Fig. 4.

Credible and predictable climate policies require:

- Acknowledgment by all political parties, now and in future.
- Immediate emissions reductions.

- Clarity on unviable activities in a net-zero world and incentives to support alternatives.
- A successful climate policy track record.

For Carney, the role of economic growth in the transition comes down to the centrality of the market, whose 'immense power' cannot be neglected. Though the book highlights the markets' failings and he is no market fundamentalist, his position is as follows:

'Continued growth isn't a fairy tale; it's a necessity. But not just any growth. The power of the market needs to be directed to achieving what society wants', with measures that go beyond GDP to account for individual welfare and remunerate societal progress.

Leadership strategies to support these goals:

- Transactional leadership for straightforward and clearly defined tasks, transformational leadership where positive changes are to be inspired.
- Artificial intelligence and machine learning can aid transactional situations, yet presently struggle with transformational ones, given the novelty of challenges such as climate change, aging population and AI itself.

At a time of low trust in politicians and elites, where algorithms reinforce confirmation biases and fuel populism, leaders across sectors must apply six principles:

- Transparency for stakeholders.
- Use fact-checking service providers.
- Embrace uncertainty to build credibility in experts.
- Better, more easily understood communications.
- Prepare for varied outcomes.
- Listen to all sides in complex discussion, to agree on the best resolutions.

Beyond these actions, key determinants of good leadership are benevolence, integrity and competence. And amongst important responsibilities:

- Finding and developing the right people.
- Setting priorities.
- Catalysing action.

'Ambitious leadership means helping to shape the future rather than just reacting to it'.

Carney promotes seven core values:

- Solidarity
- Fairness
- Responsibility
- Resilience
- Sustainability
- Dynamism
- Humility

Their application to global challenges:

Education:

‘The public school system must become the route for social mobility and excellence. A parallel system for the elites is economically, socially and morally disastrous’.

Implementing mid-career retraining.

Digitisation:

‘Digitisation is required to make the most of green investments. It also by definition improves social sustainability by bridging the digital divide that covid has so cruelly exposed’.

Moving from existing globalization to a cooperative internationalism:

- Outcomes-based, not rules-based, advancing the above seven values.
- Involves multiple stakeholders.
- Interoperable between political systems.
- Inclusive of all world citizens.

The nation state:

‘Advancing patriotism by re-instilling common purpose, ideals and values in global affairs is integral to country strategies that build opportunities for all’.

3.3 Mission Economy: A Moonshot Guide to Changing Capitalism

Mariana Mazzucato’s 2021 book argues that without a significant expansion of government’s fiscal and innovative capacity and influence, sustainable development goals cannot be met. NASA’s Apollo space mission exemplifies successful coordinated government action towards an ambitious goal, which also led to

innovative technological and managerial 'spillovers', such as the genesis of software and reducing complex problems to smaller packages.⁵

Capitalism is in a crisis, Mazzucato explains, holding, 'perhaps most crucially', no answers to the environmental crisis. 'The balance of power has shifted away from workers and towards employers', despite the dependence of society on 'low-paid and disregarded' workers during the pandemic. A 'deep sense of injustice, powerlessness and distrust of elites - especially business and political elites - has eroded faith in democratic institutions'.

- A major structural issue responsible for this is that the financial sector is mostly re-financing finance, insurance and real estate (FIRE), rather than the productive economy.
- Privatization of FIRE profits, yet socialization of FIRE losses in the 2008-9 financial crisis, and ongoing fossil energy dependence and financing, add to the urgency of re-designing economies.

Neoliberal doctrine that views government as an institution existing only to correct market failure 'creates a self-fulfilling prophecy whereby government does too little, too late'. To challenge this, Mazzucato advocates not for 'big' or 'small' government, but a different 'type of government'. Government itself must become an innovative organization capable of continual development, from being 'merely an "enabler" or even a "stifler" of innovation to becoming the engine of innovation'.

Mazzucato cites her experience of 'mission-oriented' policymaking with the European Commission, which has resulted in the EU Horizon innovation programme, explaining the complexities of processes for which she advocates. Missions to create 100 carbon-neutral cities and plastic-free oceans would require innovations in multiple areas:

⁵ Mazzucato, M., *Mission Economy* (2021).

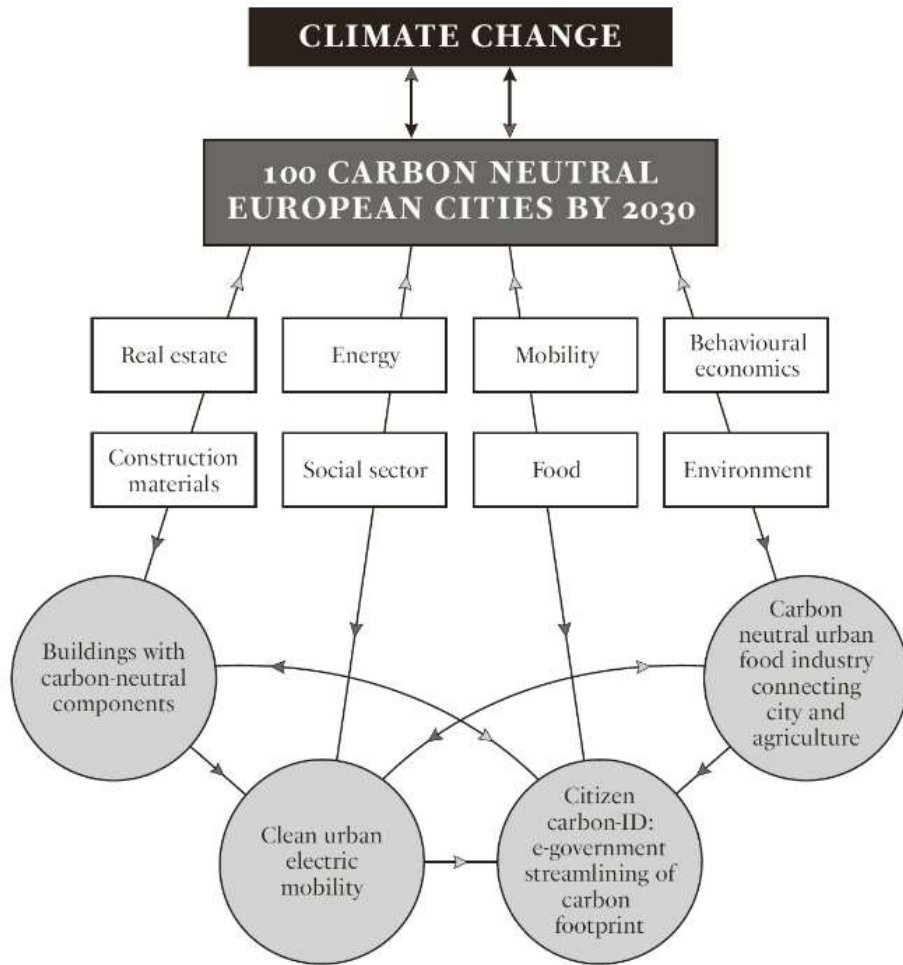


Figure 7: A mission map for 'Climate Action' (SDG 13)

Fig. 5.

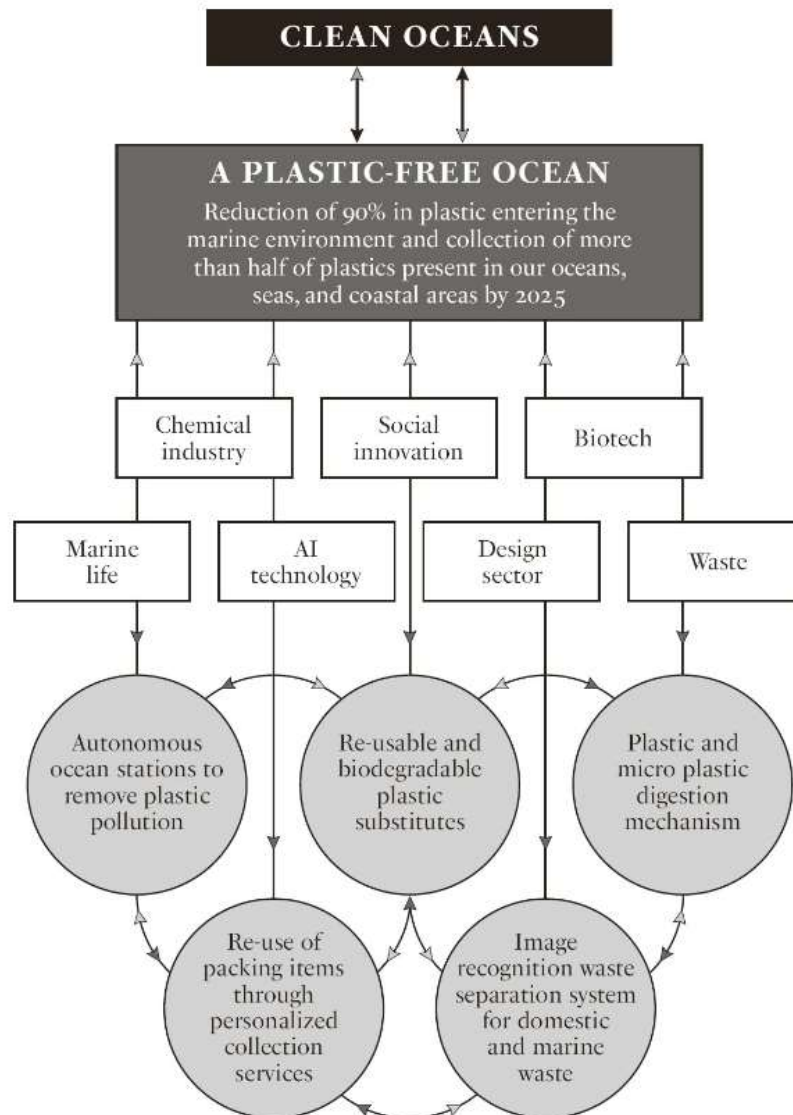


Figure 8: A mission map for 'Life below Water' (SDG 14)

Fig. 6.

- Balancing ambition and feasibility is important.
- Patient, long-term finance provision will be key for some initiatives.
- Public-private partnerships must also retain a push for non-monetary outcomes.
- Citizen engagement in initiatives, even if not always harmonious, is essential.

Green New Deals developing in the EU and US, increasingly legally mandated, and the German Energiewende, are regarded as areas of progress.

3.4 The Best of Times, the Worst of Times

Paul Behrens' 2020 book shifts between best and worst case scenarios for 5 key areas of change - population and progress, energy, food, climate, and economics - before closing with separate epilogues. ⁶ I follow some of his key progressive suggestions.

- Continued underappreciation of government intervention should be challenged, given its success in expansion of renewable energy, particularly in Germany and China.
- Pairing rapid expansion of renewables with energy-intensive machine learning and automation can revolutionize many problems, for example, optimizing material use in building construction.

The reserves-to-production ratio of oil, around ten years, explains the need for massive continuous investment, and points to the possibility that a 'death spiral' for oil may arrive sooner than oil majors think - the assessment of the 2021 IEA Net Zero Roadmap supports this:

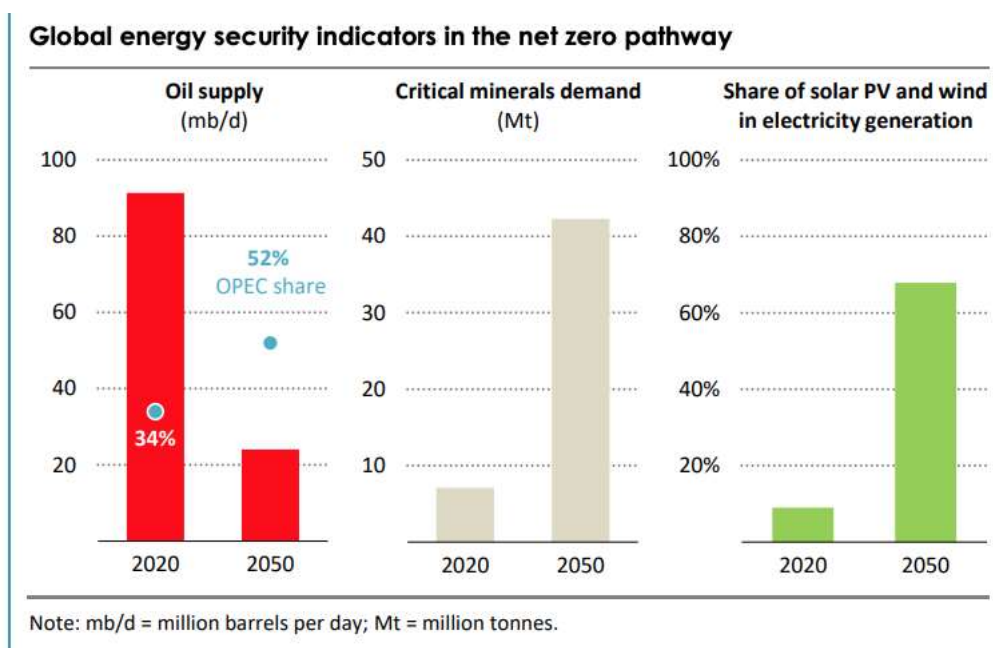


Fig. 7. Source: IEA, *Net Zero by 2050: A Roadmap for the Global Energy Sector*.

⁶ Behrens, P., *The Best of Times, the Worst of Times* (2020).

Key roadblocks to progress:

- Criticism of climate activists' personal carbon footprints (hypocrisy) in the current unsustainable system. This delays individual and system change further: 'Individuals have to live within a system, and the system responds to individual change. Both actions are vital.'
- Low levels of worker engagement, and 'paper-pushing' exercises of little to no importance. 'It could be that this superfluous work has arisen out of social hierarchies and macroeconomic requirements to keep people employed rather than any material need'.

Possible policy solutions:

- A 2020 quantification of minimal final energy requirements while maintaining decent living, which could be approximately 95% lower in the highest consuming countries, reduce time spent working, yet remain 'far more materially generous' than critics often assume.⁷
- Reduce working hours to enable positive social activities.
- Beyond improving wellbeing, Universal Basic Income and Universal Basic Service (UBI and UBS) policies have the potential to increase people's cognitive freedom to formulate societal innovations, including to sustainable transitions. Opinions conflict on the optimal design of such policies, often motivated by political orientation, yet their potential to aid meaningful societal progress is broadly recognized.

With population growth stabilizing and even declining in some areas, Behrens questions whether steady-state or degrowth economies would really be challenged if societies adopted a broader conception of value. As social tipping points on the need for climate action approach, cynics may also engage more productively. Whatever the case, hope is a pre-requisite for advancement.

3.5 Under the Sky We Make

Kimberley Nicholls follows Rockström and Raworth's planetary boundaries in her 2021 book, framing the shift as from an exploitation to regeneration mindset.⁸ She pairs poignant reflections on the weight of this moment and its emotional challenges, with scientific and political insights.

⁷ *Providing decent living with minimum energy* (2020).

⁸ Nicholls, K., *Under the Sky We Make* (2021).

Nicholls disapproves the influence of those cynical of our capacity to make the enormous shifts required, yet acknowledges her empathy. It has been argued elsewhere that one lesson for climate action from responding to COVID-19 should be to impose top-down measures regardless of the level of citizen support.⁹ Nicholls believes it is 'more helpful to think about taking action as a spark for hope, not the other way around', quoting Greta Thunberg on this:

'Once we start to act, hope is everywhere. So instead of looking for hope, look for action. Then, and only then, hope will come'.

Political roadblocks to change are presented. Nicholls counters tactics of fossil companies to sow misinformation on the scientific reality of climate change, and invest more in greenwashing advertisement and counterfactual media coverage than clean energy, with admirable honesty:

'Lives and species are being lost because of fossil fuel companies. I truly do not understand how oil executives can sleep at night or look their kids in the eyes. I am filled with rage every time new evidence of their harm, deceit, and hypocrisy comes to light.

Anger at those who practice deliberate harm and deception is justified. Anger toward dishonest leaders and lobbyists is righteous. [...] Personally, I find anger can be empowering, if I use its rush of energy to fuel organization and action'

These tactics have been further exposed by Michael Mann in *The New Climate War: The Fight to Take Back Our Planet*.¹⁰ With consensus now growing in spite of these deplorable actions (73% of Americans believing that climate change is happening in 2018, for instance), the need for a rapid reevaluation of our individual behaviour to protect the tiny, precious remainder of our collective carbon budget is emphasized:

'The good / bad news: If you live in a rich country, and especially the richer you are, your individual actions really matter. [...] Your behaviour also helps change the culture, showing that the vision of a good life is transforming from a high-carbon life to the low-carbon good life. Further, practising what you preach enhances your moral authority and ability to inspire others'

'As Bill McKibben sees it, the most important thing someone can do as an individual is "not to be an individual ... we need to join with each other in movements"'.¹⁰

⁹ *Why are we so much more afraid of COVID-19 than of climate change?* (2021).

¹⁰ *Fighting Back* (2021).

Annual investment to meet 1.5C of warming is an estimated 2.5% of global GDP through 2035 (IPCC).

‘Once a vision is agreed on, backcasting can help make it a reality: starting from where we actually want to end up, then working backward to find the pathways from where we are now to where we want to be’.

3.6 Impact: Reshaping Capitalism to drive real change

Ronald Cohen (2020) explores the ‘Impact Revolution’, capable of shifting our economies from their catastrophic trajectories by bringing innovation to five groups of stakeholders (entrepreneurs, investors, corporations, philanthropists and government).¹¹

Development and Social Impact Bonds (DIBs and SIBs) appeal to philanthropists seeking to pay for outcomes, in a dynamic similar to that between venture capitalists and entrepreneurs. Achieving the SDGs by 2030, particularly concerning emerging markets, requires around \$30 trillion. These goals are attainable and profitable.

Cohen cites Mazzucato’s argument from *The Entrepreneurial State* that governments have actively shaped and created markets, explaining nine actions for them to stimulate the impact market and ‘fundamentally change the world’:

1. Require companies to measure their impact.
2. Appoint a cabinet-level minister to lead impact policy.
3. Publish the cost of social issues.
4. Shift government focus from inputs to outcomes.
5. Create central outcome funds to boost effective service delivery.
6. Integrate impact investment into international development aid.
7. Release unclaimed assets to establish ‘impact capital wholesalers’.
8. Boost supply of impact capital through changes to regulation and tax incentives.
9. Boost demand for impact investment from charitable organizations and purpose-driven businesses.

‘Ten years ago we did not know what to do to improve our economic system; now, the pieces are in place’.

Bi-partisan agreement on these outcomes is attainable ‘even in this politically polarized era’. A watershed moment will draw the transition from ‘selfish capitalism’ to ‘impact capitalism’: the arrival of impact-weighted financial accounts requiring businesses to demonstrate impact integrity alongside profit.

¹¹ Cohen, R., *Impact* (2020).

'Impact capitalism and the impact economies that sustain it will emerge and succeed because they embody the values of a rising generation that understands that our future depends on it.'

3.7 How To Avoid a Climate Disaster: The Solutions We Have and the Innovations We Need

As its title suggests, Bill Gates' 2021 book focuses on expanding use of available sustainable technologies, and further innovations still required. ¹² I concentrate on his prescriptions for governments.

Seven recommendations for government policy:

1. **Mind the investment gap:** support the transition via incentives, while also supporting riskier projects for new zero-carbon technologies and tolerating some failures.
2. **Level the playing field:** reduce Green Premiums to zero, by making carbon-free things cheaper and carbon-emitting things more expensive.
3. **Overcome non-market barriers:** which stem mainly from a lack of information, trained personnel or incentives.
4. **Stay up to date:** update government policies as new, more efficient technologies arrive.
5. **Plan for a Just Transition:** support workers and communities whose livelihoods are affected by the energy transition.
6. **Do the hard stuff too:** challenges associated with sectors including electricity storage, clean fuels, cement, steel, fertilizer.
7. **Work on technology, policy and markets at the same time:** as they are interdependent.

Although deep decarbonisation by 2030 is unrealistic, given the depth of our dependence on fossil fuels, adopting policies that put us on track for deep decarbonisation by 2050 is essential.

¹² Gates, B., *How to Avoid a Climate Disaster* (2021).

Measures to scale up clean energy technology deployment:

1. Carbon pricing.
2. Clean electricity standards.
3. Clean fuel standards.
4. Clean product standards.
5. Early retirement of fossil fuelled equipment.

Coordinating government work across various levels - national, provincial, city, local - will be required. Accelerating voter demand for climate plans is also important for governments to gain the required capacity to implement changes.

3.8 Other relevant works

In *Degrowth* and *Post-growth*, Jason Hickel and Tim Jackson have argued that moving away from economic growth is the only route to social progress and reaching climate goals. In *Another Now*, Yanis Varoufakis frames a science-fictional alternative reality to argue for a post-capitalist, market socialist society. In *The Good Ancestor*, Roman Krznaric explores principles of intergenerational justice: efforts to 'de-colonize the future' and commit to long-term thinking. Each foster further valuable progressive discussion.

4 Conclusion

These works present numerous synergies, including:

- Viewing the world which we want, then working back from there in its pursuit.
- The imperative of expanding governmental capacity.
- The significance of ideas, at a time where innovation is vital in all areas of the economy.
- That international coordination and solidarity is a pre-requisite to address environmental and social challenges within and beyond borders.

Development and application of such principles is growing as humanity reckons with the immense challenges and opportunities of the decisive decade.

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