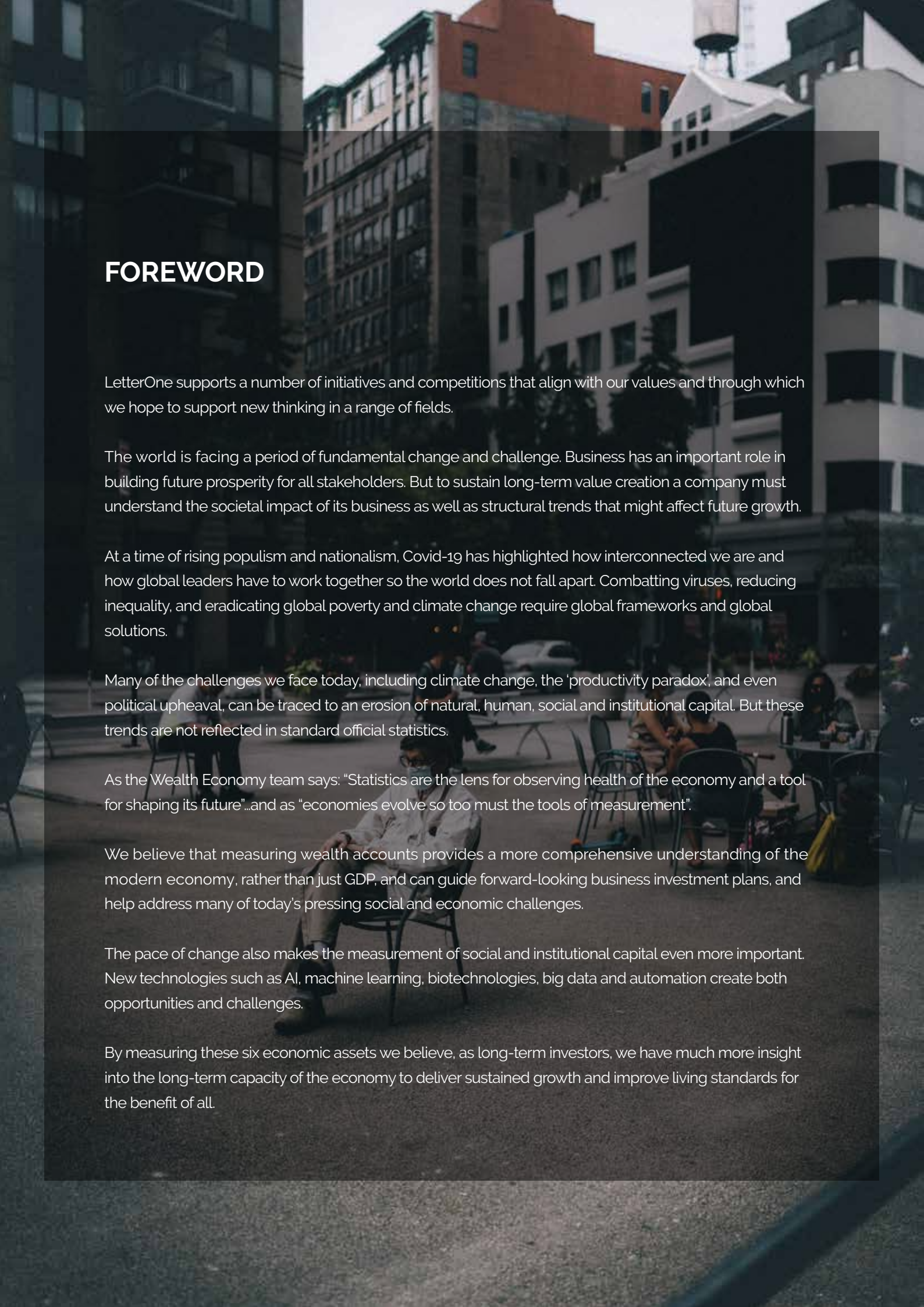

UNIVERSITY OF CAMBRIDGE
Building Forward: Investing in a Resilient Recovery
A Wealth Economy Project Policy Report for LetterOne
LETTERONE
Bennett Institute for Public Policy Cambridge



FOREWORD

LetterOne supports a number of initiatives and competitions that align with our values and through which we hope to support new thinking in a range of fields.

The world is facing a period of fundamental change and challenge. Business has an important role in building future prosperity for all stakeholders. But to sustain long-term value creation a company must understand the societal impact of its business as well as structural trends that might affect future growth.

At a time of rising populism and nationalism, Covid-19 has highlighted how interconnected we are and how global leaders have to work together so the world does not fall apart. Combatting viruses, reducing inequality, and eradicating global poverty and climate change require global frameworks and global solutions.

Many of the challenges we face today, including climate change, the 'productivity paradox', and even political upheaval, can be traced to an erosion of natural, human, social and institutional capital. But these trends are not reflected in standard official statistics.

As the Wealth Economy team says: "Statistics are the lens for observing health of the economy and a tool for shaping its future"...and as "economies evolve so too must the tools of measurement".

We believe that measuring wealth accounts provides a more comprehensive understanding of the modern economy, rather than just GDP, and can guide forward-looking business investment plans, and help address many of today's pressing social and economic challenges.

The pace of change also makes the measurement of social and institutional capital even more important. New technologies such as AI, machine learning, biotechnologies, big data and automation create both opportunities and challenges.

By measuring these six economic assets we believe, as long-term investors, we have much more insight into the long-term capacity of the economy to deliver sustained growth and improve living standards for the benefit of all.

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"Building back is not the challenge; it is Building Forward to something better."

PREFACE

In the two years since we started the Wealth Economy project at the Bennett Institute, thanks to the support and commitment of LetterOne, we have seen our work on improving the measurement, and hence the management, of the economy grow in importance and prominence. The insight that a sustainable and resilient economy and society require investment in the whole range of assets that constitute true wealth is shared by more and more policymakers and business leaders. This shift is welcome but it is being accelerated by the fact that society is facing some profound challenges.

One is, of course, the pandemic and its impact on economies and societies. It has shone a brutal light on existing inequalities, and made them worse as a result of the sharp downturn. It has underscored the sometimes literally lethal consequences of air pollution, and the importance for people's health of access to green spaces and nature. It has revealed the importance of being able to depend on family, friends, and neighbours when ill or unable to go out. If we had started with better measures of assets like natural and social capital we would already have known this. The current crisis has increased focus on the need for resilience. Without adequate buffer stocks, whether that is proximity to clean air and green space for all, sufficient investment in skills that people can adapt, or communities where neighbours want to help others, there is no resilience. Now, there is no excuse for any decision-makers not to take wealth into account.

Another aspect of social fracture in many countries is its geography, and the need to 'level up' those places where people have had too few opportunities to get on in life. They are often former industrial towns, but can also be rural or coastal communities. As the character of the economy has changed in ways that favour big cities, the policy response has failed to support people living in other places. Political upsets and growing polarisation have now made it clear that the benefits of economic progress must be widely shared, including geographically. This makes it essential to understand the geography of all the key assets, and how they can complement each other if economic policies are informed by better measures.

This need to focus on the 'where' as well as the what, why, and when also speaks to another underlying issue, concerning many governments before the pandemic: disappointing growth in productivity for at least the past decade. Economists regard productivity as a key indicator of long-term economic prosperity, closely related to increases over time in wages and living standards. A lost decade is therefore a serious concern. No economy can increase its productivity as a whole if only certain cities or places are thriving; it needs to be more broadly-based.

There has been an immense amount of economic research on barriers to productivity growth but far less on how they relate to each other, as well as on the need to co-ordinate policies and decisions by business and individuals. Investment is needed in all of the components of wealth because they complement each other. The returns to any single element will be higher if they are treated as a portfolio. A key part of the Wealth Economy project is understanding those links: **how do nature, health, and education interact to make people productive? What role does trust play in investment in conventional physical assets?**

This report by the Wealth Economy team focuses on the practical, immediate policy lessons emerging from our approach. The pandemic, alongside mounting evidence of the consequences of climate and biodiversity crises, has opened many people's eyes to the fact that this is a fork in the road. Building back is not the challenge; it is Building Forward to something better.

Diane Coyle,
Bennett Professor of Public Policy

"Without adequate buffer stocks, whether that is proximity to clean air and green space for all, or sufficient investment in skills that people can adapt, or communities where neighbours want to help others, there is no resilience."

WHAT IS INCLUSIVE WEALTH?

A nation's Inclusive Wealth is comprised of many interconnected capitals.

The Wealth Economy approach leverages the mutually reinforcing nature of these assets.

The result is a strategy that increases returns to all investments (public and private) by recognising the importance of complementary assets.

Our first report introduced the wealth framework.
Our second shed light on valuing natural and social capital in a changing, globalised world.

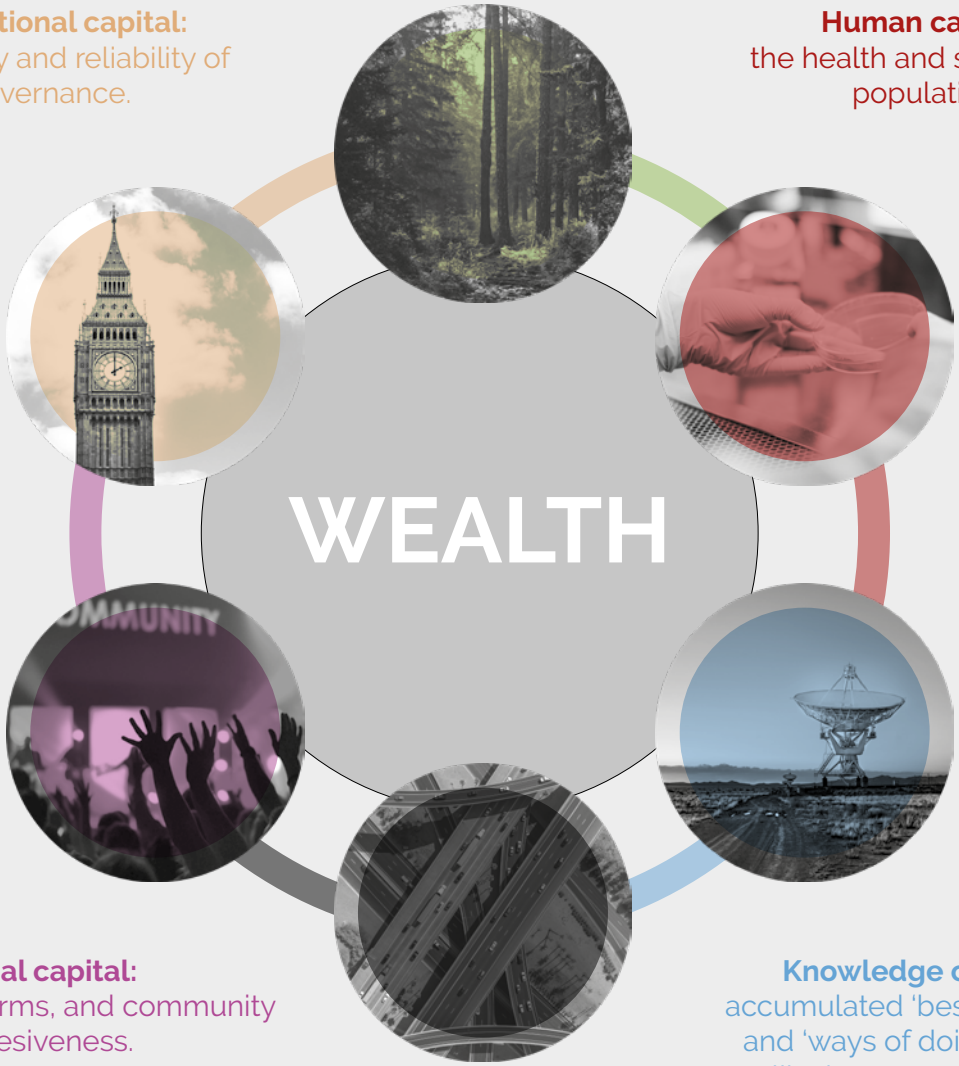
Here, we show how the Wealth Economy approach can help Build Forward, by investing in a resilient recovery.

It is our best chance of delivering the kind of growth needed for 'levelling up', meeting Net Zero, safeguarding biodiversity, and delivering sustainable prosperity for all.

Natural capital:
environmental stocks and systems that generate benefits for people (including ecosystems, raw materials, and a stable climate).

Institutional capital:
the quality and reliability of governance.

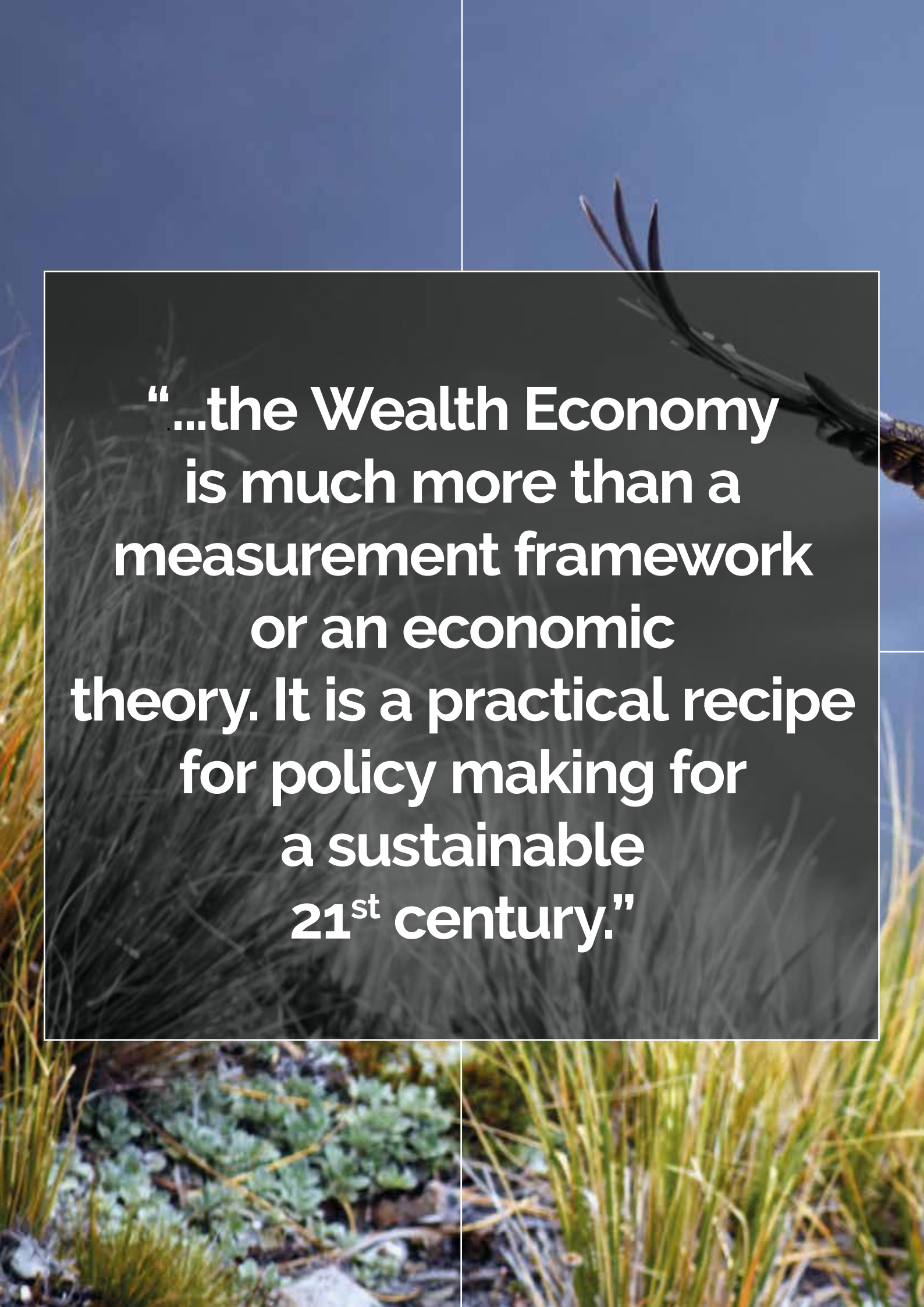
Human capital:
the health and skills of the population.



Social capital:
trust, social norms, and community cohesiveness.

Knowledge capital:
accumulated 'best practices' and 'ways of doing things'. Unlike human capital, it can live forever.

Physical capital:
infrastructure, homes, machines and equipment, and information and communications technology.



"...the Wealth Economy is much more than a measurement framework or an economic theory. It is a practical recipe for policy making for a sustainable 21st century."

A NEW MARSHALL PLAN

The Wealth Economy project is grounded in the realisation that the size of the economic pie depends on the stock of ingredients in our pantry. If we run down our supplies too much, it will mean a smaller pie in the future. Measuring our stocks of natural, social, and human capital – fundamental but too often overlooked ingredients of economic prosperity – has been our focus. But the Wealth Economy is much more than a measurement framework or an economic theory. It is a practical recipe for policy making for a sustainable 21st century. The chief advantage of the Wealth Economy approach is to recognise the mutually reinforcing nature of society's assets, and the fact that investments in one component of wealth influence the returns to all other investments.

Taking just one example – urban trees and woodlands – shows how natural capital can enhance the returns to all other realms of public spending. These green spaces provide a place for outdoor recreation, adding £78 billion to the value of UK homes within 500 metres of public green space, thus increasing the returns to housing investments. The cooling and shading services of trees and waterways were estimated to be worth £248 million in a 2017 study because they maintain productivity and reduce air conditioning costs. And the health benefits from outdoor exercise and cleaner air increase the returns to human capital, because healthy and happy workers are more productive and require fewer days off work, reducing burdens on the NHS.

Whether we're talking about education, infrastructure, R&D, or social programmes, the returns to public investments will be greater if due consideration is given to the complementary investments that will deliver greater returns for every pound spent.

Today's economic challenge is very different, but it is clear that economic recovery will require a coordinated global strategy at least as ambitious as the Marshall Plan after World War II. The challenge before us entails rebuilding economies after a virulent pandemic, and at the same time also rebuilding the biosphere after decades of rapacity and neglect. Human activity has "severely altered" 75% of the planet's terrestrial (and 66% of its marine) environment, leading to an average decrease in ecosystem extent and condition of 47% against their natural baselines. The past half-century has seen

vertebrate populations fall on average by in 68%, largely driven by agricultural expansion into biodiversity-rich, intact ecosystems, the direct exploitation of species (e.g. overfishing and hunting) and by climate change, pollution, and invasive, alien species. In sum, around one million species on earth are now threatened with extinction.

The economic recovery plan should be grounded in the realisation that economies – from the local farm shop to the biggest companies on the planet – exist and operate within the context and confines of the natural world. It should acknowledge that when we invest in nature, we are maintaining and enhancing the operating space for the economy, pushing forward the frontier of what is economically possible over the long-term. There is no choice between nature and the economy - the two must enhance each other.

But the challenge is not just environmental. There is also a pressing need to address growing inequalities, support social cohesion, and restore faith in public institutions. Around the world people are expressing the strong desire not to return to business as usual. Lockdowns forced people to reconsider what matters to them. The public have enjoyed safer traffic-free cycling, better air quality, and a chance to reconnect with nature. The importance of human connection and community spirit was revealed by the experience of lockdown – including neighbours singing in the streets and clapping for the NHS.

The good news, is that many of the outcomes people want are already articulated in the United Nation's 17 Sustainable Development Goals (SDGs) and their 169 targets, in commitments to reach Net Zero, and in policy documents such as the UK Government's 2011 White Paper, which aims to make this the first generation to leave the natural environment in a better state than it inherited. But whilst these Goals describe the *outcomes* we want, inclusive wealth determines our *means or capacity* to deliver them.

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A NEW MARSHALL PLAN

The Wealth Economy approach shows that future economic possibilities depend on the current management of all forms of mutually reinforcing wealth. Building capacity and resilience after the pandemic requires investing in vital assets necessary for a sustainable 21st century. This includes: human health and skills, physical infrastructure (e.g. transport, housing, utilities and ICT), intangible knowledge assets that allow us to use all resources more efficiently, sustainable natural resource and ecosystems management (including air quality, biodiversity, and climate systems), social trust and the strength of communities, and the quality of democratic institutions. Combined, these assets determine an economy's Inclusive Wealth, and are the building blocks for achieving the SDGs.

Statistical infrastructure actively shapes the future through its influence on government objectives and policies. From the Marshall Plan to the present day, economic statistics do more than measure progress: they become guiding principles for government policies, as the pursuit of GDP growth did for many decades. But today's challenges of climate and environmental change, inequality, and social upheaval cannot be solved by GDP growth alone.

Inclusive Wealth statistics can help guide policy efforts towards enhancing the capacity of nations to deliver on commitments to reach net zero, meet the SDGs, and protect global biodiversity. Sustainable development encompasses a broader suite of guiding objectives and requires a more inclusive statistical infrastructure to reflect it.

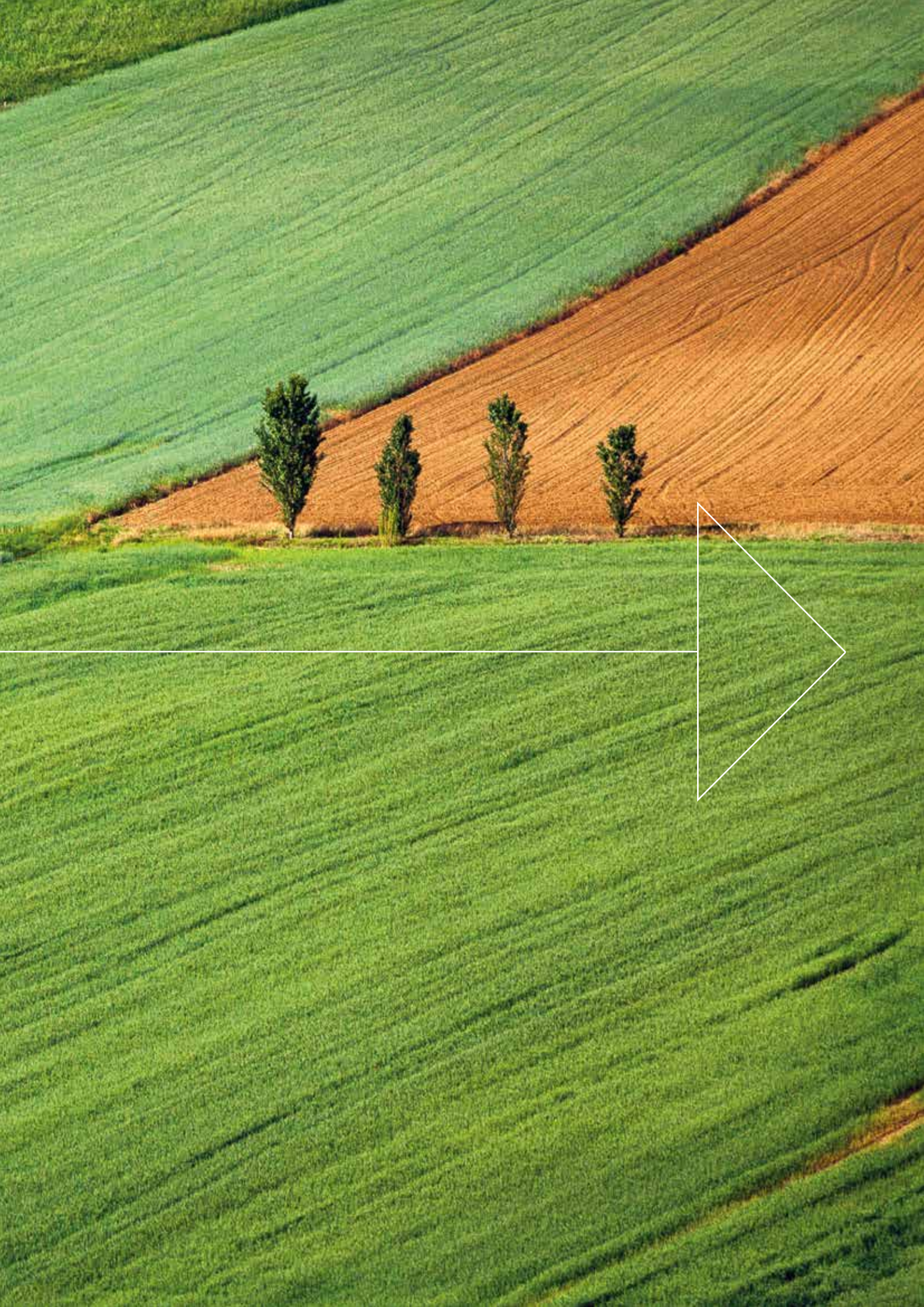
Inclusive Wealth statistics have seen significant improvements in the past decade. The UN's Inclusive Wealth Reports and World Bank's Changing Wealth of Nations books have demonstrated that it is possible to assess changes in natural, human, and physical capital across all countries, regardless of income level. The UN System of Environmental Economic Accounting (SEEA) and its Experimental Ecosystem Account (SEEA-EEA) have greatly improved our ability to account for environmental stocks and their economic contributions.

But substantial investments are needed to improve, expand, and get the most out of Inclusive Wealth statistics. In addition to the opportunity presented by the current, periodic revision of the official statistical definitions (due to finish in 2025), the priorities include greater funding for National Statistical Offices and investments to automate and digitalise Inclusive Wealth data collection (e.g. remote sensing, machine learning, and AI for environmental statistics). Existing measures of social and human capital – as underlying assets and as SDG indicators – suffer from conceptual oversimplification and incomplete and infrequent data availability. The fact that these fundamental assets remain difficult to measure means they deserve more attention, not less, in official statistics.

There is an urgent need to compile Inclusive Wealth statistics now so they can shape the global recovery. Inclusive Wealth statistics present an opportunity to explicitly define the recovery from the pandemic in terms of sustainable development, the UN Paris Agreement (2016), and the Beyond GDP movement.

"From the Marshall Plan to the present day, economic statistics do more than measure progress: they become guiding principles for government policies"

"The health, environmental, economic, and social challenges we now face are deeply intertwined... Building Forward means adopting a coordinated strategy for investing in mutually reinforcing wealth, delivering progress on all fronts."



BUILDING FORWARD – A BLUEPRINT FOR A POST-PANDEMIC RECOVERY

The Covid-19 crisis has laid bare the fragility of the economy. The crisis has exposed which assets are vulnerable to physical shocks, and which others contribute to resilience and well-being. Yet many have suffered chronic underinvestment and are deeply unequal in their distribution. These assets fall within the scope of the Wealth Economy as they are fundamental to generating a prosperous society. They include social and relational assets such as trust, belonging, and community cohesion, and natural assets which are largely excluded from mainstream accounts of capital.

The crisis has generated a 'Building Back Better' narrative designed to shape the direction of the recovery by investing in resilient, inclusive, and sustainable assets. But what drives this message?

Signs of growing discontent, societal unrest, and stagnating or falling standards of living for some people and places predate the pandemic. There are new narratives shaping economic thinking, in particular questioning the ability of 'capitalism' to generate an economy that sustainably and equitably delivers well-being.

At the same time, new indicators and economic tools have been in the making for at least the last decade, but their adoption in real-world policy circles has not kept pace. The Covid-19 crisis may mark a turning point. The spirit of 'Building Back Better' is a call to put the new economic thinking into *practice*, in the face of a concrete opportunity and necessity to do so. But this entails a deep transformation. The goal is not to build back to 'business as usual' with some improvements around the edges, but rather to 'Build Forward' towards a system that recognises, values, and enhances all assets.

Lockdowns around the world have brought about substantial changes which contribute to increased well-being: less commuting, less air pollution, reduced CO_2 emissions, and a spike in outdoor recreation. The evidence is clear – the public enjoyed these changes and wants to maintain them. The question is whether this public opinion will continue, and whether recovery strategies will focus on the targeted, mutually reinforcing investments necessary to deliver?

The health, environmental, economic, and social challenges we now face are deeply intertwined. The pandemic and its impacts are a direct consequence of a global food system that fails to respect and protect natural capital. The failure to protect this wealth is partially due to an economic system that fails to value and account for it. The politicisation of science erodes trust – in experts, governments, and 'other people' - limiting the ability of policy to address the problems. These challenges cannot be fixed in isolated silos. Building Forward means adopting a coordinated strategy for investing in mutually reinforcing wealth, delivering progress on all fronts. It provides the basis for policies that shape the future, rather than fix it when things go wrong. And it builds in resilience, as greater wealth means societies will have more of the assets that matter in times of crisis.

In contrast to Building Back Better, 'Building Forward' looks to strengthen new sectors and structures in line with a more prosperous economic model. The Wealth Economy concept provides the economic toolkit to do this.

Two aspects to this are key: (i) investment in comprehensive assets and (ii) building an economy characterised by robustness and resilience.

"New indicators and economic tools have been in the making for at least the last decade, but their adoption in real-world policy circles has not kept pace."

Social Capital and the response to Covid-19

One of the striking responses to the Covid-19 crisis has been the emergence of mutual aid groups in communities throughout the UK. These support networks are a manifestation of social capital and can prove especially effective in times of emergency. Similar examples include neighbourhood assistance to the elderly at the time of the 1995 Chicago heat wave or the aid within family clans in rural China during the Great Famine.

Using the list maintained by Covid-19 Mutual Aid UK, a central organisation supporting the local groups, and scaling this number by the mid-2018 population estimate, we can look at how the number of groups varies by local authority, as shown in Figure 1.

This estimate ranges between 0 (indicating no group in a local authority with a population of about 250,000) and 57. The data describes substantial variation across communities, with some showing little to no mobilisation, while others experience considerable mobilisation. We can correlate results with other statistics at the local authority level. For instance, there is a rather sizeable, positive correlation between the number of mutual aid groups and measures of socio-economic advantage, such as gross disposable income (2017) or the share of individuals with an undergraduate degree or above (Census 2011 for England and Wales), as well as with median age (2018 estimate). The correlation is also positive if we look at average scores for well-being measures including happiness and life satisfaction (2018-19). As the map indicates, the number of mutual aid groups appears to be spatially correlated too: local authorities with higher values tend to be clustered together, to some extent.

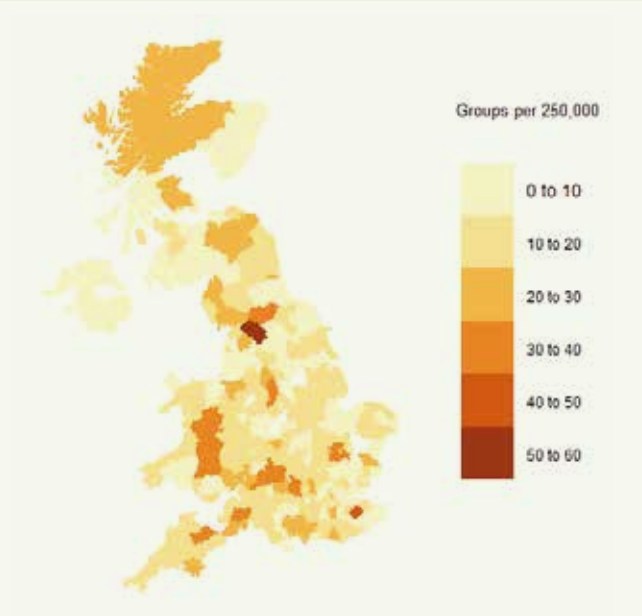


Figure 1: Number of Covid-19 Mutual Aid Groups per 250,000 people, by Local Authority

These correlations need to be interpreted with caution, of course. It is a partial picture, representing the number of mutual aid groups that were registered on the Covid-19 Mutual Aid website by March 27th 2020. There will be others that had not registered, as well as many individual and informal helpers. Moreover, there might be additional variation *within* communities and neighbourhoods, which we do not capture here.

From an inequality perspective, the key point is that the intensity of these support networks correlates with the socioeconomic profile of the area. Geographical inequalities seem to reinforce each other, a fact relevant to the 'levelling up' policy agenda, to which the government will have to return in the recovery from the Covid-19 crisis. These initial findings could be explained, among other things, by mutually reinforcing returns across capitals (in this instance, social and human), and are in this sense consistent with what we would expect to see if the Wealth Economy approach is an accurate description of the real world.

Investing in key comprehensive assets

An understanding of wealth which expands beyond physical and produced capital will not only generate a more productive growth path, but also increase economic resilience to future shocks, whatever form they may take. Key comprehensive assets can be found in the capitals that are, in many cases, currently underinvested in: human, natural, knowledge, and intangible capital. Even prior to the Covid-19 crisis, the emerging narrative around economic prosperity focused around attaching substantial weight to these undervalued capitals (see our Wealth Economy work, OECD, World Bank, and United Nations).

Locking into future-proofed productive and resilient infrastructure and not spending public or private money propping up fossil-fuel intensive assets with limited productivity potential, for example, is a key part of investing in resilience. But we have argued the need to expand our focus beyond investment in physical and produced capital. Investment in human capital must be accelerated through active labour market policies to secure the skills and jobs necessary for the 21st century economy. Robins et al (2019), make a strong case for retooling and reskilling workers to enable those affected by change to participate in the new economy.

Preserving natural capital is a prerequisite for sustainable well-being. Habitat loss and the mismanagement of biodiversity increase the likelihood of diseases like Covid-19. In fact, 75% of emerging infectious diseases are of zoonotic origin. This pandemic has served to remind the world of the need to strengthen the quality and resilience of natural assets.

Economies in the 21st century will be driven by knowledge capital. It is the key catalyst of growth in total factor productivity (TFP) and shapes our ability to get the most out of our resources whilst enabling dematerialisation and decarbonisation. The sheer scale of the low-carbon transition has already generated economies of scale in production and discovery, and the scope for productivity-augmenting clean innovation is unbounded. There has already been an 80% or so decline over the last decade in the costs of key renewable sources of energy, such as solar photovoltaic (PV) and battery storage. Further, evidence suggests renewables provide significant spillovers into other parts of the economy.

"Habitat loss and the mismanagement of biodiversity increase the likelihood of diseases like Covid-19."

The Wealth Economy project began by focusing on a particular collective aspect of intangible capital – the need to invest in social and institutional capital. This is required to deliver effective and functional government, with popular support and democratic legitimacy. This type of capital is also essential to rebuild trust in policymakers and institutions to deliver sustained prosperity, and is key to revamping the social contract (e.g. see OECD 2020).

It is increasingly recognised that investing in social capital means tackling inequalities, not just in income or wealth, but also in 'access' to goods and services. The pandemic has exacerbated the unequal access to goods and services such as health, housing, transport, education and justice. A fairer and more inclusive society is at the core of the Building Forward narrative. The crisis has highlighted the conditions faced by key workers, accentuating differentials working and living conditions. The conversation has moved beyond talking about the importance of social capital, to examining how to invest in this intangible asset. Ideas include increased localism and devolved decision-making, small grants for community activities, and various forms of collective national service (e.g. a national conservation corps to plant trees and restore conservation areas).

Work by the Bank of England Chief Economist Andy Haldane found that the cash-strapped social sector, which includes charities and enterprises with social objectives including neighbourliness and volunteering, generated up to £200 billion of value to the UK economy, or equivalent to around 10% of GDP in recent years. These sectors form a key complementary asset whose value is often underestimated or neglected.

Confidence and investment in Building Forward

The decline in confidence since the pandemic has led to reduced investment and consumer spending, and a rise in unemployment as jobs are shed and income protection schemes (e.g. furlough and others) change. From a macroeconomic perspective, this makes it a good time for public investment. Targeted investment can generate short-term spending multipliers and long-term supply multipliers by increasing productive capacity and stimulating innovation. This means it matters what form the investment takes, when looking to sustainably expand medium-term supply and avoid debt crises (See Public Debt, Public Wealth, and Fiscal Sustainability).

With Covid-19 being a swift but poignant shock, 'scarring' might be psychological rather than physical, in terms of the 'shock factor' and the

impact of greater anxiety and perception of risk post-Covid-19, especially if the pandemic drags on.

Economic evidence strongly suggests that growth after the crisis requires a government-led sustainable and resilient recovery. Clear, consistent, and bold policy can support consumer and business confidence, giving the economy the greatest chance of recovering as quickly as possible once the immediate health crisis has been addressed. Guiding expectations and understanding how the valuation of assets is likely to change in the face of 21st century challenges and opportunities will guide investment.

There is early evidence that vulnerability to shocks is increasingly weighing on prices in multiple asset classes. Most notably these include commercial real estate (especially urban office space), public transport, airports, and even high street shops and hospitality spaces. The pandemic has severely impacted the returns to all of these assets. This is consistent with research on the underperformance of assets which risk being stranded. Some of these trends had begun before the pandemic, which in many ways has accelerated the 'Great Reallocation' of resources away from vulnerable sectors. But a full reallocation requires a strong policy lead especially as there is a growing risk that much capital will not be used in the same ways again. The transformation could leave entire regions and segments of the labour force stranded.

Multiplied benefits of Building Forward

Empirical estimates suggest that during a severe downturn, the multipliers, or returns to public investment, are substantial. Each dollar of public borrowing is likely to raise output by £2-£3, the result of a short-term income or expenditure effect and a longer-term capacity-increasing effect. Studies from National Bureau of Economic Research (NBER) and the International Monetary Fund (IMF) suggest that fiscal multipliers associated with government spending range from near zero when the economy is operating close to capacity to about 2.5 during recessions.

Government spending in a slump not only generates positive benefits, it also prevents negative hysteresis[1] effects on future supply, whereby capital is scrapped and labour skills are lost as a result of protracted under-utilisation. Llewellyn Consulting conclude, on the basis of three quite different models for the UK (by the IMF and by the OECD), that under circumstances such as

"... the ability of an economy to service its debt depends on the quality of investments made with it."

1. Brookings (2012) *Fiscal Policy in a Depressed Economy*

those prevailing at present, debt-financed fiscal injections probably have UK multiplier effects in a (narrow) range of 2.5 to 3.0.[2] Another IMF study found that in the medium run (three years), the average multiplier for the EU is about one in normal times, but between 1.6 and 2.8 when interest rates are close to the zero bound, as they presently are.[3] The OECD estimates a similar range.[4]

Of course, these multipliers are marginal. They apply in the current context of excess capacity in the economy. They are explicitly not an excuse for unlimited borrowing and uncoordinated spending. When the fiscal multiplier is greater than one, it means there is spare capacity that the economy is not utilising. As public investments stimulate the economy by putting this spare capacity to work, the multiplier will begin to fall. Once the economy has recovered and is operating at capacity, fiscal policymakers might seek to secure debt sustainability by balancing the current budget over the economic cycle. But that is not where we are. With current multipliers of 2.5–3.0, there is substantial scope to invest up until the multiplier falls to one. Finally, the ability of an economy to service its debt depends on the quality of investments made with it. If spending is directed towards investments that maintain and enhance a broad range of complementary assets, these will support growth – and therefore the ability to service debt – well into the future.

The evidence of governments actively pursuing policies to Build Forward has, so far, been limited. But there is an important difference between immediate rescue and job preservation (which will, understandably, look like the status quo) and strategies for growth and recovery. The former are needed to protect people during the crisis, while the latter are the key to moving forward after the pandemic. A recent study identified over 300

2. Llewellyn focuses only on model results in which spending was additional and funded by new borrowing. The OECD, averaging across three different model estimates, has estimated that a sustained increase in public investment in the UK of ½ percentage point of GDP leads to a long-term output gain (potential GDP) of around 1½ % of GDP (i.e. a 3% increase for a 1% increase in investment). See OECD (November 2016) *Can an increase in public investment sustainably lift economic growth?*, paragraphs 26 – 31., and Figure 8.
The IMF has estimated similar figures, with the caveat that underlying economic conditions affect the value importantly: "The macroeconomic effects of public investment shocks are very different across economic regimes (Figure 3.6, panels 1 through 4). During periods of low growth, a public investment spending shock increases the level of output by about 1½ percent in the same year and by 3 percent in the medium term, but during periods of high growth the long-term effect is not statistically significantly different from zero." See IMF (2014). *World Economic Outlook October 2014. Chapter 3. Is it time for an infrastructure push? The macroeconomic effects of public investment*
Elsewhere the IMF has found statistical evidence for a value of 2.5: see IMF (May 2015) *The Macroeconomic Effects of Public Investment: Evidence from Advanced Economies*, especially p. 19.
3. *Amendola, A., di Serio, M., Fragetta, M. and Melina, G. 2019 The Euro-Area Government Spending Multiplier at the Effective Lower Bound. IMF*
4. Mourougane, A., Botev, J., Fournier, J-M., Pain, N., and Rusticelli, E., 2016. *Can an increase in public investment sustainably lift economic growth?* OECD Economics Department Working paper, 24 November, paragraphs 26 – 31, and Figure 8.

implemented policies of significant magnitude. The vast majority of these policies are of the rescue rather than the recovery typology, including significant worker and business compensation schemes which defend livelihoods. These policies have not paid much attention to sustainability, but there is already evidence of support for lower-emissions, more resilient service-oriented economy feeding policy objectives (Figure 2).

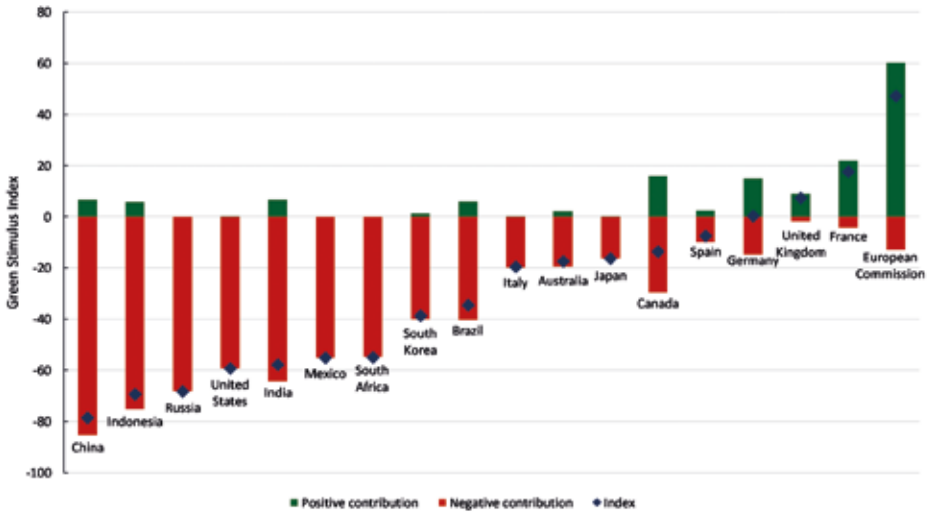


Figure 2. The Green Stimulus Index
Source: Vivid Economics, 2020[5]

The Oxford study which surveyed 231 global finance ministry and central bank officials and senior economists showed that investments with the highest economic growth multipliers are in many cases thought to be the cleanest and most sustainable. The highest scoring sectors include clean R&D spending, clean energy infrastructure, connectivity infrastructure, building upgrades and energy efficiency, and investment in green spaces. With a growing understanding among business and policy leaders that sustainability and growth are complements and not substitutes, and with a clear vision of the kind of future within our power to design, the stage is finally set to Build Forward.

5. The Green Stimulus Index (July 2020 version) examines 17 major economies and the European Commission to assess the green vs. brown orientation of their stimulus funding based on: the scale of funds flowing into environmentally relevant sectors; the existing green orientation of those sectors, and the efforts to steer stimulus toward (or away from) sustainability. What is being captured in the index to date is a flow of rescue funding into existing sectors, which, for many countries, reinforces a status quo that is significantly tilted toward brown.

"Our newest research focuses on how network effects (or social capital) affect the accumulation of human capital as a source of productivity growth."

PRODUCTIVITY AFTER THE PANDEMIC

Many advanced economies have experienced weak growth in productivity since the 2008-09 Global Financial Crisis (GFC). A decade later, the UK's low productivity growth (0.03% since the crisis) has failed to return to its pre-crisis trend (approximately 2% per year from 1997–2007). This startling result made productivity growth the 'UK Statistic of the Year' in 2019. As the key measure of standard of living, the chronic slowdown has attracted attention from the policymakers across the globe. The pandemic makes the need to revive productivity growth more pressing than ever.

The Wealth Economy's emphasis on social and human capital is critical to understanding the UK's productivity puzzle. Investing in human and social capital would not only help to enhance the productivity of the current generation but is also crucial to securing a more sustainable future for the global economy.

We previously found that interpersonal trust, one of the essential components of social capital, has a significantly positive association with total factor productivity (TFP) growth. In this report, we explore the possible channels that could explain this link.

Human capital is the knowledge, skills, competencies, and attributes (including health) embodied in individuals enabling them to establish their personal, social, and economic well-being. These characteristics are generally slow-moving variables - although they can change, they remain stable once acquired. The economy's stock of human capital increases through investment in quality education, training and health, but can also depreciate due to lack of use, ageing, illness and the emergence of disruptive technologies.

"The Wealth Economy approach, with particular emphases on social and human capital, is critical in understanding the productivity puzzle."

The returns to human capital can be substantial. At the individual level, they are typically measured in terms of their impact on private income and earnings. It has been estimated that an additional year of schooling leads to a 10% increase in individual earnings on average. Macro level results suggest the annual GDP level could be 28% higher over the next 80 years, should all young people living in lower-middle-income countries meet the goal of universal basic skills by 2030. Similarly, the annual GDP of upper-middle-income countries could be raised by 16%.

The concept of social capital, on the other hand, is less sharply defined. Robert Putnam, one of the leading scholars in this field, refers to social capital as the social networks that connect people, the norms of reciprocity, and trustworthiness that arise from them. As social capital is a multifaceted concept it is difficult to have an aggregate measure covering all its dimensions. Trust measures are widely used as a proxy for social capital. However, Dasgupta (2016) suggested that the concept of social capital could be better reflected by the character of social networks.[6]

The existing literatures on human capital and social capital have mostly developed separately. There have been few attempts to explore the possible interactions between the two, and how they contribute to sustainable economic growth.

Our newest research thus focuses on how network effects (or social capital) affect the accumulation of human capital as a source of productivity growth. Social capital is the glue that holds the society together. It provides a supporting environment for individuals to accumulate knowledge and skills. At the same time, the economics of human capital cannot be explained outside the context of social relationships.

6 Social capital does not necessarily lead to positive outcomes for society. Street gangs and mafias also have extensive social networks. It is the use of social networks that matters.

Two potential network effects could impact the diffusion and the accumulation of human capital.

First, the structure of social network matters.[7] Figure 3 illustrates how a tight-knit community can inhibit the wider diffusion of productive technologies as well as knowledge and skills. It shows three nodes – think of them as social groups, A, B, and C, further denoted by colour. Each node represents an individual or a group of homogeneous agents, and each link between nodes represent the social relationships between them. Within this economy, there are three social groups.[8] Early users of a new technology in the red group, such as individuals A0 and A1, decide to invest their time and effort to learn the skills needed to use the technology (for example a new social media platform). Suppose each person would also adopt the technology (start using the social media platform) if at least half the individuals in their social networks are using the new technology. The technology will quickly spread among the red group.[9] But it would not reach the yellow and blue groups, because both groups only have a social connection with A4. Yet as the only channel connecting to outside communities, B0 and C0 are among the first to access new information (such as a new job opportunity) about what is happening in the red group. So in our example, B0 and C0 will hear about the new social media platform, but ultimately would not adopt this new technology because it is not widely used in their own social group. Hence specific network structures may hinder productivity growth. Policies that solely focus on information dissemination are not sufficient to enable the diffusion of new technologies and skills.

7. See BenYishay and Mobarak (2014) for an example on how social network plays a role in influencing the adoption agricultural technologies and practices.
8. The social groups differ by age, race, geographic location, etc.
9. To see this, start with person A2. She is connected to A1, A0, and A3. If A1 and A0 are 'early adopters' then 2/3 of person A2's contacts would be using the technology. Because this exceeds the 50% network adoption requirement, A2 would start using it too.

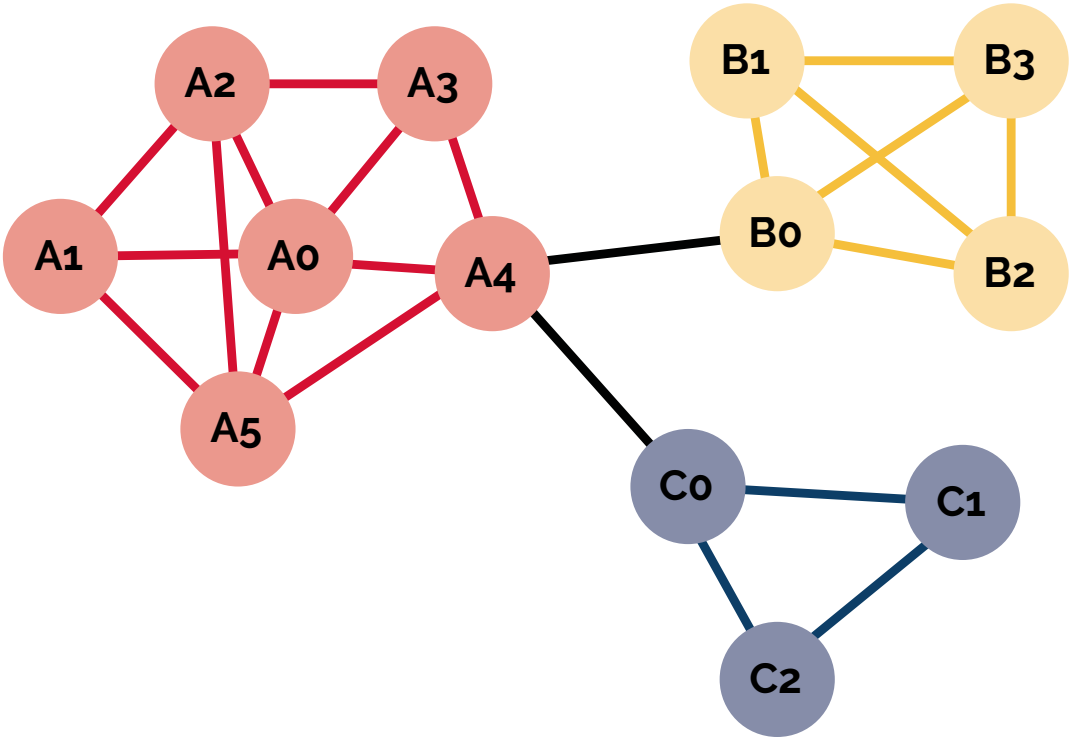


Figure 3: social contagion with a threshold

Second, the coordination of expectations is instrumental in the accumulation of certain types of human capital. For when network effects exist, the decision over whether to invest time, money, and effort in developing a new skillset depends not just on an individual's evaluation of whether it is 'worth it', but also on their expectations about how many others will do the same. A powerful example is the decision to learn a new software package or programming language. It takes time and effort, and the returns depend on whether other people use it too. For instance, Python is an increasingly popular programming language for statistical analysis. With the number of users growing, and more and more open-source statistical packages being developed for Python users, it is increasingly appealing for individuals to invest their time and effort learning to programme in Python. The knowledge and skills acquired through the learning process add to their existing stock of human capital. Therefore, for technologies or skills that exhibit network

effects, decision-makers need to coordinate expectations among the target population to ensure the success of human capital accumulation. Another strategy is to make it easier for potential users to learn the new skill, for instance by developing training programmes and materials that reduce the time and effort required.

The interactions between social capital and human capital are complex. We have only described two possible channels for social capital to affect human capital, but the reverse is also possible. For example, schooling positively correlates with the development of social skills, civic participation, and social justice, which are essential components of social capital. In addition to formal education, both training and professional associations bring individuals into a social learning environment, which enhances relationships and skills. Whilst human capital is a crucial element of wealth, it needs to be developed in conjunction with other assets to avoid adverse effects. For example, some evidence suggests families with high human capital and net earnings are likely to have less time for interactions within the family and other social institutions, eventually resulting in the deterioration of social cohesiveness.

At the macroeconomic level, high economic growth led by an improvement in human and social capital will have a multiplier effect whereby the government and households would have more revenues to invest in health and education.

"Whilst human capital is a crucial element of wealth, it needs to be developed in conjunction with other assets to avoid adverse effects."

Human capital: investing in people who Build Forward

A key component of the wealth approach is to develop future-proofed human capital - a labour force with the skills, jobs, and adaptability needed in the 21st century. We need engineers who design zero-carbon vehicles, not internal combustion engines. The alternative – locking into the skills of the past – makes it harder to reach environmental targets and increases the economic, social, and human costs of transition.

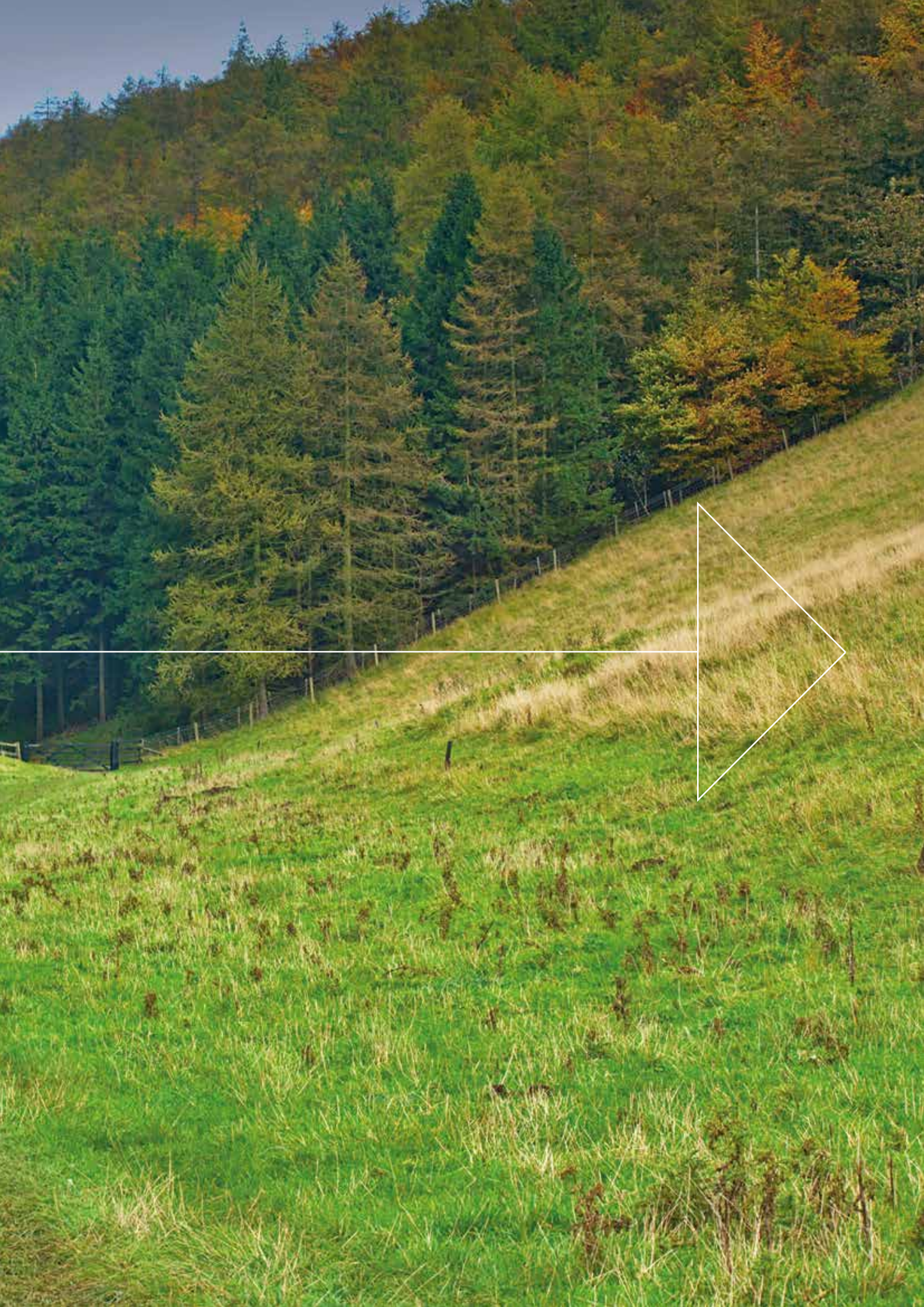
The 21st century will be defined by knowledge and innovation, which are key drivers of productivity growth. Ultimately, human capital will determine our ability to get more out of the resources we have. Education systems and choices over which technologies, processes, and behaviours to work with and learn from will steer the development of the knowledge economy, shaping our future.

One potential strategy for developing the right kind of human capital would be to score university and vocational courses in terms of their compatibility with the Paris Agreement, biodiversity targets, and the Sustainable Development Goals. Just as greenhouse gas emissions disclosure can help investors judge the potential long-term worth of companies, students can make similarly informed decisions on how best to invest in their lifetime earning capacity. They can judge which courses best match likely demands for knowledge and skills in the future. It could also push degree-granting institutions to demonstrate how new course offerings will prepare graduates for life in the new economy.

Methods for ranking courses could be developed in conjunction with universities, employers, and expert stakeholders (including students). Of course, all university rankings entail a degree of subjectivity, but the details could evolve over time. What matters is that even the simple act of thinking about courses in terms of compatibility with the new economy will be a strong motivating factor. It will change behaviour in both the supply and demand for human capital, and help mobilise the entire higher education sector in developing a resilient labour force, bringing about a sustainable and prosperous future.

This is not just a story for the next student cohort. The Covid-19 crisis has shown the possibility of rapid changes in ways of doing things and their potential to reconfigure production and supply chains and alter the structure of the labour market. The pace of change, particularly in automation and the adoption of new technologies means that workers may need to re-skill repeatedly over their working lives. A just transition towards a sustainable economy requires retooling and reskilling workers so they can participate in the new economy.

"Our research at the Bennett Institute highlights how places on the losing end of public service provision are also often the places locked out of other sources of growth."



PLACE, INEQUALITY AND ASSETS

Life chances depend on where you are born, where you grow up, and what access you have to educational and other opportunities. Underlying the increasing spatial inequalities evident in the UK and elsewhere are large differences people in villages, towns, and cities face in the access to key assets such as physical and natural capital.

Concerns about the unequal life outcomes for people living in different parts of the UK have prompted the UK Government's 'levelling-up' agenda. Similar gaps exist in all developed economies, but they are wider in the UK than in comparable countries. While the details of its policies are still emerging, the Government's ambition to "mend the indefensible gap in opportunity and productivity and connectivity between the regions of the UK to unite and level up" will require investment in complementary assets to meet the needs of different communities.

One of the key inequalities between places in the UK is the level of physical infrastructure. There are also significant differences in per capita spending on public services across different regions of the UK. At the level of towns and villages where people live, this means differences in the access to schools, hospitals, and GPs, as well as availability of public transport.

Part of the story behind these inequalities relates particularly to non-metropolitan areas – defined here as conurbations with a population between 10,000 and 175,000. These towns have had to absorb large cuts in public expenditure since the 2008 financial crisis, and are consequently struggling. In some cases, reforms to public services have resulted in the loss of sole service providers in small communities.

Our research at the Bennett Institute highlights how places on the losing end of public service provision are also often the places locked out of other sources of growth.

For example, towns in England with fast-growing local economies are more likely to have a train station, after controlling for the land area and population size (Figure 4). This finding does not establish a causal relationship but shows that towns with the largest business growth tend to have a better public transport infrastructure.

Source: Ordnance Survey – Points of Interest (© Crown copyright and database rights 2019 Ordnance Survey (100025252)); Office for National Statistics – UK Business: Activity, Size and Location

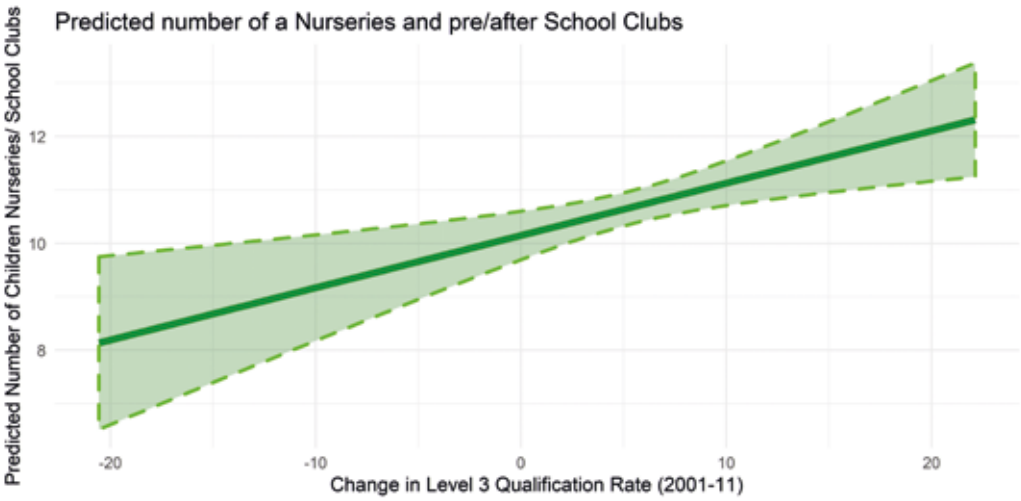
Notes: Towns are any Built-Up Area with an estimated 2016 population of 10,000-175,000.
Sample size is 428 English towns.
The figure plots the results from a simple binomial regression between train stations and business rate change controlling for population and area size.

Figure 4: The relationship between train stations and business growth

However, physical infrastructure is not limited to impacts on business growth - human capital is also associated with a town's built environment.

The number of children's nursery schools and pre- and after-school clubs is related to changes in the educational attainment of a town's population between the last two census years of 2001 and 2011, again controlling for size and population (Figure 5). A 10% increase in the change to the rate of a town's population holding further or higher education qualifications is associated with an increase of one nursery school or pre- after-school club.

"In the UK one of the key inequalities between places is the level of physical infrastructure."



Source: Ordnance survey – Points of Interest (© Crown copyright and database rights 2019 Ordnance Survey (100025252)); Census 2011

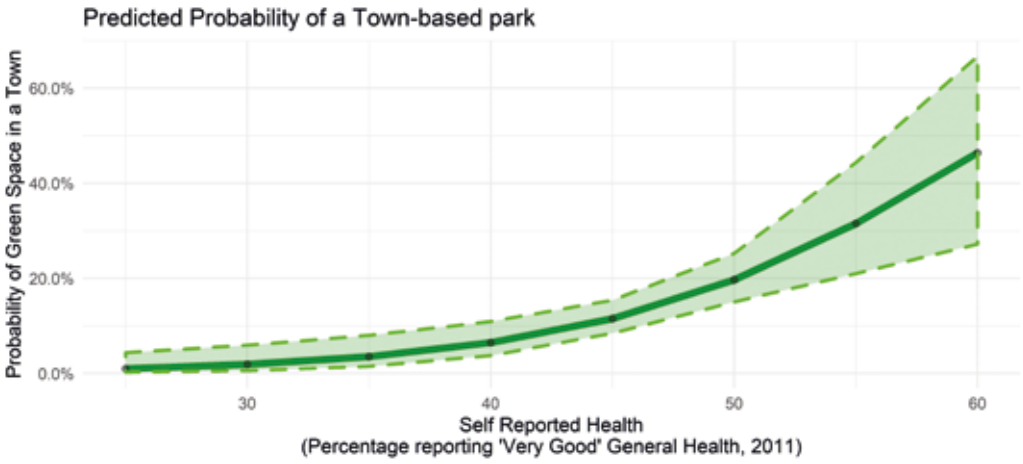
Notes: Towns are any Built-Up Area with an estimated 2016 population of 10,000-175,000.
Sample size is 428 English towns.
The figure plots the results from a simple linear regression between the number of nursery schools and the rate of level 3 qualifications controlling for population and area size

Figure 5: The relationship between early years education and educational attainment

Another key kind of capital for residents of towns is the availability of natural capital in a town centre - something which has become increasingly clear during the Covid-19 pandemic. However, access to green space, which is crucial to the mental and physical health of a population, especially during lockdown, is very unevenly distributed.

For example, the least healthy towns in England – measured by responses to a question about general health in the 2011 Census - are very unlikely to have a commons or park which is easy for their inhabitants to access (Figure 6).

"...access to green space, which is crucial to the mental and physical health of a population, especially during lockdown, is very unevenly distributed."



Source: Ordnance Survey – Points of Interest (© Crown copyright and database rights 2020 Ordnance Survey (100025252)); Census, 2011

Notes: Towns are any Built-Up Area with an estimated 2016 population of 10,000-175,000.
Sample size is 428 English towns.
'Green Space' is any classified 'commons', 'municipal parks and gardens' or 'country and national parks'.
Towns are classified as having a green space if any of the locations of these green spaces fall within their built-up area boundary.
The figure plots the results of a simple binomial regression between green space
and the percentage of respondents reporting very good general health controlling for population and area size.

Figure 6: The relationship between green space and self-reported health

This analysis points to the complex relationships between a place's assets and the local population's quality of life. The causal nature of this relationship is hard to establish, but the correlations are striking. One of the concrete implications of our analysis is the importance of recognising the interaction of different capitals at a very small geographic scale when investment decisions are made. Important too, is recognising that the benefits of physical infrastructure and natural capital may well manifest in terms that are not immediately monetary, such as population health or educational attainment.

Inequalities between towns are also evident in terms of their situation in different counties and regions of England. Figure 7 visualises the location of towns that have green space within their built-up area boundary.[10] The figure shows that there are clusters of 'green towns' found in London's commuter belt, Cambridgeshire, and parts of the North West, and Yorkshire and the Humber. However, some regions such as the North East, the Midlands, and the South West have very few towns with green spaces.

10. The boundaries used in this analysis are drawn around connected, developed land and so this measure captures which town centres will have green space incorporated in their design and development.

London's landmark natural capital accounts showed how learning and relaxing alongside nature promotes children's healthy development and nurtures positive environmental attitudes and values. Disadvantaged areas have the least access to green landscapes. Better green spaces, starting with social housing estates, would have a positive impact on health and well-being as well as social inclusion, and economic opportunity.

Figure 7: Green towns: the location of towns with a park or commons in their centre

Relationships between the physical and natural capital of our communities and key population outcomes raise questions about the distribution of public infrastructure investment. Recent research by Coyle and Sensier shows that the cost-benefit analysis used by the UK Treasury to determine investment has "reinforced the regional imbalance of the UK economy". They argue for a strategic approach to infrastructure investment that tilts the spending towards disadvantaged areas.

Complementarities between assets are highest in cities. Investment in skills (from jobs training programs to secondary education) help raise wages, attract talent, and promote urban growth. It also improves the flow of information vital to civic inclusion and effective governance. Work by Glaeser and Resseger finds that the productivity benefits of large cities are particularly strong in cities with high levels of degree-educated populations.

Meanwhile the productivity benefits of a city's size barely exist in places with low levels of degree-educated populations. This could suggest "strong complementarity between skills, city size and learning".

The intellectual economy is often reliant on investment in physical capital. New equipment enables new ideas and innovation in technologies. Cities are social networks with associated infrastructure. They exist to bring people together (and connect them with things: raw materials, goods and services, and waste management), and thereby generate static efficiency by sharing infrastructure and promoting matching. But they also generate dynamic efficiency through sharing of ideas, learning, better practices, and innovation.

To help understand why cities are so important to the economics of growth, one can go back to traditional growth theories where output is a simple function of capital and labour. It is assumed that technology is exogenous - in other words, innovation and technical advance just happen without incurring any cost.

Subsequent contributions to the theory of growth have shown that innovation is stimulated by learning, experience, sharing knowledge, and through working with other people and new machines. The close spatial proximity found in compact connected cities stimulates the development and spillovers of ideas. Such innovation has a positive effect on growth but also on efficiency, by enabling society to use resources more sustainably.

Empirical studies find a close connection between wealth creation, efficiency, and urbanisation. However, the drivers of these relationships have changed over time. Urban wealth no longer depends primarily on special local features, such as access to a coal mine or a port, and is instead increasingly reliant on the availability of green space, the quality of schools, and urban walkability. Reducing the transport cost of goods and materials may still be an important element in urban economies, but the key inputs are now more likely to be skilled people, rather than iron ores. This finding has important implications for the location of new cities. The physical advantage of London's or New York's natural harbours is no longer relevant in propagating their economic success. Paul Krugman famously said in his Nobel Prize lecture "God made the Santa Clara valley for apricots, not semiconductors". Examples outside Silicon Valley include London's financial services sector or Dhaka's highly competitive garment industry.

"Better green spaces, starting with social housing estates, would have a positive impact on health and well-being as well as social inclusion and economic opportunity."

PLACE, INEQUALITY AND ASSETS

The pandemic has served to reduce the benefits of compact cities as physical connection has been discouraged. City centres have been largely abandoned and the use of public transport has dramatically fallen. In the longer-term, it might even prompt the 'hollowing out' of cities as people choose to live in the suburbs and work from there. This could also have a negative effect on congestion and pollution, as reduced revenues from ticket sales prompt less investment, and a postponement or abandonment of public transport upgrades and modernisation plans. Fewer and less reliable trains and buses would entail more crowding, and, in turn, discourage passengers, raising fears of a possible 'death spiral' for public transport as people shift en masse to cars and sprawling suburbs. This can erode cities' ability to drive innovation and attract skilled workers as a fear of pandemics becomes the enemy of agglomeration.

This makes rethinking investment in our communities particularly important in light of the coronavirus pandemic. Amplified financial hardship along with reduced population mobility has increased, as has a reliance on an immediate local community to deliver key services and support. This has different impacts on the economies of major cities and smaller towns whose daytime populations have now shrunk or increased.

Footfall and spending data analysed by the Centre for Cities shows that, in the UK, some towns' high streets have experienced an increase in local spending and activity compared to previous levels. This contrasts with activity in many core cities which is still significantly reduced. Places like Burnley, Aldershot, and Wakefield have seen increases in spending in their high streets whilst London, Manchester, and Edinburgh have seen large declines.

"If this new local activity is both significant and enduring then it will be even more important to invest in complimentary assets for smaller communities..."

Covid-19 may well have permanently changed where many people work, socialise, and access key services. Indeed, the Welsh Government has set an aim for 30% of the workforce to continue working from home or in 'a network of community-based remote working hubs' after Covid-19, to embrace the personal and community benefits of this phenomenon. If this new local activity is both significant and enduring then it will be even more important to invest in complimentary assets for smaller communities – both in residential parts of cities and in towns - where life is now increasingly located.

Health and Human Capital

Human capital is the term used by economists to reflect people's potential contribution to productivity and to their own income and well-being. Often it is measured by formal educational qualifications or by earnings. However, the health dimension of human capital has attracted additional interest due to the emergence of the Covid-19 pandemic. Gary Becker, a Nobel Laureate in economics and pioneer in the study of human capital, argued as long ago as 2007 that, for a potential pandemic rivalling the scale of the 1918–19 flu pandemic (when 2.8% of the world population died), the economic cost could be as high as US$110 trillion. Today, this looks like a conservative estimate.

Yet, despite some early contributions, most of the existing human capital literature is focused on education, while health remains relatively underexplored. This factor is starting to change. For example, the World Bank has created a composite human capital index, which includes the child mortality rate.

Health is multifaceted, and the correlation between health and other economic outcomes is circular and cumulative. Much of our physiological and cognitive development takes place during childhood. Thus, poor health in childhood could negatively affect the formation of human capital at a later stage in life. This suggests that intervention in health as well as education at an early age generates the most significant economic returns over a person's lifetime.

Similarly, poor health at a later stage in life also depresses the number of healthy days people have available both for work and leisure. This, in turn, affects both their formal education and on-the-job experience. Therefore, understanding human capital requires the study of the interaction between health, education or training, and work over a person's whole life course.

Health is also complementary to the development of other forms of human capital. For example, Gary Becker showed that in a country with a high child mortality rate, individuals might feel reluctant to spend additional resources on children, even though this would raise their chances of surviving to an older age. There is a self-fulfilling character to the decisions made early on, because of the expectations set by the context.

Another example concerning the complementarity between health and schooling is that while educational costs are incurred at young ages, individuals only receive the returns in higher pay when they are older. An increase in life expectancy at later ages thus has a positive impact on returns to those early investments in education. On the other hand, the investment in education at the same time improves an individual's life expectancy by making them better off and better informed about how to stay healthy.

The conclusions are that policy interventions are needed at early ages. And the complementarities suggest that the policy mix must cover multiple dimensions of skills and health to achieve inclusive and sustainable growth. There is still much to understand about the interactions between health, education, and people's livelihoods, in order to design appropriate policies in different economic contexts.

"The most successful and prolonged periods of debt consolidation have occurred during periods of sustained high growth, whereas alternative approaches have been less successful, often engendering economic and social disruption."

The unprecedented government response to the global pandemic has pushed public debt in many countries to historic highs, relative to output. Governments have had to step in at scale to support businesses and livelihoods. The pandemic has already prompted an unprecedented global fiscal policy response of close to $11 trillion and, at the time of writing the disease is not under control. As a result, the UK and US public debt is expected to rise above the value of annual GDP this year.

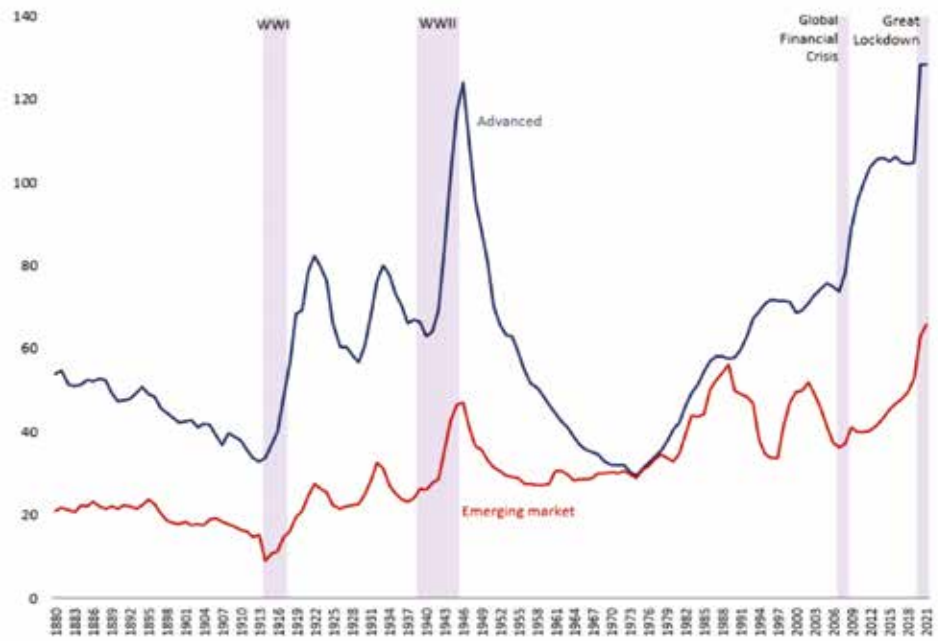


Figure 8. General government debt, percent of GDP
Source: IMF data and short term projections available here

With fiscal deficits already large, there are also growing calls for an active post-Covid-19 programme of public investment to boost productive capacity, as well as provide a short-term economic stimulus, recognising that monetary policy alone cannot continue to support global growth. This has raised concerns about debt sustainability and potential limits to fiscal space. Although there is no magic ceiling to the public debt-to-GDP ratio, it remains clear that managing the public finances over the long-term reduces vulnerability to future debt crises.

Yet the outlook for interest rates looks favourable for debt sustainability. Real interest rates on government bonds in advanced economies remain close to zero. This reflects continued low demand by the private sector for funds to invest and an abundant investor appetite for safe public debt. Debt servicing costs in most developed economies are historically low relative to GDP. Total government debt as a percentage of GDP was 238% in Japan and 86% in the UK in 2019. Yet debt servicing costs were 1.2% of GDP for both countries. Despite the rise in government borrowing across the world, financial markets are still paying prices which keep real-terms risk-free interest rates close to zero. The UK sold negative-yielding government bonds[11] for the first time in May and financial markets expect them to remain below zero[12] for the rest of the decade (as the forward yield curve in Figure 2 shows).

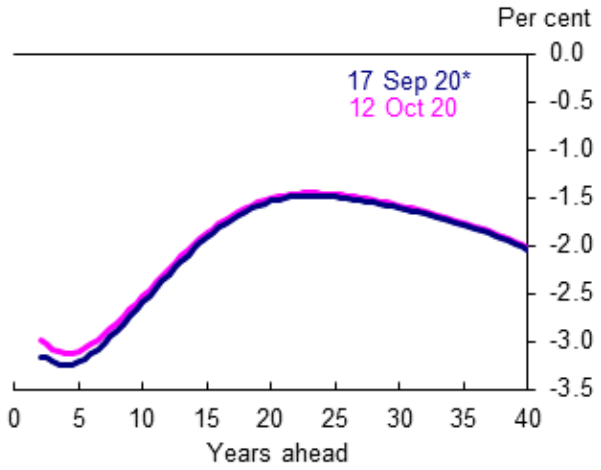


Figure 9. Forward yield curve for UK gilts
*Source: Bank of England calculations

With interest rates likely to stay low, the other important part of the calculation is the extent to which economic growth can help keep debt sustainable. Future growth cannot be guaranteed so there is a risk involved, but at present there are immense opportunities for governments to stimulate growth. As well as increasing the denominator, there is also a prospect that growth will shrink the numerator of the debt-to-GDP ratio, too. For example, targeted investment might have a multiplier of three, meaning a £3 increase in GDP for every £1 of investment could potentially generate public revenues sufficient to pay off the extra debt. The combined effect on both the

11. Bloomberg (May 2020) *U.K.'s First Negative-Yielding Bond Sale Sharpens Focus on BOE*
12. Bank of England (2020) *Yield curves*

numerator and denominator of the debt-to-GDP ratio explains why, under the right conditions, borrowing to invest can be so much more sustainable in terms of public debt management than seeking to target balanced budgets directly. The latest IMF Fiscal Monitor (September 2020) makes a strong case for increased public investment to boost growth, in spite of growing public debt.

History shows that the most successful and prolonged periods of debt consolidation have occurred during periods of sustained high growth, whereas alternative approaches have been less successful and often engendering economic and social disruption (Figure 10). By contrast, fiscal crises tend to be driven by periods of sustained low growth, high interest rates, or both. From a political economy perspective, not to mention that of good governance, growing out of debt has the additional merit of generating more jobs, boosting productivity and wages, and therefore less likely to be politically damaging.

	REAL	NOMINAL
Reduce Numerator	**Austerity** Cut spending taxes • High cost to the economy and society • Often not effective (because of denominator effect) E.g. 1920s and UK/EU 2010	**Default** Restructure or creditor "haircut" • Cost to economic reputation • Increased future borrowing costs E.g. Rare in advanced economies that borrow in their own currency
Increase denominator	**Growing the economy** • Sustainably raise GDP • Effective • Positive impact on denominator by raising net public revenues • Positive for the economy and society E.g. UK Post Napoleonic wars 19thC OECD 1950s/60s; mid 1980s-2008	**Inflation** • Effective but at economic cost • Hard to restore monetary credibility • Uneven distributional impact on society • Increased future borrowing costs E.g. OECD late 1960s-mid 1980s

Figure 10: Options for reducing the public debt-to-GDP ratio

The fact that fiscal multipliers are high and servicing debt interest is currently affordable is important, but it does not mean that public debt ratios can rise forever. Low debt-servicing costs are no guarantee against sudden fiscal crises when financial markets decide debt is not sustainable, as occurred in Greece over the last decade. High public debt increases vulnerability: the larger the debt, the bigger the economic ramifications of debt mismanagement. In the medium-term, governments should aim to contain public debt and ensure that current budgets are balanced over the economic cycle (whereby borrowing is used only to invest in high productivity, high-growth potential sectors and industries, and their mutually reinforcing components of inclusive wealth).

Yet a fiscal package based on sustainable investment, properly managed and implemented, can simultaneously help reduce existing inequalities, which have been exacerbated by the pandemic, and improve economic and social resilience to future shocks. The Wealth Economy approach argues for investment in productive, sustainable and resilient physical, human, social, intangible, and natural capital in regions that need it most, in order to generate sustainable prosperity. Investment in comprehensive wealth includes locking into low emission infrastructure, securing the skills, jobs, and ideas necessary for the 21st century economy, while recognising the need to enable those affected by change to participate in the new economy.

Public investment will play a key part in steering private finance towards, and inducing innovation in, assets that drive durable and resilient growth. Sustainable growth will be the best way to address public indebtedness and the appropriate debt-to-GDP level depends on the economic context. By contrast, aiming to balance budgets prematurely after a major recession is self-defeating and counterproductive.

"High public debt increases vulnerability: the larger the debt, the bigger the economic ramifications of debt mismanagement."

"Globally, nearly 100 countries are currently developing accounts and are beginning to use them in real-world policy settings."

WEALTH ECONOMICS AROUND THE WORLD

The Wealth Economy provides and economic strategy whose time has come. Growth in prosperity, education, health, nutrition, and life expectancy over the past century has brought about unprecedented improvements in the human condition. But it has also generated 1.5 trillion tons of CO_2 emissions, driven the Earth's land and ocean ecosystems to the brink (a direct cause of the Covid-19 pandemic), and created a resurgence of populist politics and social tensions across issues of race, inequality, and a stark urban-rural divide. In short, the failure to invest in natural and social wealth, and distribute their returns widely, has fuelled environmental and social pressures which now threaten a century's worth of economic progress.

Both economic theory and historical observation now tell a clear story: future economic possibilities are shaped by the current management of wealth, broadly defined to include physical, social, natural, and human capital assets. As the costs of environmental degradation become increasingly apparent, local, national, and global institutions are turning to improved natural capital management as a source of sustained growth.

A major development in moving from theory to practice has been the development of the United Nations System of Environmental Economic Accounts (SEEA), which ensures natural capital measurements are consistently developed, comparable across time and place, and based on the best scientific and economic foundations. Currently, nearly 100 countries are developing these accounts and are beginning to use them in real-world policy settings.

From Sweden to New Zealand, and from Mexico to Indonesia, the Wealth Economy approach is increasingly used to inform policies across the full spectrum of government decision-making, including health, land use, energy, water, fiscal policy, and tourism. Beyond policy development, these accounts are helping to evaluate the success and failure of policy implementation, helping politicians, businesses, and citizens hold governments to account.

Designing emissions taxes in Sweden

To develop their national climate legislation, Swedish policy makers needed policies that reduced emissions whilst minimising any negative impact on GDP, employment, and growth. The development of detailed emissions and energy accounts made it possible to model sector-specific energy inputs. New sectoral detail enabled more precise estimates of the costs and implications of carbon taxes across sectors and in aggregate. Subsequent modelling showed that existing policy proposals could be improved, and significant cost and efficiency savings could be made by broadening the range of industries affected by emissions charges. Modelling based on these accounts created policy recommendations that could lower emissions about 50% more (avoiding an additional 700,000 tonnes of CO_2), whilst simultaneously reducing costs by nearly 25%.

Building on the successful use of natural capital accounts in climate policy, Sweden has further aspirations to develop and use the SEEA to inform national policy in other domains, setting itself a goal that "the significance of biodiversity and the value of ecosystem services [will] be common knowledge and integrated into economic arguments, political considerations and other societal decisions where relevant and appropriate."

Designing water tariffs in Colombia

Since the 1980s, deforestation and erosion has led to increased water scarcity in many of Colombia's small and medium-sized river basins. In response, the Government of Colombia introduced 'water use fees' to raise funds for watershed management and restoration. A national minimum fee of 0.78COP/m^3 was introduced, although regional authorities could increase this in their respective jurisdictions. This was a comparatively low fee (for example, it is only one-fifth of the equivalent fee in Costa Rica), and by 2014 it became apparent that the fees failed to raise enough revenue to support investments in watershed management and conservation. In fact, they failed even to raise enough revenue to cover the administrative costs of billing and collection.

"The development of detailed emissions and energy accounts made it possible to model sector-specific energy inputs."

The question then facing the Government was whether raising fees could achieve the objective of financing watershed conservation projects, and what impact this would have on various sectors of the economy. To assess this possible impact, the National Department of Planning (DNP) combined national water accounts with Colombia's existing social accounting matrix (SAM). By doing so, the DNP was able to model the macroeconomic impact of changes in the water use fee. As the SAM included all divisions of relevant stakeholders, it was also possible to conduct sectoral analyses. These analyses showed that increasing the minimum water use fees to 3COP/m^3 and 10COP/m^3 for agriculture and industry respectively would have negligible impacts on output and water abstractions, but would generate substantial funds for water management and watershed conservation investments.

Social capital measures in the UK

One of the aims of the Wealth Economy project is to improve the measurement of social capital to make it usable and relevant for policy. Our previous reports describe how we developed novel social capital metrics which have subsequently been adopted by the UK Industrial Strategy Council to help evaluate the success of the UK Industrial Strategy. Our research uncovered two core components of social capital: one describing the overall level of trust, and another describing whether that trust is placed in people, or institutions such as governments and the police. Our team is now working with the UK Office for National Statistics and the Government Statistics Service to develop harmonised social capital measures for comprehensive use across the UK Government. These will focus on trust, neighbourhood belonging, companionship (as an antidote to loneliness), and civic engagement (voting and volunteering).

Most attempts to measure social capital – including those we have developed for the UK – focus on the use of surveys, typically asking respondents to answer questions about how strongly they agree or disagree with particular sentiments such as 'in general, most people can be trusted'. Survey results can be extremely informative, especially in large datasets with good sampling practices. But they can also contain measurement errors, or 'noise' associated with the act of conducting a survey rather than the social phenomenon one is trying to measure. For instance, respondents might want to impress the surveyor, demonstrating that they are more socially-minded than is really the case. Even changes in how the survey is conducted – face-to-face versus online – can have big impacts on the results.

To address these challenges associated with survey results, our project is developing additional metrics based on observed behaviour, rather than stated beliefs. By examining actions people actually take in the real-world, we can avoid some of the potential complications with standard surveys. Our first investigation of observed social capital examined the development of Covid-19 Mutual Aid Groups, and is described in the Box: Social Capital and the Response to Covid-19.

New Zealand's Living Standards Framework

The Wealth Economy team has collaborated with the New Zealand Treasury in its pioneering application of the wealth approach to statistical measurement and policy assessment. New Zealand is currently a world leader in adopting an explicit well-being approach to public policy. In 2018 the NZ Treasury published its Living Standards Framework (LSF) and the LSF Dashboard, a measurement tool designed to view and compare indicators of well-being. The LSF represents the Treasury's view on what matters for New Zealanders' well-being now and in the future. Influenced by the OECD's

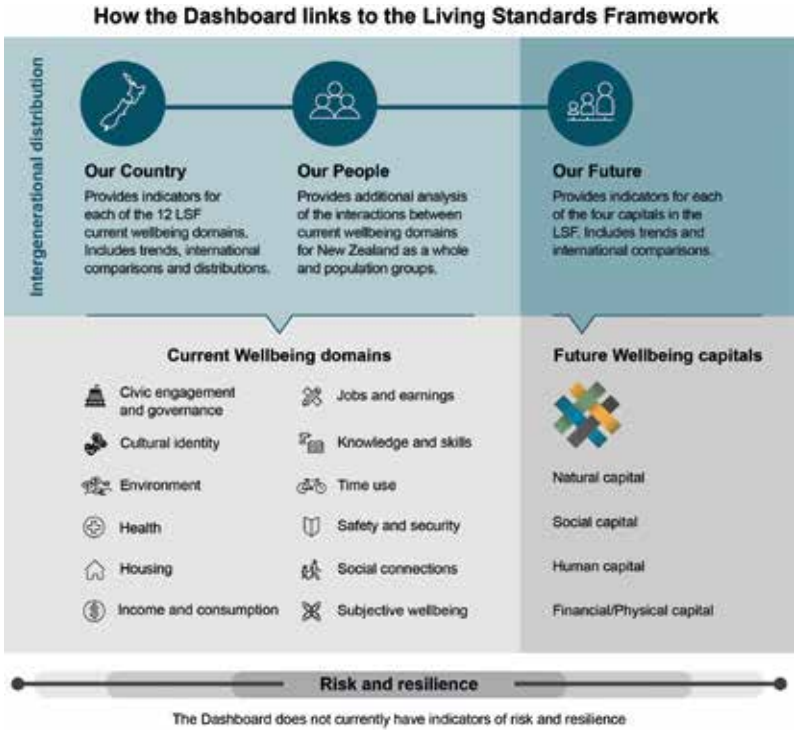


Figure 11. Current and Future well-being in the Living Standards Framework

Better Life Index, the LSF Includes measures of natural, human, and social capital, with financial and physical capital comprising a fourth element. In addition to these 'Four Capitals', the LSF includes risk, resilience, and distribution, which considers how the level of well-being varies across the population or by population group. The Treasury is planning to refresh the LSF in 2021 to better reflect Maori and Pacific world views, children's well-being, and the ways in which culture contributes to well-being.

The Dashboard is a work in progress but its primary purpose is to inform the Treasury's advice about cross-governmental policy priorities for improving well-being and a key tool for implementing the Treasury's LSF. Combined, the Dashboard and LSF demonstrate the Wealth Economy in practice, emphasising the need for policies that support current well-being while protecting the components of wealth that underpin it in the future (Figure 11).

Scotland's Well-being Economy

The Scottish Government has accepted recommendations to adopt a 'well-being economy', grounded in the Wealth Economy approach and organized around four capitals (natural, social, human, and economic or produced, physical) capital. Scotland's well-being economy is characterised by principles of economic progress and prosperity, inclusion, sustainability, and resilience. The underlying report by the independent Advisory Group on Economic Recovery (AGER) made 25 recommendations for a Scotland's economic recovery, ranging from fiscal strategy to regional economic development, to investments in digital infrastructure and natural capital, and the establishment of a Scottish National Investment Bank. The AGER's recommendations are placed within the Wealth Economy framework and acknowledge the mutually reinforcing benefits of investments in broad assets, including people, places, and communities.

Crucially, the Scottish Government has committed to developing a Well-Being Economy Monitoring Framework to assess performance across multiple dimensions of well-being. The framework, shown here in Figure 12, portrays wealth as the foundation upon which an inclusive, growth-oriented, and sustainable recovery can be based. The dimensions of well-being (the colourful flower in the middle) are drawn from Scotland's National Performance Framework.

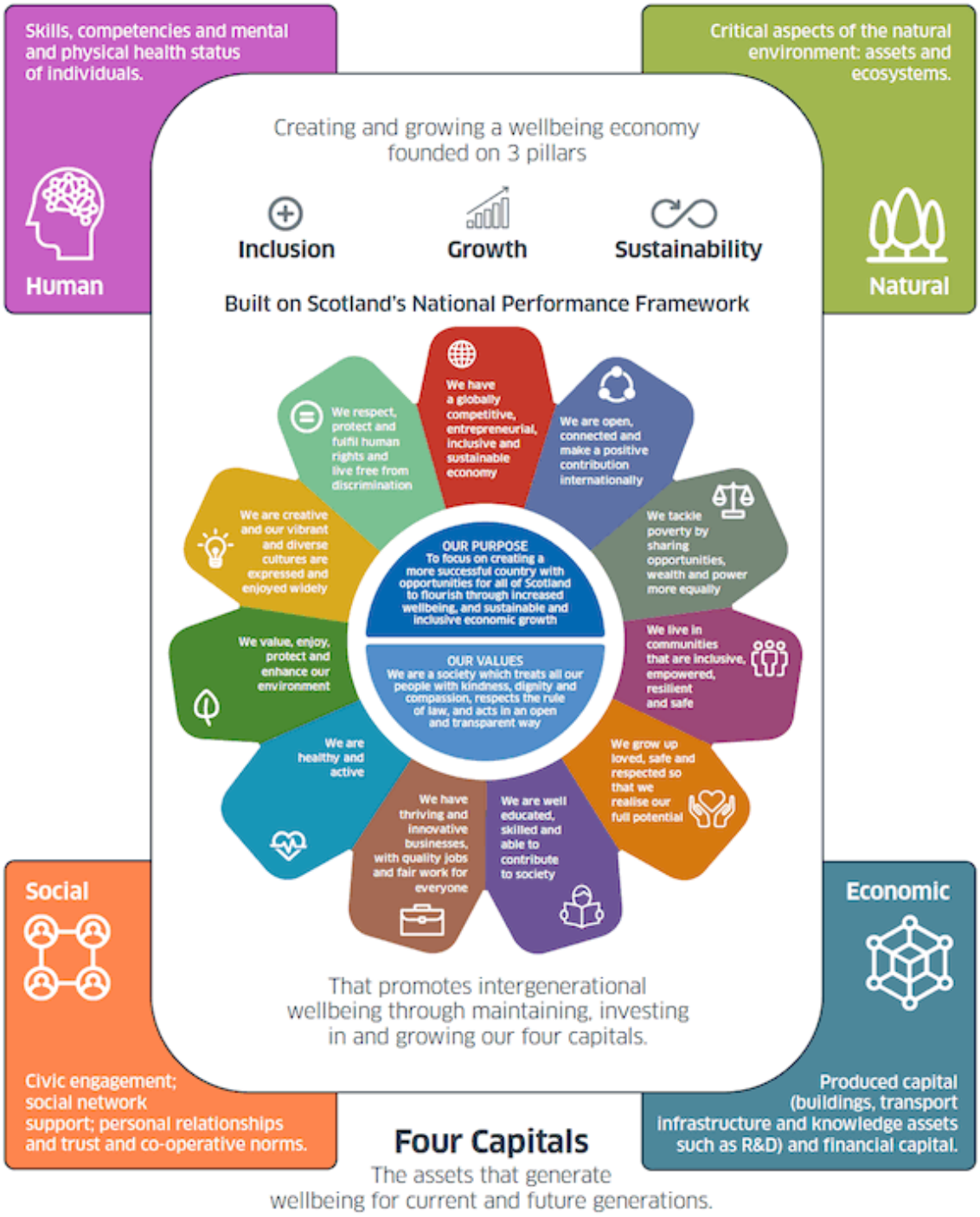


Figure 12. Scotland's Wellbeing Economy Monitor

Post-Pandemic Law and Policy Innovations to Achieve the UN Sustainable Development Goals

We are living in a convergence of crises. Rapid and dangerous climate change, biodiversity loss, and the continued destruction of critical ecosystems are exacerbating global poverty, undermining food security, and threatening livelihoods around the world. Across 195 UN member States, pressure is rising on already-limited human, financial, and natural resources. This is intensifying the need for prompt and effective public policy responses, backed by legal and institutional reforms, to foster rather than frustrate global sustainable development.

For at least half a century, the global community has struggled – despite numerous initiatives – to implement a coordinated strategy for delivering sustainable, inclusive prosperity. In 2015, as part of new global cooperation agenda towards 2030, countries adopted 17 Sustainable Development Goals (SDGs) with 169 time-bound targets applying a common framework and a succinct set of public policy priorities for all countries. Of course, as critics underline, each SDG is aspirational and strictly non-binding in nature. However, like other aspirations such as world peace, or human rights, the SDGs are not legally irrelevant. Indeed, law can help – or hinder – every global Sustainable Development Goal. An entire network of increasingly specific international accords on sustainable development have been adopted in recent decades, setting cooperation arrangements in place that aim to achieve the key targets of the SDGs. Further, efforts to achieve each SDG target are also facilitated by a toolkit of related domestic legal obligations, regulations, and institutions in each country, and also by important customary norms and ethics. Unfortunately, preventing progress on all 17 SDGs, and on compliance with the hundreds of binding international agreements that support them, are two seemingly impossible barriers **– we lack the resources, and we lack the capacity.**

The gap in human and financial resources, until lately, seemed unsurmountable. Collectively, achievement of the 169 SDG targets has been estimated by the UN to require an investment of £2.5-3.4 trillion per year in developing countries, simply to cover costs of basic infrastructure, food security, health and education, and climate change adaptation and mitigation efforts. For the poorest, least developed countries alone, the gap is £700 billion. As countries consider new post-pandemic economic stimulus measures, the world's SDGs represent the global investment opportunity of a millennium.

Our research is tracing economic stimulus measures as opportunities to scale up investment, restarting economies, but also 'Building Forward' towards achieving SDGs. For instance, there is a pressing need to support SDG 13 (climate action), implement key binding international obligations under the UNFCCC and its Paris Agreement. As one example, Canada is committing £1.5 billion over five years. Actions include: creating new jobs within the renewables sector, investing in energy efficient innovations and building retrofits, zero emission vehicles and infrastructure, climate-related disaster impact reduction, and net zero future industries. Countries are also working to achieve SDG 7 (access to clean, affordable energy)

by meeting their obligations in the International Renewable Energy Agency (IRENA) and the Energy Charter Treaty, as well as clean energy chapters in trade and investment agreements. The UK Government has announced plans to invest £160 million into off-shore wind energy to create jobs, reduce emissions, and increase exports, by upgrading ports and infrastructure across the UK, with 60,000 indirect and 2,000 direct jobs. South Korea, with the passage of the "Korean New Deal," aims to transition from fossil fuel dependency to a green economy through investments of £45 billion (67 billon KRW) by 2022 in green technology, digitalisation, and an enhanced social safety net.[13]

Economic stimulus measures can also improve food security in support of SDG 2 (zero hunger) and to protect terrestrial ecosystems and biodiversity in support of SDG 15 (life on land). Countries are announcing measures which can advance human rights obligations under the International Covenant on Economic, Social and Cultural Rights, or the Convention on the Rights of the Child, as well as addressing global biodiversity commitments in the Convention on Biological Diversity, the Convention on Migratory Species, and other accords. Ethiopia has dedicated £490 million for emergency food distribution and £11.5 million specifically for those facing food insecurity. Samoa has created an economic stimulus package that dedicated £19.6 million to create a three-month grace period all loan payments, an exemption on import duties for staple foods and an expansion in duty concessions on agricultural, and fishing materials. To support biodiversity in forests and other ecosystems, Canada has committed £763 million to preserve a quarter of land and coastal zones and plant 2 billion trees. The UK has dedicated £640 million for the Nature for Climate Fund to plant over 40 million trees and to restore 35,000 hectares of peatland across England, as well as £25 million to create a new Nature Recovery Network in England and £10 million in support per year for the Darwin Plus programme, which protects unique wildlife in the UK Overseas Territories.

In essence, many countries are leveraging post-pandemic recovery packages to meet their international obligations, and support the SDGs. If the necessary resources can be set in place, the pressure to address the second barrier– the capacity chasm – is thrown into sharp relief.

Awareness, knowledge, and understanding, supported by research, skills development, and above all, by quality education, are desperately needed to advance achievement of each SDG, and to prepare future generations to address the impacts that centuries of unsustainable development have already set in motion. This is the role for universities and colleges, and it is crucial (see 'Human Capital: investing in people who Build Forward'). To this end, the Sustainable Development Solutions Network have already opened 38 national and regional networks, opening online forums for those who teach the SDGs to collaborate and share materials and opportunities. This commitment, creativity, and courage is the key to action and offers hope. Our world – future generations of all species including humanity, is depending on us.

13. *Ibid*, IMF Database; see South Korea.

"The returns to investment on any project depend on the whole portfolio of assets people can access."

Investing in infrastructure

Public investment in new infrastructure is one way to help the economic recovery by building valuable new long-term assets, creating jobs, and enabling people to gain new skills. Infrastructure projects can be slow to start up, but generate a high return on investment and contribute to productivity and growth in living standards. As economies emerge from the coronavirus pandemic, many people see the need for government investment as an opportunity to speed up the transition to low carbon energy and transport, developing expertise in the technologies and supply chains involved. This underlines the importance of thinking about infrastructure in a holistic way. Modern infrastructure is not a matter of pouring concrete and leaving it to routine maintenance thereafter. Major construction or transport schemes generally involve advanced digital technologies, with sensors transmitting data in real time to monitor performance and detect problems early. Thus, digital assets are integrated with physical ones. This means new infrastructure can deliver greater value but it is spread over long periods of time. Future-proofing infrastructure projects requires people with advanced engineering skills to design, build and operate them, reinforcing the importance of human capital, and ensuring that all new human capital is net zero compatible (see Box 'Human Capital: investing in people who Build Forward').

"Future-proofing infrastructure projects requires people with advanced engineering skills to design, build and operate them..."

Even more fundamentally, infrastructure needs to be thought of holistically in each place, whether in a city, town, or rural area. The returns to investment on any project depend on the whole portfolio of assets people can access: different forms of transport, fixed and mobile broadband, roads, bridges and flood defences, housing, social amenities, natural capital, and human and social capital. Without taking into account the whole portfolio, public and private investors will not be able to judge the likely impact on productivity, growth, and well-being, of any individual infrastructure investment. As the UK's National Infrastructure Commission has stated in its recent report on productivity and growth across the regions: "[T]he importance of complementary policies cannot be overstated in achieving infrastructure-led regeneration." However, joining up policies across different departmental and political responsibilities does not happen nearly enough in practice. A wealth-based approach to the range of investments that give people the opportunities they need can start to shift decision-makers toward more effective use of public funds.

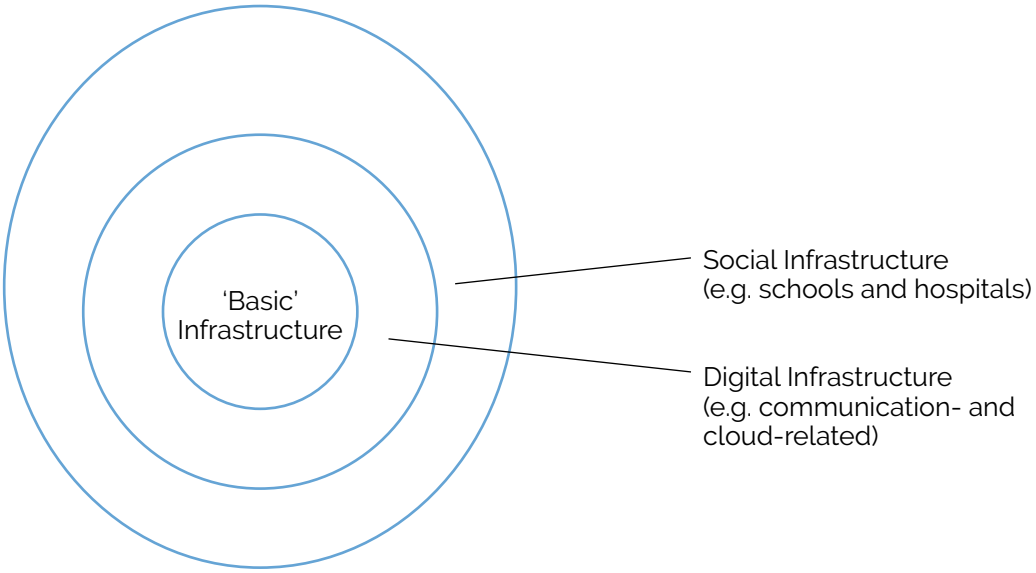


Figure 13: Types of infrastructure
Source: US Bureau of Economic Analysis

Cost-benefit analysis

The method widely used in government for deciding whether or not to pursue major investments is Cost-Benefit Analysis (CBA). In the UK, the Treasury's Green Book sets out the procedures. It is a complex exercise involving placing numerical estimates on the value of the different future benefits and costs of any given project. Although it is important to ensure decisions are evidence-based, CBA inevitably involves a lot of judgments, including the scope of what costs and benefits to include, how to weight the future compared to the present, and how to put monetary values on the environment or well-being. The Green Book acknowledges this with detailed advice on calculating *social* costs and benefits, and the broad impact an investment could have on economic welfare.

However – as the Green Book points out – the technique can be applied only to incremental (or 'marginal') investments. It is not suitable for taking into account the significant changes in activity and behaviour that might come about as a result of major investments. So any application of CBA in practice needs to consider what the documentation refers to as the 'strategic case'. The strategic case examines a whole suite of planned policy interventions together, and can take into account broader societal or political goals, such as universal service, or tipping points in nature such as averting potential ecosystem loss. As applied, CBA also tends to favour investments in places that are already more productive, because it uses local measures of productivity and land values to assess future benefits. The UK Treasury is currently reviewing the way its Green Book is used with these issues in mind. This good practice, keeping in mind the limitations of CBA, should be adopted throughout the UK public sector and elsewhere.

Measurement: evolving official statistics

Since the present framework for measuring the economy – the System of National Accounts (SNA) – was put in place in the years after the Second World War, the published statistics on growth in Gross Domestic Product (GDP) and its components have steered policy and business choices. Little attention has been paid to national balance sheets. Even when the assets and liabilities of the nation come into focus (for example, in the UK Treasury's Balance Sheet Review to be published Autumn 2020), the focus has been on a subset of government assets.

Statisticians have increasingly come to realise, however, that sound economic management requires a fuller national balance sheet and have been improving measurement of the 'missing capitals'. These include natural capital, infrastructure and human capital, as well as intangible assets related to social capital. The UN has been working steadily on improving natural capital definitions and measures. The SNA is currently undergoing one of its periodic processes of revision (the previous one was in 2008), involving an international community of economists and statisticians (including members of the Bennett Institute Wealth Economy team, due to be complete in 2025). The unfolding climate and biodiversity emergencies means measuring natural capital measurement is a priority.

The 2025 revision will add measures of a wider range of assets, and also well-being indicators such as those included in the SDGs, to the official international statistical framework. As far as possible, these will be presented in the same accounting framework as the SNA, which helps ensure consistency, as well as making the new wealth statistics as useful as possible for decision-makers. It will then be up to individual governments to use the measures to improve policy choices for the well-being of their residents, rather than relying only on short-term changes in GDP as the indicator of progress.

"The unfolding climate and biodiversity emergencies mean natural capital measurement is a priority."


Trust
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Resilience
Carbon
Inequality
Politics
Capital
Data
Capacity
Conservation
Innovation
Openness
Organisation
Alternatives
Intangible
Biodiversity
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Productivity
Water
Sustainable
Net zero
Development
Place
Progress
Technology
Pollution
Connections
Species
Happiness
Ecosystem
Creativity
Wealth
Opportunity
Forests
Wildlife
Earth
SDGs
Education
Policy
Economy
Debt
Parks
Climate change
Digital
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