Analysing options for systemic change to transform the world's economic and financial systems after the pandemic.

Building a resilient economy

institute for future-fit economies

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Project Consortium

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Content

Executive Summary

In 2020, the world's governments acted at an impressive scale and speed to mobilise resources in response to COVID-19. By April, they had collectively assigned US $ 9 trillion to buffer against the economic impacts of the pandemic. In the UK alone, € 176.7 billion were made available as an immediate fiscal response.

As these eye-watering sums illustrate (and those associated with the banking crash in 2008 reinforce), dealing with a crisis is very costly, in economic terms as well as regarding social impacts. Therefore, where a crisis is foreseeable – as in the case of climate change and increasing biodiversity loss, societies should invest in preventative measures.

Science shows us that humanity's impacts on the planet are intensifying and environmental trends are heading in the wrong direction. In response, there have been **calls for systemic interventions** from prominent international agencies including the United Nations Environment Programme, the Intergovernmental Panel on Climate Change (IPCC) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES).

These agencies recommend a rapid transition towards an economy that's low-carbon, resource-light and that restores nature. They are promoting the need for a fundamental reform of our economic systems, so that equality, environment, and wellbeing become core to the way our economies function. It's **an agenda that has been endorsed by mainstream actors** such as the World Economic Forum, the Financial Times and the Economist.

Many reports, ideas and proposals make the case for the required changes. **What has been missing is a better understanding of *how* systemic change can be put into operation** and, given the urgency and interdependency of the issue, **how the UK can effectively support a fundamental transformation** of its economic system towards a resilient economy.

This report it is an attempt to fill this gap. The following chapters (and the research underpinning them) focus on **the role of government and policy in delivering systemic change. We outline where public policymakers should place the emphasis** in order to transform the world's economic and financial systems most effectively to mitigate future environmental crises.

The report proposes a set of **policies the UK government could implement to amplify impact** and ensure long-term systemic change – both for its domestic economy and at an international level. There is no "silver bullet" solution to the multiple crises we face, and many changes will be required, involving governments, investors, businesses and the public alike – so the **policy package we outline is a blueprint to deliver systemic change** in the current policy context. It should be regarded as a basis for discussion to demonstrate the scale, nature and interlinkages of the changes required.

We start by categorising the key areas for systemic intervention that can shift behaviour in the longer term into **four sections (policy, finance, business, and citizens),** as illustrated in Table 1.

The → first part of our report provides a summary of almost 300 transformative proposals split into these four categories. Each proposal has the potential to address **the socioeconomic root causes** of today's crises through **policy changes** that have **cross-cutting and transformative impact.**

Building on this comprehensive list of proposals we **set three key criteria to identify the most promising policies:**

1. **Relevance:** their relevance and topicality in the UK context.

2. **COVID-19 suitability:** the extent to which they could support a sustainable economic recovery from COVID-19.

3. **Transformative potential:** the impact they have on driving long-term systemic change.

Policy	Finance	Business	Citizens
Multidimensional indicators, monitoring capacity, and legal frameworks: ensure political decision making addresses the environment and wellbeing with equal weight on the economic aspects. **Fiscal policy and growth independence:** increase the space for fiscal interventions to support a green and just transition and decouple economic stability from economic growth. **Limiting power and empowerment for change:** reduce economic and democratic power imbalances.	**Mandates and legal interpretations:** include environmental and social objectives in the targets of public institutions such as central banks and development banks. **Metrics for the long-term:** integrate environmental categories and extend the time horizon in risk assessments.	**Shifting Profitability:** internalise the costs of environmental damage. **Sustainable investment and innovation:** shift investment and technology from resource-intensive activities to those that are less resource-intensive but more labour-intensive. **Non-financial disclosure, reporting and accountability:** include environmental objectives in business reporting standards. **Sustainable business models:** Support business models that focus on sustainability and wellbeing and create a level playing field.	**Sustainable consumption alternatives:** shift from unsustainable to sustainable consumption. **Sufficiency:** limit the total level of consumption. **Affordability and fairness:** reduce inequality and ensure that all are capable of meeting their basic needs and of participating socially.

Table 1: *Fields of action and intervention clusters of recommendations from the literature review*

Using this analysis and input from experts in policy, academia and business, we propose a package of **eight mutually supportive areas of reform** in the → second part of the report. These policies would help to significantly accelerate the transition towards a resilient economy for the UK and internationally:

1. A → wellbeing budget for the UK that redefines what we value in our economy and consequently allocates a greater share of public and private resources towards environmentally sustainable and socially beneficial outcomes.

2. A → modernised set of government fiscal rules in the UK that ensure the availability of sufficient resources to complement the wellbeing budget. This will enable the UK government to borrow more at the current low interest rates and invest in the low-carbon and resource-efficient sectors that will sustain the economic development of the country over the coming decades.

3. Further backing for redirecting money to help fund the green transition, via a new → UK national investment authority. This will play an active role in the market by investing public resources towards specific missions or outcomes (such as meeting the UK's net zero target).

4. On a financial level, this shift in investments is accelerated through → mandatory financial risk assessments and their disclosure for private banks that integrate non-traditional environmental risks into their accounting and risk assessment frameworks.

5. The disclosure of these risks is also a precondition for → green credit guidance. By factoring climate and ecological risks into their asset purchases and collateral frameworks, central banks will help shift investments from harmful activities to green sectors.

6. A → land value tax to generate a new source for financing investments and generating resources to support low-income households. This policy will have negligible effects on economic activity, but will help correct wealth and power inequalities. Its taxes windfall increases in land value while increasing the efficiency of land use in rural areas, and will reduce soil sealing and the fragmentation of landscape.

7. Additional fiscal revenues from → resource caps. These ensure that increases in resource efficiency translate into an absolute rather than a relative reduction in resource use. In doing so they help control biodiversity loss and ensure ecosystems can recover naturally to a more sustainable state.

8. → Environmental border taxes that put a higher price on imports of environmentally harmful goods. These will ensure that the domestic economy is competitive, at the same time they will reduce carbon emissions while protecting biodiversity.

For each of these policies we identify several existing stakeholder coalitions and upcoming political opportunities where they could be refined, promoted and secured. Some require much greater international cooperation and are therefore more challenging, while others could be enacted immediately.

The policies presented here are mutually supportive. Most address several of the intervention areas listed in Table 1. A wellbeing budget for the UK, the national investment authority, mandatory financial risk assessments and a green credit guidance all aim to increase and strengthen investment in the green economy. A modernised set of government fiscal rules, a land value tax, and resource caps create the necessary fiscal leeway. Resource caps ensure that these policies are effective in reducing resource use through absolute limits and a dynamic steering effect via prices. Lastly, a land value tax is one option among many to ensure social acceptance, while environmental border taxes aim to support domestic economic actors.

The recovery from COVID-19 presents a fork in the road for governments. *Bouncing back* to the pre-COVID days isn't good enough. We cannot afford to continue to tinker at the edges with policies that achieve incremental change or are no longer fit for purpose. As the environmentalist Bill McKibben solemnly noted, "winning slowly is the same as losing" in the context of climate change. **The research, analysis and synthesis presented here offers a sample of the bold and transformative policies we need to *bounce forward* and to address the multiple crises we face collectively.**

To do so, government, investors, businesses and citizens need to make choices. Together, they need to put in place regulation that breaks our dependence on fossil fuels and extractive economic activities and propels the UK along a carbon-neutral, low resource and high wellbeing pathway. This report is an invitation. We are aware the proposals are far-reaching. But we are convinced they are necessary. To mitigate the costs of future crises, we need the courage to do something new. With this report, we invite you to dare, so that the prosperity of today will benefit our children tomorrow and we can give them a greater chance to thrive on a bountiful planet.

Introduction

»COVID-19 has shown that avoiding crises is not just a moral issue – it is also an economic question.«

Crises tend to encourage short-term thinking.[1] When facing a crisis, people tend to react impulsively to end it – be it in relationships, business, finance or policy. This has been no different during the COVID-19 crisis. Many governments responded quickly and with extensive effect. By April 2020, leaders around the world had collectively mobilised $ 9 trillion to buffer against the economic impacts of lockdown measures.[2] In the UK alone, € 176.7 billion were made available as an immediate fiscal response to the crisis.[3]

The scale of these investments is impressive. But at the same time, the COVID-19 crisis has made clear how much crises can cost. Only through such unprecedented public investment and by radically restricting public life – closing kindergartens, schools and businesses – could the worst be prevented. The countries that did not react swiftly and underestimated the crisis, such as Sweden, have paid for this with many lives.[4, 5]

The actions focused on the short-term saved lives. However, while politicians respond to the immediate dangers, there is a direct lesson to be learnt: Crises are expensive, and they can cause economic disaster. Societies would, therefore, do well to invest in preventative measures.

Some crises, like COVID-19, are difficult to anticipate. Others, however, are foreseeable – climate change and increasing biodiversity loss, for example. In the interest of long-term economic stability, policymakers must face this fact today and work to limit climate change and the breakdown of ecosystems. Not only because doing so can decrease the risk of future pandemics[6]: as COVID-19 has demonstrated, avoiding crisis is not just a moral issue, but also an economic question.

Many international scientific organisations, including the IPCC[7], the IBES[8] and the recent WEF report on "The Future of Nature and Business"[9], have highlighted that a fundamental transformation of today's socio-economic systems is needed to mitigate climate change and biodiversity loss. They provide a broad consensus on the main areas needing reform – ranging from policy and finance to private sector business and lifestyles. What has been missing is a better understanding of *how* systemic change can be operationalised and, given the urgency and interdependency of the issue, **how the UK can effectively support a fundamental transformation.**

Aim of the report

With this report, we seek to close this gap. Our work aims to provide:

1. A definition of systemic change
2. An overview of the main policy areas needing reform, of barriers to change and transformative policy options
3. A set of eight policy priorities for the UK that could also inspire international action

We have conducted a qualitative expert-led assessment of **60** sources within the global literature on systemic change. From this literature review, we derived **270** policy proposals from across **12 topic clusters, pertaining to four stakeholder groups: policy, finance, private sector business and people. Of these, we have selected eight key policies** for a more detailed elaboration, based on three criteria: **feasible and topical** in the **UK** (relevance), contribute to **recovery** from the COVID-19 crisis (COVID-19 suitability) and have **high** transformative potential (transformativity).

This report contributes to multiple policy discussions. The options outlined here add to the list of options for change in the Dasgupta Review, commissioned by the UK Treasury, to address the biodiversity crisis. This analysis also provides guidance for the effective implementation of the UK's net-zero legislation, circular economy strategies and COVID-19 recovery programs.

We focus on policy actions aimed at adjusting the structure of the economic system through legal frameworks or legislation, to influence behaviour i. e. actors' collective decision making and in doing so achieve far-reaching change. This recognises that institutions are performative: the economic and institutional framework is a key determinant of how funds are invested, how and what businesses produce and how people live and consume.

The report is structured as follows:

1. **Chapter one** presents our interpretation of the main challenges that are rooted in the economics of biodiversity, which we will present here drawing on the insights of The Dasgupta Review[10]. We then provide our definitions of a resilient economy and systemic change.

2. **Chapter two** provides a short synopsis of the methodology used in the literature review and the stakeholder consultation.

These introductory chapters are followed by two parts that summarise the results:

- **Part 1** provides an overview of the barriers that hinder systemic change, categorised into four areas of action: policy, finance, business, and people. In this chapter, we also summarise the boldest and most transformative policy solutions to overcome these barriers, that we found in literature.

- **Part 2** further elaborates on the eight key policy proposals in detail and explains the rationale behind their prioritisation. Every policy proposal includes a section on implementation and the associated barriers and enablers, inspirational practices, windows of opportunity and potential stakeholder coalitions.

- **Chapter Five** explores how systemic change is as much about narratives of change and collaboration, as it is about policymaking.

An invitation to think about systemic change

Many policymakers know that current measures will not be enough to tackle today's environmental crisis, but, in the face of groupthink, only a few dare to call for more ambition. **With this report we hope to encourage those involved in public administration to speak up.**

The report is an invitation to question and consider new solutions. We do not claim to have found all the solutions. Rather, we aim to start a necessary discussion to think outside the box. We are aware that some of the solutions we present may seem unusual or too ambitious. However, we believe that the time has come to discuss more transformative measures in the political arena, and doubt that anything less would suffice to address the magnitude of today's challenges. The costs of inaction are too high.

Background
The economics of biodiversity and the need for systemic change

» The extinction rate has accelerated enormously, being up to 100 times higher than in the past. «

A recent study by the Potsdam Institute for Climate Change showed that limiting global warming to below two-degrees Celsius, as agreed in the Paris Agreement, would be economically efficient[11], while an abundance of literature has confirmed that costs of climate change will be astronomical.[12] While such studies are subject to uncertainty, modelling, data and valuation choices, they point in the same direction: the costs of climate change will be high. Some of these costs are already evident today. One consequence of climate change is the devastating loss of natural habitats and the associated ecosystem services. Together with resource consumption, land-use change, pollution and invasive species, these drivers have brought the global ecosystem to the brink of collapse.[13]

Ecosystems are responsible for purifying water and air; providing food, wood, and biomass; regulating climate and delicate water cycles; and providing natural amenities that humans use for recreation and education. Take bees, for example: They contribute between $ 233 billion to $ 577 billion to global food production and support basic ecosystem functioning through their pollination activities[14], this economic and ecological value goes largely unnoticed and unprotected. All these valuable ecosystem services are at risk. While current extinction rates for species are hard to assess, they may lay somewhere between 1–2 every week[15]. There is wide agreement that the extinction rate has accelerated enormously, being up to 100 times higher than in the past.[16]

For example, in 2003, New York has designated a huge nature reserve and $ 150 million annually for its preservation – but not for moral reasons. The nature reserve purifies water and the construction of a comparable water purification plant to replace this natural service would cost $ 8 to 10 billion. Preserving biodiversity is similarly economically efficient.

Addressing biodiversity loss

» Economic growth is not the goal in and of itself, but a means of reaching a number of other goals, which collectively create economic stability. «

To understand the economics of biodiversity and the value of nature, HM Treasury (the UK Department of Finance) recently commissioned a report on the "economics of biodiversity". Dasgupta discusses two scenarios for ending the degradation of the biosphere by 2030, which depend on the "efficiency with which we convert the biosphere's goods and services into GDP".[17] In a "Green Growth" scenario, this efficiency would need to almost quadruple, from 2.5 % to 9.1 % by 2030 – an unprecedented and unlikely rate of innovation. He therefore outlines a second scenario, an economy with constant economic output (GDP) from now until 2030, where efficiency would "only" need to dou-

ble – a still unlikely, but more likely scenario. The second scenario, essentially a "stagnating economy" by current standards, is a headache for economists, especially in a crisis period.

Pillars of economic and political stability, including servicing debts, investment, providing jobs and fighting inequality, all seem to demand economic growth. **Economic growth is not the goal in itself,** but a means of reaching a number of other goals, which collectively create economic stability.

The social, economic, and political aspects of the current economic system demand growth to ensure stability in the short term. However, **in pursuing short-term economic growth, policymakers put long-term stability at risk** – by trading in environmental health and function, transgressing planetary boundaries and risking costs for public budgets from the environmental crisis.

Economic Stability and Resilience

Stability is a rather static concept. First and foremost, it means that important system variables such as unemployment, inequality or temperatures have a predictable level of variation around a mean. To talk about how policy can escape the dilemma of choosing whether to preserve short-term or long-term stability, we must introduce another concept: "resilience". Resilience adds a dynamic component to the concept of stability. **While stability is about the *magnitude* and *strength* of change, resilience defines the *ability* to cope with change,** especially massive change such as shocks and crises. Stability in the long-term can therefore be achieved both by limiting the size of change or by developing an ability to adapt to and recover from change.

Inspired by Andrew Mitchell[18], we define resilience as "the ability to absorb and recover from shocks". Long-term stability requires a resilient economy. An economy that is able to react to massive change and at the same time reduce the risk of such change. For the post-COVID recovery to create a resilient economy, it must transform both structures and means of living to enable the system to react to large shocks, while also reducing the risk of such shocks.

In this sense, out of all the dimensions of resilience[19], two aspects of a resilient economy are central to this report:

1. **Safeguarding environmental resilience:** A resilient economy reduces the risk of future environmental shocks and enhances environmental resilience through a reduction of drivers of biodiversity loss. Green innovation and a structural transformation of the economy towards sustainable business models and lifestyles can reduce pressure on the environment. Investment in ecological function and recovery can boost both ecological as well as economic resilience, if employment and income are coupled with a healthy environment.

2. **Strengthening socio-economic resilience:** By safeguarding environmental resilience, a resilient economy reduces the long-term economic risks of environmental crisis. At the same time, a resilient economy increases its capacity to recover from shocks by liberating its stability from the need to grow. *A resilient economy can ensure employment generation, equality and debt reduction even in a stagnating economic environment.* Such resilience would require rethinking how we generate wellbeing and rearranging how we pursue it, as well as how debt is managed, how jobs are created, and how inequality is reduced.

Strategies for addressing the biodiversity loss

To pave the way for a resilient economy, two central strategies are required:

1. **Green innovation:** We need huge leaps in green innovation to increase material productivity and efficiency, as specified by Dasgupta, to allow businesses to produce and society in general to enjoy as much material prosperity as is available for distribution. Within the ecological limits of the planet, policies that encourage green innovation can reduce the negative ecological effects of economic activity and could enable a transition to a less resource-intense and climate-friendly economy, as sought by the UKs Net-Zero Regulation and the Circular Economy Package.

2. **Growth independence: However, while green innovation has to increase,** policymakers today must prepare for the fact that these innovations are likely to still not be sufficient, as recognised by Dasgupta. It is **possible** that ecological collapse can only be avoided by a courageous restructuring of today's economic systems: decoupling economic and political stability from economic growth.

The matter of which of these strategies is the right one is highly disputed.[20, 21, 22, 23, 24, 25, 26, 27] Given the uncertainty of the future, we must apply both rather than debate which one is right.

Understanding and defining systemic change

Many researchers, including the IPCC[28], the IPBES[29] and the WEF[30] have highlighted that transformative change is necessary to mitigate the acceleration of the climate crisis and biodiversity loss. They agree on the main areas of reform, ranging from policy and finance to business and lifestyles. However, what is missing thus far, is a better understanding of *how* to operationalise systemic change.

We define systemic change as institutional change[31] that drastically decelerate or mitigate the breakdown of ecosystems, either directly through policies that protect and restore natural habitats or indirectly, e. g. through policies that address the *drivers* of biodiversity loss like climate change.

Douglass North defines institutions as "constraints that structure political, economic and social interaction. They are made up of formal constraints (constitutions, laws, property rights), informal constraints (sanctions, taboos, customs, traditions, codes of conduct), and their enforcement characteristics."[32]

In this report, we go beyond the cultural and informal dimensions of institutional change. Often, responsibility is redirected to the people's culture. In those cases, the assumption is that people have to change their values first, which would then translate into different policies afterwards.[33] In our assessment, we recognise the reciprocal nature of the interaction between formal and explicit institutions like policy, regulations, laws, agreements and informal value systems and culture.[34] We assume that policy can drive cultural change, rather than only being an outcome of it. This, however, does not take anything away from the necessity of informal cultural change independent of policy.

Criteria for systemic change

Systemic change can be understood as changing the formal and explicit (policies, practices, resource flows) as well as informal and semi-implicit (power dynamics, relationships and connections) and implicit (mental models) institutions of today's economies.[35] In order to be considered systemic changes, proposed institutional changes must fulfil the following criteria:

1. Structural: Increase the relevance of sustainability and wellbeing aspects in formal institutions like governance processes, legislation and international agreements (explicit level).

2. Root-cause related: Address the **root causes** of today's environmental and social challenges (semi-implicit and implicit level): power imbalances, lack of valuation of nature, growth dependence, narrow value systems in society, business, finance and policy, and mindset.

3. Cross-cutting: Influence the behaviour of the **majority of actors within different economic areas** (policy, business, finance, citizens) across different economic sectors (manufacturing, agriculture, energy ...) on a long-term basis, rather than changing the behaviour of only one single actor.

4. Transformative: **Can be incremental in the short-run** (e. g. biodiversity labels for financial products), if they contribute to systemic change in the long-run (e. g. directing investments across sectors into nature conservation) and help overcome path dependencies that create lock-ins in existing structures.

Methodology

To identify a set of key policies for systemic change toward a resilient economy, we conducted a qualitative expert-led assessment of literature on systemic change, building on our experience in the field of transformation sciences and new economics. In doing so, we conducted the following steps:

1. Identification of sources

Firstly, we identified **60 sources** on systemic change from the global literature based on expert input. Criteria for the selection of sources can be found in the appendix.

2. Identification of barriers and transformative policy proposals / options

Secondly, we identified **270 policy proposals** from these sources. Our literature review concentrated on proposals for systemic changes, as defined in the previous chapter.

From this set of proposals, we identified **12 topic clusters** on systemic change along the four clusters of actors. These are:

- **Policy:** multidimensional indicators, monitoring capacity, and legal frameworks; fiscal policy and growth independence; limiting power and empowerment for change.
- **Finance:** metrics for the long-term; mandates and legal interpretations.
- **Business:** profitability, investment and innovation; disclosure, reporting and assessment; business models.
- **Citizens:** sustainable consumption alternatives; sufficiency; affordability and fairness.

Part One of the report will describe the clusters and associated policies in more detail.[36] In terms of content, we have enriched the chapters with additional sources, when an important aspect was still missing.

3. Definition of eight key policies for the UK

Out of these 12 clusters and associated proposals, this report elaborates on eight key policies that:

- are **feasible & topical** in the **UK** (relevance),
- contribute to **recovery** from the COVID-19 crisis (COVID-19 suitability),
- have a **high-transformative impact**[37] (transformative potential).

At the same time, additional conditions apply to the whole set of policies, rather than single policies:

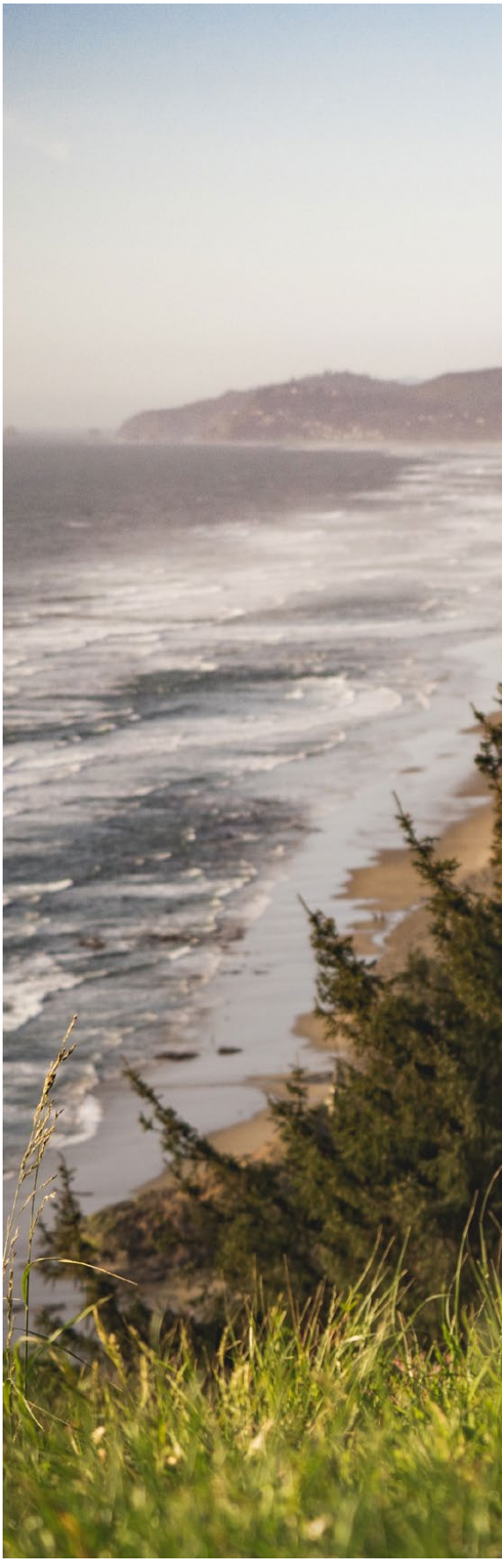
- **Balance:** To find the **balance between feasibility and transformative impact** the overall set of policies includes at least one less feasible, but highly transformative proposal.
- **International dimension:** To account for the UK's international role, at least one proposal should have an international dimension attached.
- **Side effects:** The set of policy should be complemented with proposals to reduce negative side effects of other proposals, to ensure consistency (e. g. environmental border taxes, land taxation)

4. Expert consultation

In order to "sense-check" the policy proposals that emerged from the literature review and from expert input, we conducted a **stakeholder poll amongst leading policy experts,** academics and commentators who work on relevant questions in the UK and beyond. We invited almost 100 participants and received a response rate of approximately 30 %. Participants in the survey were asked to:

- Reflect on whether the shortlist of proposed policy changes met our criteria for being both transformative, and possible, in the UK context.
- Nominate the three policy changes they would be most likely to advocate for and why, and to point to any policies we should consider adding to our list.
- Advice as to what strategy and approach would help to secure adoption of the respective policies in the UK.

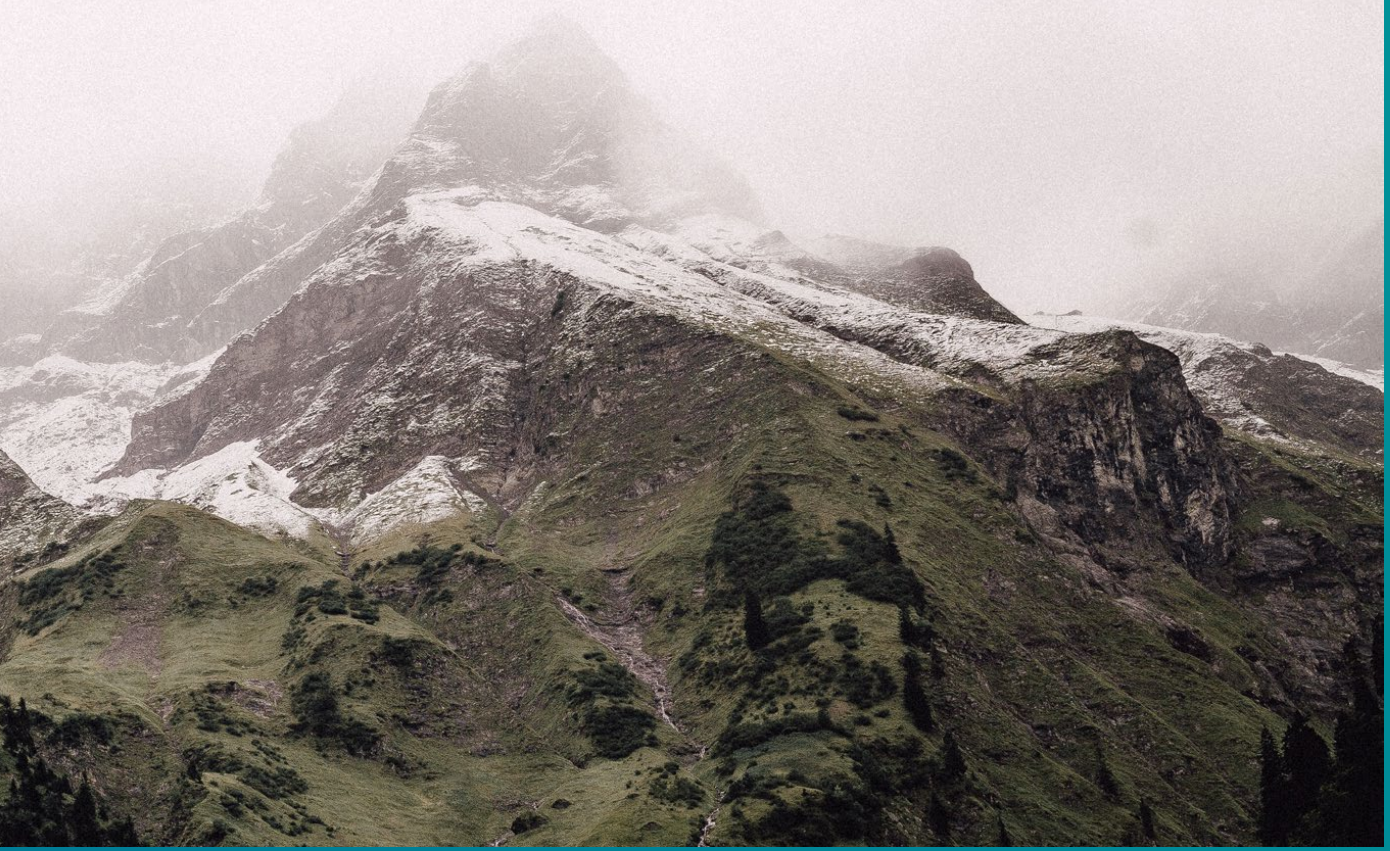
While not a large-scale representative poll, this deliberate, strategic sampling of professionals with relevant expertise has provided confidence in the suite of policies we set out below. To augment the poll input, we also posed similar questions to a different set of policy experts, including UK government officials, at a webinar hosted by the WWF in June 2020.



Part 1

Overview of barriers and policy proposals for changing the economic and financial system

This part provides an overview of the main areas of reform, as well as barriers and transformative policy options, categorised into four areas of action: policy, finance, business and citizens.



Introduction

Drawing on our assessment of the global literature on systemic change, this part provides an overview of the main areas of reform, as well as barriers and transformative policy options.

To this end, we consider four fields of action in the following four sub-chapters: Policy, Finance, Business and citizens. The literature offers a wide range of insight on what prevents these actors from changing their behaviour and what policy can do about it.

We faced two challenges when synthesising the literature. The first challenge were the highly differing levels of abstraction of proposals found in the literature, ranging from abstract proposals such as "internalise environmental costs" to very concrete proposals such as "increase equity requirements for unsustainable credits". The challenge was therefore to align proposals to a similar level of abstraction. The second challenge was to identify the target group for policy proposals. For example, in the case of the proposal to "ban advertising of environmentally harmful products", the question of whether the proposal is attributed to the target group that implements the policy (business) or target group that should change its behaviour (citizens).

To align levels of abstraction and consistently assign target groups, we identified **12 intervention clusters for policy makers** (see Table 1). The clusters are to be understood as objectives, the achievement of which influences the behaviour of each actor. Some proposals in the literature are directly reflected in the objective, others in the associated policy proposals.

A detailed summary of all literature sources can be found in the → Appendix.

It is important to stress that these clusters are all interwoven. There are many synergies but also many conflicts between them. Many of the goals can only be achieved in tandem with others. For example, consumption change is only possible through the availability of product alternatives, as well as the purchasing power required to access them. Power cannot only be directly restricted through prohibition, but it can be influenced indirectly through tax structures and new corporate models. By cross-referencing, we point out possible links between the objectives in the chapter.

Policy	Finance	Business	Citizens
Multidimensional indicators, monitoring capacity, and legal frameworks: ensure political decision making addresses the environment and wellbeing with equal weight on the economic aspects.	**Mandates and legal interpretations:** include environmental and social objectives in the targets of public institutions such as central banks and development banks.	**Shifting Profitability:** internalise the costs of environmental damage.	**Sustainable consumption alternatives:** shift from unsustainable to sustainable consumption.
Fiscal policy and growth independence: increase the space for fiscal interventions to support a green and just transition and decouple economic stability from economic growth.	**Metrics for the long-term:** integrate environmental categories and extend the time horizon in risk assessments.	**Sustainable investment and innovation:** shift investment and technology from resource-intensive activities to those that are less resource-intensive but more labour-intensive.	**Sufficiency:** limit the total level of consumption.
Limiting power and empowerment for change: reduce economic and democratic power imbalances.		**Non-financial disclosure, reporting and accountability:** include environmental objectives in business reporting standards.	**Affordability and fairness:** reduce inequality and ensure that all are capable of meeting their basic needs and of participating socially.
		Sustainable business models: Support business models that focus on sustainability and wellbeing and create a level playing field.	

Table 1: *Fields of action and intervention clusters of recommendations from the literature review*

Policy and governance

» Governments have often fallen short of implementing policies that translate agreed environmental and social objectives into action. «

Policy and governance are one central lever in bringing about a resilient economy. By setting legal and institutional frameworks, governance shapes people's attitudes and behaviour, and the interactions between actors (including governments, financial institutions, business and civil society).[38] Policy could either reproduce existing inequalities or support low-income groups in the transition to a more sustainable society. Policy can also incentivise or disincentivise certain investment, innovation, production, and consumption; making it a key measure in the effort to overcome path-dependencies that lock in current modes of unsustainable production, consumption, and generation of wellbeing.[39]

Governments have often fallen short of implementing policies that translate agreed environmental and social objectives into action. While objectives such as the Sustainable Development Goals (SDGs) and the Paris Agreement are important steps towards a resilient economy, , the world is not well placed to achieve most of the SDGs.[40] Similarly, global policy commitments to reduce greenhouse gas emissions are insufficient to halve GHG-emissions by 2030, which is required to limit global warming to 1.5 °C.[41] Even the existing weak climate pledges are unlikely to be achieved. The policy efforts of the UK, the second largest contributor to CO_2 emissions in the European Union (10.7 %), have fallen short. The Paris Agreement binds the UK to reducing emissions by at least 40 % of 1990 levels by 2030, and in June 2019 the UK adopted a net zero emissions reduction target for 2050. Achieving any of these targets remains unlikely, especially given that the UK's expenditures into climate mitigation ($ 100 billion) decreased by 35 % between 2014 and 2017.[42, 43]

Challenges

Barriers to policy change

It remains difficult for most governments to promote policymaking that is suitable for tackling the complex challenges of the 21st century, for a myriad of reasons. An assessment of the literature can be summarised in two clusters: Governance & political value systems, and power imbalances.

Compartmentalised governance and short-term focused political value systems

Firstly, managing the global commons in the face of international economic competition requires collective action and enforcement. The non-binding nature of international climate agreements, with unclear or inadequate compliance rules, has **not succeeded in raising political ambition at a national level to take meaningful climate action.**[44]

Secondly, one of the reasons for this lack of interest in stronger international agreements are **political value systems and the associated governance processes that prioritise short-term economic impacts of policies, rather than long-term environmental and other social impacts.** Many policies lack an evaluation of long-term environmental and social impacts and are shaped according to a short-term agenda of economic growth – even though long-term ecological and social harm also translates into immense fiscal expenses down the line. Economic growth is associated with high levels of wellbeing, debt reduction, lower inequal-

ity and employment generation. Therefore, it is seen as the preeminent means to achieve the most fundamental socio-economic policy objectives. This and a range of further lock-ins, such as media attention, geopolitical power competition, private interests and lobbying, make it very **difficult for policymakers to break away from economic growth as a policy objective and argue in favour of a wider set of indicators and policy measures.**[45, 46]

Thirdly, political value systems that prioritise short-term economic policy impacts are tied to economic attitudes and theories in public institutions, which stem from a narrow reading of economics. Economists shape how policymakers perceive and measure the world, affecting the decisions they make.[47, 48, 49, 50] The uncompromising focus on economic growth is one example.[51] Another is the focus of public policy on market-based, supply-side solutions to economic problems For example, prior to the COVID-19 crisis, policymakers – both globally and in the UK – were convinced that solutions would surface through the free market, which policy should not excessively regulate.[52, 53] This reading made it difficult to implement regulatory measures such as bans or obligations. These may be economically less cost-effective, but they are effective in terms of their impact.

Fourthly, **certain features of existing democratic systems pose additional barriers to long-term oriented policymaking.** To ensure re-election, political agendas tend to focus on actions with measurable impacts during their term.[54]

Power imbalances

These structural lock-ins of policy and governance systems are reinforced by actors pursuing short-term profits and translate into power imbalances. In the UK, 0.1 % of business receives 47.8 % of total revenues and provides 39.5 % of the country's jobs.[55] In the US, the "Big Three" index funds, Vanguards, BlackRock and State Street make up 96 % of the shareholdings of Fortune 250 companies and exercise significant influence over shareholder proposals, especially on proposals related to the environment, social matters and governance.[56] This concentration of power, reinforced by their capacity to organise lobbying and their strong political networks, gives them tremendous leverage when it comes to public decision making.[57] The resulting power imbalance between policymakers, business and civil society hampers any progress towards sustainable solutions.[58]

Solutions

Options for systemic change

Drawing on the reviewed literature, we propose several actions to overcome these barriers. Policy actions can be grouped into three clusters: governance related issues, fiscal policy and growth independence and power. We summarise key arguments and invite readers to consult the sources provided in the footnotes.

Multidimensional Indicators, monitoring capacity, and legal frameworks

Political decision-making should give equal weight to the environment, wellbeing and economic aspects in order to build ecological resilience and social wellbeing. This requires developing and implementing policies that consider short- as well as long-term environmental and social impacts. To achieve this, governments should replace purely economic measures as indicators of progress that guide political decision-making, such as Gross Domestic Product[59] – which does not account for the negative environmental impacts of economic growth, or the negative impacts on

human health and social relationships. A group of countries, including New Zealand and Scotland, are exploring alternatives using Wellbeing Budgets which rely on a multidimensional set of indicators.[60, 61] **The alternatives are there.[62] What is missing is their implementation and their actual use in political decision-making processes.**

Indicators are not only measurements but can also determine accountability and effectively change policy decisions, if they are incorporated into policy design and decision-making processes. This would require methods, models and a community of users able to understand and evaluate the quantitative as well as qualitative impacts of policies on wellbeing and the environment, as exists for economic indicators.[63] Some argue that such skills should be accompanied by training in systems thinking, to build capacity in public institutions in understanding feedback mechanisms between the economy, society, environment and associated tipping points.[64, 65] Such indicators for policies should also be used to assess existing subsidies and tax systems, subjecting them to a critical analysis of their domestic and international environmental and social impacts.[66, 67, 68]

Governance systems would need to be legally obligated to adopt long-term criteria to ensure that an enhanced understanding of environmental, social and economic impacts and interlinkages inform policies. The upcoming Environment Act in the UK or the Climate Law in the EU are important steps in securing obligations among policymakers to incorporate future factors and the needs of nature into decision-making. Proposals in the literature include the legal recognition of the rights of nature, as in New Zealand, Bolivia or Ecuador.[69] A new democratically elected chamber with the responsibility of representing the interests of future generations could have veto power on decisions with long-term impacts.[70] This would increase pressure to find solutions that mediate conflicts between the present and future interest groups. One important initiative in this vein is the Wellbeing of Future Generations Act in Wales, which requires public bodies to think about the long-term impact of their decisions, in terms of their effects on persistent problems such as poverty, health inequalities and climate change, offering opportunities to bring about long-lasting, positive change for current and future generations.

Fiscal policy and growth independence

However, **for long-termism to be embedded in policy, another structural barrier must be overcome. The puzzle of economic growth dependency needs to be solved.**[71, 72] The COVID-19 crisis has demonstrated how steadfast public perception is that stability depends on economic growth. Placing social, environmental and economic stability at the centre of concern is not merely a matter of political will. Economies today seem to be structurally dependent on the continuous expansion of the economy.

Becoming growth independent means finding other ways of generating employment, promoting equality and reducing debt. It is not about de-growing the economy. It is about recognising the fundamental uncertainty regarding the future. Due to the complexity and amount of assumptions involved, neither science nor policy can foresee how stronger environmental commitments and regulation will affect aggregate economic growth in the long-term. It would be great, if green growth and technology solved the problem and ensured that today's economies stayed within planetary boundaries while growing. However, as outlined recently in the Dasgupta Interim Report[73], innovation is likely to be too slow for addressing urgent environmental challenges. **Becoming growth independent is about preparing for the possibility that ecological resilience can only be maintained through a steady-state economy or a decrease in consumption and production.** In addition, policy-

makers must rethink fiscal policy. A green transformation requires substantial public investment. At the same time, **it will be crucial to invest where the economy creates real public use-value:** health care, education, nursing care, public parks and clean energy, transport and infrastructure.[74, 75] To do so, sufficient amounts of resources must be available. Thereby, regulations such as the Stability and Growth Pact in the EU, or the Charter for Budget Responsibility in the UK define how much money can be spent and what it is spent for. **Changing the legislations that assess fiscal space can create space for new investments.**

These new investments can, for instance, be directed by a Green Investment Bank[76] to where they minimise ecological risks and maximise social value. However, such investments often face higher debts. Charles Goodhart and Michael Hudson therefore propose a modern form of debt jubilees to deal with this challenge, where those forms of debt most largely contributing to income and wealth inequalities could be cancelled by funding from a land or property tax.[77, 78]

Additional resources can come from taxation on activities that produce damage instead of value, and by fighting tax evasion and offshoring. Legislation defines how much money is taxed and who pays that money, thus guiding economic development in a certain direction. More taxes can be collected by reducing tax advantages for fossil fuel industries[79, 80] or implementing taxes on activities that are harmful to the environment and the public good (e. g. carbon taxes[81, 82]). Policy would thereby internalise external effects from economic activities and incentivise the right kind of behaviour. Taxes can also come from skimming off economic rents: increases in value that occur not by the personal investment of people, but through the investment of the State[83, 84] or are not associated with real economic activities (e. g. a financial transaction tax[85]).

Limiting power and empowerment for change

Policymakers will face considerable resistance to change, if policies are accompanied by concentrated impacts that run counter to the interests of powerful actors. To prevent this, **policies that combat power inequalities are important.** Often, money results in political power (in the sense of an individual's or group's ability to influence political decision making), over the use of public resources and the implementation of policies[86]. Proposals to break these power imbalances by distributing money more equally range from redistributing economic rents through land tax reforms[87], progressive wealth and inheritance taxes[88] to structural approaches like business unbundling, stronger regulation for mergers to a change in ownership structures as a whole[89, 90], to maximum sizes of companies[91], income limits[92, 93] or basic income schemes[94].

Tackling power imbalances is not only about limiting the power of influential actors, but also about increasing power of less powerful groups. One way to achieve this is to extend policy coherence boundaries to non-state actors that operate outside or across the borders of national legal regulation.[95] This includes corporate norms and compliance systems, new business models, new ways of forming civil society groups, the use of social media, etc. Policy coherence needs new means of governance. New forms of collaboration between policy and the private as well as the civil society sector can promote policies that cut across functional boundaries to create solutions that anticipate societal and global dependencies. Citizen assemblies can become a new form of policy design and innovation.[96]

Finance

The vast majority of financial institutions fail to integrate environmental and long-term factors into their decision making. This leads to a large misallocation of funds. On the one hand, funding the transition to a sustainable economy is estimated to cost between US $ 5–7 trillion per year until 2030. However, public and private finance only mobilises US $ 2.5 trillion, leaving a significant shortfall of funds[97, 98]. On the other hand, financial institutions continue to fund unsustainable economic activities. Bond and equity markets are, for instance, overexposed to fossil fuel intensive and polluting sectors. This means that a large amount of capital is being invested in environmentally harmful business, rather than sustainable alternatives. Notably, this also applies to the seemingly "market neutral" asset purchasing programs of central banks[99]. A similar dynamic exists in bank-based finance. It has been estimated that banks across the world have invested a total of US $ 2.7 trillion in fossil fuel projects and companies between 2016 and 2019; after the signing of the Paris Agreement[100]. Of this amount, UK banks alone accounted for US $ 100 billion between 2016 and 2018[101]. In addition, the high exposure of the UK's financial sector to mortgages on real estate with low energy efficiency illustrates how urgently the financial system needs reform, if it is to become an enabler rather than a barrier to environmental sustainability[102].

This collective misallocation of funding has enormous implications in the way of destabilising the planet's environmental systems. Since economic and financial systems are embedded in earth systems, financial stability itself is at risk. Now realising the systemic risks for financial stability that arise from climate change, which are estimated at US $ 43 trillion in financial losses by 2100[103], regulators and central banks have started to explore and integrate climate-related risks into their work.

» The collective misallocation of private funding has enormous implications in the way of destabilising the planet's environmental systems.«

Climate-related risks are, however, not the only concern for finance. A WWF sponsored study has recently estimated potential losses from ongoing biodiversity-related loss at a minimum of US $ 10 trillion by 2050[104]. Another study sponsored by UNEP suggests these risks are heavily concentrated in a few sectors, including agriculture, apparel and resource extraction and use[105].

Notably, such high-level scenarios are likely to underestimate the real risks that materialise. They are based on assumptions about highly interdependent and uncertain environmental, technological and political trajectories. In light of this, recent working papers from the Bank for International Settlements[106] and the UCL's Institute for Innovation and Public Purpose[107] have pointed out the limitations of relying on modelling. Citing the precautionary principle and the fundamental uncertainty that comes with changes to the planet's natural systems, the authors advocate rapid and transformative action to avoid potentially catastrophic outcomes for nature, the economy and finance.

Financial institutions and their supervisors need to better incorporate environmental criteria into their allocative decision making and their risk assessments. Ethical investors, ESG rating agencies and NGOs have pioneered the work on disclosing and understanding the data on how finance contributes to and is exposed to environmental risks. Most recently, initiatives like the FSB TCFD have added much-needed rigorousness and scope to these assessments. Nonetheless, disclosure alone remains insufficient if financial institutions are unable or unwilling to process it.[108] This needs to go further by making sure that this data is used

effectively. The priorities and mandates of regulators need to change. Additionally, actors across the financial system including financial institutions, regulators and service providers (e. g. rating agencies, index providers) need to develop common metrics and methodologies that make the relevant environmental issues clear. Together, these shifts could give rise to policies and investment practices that better allocate funding.

Challenges

Barriers to a sustainable transformation of the financial system

There are, however, institutional and legal reasons for the misallocation of funds and the failure to take environmental issues into account.

Short-termism

The first issue is that financial institutions and their regulators often only operate **using a time horizon of one business cycle,** and thus, only look at what happens in the next one to five years[109, 110]. In addition, the practice of quarterly reporting has been linked to short-termism by some observers[111]. The associated longer-term environmental impacts and risks of financial transactions are often not considered and therefore not appropriately priced.

A second issue is that large financial institutions and investors are **generally risk averse when it comes to economic risks.** This is because regulation and mandates require that they do not gamble with the contributions of pension savers or insurance holders. While this is a sensible policy, it also means that such financial institutions display a status quo bias, which means that they are greatly exposed to the current unsustainable economy, whereas alternative (possibly more sustainable, but less profitable) businesses face a shortage or increased cost of funding. This status quo bias is further exacerbated by the use of indices like the S & P 500 or the MSCI World as proxies for "the market" against which risks and returns are benchmarked. Such indices have been found to be biased in favour of the fossil fuel industry and to grant undue infrastructural power to index providers like MSCI, which make far-reaching decisions about capital allocations.[112, 113]

The inability of institutional investors to fund sustainable projects is further exacerbated by narrow legal interpretations of their responsibilities (i. e. fiduciary duties). These postulate that they need only take short-term profit maximisation into account[114]. A final institutional issue is the mismatch of scale across capital markets in particular. Impactful environmental preservation projects often have a volume of less than one million euro or dollars, while the average green bond requires a volume of 100 million EUR.[115]

Lack of metrics

A second cluster of barriers concerns the lack of common metrics for environmental and broader sustainability indicators. While data and ratings on Environmental, Social and Governance (ESG) criteria abound, different methodologies make standardisation and comparison difficult. The lack of correlation between different providers has led critics to adopt the term "alphabet soup" when referring to ESG[116, 117, 118]. Some of the confusion of ESG methodologies comes from the fact that data providers often assess companies' targets and policies instead of the actual environmental and social outcomes. Initiatives like the EU's upcoming green taxonomy and the Task Force on Climate-related Financial Disclosures (TCFD), as well as more established frameworks such as the Global Reporting Initiative or the CDP (formerly Carbon Disclosure Project), aim to enhance the clarity of envi-

ronment-related information. Most recently, several organisations including the WWF and UNEP launched the Taskforce for Nature-related Financial Disclosures[119]. Given increased deterioration of ecosystems and increased awareness of finance and the economy's dependence on natural systems[120], this task force aims to improve the reporting, metrics and data that financial institutions need in order to better understand their risks, dependencies and impacts on nature by 2022.

These developments notwithstanding, the lack of agreed upon and widely used metrics allows financial institutions to engage in "greenwashing", i. e. selecting the ESG measures that make their portfolio *look* sustainable. This kind of ESG data shopping, however, defeats the purpose of sustainable investment, since instead of reallocating capital towards sustainable businesses and projects, existing assets are merely relabelled. In addition, the "noise" that such competing methods generates, makes it harder to clearly identify the long-term risks.

Culture and Policy Frameworks

Thirdly, there are barriers to sustainability in finance that are related to but not completely covered in the institutional and legal barriers, which we term **culture and policy frameworks.**

Financial practitioners tend to reflect little on long-term and environmental impacts in finance education and in the work environment. Instead, short-termism and a narrow conception of monetary profit are prioritised. This is reinforced by the dominant metrics and tools that financial practitioners use. The ubiquity of narrow Cost Benefit Analysis and short-term financial pricing models like the Capital Asset Pricing Model (CAPM) as well as Modern Portfolio Theory more generally, are prime examples of this dynamic.

A second broader issue is the overall policy framework beyond the regulation of the financial sector (see Chapter 1). The materialisation of the risks for unsustainable investments depends ultimately on real economy policies. If, for instance, a high carbon tax is implemented or internal combustion engines are prohibited, this represents a risk for those who currently invest in financial assets linked to these economic activities – in the literature, this issue is denoted by the concepts of stranded assets and transition risks. If, however, financial institutions do not believe that governments will act forcefully, they have little incentive to already factor in such transition risks today.[121] For this reason, focusing on risk disclosures in finance only is unlikely to shift allocation patterns.

On the other hand, the point about the significance of real economy policies should not be overstated. Finance is not merely a reflection of the real economy and reforms to the financial system are not only second-best strategies. Instead, there is a two-way dynamic between finance and the real economy. The financial system processes information from the real economy according to its own institutional dynamics. Allocation decisions that are made in this process **not only reflect the current real economy, but also contribute to the construction of the future real economy.**[122, 123] **As such, reforms of both the real economy and the financial system are needed to transition to a sustainable economy.**

Solutions

The role of policy in setting finance on course for tackling today's challenges

Institutional legacies, mandates and legal interpretations are the outcomes of past political choices and policies. Likewise, what is considered today as standardised and "hard" financial data is,

in fact, the outcome of legal and political processes[124]. The barriers to finance adopting and playing its part in funding a sustainable transition is therefore not set in stone, and policymakers can rewrite the rules of the game according to the altered priorities that planetary emergencies demand. We have identified two main clusters where policy can intervene.

»Only 13 % of central banks have a sustainability-related mandate.«

Mandates and legal interpretations

In its simplest form, a mandate describes the objectives of a public institution. Accordingly, a body with political legitimacy like the UK Parliament delegates the task of achieving certain goals to an independent public body like the Bank of England (BoE). In the context of finance, central banks and regulators are the public institutions whose mandates are especially relevant. Mandates serve on the one hand to ensure the consistency of policies prescribed by regulators and central banks, since they prevent politicians from creating confusion by constantly adjusting policies. On the other hand, mandates prevent "mission creep" on the part of these institutions by clearly circumscribing their tasks.

Nonetheless, it is important to remember that mandates remain based on political decisions and that they reflect the context of those decisions. **A recent review of 135 central banks finds that only 13 % out of the reviewed institutions have a sustainability-related mandate**[125]. Some, like the BoE, have a broader mandate that tasks them with contributing to the government's priorities. However, due to different political priorities in the past, many central banks, including the BoE, are still primarily tasked with ensuring price stability (and more recently financial stability). This could make them a target for criticisms of mission creep, should they try to address environmental issues like climate change[126].

Legal interpretations, on the other hand, determine the meaning and implications of a concept in regulation or any other piece of legislation. Such clarification determines, for example, whether and to what degree the task of maintaining financial stability forces central banks to address climate change. Yet legal interpretations also impact private financial actors. For instance, the question of which risks can be considered "financially material" influences the reporting and risk assessments of financial institutions. Another example is the above-mentioned concept of fiduciary duty, which has implications for the allocation strategies of institutions like pension funds. The list below outlines certain policies that could modify the cluster of mandates and legal interpretations towards sustainability:

- Democratic consultation on the purpose of the financial sector led by the Parliament, whose outputs would be used to update the mandates of the Bank of England and the Financial Conduct Authority.[127]
- Clarify the meaning of materiality, so that it accounts both for risks of dependencies of financial institutions on nature and for impacts of financing operations on nature (double materiality)[128].
- Clarification of the non-financial dimension of fiduciary duties.[129]

Metrics for the long-term

Illumination of the links between the environment and finance requires standardised measuring techniques. While popularisation and increasing sophistication of environmental metrics helped the financial sector to learn about environmental issues in the past, these efforts have been insufficient in anchoring sustainability concerns to finance. To assess the risks to and impacts on nature, financial institutions and regulators need consistent, science-based data that can be integrated into financial decision making and supervisory practices respectively. There is a need for common standards, mandatory disclosure and publicly backed methodologies. Some of the proposals that are related to the question of metrics are listed below:

- Support the development of a taxonomy of economic activities.[130]
- Develop public labels that certify the compatibility of financial products with biodiversity goals and ensure that biodiversity is integrated into ESG [Environmental, social and Governance] ratings. In the longer-term, methodologies should be harmonised.[131]
- Make long-term and environmental risk assessments obligatory for all financial institutions through prudential regulation tools such as climate stress tests.[132, 133]
- Develop transition scenarios and stress tests to assess how well financial institutions are aligned with the pathways towards a 1.5 °C transition and a halt of biodiversity loss.[134, 135]
- Make environmental, long-term risk assessments obligatory for all financial institutions.
- Make disclosure and reporting of "non-financial" information to regulators and the general public obligatory for listed companies.[136, 137, 138]
- Make financial institutions' disclosure to supervisors of climate-related risks and their management obligatory.[139]
- Make reporting on climate change risk mandatory.[140]

Success story

The Task Force on Climate-Related Financial Disclosures (TCFD), hosted by the Financial Stability Board (FSB), was put in place to develop consistent, climate-related financial risk disclosures to help companies, banks and investors provide information to stakeholders. Increasing the amount of reliable information on financial institutions' exposure to climate-related risks and opportunities will strengthen the stability of the financial system, contribute to greater understanding of climate risks, and facilitate financing the transition to a more stable and sustainable economy. This framework requires businesses to report the climate-related impacts of their operations, thus providing an accounting mechanism that clarifies progress toward wellbeing goals. To date, the TCFD has gathered over 1020 supporters representing a market capitalisation of over US $12 trillion[141]. In addition, regulators like the UK's Department for Work and Pensions have started to explore the option of making the TCFD framework mandatory[142].

Business

» Efficiency gains might be realised in one sector, but they are often offset by an increase in production in another. «

Business[143] has a major influence on the prospects for a sustainable economy and socially just society. The **private sector is a key economic actor via its immediate role as employer, purchaser, producer, and taxpayer and by shaping the behaviour of employees, citizens, communities, other businesses, and societal institutions.**[144]

In the UK, the private sector accounts for 60 % of GDP145 and per capita income and employs 77 % of the workforce[146]. It is responsible for 18 % of UK territorial Greenhouse Gas (GHG) emissions on average.[147] It extracts over 100 million tonnes of natural resources in the mineral and agricultural sectors alone.[148] It uses these resources to satisfy consumption, which has increased nearly 50 % from 2005 to 2019.[149]

At the same time, **business practices can exacerbate vertical and horizontal inequalities.** For example, a focus on returns to financial capital can come at the cost of the returns to labour.[150] Without regulation, the majority of businesses will continue to pursue activities that risk undermining environmental quality and resilience and undervaluing workers and the wider community.

In the past, efforts in the UK to compel sustainable production focused on closing material cycles, increasing energy and resource efficiency and decarbonising the energy system. In 2008, the UK adopted the Climate Change Act, and it is implementing higher standards on efficiency and the circular economy, while growing the renewables sector. It has improved benchmarks for ESG disclosures[151], has taxed plastic bags in grocery stores[152] and implemented the UK Trading Systems (UK ETS) and carbon pricing.

While these **measures are moving in the right direction,** they fall short in terms of scope and speed of change. While the UK has seen a decrease in carbon emissions in the private sector by 41 % since 1990[153], the speed of decarbonisation has to further accelerate to stay within the 1.5° goal of the Paris Agreement.[154] The UK's private sector has made progress in reducing dependency on fossil fuels, reducing the use of coal by 80 %, gas by 20 % and oil by 6 % in the last decade[155], but the private sector is still hugely dependent on these fuel sources. **Efficiency gains might be realised in one sector, but they are often offset by an increase in production on the other.**[156]

The expectation for businesses to be more inclusive of social and environmental considerations is growing. **Businesses are already feeling pressure to become more sustainable,** primarily from their competitors, following customers and governments.[157] However, only 17 % of the current market is demanding more sustainable products.[158] Despite this, the prominence of the "ESG" agenda is growing.

Challenges

Barriers to implementing sustainable and fair business models

From the literature, we identified a series of barriers that limit the development of sustainable and fair business models:

1. **Short-termism:** Institutional investors are typically unable to sacrifice short-term finance returns in support of ESG guidelines[159] as they have the fiduciary duty to preserve capital and maximise risk adjusted returns.

2. **Fiercely competitive market contexts** which create narrow profit incentives and pressures to compete on cost and price, driving outsourcing, automation, and externalisation. These profits are important to pay for the opportunity costs of the owner, to service liabilities and attract investors to keep up with technological progress. Coupled with the need to scale, the sustainable investment market is often not large enough to attract big institutional investors to support the transition toward sustainability.[160] In markets for goods and services, for those who cannot differentiate their product, going against these trends means their customers would purchase elsewhere and the firm would become unviable.

3. Without **standardisation of measurements and labels,** investors (and consumers) cannot compare products against each other, and sustainability is left as a "nice to have" instead of a requirement. There is a lack of common language and inadequate measurement tools to aid businesses in their transition towards sustainability.[161] Without standardisation mechanisms, companies, investors and consumers have no way to compare the efforts of respective businesses which translates to weak incentives for businesses to change.

4. Lobbying that pushes for **unambitious regulation and loopholes** for businesses to exploit, potentially exacerbated by reliance of certain regions on the presence (and hence employment footprint) of a single firm or industry (see → Policy).

5. **Corporate governance structures** and business models that elevate financial over social and environmental interests and incentivise managers to make decisions accordingly.

Solutions

Policy options to drive sustainable business behaviour

As outlined in the chapter on the role of → Policy, **governments incentivise or dis-incentivise certain business behaviour.** In order to achieve sustainable business behaviour, there is a **need for changing legal frameworks and for providing the right incentives and mandating tools, methods and models that support longer-term visions.** For example, public procurement and tax policies are key levers to inculcate better distribution of value shared. Furthermore, regulations, trade-agreements and standard setting can determine how environmental impacts are approached and accounted for. Drawing on our literature review, we have identified four clusters of policy action:

Shifting Profitability

Profitability is one of the major drivers that determine where investments flow and business models emerge. To change what is profitable, governments can undertake tax (and subsidy) reforms to encourage companies to better align their activities with socially and environmentally beneficial outcomes. For example[162]:

- **Move towards a new taxation paradigm.** Rather than taxing what people value (employment), policy should tax harmful activities (environmental damages), increase taxes on resource use such as Carbon or Resource taxes[163], phase out direct and indirect fossil fuel subsidies[164] and lower taxes on labour.[165]

- **Advance tax collection tactics and promote international collaboration.** The corporate tax base has steadily been eroded as globalisation of corporate activities allowed companies to

shift home-bases and transfer liabilities to tax havens.[166] This has exacerbated inequality and undermined public revenue.[167] One example of a new tactic to end tax avoidance and evasion is the OECD / G20 Inclusive Framework on Base Erosion and Profit-Shifting.

Non-financial Disclosure, Reporting and Accountability

Many authors have advocated for an **inclusion of external environmental costs into economic accounting.**[168] As flagged elsewhere in this report, requiring corporate disclosure, reporting against clear benchmarks and increased accountability can move businesses away from a narrow focus on short-term profit maximisation towards the incorporation of wider societal concerns in business decision making. For example:

- Require businesses to include both **social and environmental objectives** in their stated purpose and accounting;
- Develop **biodiversity labels for financial products** for retail investors to be better informed on the real impacts of their investments;
- **Full cost accounting** for environmental externalities to change patterns of use, purchase and production via more accurate prices;
- Establish a **common international standard** for calculating carbon content and biodiversity impacts of goods.

Sustainable Investment and Innovation

Challenges such as climate change, health and well-being are complex and interconnected: solving them requires the inclusion of several different stakeholders. Businesses need to have access to resources and partners in order to invest and innovate in addressing these challenges.[169] For example, **properly targeted and monitored government investment** can provide businesses with access to finance that underwrites experimentation and innovation for sustainability.[170]

Regulations also matter: to increase the circularity of economies, governments might regulate for **extended producer responsibility** (such as via longer warranties), that encourages better durability of products, alongside the right to repair and modularity standards. Creating **design requirements** for products such as the Cradle to Cradle framework[171] and punishing planned obsolescence[172] can increase repair and reuse potential[173], while banning waste disposal can compel practices such as food-sharing.

Sustainable Business Models

In the current system, a substantial number of businesses are configured so that their utmost goal is to maximise profits for shareholders. This heightened **focus on economic profit and growth is often counter to the interests of other stakeholders and fails to adopt longer-term time horizons.** Policy can ensure businesses incorporate environmental and social considerations into internal governance structures to be accountable for and deliver on a suite of impacts[174, 175] via:

- **Regulating for legal forms beyond the Public Limited Company (PLC).** The UK, for example, has a suite of pro-social business models such as Community Interest Companies, social enterprise, and cooperatives.
- **Using incentives** (tax breaks, accounting advice, preferential procurement and so on) that encourage the uptake of such business models.

Citizens

» The focus on consumer sovereignty fails to acknowledge the influence on individual consumption behaviour of contextual factors. «

Consumption is also a major factor in rising global emissions and environmental degradation beyond planetary boundaries. Considering the entire global value chain, nutrition, housing and mobility account for approximately 75 % of lifestyle carbon footprints.[176] Hotspots include meat and dairy consumption, fossil-fuel-based energy, car use and air travel. To get on track towards the Paris Agreement will require immense reductions of carbon footprints by up to 96 % in industrialised countries, in the next 30 years.[177]

Not all people equally contribute to this problem. Forms of consumption are enormously unequal distributed, both between and within countries. 20 % of the world's population in the wealthiest industrialised countries account for 86 % of the world's consumption, while the world's poorest 20 % account for only 1.3 %.[178] With disposable per capita income being a major driver of consumption, the environmental impact of households increases with income.[179]

Policy efforts for sustainability so far have primarily focused on accelerating technological change to make production more sustainable, by decarbonising energy provision and improving material and energy efficiency (for discussion of this approach, see → Business).

Policy based on the demand side of consumption have thus far had limited success in changing unsustainable behaviours.[180, 181] This is due to their basis in the concept of consumer sovereignty i. e. policies such as information labels about sustainable products and price signals.[182] However, this focus fails to acknowledge the influence on individual consumption behaviour of contextual factors like infrastructures[183], provisioning systems[184, 185, 186], inequality[187], psychological drivers and habits and norms[188].

Sustainable consumption policy is about influencing how and what people consume. It is about

- providing new sustainable consumption options and the necessary infrastructures.
- decreasing overall consumption levels and addressing the underlying drivers of increased consumption.
- ensuring that needs satisfaction does not necessarily rely on material consumption and income, but also on immaterial goods.

Challenges

Barriers for change towards sustainable living and drivers for unsustainable behaviour

Literature outlines two levels of barriers to sustainable consumption: social and physical infrastructures at the structural level and deeply enrooted habits at the cultural level.

Social and physical infrastructures

The first barrier are lock-ins to unsustainable consumption patterns beyond individual control. These result from

a. existing infrastructures[189, 190, 191],
b. availability of consumption options,

c. misleading incentives[192, 193, 194] and
d. economic threats.[195]

Existing infrastructure in industrialised economies make it difficult to consume in a sustainable way. There is limited access to sustainable alternatives for high environmental impact housing, energy, mobility and nutrition, everyday consumer products, working environments and social integration. In many sectors, sustainable alternatives are simply not available (e. g. the IT sector) or are not affordable for everyone (e. g. organic food, clothing and material for housing). Further, **misleading incentive structures** promote unsustainable consumption patterns. Subsidies for fossil fuels, large-scale industrial agriculture, or tax-free kerosene distort prices for consumers, thus encouraging unsustainable consumption.

Another barrier is ***efficiency consumption***, when consumption is presented as an "offer you can't refuse"[196]. Owning certain products is required to actively participate in society, increase time efficiency and become employed. Examples include washing machines, cars and mobile phones. One's ability to drive to work, communicate efficiently and have sufficient time for a full working week depends on access to goods and services and on whether employers and colleagues expect one to have this access. In this case, consumption is not a choice, but becomes a necessity.

Habits

In today's society, consumption serves important social and psychological functions that pose a cultural barrier to sustainable consumption. The cultural relevance of consumption in high-income societies associates higher levels of consumption with improvements in wellbeing, beyond the meeting of basic needs. For example, the term "status consumption" describes how people manifest their role in society by owning goods that offer recognition. In addition, alternative means for needs satisfaction are limited, e. g. recognition via stronger and meaningful relationships.

Solutions

Policy actions to enable sustainable living

Policymaking has the tools to effectively change social infrastructures and set incentives for cultural change, the two mutually reinforcing drivers of unsustainable consumption. Addressing both levels of barriers is crucial to initiate change. To effectively tackle unsustainable consumption, literature describes three levels that policy can address: **What** people (can) consume (incentives, consumption options and infrastructures), **how** they consume (behaviour and culture) and the creation of more **equal** consumption opportunities (affordability and income inequality).

Sustainable consumption alternatives

In a society with diverse values, sustainable products must be cheaper than unsustainable alternatives, for sustainable consumption to become the norm. This requires effective incentives or regulations, as discussed in the → Business chapter. Market prices must integrate true environmental and social costs, e. g. via the introduction of taxes on carbon emissions[197, 198, 199] or stricter waste incineration laws[200].

» Prices alone are not sufficient for transitioning towards more sustainable production and consumption systems.«

Of particular importance is decreasing direct and indirect prices for basic needs and services like mobility, nutrition, housing and increasing prices for luxury goods, to influence what is consumed. Likewise, regulation can promote more sustainable consumptions. For transport options, this means lowering costs of public transport, abolishing VAT for rail travel, introducing a tax on kerosene, setting incentives for car-free travel and commuting, setting speed limits for cars or including the transport sector in the emissions trading scheme to reflect the right prices for transport.[201] For the working environment, this can mean introducing one Veggie Day a week for canteen food or financially supporting alternatives to commuting to work by car.[202] With regards to nutrition, recommended policy actions include price incentives to substitute dairy products and red meat with plant-based options and raising taxes on meat.[203] Concerning housing, recommended policy actions include progressive estate taxes on e. g. living space, to avoid efficiency improvements being negated by increases in living space. Status consumption beyond what people really need can be discouraged through taxes on luxury goods[204], or higher taxes on products beyond basic needs.[205]

Prices alone are not sufficient for transitioning towards more sustainable production and consumption systems. For incentives to reach their full potential, policy must promote better availability of sustainable alternatives, reduce transaction costs and make unsustainable options unavailable. Exemplary policy options include the introduction of low-emission transport infrastructure such as bike lanes or public transport, target values for bike sharing[206, 207] and good pedestrian infrastructure in all traffic areas. Further, policy can direct innovation where it reduces transaction costs of sustainable services, making sustainable consumption easier and more comfortable. An example is the simplification of cross-border train bookings. Lastly, policy regulation is needed to limit non-sustainable products and services such as domestic flights, plastic bags or meat products in canteens.[208]

Policy can strengthen local and sustainable consumption and thereby lower transport emissions, while establishing and diversifying local working opportunities. A wide variety of policy options include financial incentives for local production, regional business development focused on ecological, non-intensive small-scale agriculture, community-supported agriculture, strengthening of local eco-tourism[209], price incentives to consume regional, seasonal food, as well as regulations that make the implementation of complementary local currencies possible.[210, 211]

Infrastructures for sufficiency

Along with "what" people consume, great potential lies in changing "how" people consume. Rather than replacing a product with a sustainable alternative, the "how" it is about reflecting on the necessity of using and owning certain services and goods and move towards sufficiency. Sufficiency means to identify **new ways of needs satisfaction beyond material consumption,** reducing overall consumption levels and creating structures for social integration that do not rely on material consumption.

To ensure this, infrastructures that allow a different form of consumption and working life are required e. g. reducing working hours[212], enabling sabbaticals[213] or working from home. Such changes have the potential to offer opportunities to consume differently, as they provide more time for more sustainable, time-intensive activities.

For example, this additional time can be used to **repair products**. Demand-side policies can make this easier, e. g. by supporting the implementation of repair cafés that increase awareness of and care for product durability and support a shift away from a "throw-away" mentality.[214, 215]

A **sharing economy** would make people reconsider which goods really needed to be owned and which can be substituted by services. Well-known examples of a sharing economy include car sharing, bike sharing and the introduction of neighbourhood sharing systems for goods people rarely use, like special toolkits.[216, 217]

The development of **new ways of housing** has the potential to reduce the living space and the associated energy demands for heating i.e. model projects for alternative forms of housing such as multi-generation houses and the construction of overall smaller living spaces.[218]

A **different form of nutrition** can be incentivised through the creation of community-supported agriculture and community gardening, creating new communal spaces and raising awareness of and demand for the consumption of seasonal food.[219, 220]

Affordability and fairness

Literature stresses that addressing inequality is a necessary precondition to effectively changing the "what" and "how" of people's consumption. Therefore, policies that ensure people are able, financially and socially, to satisfy their basic needs and participate in society are necessary to enable sustainable consumption. Such policies include establishing minimum and maximum income levels[221, 222], a universal basic income (monetary and non-monetary)[223, 224], and / or wage tax cuts for low-income households (→ Power).[225] Further measures include **providing equal access to sustainable goods and services** through providing vouchers for rail travel, regional food and sustainable housing for low-income households. Universal access to health care and education[226], increases in energy efficiency of buildings and housing[227, 228], and free public transport can play a crucial role in creating more sustainable consumption.

Interim conclusion
Thinking about and engaging in systemic change

This section has shown the amount of possible changes mentioned in the literature and made clear that **economic behaviour is not set in stone.** Be it politics, finance, business or citizens, behaviour is always the result of existing political decisions, legislation and systems. Therefore, to find the way to a resilient economy, it is necessary to change the underlying systemic factors.

As illustrated in the previous chapters, there are a number of **constraining forces** that hinder change. They prevent people from changing their consumption, investment, or political decisions. → Figure 1 summarises these factors.

However, these constraining forces can be countered by the **enabling forces** of change summarised in the previous sections, as depicted in → Figure 1. The enabling forces are a summary of the political intervention options. They show starting points for alternative policies that – if cast into political legislation – can free the actors from their cages and enable them to move towards a resilient economy in their respective fields (politics, finance, business, or consumption).

While some required changes may be hard to swallow, policies in each of the fields of action are strongly interconnected. They only develop their full effectiveness when they are applied at different points (see Box "A systemic change mindset" →). Their interplay can generate many co-benefits. Investments into green sectors include job opportunities in the renewable energy sector, the circular economy or care, cultural and crafting sectors. Improvements in environmental quality and equality could have positive effects on health and wellbeing. Providing public expenditures to fix the harm created by the current economic system may increase economic resilience and provide resources to reduce poverty. Rethinking how we consume can leave people with more time for their relationships, families, and friends.

In the next chapter we will discuss eight of these proposals in detail and show how they reinforce each other.

A systemic change mindset

It is not easy to find and prioritise systemic change among the options presented here. Prioritisation requires changes in how policymakers think. Science and policymakers often use mechanical images to guide thinking on solutions: leverage points, gear wheels or levers, which encourages a focus on the most important lever, the "one size fits all" solution. However, reality is too complex to be captured in mechanical terms and linear pictures. Solutions capable of creating systems change require thinking in terms of a network.

In fact, the network metaphor is ideal for systems: if one pulls on one point, the tension to connected points will increase. If environmental taxes are implemented, their impact will be limited by distributive implications. If policy wants to use other indicators and goals, the realisation will be limited by the power of those actors who profit most from economic growth as a policy goal. Policymaking for systemic change is not about finding the right lever, for there is never a "most important point" to address. It is about finding the most connected node points that lock-in the current behaviour patterns of policy, business, finance, and citizens. Only a package of policies that targets several points of the network simultaneously can direct the system towards a more sustainable state. The → second part of this report presents one option for such a package.

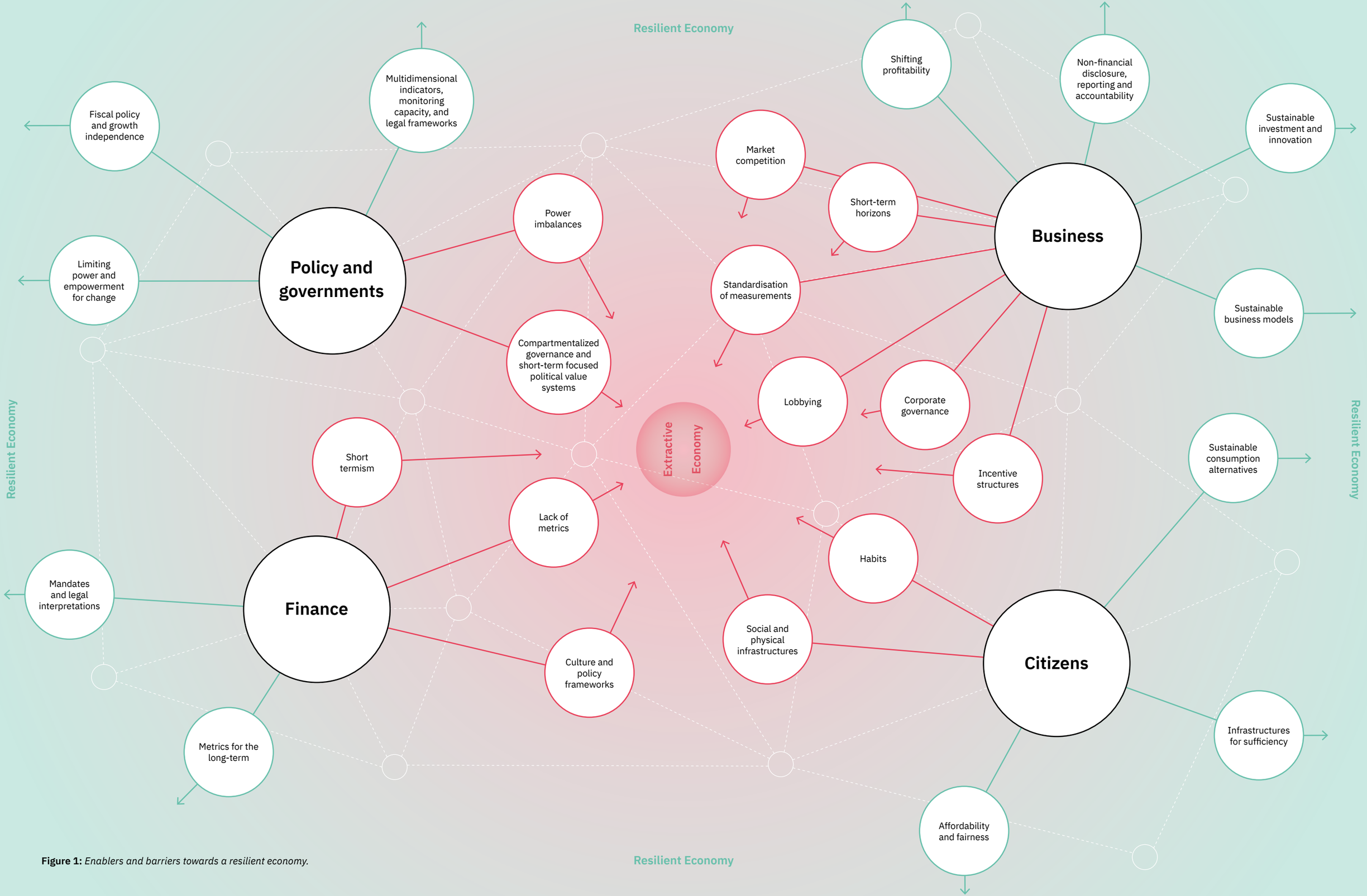


Figure 1: *Enablers and barriers towards a resilient economy.*

Policy and governments

Constraining forces

Compartmentalized governance and short-term focused political value systems

- Non-binding international agreements
- Short-term oriented political value systems and governance processes
- Economic mindsets in public institutions
- Short-termism due to election cycles

Power imbalances

- High influence of few businesses on policy
- High concentration of turnover and jobs

Enabling forces

Multidimensional indicators, monitoring capacity, and legal frameworks

- Integrate multi-dimensional indicators into the whole policy cycle
- Increase capacities for systems thinking
- Promote long-term thinking trough legal frameworks

Fiscal policy and growth independence

- Decouple economic stability from economic growth
- Change fiscal assessment frameworks
- Create fiscal space for investments in green infrastructure, health and education
- Introduce taxes on environmentally and socially harmful activities
- Combat tax avoidance and evasion

Limiting power and empowerment for change

- Redistribute wealth and incomes
- Break the power of monopolies and trusts
- Change ownership structures of businesses
- Involve citizen assemblies into policy design
- Extend policy coherence across national borders

Finance

Constraining forces

Short termism

- Time horizons rarely extend beyond the business cycle
- Risk aversion of institutional investors
- Narrow legal interpretation of fiduciary duties by institutional investors

Lack of metrics

- Lack of standardisation and comparability of ESG data

Culture and policy frameworks

- Value systems focused on short termism and monetary profit
- Lack of clear incentives and direction by overall policy frameworks and regulators

Enabling forces

Mandates and legal interpretations

- Green mandates of central banks and regulators
- Account for nature-related risks
- Clarify non-financial dimensions of fiduciary duties

Metrics for the long-term

- Introduce common standards for environmental metrics
- Mandatory disclosure and publicly backed assessment methodologies

Business

Constraining forces

Short-term horizons

- Narrow focus on short-term

Market competition

- Pressures to compete and innovate

Standardisation of measurements

- Lack of standardised sustainability measurements

Lobbying

- Influential lobbying for weak regulation and loopholes

Incentive structures

- Lack of enforcement of policies

Corporate governance

- Prioritisation of financial over social and environmental interests

Enabling forces

Shifting profitability

- Shift profitability from environmentally harmful activities to activities that increase planetary health and wellbeing
- Impose limits on resource use and carbon emissions

Non-financial disclosure, reporting and accountability

- Introduce full cost accounting
- Establish standards for calculating climate and biodiversity impacts

Sustainable investment and innovation

- Promote business experimentation and innovation for sustainability
- Introduce stronger design and durability requirements

Sustainable business models

- Promote social business types beyond Public Limited Companies

Citizens

Constraining forces

Social and physical infrastructures

- Existing resource-intensive infrastructures
- Lack of sustainable and affordable consumption alternatives
- Misleading incentive structures
- Need for time-efficiency increasing consumption

Habits

- Cultural significance of consumption
- Lack of alternative ways for immaterial needs satisfaction

Enabling forces

Sustainabe consumption alternatives

- Price environmental and social costs
- Subsidise basic necessities and sustainable mobility, nutrition, and housing
- Increase investments in green infrastructure
- Create disincentives for unsustainable products and services and luxury goods
- Strengthen local and fair economies

Infrastructures for sufficiency

- Create infrastructure for non-material consumption
- Reduce working time
- Promote repairing, reusing and recycling of goods
- Promote the sharing economy
- Reduce unsustainable consumption

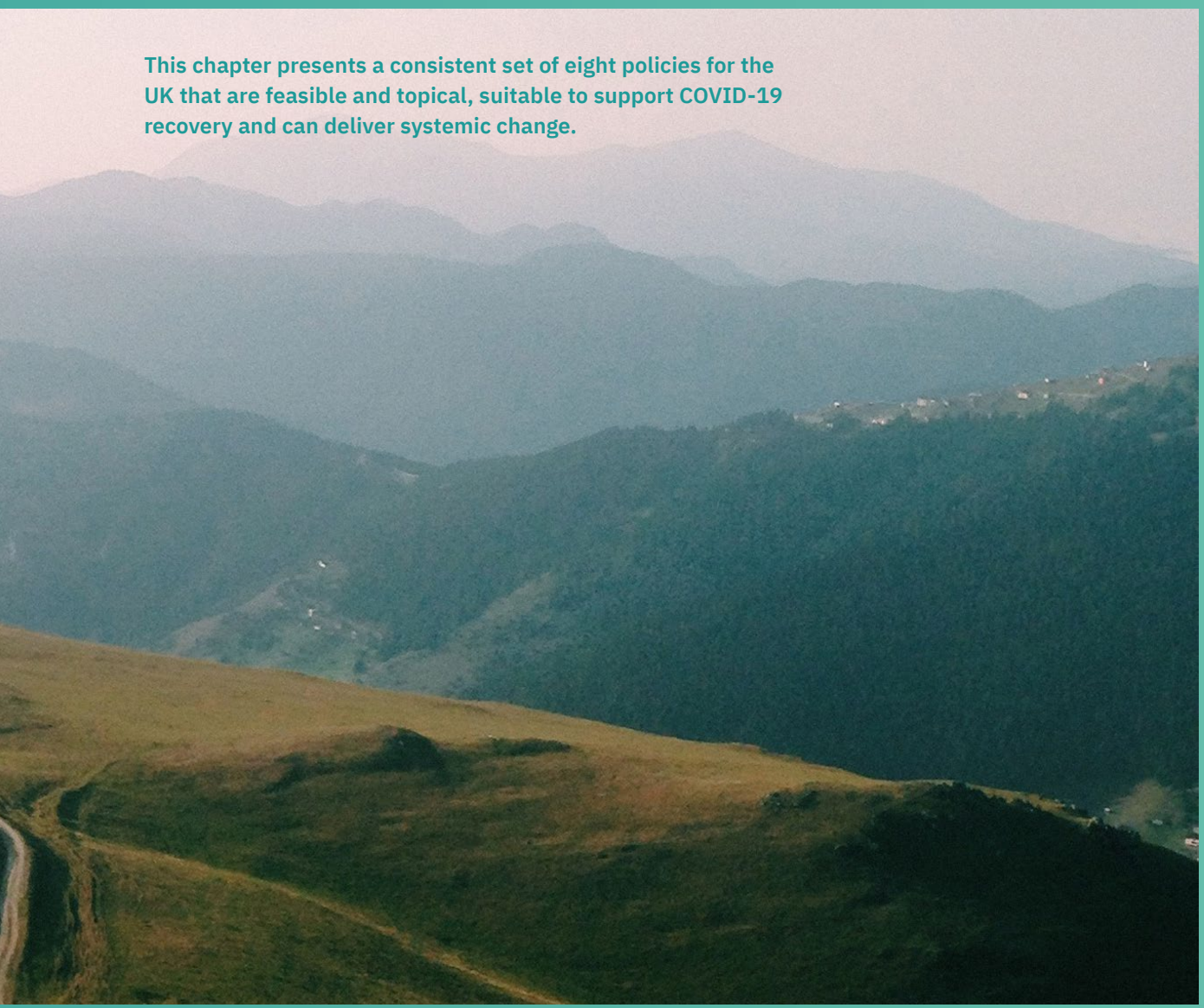
Affordability and fairness

- Support low-income households with payments or vouchers
- Ensure universal access to basic goods services

Part 2

Policy options for the UK to move towards a resilient economy

This chapter presents a consistent set of eight policies for the UK that are feasible and topical, suitable to support COVID-19 recovery and can deliver systemic change.



Introduction

Building on the literature review and a comprehensive understanding of what systemic change requires, the aim of this chapter is to present a set of policies that the UK can use to pave the way to a resilient economy. Setting priorities was the biggest challenge. To do this, the following questions were raised:

- **Focus:** How can the number of policies be kept to a minimum?
- **Synergies:** Which policies are suited for achieving several goals simultaneously?
- **Consistency:** How can a set of policies appear consistent, so negative effects of certain policies are compensated by others?
- **Sequencing:** In what order should policies be implemented, so that steps taken today facilitate desired changes thereafter?

Prioritisation is always accompanied by a high degree of normative evaluation. In our case, four experts evaluated the systemic change policies proposed in the literature against the criteria of feasibility in the UK, COVID-19 compatibility and transformative potential (see → Methodology). **The list provided here is therefore not to be understood as the only solution.** Rather, it is to be understood as an invitation to discuss what is needed and single proposals can be supplemented, adapted or rejected. The selection of policies and the intervention clusters addressed by these policies are shown in Table 2.

Policies are listed in order of increasing transformative impact, whereas proposals at the top make the implementation of proposals at the bottom more likely. As an example, if investments are channelled into sustainable business models through a Wellbeing Budget or green credit guidance, the adjustment cost of introducing resource caps will be much smaller. Alternatives will already be in place that provide jobs and infrastructure, ensuring higher levels of wellbeing.

While this list sets out what the UK can do, the recommendations for transformative policies are likely to be applicable around the world.

Policy ↴	Multidimensional Indicators, monitoring capacity, and legal frameworks	Fiscal policy and growth independence	Limiting power and empowerment for change	Mandates and legal interpretations	Metrics for the long-term	Shifting Profitability	Sustainable investments and innovation	Non-financial disclosure, reporting and accountability	Sustainable business models	Sustainable consumption alternatives	Sufficiency	Affordability and fairness
1. Wellbeing Budget	✓	✓	✓							✓		✓
2. Modernising UK's fiscal rules		✓	✓				✓					✓
3. New National Investment Authority		✓				✓	✓		✓	✓		✓
4. Mandatory financial risk assessments and disclosure					✓	✓	✓	✓	✓	✓		
5. Green Credit Guidance				✓		✓	✓	✓	✓	✓		
6. Land value tax			✓			✓	✓			✓		✓
7. Resource caps and biodiversity		✓	✓			✓	✓	✓		✓	✓	
8. Environmental border tax						✓	✓	✓	✓	✓	✓	

Table 2: *Prioritised policy proposals for the UK with increasing transformative impact in a sequenced order and targeted intervention clusters*

Rationale behind this prioritisation

First, let us briefly elaborate on our rationale behind this prioritisation of policies and present the arguments for their selection along the three selection criteria: feasibility & topicality, COVID-19 suitability, and transformative potential. Generally our approach is based on the idea that in the **short term, investments need to be targeted towards a sustainable and resilient economy, to drive down costs and ensure that a carbon-neutral and circular economy does not lead to more exclusion and social polarisation.**

The policies that encourage greater public investment will necessarily need to operate within an environment of much more progressive taxation. After all, taxation and sovereign debt issuance are the two main ways for the public sector to raise finance and invest in the economy. But the current tax regime in the UK creates adverse outcomes with individuals paying a lot more tax on their income than those that merely inherit wealth or see gains on their capital investment. **While redistribution through tax has been an ask of progressive movements for a long time, it inherently does not do much to alter the rent-seeking behaviour and financialisation of the markets.** Taxing wealth, capital gains, polluters and financial transactions, for instance, are all important but they do not per se generate positive outcomes for the environment, particularly if governments continue to see tax as a way to reduce very high public deficits.

The policies proposed here are tuned towards the investment narrative which we believe to be the comparably more effective route to transforming the economy and shaping markets in the process. An objective – or mission – oriented approach to investment led by public money can signal and drive the markets to deliver the environmental and social outcomes we urgently need.

If sustainable behaviour is to become the norm rather than the exception, systemic change requires changing the rules of the entire market. Due to the lack of environmental taxes and state support, only a selection of sustainable businesses is profitable. Moreover, the missing environmental taxes allow a tremendous externalisation of environmental and social costs and thus subsidise carbon- and resource intensive business models. Therefore, in the current economic framework, sustainable business models will not attract the scale of investment that is required to ensure they are competitive and can survive in the long term. Sustainable businesses under current conditions might be able to compete within a certain niche, but not in a competitive mass market.

Addressing profitability and providing guidance for investments holds the potential to shift competitive advantages, innovation and technological change. Sustainable business models would then be the outcome, rather than the driver of systemic change. Sustainable businesses in niche areas are nonetheless important examples of a different model of operation that could encourage policymakers to implement stricter regulations. This approach assumes that predominantly soft standards do not directly ensure that companies internalise all their external costs and face huge financing barriers to transform their business models.

Table 2 provides an overview how each of the selected policies contributes to systemic change.

In Table 3 the arguments for the selection are summarised in more detail.

Policy ↴	Feasibility & Topicality	COVID-19 compatibility	Transformative potential
1. Wellbeing Budget	Successful existing examples in other countries; need to use new state funds properly	Necessity to reduce government spending in the future in order to decrease government debt;	Strengthening of systemic thinking in fiscal policy; steering of investments in sectors of the resilient and sustainable economy; improved accounting of long-term policy goals; support of sustainable business models and lifestyles; making short-term profit maximisation at the expense of the general public more difficult and strengthening sustainable sectors shifts power relations
2. Modernising UK's fiscal rules	Existing successful examples in other countries; paradigm shift away from the primacy of monetary policy; low interest rates for government bonds	Lesson from the suspension of existing fiscal rules; new approach to government deficits without increasing future risks	Closing the existing investment gap for the achievement of climate and environmental goals; better mapping of long-term goals in fiscal policy; avoidance of future costs from climate change
3. New National Investment Authority	Existing successful examples in other countries; need to properly manage new state investments in terms of long-term goals	Effective approach to use new state funds	Orientation of fiscal policy towards long-term goals; steering of investments in sectors of the resilient and sustainable economy; support for sustainable business models and lifestyles; making short-term profit maximisation at the expense of the general public more difficult shifts power relations
4. Mandatory financial risk assessments and disclosure	No fundamentally new practice; but stronger enforcement of existing practices; reduction of future crises and credit default risks	Banks are looking for new investment opportunities	Steering of investments in sectors of the resilient and sustainable economy; Has indirect effect on the transparency of corporate models and value chains; Difficulty of short-term profit maximisation at the expense of the general public shifts power relations

Table 3: *Arguments for the selection of policies based on the three dimensions feasibility & topicality, COVID-19 suitability and transformative potential. Table is continued on the next page* →

Policy ↴	Feasibility & Topicality	COVID-19 compatibility	Transformative potential
5. Green Credit Guidance	Discursive shift away from price stability as the sole task of central banks; pre-pandemic commitment to review monetary policy frameworks; existing examples in other countries	Reduction of future crises; need for new investment impulses from central banks	Steering of investments in sectors of the resilient and sustainable economy; making short-term profit maximisation at the expense of the general public more difficult shifts the balance of power
6. Land value tax	Existing examples in other countries; need to generate new government revenue to finance debt; prevailing high levels of wealth and income inequality	Tax with great revenue potential and at the same time hardly any negative welfare effects compared to other taxes	Reduce privatisation of profits promoted by public investment; reduce one of the main drivers of inequality; finance a just transition;
7. Resource caps and biodiversity	Existing experience with carbon taxes; increasing perception of the biodiversity crisis; lack of decoupling of resource consumption and economic growth	Generation of new government revenues to finance the recovery measures	Setting hard limits for resource-intensive business models and lifestyles; promotes sufficiency; Has indirect effect on the transparency of corporate models and value chains
8. Environmental border tax	Discussions about a Border Carbon Tax on EU level	need to preserve domestic jobs and ensure international competitiveness	steering investments in sectors of the circular economy in the UK and abroad; global precedent for a new way of dealing with carbon and biodiversity leakage instead of exceptions; Has indirect effect on the transparency of corporate models and value chains

Table 3: *Arguments for the selection of policies based on the three dimensions feasibility & topicality, COVID-19 suitability and transformative potential*

1. A Wellbeing Budget for the UK

»A Wellbeing Budget seeks to elevate goals and activities aligned with what people and planet need.«

Associated clusters

Multidimensional indicators, monitoring capacity, and legal frameworks → p. 25 — Fiscal policy and growth independence → p. 26 Limiting power and empowerment for change → p. 27 — Sustainable consumption alternatives → p. 37 — Affordability and fairness → p. 39

While governments do consider a wide range of impacts, for example via equality impact assessments or environmental impact assessments, spending does not necessarily respond to the needs, and Gross Domestic Product retains its primacy as the default measure of economic success and, invariably, of government prowess.

A Wellbeing Budget seeks to elevate goals and activities aligned with what people and planet need. It promotes the attainment of environmental and socio-economic outcomes by prioritising and **redirecting government spending to initiatives that deliver on goals such as greater equality and environmental benefit**.

Government departments would need to demonstrate their positive impact on a set of politically agreed upon headline measures in order to receive budget allocations, or a proportion thereof. A Wellbeing Budget approach increases the capacity of policy to solve today's most complex and urgent challenges by:

1. **Taking a systems perspective and recognising interdependencies between government activities** by using a dashboard of indicators to assess the multi-dimensional wellbeing of current and future generations. This dashboard would better capture environmental and social impact than targets such as Gross Domestic Product, by better illuminating wider goals and trade-offs. The elevation of these goals protects them against being swept aside in favour of narrow short-term financial priorities.

2. **Encouraging cross-departmental collaboration to recognise and harness fiscal savings accruing beyond one departmental silo and beyond single spending cycles.**

3. **Promoting precautionary policymaking that mitigates negative long-term outcomes.** Currently, substantial amounts of public funds are deployed in attending to the harm caused by inequality and environmental depletion e. g. tax credits to top up low wages and treatment of avoidable stress and anxiety; repairs to infrastructure and treatment for health ailments caused by polluted air. Yet, as the Dasgupta's review interim report states, "it is more cost-effective to maintain an ecosystem than it is to degrade and then restore it: conservation trumps restoration".[229] A Wellbeing Budget reduces long-term fiscal costs.

A Wellbeing Budget has been described by respondents to our survey as a "game changer … that could transform decision making"; "likely to be well received and to be transformative"; "[it reaches] the deeper levels of the problem" and has the possibility to extend impact beyond the UK by setting "a precedent for other countries". A strategy to implement a Wellbeing Budget could include the following steps:

1. **Build public demand** via cross-political, cross-institutional and cross-sectoral coalitions for a Wellbeing Budget, ideally with several high-profile champions within and beyond politics and inclusive participatory processes to determine priority goals.

2. **Build capacity** within government agencies to invest long-term, link spending to various ONS measures (and commission new measures if necessary) and incentivise cross-departmental collaboration.

3. **Introduce a pilot** for wellbeing-led spending in the 2021 budget.

4. **Communicate success stories** and scale up momentum for a bolder and more comprehensive 2022 Wellbeing Budget.

Inspirations

- The 2019 New Zealand Wellbeing Budget (using the Treasury's Living Standards Framework) with low carbon economy as one of its five priorities, led to considerable spending aimed at mitigating[230] – rather than ameliorating – environmental harm.
- The Welsh Government's *Wellbeing of Future Generations Act* (with budget scrutiny carried out by the independent Future Generations Commissioner).
- Bhutan's response to inequalities in wellbeing as revealed by its Gross National Happiness surveys, focuses on the root causes of lower wellbeing amongst certain population groups, such as women or rural communities.

Enablers and barriers

Enablers:

- ↗ Emerging evidence of fiscal savings and tangible quality of life improvements.
- ↗ Strong leadership to champion the approach.
- ↗ Cross-party support to avoid it becoming a political tool.
- ↗ Deployment and building of Treasury capacities to support its implementation, including navigating trade-offs and undertaking system-wide macroeconomic modelling.

Barriers:

- ↙ Balancing immediate acute needs while simultaneously investing in upstream preventative activities
- ↙ A lack of tools and processes to capture the benefits and savings of preventative spending
- ↙ Resources required to properly and authentically involve the public in determining priority goals
- ↙ Persistence of GDP growth as central element in conceptions of economic and political success.

Windows of opportunity

The shift in priorities sparked by the COVID-19 crisis and the enormous scale of government spending and intervention in response constitute an opening of political space to transformative ideas hitherto dismissed as impossible. The various emergency budget statements and spending reviews already underway are junctures where new ways of undertaking government spending could be adopted. As the UK charts its post-Brexit economy in 2021 and seeks to make good on its "levelling up" agenda, it will host the (delayed) COP26 where it will be seeking to tell a positive story about the UK's role in the world – all of which will be aided by a Wellbeing Budget.

Relevant stakeholders

Media attention will also be important in helping to build support: something as process-heavy as a Wellbeing Budget is potentially challenging from a public-facing campaigning perspective. It would need to be framed in compelling, accessible impact-focused messaging. This challenge could be offset by the potential for **unusual cross-party political alliances and a broad coalition** of the willing amongst civil society as just set out. Moreover,

- The APPG on Wellbeing Economics, APPG on Limits to Growth, and the APPG on Inclusive Growth can build **parliamentary buy in.**
- The Wellbeing Economy Governments partnership can help share practical experience from around the world.
- The What Works Centre for Wellbeing, the Committee on Climate Change, ICAEW and other scholars can **support the evidence base and advise on processes.**
- Social justice and environmental NGOs and think tanks can **build the public demand** – for example the New Economics Foundation, The Equality Trust, the Green Alliance, IPPR, the Carnegie Trust, the Early Intervention Foundation, and education, nursing and police unions.
- Globally, networks such as WEAll, the Club of Rome, and Club de Madrid can bring together civil society, scholars, and former heads of state willing to **support the adoption** of a Wellbeing Budget.

2. Modernising UK's Fiscal Rules

» The UK can address the investment gaps to meet net zero emissions by 2050 by enhancing fiscal space, i. e. its scope for greater public borrowing. «

Associated clusters

Fiscal policy and growth independence → p. 26 — Limiting power and empowerment for change → p. 27 — Sustainable investments and innovation → p. 35 — Affordability and fairness → p. 39

Presence of several market failures has resulted in systematic underinvestment in the low carbon transition and biodiversity conservation. **A mix of public investment and regulation across other sectors of the economy will be essential in driving a green transition.** The Committee on Climate Change estimates a total resource cost to achieving net zero emissions of between 1–2 % of GDP per year on average by 2050 – between £ 20 billion and £ 40 billion in 2019/20 terms.[231] An analysis by Greenpeace and other civil society groups estimate a total additional annual public investment of £ 25 billion in meeting net zero emissions and addressing the biodiversity crisis.[232]

The UK can address these investment gaps by enhancing fiscal space, i. e. its scope for greater public borrowing. Fiscal space is underpinned by fiscal rules that define the limits to measures available to fiscal institutions, like the Treasury, to manage headwinds facing the economy. They include, for instance, relatively arbitrary rules on limiting public borrowing to 3 % of GDP or setting targets for balancing current public spending, which severely limit governments' ability to appropriately respond to crises. COVID-19 has prompted the UK government to relax fiscal rules. France has since opposed a return to the stability pact and the 3 % deficit rule. As monetary policy has reached certain limits, with interest rates having been at a historical low over the last decade, the COVID-19 crisis has shown that monetary policy must be complemented with fiscal policy to deal with the crisis.

There are numerous reasons to sustain changes in fiscal rules to prevent future costs from climate change or biodiversity loss. **To do so, the Treasury could:**

1. **Develop a new framework** for regularly assessing, measuring and forecasting safe limits to fiscal space, and thereby, public investments.

2. **Support politicians** to make an informed decision on the best combination of fiscal intervention or fiscal prudence at a given point in time and the appropriate size of preventative spending.

3. **Enforce a Resilience Fiscal Rule,** requiring all government spending to be aligned with maximising economic resilience, rather than mere short-time economic stabilisation. Such a rule would also need to work alongside a new, more sophisticated set of indicators of and targets for "fiscal space", to replace the current narrow targets for public debt / borrowing.

Inspirations

The role of state banks like KfW in Germany providing patient capital and supporting low yielding projects like energy efficiency is well established. Thanks to its structure, the KfW is able to borrow capital without burdening the State's deficit or the government's fiscal rules. Outside Europe, Japan has been a leader in public R&D investments over the last two decades, while the China Development Bank has offered patient capital to help fledgling industries to catch up with competitors.

Public investment has also often been necessary alongside regulation to address failures such as the significant regional disparity of low carbon infrastructure and its associated benefits, lack of private investment in regenerative agricultural practices, peatland restoration or smart meter rollouts, to name a few.

Enablers and barriers

Enablers:

↗ The prevailing environment for interest rates and the UK's possession of a sovereign currency allow it to borrow considerably higher amounts of resources.

↗ The flexing of fiscal rules in response to the COVID-19 crisis is forcing the government to not just drop the pursuit of austerity altogether, but also to explore the balance between fiscal prudence and intervention.

Barriers:

↙ An inflexible approach to fiscal prudence can limit the pace of the transition that climate science demands and thereby risk the long-term stability of public budgets.

Windows of opportunity

The Conservative government's levelling up agenda remains a top priority and the government has already indicated that it will not pursue any form of austerity, but instead invest and grow its way out of the current crisis. This commitment offers an opportune moment for rethinking fiscal policy. The Treasury is currently undertaking a review of the fiscal rules' framework, which is due to report in Autumn at the same time as the Spending Review. As part of the review, the Treasury is exploring the need for strengthening the fiscal framework to better mitigate long-term risks and shocks, including those related to the environment and climate change. Also, the general mainstream media discourse is shifting towards a wider acceptance of state intervention in supporting the economy.[233]

Relevant stakeholders

- Specific low carbon sectors where UK public investment can trigger global supply chains and induce similar behaviour across other economies, compounding the benefits of domestic action. These include investments in electric vehicles, hydrogen production, carbon capture, low carbon heating technologies and other nature-based climate solutions.
- The "Left behind" economies of Northern UK, which bear promising potential for employment that is built on low carbon infrastructure and services.[234]
- Influential right wing think tank Policy Exchange, which has recently called for a "credible fiscal activism" while ditching more orthodox neoclassical economic approaches[235].
- Organisations under the banner of "Build Back Better" that are calling for greater flexibility from the government on its fiscal rules and for spending on green infrastructure.
- A few Conservative MPs from key northern and midland constituencies who are calling for significant investment in local green infrastructure and jobs, driven by a national level public investment vehicle.

3. A New National Investment Authority

» The sustainability objectives require a state-led financing model that meets the need for patient capital while addressing short-termism in the financial markets. «

Associated clusters

 Fiscal policy and growth independence → p. 26 —  Shifting profitability → p. 34 —  Sustainable investments and innovation → p. 35  Sustainable business models → p. 35 —  Sustainable consumption alternatives → p. 37 —  Affordability and fairness → p. 39

Policy and regulation are critical but remain, in themselves, inadequate to drive change at the scale demanded by science. Thus, they also put at risk the long-term stability of the UK's public budget. Where perceived risks to private capital are higher, like regenerative agriculture or large-scale retrofitting of homes, much needed investment has been hard to come by. Initial annual public investment estimates range from 1–2 % of GDP to achieve net zero and nature conservation targets. These need to be balanced alongside public spending on innovation and commercialisation of new low carbon solutions and processes. **The high investment needs to achieve net zero, ecosystems recovery and wider sustainable development goals require a state-led financing model that meets the need for patient capital while addressing short-termism in the financial markets.**[236] A National Investment Authority (NIA) can serve this purpose by:

1. **Channelling public investment** towards the objective of a sustainable economy to help achieve the environmental and recovery objectives.

2. Systematically **identifying market failures** across the economy, not only with the aim of fixing them, but also to shape the market more deliberately in service of broader societal benefits.

3. **Coordinating with the Treasury and the Bank of England** on how to allow greater public borrowing alongside modernising the UK's → Fiscal rules.

4. Taking a **twin role** of direct infrastructure investment through grants, loans, guarantees etc. alongside the role of private equity firms that attract private capital into public infrastructure investment funds that the NIA would hold.[237]

Inspirations

In countries that have achieved high degrees of green innovations, the State has often supplied the patient strategic finance that the private sector was unwilling to provide.[238] Central governments in such countries have actively shaped new technological and industrial landscapes by acting as an investor of first resort, not simply as lender of last resort.

- In many countries patient strategic finance is increasingly coming from national investment banks (NIBs). Germany, China, Brazil are a few clear examples where state-driven investment strategies have been effective to achieve specific mission-led outcomes.

- The European Investment Bank is another example that recently announced the termination of its lending to fossil fuel energy projects and a commitment to invest € 1 trillion on climate and environmental projects by 2030.[239]

Enablers and barriers

Enablers:

↗ Public investment authorities like the Green Investment Bank, albeit with considerable limitations, have established a precedent in the UK on how public capital can direct low carbon development.

↗ The current crisis of COVID-19 and the resulting ballooning of public borrowing hasn't yielded calls for austerity, but instead a desire to grow our way out of the recession within the context of lowest central bank interest rates and negative yield rates for government debt.

Barriers:

↙ Designing a bank to invest in specific low carbon or green projects with the mere purpose of crowding in private capital, as was the case with the GIB, significantly limits the scope of investments and remains a major barrier for creating an effective investment authority.

Windows of opportunity

- UK's Energy Minister, Kwasi Kwarteng, suggested that the government was seriously considering a new investment authority, a green investment bank 2.0, highlighting the role that KfW has played so far in Germany.[240]
- Hundreds of local authorities across the UK, having declared a climate emergency, are poised to drive a green recovery. But a decade of austerity cuts has left them significantly depleted of resources. A central government-led investment program that pursues broad outcomes through a series of region-specific strategies will be essential.

Relevant stakeholders

- Hundreds of local authorities across the UK who have a major interest in establishing an NIA and who have recently called for a new Net Zero Development Bank to accelerate private capital in local energy schemes that often face significant fiscal barriers.[241] Several of those that have campaigned for the green investment bank between 2009–2012 are now calling for a similar institution to be set up.[242]
- The RSA's Food, Farming and Countryside Commission who, in its recent report, recommended the creation of a National Agroecology Development Bank.[243]
- A broad range of civil society groups, in partnership with local authorities and businesses, is collectively arguing for a more purpose- and mission-driven public investment authority to tackle the triple crises of climate change, biodiversity loss and economic inequality.

4. Mandatory Financial Risk Assessments and Disclosure

» For environmental risks, the Prudential Regulation Authority should use stress testing exercises to take corrective actions [...] thus operating in the same way as it does with ›economic‹ stress testing. «

Associated clusters

Metrics for the long-term → p. 32 — Shifting profitability → p. 34 Sustainable investments and innovation → p. 35 — Non-financial disclosure, reporting and accountability → p. 35 — Sustainable business models → p. 35 — Sustainable consumption alternatives → p. 37

Bank loans remain one of the main direct sources for both sustainable and unsustainable capital expenditure. In contrast to interventions in the capital markets, where the shifting of existing assets between investors affects companies only indirectly, bank loans provide direct funding for companies' business activities. By extension, **it matters greatly to whom this money is lent and how it is spent.**

When deciding to whom loans are awarded, banks take a variety of risks into consideration. Supervisors inside the Network for Greening the Financial System (NGFS), including the Bank of England's Prudential Regulation Authority (PRA), are currently **exploring the environment-related risks through tools like scenario analysis, without imposing any corrective actions such as additional capital requirements.**

This policy aims to ensure that financial supervisors like the PRA strengthen the assessment of environment-related risks. As the materialisation of risks in part depends on the implementation of other policy options like resource caps, such risk assessments should not be considered in isolation. Most importantly, rather than waiting for the data to rightly calibrate risks, regulators should follow the precautionary principle when assessing these risks. In this spirit, they should:

1. Make sure that banks **do not neglect climate and nature-related risks.**

2. **Review banks' risk assessment and risk management.**

3. Use **stress testing** to take corrective actions and impose additional capital buffers, whenever supervised financial institutions fail to sufficiently integrate environment-related risks thus operating in the same way as it does with "economic" stress testing.

4. Force banks to **integrate non-traditional risks** by requiring them to hold higher add-on capital that reflects such increased risks, under the discretionary framework of Pillar II of the Basel Accord.[244]

A possibility for intervention within the UK system is given within the framework of the PRA capital buffer that is applied to supervised entities within the Pillar II B guidelines of the Basel Accord. This buffer should be maintained by firms in addition to their Pillar I (established risks categories) and Pillar II A (standardised risks not captured in Pillar I) minimum capital requirements. The scoring of financial institutions in stress tests provides information about the size of the buffer. The PRA is currently developing biennial climate scenarios that will start in 2021 and measure firms' exposure to climate-related risks. Similar approaches can be used for biodiversity related risks. **To move beyond information gathering to effectively regulating behaviour, the PRA should use the stress testing exercise to take corrective actions and impose additional capital buffers where necessary, thus operating in the same way as it does with "economic" stress testing.**

Another input into calculating the capital buffer are supervisory judgements that, inter alia, incorporate the sustainability of the business model of a financial institution. Accordingly, firms that are dependent on or specialised in lending to businesses with high negative environmental impacts and do not have a credible transition plan could be required to hold additional capital. Likewise, financial firms that specialise in financing the transition could be rewarded with comparatively lower requirements.

In doing so, **supervisors would incentivise banks to divest from unsustainable activities**, as the raising and holding of regulatory capital represents an additional cost with no economic benefit for them.

Where such actions are insufficient to address the risks of a financial institution, **the PRA should also consider more interventionist approaches** that supervisors have applied within the Basel Framework of banking regulation. These include imposing limits on lending, restrictions on dividends, capital distributions and bonuses, prohibitions on investing in certain instruments, reduction of exposures to certain assets or positions (through hedging or sale of assets), and requiring the divestment of financial products, e. g. where the valuations of those products would not be deemed sufficiently conservative.[245]

Finally, while the communication between banks and supervisors about risk assessment frameworks is normally not communicated to the public, the Pillar III mechanism that imposes market discipline through the disclosure of risks should be used as an additional policy tool. While the PRA has already communicated to the entities that are under its supervision that they should expect mandatory disclosure in line with the Task Force on Climate-related Financial Disclosures (TCFD) framework in the near future, a similar **supervisory statement should be made about nature-related risks.**[246]

Inspirations

- NGFS members have started to assess the risk profiles of "green" and "brown" assets.
- Several regulators have started to "educate" banks by coming up with climate stress tests and scenario analysis. A first test of differential capital requirements under Pillar II is carried out by the Hungarian Central Bank, which will be testing preferential capital requirements for loans linked to energy efficient real estate between 2020 and 2023.

Enablers and barriers

Enablers:

↗ Work on taxonomies in several jurisdictions (EU, China, Bangladesh).
↗ Work on scenario analysis enables forward looking assessments that project the environmental risks into the future.
↗ Awareness of the two-way relationship of financial institutions being affected by environmental risks and contributing to (future) environmental risks by financing harmful practices, a concept (double materiality) which is used in the EU's non-financial reporting directive guidelines.

Barriers:

↙ Pressures that financial firms experience due to the COVID-19 pandemic.

Windows of opportunity

- Significant regulatory momentum behind “sustainable finance”. ESG-related funds have outperformed the market indices during the pandemic.
- The regulatory environment is sufficiently institutionalised to not be derailed by the crisis. In the EU, the Sustainable Finance Action Plan has received renewed impetus.
- The economic losses from COVID-19 show that environmental risks are massive and real; This could add further momentum.
- COP 26 adds momentum to biodiversity risks, especially in the UK.

Relevant stakeholders

- Network for Greening the Financial System (NGFS), INSPIRE Research Collective, ClimateWorks Foundation and Task force on Nature-Related Financial Disclosures work streams on biodiversity are ongoing.
- NGOs and research institutes like Finance Watch, Carbon Tracker, Third Generation Environmentalism (E3G), the Institute for Climate Economics (I4CE), 2 ° Investing Initiative and ShareAction have conducted research and / or campaigned on differential capital requirements and risk assessment methodologies for supervisors.

5. Green Credit Guidance

»Central banks can influence the costs of green capital through their own asset purchases and collateral frameworks.«

Associated clusters

Mandates and legal interpretations → p. 31 — Shifting profitability → p. 34 Sustainable investments and innovation → p. 35 — Non-financial disclosure, reporting and accountability → p. 35 — Sustainable business models → p. 35 — Sustainable consumption alternatives → p. 37

Interventions by Central Banks (European Central Bank in the Eurozone, national central banks outside) influence the costs of capital, which in turn have the effect of guiding how capital is allocated by private banks. One of the most influential ways in which central banks do this is by lending at low cost to banks via the Targeted Long-Term Refinancing Operations (TLTRO) programme in the Eurozone and the Term Funding Scheme (TFS) in the UK, both of which are forms of Quantitative Easing. **But central banks also influence the costs of capital through their own asset purchases and collateral frameworks and via their macroprudential policies which require private banks to hold more capital against loans to some types of assets and less against loans to others.**

All of these activities can be considered as forms of "credit guidance" and can be greened by building climate or other ecological risk metrics into how measures are assessed or setting objectives related to climate risk.[247] Much of this can almost certainly be achieved within the current mandates of most central banks. For instance, if providing cheap liquidity under TLTRO or TFS, central banks could require private banks to exclude certain loans, such as those to fossil fuel firms, on the basis that these may pose a higher financial risk over the loan period due to the climate risk they pose.

Alongside other measures to green the allocation of capital in the economy – most notably the very strong pull of → Public investment, the greening of → Fiscal frameworks and → Mandatory risk assessments and disclosure already covered in this report – green credit guidance by central banks could have a very significant impact on the selection of activities to receive loans. For instance, **firms included in the ECB's collateral frameworks benefitted from interest rates that were on average**

one-third cheaper than those not included and that newly eligible firms received more credit than ineligible ones. In other words, markets favour the assurance of central bank support and allocate capital accordingly. Thus greening these measures could have a very powerful effect on incentives and disincentives for high and low carbon activities in the real economy.

Inspirations

- Role of credit guidance in most Western countries post-war reconstruction and growth processes and were central to Europe's Golden Age.
- Policies influencing the level of credit were imperative to the rapid expansion in post-war Japan, the recent growth of China, the development of East Asian miracles, and the growth of "other" emerging economies.[248] It is only in liberal, post 1980 western economies that the guidance of credit by central banks has given way to the mantra of market neutrality.[249]

Enablers and barriers

Enablers:

- ↗ Reducing risks in the balance sheets of banks. A recently published research by the New Economics Foundation has shown that current Bank of England QE programmes are not only carbon intensive, but, more so than the UK economy itself, introducing significant climate-financial risk onto the bank's balance sheet and pumping cheap money into fossil fuels.[250]
- ↗ The ECB's mandate includes a requirement for the bank in effect to support the European Commission's policy agenda[251], it would arguably not only be odd but also opposing its mandate if the ECB did not guide credit along the lines of the European Green Deal.
- ↗ Commitment of the UK government to its 2050 targets and requirements of the Paris Agreement could be used as the guiding star for central bank activities and could potentially be utilized to hold them accountable if current carbon-intensive refinancing and asset purchases continue.
- ↗ Past guidelines of monetary policy, are reaching their limits. High public debt has not led to rising interest rates; inflation is less of a problem than the persistent lack of demand.[252]

Barriers:

↙ Green credit guidance may be seen as active and therefore non-market-neutral by conservative central bankers and therefore offending the tenets of independence from government.

Windows of opportunity

- The post pandemic crisis and the need for cash and credit to be pumped into the economy by central banks creates the policy frameworks in which green forms of credit guidance could help reduce future risks.
- The pre-pandemic commitment by both the ECB and BoE to review monetary policy frameworks along with the increasing traction of Paris Commitments create the processes by which experts, economists and campaigners can gather support and evidence for the need of establishing green credit guidance as the new norm.

Relevant stakeholder clusters

- The Network for Greening the Finance System (NGFS) is a key insider forum for developing credible, evidence-based frameworks.[253]
- The ClimateWorks Foundation has created a stream of research called INSPIRE, in parallel with the NGFS, to help unblock analytical concerns and fill evidence gaps.
- Growing cliusters of policy-focussed groups (Council on Economic Policies in Switzerland, The Institute for Innovation and Public Purpose at UCL in London, the New Economics Foundation and Positive Money, both in the UK and EU), which collaborate to support the development of credible policy to support green central banking and to work on the inside to champion progressive banks and individuals.
- 350.org, Greenpeace and France's Reclaim Finance are also shaping to develop more outsider campaigns.

6. Land Value Tax

» The uplift in land value, which often affords owners of land considerable income, remains largely untaxed. «

Associated clusters

Limiting power and empowerment for change → p. 27 — Shifting profitability → p. 34 Sustainable investments and innovation → p. 35 — Sustainable consumption alternatives → p. 37 — Affordability and fairness → p. 39

In transformation, it is important to primarily include those people who are most affected by the transition: Because they will potentially lose their jobs, have to develop new skills or will see their whole region undergo tremendous change. One possibility is financial support. Of all the possibilities mentioned in the chapter on → Citizens, we focus on the Land Value Tax, because it is one way to fundamentally change the distribution of income and thus also of prosperity.

A land value tax increases in the value of land, which accrued in value because of community and not individual effort.[254] It can either be implemented as part of a wider tax system or as the predominant tax in a new system that seeks to price the use of natural assets whose supply has hard boundaries. Land and property are taxed, for instance in the case of Stamp Duty when a property on a piece of land is sold or through Inheritance Tax or when inherited. However, **the uplift in value, which often affords owners of land considerable income through charging rents or sale at a higher price level, remains largely untaxed.**

Proponents of Land Value Tax (LVT) have long argued that it can:

1. Help **correct wealth inequalities** by taxing windfall increases in land value and thereby decrease power imbalances.

2. **Deter speculative acquisition** of land and “land banking” and shift investment from land to productive assets in the real economy.

3. Help **economic development** in areas where land values are low, versus those where values are high.

4. **Increase the efficiency of land use** in rural areas and reduce soil sealing and the fragmentation of landscape for example by investing into buildings, which facilitate the provision of affordable housing without designating new building land.

5. **Boost government tax receipts,** which could assist with tackling major challenges, such as ecological crises.

The Mirrlees Review of the UK Tax System, published in 2011, concluded that a land value tax would address many of the inequities and structural issues, arguing that, "In particular, there is a strong case for levying a land value tax, which is a tax on pure rent – if the practical difficulty of valuing land separately from the buildings on it can be overcome."[255]

The UK is one of the most unequal OECD countries and its taxation reflects this, the principal symptom being the disparity between taxes on income, which operate at a higher effective rate than taxes on wealth.[256] **Steeply rising land values in the UK are one of the main components of wealth acquisition.** This effect has been very unevenly spread with land values in some locations rising at much higher rates than in others. Land in the UK is worth an estimated £ 4.057 trillion, which is more than two-fifths of the nation's net worth.[257] Total UK land value has increased by more than 450 % since 1995, a rise that significantly outstrips that of the assets on the land.[258] **These increases in land value are a windfall for those who have benefitted, especially because of the location of the land they own.**

Because land is not frequently valued, there are few estimates of the revenue that could be raised from taxing land values. One study, which focuses on London, found that, based on 2015 valuations, an LVT of 1.97 % could raise around £ 6.5 billion in 2017.[259] An ongoing study has suggested a locally-levied tax on commercial landowners at a rate of 2.9 % of capital values could raise up to £ 6 billion.[260] Different options for a LVT have been discussed.[261, 262] These include the extension of existing land and property taxes, the use of a land value tax to replace all existing taxes on land and property or the use of a Local Land Value Tax to replace business rates and council tax.

Inspirations

The 2018 Land Value Tax review, conducted for the Scottish Land Commission, sampled 61 countries with some form of land value tax and found that most implement such a tax alongside existing land and property taxation measures.[263] In particular the study highlights five case studies – Queensland (Australia), Estonia, New Zealand, Denmark and South Africa.

Enablers and barriers

Enablers:

- ↗ LVTs are a tool for wealth redistribution and for the recognition of land as a valuable asset.
- ↗ Potential to increase tax revenues and finance recovery programs and the green transition with few impacts on economic recovery.[264]

Barriers:

- ↙ High administrative costs of implementation, given that taxing land requires it to be parcelled and valued, its interaction with other land and property taxes and the need to revise the planning system to work alongside a Land Value Tax.[265]
- ↙ Political viability. In the UK, the relatively undisturbed centuries-old pattern of land ownership, the huge rise in land values over the past two decades and the predilection of UK policy towards home ownership, locks together an old and new constituency that would likely oppose a Land Value Tax and would wield considerable power and influence over government.[266]

Windows of opportunity

Refinancing the COVID-19 economic recovery programmes will require new sources of income for the State in the medium-term. A tax levied on land values and hence on landlords, could tap into a seam of wealth that has hitherto remain untaxed. At the same time, it has negligible negative effects on economic recovery compared to other types of taxes. Revenues can help local authorities or high-street businesses in the post COVID-19 period deal with even greater financial pressures. Further, the income generated can support low-income households in the green transformation. This can create acceptance for the measures proposed in the other chapters.

7. Resource Caps and Biodiversity

»A tax or license trading system for resource use (similar to that for carbon) based on biodiversity impacts of the taxed resource could address biodiversity loss.«

Associated clusters

Fiscal policy and growth independence → p. 26 — Limiting power and empowerment for change → p. 27 — Shifting profitability → p. 34 Sustainable investments and innovation → p. 35 — Non-financial disclosure, reporting and accountability → p. 35 — Sustainable consumption alternatives → p. 37 — Sufficiency → p. 38

Currently, all drivers of biodiversity loss are accelerating, while the decline of global biodiversity is unprecedented.[267] **The overuse of resources has been identified as the main driver of biodiversity loss** by researchers: 90 % of biodiversity damage and water stress are caused by resource extraction and processing.[268] So far, strategies such as implementing a circular economy have not proven to be sufficient in halting biodiversity loss.[269]

Thus, there is an **emerging consensus among scientists that global resource extraction of renewable and non-renewable materials needs a cap,** estimated roughly at a yearly maximum of 50 billion tons globally.[270, 271, 272, 273] While this aggregate level lacks a break down on resources and their associated impacts, studies have shown that avoidance costs for stopping biodiversity loss by reducing material consumption are lower than overall expected damage and repair costs.[274] **The introduction of a tax or license trading system for resource use (similar to that for carbon) based on biodiversity impacts of the taxed resource could address these challenges effectively:**

1. Resource caps establish limits on resource throughput and ultimately constrain consumption and production.[275, 276, 277]

2. Caps support transformative change as increasing costs for resource inputs modify the competitiveness dynamics in a market economy, consequently requiring companies to redesign products and business models by taking resource limitations into account.

3. Resource caps force both private and public investments to take biodiversity impact implicitly into account (see → Modernising UK fiscal rules and → New national investment authority) and ultimately, channel investment towards a circular economy.

To implement resource caps the following steps are needed:

1. Agreeing on a science-based global goal on biodiversity loss (similar to 1.5 °C goal in Paris Agreement) and derive resource budgets and reduction needs.[278]

2. Defining assessment approaches to estimate biodiversity impacts by a given resource in a preventive manner that allows for data gaps (similar to CO_2 equivalents).

3. Implementation of a resource tax resource, increasing over time, until the resource reduction target is reached or implementation of a cap and trade scheme that issues resource licences. Taxes or licences would differentiate between biodiversity impacts of resources.

Our **survey results suggest that resource caps could provide a crucial new source of fiscal revenue** which "enables the UK to [tackle pressing challenges] such as zero-carbon innovation / infrastructure and regeneration of food, farming and land use". At the same time, resource caps could also send "important signals about incentives and societal priorities", both domestically and internationally.

Inspirations

If applied in the right manner that addresses the downsides[279] of existing approaches like the EU Emissions Trading System (EU ETS)[280, 281] cap and trade schemes, they can be a **cost-effective option** to limit resource use. Other options like resource taxes can be just as cost-effective. The ITQ system and resource rent tax in Icelandic fisheries provided the correct incentives for sustainable harvesting of fish and made it possible for fishers to safeguard stocks through decreasing effort and catches, while at the same time securing their long-term economic future.[282] Other examples include the Alaska Permanent Fund[283], Earth Atmospheric Trust[284] and the Norwegian Nature Index.[285, 286]

Cap and trade schemes make use of market efficiency, which will ultimately allocate the resource rights at their highest valued uses.[287] In addition, raising awareness on contributions of biodiversity and ecosystem services to human wellbeing can be promoted.[288] Finally, caps on resource use should go hand in hand with measures to redistribute rents and channel the gained money back into society, for instance by funding green projects.[289] This is why our set of policies also includes land value taxes, green credit guidance and a Wellbeing Budget.

Enablers and barriers

Enablers:

- ↗ The Science Based Targets Initiative endeavours to develop science-based targets also for biodiversity loss.[290, 291]
- ↗ Cap and trade schemes make use of **market efficiency** which will ultimately allocate the resource rights at their highest valued uses.[292]
- ↗ **Raising awareness** of contributions of biodiversity and ecosystem services to human wellbeing.[293]
- ↗ Caps on resource use should go hand in hand with **measures to redistribute rents** and rentier to channel the gained money back into society, for instance by funding green projects.[294] This is why our set of policies also includes land value taxes, green credit guidance and a Wellbeing Budget.

Barriers:

- ↙ In contrast to GHG emissions, **biodiversity impact of resources and products is difficult to assess** as a broad range of variables influence the biodiversity impact of materials. Thus, a **measurement system** capturing the biodiversity impact of resources has to be developed (see → EBTs).
- ↙ A lack of **consideration of territorial differences** in biodiversity could be problematic when implementing resource caps.[295]
- ↙ Explicit disclosure of trade-offs and synergies between different objectives have to be taken into account and a more balanced and transparent funding between production of agricultural commodities and delivery of public goods is necessary.[296]
- ↙ **Socioeconomic factors** should be considered, to avoid welfare losses through regressive policies, for instance, by weakening the position of domestic industries or bounding income from low income groups through significant price increases for essential goods.[297]

Windows of opportunity

- The ongoing conversation in Whitehall on substituting the EU ETS with a domestic carbon trading mechanism offers an opportunity to ensure that robust and effective caps are introduced to limit the impact of carbon intensive sectors.
- Even within agriculture and transport sectors, current leading proposals on decarbonisation have variations of resource caps with elements of trading for credits (either in the form of electric vehicles or peatland carbon).
- Current legislation going through parliament on agriculture, environment, fisheries and trade all offer challenging but key parliamentary opportunities to introduce resource caps, where relevant.

Relevant stakeholder

- Given the complexity and nascent nature of this policy idea, it is not easily communicated in campaigning. But given the existing windows of opportunity, the following clusters are well-placed to take this issue forward in terms of policy development and advocacy.

    1. The Greener UK coalition in the UK working on post-Brexit implications for the environment and natural resources.
    2. The Build Back Better coalition of progressive NGOs and grassroots groups working towards a green recovery.

8. Environmental Border Tax

» Establishing EBTs would treat domestic and offshore resource extraction and use equally, based on their respective biodiversity impact. «

Associated clusters

Shifting profitability → p. 34 — Sustainable investments and innovation → p. 35 — Non-financial disclosure, reporting and accountability → p. 35 Sustainable business models → p. 35 — Sustainable consumption alternatives → p. 37 — Sufficiency → p. 38

To halt the unprecedented decline of global biodiversity and to ensure the effectiveness of unilateral policy efforts such as resource caps, **biodiversity offsetting or environmental border taxes (EBTs) can present a crucial complementary measure to prevent biodiversity leakage and to safeguard domestic competitiveness.**[298]

In the case of climate change, there is a growing consensus that border taxes such as border carbon taxes (BCTs) will constitute an essential component of the response to climate change.[299] This is because **BCTs can help level uneven carbon taxation schemes and are the only unilateral policy option that offers both effective protection against leakage of production and an incentive for other countries to strengthen their climate efforts.**[300] In our survey, the combination of resource caps and EBTs has been described as "[potentially] having a big impact at home and [an even stronger] impact abroad as it is [...] a more fundamental break from the current paradigm."

We propose to widen the idea of BCTs for avoiding leakage from carbon taxation to a wider EBT that aims to avoid leakage from resource taxation, as proposed in the → previous chapter. Biodiversity leakage describes the phenomenon of biodiversity damaging activities relocating elsewhere after being stopped locally, for example by a cap on resource extraction that is harmful to biodiversity.[301] Leakage can lead to high net biodiversity loss since it is difficult to measure or prevent.[302, 303]

Establishing EBTs would treat domestic and offshore resource extraction and use equally, based on their respective biodiversity impact. Environmental Border Taxes (EBTs) would be charged depending on biodiversity impacts associated with certain resources. This can level the competitive playing field, reduce leakage, and

incentivise trade partners to strengthen biodiversity policy efforts.[304] Thus, preserving competitiveness of domestic industries, if faced with domestic taxation schemes (see → Resource caps) and addressing the problem of uneven resource reduction efforts by including imports in or exempting exports from biodiversity constraints.

In particular, tariffs on products containing resources with strong biodiversity impacts, such as **agriculture, rare earths and chemicals,** would presumably reduce the leakage of production facilities that use these resources. When compared to unilateral measures such as resource caps alone, EBTs may be most effective in leakage reduction and promotion of global cost-effectiveness as is the case for carbon taxes.[305]

To avoid the risks of trade wars driven by unilateral protectionist trade-policy, an **EBT should not be established single-handedly.** We propose to complement it with the establishment of an international UK biodiversity fund. Revenues from tariffs would partly be used to equip the fund. Offshore trading-partners could apply for funding with projects that aim to reduce the biodiversity impact from the resources used in their business model.

We identified the following steps that would be necessary to design EBTs successfully:

1. Agreeing on a science-based **global goal** on biodiversity loss (equivalent to 1.5 °C goal in Paris Agreement).[306]
2. Defining **assessment approaches to estimate biodiversity impacts** through resource use in a preventive manner that allows for data gaps (similar to CO_2 equivalents).
3. Designing a standard to calculate product-based biodiversity impacts by trading partners.
4. Implementing a **UK biodiversity fund** to support offshore industries with reducing their biodiversity impact.
5. Imposing **adjusted tariffs for imported goods,** where firms cannot prove that the biodiversity impact from the resources contained in the product is below a certain threshold.

Inspirations

The UK would be a forerunner by implementing a broader environmental border tax (EBT), rather than limited border carbon taxes. In fact, this will be the first of its kind, however, the EU is currently leading the change in this policy sphere.

Enablers and barriers

Enablers:

- ↗ For BCAs, there is a consensus that these can be a WTO-consistent policy tool when designed and implemented properly.[307]
- ↗ Increasing awareness for the necessity to decelerate biodiversity loss.

Barriers:

- ↙ Difficulty to draw a strict line between sectors covered and not covered.[308]
- ↙ **Considerable variation across sectors** in resource intensity and associated biodiversity impacts.
- ↙ **Complexity** in calculating the appropriate EBT margin, **high administrative costs** and a requirement for a strong welfare justification, as for carbon.[309]
- ↙ Risk of **"cascading protectionism"** with tariffs being possibly extended to industries further along global value chains.[310]
- ↙ Potential **misuse of border measures for strategic reasons** in presence of market power on international markets.[311]
- ↙ Possible violation to the WTO's most-favoured-nation treatment (GATT) and may conflict with the principle of common but differentiated responsibilities (CBDR).[312]

Windows of opportunity

- The major window of opportunity is the EU and the Commission indicating a strong interest in pursuing an environmental border tax, which is bound to draw in the UK as a close trading partner.
- The post COVID-19 economic recovery requires a wide set of tax levers for the Treasury to utilise in order to raise revenue and bridge the huge fiscal deficit. If pitched properly, border adjustment taxes could prove to be a vital tool in the tax toolbox.
- Our survey suggests that the UK is well positioned to work on EBTs in the post-Brexit period. Brexit will result in a more independent decision-making process that can build up on the heritage of EU environmental standards and carbon pricing/trading at the same time.

Relevant stakeholders

- Influential think tanks like Policy Exchange and Aurora energy have previously made the case for carbon border adjustments tax alongside other rightwing groups.
- The UK government's chief climate advisory body, the Committee on Climate Change, has advocated for a carbon border adjustments tax to achieve net zero. This offers a clear baseline to build on extending the tax to wider biodiversity issues, beyond just carbon.
- Other potential supporters include both economic and environmental advocacy institutions and NGOs.

Interim conclusion
The interplay of policy proposals

The interplay between the policies presented here is as important as the details of individual policies.

The policies presented here are mutually supportive. Most policies address several of the intervention areas listed in Table 1. A wellbeing budget for the UK, the national investment authority, mandatory financial risk assessments and a green credit guidance all aim to increase and strengthen investment in the green economy. A modernised set of government's fiscal rules, a land value tax, and resource caps create the necessary fiscal leeway. Resource caps ensure that these policies are effective in reducing resource use through absolute limits and a dynamic steering effect via prices. Lastly, a land value tax can ensure social acceptance, while environmental border taxes aim to support domestic economic actors.

The interaction between the policies is illustrated in the graphic on page 84. Arrows indicate the flow of financial resources – for example investments or payments that flow into unsustainable sectors with low wellbeing gains, or into sustainable sectors with high wellbeing gains.

Originating from the state, shifting from the current national budget to a **Wellbeing Budget** would force policymakers to implement procedures (indicator sets, models, decision-process) to ensure that public spending generates positive impacts for wellbeing and the environment. It would thereby ensure that the state invests in the sectors that are important for the society such as resilience, economic security, care, education, infrastructures. However, this would require that a sufficient amount of public spending is available to do so. This would be achieved by **reassessing fiscal space.** A new fiscal framework supports the Wellbeing Budget. By including long-term considerations into the associated national assessment framework, more space will be available for investments to enhance resilience, mitigate climate change and conserve biodiversity.

In order to effectively utilise that fiscal space to deliver the objectives as outlined in the Wellbeing Budget, a **New Investment Authority** would be responsible for ensuring that investments are channelled into the appropriate sectors. It would also provide credits and support for both businesses with a sustainable business model and consumers who want to purchase sustainable products. These investment policy measures would constitute a tremendous shift, by restraining the power of unsustainable businesses.

These public investments would impact capital flows from public banks and the central bank and crowd-in private finance. In addition, two policies can make private banks shift their investments towards more sustainable sectors and business models on their own and make environmen-

tally harmful activities more expensive. The first is a **mandatory risk assessment and disclosure of climate and biodiversity related risks** of credit provided by private banks, which makes environmental risks more transparent. These risk assessments would support the second policy, **green credit guidance,** which would drive investment in sustainable business and raise economic and environmental resilience by lowering environmental pressures.

These policies would reduce costs for sustainable business models and create economies of scale, thus boosting green innovation in the mass market. Sustainable products would become more affordable and unsustainable products less so. However, there might still be some price increases, so to counter this we need some carefully targeted redistributive policies to ensure a just transition and build overall political and public support for the package of measures. This would ensure that all people have access to basic goods and services such as housing, water, mobility, energy and food.

To raise revenue for these efforts in a way that would also coherently support the goals of efficient use of natural resources, a **land value tax** could be introduced.

It is impossible to foresee whether a different incentive structure and financial environment will indeed prevent the costs of the environmental crisis. **The above measures may generate relative gains, like increase material and energy efficiency and carbon intensity. Resource caps** can make sure that these gains translate into an absolute reduction of resource use and thereby ensure that the economy operates within planetary boundaries. While other policies serve to redirect investment, resource caps go further, directly addressing the profitability of certain business models. Resource caps would restrict activities that harm biodiversity by charging higher prices for resource licences or imposing taxes. Due to this policy's impact on competitiveness and profitability, **Environmental Border Taxes** would be a crucial complementary measure in protecting biodiversity leakage and safeguarding domestic competitiveness.

It is important to note that to effectively restructure the economic and financial system towards sustainability, it is **necessary to apply policy packages, rather than individual policies.** However, many of the prioritised policies in "the package"- may be replaced with others that deliver a similar effect; it is only necessary that the impacts of the chosen policies are addressed simultaneously. For example, the goal of a land value tax or inheritance taxes is to lessen the extent of power imbalances by reducing wealth accumulation from land ownership. These taxes could supply households with income needed to purchase basic goods and services, whose prices might have risen due to the impacts of other policies, such as resource caps.

Legend

Arrows indicate the flow of financial resources into the resilient (■) or the extractive economy (■).

1. Wellbeing Budget

↳ These boxes are policies to change the flows.

1. Wellbeing Budget

2. New Framework for Assessing Fiscal Space

Government

Extractive Economy

Resilient Economy

Investment Facility

3. New Investment Facility

5. Credit Guidance

Central Bank

Private Banks

4. Mandatory Risk Assessments and Disclosure

8. Environmental Border Taxes

Trading Partners

7. Ressource Caps

Planetary Boundaries

6. Land Value Tax

high-income households

low-income households

In place of a conclusion: A story of hope

» It's not enough to imagine another world is possible, we need to feel and taste it. «
— Naomi Klein

This report and the research underpinning it is an attempt to better understand what systemic change towards a more resilient and sustainable economy might look like for the UK. We have outlined eight key proposals *that provide an effective route to transforming the economy and shaping markets and the behaviour of a variety of actors in the process.*

Despite the many potential benefits of the proposals presented in this report, they lack widespread awareness or support. The world is quite a long way from being able to implement some of them. One reason is that the destination of a different economy can feel abstract or irrelevant, especially to audiences that are not immersed in complex economic theory or policymaking. As a result, **there is a dearth of positive visions of the future in the media. This is a problem, as humans make sense of the world through stories – and these stories shape how we behave in it.**

Narratives in public discourse shift culture – and produce tangible impact through policy change, behaviour change and advocacy. With this in mind, we urgently **need to move past the focus on discussing what is wrong with the current system, towards sharing *positive, new* narratives that inspire people** to imagine a resilient economy that promotes human and ecological wellbeing, and to start engaging with on how to actually make this happen. **With imagination comes hope, and with hope, action.** Clear narratives around resilience and wellbeing, which succinctly summarise the societal vision towards which policies work, are crucial to provide direction, motivation and widespread support. This requires seeing an idea put into practice and thus getting a sense of what it looks and feels like.

What might this "resilient economy" look like?

For **policymakers,** it might entail more collaboration with all stakeholders, including more participatory processes with citizens and new partnerships to co-create and implement transformative policy projects. Policymakers would incentivise agencies and non-governmental actors to demonstrate their positive impact on a suite of collective wellbeing indicators in order to receive resources. They would be seen as the ones navigating the economy into the future, as the supporters and the enablers of the transformation.

For **investors,** the policies mentioned in this report would reframe the goal of financial markets from maximising short-term financial performance, to the allocation of capital to support sustainable outcomes. In order to make investments with this goal in mind, investors would be empowered with

the right information via strict standardised monitoring mechanisms that allow for the assessment and comparison of sustainability metrics of different business models, along with traditional financial metrics, and would be incentivised by new regulatory and market based frameworks. New investment opportunities created by governments would create more options for investors looking to invest in more socially responsible ways. Finally, biodiversity labels, environmental externalities assessments, and a common international standard for calculating carbon emissions embodied in goods, would provide the information needed to identify sustainable financial products. This would lead to adequate investment in innovative and sustainable businesses.

For **business leaders**, the proposed policies would reframe the definition of success: to consider the wider impacts on environment & society, not just short-term shareholder profit. Based on this new modus operandi, businesses would make decisions that favour people and the planet, along with generating profit. Sustainable operations would likely be more profitable due to lower taxation, an increasing demand for sustainable products from citizens, improved reputation, reduced risk and increased innovation due to increased financial incentives from investors and government.

For **citizens,** proposed policies would result in being treated like people, rather than as consumers. All people would have financial stability, due to the eradication of the underlying drivers of financial inequality and concentration of power. Responsible citizens would be sustainable consumers who collectively respect environmental boundaries and promote social justice and equal opportunities. Satisfaction of their needs would not always rely on more cars, Iphones and other goods, but could also be obtained through immaterial services, strong social relationships and meaningful activities.

It is the interplay between these actors that forms the basis of a resilient economy. Therefore, it is crucial to involve a relevant number of different stakeholders: it is vital to reach a critical mass of people and organisations coming together to form a movement to create systemic change and call on policymakers to implement the necessary reforms. No one alone can achieve it. But together, actors can demand that policy creates the framework that makes sustainable behaviour easier and paves the way to a resilient economy. We are aware that the proposals in this report are far-reaching. Their implementation is seemingly difficult. But we are convinced that they are necessary. We need the courage to dare something new. With this report, we invite you to dare, so that the prosperity of today will benefit our children tomorrow and we can ensure survival on this planet.

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Appendix

Title	Authors	Pub-lished	Key Questions
Financing the transition – how financial system Reform can serve sustainable development	Nick Robins, Jeremy McDaniels	2016	What measures are most needed to deliver efficiency, effectiveness and resilience in ways that the financial system can contribute to specific sustainability priorities in the real economy?
Delivering the sustainable financial system the world needs	Steve Waygood and others	2017	How can private finance be aligned with the Sustainable Development Goals (SDGs)?
Doughnut economics: seven ways to think like a 21st century economist	Raworth, Kate	2017	How can we frame an economy that integrates social wellbeing into planetary boundaries within the “safe and just operating space for humanity”?
The IPBES Global Assessment report – Summary for policymakers of the global assessment report on biodi-versity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.	IPBES – Díaz, J. Settele, E. S. Brondízio E.S., H. T. Ngo, M. Guèze, J. Agard, A. Arneth, P. Balvanera, K. A. Brauman, S. H. M. Butchart, K. M. A. Chan, L. A. Garibaldi, K. Ichii, J. Liu, S. M. Subramanian, G. F. Midgley, P. Miloslav-ich, Z. Molnár, D. Obura, A. Pfaff, S. Polasky, A. Purvis, J. Razzaque, B. Reyers, R. Roy Chowdhury, Y. J. Shin, I. J. Visseren-Hamakers, K. J. Willis, and C. N. Zayas (eds.). IPBES secretariat, Bonn, Germany. 56 pages.	2019	Status, trends and drivers of change in nature for better evidence-informed policy decisions and action at the local, national, regional and global levels.

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
Case studies on sustainable energy, climate risk assessment and sustainable land use; Geographies: India, EU, France, Netherlands, Sweden, UK, California, Brazil, Indonesia	Repurpose subsidized credit to comply with environmental indicators (e. g. no deforestation in Brazil). Improve disclosure, data and risk analytics (e. g. for energy efficiency). Integrate financial sector considerations into sectoral environmental policy. Think in system terms to identify key drivers of change in finance.	System thinking approach of the study.
	SDGs or sustainability aligned benchmark. Guidance on fiduciary duty to include non-financial objectives. Financial education to build demand for long-term products.	
Doughnut framework, planetary boundaries	Seven steps to think like a 21st century economist: 1. Change the goal 2. Tell a new story 3. Nurture human nature 4. Get savvy with systems 5. Design to distribute 6. Create to regenerate 7. Be agnostic about growth	Economics as a sphere in which people produce, distribute and consume products and services that satisfy their wishes and needs. Distinguishes between four supply spheres: individual household, market, commons, state. Economy is not a closed cycle, but an open system with constant inflows and outflows of raw materials and energy. The most important resource flow is not money, but the energy cycle.
State-of-the-art literature review. Revolves on a conceptual model which represents the links between nature and human wellbeing (as well as drivers, institutions, and other elements). Scenario-based modelling is used in one specific Chapter (Ch. 4).	• Reforming subsidies • Address over and under consumption • Reducing unsustainable production • Reforming trade regimes and financial systems • Reforming models of economic growth	Acknowledging nature's contributions to people's life to consider environmental impacts in economic decision-making. Biodiversity loss means loss of wellbeing, including economic welfare.

Title	Authors	Pub-lished	Key Questions
Assessing the degrowth discourse: A review and analysis of academic degrowth policy proposals	Cosme, Inês, Rui Santos, und Daniel W. O'Neill	2017	Which areas of impact are covered by degrowth policy proposals and where are its underdeveloped parts/blind spots?
Degrowth – Vocabulary for a new era	Giacomo D´Alisa Federico Demaria Giorgos Kallis	2015	What are the different strands of critique and proposals of the degrowth community?
Climate and nature and our 1.5° future – WWF synthesis of the IPBES and IPCC reports	Stephen Cornelius Sophie Yeo Christopher Weber, Fernanda Carvalho, Leanne Clare, Mandy Woods, Pauli Merriman, Roz Pidcock, Vanessa Perez-Cirera	2019	What are the systemic changes needed for limiting global warming and halting biodiversity loss?
Mobilising Private Sector Capital in Support of the UN Sustainable Development Goals	UNDP, Global Ethical Finance Initative, R.J. Fleming & Co	2020	How to incentivise the investment sector to support the UN SDGs?
The Business of Wellbeing	Mira Bangel and Michael Weatherhead	2020	How can businesses participate in a wellbeing economy?
Using TCFD's to manage climate risk: next steps for UK government, investors and businesses	Aldersgate Group	2019	How can the financial sector address climate risk?

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
Literature review of 128 peer-reviewed papers and 54 that include proposals for action.	Meta-study, analyzing policy proposals concerning three goals: 1) Reduce the environmental impact of human activities. 2) Redistribute income and wealth both within and between countries. 3) Promote the transition from a materialistic to a convivial and participatory society.	
	Recommendation for a transition to a degrowth economy, that goes along with new allocations between private and public provisioning of goods and services, a stricter focus on environmental limits, a different concept of wellbeing and more equality.	New understanding of wellbeing, that is less based on personal gain and more on redistribution, because evidence has shown, that above a certain level of national income, it is equality and not growth that improves social wellbeing (Wilkinson and Pickett 2009).
Synthesis review of IPCC and IPBES reports structured by ecosystem type. Case studies and specific WWF recommendations based on the reports.	Climate pledges consistent with the 1.5°C goal. Nature-based solutions part of countries' climate commitments. Coordinate climate, biodiversity and sustainable development policies. Align financial flows with the needed systems transformations. Address the international impacts of domestic policies.	Nature-based solutions, sustainable consumption and production can be synergically used to tackle climate change and biodiversity loss.
Survey and interviews with over 100+ senior reps from investment space SDGs	Products: BONDS (e. g. Sustainable Bonds: Green Bond, Green Sukuk, Green Securitisation Bond, Blue Bond, Sustainability Linked Bond, Social Bond, Forests Bond] Impact Funds, Blended Finance, Green Loan, Sustainability Linked-Loan)	Challenges in integrating – (1) Risk & Return, (2) Scale, (3) Ratings – ESG rating are inherently subjective and investors have to undertake own analysis of sustainability factors – (4) Measuring & Reporting – several initiatives without standard or widespread adoption (5), Liquidity-lacking due to supply/demand imbalance (6), Government support – policy is critical to shaping investment climate in markets, (7) Greenwashing.
Co-created guide with SenseTribe w/interviews with partners and stakeholders		Businesses want to participate in a wellbeing economy, but competition prevents it. Creating incentives for sharing innovations to enable other businesses is key.
	1. Reporting of climate change risk should be mandatory to provide data and create a level playing field 2. Governments should require companies to disclose what actions they're taking to manage identified risk 3. Market participants must be encouraged to look beyond usual business planning timelines 4. Corporate Reporting Lab should be established to develop impartial sectoral scenario guidance companies in same industries 5. UK must keep up with international trends on climate disclosure 6. Investors must make voice heard and engage with companies	Establish a leveled playing field, introduce Mandatory reporting, corporate Reporting Lab should be set-up, go beyond "BAU" timelines and more forward thinking.

Title	Authors	Published	Key Questions
2019 Global Sustainable Development Report	Independent Group of Scientists appointed by the UN Secretary-General: Co-chairs; Peter Messerli, Endah Murniningtyas	2019	Current shortfall of Sustainable Development Goals by 2030
UNISDR (2017) Build Back Better in recovery, rehabilitation and reconstruction. (Consultative version)	UNISDR	2017	Best practices for disaster recovery across countries?
The Tragedy of Growth	Positive Money	2020	How can the UK government move past GDP measurement toward measurements of wellbeing?
Nature's Return: Embedding environmental goals at the heart of economic and financial decision-making	Ludovic Suttor Sorel and Nicolas Hercellin	2020	1. Is private finance up to the task [financing the preservation of biodiversity]? 2. Are current regulatory proposals able to scale up the mobilization of finance for nature? 3. If not, what interventions can bring deep and lasting changes to the provision of finance for nature?
Towards a performance framework for a sustainable financial system	Wally Turbeville	2016	Exploring the connection between available liquidity and fulfillment of investment flows for sustainability (and the need to divert from unsustainable activities) to assess the functionality of the financial system and come up with recommendations for reform.
COVID-19: the future of UK economic policy	Giles Wilkes; Kiran Horwich	2020	Examining the big policy questions that lie ahead (through COVID-19), and how they might develop through four key phases of action.
Measuring Prosperity – Navigating the options	Christine Corlet Walker; Tim Jackson	2019	How can we move beyond GDP in measuring prosperity? 1. discusses the benefits and disadvantages of the different types of alternative indicators 2. contribute to challenge of aggregation and the question of monetization 3. a roadmap for interested parties to better understand what makes a successful and influential indicator

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
SDGs and assessment of SDG achievements.	Put inequality at heart of global development agenda. Promote agreement, inclusivity and consensus to achieve policies that work for the common good, rather than narrow self-interest, across both the public and the private sectors.	Emphasis on the role of science for designing and implementing development policies (systems approach).
Building of a common framework through identifying common terminology, agreeing on priorities and learning from best practices.	Strengthen policies, laws, programs that promote (incentivise), guide (ensure), and support Build Back Better in recovery, rehabilitation, and reconstruction in public and private sectors, and by individuals and households.	Learning from best practices across the world offers solutions for global-scale challenges.
	• Abandon GDP as a indicator of progress • Transition to a non-financialised and non-growing system • Incorporate a dashboard of social and environmental wellbeing indicators into the policy process	Foster balanced creditor – debtor relationships – founded on ways of guaranteeing access to means of payment and access to credit UBI issues via central bank currency, direct clearing facility, banks and modern debt jubilees as policy.
Exploration of (neoclassical) Modern Portfolio Theory and the Capital Assets Pricing Model to illustrate the inadequateness of the current financial system to finance environmental projects.	• Update the metrics for tracking environmental impact from the Rio Markers to the BioFin ones [in EU]. • End counterproductive agricultural subsidies and redirect them for transitioning to nature preserving practices • Exempt public investments in nature from public deficit rules as they can be counted as capital investments • Better enforce environmental regulations • Explore blending of public and private financing for a limited number of areas	Counters the financial innovation arguments.
Revisits Mynski's Financial Instability Hypothesis, the Efficient Market Hypothesis and the work on the cost of intermediation from Phillipon and the Bank for International Settlements.	Assess the financial system not by self-referential metrics like amount of transactions or liquidity of the market but in terms of its system outputs, i.e. whether or not it delivers the investments that are needed for the transition towards a sustainable economy.	Framework to conceptualise finance as a system as well as meaningful categories to assess its functionality.
	The "story indicator" must be clear and distinct from the story captured by GDP. It can benefit from simplicity and aggregation, allowing them to compete with GDP on the public stage. The "decision-aid indicator" requires closer attention to technical characteristics as well as inclusion of end-users and political context.	

Title	Authors	Pub-lished	Key Questions
From containment to recovery: Environmental responses to the COVID-19 pandemic	OECD	2020	Focus on immediate steps that governments can take to ensure COVID-19 emergency measures do not derail efforts to address environmental challenges and improve environmental health and resilience of societies.
The regulatory compass towards a purpose-driven approach to financial regulation – Finance Innovation Lab	Christine Berry, Anna Laycock, Rob Nash and Marloes Nichols	2018	What is the purpose of finance and how can reforms make the financial system closer to deliver on this purpose?
Blueprint for Better business	Blueprint for Better Business	2019	What is a purpose driven business?
Will COVID-19 Fiscal recovery packages accelerate or retard progress on climate change?	Cameron Hepburn, Brian O'Callahjan, Nicholas Stern, Joseph Sitglitz, Dimitri Zenghelis	2020	Will COVID-19 Fiscal recovery packages accelerate or retard progress on climate change?
Successful non-growing companies	Andrea Liesen, Christian Dietsche, Jana Gebauer	2014	Who are the successful non-growing companies and what is their potential in a post-growth economy?
Global Futures: Modelling the global economic impacts of environmental change to support policy-making (WWF report)	Justin Andrew Jackson, Uris Lantz Baldos, Thomas Hertel, Chirs Nootenboom, Stephen Polasky, Toby Roxburgh	2020	What is the impact of different scenarios concerning the (non)-preservation of ecosystems on GDP by the year 2050?

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
Case studies	• Update metrics for performance assessments • Reform the mandates of regulators and change the mindsets of people involved in finance	
	1. Honest and Fair with Customers and Suppliers 2. A Good Citizen- seeing each person affected by decisions as if they were a member of the decision-makers own community 3. A Responsible and Responsive Employer – treats everyone with dignity and provides fair pay 4. A Guardian for Future Generations	Framework on how businesses can do more for employees and community as a whole.
	Policies can deliver both economic and climate goals, co-benefits can be captured, prioritise policy design	Green fiscal recovery packages can act to decouple economic growth from GHG emissions and reduce existing welfare inequalities that will be exacerbated by the pandemic in the short-term and climate change in the long-term.
Document analysis (i. e. systematic procedure that "entails finding, selecting, appraising (making sense of), and synthesising data contained in documents"	• Produce not cheaper and more, but less and more valuable products • Spare resources by reducing output • Increase the immaterial benefit of the printing process e. g. experience quality, focusing on useful printing products • Distribute profits and provide reasonable compensation for all employees • Identify indicators that allow to more easily measure and communicate success of non-growing companies	• Aim for better not bigger • Focus on quality of products/ services and quality of work and life • Make contribution to reduce absolute amount of resource use
Ecosystem model is pegged onto computable general equilibrium model through input-output accounts, where inputs are shocked due to the deterioration of the environment. The integrated model uses representative agendas, discounting, and GDP growth trajectories that are obtained from historical trends and carbon prices from Integrated Assessment Models	Shift to sustainable economic practices and restoration of land leads to less adverse economic effects, while being able to maintain food for the world populations. Hence, policy and behavioural shifts that comply with a conservation scenario should be undertaken.	Estimates on the monetary losses from the destruction of ecosystem services like pollination or coastal ecosystems.

Title	Authors	Pub-lished	Key Questions
Growth, Degrowth and Climate Change: A scenario Analysis	Peter A. Victor	2011	What are the various scenarios of economic growth that impact GHG emissions?
Wellbeing Economics for the COVID-19 Recovery	Milena Büchs, Marta Baltruszewicz, Katharina Bohnenberger, Jonathan Busch, James Dyke, Patrick Elf, Andrew Fanning, Martin Fritz, Alice Garvey, Lukas Hardt, Elena Hofferberth, Diana Ivanova, Amanda Janoo, Dan O'Neill, Monica Guillen-Royo, Marlyne Sahakian, Julia Steinberger, Katherine Trebeck, Christine Corlet Walker	2020	How can governments build back better toward economies focused on wellbeing?
Recommendations in the IPCC special reports on global warming of 1.5 ºC, land, the ocean and cryosphere	IPCC	2018	What are the impacts of impacts of global warming of 1.5°C above pre-industrial levels?
Come On! Capitalism, Short-termism, Population and the Destruction of the Planet	von Weizsäcker and Wijkman	2017	How to create more resilient economies and why our current economic systems is insufficient?
Climate Change: An Antidote To Democracy's Mid-life Crisis	Richard Roberts	2018	How to make climate policy that is effective?

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
Many models comparing BAU, low/no growth scenarios against one another	Low/no growth economy scenario to see how it can affect GHG emissions, government spending, carbon tax, working time, population, poverty, unemployment, and debt.	As GDP rises, so does debt, GHG emissions and poverty. In low/no growth scenario, GHG reduces, unemployment, debt and poverty all reduce.
Policies for building back better are contrasted with building back worse policies.	• Doughnut economics framework in Amsterdam • Wellbeing Economy Government partnership • Green Deal • Pop-up bike lanes • Green recovery plans • Sharing partnerships • Basic incomes • Freezing debt payments for low income countries • Put dividend and bonus payments on hold (banks and coops) • Quantitative Easing measures or direct public money creation	Best practice examples.
Scenarios	• Avoiding carbon overshoot can only be achieved if global CO2 emissions start to decline well before 2030 • A wide range of adaptation options should be used to reduce the risks related to global warming • Mitigation strategies to reduce net carbon emissions are required to avoid more severe impacts.	Limiting global warming to 1.5°C requires rapid and far-reaching transitions in energy, land, urban and infrastructure (including transport and buildings), and industrial systems. Climate change generates negative impacts on sustainable development, eradication of poverty and reducing inequalities.
SDGs, planetary boundaries, regenerative principles – Fullerton, blue economy etc.	• Rethink taxation • Strengthen recycling and reuse targets • Strengthen existing policies of promoting renewable energy • Introduce design requirements for new products for ease of repair and maintenance • Use public procurement to incentivise new business models • Make material efficiency a core part of climate mitigation policies. • Launch investments, primarily in infrastructure, to support the circular economy • Support innovation in low-carbon solutions • Exempt all secondary materials from VAT	
	1. A flatrate, no-exceptions tax on emissions. 2. Investment in renewables and low-emission transport infrastructure, which will also create jobs. 3. Enhanced protections for natural carbon sinks in public hands. 4. Funding for research into carbon capture and use, energy storage and next generation renewables. 5. Higher mandatory energy efficiency standards for all new buildings. 6. Scrappage schemes 7. Investment in climate adaptation and resilience. 8. Public awareness campaigns to promote dietary changes that both reduce emissions and improve health. 9. Lowering the voting age to 16.	

Title	Authors	Pub-lished	Key Questions
The Economy For the Common Good	Christian Felber, Gus Hagelberg	2017	How to build an economy for the common good?
Future Fit Positive Pursuit Guide		2020	What can businesses do above and beyond its pursuit to break-even to speed up transition to future-fitness?
Ökonomien der Transformation – Ansätze zukunftsfähigen Wirtschaftens	WWF Deutschland	2020	Describes and criticizes concepts of Green Economy, Bio Economy, Circular Economy and checks practical examples of sustainable development.
World Bank (2020) Proposed Sustainability Checklist for Assessing Economic Recovery Interventions, April 2020	World Bank Group - Climate Change	2020	What are the steps to be taken for assessing the sustainability of economic recovery interventions?
COP26 Universities Network Briefing (April 2020) A net-zero emissions economic recovery from COVID-19	COP26 Universities Network (Jennifer Allan et al.)	2020	How can the transition to net-zero emissions contribute to recovery and economic growth after covid19?
Evergreen Action Plan	Sam Ricketts, Bracken Hendricks and Maggie Thomas	2020	How can we contribute to defeating the climate crisis and build a new, socially and environmentally sustainable economy?
Envisioning a Not-For-Profit World for a Sustainable Future	Jennifer Hinton	2019	How can we contribute to a Not-For-Profit Business model for a sustainable economy?
Committee on Climate Change (2020) Letter to Prime Minister on COVID19 recovery	Committee on Climate Change (Lord Deben, Baroness Brown of Cambridge), Helen Brown, Saamah Abdallah, Ruth Townsley	2020	How can actions towards net-zero emissions and to limit the damages from climate change help rebuild the UK with a stronger economy and increased resilience? How can governments use local wellbeing indicators to inform policy making?

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
ECG Frameworks	• Ethical market economy designed to increase quality of life for all • Promote values of human dignity, human rights, ecological responsibility • Need for Common Good balance Sheet • Common Good companies benefit in marketplace through consumer choice, cooperation partners, common-good-orientated lending institutions • Common Good companies should benefit from advantages in taxation, bank loans and public grants and contracts • Biz profits serve to strengthen and stabilize a company and to ensure the income of owners and employees over the long term • Companies no longer forced to expand and grow • Reduce income inequality is mandatory in order to assure everyone equal economic and political opportunities	
Future Fit Frameworks	• Create positive impact • Reduce negative impact • Amplify the positive impact of others	
Best Practices	Moves away from the absolute growth paradigm and establishes thinking in a holistic and sustainable way.	
Checklist divided by topic and short-term/ long-term	Aspects for assessing sustainability of economic recovery interventions: • Impacts on employment • Economic activity • Timeliness and risk • Impact on human, social, natural, cultural and physical capital impact on technologies • Impact on fundamental market failures, increase resilience and adaptive capacity • Decarbonisationation	Addresses market failures and impacts on different forms of capital, including natural and cultural in economic recovery interventions post COVID-19 crisis.
Policy survey	• Reduce emissions • Invest in cleaner technology/research/infrastructures, invest in nature-based solutions • Establish a Sustainable Recovery Alliance at COP26	UK could lead a climate-safe recovery from COVID-19 by leading a Sustainable Recovery Alliance at COP26
n. a.	• Invest in green and socially inclusive economic progress, especially regarding job creation • Use foreign policy to promote global action against climate change	National and international mobilization is key.
	Change directive for businesses to move beyond making money.	Profit is not an end goal in itself. Profit is only a means to create a deeper end, community benefit.
Prioritisation of actions based on six principles of resilient recovery. Happy City Index,	1. Use climate investments to support the economic recovery and jobs. 2. Lead a shift towards positive long-term behaviours. 3. Tackle the wider “resilience deficit” on climate change. 4. Embed fairness as a core principle. 5. Ensure the recovery does not “lock-in” greenhouse gas emissions or increased climate risk. 6. Strengthen incentives to reduce emissions when considering fiscal changes. 7. “Measure what matters”.	• Investments in low-carbon and climate-resilient infrastructure • Support reskilling, retraining and research for a net-zero, well-adapted economy • Upgrades to buildings • Facilitation of walk, cycle, and work remotely • Tree planting, peatland restoration, green spaces and other green infrastructure

Title	Authors	Pub-lished	Key Questions
September 2020 (and March 2021): the temporary and the permanent impacts of coronavirus, Dieter Helm, 25th March 2020	Dieter Helm	2020	What will be the temporary and more importantly the permanent effects once the immediate emergency is over?
Why We Need a National Investment Authority	Saule T. Omarova	2020	How can the US federal government mobilize economic resources and manage emergency bailouts in response to systemic crises in a fully national, well-coordinated manner?
MDBs (multilateral development banks) response to COVID19	Chris Humphrey (ODI)	2020	How to scale up multilateral financing to face the COVID-19 crisis?
Jackson, Tim. 2017. Prosperity without growth: foundations for the economy of tomorrow	Tim Jackson	2017	What can prosperity possibly look like in a finite world, with limited resources and a population expected to exceed ten billion people within a few decades? How is a new understanding of prosperity made possible in world that is not relying on economic growth?
CAN INTERNATIONAL (2020): Fundamentals for Recovery & Economic Stimulus Packages in response to COVID-19, May 2020	Climate Action Network International (CAN)	2020	What are the short- and long-term measures to be implemented by governments and all stakeholders to respond to this pandemic and incoming climate related challenges?
A government roadmap for addressing the climate and post COVID-19 economic crises	Climate Action Tracker	2020	How can we synergistically solve COVID-19 and climate change crisis?
Post-Growth Policy Instruments	Peter Ferguson	2013	Framework to evaluate post-growth policy. Most effective policies reduce average working hours, expand low productivity sectors and reduce inequality. Specific policy instruments include public sector expansion and the promotion of cooperatives, the introduction of citizens' basic income schemes, environmental tax reform, the abolition of fossil fuel subsidies, reforms to monetary policy, financial regulatory reform and the introduction of alternative measures of progress to gross domestic product.
Wellbeing Budget New Zealand	New Zealand Government	2020	What is the New Zealand government doing to build a wellbeing economy?
Designing Border Carbon Adjustments for Enhanced Climate Action	Michael A. Mehling, Harro van Asselt, Kasturi Das, Susanne Droege, Cleo Verkuijl	2019	How to design border carbon adjustments in conformity with international trade law?

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
Qualitative scenario	• Support to health service • Measures of prevention and resilience to mitigate effects of future pandemics and impacts from environmental destruction	COVID-19 crisis will accelerate renationalisation, intergenerational conflicts and the retreat from globalisation.
	Set-up of a "national investment authority", responsible for: 1. Monitoring and management of capital allocation 2. Formulation of rapid crisis response/emergency bailout mechanisms 3. Implementation of long-term economic development strategies on the federal level	US Treasury and FED's lack of transparency and accountability can equally be applied to the European Central Bank.
• Bond rating • Financial investment for development	Essential to expand lending to developing countries in a coordinated manner among the major MDBs, with explicit support of G20 and other shareholders.	MDB lending is crucial for developing countries to recover from COVID-19.
• Become independent of growth • Redefine prosperity	Re-define: a. enterprises b. work c. investment d. money e. the role of the State	
	• Not bail out dirty industries. • Planning and investments shall meet environmental and social standards. • Equity should be at the hearth of policy responses to crisis. • End fossil fuel subsidies.	Resilience depends on equity.
Scenario modelling and projections	Green economic recovery would solve COVID-19 and the climate crisis if certain actions are taken and some are avoided.	Trade-offs and synergies between COVID-19 and climate change.
Policy measures		$ 3 B in operating funding/year to ensure government services continue to support NZ people through extraordinary time. Expand low productivity sectors and reduce inequality.
Historical overview and policy analysis	Design and implement BCAs as to conform to international trade law and WTO rules.	Illustration of the legal uncertainties of GATT prescription when designing BCAs.

Title	Authors	Pub-lished	Key Questions
Gesellschaftliches Wohl-ergehen innerhalb planetarer Grenzen – Der Ansatz einer vorsorgeorientierten Postwachstumsposition	Umweltbundesamt	2018	What is the role of economic performance (growth) and its future development in maintaining planetary boundaries? What are the best policies that degrowth and degrowth could possibly deliver? How would the perspective of a "precautionary post-growth position" look like?
The Green Swan: Central Banking in the Age of Climate Change	Patrick Bolton, Morgan Despres, Luiz Awazu Pereira da Silva, Frederic Samana, Romain Svartzman	2020	What is the role for central banks in the complex, non-linear affair of climate change? Which actions can they take within their mandates?
Network for Greening the Financial System: A call for action Climate change as a source of financial risk	Network For Greening the Financial System (63 central banks and supervisors). Secretariat is provided by the Banque de France	2019	Understanding how climate change affects the financial system and the economy.
Growth imperatives: Substantiating a contested concept	Oliver Richters, Andreas Siemoneit	2019	Economic growth remains a prominent political goal, despite its conflicts with ecological sustainability. Are growth policies only a question of political or individual will, or do "growth imperatives" make the inescapable?
Integrating Climate-related Risks into Banks' Capital Requirements	Maria Berenguer, Michel Cardona, Julie Evain	2020	Unpack the debate about using differentials in capital requirements to green the financial system.
The UK: Global Hub, Local Dynamics: Mapping the Transition to a Sustainable Financial System	Nick Robins and Jeremy McDaniels	2016	Describe developments in sustainable finance in the UK and make recommendations for a strategy.

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
Policies from degrowth and green growth perspective	Instruments to achieve environmental objectives and to reduce the dependence on growth in the area of employment and social security systems	
Non-equilibrium models (e.g. Stock flow consistent, Agent based). Sensitivity analysis, Case studies on risks and transmission channels between climate change, ecological transition, real economy and financial stability. Socio-technical systems change model (Geels et al. 2017)	Integrate climate-related risks into macroprudential supervision through stress testing and micro-supervision of financial institutions strategies and risk management procedures. Use Central Banks' own portfolios to promote green (extra-financial) objectives. Update collateral frameworks for Quantitative Easing to reflect climate-related risks – thus abandoning a false notion of "neutrality". Cooperate with governments and fiscal policy for financing a transition. Engage in multilateral cooperation. Integrate sustainability into corporate and national accounting frameworks	Comprehension of climate-related risks need to go beyond established policy and modelling practices.
Scenario analysis, granular modelling of transmission channels. Critical stance towards integrated assessment models	1. Integrate climate-related risks to prudential supervision. 2. Manage own portfolios according to sustainability criteria. 3. Bridge data gaps. 4. Build awareness and institutional capacity. 5. Achieve robust and internationally standardised disclosures. 6. Support the development of a taxonomy for economic activities.	Focus on scenarios and transmission channels instead of macro modelling.
Literature review	Limit resource consumption and redistribute economic rents.	
	• Development of a taxonomy • Being explicit about which goal (reduction of risk or industrial policy) one wants to achieve	Debate about capital requirements
Ecosystem mapping exercise through case study	• Social Innovation: aligning finance with individual values and social purpose, from socially responsible investment through fossil fuel divestment to new green peer-to-peer initiatives. • Institutional Stewardship: placing sustainability factors at the heart of mainstream financial sectors, most notably investment management. • Housing Finance: improving the environmental and energy performance of the UK's housing stock through new ways to mobilize financing. • Capital Markets Mobilization: incorporating sustainability into equity and debt market disclosure, analysis and capital raising. • Prudential Governance: embedding sustainability into the oversight of the safety and soundness of key sectors and the system as a whole. • Public Balance Sheet: mobilizing fiscal and other resources to facilitate the transition to a low-carbon, green economy.	

Title	Authors	Pub-lished	Key Questions
Greening Monetary Policy	Dirk Schoenmaker	2019	Should Central Banks take the carbon intensity of assets into account in the context of monetary policy?
OECD Green Budgeting		2020	
Into the wild – Integrating nature into investment strategies	Hugo Bluet, Ciprian Ionescu,	2019	How can finance contribute to the decrease of the degradation of biodiversity?
State of the Apes The Impact of Infrastructure Development on Biodiversity	Jo Alexander	2019	What should institutional investors do to minimize harmful impacts on biodiversity when investing in infrastructure projects? What risks does the failure to consider biodiversity questions entail?
A Green Stimulus to Rebuild Our Economy;	Johanna Bozuwa et al.	2020	What kind of economic stimulus should we pursue to respond to COVID-19, climate change and rising inequality in the US?
Issues in the design of fiscal policy rules	Portes and Wren-Lewis	2014	Repositioning fiscal rules as enablers of government spending to aid resilience and solve social and environmental issues rather than merely maintaining stable debt-to-GDP ratios.
Just about managing demand: Reforming the UK's macroeconomic policy framework	Alfie Stirling	2018	1. New fiscal rules which would enable more active fiscal policy in a downturn, including greater public investment. 2. Revision of the Bank of England's mandate to help interest rates rise faster in time for the next recession. 3. New mechanism to delegate an economic stimulus to a new National Investment Bank and purchase its bonds to ensure a direct injection of demand.
Public Finance for a Green New Deal	Stirling and van Lerven	2019	What kind of fiscal rules and policy framework (macroeconomics) do we need to tackle the climate emergency?

Theories, Models, Methods	Recommendations	Useful Insights and Arguments
Legal argument for the ECB, numerical examples for green tilting.	Green tilt of central banks' corporate bond portfolio.	Proposes an incremental green quantitative easing path that might be easier to implement than full scale suggestions.
	Standardise accounting	Green budgeting
Case studies, revisiting of biodiversity and other ecosystem foot-printing and scenario tools	1. Task force on nature related disclosures in analogy to FSB TCFD 2. Ensure that biodiversity is integrated in ESG ratings – in the longer-term methodologies should be harmonized 3. Develop a framework to assess biodiversity risk. 4. Develop biodiversity labels for financial products	
	Investors and banks should establish processes to monitor biodiversity as well as dispossession of indigenous land when financing infrastructure projects.	
Policy option menu grounded on four key strategies	• Create new family-sustaining, career-track green jobs • Deliver strategic investments • Expand public and employee ownership • Make rapid cuts to carbon pollution	Climate change is a challenge but also presents opportunities for fighting unemployment and inequality.
	• Fiscal rules that target necessary deficit • "Fiscal councils" to help guard against either under or overuse of fiscal space	
	Demand.	
	New fiscal rules and coordination between treasury and central banks	Government borrowing is key to tackle climate and wider ecological crisis

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