# ACCELERATING TRANSITION

## CLIMATE FINANCE POLICIES TO PRIORITISE IN THE FIRST 100 DAYS


KING'S College LONDON | KING'S BUSINESS SCHOOL | QATAR CENTRE FOR GLOBAL BANKING & FINANCE

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# INTRODUCTION

David Carlin, David Aikman, Marc Lepere and Luca Taschini

Amid the challenges of climate change and the low-carbon transition, there is a historic opportunity for the UK—the home of the industrial revolution—to become a global leader in sustainable finance. Effective policies can enable the UK to transform into a net-zero financial hub, spur innovation, and promote economic growth. Not only will these policies advance global climate goals, but they will directly benefit the British people by creating a more vibrant, resilient, and equitable society. This e-book compiles a set of nonpartisan perspectives on specific climate finance priorities, offering a policy playbook for the new government from diverse voices from across the UK's sustainable finance community.

This compilation draws on insights from a collective of sustainable finance thought leaders in business, academia, civil society, and international organisations. The e-book is filled with policy ideas and actionable recommendations for addressing climate change and reaching net zero. Each author was given the prompt: what sustainable finance priority should the new government pursue within its first six months? The diverse responses to that question represent the views of their authors rather than the collective overall.

Each essay is roughly 1200 words long, brief enough to suit a busy policymaker but detailed enough to grapple with technical issues. They are organised alphabetically by author within five chapters: Climate Risk Management, Data and Regulation, Market Incentives, International Finance, and the Built Environment. We highlight below some of the actionable policy proposals explored in each area (with contributors' surnames in parentheses).

**Climate Risk Management: Understanding and Mitigating Risks**

The contributions in this section cover a wide range of issues relating to the physical and transition risks of climate change. There is general agreement on the need for more comprehensive data on these risks. This is especially so for physical hazards, where investors need comprehensive and reliable data at the local level to assess their risk exposures and allocate funds effectively. The need for greater focus on adaptation efforts features in several essays, with Paisley arguing for an "*adaptation mindset throughout government*" to establish appropriate resilience standards for these risks. Another theme is the need to reduce policy uncertainty by recommitting to achieving the UK's net zero goals. Finally, many authors emphasise the need for greater open dialogue between the government and the financial sector, leveraging existing groups such as the Climate Financial Risk Forum.

Specific policy recommendations include:

- HM Government should establish an Office of Sustainability Planning with the responsibility to develop and maintain a small set of realistic UK-specific climate

scenarios designed to capture the non-linearities that could manifest themselves over a 5-10-year horizon (Cliffe).

- The Financial Conduct Authority should update its Sustainability Disclosure Requirements regime to introduce the concept of "double materiality" reporting in financial statements. This would go beyond disclosing the financial impacts of climate change on the firm by also disclosing the firm's impacts on the climate (Cliffe).
- The UK Sustainability Disclosure Technical Advisory Committee should consider requiring firms to disclose an estimate of the projected impairments they would suffer in a 1.5-2°C warming scenario (Patience).
- HM Government should aim for a convergence of existing convergence of existing sustainability regulation and standards with EU standards, thereby avoiding fragmentation of the regulatory landscape (Pinkse, Hutson, Yaqubb, and Oakman).
- HM Treasury should instruct the UK Debt Management Office to issue the first dedicated UK adaptation bond in this Parliament, supporting local, municipal and national adaptation projects (Bremner).

**Data and Regulation: Enhancing Transparency and Accountability**

Among the contributions in this section, there is general agreement about the need for a legally binding and robust accounting system for GHG emissions in the UK and the need for that system to encompass small and medium-sized companies (SMEs). There is debate about the UK's adoption of new IFRS sustainability accounting standards; Buchanan, Lepere and Manning agree on their immediate adoption; however, Lepere argues the UK should reject the standards' concept of proportionality, whereby companies can *"…use all reasonable and supportable information available at the reporting date without undue cost or effort".* Nearly all contributions discuss the centrality of transparent, credible, and decision-useful data on climate and emissions to support better-functioning markets and more effective supervisory oversight.

Specific policy recommendations include:

- Parliament should set new, higher rates of capital gains tax for high-carbon emitters and polluters (Bracking).
- The Department for Energy Security and Net Zero (DESNZ) should broaden the reporting mandate to include all companies operating in the UK with five or more employees and/or turnover of £500,000 (Lepere).
- The Financial Reporting Council should mandate listed and large UK-registered companies to develop comprehensive transition plans aligned with the Transition Plan Taskforce (Manning).
- HM Government should restore the Bank of England's mandate on climate and sustainability (Owens and Folland).
- The Department for Science, Innovation and Technology should mandate environmental considerations within the AI regulatory framework (Tkachenko).

**Market Incentives: Creating the Right Signals**

The contributions in this section focus on different aspects of promoting sustainable finance and achieving net-zero targets in the UK using fiscal instruments and targeted financial

strategies. There is strong agreement on the need to revise financial product standards and regulatory frameworks to enhance the credibility of these products and reduce greenwashing risks (McKay, Mio, and Watson). There is also a consensus on the need to increase the level and scope of carbon pricing mechanisms, such as emissions trading schemes and carbon taxes, to support the transition to a green economy (Butterworth, Mio, Rosales, and Taschini).

Specific policy recommendations include:

- The Department of Business and Trade should establish an independent body with responsibility for tracking investment flows into net-zero initiatives. This body would collect, analyse, and publish data on where net-zero-aligned investments are being made and identify gaps in funding (McKay).
- HM Government should begin the process of linking the UK Emissions Trading System with its EU counterpart to enhance market depth and liquidity and mitigate potential negative effects on UK exporters of the EU Carbon Border Adjustment Mechanism (Rosales and Taschini).
- The Department for Energy Security and Net Zero should integrate the Woodland Carbon Code into the UK Emission Trading System, supporting the UK's afforestation targets and overall emissions reduction strategy (Rosales).
- HM Government should align the UK's insolvency laws with net-zero objectives to catalyse innovation and protect long-term investments in green projects (Watson).
- The Loan Market Association should review the criteria for Sustainability Linked Loan products and Green Loans in order to make them more accessible as financial instruments to address climate change (Mio).

**International Finance: Global Leadership in Sustainable Finance**

There is unanimous agreement from contributions to this section for the UK to seek to become a global hub for sustainable finance, restoring its financial centrality that has diminished since Brexit. The contributors also see a need for the UK to scale finance in emerging economies to meet global climate goals and expand markets for British technology and expertise (Carlin, Chatterjee, Webster). Within London, the contributors argue for financial innovation in the form of Green Gilts, sustainability-linked bonds, and improved listing rules (Burge, Van Coppenolle, and Kidney, Tukiainen, Carlin).

Specific policy recommendations include:

- HM Treasury should enhance the UK Green Taxonomy to include transition pathways, adaptation, and resilience (Burge, Van Coppenolle, and Kidney).
- The Foreign, Commonwealth and Development Office should increase funding to British International Investment and other development organisations for scalable clean energy and resilience projects in emerging markets that can catalyse private sector investment (Carlin, Chatterjee).
- UK Research and Innovation should expand funding for both early-stage green entrepreneurs and those at the deployment stage through programmes like Innovate UK. UK Export Finance should provide capital and guarantees to help British innovators find markets abroad for their decarbonising and climate-adaptation technology (Carlin).

- HM Treasury should expand the green gilt programme by issuing new debt under the green gilt framework and rolling over outstanding debt as green debt (Burge, Van Coppenolle, and Kidney, Tukiainen).
- HM Treasury should take the lead and become the first developed market sovereign to issue a sustainability-linked bond, wherein the coupon paid is tied to progress on decarbonisation objectives (Tukiainen).
- The London Stock Exchange should encourage green emerging market listings in London through streamlined listing processes and support services to new issuers (Carlin).

**The Built Environment: Constructing a Sustainable Future**

The contributions in this section agree that the government needs to crowd-in private finance to achieve two key goals: retrofitting existing buildings and constructing new, resilient, net-zero ones. Many contributors highlight the importance of addressing the UK's residential building stock, which is among the least energy-efficient in Europe (Bhullar and Reynolds Farrimond). Strategic investment in industrial production and the electricity grid are emphasised as priorities for powering the green transition (Alexander, Butterworth).

Specific policy recommendations include:

- The Department for Energy Security and Net Zero should simplify the planning and approval processes for green energy infrastructure and green gigafactories. This can be done by issuing pre-application planning approvals and increasing the staff reviewing applications (Alexander).
- HM Treasury and the Department for Energy Security and Net Zero should take steps to effect an increase in the UK carbon price – to approximately £100/tCO2 by 2030 and £200/tCO2 by 2050. Revenues can be invested strategically in the power grid and in ensuring energy price stability (Butterworth).
- The Department for Energy Security and Net Zero should begin a comprehensive retrofitting programme for the UK's 15 million energy-inefficient homes, aiming to reduce GHG emissions by 5% and supporting 580,000 jobs by 2030 (Bhullar and Reynolds, Farrimond).
- The Department of Education should fund green skills training programmes to prepare the workforce for a changing future and promote opportunity and a just transition for all parts of the country (Bhullar and Reynolds, Farrimond).

We hope this e-book spurs ideas and action on urgent sustainable finance priorities, helping policymakers take advantage of the unique opportunities that exist at this juncture. It is designed to foster dialogues between the government, the regulators, and the sustainable finance community, encouraging collaboration and innovation. Together, these policies can transform post-Brexit Britain into the epicentre of sustainable finance, demonstrating how coordinated, strategic action can create a resilient, prosperous, and sustainable future at home and abroad. The time for action is now, and the UK is uniquely positioned to lead the charge.


CLIMATE RISK
MANAGMENT

# THE CLIMATE HAS ALREADY CHANGED: ADAPTATION AND HOW TO INVEST TO CREATE A CLIMATE-RESILIENT ECONOMY

Cath Bremner, Impax Asset Management and the Met Office

*The UK is a global leader on mitigation and net-zero commitments. However, to avoid the worst impacts of climate change, over the next decade, we must ensure that adaptation receives the same level of attention from policymakers and the private sector as mitigation. The finance sector stands ready to invest in the opportunities adaptation-inclusive transition plans can bring and build a thriving net zero economy, while making it more resilient to the impacts of climate change.*

Alongside the UK's commitments to make ambitious emission reductions as a contribution to global efforts to avoid dangerous climate change in the future, we must increase awareness that the UK's climate has already changed, as a result of global average temperatures having reached 1.26˚C above pre-industrial levels.[1]

The annual UNEP Adaptation Gap report estimated the size of the global challenge and investment opportunity: *"The adaptation finance needed to implement domestic adaptation priorities is estimated at US$387 billion per year".*[2] And *"As a result of the growing adaptation finance needs and faltering flows, the current adaptation finance gap is now estimated at US$194-366 billion per year."*

The UK is not adequately prepared for the impacts of climate change – principally warmer, wetter winters and hotter summers – which it is now facing. In 2023 the Climate Change Committee found that *"Right now, buildings, cities and infrastructure in the UK are built for climate conditions that will no longer exist in five years, locking in future problems of overheating, economic disruption and rising damages from weather extremes".*[3] The Infrastructure and Projects Authority estimates that *"total infrastructure investment over the next 10 years, including private investment, will be nearly £650 billion".*[4] In 2023, a group of academics and industry experts led by the Oxford Smith School produced an independent policy recommendations on how to scale up finance and investment into adaptation - The

[1] This is based on a 20-year mean period, combining the last decade of the observations with trends from a climate model for the next decade. Betts, R. A., Belcher, S. E., Hermanson, L., Klein Tank, A., Lowe, J. A., Jones, C. D., Morice, C. P., Rayner, N. A., Scaife, A. A., & Stott, P. A. (2023). Approaching 1.5 ˚C: How will we know we've reached this crucial warming mark? *Nature*, *624* (7990), 33–35.
[2] Adaptation Gap Report 2023 | UNEP - UN Environment Programme.
[3] 2023 Progress Report to Parliament - Climate Change Committee (theccc.org.uk).
[4] Analysis of the National Infrastructure and Construction Pipeline 2023 (HTML) - GOV.UK (www.gov.uk).

Mission Climate Ready report - which argued that *"keeping the UK at the forefront of action on climate change requires not only building a net-zero economy, but a net-zero, resilient and nature-positive economy"*.[5] The report identifies six pillars of action and twenty-five specific recommendations to the government to act on by 2025 (see Annex A).

Momentum is building in the finance sector to better understand the risks of climate change, and how to adapt and invest in resilience. The Climate Financial Risk Forum (CFRF), overseen by the FCA and the PRA, established an Adaptation Working Group in 2023 which I have the honour to co-Chair with Ingrid Holmes from the Green Finance Institute. Members include firms from across the insurance, banking and asset management industry, with support from technical and scientific experts, including the Met Office and the universities of Oxford and Leeds. The outputs and recommendations of the CFRF Adaptation Working Group report will be published in the autumn and will be focused on how to make improvements in three key areas – **data, deals and disclosures**.

**On data** – the finance sector needs to have access to good quality weather related hazard data and climate change scenarios, at a local level. Given that the impacts of climate change will vary by location, it is crucial therefore to know where heat stress, flooding, humidity and hazards will impact infrastructure, including housing for mortgages. The insurance sector has been quantifying the value at risk for some decades, but the data they have on local impacts is not publicly available. For an asset manager like Impax, which invests in companies at an individual stock level, we need the location of key assets to be disclosed. For example, if Impax were to invest in a global manufacturer with over 200 sites, it's important to know which sites will be exposed to extreme weather hazards such as heat, cyclones or floods. For some companies, particularly in the agricultural sector, climate change may impact supply chains and therefore ensuring that companies understand and are taking steps to minimise their points of vulnerability is key.

The finance sector needs to assess climate related risks at a local level, over different time horizons as well as understand the tail risks (90$^{th}$ percentile), not just what the average (50$^{th}$ percentile) impacts will be. Much of the industry relies on climate risk assessments from third-party providers. Unlike in the mitigation space, where there are now well-known standards for carbon accounting and how to gather carbon footprint data, the equivalent doesn't exist in the adaptation space. The third-party data providers often rely on inputs from publicly available climate scientific data – but then manipulate this in 'black boxes' for the finance sector to use. However, there are very few adaptation standards, or third-party assurance providers to assess whether the data and the manipulation of this for climate and weather-related hazard and risk assessment is being done correctly. This is a real concern for participants in the finance sector, who are making investment decisions and having to disclosure their preparedness to climate change to regulators. There needs to be 1) disclosures of asset level data; 2) guidance on what is 'good quality' hazard data; 3) standards on how to calculate physical climate risk and financial impacts; and 4) assurance or 'kite' marks provided by independent technical experts.

**On deals** – The State of Climate Finance 2023 report suggests that 98% of adaptation finance remains dominated by the public sector.[6] Taxonomies can help increase flows into

[5] Oxford Smith School, Mission Climate Ready report
[6] Global Landscape of Climate Finance 2023 - CPI (climatepolicyinitiative.org).

adaptation solutions by being more specific about what investment opportunities exist by sector in the UK and globally. Impax's climate framework and adaptation taxonomy – where solution providers are screened on their ability to provide goods and services that will improve company's resilience to climate change – has been in place since 2018. Adaptation includes technologies and systems that improve our resilience to acute physical risks (for example grid and water infrastructure) as well as products and services that address indirect impacts for example heat resistant crops and health-care products. Standard Chartered's guide for adaptation and resilience provides insights into the investment opportunities.[7] The Climate Bond Initiative is creating a Building Resilience taxonomy for the finance sector.[8] Oxford University's Resilient Planet Finance Lab has also completed a comparative study of these taxonomies.[9]

It is well understood where the investment opportunities are in mitigation. For example, across the energy sector, renewables and battery storage technologies are needed. In transport, electric vehicles. However, we are about a decade behind knowing what the top investment opportunities by sector are for adaptation compared to mitigation. Blended finance mechanisms, such as the Green Climate Fund, from the World Bank should be expanded to include adaptation projects and resilient infrastructure.[10] Insurance products – like catastrophe bonds and government-backed insurance schemes like Flood Re in the UK, can provide a back-stop where risks of climate change are making assets uninsurable.[11] An adaptation playbook is needed for the finance sector to ramp-up investments in adaptation and resilience. HM Treasury should issue the first dedicated UK adaptation bond in this Parliament, supporting local, municipal and national adaptation projects.

**On disclosures** – under the mandatory reporting of TCFD, the finance sector needs to undertake scenario analysis to disclose physical climate change risks in their portfolio, loan and insurance books.[12] The CFRF Adaptation Working Group asked its technical and scientific advisers which scenarios they should be prepared for. The Working Group's report in the autumn will include detailed guidance to help the finance sector undertake meaningful and robust scenario planning.

In addition, we must urgently improve both the quantity and quality of corporate adaptation plans. S&P reported only one in five companies have an adaptation plan.[13] Widely supported by the finance sector, the Transition Plan Taskforce (TPT) Disclosure Framework called for adaptation to be included in transition plans.[14] There needs to be an integrated framework endorsed by Government for **adaptation-inclusive transition plans** for disclosure by real economy companies and the finance sector. These can only be prepared with access to good quality weather hazard and climate change related data.

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[7] Guide for Adaptation and Resilience Finance | Standard Chartered (sc.com).
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[9] Adaptation and Nature Finance Toolkit | Environmental Change Institute (ox.ac.uk).
[10] Green Climate Fund (worldbank.org).
[11] Flood Re - A flood re-insurance scheme.
[12] TCFD-aligned disclosure guidance for public sector annual reports - GOV.UK (www.gov.uk), Taskforce on Climate-related Financial Disclosures (TCFD): ahead of mandatory reporting (frc.org.uk).
[13] Risky Business: Companies' Progress On Adapting To Climate Change (spglobal.com).
[14] Transition Plan Taskforce | Setting a gold standard (transitiontaskforce.net).

## ABOUT THE AUTHOR

Catherine is Impax's Chief Strategy Officer. She is responsible for strategic projects working with the CEO, for coordinating the build-out of Impax's digital strategy, inclusive of our data architecture and AI capability. With over 25 years of experience in sustainable development, finance, strategy and change management, she is also a highly respected leader in green finance.

Before joining Impax in 2021, Catherine spent five years at the UK Government's Department for Business, Energy & Industrial Strategy, including acting as Director General, responsible for around 500 staff tasked with developing the UK's Net-Zero Strategy and International Climate and Energy policy. She also chaired the UK Government's Climate and Energy G7 Presidency in 2022. Before this, she was Global Head of Environmental Sustainability at Australian financial services firm ANZ. She was also Chief Operating Officer at Low Carbon Australia and Head of International Development at the Carbon Trust.

Outside of Impax, Catherine is on the Board of the Met Office and is the Chair of its Remuneration Committee.

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# CLIMATE SCENARIOS NEED REALISM, NOT IDEALISM

Mark Cliffe, University of Exeter

*To turn ambition into action, sustainable finance in the UK needs realism, not idealism. The government has the opportunity to catalyse finance to address climate change mitigation and adaptation by embracing the systematic use of realistic climate scenarios. These are urgently needed for risk management and transition planning across government, financial institutions, and non-financial corporations. This article outlines proposals to implement such an approach, focusing on short-term scenarios, the distinction between risk management and transition planning, and the challenges in implementing mandatory requirements.*

To turn ambition into action, sustainable finance in the United Kingdom needs realism, not idealism. On climate, we cannot model, let alone pursue, a single path for the world to hit net-zero GHG emissions in 2050, or even for us to meet our own national commitments. The real world is full of complexity and disruption. So, the United Kingdom needs to mobilise around plausible short-term scenarios that help UK finance take action to accelerate a sustainable transition. This means creating scenarios that reflect the disruptive realities not just of extreme weather and impending climate tipping points, but of polarised politics, financial volatility, economic fragilities, rapid technological progress, and social activism.

The new UK government has a unique opportunity to catalyse finance to address climate change mitigation and adaptation. A critical component of this effort should be the systematic use of realistic climate scenarios for risk management and transition planning across government, financial institutions, and non-financial corporations. This article outlines key proposals to implement such an approach, focusing on short-term scenarios, the distinction between risk management and transition planning, and the challenges in implementing mandatory requirements.

## The Need for Realistic Climate Scenarios

The first reality check for policymakers, in the United Kingdom as elsewhere, is that the long-term climate risk scenarios that they have been using massively understate the range of risks and opportunities that we face (Cliffe et al., 2023). From a baseline that assumes that global output increases by well over 100 percent by 2050, we are invited by the Network for Greening the Financial System (NGFS) to believe current policies would reduce it by 13 percent and policies geared to hitting net zero would reduce it by 7 percent (NGFS, 2023). It is not hard to come up with estimates that show that the climate havoc from failing to curb global GHG emissions would result in far greater losses (Trust et al., 2023), while hitting net zero might actually boost output as the world benefited from green technological progress.

Moreover, it is obvious that the linear progressions of conventional economic models abstract from the complexity and volatility of the real-world climate transition (Stern et al., 2022). Climate scientists are pointing to the growing evidence of non-linear disruptions in climate around the world and the possibility that the next decade could see the crossing of critical tipping points, such as the melting of the ice sheets or the collapse of the North Atlantic circulation (Lenton et al., 2023).

Meanwhile, the political pushback against net zero has already led to some climate policy reversals, not least in the United Kingdom. Thankfully, it is also true that mainstream scenarios have consistently underestimated green technological progress, leading some to believe that this might yet keep us on track to win the race to net zero (Bond et al., 2024).

As we hurtle towards such tipping points, both negative and positive, it is clear that we need to consider a much wider range of possible outcomes. And this is not just over the next few decades, but over the next few years. The complex interactions between the physical and human systems involved mean that we cannot rely on traditional modelling methods, which produce spuriously precise forecasts, and hence misplaced complacency.

To address these shortcomings, the UK government should:

1. Develop and maintain a small suite of United Kingdom-specific climate scenarios, based on realistic narratives that

    - include more pessimistic and optimistic outcomes
    - account for tipping points and non-linear climate impacts
    - incorporate realistic assumptions about technology deployment and policy implementation (both in the United Kingdom and elsewhere)
    - recognise that economic and financial market volatility is a cause and not just a consequence of transition risks

2. Mandate the use of these scenarios across government departments, regulatory bodies, and in climate-related financial disclosures for both public and private sector entities.

## The Importance of Short-Term Scenarios

While long-term climate scenarios remain crucial for understanding the potentially existential threats that we face, there is a clear need for short-term scenarios covering five-10 year horizons (Nowzohour, L., Dees, S. et al., 2023). Now that the focus is on delivering net zero, it is necessary for governments, finance and businesses to have detailed and actionable transition plans, which call for short-term as well as long-term scenarios (Cliffe, 2023).

The second reality check for policymakers is that short-term scenarios for transition planning need to be based on different drivers and build in greater volatility and granularity than their long-term cousins. Crucially, global warming, and increasingly extreme weather, is baked in for the next decade. This needs to be factored into all short-term scenarios. So, what really differentiates them is the transition risks surrounding actual and expected shifts in policy, economics, financial markets, technology, and social behaviour.

The UK government should therefore:

1. Develop a set of United Kingdom-specific five-10 year climate scenarios that align with the Climate Change Committee (CCC)'s carbon budgets and sector-specific pathways, drawing on the work of the Transition Plan Taskforce (TPT, 2023). and the Climate Financial Risk Forum (CFRF);
2. Require all major government departments, financial institutions, and large corporations to use these short-term scenarios in preparing their transition plans and managing their risks;
3. Establish a mechanism for annual updates to these scenarios, incorporating the latest insights and data from the CCC and other relevant bodies.

## Moving from Single to Double Materiality

The third reality check for UK policymakers is the need to confront the crucial distinction between single and double materiality. Single materiality focuses on how climate change affects an organisation's financial performance. This is currently mandatory for risk management purposes. Double materiality goes further and considers both the financial impacts on the organisation and the organisation's impacts on the climate. This is not yet mandatory but is implied by net-zero transition planning. This distinction is crucial because organisations have to reckon with the potential short-term financial costs of actions that have positive, long-term climate impacts (Cliffe, 2023).

A key implication is that, for now, scenarios for financial risk management need to be differentiated from scenarios for net-zero transition planning. The UK government has to therefore recognise that, while current regulations make the former the immediate priority, it will also have to take steps during the current parliament to make the latter mandatory:

1. The first step will be to match the European Union with double materiality reporting (drawing also on the work of the International Sustainability Standards Board (ISSB), then;
2. Develop methodologies to help organisations identify and manage potential conflicts between short-term financial risks and long-term climate goals;
3. Obligate large financial institutions and corporates to set interim impact targets for 2030 and publish annual transition plans, and finally;
4. Introduce incentives and penalties to drive their implementation; in particular, companies should be rewarded for investment in, engagement with, and stewardship of transitioning companies in their value chain.

## Addressing the Collective Action Problem

The fourth reality check is that UK policymakers need to deal with the fact that tackling climate change is a global problem requiring collective action. Success will depend largely on the actions of others (Cliffe, 2023). Moreover, although UK finance punches above its global weight (and that of the UK economy), its ability to shift the international policy debate is limited. UK financial policymakers therefore need to aspire to be leaders in the global policy and regulatory debate.

This collective action problem means that even the UK government's transition plans need to reflect scenarios in which other countries pursue decarbonisation at different speeds and either under- or over-deliver on their commitments. It also has to recognise that there is a disconnect between the country's own Nationally Determined Contribution (NDC) on

climate action and the international footprint of financial institutions and corporations owned and/or operated in the United Kingdom. Accordingly, the UK government should:

1. champion global standardisation of NDC interim targets; for example, with commitments to halve GHG emissions by 2030, or what might be called '*Net Half*', as this would help to level the playing field and reduce uncertainty for business;
2. Engage with international bodies such as the Task Force on Climate-related Financial Disclosures (TCFD), the ISSB, and the Institute of International Finance (IIF) to promote the adoption of more realistic climate scenarios globally;
3. Work with other countries to harmonise scenario methodologies;
4. Support emerging nations in building their own climate scenario capabilities through knowledge sharing and technical assistance.

The collective action problem is clearly more acute at the level of individual companies and businesses. Success in meeting their commitments is dependent on policy delivery and the actions of others in their value chains. So, while many companies have made long-term impact commitments such as net zero, this has made many reticent about setting ambitious short-term targets. Indeed, many corporate TCFD plans and industry alliances have sensibly made their interim goals contingent on policy delivery. The UK government should acknowledge this realism by:

1. Accepting that while interim targets and transition plans for 2030 will become mandatory for large financial institutions and corporates, they will be contingent on the United Kingdom's NDC and those of the countries in which they operate. In other words, they will not be held accountable for the failure of governments to deliver on their commitments.
2. Companies will be expected to publish annual financial risk transition plans that specify financial risks based on explicit sets of scenarios that include one or more scenarios of systemic failure to hit interim GHG emissions goals. For large financial institutions, the latter should include a severe scenario specified by the Bank of England for use in annual stress testing.

## Confronting the Implementation Challenges

Addressing climate change, and indeed the accompanying environmental and social challenges, will pose enormous and complex challenges for the UK government. These cannot be met simply by setting long-term targets such as net zero. Rapid action is now required, based on a systematic assessment of the risks and opportunities that we face. In place of spuriously precise forecasts, we need a rounded analysis of realistic and decision-useful scenarios.

To address the challenges of implementation, the UK government should:

1. Establish an Office for Sustainability Planning (OSP) to:
    a. Oversee the development and implementation of scenarios and transition plans across government departments and public sector bodies. In particular, climate scenario analysis should be integrated into the United Kingdom's National Risk Assessment, the long-term economic forecasts of the Office for Budget Responsibility, and the Green Book guidance for policy appraisal.

    b. Collaborate with academic institutions and think tanks to incorporate the latest climate science and policy developments and to develop robust methodologies for scenario analysis, including narrative creation, quantification, and materiality assessment.
2. Clearly communicate the rationale for adopting more realistic scenarios, emphasising the long-term benefits of improved risk management and strategic planning. The proposed OSP should engage with financial institutions to explain the importance of considering a wider range of climate outcomes.
3. Gradually phase in the new requirements on financial institutions and corporates, allowing time for capacity building and adjustment. While the initial focus should be on developing relevant short-term narratives for risk management, a clear roadmap for moving towards mandatory impact reporting, planning, and implementation should be developed.
4. Provide support and resources to help organisations, particularly small and medium sized enterprises (SMEs), implement the new scenario requirements and applications.

Embedding scenario thinking first in the UK government and then among large financial institutions and corporates, and ultimately business as whole, will not be easy; however, failure to do so will leave the economy ill-prepared for the disruptions that lie ahead.

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## ABOUT THE AUTHOR


Mark Cliffe is an experienced economist and consultant. At the Global Systems Institute he leads on sustainability projects, with a focus on developing decision-useful climate scenarios. Based on his experience in banking and consultancy on climate risk and opportunities, he co-launched the Real World Climate Scenarios initiative in 2022 to accelerate the development of fit-for-purpose scenarios for policymakers and business. Mark is well known for his distinctive insights on disruptive change in economics and policy, environment and climate, society and politics, and technology and consumer behaviour.

Mark served as Group Chief Economist and Head of Research at ING Group from 2006 to 2020. Before joining ING in 1998, Mark was Chief International Economist at HSBC, and before that was Chief Economist at ANZ Merchant Bank and Nomura respectively. He received a Double First in Economics from Christ's College, Cambridge University.

# CHARTING THE TWO CS: LESSONS FROM COVID-19 IN ADDRESSING RISKS FROM CLIMATE CHANGE

Joseph Noss, King's College London and Oliver Wyman

*Governments and financial regulators can learn lessons from Covid-19 that are relevant to how they address risks related to climate change. The global pandemic had – and climate change is likely to have – widespread effects on the real economy, albeit effects that differ across different sectors in ways not seen before. This new form of heterogeneity is likely to dent transitional notions of diversification and change how financial firms should think about risk management. As with the pandemic, the effects of climate change are also likely to increase non-linearly over time. Their mitigation therefore requires timely, strong, and time-consistent responses by governments.*

*Covid-19 also has lessons for financial regulators and informs how they tackle risks related to climate change. A first lesson concerns the need for accurate and consistent data on firms' exposure to climate-related risks, and their potential financial impacts. A second concerns how data are used. Here, it is important to note that climate-related risks might differ from those seen in past data, and to be creative in their use in scenario analysis.*

## Introduction

The similarities between Covid-19 and climate change have been well documented. Both are rooted in the natural world, yet centre on human behaviour. Both transverse national boundaries, yet unleash their deadliest devastation on poorer nations. These parallels have not been lost on the populace. The International Monetary Fund has found that one of the few positives of the pandemic is that it increased awareness of - and, in some cases, demonstrators' anger about - the climate crisis.[1]

But the similarities do not stop there. While Covid-19 and climate change are both primarily humanitarian tragedies, they have similarly had severe implications for financial systems. And the experience of Covid-19 contains lessons for governments and financial regulators as to how they should assess, manage, and respond to risks from climate change.

### 1. Climate change and Covid-19 pose similar sorts of systemic risks to financial systems

The effects of the global pandemic on the real economy were widespread. Barely a single household or business went unaffected. The same is likely to be true of the effects of climate change over the coming century. More and more economies are likely to be touched by the

[1] 43% of respondents to a recent survey were more worried about climate change now than before the pandemic; see IMF (2021), Mohammad and Pugacheva, 'The Impact of Covid-19-19 on Concern for Climate Change and Support for Green Policies'.

effects of physical risks, as well as efforts – both on behalf of governments and citizens – to transform economies to be lower emitting.

That said, Covid-19 was – and climate change is likely to be – heterogeneous in its effects. During the pandemic, some sectors saw near halts in economic activity due to compulsory lock-downs. Others thrived. Technology giants, for example, allowed former cinema-goers to stream movies directly to their homes. Similarly, firms that reconfigure their businesses and supply chains to protect against physical risks, reduce their emissions, or take advantage of the shift toward cleaner energy, may come to take market share from those that do not.

These new forms of heterogeneity have the potential to challenge traditional notions of risk management. Portfolio theory is rooted in the notion of diversification: combine assets in a way that when one falls in price another should rise and your portfolio's performance should be robust. And to pick the winners and losers? Well, look to the past. The finance literature splits the world into 'risk factors' that determine the degree to which asset prices co-move in response to economic shocks, based on historical experience.

During the pandemic, however, assets that had previously been relatively uncorrelated fell in tandem. Prices of stocks in airlines and cinemas, even US treasuries (which had previously been relatively uncorrelated) fell simultaneously. Portfolios that investors might previously have regarded as diversified turned out to have common exposure to a new and savage risk factor – namely, that they relied on people being in close proximity to each other.

Climate change might also dent traditional notions of diversification. There is little evidence that market prices reflect the extent of climate risks. Research finds little overall evidence that the prices of liabilities of higher-emitting firms incorporate a premium associated with the risk of net-zero transition.[2] And forthcoming research at King's College London has also found that firms' emissions might be a poor proxy for climate transition risks, given the full extent of changes to consumer preferences, regulation, and technology that are likely to be necessary to catalyse emissions reduction.

Like incidences of Covid-19, the impact of climate change may also grow non-linearly over time. The number of people infected increased exponentially at the start of the pandemic. Similarly, global warming gives rise to tipping points: changes in temperature that, if breached, themselves accelerate global warming. Melting sea ice increases the degree to which the earth's surface reflects heat, for instance; increased levels of atmospheric $CO_2$ cause clouds to scatter. Both effects increase the rate at which the planet warms.

There is now general agreement that the longer global warming is left unchecked, the more radical the scale of corrective action will eventually be.[3] An ounce of prevention today might save the cost of a pound of cure tomorrow.

## 2. Lessons for governments

[2] See IMF Global Financial Stability Report, 2021.
[3] IPCC (2018), 'Global Warming of 1.5°C. An IPCC Special Report '.

This underscores the importance of prompt action by governments to respond to both Covid-19 and climate change. This harsh calculus of exponential growth came to be understood by the UK government at the start of the pandemic. See, for example, the testimony of Dominic Cummings, then advisor to the UK prime minister:

'I told the Prime Minister ... lock down today *because that is what exponential curves are. The faster you act, the faster you get on top of it…that means ou do not have to have [lock down] in place as long* ... That is why the Prime Minister was so enraged by the situation [my emphasis]'.

Urgency of action is not the only lesson from the pandemic: so too is credibility of policy. In March 2020, lock-down had to mean precisely that: legislation passed, citizens holed up, and families separated. Draconian measures were necessary to induce rapid and radical changes in human behaviour. Days spent dithering not only cost lives, but also meant measures had to stay in place for longer to reduce infections.

Governments also need to provide the same strength of commitment to reduce emissions in the face of climate change. This is necessary to give investors the confidence they need to channel capital into investments in technology and broader products and services to lower emissions. And commitments need to be upheld over time if they are to be effective. There is evidence that the recent back tracking on climate commitments – e.g., via the UK government's retraction of certain emissions-reduction targets – has substantially increased market expectations of future temperature increases.

This need for time-consistency is more familiar to financial authorities than to politicians. One of the key lessons of inflation targeting over the past three decades is that the act of authorities committing to do something can be as – or even more! – potent in its effect then the consequent setting of the respective policy. Only time will tell whether the shifting sands of election cycles can provide the scale and certainty of commitment necessary to tackle climate change.

## 3. Lessons for financial regulators

Either way, Covid-19 has lessons for financial regulators in how they tackle climate-related risks to financial firms and systems. Here two points stand out:

The first concerns data. Policymakers had abundant, consistent and reliable data with which to monitor the spread of the pandemic. From early 2020, an established network of medical professionals produced reliable and timely estimates of incidents of the virus. As businesses were shuttered, analysts were able to estimate the likely effects on economic activity and, in turn, the consequences for the value of financial assets and liabilities. Rating agencies could incorporate the effects of containment measures into their outlooks for creditworthiness. Financial analysts could do the same for corporate earnings. The reliability of these estimates of the pandemic on the financial system stemmed from accounting standards – a consistent and comparable means through which to measure the effects of economic shocks on firms' solvency.

In contrast, those seeking to measure the effects of climate change on the financial system lack such a *lingua franca*.[4] There is a lack of data on firms' exposures to physical risks and their effect on their operations and supply chains (particularly where these span jurisdictional boundaries). Data on firms' emissions generally lack consistency across geographies and sectors (recent efforts notwithstanding). And things get even harder when one comes to translating the occurrence of climate-related risks into monetary terms. This impedes our understanding of the effects of climate-related risks on financial institutions and economies.

Efforts are at hand to improve climate data. In particular, the International Sustainability Standards Board (ISSB) has developed a common international standard for the disclosure of climate-related financial risks. It is essential that these be reflected fully and faithfully into national legislation if climate-related disclosures are to be high quality and consistent. If that is done, they will provide the ingredients necessary to measure the effect of climate risks on the financial system. Efforts are also underway to enhance the granularity and comparability of data relating to climate risks and to translate them into metrics of their impact on the financial system. It is important that reporting standards provide the information necessary to assess risks not just to investors but also to central banks and financial regulators.

The second lesson concerns how data are used. The unprecedented nature of the pandemic has shown us that even the best data on the past can be a poor guide to future risks, particularly when dealing with shocks as ubiquitous as Covid-19 or climate change. New and more widespread risks require creativity on the part of risk managers and their regulators. Correlations between asset classes and exposures to different economic sectors could move in unprecedented ways. Financial firms and their regulators should be astute to these risks.

Scenario analysis can play an important role here. Unprecedented shocks require us to ask 'what if' and consider the possibility that markets and financial systems move in ways not seen before. Work by central banks and the Network for Greening the Financial System has already played a useful role in helping to understand the degree to which the financial system is likely to be resilient to climate-related risks under a range of different scenarios for global temperatures.

I would encourage regulators to be as creative as possible here, particularly in their willingness to embrace the non-linear way in which climate risks could develop. Upstanding efforts are underway in this vein. These include that by the Institute and Faculty of Actuaries to understand how consideration of tipping points can improve climate scenario analysis and that by the NGFS on short-term climate scenarios. The key is to cast off the shackles of past experience and consider how climate might twist risk management in ways unfamiliar to financial firms and their regulators.

[4] For an overview of these, and other data gaps, see FSB (2021), 'The availability of data with which to monitor and assess climate-related risks to financial stability'.

The two Cs are both rough and stormy. But if 'we' – that is, governments, regulators, and societies at large – internalise the lessons from the first, then we stand a chance of navigating the second.

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## ABOUT THE AUTHOR

Joseph Noss is a Senior Advisor in Oliver Wyman's public sector and sustainability practices. In this capacity, he advises official-sector bodies on a range of issues, including those related to climate change and the transition to net-zero emissions. Joe also chairs the International Standards Organisation's (ISO) Sustainable Finance Committee, and advises the UK government on the implementation of sustainability disclosure standards into UK law. He is a Visiting Fellow at the Qatar Centre for Global Banking & Finance at King's College London.

# AT RISK: ALIGNING FINANCIAL RESILIENCE, CLIMATE AND BIODIVERSITY GOALS

Emma O'Donnell and Jimena Alvarez, University of Oxford

*The UK economy is deeply intertwined with nature and biodiversity. Recent research indicates that up to 12% of UK GDP is at risk due to nature-related financial risks. The financial sector contributes to these risks but can also be part of the solution by aligning investments with nature and climate goals. The government should integrate nature risk assessments into financial regulations, mandate corporate nature-related risk disclosures, and develop clear sectoral plans to mobilize investments for nature recovery.*

In its mission to stimulate economic growth, the Government must recognize that our economy is embedded within nature and depends on healthy, biodiverse ecosystems. Those systems are under threat. The UK is one of the most nature-depleted countries in the world and its economy and financial sector are highly dependent on natural systems globally that are being degraded. The first study on the financial materiality of nature-related risks to an economy and financial system was conducted in the UK and found that UK GDP was heavily exposed to domestic and international nature-related risks (Ranger et al., 2024). Up to 12% of UK GDP could be at risk due to compounding nature-related financial risks, underscoring the severity of neglecting to consider nature-related risks in the UK and globally. Nature risks also amplify climate risks; the two issues are intertwined and inseparable (Ranger et al., 2023).

The financial sector can be a part of the problem or part of the solution. Today, the UN Environment Program (UNEP) estimates that around $7 trillion of financial flows are damaging nature (UNEP, 2023), including through financing deforestation and polluting industries, versus around $200 billion that is financing nature protection and recovery. There is clear evidence that financial institutions are '*shooting themselves in the foot*' in creating risks through their financed activities that have material impacts on their own portfolios (O'Donnell et al., *forthcoming*). Aligning financial portfolios with climate and nature goals – shifting capital from destroying to rebuilding nature – is truly a win-win.

At a more systemic level - analogous to the words of Mark Carney in 2015 - once nature and biodiversity loss become a defining issue for financial stability, it may already be too late. As recognised by the Network for Greening the Financial System (NGFS) - there is a clear rationale for action by Central Banks and regulators urgently to manage and reduce nature-related risks. There are potential local or global ecological tipping points, which once crossed could lead to rapid, irreversible regime changes that could seriously impact key supply chains over large areas and have persistent and cascading implications for global trade, geopolitical stability, human health and the global macroeconomic environment.

Securing financial stability and nature and climate goals are synonymous; and all are essential for securing economic growth in the UK. Accordingly, we propose a series of policy recommendations to ensure that increased economic growth can be in service of nature and, thereby, build resilience.

## Integrate Ecosystem Risk Assessment in Financial Supervision and Regulation

Firstly, the new Government should encourage the Bank of England and financial regulators to incorporate assessment and management of nature-related financial risks within their supervisory and regulatory frameworks, following the same playbook as for climate risks. The UK has fallen behind other jurisdictions in this respect, undermining its objective to be the leading financial centre for green finance. Indeed, arguably, climate risk assessment – already required under existing supervisory practices - is vastly inadequate without consideration of nature feedbacks. Co-developing stress testing scenarios for the UK, including through leveraging the PRA/FCA Climate Financial Risk Forum, can be an important first step in supporting financial institutions to begin to assess their resilience to nature-related shocks, alongside climate change-related risks, and begin to take opportunities. Capability can also be built through expanding current climate supervisory actions to 'climate and environmental' risks.

Secondly, given the close relationship between nature risks and impacts, there is a clear argument for regulators advocating the development and adoption of metrics and standards that measure banks' impacts on ecosystems and biodiversity and integrating this within Sustainability Disclosure Standards. Measuring and managing this impact can contribute to long-term financial resilience and stability. And having consistent metrics and labelling can encourage the development of new markets.

## Mandatory Corporate Disclosure Frameworks for Nature-related Financial Risk

Through considering nature-related risks in portfolio construction, financial institutions can lower credit risks to their business, increase capital efficiency and reduce costs of capital to their clients. Yet, the exposure of different real economy firms to nature-related risks is opaque – far more so than even with climate risks back in 2015 when the Taskforce for Climate-related Financial Disclosures (TCFD) was launched - making it difficult for financial institutions and corporations to assess and manage the risks – *"the more we invest with foresight, the less we will regret in hindsight"* (Carney, 2015). The lack of information can lead to an unrecognised accumulation of risk across the financial sector. Enhancing the information available is essential. Therefore, regulators must promote transparency by requiring banks to disclose their impacts on ecosystems and biodiversity in their annual reports. They should also take the opportunity to ensure that net zero transition plans fully integrate nature (and resilience). This can enhance accountability and enable stakeholders to make informed decisions about the banks they support or invest in. This could involve requiring banks to disclose and manage these risks similar to climate-related financial risks i.e. the Taskforce for Nature-related Financial Disclosures (TNFD) and learning from progress in other jurisdictions including the EU. However, regulators should avoid nature-related disclosures promoting a tick-box approach to nature-related risk for financial institutions and emphasize that the priority is internal risk understanding and management. Through mandating disclosures, regulators can also encourage appropriate risk pricing, such that FIs themselves create incentives for risk management amongst counterparties that also benefit themselves.

## Develop sectoral Nature Positive Pathways for the UK to guide and mobilise investment and link this with powered up policy and public finance to deliver for the UK

Firstly, the clear and consistent ask of government that we hear from financial institutions (FIs) is to have well defined goals and plans for nature recovery. With clear plans from governments, FIs can begin to align their portfolios with nature and climate goals and mobilise investment. The current framework of targets provided by the Environmental Improvement Plan and the Global Biodiversity Targets is a good start but need to be complemented with such clear sectoral plans. From here, Defra can begin to work with the private sector to develop investment plans that can help to mobilise investment. We therefore recommend the co-development of clear sectoral nature positive transition plans.

Secondly, government should provide targeted incentives and support for the delivery of plans, including establishing expanded biodiversity markets, incentives and de-risking vehicles for investment. This could include tax incentives, subsidies, or preferential lending terms for loans related to nature-positive activities. It should also include exploring how the UKs public financial institutions can be better geared up to support nature, including consideration of a national nature investment bank. The delivery of plans should also be supported through much greater investment in nature-related data.

## Recognize and Manage the Systemic-level Risks of Nature Degradation to Financial Resilience

The fact that nature related risks are not currently included within the everyday pricing, lending and investment decisions means that potential systemic risks are accumulating. The Network for Greening the Financial System (NGFS) (2022) recognized that this accumulation of risk brings nature into the mandate of Central Banks and supervisors. The Government must explicitly bring nature into the mandate of the Bank of England and financial supervisors and introduce stress testing scenarios that assess the resilience of banking portfolios to nature-related shocks. This would help banks and regulators understand potential financial vulnerabilities arising from ecosystem degradation.

## Facilitate International and Interdisciplinary Cooperation and Engagement

The UK economy is exposed to international nature-related risks due to foreign direct investment and the global value chains of UK-based investment which strengthens the need to align policy with the Kunming- Montreal Global Biodiversity Framework (Ranger et al., 2024). Therefore, the Government must encourage international cooperation to manage systemic financial risks associated with nature loss and develop consistent methodologies and standards for assessing nature-related financial risks as well as upscaling international financing for nature recovery through its bilateral and multilateral development programmes. This would facilitate cross-border investments and ensure a level playing field for banks operating globally. Furthermore, the Government should upscale its investment in public goods of data and scientific knowledge in this area, including encouraging greater collaboration with financial institutions and environmental scientists through its existing programmes such as the UKRI Integrating Finance and Biodiversity Programme. Such collaborations can lead to innovative solutions and best practices in integrating nature into financial decision-making.

## Make the UK the world's leading green financial centre for nature finance

The government has laid out its vision of the UK as a leading green financial centre. It is vital to ensure nature is part of this vision. As well as our financial strength, the UK has world-leading scientific and technical capabilities on nature that can support this vision. We encourage the government to ensure that all relevant legislation and activities related to climate and transition finance and financial market development fully integrate nature. This includes ensuring that opportunities for nature are part of the current Transition Finance Market Review and Finance and Markets Bill. Without such progressive and forward-leaning action, the UK will fall further behind other leading financial centres on this issue.

We urge the new Government to be bold in their nature-related financial regulation to facilitate the rebuilding of a resilient Britain embedded within a flourishing ecosystem.

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## ABOUT THE AUTHORS


Emma O'Donnel is a PhD researcher at Oxford University. Her research focuses on incorporating nature-related risks and opportunities into financial decision-making to mainstream and incentivize investment in effective nature-based solutions. She hopes to develop quantitative biodiversity metrics for financial decision-making using methods such as economic-ecological modeling and remote sensing. She aims to apply the approach to two proposed case studies – the first being the development and quantification of biodiversity scenarios for stress testing central banks. The second will involve analysis of coral reef nature-based solutions for storm surge prevention.

Dr Jimena Alvarez is based at the Environmental Change Institute where she leads the Resilience & Development Group's work on scenarios as part of the Oxford Martin School Programme on Systemic Resilience, as well as the Group's research programmes on greening finance for nature. Alvarez brings 17 years' experience spanning from engineering, climate change, nature-based solutions, modelling, economics and finance across academia, industry and nonprofit in Latin America, Europe and the United States. Her research skills comprise quantitative risk analysis, systems analysis and economic/financial analysis.

# KEY CLIMATE PRIORITIES FOR AN INCOMING UK GOVERNMENT: A RISK-BASED PERSPECTIVE

Jo Paisley, GARP Risk Institute

*The UK government needs to focus on dealing with the physical and transition risks from climate change. On the physical risks side, the United Kingdom will experience increasing incidence of heat waves, flooding, and more intense weather-related events, exacerbated by longer-term shifts in the climate, such as rising sea levels. This means adaptation must be a priority. On the transition risk side, the United Kingdom has lost its climate leadership position, which is bad for business. Re-establishing this will be good for growth and represents the best way to reduce transition risk facing business.*

## Addressing Physical Risks Will Require Adaptation

Sadly, the physical risks from a changing climate are becoming all too clear, with increasing incidences of record-breaking temperatures and heat waves, flooding, and more intense weather-related events. All this is occurring against a backdrop of longer-term shifts in the climate that will give rise to chronic changes, such as rising sea levels that will exacerbate the impacts of flooding and storm surges.

Adapting to the changing climate and improving the resilience of our communities is therefore no longer a 'nice to have'; it is a necessity. The physical risks that affect us can be expected to continue to rise – possibly for many decades – because of the continued increase in GHG emissions and due to lags in the climate system.

This means supporting adaptation needs to be a key priority of the UK government. The Interim London Climate Resilience Review published in January 2024 highlighted that the country's National Adaptation Plan (2023) is lacking in ambition. The report provides a range of recommendations for London, which the government can use to be more progressive, including setting a clear strategic vision for what it means for the UK capital city to be adapting well to climate impacts by 2030 and beyond. The final report is due out later this month and will be an essential read for the incoming government.

Holistically, the incoming UK government needs to set a national strategic adaptation vision. National government has an important role in establishing resilience standards and targets for the major risks, such as heat and flooding. Just thinking about heat, are our hospitals, schools, and public transport set up to cope with extreme heat? Have we considered how green spaces in urban areas can help alleviate heat? Are there sufficient cool spaces to provide areas of refuge during extreme heat events? We also need to consider our resilience in the face of more extreme precipitation and flooding, as well as the longer-term challenges of sea-level rise.

There is also a critical role for conducting exercises which test our preparedness. For example, in October 2023, Paris ran an exercise that simulated a 10-day, 50°C heat wave in two districts. Lessons from these kinds of tests – such as roles, responsibilities, and command in the event of multiple failures of infrastructure in transport, power and water – are invaluable. It is great to see that London plans to run a similar exercise, examining how the city will cope with a week of temperatures above 40°C. Lessons from these exercises need to be shared across other cities.

So, a key priority from a risk perspective is to ensure that there is an adaptation mindset throughout government.

## Transition Risks Are Best Managed Through Consistent, Transparent Policy

Transition risks arise from the adjustment toward a low-carbon economy, including legal and policy impacts, changes in technologies, shifts in consumer and investor sentiment, and changes in the supply and demand for products. These are perhaps more under our control, since a key part of these risks is driven by the policies that governments introduce and the timing of any transition. Typically, the more time that we allow for the adjustment, the less costly and risky the transition will be.

The United Kingdom has until recently been considered a climate leader. In June 2019, it set a target that requires the country to bring all GHG emissions to net zero by 2050, compared with the previous target of at least 80-percent reduction from 1990 levels, which brings it in line with the Paris Agreement. The United Kingdom's institutional set-up is also well-placed to both challenge and support governmental leadership. An important part of this is the Climate Change Committee (CCC), established as a statutory body by the Climate Change Act in 2008. Its reports, which are essential reading for any new administration, provide the playbook for reaching net zero.

While the CCC's 2024 progress report has been delayed because of the election, the key messages from the 2023 report were stark. The country has lost its climate leadership position due to a lack of urgency in its policy actions. Meanwhile, the international environment has changed: the Inflation Reduction Act in the United States and the Green Deal in the European Union, coupled with renewed policy focus in China, has created a race to the top in the transition to a greener economy.

The Energy Transition Commission emphasises the business benefits of stronger policy ambition, as it strengthens the confidence of investors, businesses, and consumers. This makes investment more attractive, which, in turn, tends to support a self-reinforcing cycle of technological progress and falling costs with the rising deployment of new technologies. Regaining the United Kingdom's leadership position should, therefore, be a key aim of any incoming administration.

Indeed, the best approach to reduce the transition risk for businesses and the financial sector is to reduce uncertainty over the policy environment. Therefore, arguably the single best thing that the new UK government can do is to recommit to net zero with urgency and drive.

There is no need to reinvent the wheel in terms of mapping out key priorities for the country to reach net zero. Excellent work has already been done in, with the Skidmore

Net-Zero Review published in 2023 being a notable case in point. This provides evidence of the economic benefits for embracing the transition to net zero. Its recommendations include using infrastructure to unlock net zero; reviewing incentives for decarbonisation in businesses; reforming the planning system; and addressing decarbonisation in the UK housing stock.

What is particularly impressive about the review is its cross-party approach. Climate change should not be a deeply political issue. All MPs should receive education about climate change – not just about the science, but also about the strategic necessity of the transition.

One overriding principle should be that net zero needs to become embedded in all aspects of policy. Retrofitting buildings is far more expensive than setting new standards to be adopted. Some policies may take longer and be more controversial than others. So, it is likely that the new government will need to consider whether the existing departmental structure is well set up to ensure net-zero delivery has sufficient focus across government. Skidmore recommends establishing an Office for Net-Zero Delivery. Certainly, consistent and coherent policy action will be critical for us to achieve our climate goals.

In contrast to physical risks, which are location-specific, transition risks and opportunities are best looked at through a sectoral lens. Once again, there is no need to reinvent the wheel. The Climate Change Committee's 2023 Report provides a number of recommendations (which are even prioritised) across sectors, such as shipping, surface transport, waste, agriculture, buildings, and aviation.

The transition will be led by firms in the 'real economy', which is where the bulk of emissions occur. But it will need to be supported by the financial sector. A consistent and clear strategic vision of the road to net zero, with clear milestones and an unambiguous commitment to that vision, is the best way to attract the necessary financial backing.

The finance sector is excellent at innovating and creating new products to support its customers on that transition. At GARP, we have undertaken four annual benchmarking exercises of financial firms' climate risk management capabilities. Over that time, we have witnessed a significant increase in the range of financial products on offer. Products such as green bonds, ESG funds, sustainability linked loans, green corporate loans, and energy efficient financing are just a handful of the new products that have been growing in popularity (see Figure 5 in GARP's paper on Climate Risk Leadership for a more complete picture). That said, innovative financial structures, such as blended finance or public private partnerships, may also need to be considered. Open dialogue with the financial sector is the best approach, using groups such as the Climate Financial Risk Forum.

## Parting Thoughts

The science is clear about the urgency of reducing our GHG emissions to limit global warming. Since the destination is decided, the only question is the speed at which we get there.

A risk-based approach can be helpful for an incoming government. This indicates that both adaptation to a changing climate and mitigation by reducing greenhouse gases are needed, given the rising level of physical risks and the need to reach net zero. The United Kingdom has a solid legal framework and institutional set-up to support the transition, which has

provided recommended actions. The main factor that has been lacking is a determination and urgency to execute. The UK government should focus on those areas where it has most influence (for example, setting targets and taxes; agreeing what sort of infrastructure we need), and should let the private sector do what it is best at doing, which is delivery within that framework.

**The article is a personal view from Jo Paisley, President GARP Risk Institute. GARP is the world's leading professional association for risk managers, dedicated to the advancement of the profession through education, research, and the promotion of best practices.**

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## ABOUT THE AUTHOR

At GARP, we look at climate change through a risk management lens. This approach can work well for a government too when setting its priorities. As it has become well established to consider two types of risks when thinking about climate change, namely physical and transition risks, this paper looks at each in turn.

Jo Paisley is President of the GARP Risk Institute, the thought leadership arm of the Global Association of Risk Professionals (GARP). Set up in early 2018, it now largely focuses on climate and nature risk management, particularly for financial firms. Jo hosts GARP's Climate Risk Podcast. Her career began at the Bank of England where she worked in a variety of roles, across macroeconomics, statistics, supervision and risk.

Her last role was as a Director of the Supervisory Risk Specialists Division within the Prudential Regulation Authority, where she was heavily involved in the design and execution of the United Kingdom's first concurrent stress test in 2014. She left the Bank in 2015 and joined HSBC as their Global Head of Stress Testing. She has also worked as an independent stress testing consultant, advising firms on how to get the most value out of stress testing.

# DISCLOSING FUTURE IMPAIRMENTS TO ADDRESS IMPERFECT PRICING

Tom Patience, Handelsbanken

*Despite the flurry of Net-Zero-aligned standards and disclosure requirements, companies do not currently have to disclose impairments in a 1.5C-aligned or 2C aligned world. In such scenarios, around 2/3 of fossil fuels will have to remain in the ground. This creates imperfect pricing for investors, who may not be providing fiduciary duty to clients, given they cannot transparently see such material risk information. The government should advocate for the development of Net-Zero-related impairment standard, possibly using existing taskforces or bodies, such as the ISSB.*

Mandatory sustainability disclosure frameworks have served as a signal for businesses to address a range of emerging existential challenges. The UK has achieved great success in the development of prudent frameworks, such as from developing a Transition Plan framework, in addition to earlier work to incorporate TCFD-aligned disclosures into Companies Act requirements.

We stand at a time when several of the world's largest firms by market cap are materially involved in the continued extraction and expansion of fossil fuels. If economies are to achieve their net-zero commitments, which cover 90% of the global economy and are legally binding in multiple countries, strict carbon budgets cannot be exceeded, given certain greenhouse gases exist for millennia once emitted.

Despite the direction of national economies, along with mandated disclosure frameworks, companies are under no obligation today to disclose what their future impairments would look like in 2˚C or 1.5˚C economies, pursuant to article 2.1a of the Paris Agreement[1].

If the world is to achieve a 1.5˚C-aligned net-zero commitment, around 60% of existing, proven oil and gas reserves will have to remain in the ground, along with around 90% of coal reserves[2]. This is before considering new fields, yet to be discovered.

The lack of 1.5˚C and 2˚C-aligned future impairment disclosures mean investors lack material information needed to form investment decisions and ensure fiduciary duty for clients in terms of risk management, with an estimated $6 trillion "carbon bubble" of unextractable fossil fuels[3].

The lack of disclosure comes despite 39% of the global economy now using science-based targets[4] via SBTi to inform their decarbonisation pathways, whereby "the majority of

[1] United Nations Framework Convention on Climate Change. "Paris Agreement." 2015.
[2] Nature. "Unextractable fossil fuels in a 1.5 ˚C world" 2021.
[3] Carbon Tracker. "Wasted Capital and Stranded Assets - Press Release."
[4] Science Based Targets Initiative. "SBTi Monitoring Report 2023." 2023.

companies setting new targets (after 15 July 2022) are only accepted if they are consistent with limiting global warming to 1.5˚C"[5].

Early examples were attempted. In 2022, an auditor required a fossil fuel company to disclose estimated impairments in a 2˚C-aligned world[6]. These resulted in a projected write down of its gas business by $16bn, approximately one quarter of its value. No 1.5˚C-aligned disclosure was required or provided, which would have showed greater losses, despite many countries in which the fossil fuel company operates committing to this target. In requiring the fossil fuel company to make such a disclosure when not mandated, the auditor ran the risk of upsetting their relationship with the company. There is no science-aligned benchmark to ensure that the 2˚C-aligned disclosure which was provided used pre-specified, vetted criteria.

### Recommendation

The government should advocate for the development of assured impairments aligned with net-zero scenarios, to form a portion of companies' climate-related disclosures. The ISSB could serve as a platform to update IAS36[7] – Impairment of Assets – to reflect such long term implications for businesses. Disclosures should be assured, with assurance standards developed to ensure sufficient oversight.

It may be prudent for the development of such frameworks to pay close attention to Asset Retirement Obligations, with many oil wells currently considered to be operational for 50-70 years, despite net-zero commitments[8]. Such approaches fail to recognise the ongoing capping and maintenance of wells once retired, the costs of which may exceed present company dividends if accounted for[9].

If banks are to continue reserve-based lending, valuation figures used should reflect future impairments accordingly.

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## ABOUT THE AUTHOR

Tom Patience leads the Sustainable Finance proposition for Handelsbanken in the UK. Handelsbanken is widely renowned for its sustainability commitments, having received a Gold award from Imperial College Business School in 2023 for its IEA-aligned fossil fuel policy, and a AAA ESG rating from MSCI, amongst the top 5% of financial institutions globally. He is currently reading for an Environmental Sustainability MSc, having previously undertaken a sustainability-related MBA.

[5] Science Based Targets Initiative. "Why are there still companies with well below 2˚C and 2˚C targets?."
[6] Financial Times. "The future of global finance."
[7] IFRS. "IAS 36 — Impairment of Assets."
[8] Carbon Tracker. "It's Closing Time."
[9] Carbon Tracker. "Overlooked: Why Oil and Gas Decommissioning Liabilities Pose Overlooked Financial Stability Risk."

# REINSTATING TRUST IN CLIMATE FINANCE: THE NEED FOR UPSKILLING AND CONVERGENCE OF STANDARDS

Jonatan Pinkse, King's College London and Nichola Hutson, Zohrah Yaqub and George Oakman, DNV UK

*The world of climate finance is evolving rapidly, but the popularity of climate-specific financial instruments faces an uphill battle. Climate finance needs a material step change to realign the ambition to achieve Net Zero with the current financial realities, and there is significant scope for the government to positively facilitate this. We argue that two key government interventions are needed: 1) upskilling all parts of the UK economy on the importance, opportunities and risks of climate finance; and 2) convergence of sustainability regulation and standards and minimal fragmentation.*

A robust climate finance sector is essential for the UK's journey to net zero. It will empower businesses across all sectors to transition away from fossil fuels and build resilience against climate impacts. However, despite significant advancements and the introduction of new financial instruments like climate funds and bonds, climate finance faces critical challenges in scaling fast enough to meet the ambitious targets necessary to combat the climate crisis.

A mature climate finance sector is crucial for the United Kingdom's transition to net zero. It will enable firms across all sectors of the economy to shift their business models away from fossil fuels, whilst also being more resilient against negative climate change impacts. Yet, climate finance currently finds itself at a crossroads. It has matured significantly in recent years with many new financial instruments such as climate funds and climate bonds reaching the market. This makes it easier than ever before for investors to invest in net-zero-supportive initiatives while pursuing very similar risk profiles to non-sustainable investments. Despite this, however, there are doubts about whether the sector is maturing fast enough to meet the level of ambition needed to tackle the climate crisis by redirecting funds towards the net-zero economy.

On the upside, regulatory developments have bolstered climate finance initiatives. With a deluge of sustainability-focussed standards such as the Sustainable Finance Disclosure Regulation (SFDR), Corporate Sustainability Reporting Directive (CSRD), Corporate Sustainability Due Diligence Directive (CSDDD), and, more recently, the Green Claims Directive (GCD), the European Union is currently demonstrating leadership with efforts to mobilise banking and finance to drive the transition to net zero. Through a combination of policies that require investors and firms to disclose their plans for net zero and deter them from being disingenuous about their green claims, the European Union is raising the bar on net zero and its strategic significance for financial decision-making.

While the United Kingdom is in the process of emulating such EU standards with the recent Sustainability Disclosure Requirements (SDR) and the awaited UK Green Taxonomy, it is currently still trailing behind Europe. However, the new Labour government puts more weight on net zero and the sustainability agenda. As such, there is a lucrative opportunity for the country to regain its position as the financial hub, specifically for net-zero initiatives to further spur nationwide innovation, as well as economic productivity and growth.

On the downside, however, climate finance is currently suffering from the broader backlash against ESG (Environment, Social, and Governance). Though this originated in the United States, it is having an impact in other parts of the world too, including the United Kingdom. Additionally, there is widespread disappointment about the investment performance of ESG funds, which has further discredited their popularity.

What constitutes "ESG" has also been questioned. A proliferation of ESG ratings and a lack of standardisation has made it challenging for investors to assess whether they are indeed putting their money in firms that are significantly reducing their GHG emissions, for example. Some recent events also suggest that the transition to net zero is faltering. Firms that are heavily invested in fossil fuels seem reluctant to abandon their carbon-intensive assets as this would involve sacrificing short-term profits. The recent step by the Science Based Targets initiative (SBTi) to remove several major firms (including Microsoft, P&G, and Unilever) as they no longer have a credible commitment to net zero, demonstrates how difficult it is for businesses to "walk the talk" with concrete transition plans. There is concern, too, about skyrocketing costs of firms complying with the multiple EU sustainability regulations.

So, while the world of climate finance is evolving rapidly, the popularity of climate-specific financial instruments faces an uphill battle. Climate finance needs a material step change to realign the ambition to achieve net zero with the current financial realities, and there is significant scope for the UK government to positively facilitate this. Without the private sector putting funds into the net-zero economy, the transition will not become a reality. We argue for a need for the new government to step in to debunk myths that ESG and sustainability are inherently flawed as investment objectives and reinstate faith into climate finance as a viable investment opportunity.

Specifically, we believe that two key government interventions are needed to reinstate faith in the power of climate finance to make a difference:

1. an upskilling of all parts of the UK economy on the importance, opportunities, and risks of climate finance; and
2. a convergence of sustainability regulation and standards and minimal fragmentation.

As well as bolstering the United Kingdom's credibility and leadership in net zero across a global landscape, these interventions will ultimately aid the country in making an orderly and minimally disruptive transition to a net-zero economy.

The first myth that needs debunking is the idea that climate finance is 'hard to obtain'. Investors typically claim that they are ready to invest in the net-zero economy but cannot find the right investment targets. Many potential investees struggle to make a good case for themselves as an investment target. Indeed, for climate-specific financial instruments to be

effective, firms issuing them need to show that they are using the funds to reduce their GHG emissions. That is, there is a need to show additionality: it would not have been possible for them to engage in specific projects for net zero without climate finance. With the right set of skills, however, firms currently struggling to make their case could obtain climate finance more easily than they might think. Yet, they would need to gain know-how of the requirements for using climate-specific financial products to fund their transition.

To tackle this, there is a need to upskill firms across the United Kingdom, whereby the government should develop centralised sectoral guidance around net-zero investment and financing and create a policy blueprint. Sector-specific guidance can help establish what is needed for firms to be considered as making a significant and additional contribution to the net-zero economy. Guidance is especially needed for the 'hard-to-abate' sectors such as cement, steel, and aviation for them to attract climate finance, aiding them further in their unique decarbonisation journeys. Investors currently run the risk that investing in these sectors will be seen as increasing their exposure to climate risks, while in fact they are playing a key and central role in helping carbon-intensive firms to transition to net zero.

The second myth is that new standards are needed to improve the credibility of the market for climate finance. It is a common response to criticism - for example, that concerning the effectiveness of ESG in making a difference to the transition - to launch a new standard. However, part of the current credibility problem of sustainable finance is the proliferation of a large number of standards and ratings. Instead of constantly developing and releasing new standards, the UK government should aim for a convergence of existing sustainability regulation and standards, thereby avoiding fragmentation of the regulatory landscape. It might well be that some new standards are needed; for example, to catch up with EU developments. When doing so, however, the UK government should be holding more open consultations across a range of organisations for feedback. Unlocking climate finance should not be seen as a policy intervention in isolation. Instead, it should be viewed as a key component of the overarching regulatory toolkit to achieve net zero, which, in turn, could help harmonisation across global regions in the long term.

To conclude, then, there is no doubt that vast investment and climate finance is key to mobilising much-needed transition efforts towards the net-zero economy. The longer it takes to unlock the potential and implement climate finance, the more disorderly the transition for all sectors of the economy becomes.

Climate change has various 'tipping points' of no return. As recent key events indicate, climate change is worryingly unpredictable and its effects are not linear. It will have a profound and detrimental impact on the economy if we do not act now. With the recent geopolitical and socio-economic challenges faced from the repercussions of unexpected 'black swan' type events (i.e. Covid-19, the Ukraine-Russia war, and the ongoing cost of living crisis), climate change poses a real and significant impact; yet, this is one event we do expect. Therefore, this is an urgent call for action for the new Labour government to upskill the economy on climate finance and ensure a set of sustainability standards that harmonise with the current regulatory landscape in order to ultimately reinstate investor confidence.

## ABOUT THE AUTHORS

Professor Jonatan Pinkse is Professor of Sustainable Business and the Director of the Centre for Sustainable Business at King's Business School, King's College London. In his research, Jonatan analyses topics related to strategy, innovation, and finance for net-zero and sustainability, business model innovation, the green transition, cross-sector partnerships, and digital platforms.

Dr. Niki Hutson (Head), Zohrah Yaqub and George Oakman are part of the UK DNV Sustainable Finance Team, delivering a range of cross-industry Second-Party Opinions (SPOs) and ESG Advisory Projects, spanning across a variety of topics, including but not limited to: the EU Taxonomy, regional and Green/Transition Taxonomies, ESG Disclosures & Ratings, Regulatory Insights, Thought Leadership and Training.

# DATA AND REGULATION

# TO DELIVER NET ZERO, BUSINESS NEEDS A CLEAR NATIONAL PATHWAY

Julie Baddeley, Chapter Zero

*For businesses to deliver a just, nature-friendly, net-zero transition they need a clear national pathway with supportive policies across government, including planning, transport, agriculture, and energy. We need to put in place the appropriate incentives to drive change fast, as emissions currently continue to grow and action lags behind ambition. In tandem, we should have a national conversation that takes the public on the net-zero journey and explains that green investment is not a cost but an opportunity. It is also necessary to clarify that delay will be far more expensive than investing today.*

## System-wide change

Achieving net zero and a sustainable economy requires system-wide change. Our world is so interconnected and interdependent – both geographically and across sectors – that no enterprise acts alone. Change must percolate throughout the value chain. That said, our work at Chapter Zero and on the Transition Plan Taskforce shows that some sectors have a disproportionate influence over the wider economic transition.

Take construction. 60 percent of a building's emissions occur before it is even occupied. Building and property companies rely on some of the highest emitting sectors, such as steel and cement. Policy must ensure that all new homes are low-carbon in construction and operation - as well as being affordable. This will require significant changes to the planning system, which often obstructs sustainable infrastructure and permits high-carbon developments. Planning policy should facilitate low-carbon energy generation, while ensuring that new buildings are sustainable.

Transport is just as important. Journeys must transfer from road and air to rail, which means significant investment and increasing subsidies. The switch to electric vehicles relies on appropriate incentives and an adequate charging infrastructure everywhere from rural areas to inner cities. Similarly, food retailers have huge influence over the whole system from 'field to fork', including farming, manufacturing, distribution, and preparation at home.

Government must attract investment in energy generation and distribution, bringing private finance alongside public funds. These projects are long-term and an uncertain financial landscape is their enemy.

## A net-zero test for public policy

To achieve systemic change, all new government policy should consider the transition to net zero, nature, and resilience.

In the 2000s, policy proposals began to require an 'equality impact assessment'. Assessing the social justice implications of new policies is now standard practice for public bodies. In

2020, we explored with the Institute for Government and Peers for the Planet whether something similar would be possible for net zero, with little success. Perhaps we could dust off the approach. This would avoid unintended consequences and lack of consideration of interdependencies that come from silo-based policymaking.

## Disclosure and transparency

The first step on many companies' net-zero journey was the implementation of the recommendations of the Taskforce on Climate-related Financial Disclosures (TCFD). This forced boards to shine a light on their businesses' emissions, coupled with the physical and transition risks they might face. This often repealed just how little they understood about the environmental impact of their supply chains.

There is no doubt that transparency is an important lever for change. Companies competed after COP26 in setting ambitions for net zero. However, setting shorter-term milestones and implementation have proved tougher.

The plethora of disclosure standards impacting our multinational companies has become a significant issue, emerging as a barrier to change in some boardrooms. The answer is not to rein back on disclosure, but to simplify and consolidate so that we have clear, comparable frameworks where data can be collected once. The UK government should stand firmly behind the International Sustainability Standards Board's (ISSB) standards. The EU Corporate Sustainability Reporting Directive (CSRD)'s double materiality rules place additional obligations on companies, but if we only have two regimes to comply with that will make a difference.

To implement net zero, nature and adaptation ambitions, companies need robust transition plans. The Taskforce for Transition Planning (TPT) has built far more than a Disclosure Framework. It has engaged with hundreds of companies and investors to create a 'how to' manual for delivering the organisation's part of a whole economy transition. At Chapter Zero, we have published a boardroom guide to the TPT products, including a board scorecard to assess where companies are on their respective journeys to net zero.

The TPT, which was HM Treasury-backed, provides a gold standard ideal for global adoption. A new government should mandate all UK-regulated financial institutions and FTSE 100 companies to develop and implement credible transition plans that align with the Paris Agreement. The TPT disclosure framework would form the basis of these plans so that they can be easily compared.

## Joined up regulation

Energy and water regulators have a major role to play. If we subsidised energy and water for low-income households' prices generally could rise and investment increase. We have allowed the public to see water as an almost free commodity. In reality, it is a hugely energy-intensive industry and one that damages the environment when things go wrong. We have to pay properly for what comes out of our taps.

Financial regulation is another important lever. In addition to disclosure, a planned UK 'Green Taxonomy' would help guide sustainable investing. The Financial Conduct Authority, along with the Competition and Markets Authority, should continue to

implement rules to combat greenwashing, giving consumers confidence in companies' environmental claims.

## Size of the prize

Our members have excellent examples of how sustainable business models or product design have become key differentiators. Worryingly, investing in net zero is still often seen as a cost with a very long payback. More enlightened companies see it as integral to their business and commercial strategy; i.e. as an opportunity.

We must make the United Kingdom the home of green entrepreneurialism; the best place for green industry. We have a world-class financial industry and academic research base. The UK government should leverage green innovation hubs, give tax advantages for green start-ups and scale-ups, and incentivise green investment.

Oil companies are currently spending a small fraction of their capital investment on green fuels. Only these companies have the balance sheets to move the transition fast enough. The tax approach is here today, but doesn't seem to bite. A green lifestyle feels expensive, but the cost of ignoring this will be so much greater. Carbon pricing should be equitable, efficient, and global. Surely a carbon price of US$200 today would not be unreasonable? The proposed Carbon Border Adjustment Mechanism would ensure that UK manufacturers are not paying a higher carbon price than importers, and linking the UK emissions trading system to similar systems abroad would reduce compliance costs.

## Winning over the nation

Finally, how do we take the public (i.e. voters) on this journey?

Protecting the environment should be reframed as an opportunity, not a burden.

In spite of the amount of coverage of climate change in the media, we have not won over hearts and minds. The message will not land if it is all about giving up things. However, as we play catch up on technology and investment, people will have to make hard choices in the next few years to keep global temperatures in check. Yet, we have seen what happens when governments push through unpopular policies.

The UK government needs a communication campaign to lay the foundations for a net-zero-aligned pathway. So far, we have failed to persuade many to even bring their own bags to the supermarket, let alone to eat less meat, take fewer flights, and have shorter showers.

Getting support for the investment in green homes, more renewable generation on greenfield sites, and persuading farmers to move to regenerative agriculture requires a combination of carrot and stick.

It is clear that a transition pathway for the United Kingdom has to encompass all aspects of the journey. Businesses are crucial to decarbonisation, and need an enabling policy environment that encourages transparency, contains targeted and effective regulation, creates appropriate financial incentives, and has the backing of the public.

There is much to do, and very little time to avoid the worst impacts of climate change and nature loss. However, by working together across the financial system, real economy, and

government, the United Kingdom can lead the way in developing thriving green industries and the jobs that will sustain them.

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## ABOUT THE AUTHOR

Julie Baddeley is Chair of Chapter Zero, the UK Directors' Forum which has around 3,000 members focused on climate action from the boardroom, and Chair of the Governing Board of the Climate Governance Initiative, which spans 73 countries. She has served on the boards of major organisations in the public and private sectors for more than 20 years.

Julie is director of FTSE 250 automotive supplier TI Fluid Systems plc, which is leading the transition to electric vehicles, and Senior Independent Director of Marshall of Cambridge. She was previously Director of Greggs plc, Ebiquity plc, and Yorkshire Building Society, Chair of global recruitment company Harvey Nash, and Director of Camelot Group plc. Before embarking on a portfolio career, she was an Executive Director of Woolwich plc, and an Associate Fellow of the Said Business School.

Julie leads a series of initiatives to help chairs and non-executive directors recognise the opportunities and risks of climate change to their organisations, and sees delivering a zero-carbon economy as the biggest challenge for business in her lifetime. She is a By-Fellow at Hughes Hall, University of Cambridge.

# CLIMATE AND GREEN FINANCE: TIME FOR ROBUST REGULATORY ACTION BY THE UK GOVERNMENT

Sarah Bracking, King's College London[1]

*The UK faces severe crises in climate change and biodiversity loss, ranking poorly in global and G7 environmental indices. Despite setting ambitious emissions targets and biodiversity commitments, actual progress has been slow. Current green finance is insufficient and flawed, with private and public sectors struggling to meet goals. Effective government intervention is essential to create robust carbon accounting, enforce stricter regulations, and ensure green finance becomes a profitable and standard practice, aiding in the transition to a sustainable economy and environment.*

The United Kingdom faces twin crises of climate change and biodiversity loss that have generated a plethora of policy documents and promises but little material action. This situation is similar globally. Unless global greenhouse gases are halved by 2030, an unliveable rise of 3oC is predicted by the end of the century (IPCC, 2022). Relatedly, biodiversity loss is substantial and accelerating. An estimated one million species are currently at risk of extinction (IPBES, 2019), with significant reductions in population sizes of birds, mammals, reptiles, amphibians, and fishes between 1970 and 2018 (WWF, 2020). The United Kingdom ranks at the bottom of the G7 in relation to environmental issues and is the 189th country worldwide in the Biodiversity Intactness Index (McKie, 2021; De Palma et al, 2021).

What is the record of UK government action to date? The Climate Change Act (2008) created long-term, legally binding targets to reduce emissions, known as 'carbon budgets' (HM Government, 2008). In June 2019, the government legislated a net-zero emissions target by 2050, and in April 2021, it set a medium-term target for its 6th Carbon Budget (2033-37) committing to reduce emissions at the fastest rate of any major economy (CCC, 2020a; CCC, 2020b). The United Kingdom is also a signatory of the Post-2020 Global Biodiversity Framework and has committed to halting biodiversity loss by 2030, while the Environment Act 2021 commits it to biodiversity net gain in planning applications, and the reduction of risk of species loss (HM Government, 2021a; HM Government 2021b). The government committed to generating growth and employment in an industrial green transition (HM Government, 2020a; HM Government 2020b; HM Treasury, 2020) while

[1] The following persons contributed to the views held here in extensive and fruitful discussions: Adamson, G., Aikman, D., Andueza, L., Baeckström, Y., Barritt, E., Bidder, R., Bond, P., Borie, M., Bowman, M., Dempsey, J., Duffy, B., Evans, S., Feger, C., Guo, M., He, W., Jordanoska, A., Karamchedu, A., Knox, H., Kuralbayeva, K., Lander, L., Lendelvo, S., Lepere, M., Maltby, T., Myeni, S., Natarajan, N., Newsome, D., Ngwane, T., Okereke, C., Peel, J., Pennanen, T., Pollitt, A., Rambaud, A., Randalls, A., Setzer, J., Shollock, B., Sullivan, S., Taschini, L., Ventre, C., Ziadah, R. Any errors are the responsibility of the author.

growing the United Kingdom as a world leading centre for green finance (HM Government, 2021c; HM Government, 2021a; HM Treasury, 2021). It established a Transition Plan Task Force in 2022 to explore Just Transition legislation (UK Parliament, 2023). Just Transitions are multidimensional processes of holistic change toward an inclusive economy that combine consideration of workers, communities, and ecological sustainability (Robins, et al. 2019; Stevis & Felli, 2015, 2016; Krawchenko & Gordon, 2021).

However, few of these 'future-pegged' commitments remain on track, with the UK Climate Change Committee (CCC) reporting in 2021 that there were credible policies in place to cover less than 20 percent of the emissions cuts needed to meet the sixth carbon budget (CCC, 2021, 16; see Friends of the Earth (FOE), 2024). This situation is reflected globally, where there is currently strong evidence that existing actions have not even marginally begun to reduce emissions or species loss rates at the scale required (Guzmán, S. et al. 2022; Webber et al, 2022). Barriers include the following: first, the metrology of how carbon emissions are counted is flawed, based on limited Scope 1 and 2 counts and low-quality offsets, not emissions up and down the supply chain, including consumption; second, there has been slow progress in aligning financial flows between countries, sectors, and communities to the goals of the Paris Agreement, with climate finance unevenly distributed (IPCC, 2022b; Sengupta, 2023); and, third, both public and private green and climate finance - widely seen as the conduit of change - are insufficient and of a low quality.

Green finance is private and/or public equity, debt, insurance, or derisking instruments designed to advance lower carbon-emitting activities and less harmful ecological outcomes. It is estimated variously at approximately $1.2 trillion per annum, making up less than 4 percent of total global financial markets (International Finance Discussion Papers, 2023). Green finance is currently insufficient, with a large 'financing gap' in respect to Paris targets (Climate Policy Initiative, 2020), and flawed, with nebulous design criteria (UNCTAD, 2023). This leads to a range of consequential outcomes, as well as operational contradictions between climate change and biodiversity goals (Bracking et al, 2023). In short, there is not enough green finance, and what currently exists is not fit for purpose (Bracking & Leffel, 2021). The story for publicly provided climate finance, domestically and globally, is similar, with developed countries repeatedly failing to meet their promises of US$100 billion per annum in the UNFCCC process.

There are many challenges preventing the scale-up of private sector green and climate finance. Private issuers and investors in green products struggle, in both intention and metrology, to cost effectively generate scientific data to calculate climate and biodiversity risk. Similarly, they find it difficult to implement their economic, social and, governance (ESG) compliance systems or to meet their disclosure and reporting requirements (Perkins, 2021). The natural world is complex, and biodiversity and carbon accounting are scientific, place-based and context-specific. This demands ever-higher levels of expertise that financial institutions do not intrinsically possess (Sullivan, 2018; Bowman, 2022). Firms also rely on accountants, auditors, financial stability boards, financial conduct authorities, and governments to provide regulatory infrastructure, some of which are still being developed (Bracking et al, 2023). In addition, issuers are struggling to build business cases for green investments, with profitability on par with, or worse than, vanilla equivalents (Christophers, 2019; Sato, M. et al. 2020). Further, the introduction of climate risk to prudential regulation has so far had negligible effects on capital allocations that prioritise green

(Reinders, Schoenmaker and van Dijk, 2023), while the current technology employed in bank stress testing perversely indicates that financial stability is resilient far beyond the excess human mortality levels acceptable to society, encouraging complacence (Reinders, Schoenmaker and van Dijk, 2023; Cliffe, M. 2023). Finally, in the absence of effective mandatory regulation, reducing emissions relies on voluntary standards, taxonomies, and disclosure (Ameli, Drummond & Bisaro, 2020; Steuer & Tröger, 2022), climate risk reporting (Tripathy, 2017), and sustainability standards (Berrou, Ciampoli, & Marini, 2019). Together, these generate a non-uniform environment for investors that hinders green investment being scaled up (Fiedler et al. 2021). Overall, current ESG merely assesses the external environmental, social and governance risks to a company's ability to generate cash flow and profits in future (known as materiality), not the 'double materiality' (Lee, 2021) that would include the impact and risks the company poses to the environment or society. There are also questions about the contribution of green finance to just transitions (Jones et al., 2020).

But these challenges cannot be overcome by the private sector alone: governments make markets through regulation: Enabling green finance should be an urgent responsibility for the new UK government, thus transforming the financial sector. This would help green finance to becomes the model for business-as-usual, as well as being the most profitable choice for investors with double materiality embedded in regulation. Currently, asset and pension fund managers, as well as those designing green bonds and ESG portfolios, are stymied by what they perceive as a strict legal obligation of fiduciary responsibility to gain the best return for their investors. At the same time, the fossil-fuel and 'dirty investments' sectors are experiencing a post-Covid-19, war-fuelled boom in their profitability. As a result, the moral course of action of green investors is sidelined and often priced out of the market. Together with the Treasury, the Bank of England, the Financial Conduct Authority (FCA), scientific advisors, and private sector organisations, the incoming government should pass urgent legislation on a UK Just Transition. Policies could include: the instigation of a legally binding and robust accounting system for carbon emissions; new higher rates of capital gains tax for high-carbon emitters and polluters; a restoration of the ban on new oil and gas exploration and fossil fuel infrastructures; rapid provision of a working structure of climate adaptation, loss and damage finance, plus pooled and derisked climate change insurance for UK households; and a restoration of levels of international climate finance according to our historical and differentiated responsibility under the Paris Agreement of 2015. Overall, the legislation should tip profitability in favour of green choices and allow for them to be robustly and scientifically identified via mandatory carbon accounting and the product standards of the Financial Conduct Authority.

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## ABOUT THE AUTHOR

Sarah Bracking was appointed to a Professor in Climate and Society at King's College London in 2017. She has previously worked at the University of KwaZulu-Natal, South Africa (2013-2017) and the University of Manchester (2001-2016). She is editor of Corruption and Development (Palgrave, 2007), author of Money and Power (Pluto, 2009) and The Financialisation of Power (Routledge, 2016), and lead author of Valuing Development, Environment and Conservation: Creating Values that Matter (Routledge, 2019). She currently works in the field of the social science of finance, studying the design, implementation, and consequences of green and climate finance.

# EMPOWERING SMES FOR A NET-ZERO FUTURE: CHALLENGES, SOLUTIONS, AND THE IMPORTANCE OF COLLABORATION

Heather Buchanan, Bankers for Net Zero

*SMEs in the UK face significant challenges in sustainability reporting, including regulatory barriers and inconsistent data frameworks. To address this, B4NZ and partners recommend developing standard reporting frameworks and automated tools like Project Perseus to streamline data collection and improve access to green investment. Collaborative efforts among government, corporations, and financial institutions are essential to support SMEs in achieving net-zero goals.*

## The Current Situation for SME Sustainability Reporting

With over 5.5 million small and medium-sized enterprises (SMEs) in the United Kingdom, constituting more than 99 percent of private sector businesses, SMEs are at the heart of the UK economy. Mobilising SMEs for climate action is crucial to ensuring a fair and robust transition to net zero. However, SMEs still face considerable challenges in implementing net-zero initiatives within their organisations. These hurdles include regulatory barriers and a lack of information and awareness regarding available opportunities, coupled with restricted access to networks, knowledge, and financial resources.

The global economic transition to net-zero carbon emissions is well underway within the larger corporate sector. The financial sector committed to decarbonising their financed emissions at COP26. However, one of the biggest challenges for banks is reporting on their Scope 3 emissions, as they lack reliable and primary data from the SMEs in their portfolios and supply chains. Corporates are currently using proxy data or estimations from spend-based analysis. However, this information is very top-down given that there is no standardised approach to data disclosure or assessment, particularly concerning SMEs. These issues can be solved if the right mechanisms are in place to obtain verifiable and reliable data.

As we move into an increasingly data-oriented world, it is essential to ensure that data are verifiable and reliable to mobilise green investment into net zero.

## The Importance of Reporting Scope 3 Emissions

Reporting Scope 3 emissions is essential for a comprehensive evaluation of an organisation's environmental footprint, extending beyond direct operations to encompass indirect emissions throughout the value chain. This reporting provides a holistic view of a company's impact, identifying significant contributors and enabling informed decisions on emissions

reduction strategies. It enhances transparency with stakeholders, aligns with emerging reporting standards, and supports the development of sustainable and resilient supply chains.

As the right structures and frameworks for SMEs continue to develop, banks and financial institutions can start consolidating and collecting data from the SMEs in their portfolios and supply chains. They can also leverage their relationships with their SMEs. This support should encompass both gradual and transformative solutions to reduce emissions. Banks that engage with the sustainability performance of their SME clients not only fulfil regulatory requirements; they also position themselves competitively in a market where consumers and investors increasingly prioritise sustainable practices. Failing to do so will result in these entities falling short of their own commitments, leading to potential reputational risks as well as exposing themselves to transition and physical risks.

## UK current Sustainability Reporting Regulatory Requirements

As part of legislation introduced in 2018, the UK government established the Streamlined Energy and Carbon Reporting (SECR) policy,[1] which requires an estimated 11,900 companies in the UK to disclose their energy and carbon emissions. SECR builds on, without replacing, existing requirements that companies may face, such as mandatory GHG reporting for quoted companies, the Energy Saving Opportunity Scheme (ESOS), the Climate Change Agreements (CCA) scheme, and the EU Emissions Trading Scheme (ETS). The legislation affects large unquoted companies and large limited liability partnerships with over 250 employees, thus effectively excluding UK SMEs.

In the 2023 Green Finance Strategy,[2] the government set out its plan to introduce streamlined 'Sustainability Disclosure Requirements' (SDR), building on global best practices and leading standards. Core to this is the process to assess and endorse the global corporate reporting baseline of the International Sustainability Standards Board (ISSB): the IFRS S1 and S2 Standards. The aim is for the information companies disclose under the UK-endorsed standards to be globally comparable and decision-useful for investors. Therefore, these policy frameworks are targeted at large rather than small companies. This will eventually lead to SMEs being left behind in the transition.

## Lack of Standardised Data Worsens the Problem

The number of carbon accounting solutions and other technologies that gather data from SMEs and provide estimates of GHG emission impacts has exploded over recent years. In 2024, a study from Icebreaker One, commissioned by the British Business Bank, revealed over 270 carbon reporting tools specifically aimed at SMEs operating in the United Kingdom.[3] However, without common frameworks for SME sustainability reporting, there is no consistent approach to collecting, measuring, and storing data. Nor does a common process exist for SMEs to report sustainability impacts to larger customers that require such information nor to stakeholders such as financial institutions.

On top of this, SMEs are navigating a wide range of inconsistent and technically challenging data requests from large corporate customers and finance providers (who are

[1] UK Government. "Environmental Reporting Guidelines: Including streamlined energy and carbon reporting guidance." UK.
[2] UK Government. "Green finance strategy 2023 update."
[3] British Business Bank and Icebreaker One. "Carbon reporting solutions for UK SMEs (2024)."

mandated to report). In addition, many struggle to determine what topics are relevant and applicable to their business. For banks and buyers of SME services (e.g. large corporations), the data received are not comparable or verifiable within their Scope 3 disclosure frameworks. Larger corporations and financial services providers (who are obligated to measure and report their Scope 3 emissions) emphasise how irregular data collection methods mean they cannot effectively report on sustainability performance nor ensure the credibility and reliability of their climate risk management practices.

## Working Collaboratively to Simplify Reporting Requirements for SMEs

Given the scale of the issue, B4NZ has been working with our member banks and corporations as well as the wider ecosystem to find a solution for SMEs. B4NZ has chaired the SME Advisory Group for the Transition Plan Taskforce (TPT), which was set up in July 2023 to consider proportionate sustainability reporting and transition planning activities for SMEs. The working group brought together over 85 leaders across finance, industry, UK government, regulators, trade associations, and SMEs for a series of working sessions and interviews over Autumn 2023. In April 2024, the TPT launched a paper[4] authored by B4NZ with policy recommendations to the government as part of our SME Advisory Group to the TPT. The main recommendation was to develop a **standard framework for reporting GHG emissions for SMEs**. The establishment of these standards should prioritise proportionality, ensuring that requests are manageable for businesses with limited resources to fulfil; consistency, achieved by clearly defining and simplifying key terms, topics, and metrics across the reporting framework; and materiality, by offering clear guidelines to identify significant topics and metrics for SME reporting.

## Project Perseus

Additionally, B4NZ Project Perseus,[5] along with Icebreaker One, has emerged as the critical infrastructure that allows the automation of greenhouse gas emissions reporting for SMEs. Project Perseus will create rapidly scalable, low-effort, low-friction sustainability reporting and unlock access to capital by automating emissions reporting for SMEs. Perseus has been championed by the UK government and included in the Green Finance Strategy[6] to ensure the United Kingdom reaches its emissions reduction targets. The initiative aims to unlock access to capital by automating GHG reporting for every SME in the United Kingdom. Building on the principles of Open Banking, Perseus creates the rules and processes that make automated reporting possible, making it easier to implement reporting standards. In turn, these rules will enable a host of other products and services, such as emissions calculators, databases, and reporting software. It will improve the quality and durability of the data they need and use. This means that financial institutions and corporations can access reliable and standardised energy data from the SMEs in their supply chains or portfolios. Critically, Perseus focuses on automating access to verifiable energy data to support the reporting of GHG Scope 3 Category 15 emissions.

## The Power of Collaboration to advance our net-zero goals

Collaboration is pivotal to overcoming the barriers that SMEs face in their transition to net zero. The complexity and scale of the challenges necessitate a concerted effort from all

[4] Bankers for Net Zero. "Considerations on SMEs and transition plans report (2024)."
[5] Icebreaker One. "Project Perseus."
[6] UK Government. "Green Finance Strategy 2023 (Box 8 – page 45)."

stakeholders, including government bodies, large corporations, financial institutions, and SMEs themselves.

Government agencies must continue to work with industry leaders and coalitions like B4NZ to develop proportionate and practical reporting standards tailored to the needs and capacities of SMEs. These standards should be flexible enough to accommodate the diverse nature of SMEs while ensuring consistency and comparability of the data collected.

Large corporations and financial institutions have a critical role to play by providing the necessary resources, expertise, and incentives to support SMEs in their sustainability efforts. If larger companies foster transparent and supportive relationships, they can help SMEs understand the importance of accurate emissions reporting and can guide them in integrating sustainable practices into their operations.

Innovative projects such as Perseus are essential in developing and deploying tools that simplify the reporting process. This automated solution can reduce the burden on SMEs and enable them to participate fully in the green economy.

In conclusion, the transition to net zero for SMEs is a multifaceted challenge that can only be met through collaborative efforts. The collective action of all stakeholders will be instrumental in driving the systemic changes needed to achieve our climate goals and build a resilient, low-carbon economy.

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## ABOUT THE AUTHOR

As the CEO and Co-founder of Bankers for NetZero, Heather leads a coalition of banks, businesses, and policymakers that aims to align the UK banking sector with the net-zero emissions target by 2050. She also serves as an Advisory Board Member at Rewired Earth, a nonprofit organisation that leverages technology and innovation to accelerate the transition to a sustainable and circular economy. With over ten years of experience in leading and advising organisations that drive positive social and environmental impact, she has strong skills in policy development, stakeholder engagement, and strategic partnerships. Heather is passionate about creating solutions that address the most pressing challenges of our time, such as climate change, inequality, and biodiversity loss. Her goal is to inspire and empower others to join her in building a more resilient and inclusive future for all.

# CONTAMINATED DATA?

Marc Lepere, King's Business School

*The widespread use of estimates in GHG emissions reporting contributes to scientific uncertainty and undermines the accuracy needed to price both physical and transition risks. Three key recommendations to enhance GHG emissions reporting in the UK are proposed: first, regulate and mandate audit of GHG calculations and reporting; second, broaden reporting requirements to encompass all companies with five or more employees and/or revenue exceeding £500,000; and third, adopt the new IFRS sustainability standards while rejecting the concept of proportionality to ensure 96% coverage of UK business emissions. These measures aim to eliminate low-quality estimates, improve the pricing of risk in investment appraisal, and accelerate the transition to a net-zero economy, thereby positioning the UK as a leader in sustainable finance and green technologies.*

The widespread use of low-quality estimates contaminates GHG emissions data and is unlikely to produce accurate pricing of risk in a durable way

The ubiquitous use of estimates in GHG emissions reporting adds to scientific and estimation uncertainty inherent in the calculation of GHG emissions (Aikman, *et al.,* 2023, p.17). Such uncertainty is likely to be compounded by the current (and planned) reporting regime which: (a) incentivises the use of low-quality estimates; (b) unintentionally contaminates GHG emissions data; (c) undermines efforts to price physical and transition risk into investment appraisal; and (d) retards the United Kingdom's capacity to meet its net-zero commitments. This note makes three recommendations to improve the quality of GHG emissions reporting.

Chris Ailman, Chief Investment Officer of Calstrs (one of the world's largest pension funds with assets of $331 billion under management), said in May 2024 that companies disclosing their GHG emissions:

*"…are using an estimate of an estimate of an estimate and publishing that. We don't think that's intellectually honest. We need better disclosure."*

According to London Stock Exchange Group, 80 percent of the FTSE All-World Index (an index of over 4,000 large and medium-sized listed companies across developed and emerging economies) do not provide data for the most material GHG emissions in their value chains (known as 'Scope 3' emissions) (Fouret, *et al.,* 2024).

In sum, as sewage contaminates blue water rendering it undrinkable, the widespread use of low-quality estimates contaminates GHG emissions data preventing the accurate pricing of physical and transition risks.

The ability to price physical and transition risks and opportunities associated with GHG emissions is critical to private sector funding of initiatives and technologies that mitigate and/or abate GHG emissions. The pricing and modelling of risk requires GHG emissions

data (or highest quality estimates possible) to be consistent and comparable at firm and sector-level throughout the economy and with financial data. Policy on climate action targets private sector funding as a critical mechanism of the transition to net zero. To be effective, it must seek to improve the quality of GHG emission reporting.

## Three recommendations to improve the quality of GHG emissions reporting

To reduce the need for estimation and to increase reporting incidence, this note recommends that UK policymakers regulate the calculating and reporting of GHG emissions and require audit with immediate effect. Reporting should be mandated for all companies operating in the United Kingdom with five or more employees[1] and/or revenue of £500,000 or more; a corporate population representing an estimated 96 percent of UK business emissions. This policy requires both the immediate adoption of new International Financial Reporting Standards (IFRS) sustainability accounting standards and the repudiation of the concept of proportionality, which the standards contain.

The aim is to produce, in short order, economy-wide financial-grade, auditable GHG emissions data that can be integrated with financial data to enable the private and public sector to rapidly and confidently price risk and opportunity into investment appraisal. The prize is a world-leading position in the pricing of risk, driving growth in the UK financial and professional services sector and investment in green technologies of the future.

***Regulate the calculation and reporting of GHG emissions and require audit***

The capacity for GHG emissions calculation and reporting is nascent. Companies are lacking the skills and capabilities, although capacity is building (IFRS, 2024). Reporting requirements place a heavy reliance on external providers. Gaps in the framework for calculating emissions (the GHG Protocol)[2] create distorted incentives for preparers. Reporting companies can shop for emissions that underestimate or overestimate their GHG inventory (similar to rating shopping). The current unregulated regime creates the conditions for emissions gaming, which is likely to grow as economic incentives associated with carbon pricing become more prevalent (Aikman et al., 2023).

Economic incentives associated with the pricing of carbon emissions will grow significantly this financial year (FY 2024). For example, the UK Supreme Court decided (20 June 2024) that authorities must consider GHG emissions when deliberating planning proposals; UK companies exporting to the European Union, or conducting business in the European Economic Area, must report GHG emissions under various EU regulation (e.g. CBAM, CSRD, SFDR) and banks must report on their financed emissions.

Pricing risk necessitates that GHG emissions become a unit of account that can be integrated with financial data. To be consistent and comparable with financial data, it is

[1] Including groups of companies irrespective of domicile. UK companies with no employees (4.1 million) and those with 1-4 employees (904,110) reflect consumer rather than organisational behaviour and are excluded.
[2] The GHG Protocol is the framework used by the Department for Energy Security and Net Zero (DESNZ) to calculate GHG emissions. The framework is complex and requires the collection of large datasets on companies' activities (e.g. energy usage, mileage, purchased goods & services) and multiple calculation methods and emission factor datasets provided by Department for Environment, Food & Rural Affairs (DEFRA), which are used to convert company activity into GHG emissions. Scientific and estimation uncertainty is inherent in the process.

imperative that the preparation of GHG emissions is regulated and requires audit. While professional accountants may need additional training, their existing skills, requirement to act in the public interest, and professional scepticism make them well-suited for GHG emissions accounting and audit.

*Broaden the reporting requirement to cover 96 percent of UK business emissions*

Currently, reporting of GHG emissions is limited to companies traded on public stock markets, banks, and insurance companies with more than 500 employees and a turnover of more than £500m. The United Kingdom cannot hope to meet its net-zero commitment if it only addresses GHG emissions from these companies.

There are 3,900 large corporations representing 0.3 percent of the total population of 1,444,985 companies with employees. Large companies are disproportionately significant to the transition to net zero, representing an estimated 36 percent employment, 45 percent of business turnover, and 59 percent of UK business GHG emissions.

The widening of the mandate to include companies with five or more employees adds 417,545 firms, responsible for an estimated 46 percent of employment, 48 percent of business turnover, and 37 percent of UK business GHG emissions (Gov.UK, 2023).

Policymakers default to the assumption that requiring small and medium sized businesses to report GHG emissions will be prohibitively costly and burdensome. This is unlikely to remain the case. Already scores of firms now offer automated and online GHG emissions calculation services to UK companies at a range of price points, including, for example, free calculators offered by high street banks. There is widespread scepticism surrounding the opacity and robustness of methodology deployed by some of these providers. The need to regulate calculating and reporting of GHG emissions is widely acknowledged as discussed above (UN, 2023).

The broader mandate to include companies with five or more employees is critical to the United Kingdom's transition to net zero. These companies account for an estimated 96 percent of UK business GHG emissions or about 35 percent of total UK GHG emissions.

*Adopt IFRs standards, while repudiating proportionality*

The IFRS standards on GHG emissions reporting contain the concept of proportionality, which allows reporting organisations to estimate such emissions "...without undue cost or effort".[3]

Current evidence suggests that corporate behaviour, like water, finds the lowest level. The economic incentive to avoid "undue cost" acts like gravity; most likely, it will continue to drive significant use of low-quality estimates in GHG emissions reporting rather than robust data that attempt to reflect organisations' activities or, at least, high-quality estimates that are internally consistent (both of which are assumed to be more 'costly' to collect).

[3] IFRS S1.37 (a); S2.18 (a); "...use all reasonable and supportable information available at the reporting date without undue cost or effort".

The IFRS has yet to announce whether the mechanism of proportionality is a temporary or permanent feature. Adopting the IFRS new sustainability standards without delay is a critical step in the United Kingdom's ability to drive transition. Yet, the concept of proportionality undermines this from within and needs to be repudiated on adoption.

### Reducing low-quality estimation accelerates transition

The widespread use of estimates adds further and unnecessary complexity to the pricing of risk associated with GHG emissions. Every year the current regime of estimation is allowed to thrive, the United Kingdom's ability to price risk adequately reduces, thus curtailing the funding of alternative energy and green technologies and delaying the transition to net zero.

In contrast, adopting IFRS sustainability accounting standards minus the concept of proportionality, requiring audit, and broadening the reporting requirement reduces the need for estimates accelerating the country's transition to net zero – at no cost to the UK Treasury.

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## ABOUT THE AUTHOR


Marc Lepere leads Executive Education on ESG & Sustainability at King's Business School, King's College, London. He holds a PhD and a MSc from King's College, London, and is an Economics graduate of Trinity College, Dublin. He is a Fellow of the Higher Education Academy. Marc has published in leading journals including Stanford Social Innovation Review, the Financial Times, and Discovering Truth (series 1), which was nominated for a Pulitzer Prize.

Professionally, Marc has served as Chief Marketing Officer for Havas Worldwide, Executive Vice President for McCann Erickson WorldGroup, and Deputy Chairman of Dentsu in Europe, Middle East, and Africa. In 2021, Marc's academic research and experience as an entrepreneur and senior board member inspired him to found Omnevue. Omnevue is a new online platform that makes it easy and affordable for SMEs to get ESG data and reports assured by certified public accountants, just like financials.

# GOVERNMENT CLIMATE LEADERSHIP: A WHOLE-OF-SYSTEM RESPONSE

Mark Manning, London School of Economics and Political Science

*We are currently on a trajectory towards 3°C warming, far from the goals of the Paris Agreement, with devastating potential consequences. Urgent action is needed as the current market norms and coordination issues hinder the necessary investments for the transition. This article outlines six policy recommendations for the new UK government to create conditions for sustainable change via transition plans at national and company level.*

We are well off-track in achieving the goals of the Paris Agreement. In fact, on current policies, we are heading for a 3˚C warming scenario (IPCC, 2023). Make no mistake: that would be devastating. Much of the world would be uninhabitable; and even more of it, uninsurable. The human cost would be catastrophic – with loss of life, mass migration, geopolitical tension, and food insecurity – and the economic and financial system could not function as it does today.

Thanks to excellent work by researchers at the University of Exeter and the Institute and Faculty of Actuaries, market participants are waking up to the implications of these 'real-world' scenarios (e.g., Trust et al., 2023; Trust et al., 2024). And with warming records tumbling almost daily, there is a growing recognition that these are not distant 'future risks'. These risks are already starting to crystallise today.

But we are not yet seeing the urgent action that we need. Real-world scenarios are not yet priced into markets. Coordination problems, information frictions, and other market failures, are holding back progress. And current capital market norms (e.g. investment horizons, valuation methodologies, and reward structures) remain barriers to the scaling of investment in the transition.

Since we are dealing with systemic risks, we need a whole-of-system response – with government at the centre. Post-election, the United Kingdom has a tremendous opportunity, both to advance climate action domestically and to use its influence and voice to drive progress internationally. Building on work with several collaborators from across the system (Manning et al., 2024 (forthcoming); Manning et al., 2024), this article sets out six recommendations for the new UK government to create the conditions for positive sustainable change.

## Embed transition planning across the economy

The transition to a just, low-emissions, climate-resilient and nature-positive economy will require a fundamental rewiring of the economy. As Stern, 2022, observed: "The necessary transformation of the economy relies critically on changing key systems: energy, cities, transport, land use. These large and complex systems cannot be changed by fiddling with just one parameter, a whole set of policies will be required to foster change."

Every actor will need to consider how to respond and contribute. Strategic transition planning at national level and across the economy – operating together in an integrated transition planning ecosystem (Tayler et al., 2023) – can help steer the transformation. Guided by the government's plan, private sector actors will have the confidence and incentive to invest in the transition. Equally, informed by private sector plans, the UK government will be able to target its own interventions – and public funding – more effectively, crowding in private finance.

***Recommendation 1: Develop a strategic national transition plan***

Private sector actors often cite the absence of a clear, stable, coherent, and supportive policy environment as a barrier to investing for the transition. The government can address this with strategic national transition planning: setting direction, and providing incentives, finance and support for actors across the economy. Building from existing policies and obligations, an effective national transition plan would:

- set a clear national strategic ambition and embed this in a coherent whole-of-government strategy;
- translate the strategic ambition into a costed action and investment plan, with targeted allocation of public money to crowd-in private capital at scale;
- act as a vehicle for communication and coordination with private actors (see also below), with accountability to citizens and other stakeholders.

***Recommendation 2: Move swiftly to mandate transition plans across the economy, using the Transition Plan Taskforce (TPT) Disclosure Framework***

A company's response and contribution to the climate transition will increasingly drive its future value. So, strategic transition planning and disclosure will be essential. A growing number of companies are already starting to do this. The TPT and Glasgow Financial Alliance for Net Zero (GFANZ) have developed frameworks and guidance for credible transition planning and disclosure (TPT, 2023; GFANZ, 2022). The IFRS Foundation has assumed responsibility for the TPT's disclosure-specific materials (IFRS Foundation, 2024) and will use these to develop educational materials to support disclosures against the transition plan related provisions in the International Sustainability Standards Board (ISSB) climate-related disclosure standard (IFRS S2). This can help to embed transition plan disclosure internationally. Yet, there are limits to how far disclosure regulation alone can accelerate climate action (Eccles, et al., 2024). So, consistent with its election manifesto commitments (Labour Party, 2024, p57), the current government could move swiftly to require listed companies, large UK-registered companies, and regulated financial services firms to develop, not just disclose, comprehensive transition plans. These should be aligned with the TPT framework, and should respond and contribute to a just, low-emissions, climate-resilient and nature-positive economy. The European Union has already taken steps in this direction (Corporate Sustainability Due Diligence Directive, 2024).

## Coordinate, collaborate, co-create, and communicate with actors across the economy

"*Truly systemic change hinges not only on changes to the 'rules of the game' and other structural elements, but also changes to relational elements (such as mechanisms to connect, collaborate and co-create solutions) and cultural elements (including the mental models that underpin individual, corporate, and political decisions and actions)*" (Manning et al., 2024). So, as part

of its national transition plan, it will be critical that the government provides for close engagement and collaboration with actors across the economy:

***Recommendation 3: Establish dedicated mechanisms for government to work in partnership with companies and financial services firms***

The government can accelerate progress towards climate goals through close collaboration with companies and financial services firms, leveraging private actors' experience, expertise and creativity. Public-private engagement could, for instance, entail: sourcing private sector input to policy development; identifying and addressing policy-related, informational, technological, or financial barriers to effective climate action; or partnering to scale climate solutions. There are examples of effective partnership in each of these areas. For instance, the Danish government's Climate Partnerships are a promising and replicable approach. Established following the passage of the Danish Climate Act in 2020, the 14 sector-specific partnerships developed more than 400 recommendations for government. The vast majority of these (more than 80 per cent) have since been taken forward (State of Green, 2023).

***Recommendation 4: Reconnect government and society to build trust, support and collective responsibility for climate action***

Government climate action should also be informed by a clear understanding of citizens' preferences, and underpinned by efforts to build trust and support for the behavioural change that will inevitably be required across society – e.g. changes in how people heat their homes, how they travel, the jobs they do, and the goods they buy. The UK government has a responsibility to design policy in a way that delivers a just transition, as well as to educate citizens and deliver a compelling narrative for change.

## Create the conditions for a scaling of sustainable finance

Finally, the government has an opportunity to rebuild momentum towards an effective market for sustainable finance, responding quickly to the recommendations of the Transition Finance Market Review (UK Government, 2023), once complete, and taking steps to address other remaining barriers – e.g. informational barriers, uncertainties around fiduciary duties, and deeply entrenched norms in areas such as investment horizons and valuation methodologies. In the near term, two measures could be particularly impactful:

***Recommendation 5: Move decisively to mandate corporate reporting on sustainability-related risks and opportunities, in line with the ISSB Standards***

Disclosure is a critical foundation. We have seen good progress in recent years, most notably with the delivery of the ISSB's global baseline sustainability reporting standard – a common language for companies to tell their sustainability stories. Once embedded across the economy, this information will inform capital allocation and value chain decisions, as well as the design of financial products and instruments. The UK government has been an advocate for the ISSB since it was first conceived at COP26, and a process is now underway towards endorsing the standards for use in the United Kingdom. With the commencement of this process having been delayed, it is recommended that the current government now accelerate the endorsement and implementation of the ISSB standards, bringing forward the benefits for UK markets and enhancing UK leadership internationally.

***Recommendation 6: Set a clear expectation that asset owners should consider systemic risks in their capital allocation decisions***

This article has emphasised that climate action must be a collective, whole-of-system endeavour. Asset owners can play a decisive role. With long horizons and undiversifiable risks, universal asset owners especially are highly exposed to severe warming scenarios. Recognising this, Financial Markets Law Committee (FMLC), 2024, steers pension scheme trustees firmly towards taking systemic risk into consideration in their capital allocation decisions. The FMLC observes that "... whereas some wider economic or systemic climate change-related issues may have been characterised as 'too remote and insubstantial' in the past...physical, transition and litigation risks are now apparent and material." If the government and regulators were to endorse this interpretation, removing any remaining doubt, asset owners could become an important catalyst for accelerated climate action. Pension scheme trustees could manage their exposure to future systemic risks by setting clear expectations that their asset managers allocate capital in a way that 'rewards' investee companies with credible transition plans, thereby collectively incentivising and accelerating climate action.

Taking these steps will deliver real benefits to the UK government, the private sector, and wider society. As the physical risks of a changing climate increasingly crystallise, the new government must take a decisive leap forward – or else bear the rising social and economic cost of inaction.

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# UK CLIMATE FINANCE PRIORITIES FOR A NEW GOVERNMENT

Amy Owens and Richard Folland, Carbon Tracker

*The new British Government must prioritise climate finance, driven by the upcoming COP29 and the need for economic growth through a low-carbon economy. A whole-of-government approach and a revised vision for financial regulators, including a new climate mandate for the Bank of England, are essential. Additionally, innovative ideas like unlocking pension fund capital and modernising IPO regulations to account for carbon budgets are crucial for supporting the transition to green technologies and aligning financial flows with climate goals.*

The new British Government taking office on 5 July will have several immediate domestic and international priorities – ranging from cutting NHS waiting lists to providing continued support to Ukraine. While climate finance will not feature as a first-order issue for the new government, polling consistently indicates that action on climate change matters to a significant portion of the public. The government should therefore respond to this by setting out its climate strategy without lengthy delays.

Specifically, there are two drivers for prioritising climate finance:

- The COP29 convening in November 2024 (in Baku, Azerbaijan) is being increasingly talked up as the "climate finance COP"; hence, the UK – now departed from the European Union offer post-Brexit – will need to show its hand on this agenda;
- More importantly, given the sluggish performance of the UK economy, the new administration will want to focus on areas that promise economic growth. Moving to a low-carbon economy and enabling the UK's financial services sector to become a hub for green and transition finance would provide clear opportunities to support this growth; this would need to be underpinned by an industrial strategy and investment plan supporting investment in these areas.

This article outlines two innovative ideas for accelerating low-carbon investment. First, we set out the overarching policy approach that will be necessary to underpin the step-change.

## A Whole-of-Government Approach

Over recent years, the consensus has been that climate finance has become "mainstream". The reality is that this remains a work in progress, certainly in the UK. The lead climate department, Energy Security and Net Zero (DESNZ), has not carried sufficient political weight for a long time, and has suffered from a turnover of ministers who have sometimes been more preoccupied with short-term hobbyhorses than a longer-term strategy - to the detriment of the climate agenda.

By contrast, the government department with the most muscle and focus on economic growth – HM Treasury – has tended to treat climate finance as a marginal issue. This needs

to change. Ultimately, the lead must come from the top (i.e. the Prime Minister's team supported by the Cabinet Office) for the mainstreaming of climate finance to translate into genuine economic growth.

## A Real Economy Philosophy

Mention of the real economy is a reminder that the new government should be thinking about more than Whitehall restructuring; a whole-of-government approach should also be coupled with a fresh philosophy on climate finance.

Greenwashing is regularly levelled at energy companies and financial institutions. Carbon Tracker has substantial evidence of pension funds and asset managers enthusiastically promoting their net-zero targets. Unfortunately, financial institutions are simultaneously reluctant to acknowledge that reaching those targets will demand policies utilising both arms of the scissors - namely, (i) a proactive and open approach towards the opportunities that the low-cost renewables and clean energy technologies can unlock; and (ii) an unambiguous acceptance that keeping 1.5C warming within reach means that the phase-out of oil, gas and coal as energy sources is inescapable, and that this phase-out must be accelerated.

The new government can take the lead here, building upon the Green Finance Strategy's support for 'green' activities to tackle 'brown' activities more comprehensively. A real economy policy towards climate finance will require a forensic, sector-based approach that recognises the support and care required by hard-to-decarbonise, high-carbon sectors as they transition the coming industrial revolution. This should not overlook the opportunities of a new economy based on high-quality skills and innovative technologies that low-carbon sectors can seize.

## Innovate to Deliver

The transition will require a systems transformation (alongside the revolution of AI) to deliver a new industrial economy for the UK that will enable it to compete against the big industrial blocs of the United States, China and the European Union. We have two proposals that can make a difference. Both of these complement Carbon Tracker's mission to mobilise capital markets to accelerate the transition and reach our goal of a globally decarbonised economy.

***Unlocking the capital in pension funds***

According to the Office of National Statistics, the value of private sector pension funds is nearly £2 trillion. Imagine the power of these capital funds tilting powerfully in the direction of the low-carbon economy. Equally, imagine the further domestic and overseas investment that this capital could unlock. To do this, however, financial policymakers and regulators must be prepared to discard a business-as-usual approach and deploy their powers to drive systems change.

The new approach must start from the top. UK Treasury needs a revised vision for its regulators. The Bank of England at present does not have climate change and sustainability embedded in its core mandate. Likewise, the Financial Conduct Authority (FCA) – while steadily updating its rules to improve its climate-related financial decision-making – still fails to prioritise climate as it should.

We therefore recommend early action by the Treasury to reset the Bank's mandate on climate and sustainability. This would send a shock wave through the financial ecosystem, asserting the urgent need to prioritise and respond to climate risk. It could also transform the Bank's approach to climate scenario modelling. As Carbon Tracker's *Loading the DICE against Pensions* and other reports have demonstrated, this currently undervalues the physical impacts of climate change. This is significant as its modelling provides the basis of investment consultants' advice to pension funds, which, in turn, frames the cautious approach that their Trustees adopt on the transition.

A fresh Bank mandate on climate therefore has the potential to change the game for pension funds, by increasing the cost of doing nothing and decreasing the cost of doing something. In this way, pension funds can be in the vanguard of making Article 2.1.c of the Paris Climate Agreement into a reality, moving capital away from risk into areas of opportunity; in the Article's words: "*making financial flows consistent with a pathway towards low greenhouse gas emissions…*".

***Making IPOs fit for the modern age***

Our second proposal on financial regulation could support the transition away from fossil fuels and usher in a new era of low-carbon investment. At present, there is a major loophole in the regulatory framework that oversees the fossil fuel sector. We therefore suggest the consideration of new regulation on reserves reporting in order to embed a requirement for companies wishing to develop new coal, oil and gas reserves to disclose how these reserves are viable within the constraints of the carbon budget.

We have a ready-made set of ideas to form the basis of this new regulation. It would involve the establishment of petroleum engineers and geologists in the formal IPO prospectus process in the UK (we note this approach could also apply in other jurisdictions). This revamped process could explore whether climate constraints and the "carbon budget" as a ceiling to future production could be factored into new disclosure requirements, in the form of an "atmospheric viability" test on company reserves. This would be a significant step forward for the joined-up policy approach that we recommended earlier.

## Conclusion

We acknowledge this agenda represents a vaulting and complex challenge. But we cannot ignore the fact that existing financial regulation fails to recognise any ceiling on what fossil fuels can be produced. This approach cannot be right as it is at odds with the goals of the Paris Agreement. Nor can it be right that overall financial policy and regulation are not set up for the new economy and for the industries that will be critical to powering this economy. We hope the new government can see this and grasp the opportunity.

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## ABOUT THE AUTHOR

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# REGULATORY FRAMEWORKS AND POLICY INNOVATION

Paul Pritchard, UK Sustainable Finance Standards Committee

*Fundamental changes in policy approach are required for the finance sector to deliver the quantity of finance required to deliver the transition to sustainability. Firstly, that regulation should aim to translate sustainability objectives into financial implications so that they can feed into core finance processes like underwriting, asset allocation and lending – essentially, moving finance from a niche to a core process. Secondly, that the systemic nature of forward-looking sustainability impacts mean that regulators should aim to recognise and manage uncertainty rather than risk, for example doing rapid test and learn experiments to identify (potentially unanticipated) real economy impacts.*

It's likely most people involved with sustainable finance felt a sense of relief on Thursday 5th July. Hopefully no more ill-informed policy changes smacking of desperation, maybe even a sensible engagement with the finance sector and its regulators to inform a public-private strategy that can deliver environmental benefit aligning with the new chancellor's focus on growth. Having said that, climate or sustainability didn't feature as a headline concern in the election campaign. There is a huge in tray of problems facing the new Government and, for sure, an associated long list of (highly deserving) requests for public funding as a priority. There will also be a noisy group, unhindered by any need to be informed by expert economic or scientific insight, that will surely also continue with their anti-net-zero agenda.

Nevertheless it wasn't delaying the switch to electric cars or other such recent policy pushbacks that is the focus here, rather it was the letter sent by the (then) Chancellor to the Governor of the Bank of England in November 2023, essentially downgrading the priority (compared to previous years) assigned to climate change for the Bank (it did get a brief statement that climate change and net zero could still be regarded as a risk relevant to its primary objective). Accordingly, the clarification from the (then) shadow chancellor in a March Mais lecture was most welcome indicating that 'at the first opportunity' a Labour Government will reverse the earlier decision 'Because there can be no durable plan for economic stability and no sustainable plan for economic growth, that is not also a serious plan for net zero'.

Nonetheless the obvious starting point for an indication of future Government priorities for sustainable finance is the January 2024 publication 'Financing Growth. Labour's Plan for Financial Services'. A senior group of finance professionals clearly had real influence on a document that highlighted challenges faced by the finance sector and also the genuine opportunity for economic and environmental benefit when politicians, regulators and the

private sector work together. The actions highlighted were most welcome, particularly on public/private collaboration to green the housing stock (for reasons to be considered later).

Other actions in the report also link strongly to the sorts of concerns/priorities heard routinely from sustainable finance professionals - a focus on disclosure challenges (transition plans, ISSB and the UK green taxonomy) and associated data problems. No-one would dispute the benefits of transparency and good quality data – the ISSB developments, for example, are hugely significant in a global context –it's rather that there isn't enough attention/effort/action on what is surely at the of core of sustainable finance, indeed any finance activity – the nature of financial risk.

Referring back to the earlier comment on the remit of the Bank of England and considering the need to 'mainstream' finance to deliver the changes we need to achieve a just and orderly net-zero transition. This can't be a niche activity – it just won't deliver the scale of financing required. There have been recent welcome developments in linking sustainability (primarily climate) impacts to financial risk including ISSB and TPT but the experience to date has not been as positive as it might have been. TCFD was a ground-breaking measure when it appeared and has seen global uptake, but the weakest elements after several years of reporting remain the central aims of identifying financial risk and future organisation resilience.

Identifying forward looking financial climate (and wider sustainability) risk facilitates its routine treatment in core finance processes -asset allocation, credit rating and underwriting decision making – essentially getting climate and nature integrated across the board. Of course, identifying financial risk also allows identification of situations where there isn't sufficient incentive to provide finance. - a mismatch between environmental impact and financial risk (the double materiality question). This is where public support (e.g. through blended finance) comes in and hence the enthusiasm sown earlier for the public/private partnership plan for greening housing.

The Bank of England can (and should) be central to this, not only in its research and capacity building roles but also considering how their regulatory approach might drive behaviour. For example, organisations with an effective net-zero planning system (for example through consistency with TPT recommendations) surely represent a better proposition with regard to maintaining overall finance system stability than a bank/insurer/investor with an uncertain risk profile? Might this not be reflected in powerful market signals like regulatory capital requirements or in their inspection regime? Regulators are rightly wary of unintended consequences linked to regulatory innovation, uncertainty being an intrinsic attribute of the complex systems they need to influence. To this end the Regulatory Innovation Office proposed in Financing Growth could play a key role. There is obvious uncertainty linked to climate change – uncertainty over timing and impact – but with increasing likelihood that we are pushing the system hard in the wrong direction, and it may flip quickly to an undesirable and essentially irreversible bad place. This presents challenges for traditional risk management and could prompt a change in approach for Government and regulators starting to think about uncertainty rather than risk management. Managing uncertainty would suggest, for example a move towards transition planning rather than the existence of plans. This has been long known in military circles– as exemplified by the quote attributed to President Eisenhower 'Plans are worthless, but planning is everything'. Of course, in the context of net-zero transition planning they are

most certainly not useless, serving the needs of transparency. The President was highlighting that plans themselves are often incorrect but a planning process that involves exploration of options and contingencies is crucial to guide action as unanticipated and uncertain futures unfold. This is surely what is being sought from both individual financial institutions and overall system stability.

Coming back to that bulging in tray for our new Government. There are going to be lots of deserving requests for funding, but this one is rather different (and they have already indicated it aligns with their own thinking). The first challenges for the new Regulatory Innovation Office could feature an overall objective and related specific target as follows. Firstly, consider how regulation might consider management of uncertainty rather than risk with sustainability as the starting point. On a more specific applied instance, do rapid test and learn exercises across a suite of regulatory improvements that support integration of financial risk into core business operations around net-zero transition planning. This would be building on the excellent foundations provided by TPT and the background of ISSB implementation. These small-scale experiments don't need to be perfect or wait for better information but rather aim to move things in the right direction, recognising the uncertain outcomes of interventions in complex systems. Indeed, many will likely fail. It's unlikely that anyone will receive much immediate credit for this, but the potential for future scaling of beneficial climate and economic impact could be huge. Maybe the lessons from sustainability could even inform better decision making across a broad range of issues for Government and regulators?

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## ABOUT THE AUTHOR

Dr Paul Pritchard has wide experience in corporate sustainability with a focus on financial services. Originally an environmental chemist he worked in oil and gas before joining RSA Insurance Group where he initially supported investment activities and capital management, later becoming Group Environmental Adviser. He now works as an independent providing climate related services for a range of finance and other organisations, focusing on climate-related risk, scenario analysis and TCFD. He has served as Vice Chairman of IEMA and as a Fellow at the University of Cambridge Institute for Sustainability Leadership (CISL) where he focused on the integration of sustainability into financial services and is currently chair of the UK sustainable finance standards committee (BSI).

# GREEN INTELLIGENCE: ALIGNING UK AI STRATEGY, CLIMATE TRANSITION, AND NATURE GOALS

Nataliya Tkachenko, University of Cambridge

*The UK urgently needs policy alignment between its AI strategy and climate and nature goals to ensure the environmental sustainability of AI technologies and prevent their misuse in spreading misinformation. AI can significantly impact energy consumption and carbon emissions, thus requiring regulations that promote energy-efficient practices. Moreover, AI must be governed to avoid its exploitation in misleading disclosures and transition plans related to climate action, ensuring transparency and accountability in environmental initiatives. Aligning these policies is essential for fostering a sustainable future where technological advancements support, rather than hinder, climate and nature objectives.*

As the environmental crisis escalates, the imperative for robust green finance mechanisms has never been more urgent. Hence, within the next six months, the UK government must prioritise aligning its artificial intelligence (AI) strategy with sustainability targets to begin addressing environmental impacts. By leveraging AI in the transition, the UK can not only enhance its sustainable finance strategies but also set a global precedent for a fully responsible technological advancement in the sphere of AI.

Artificial intelligence (AI), with its capacity for processing vast datasets and generating predictive insights, holds significant promise in addressing climate- and nature-related challenges. Advanced AI (such as generative, agentic and fully autonomous systems) can optimise energy use, reduce waste, enhance carbon capture technologies, and improve climate and ecosystem modelling and reporting analytics. However, given the known and emerging deployment risks, such as a rapidly growing appetite for energy and lack of credibility, AI use must be effectively managed to ensure it does not inadvertently exacerbate the very environmental problems it is trying to solve - or scale up 'green' misinformation to unprecedented levels.

Current environmental AI applications can be broadly categorised into three main areas: monitoring/prediction, optimisation and innovation. AI algorithms have an impressive capacity for environmental data analysis, from monitoring weather to projecting climate trends. DeepMind's GraphCast model[1], for example, can forecast weather patterns and extreme events, aiding in disaster preparedness and resource allocation. Neural simulations can enhance the efficiency of systems and processes, such as energy grids[2] and transportation networks[3]; By optimising these systems, AI systems promise to reduce waste

[1] Graphcast AI Model for Faster and More Accurate Global Weather Forecasting. DeepMind.
[2] AI for Energy Grids Lab. ICAI.
[3] How Artificial Intelligence is Shaping Public Transit. Forbes.

and improve the use of renewable resources. AI-driven innovations in areas like smart agriculture[4], sustainable manufacturing[5], and carbon capture technology[6] can significantly lower greenhouse gas emissions and foster sustainable practices.

The UK has a strong appetite to position itself as a global leader in AI[7] and green transition spaces[8]. However, despite significant advancements in both areas, there are notable gaps in their alignment, which can arguably slow down the overall summative ambition of green technological growth. Specifically, three of the biggest challenges are *regulatory asynchrony, lack of cross-sectoral integration and a lack of robust regulatory backing*. The UK's approach to AI regulation is outlined in the 2023 AI Regulation White Paper[9], which promotes a principles-based, pro-innovation strategy. This framework emphasises leveraging existing regulators across different sectors, like Ofcom or the Financial Conduct Authority (FCA), to implement AI guidelines within their respective domains. The framework is designed to balance the benefits of AI innovation with safety and ethical considerations, yet it lacks specific statutory backing and comprehensive legislative measures compared to the more prescriptive approaches of the EU and the US. On the climate front, the UK has robust regulations driven by the Environment Act 2021[10] and the recently established Transition Plan Taskforce (TPT) framework[11]. These regulations aim to ensure corporate accountability in environmental impact and promote sustainability through mandatory reporting and transition plans.

Hence, it can be argued that the current AI adoption frameworks focus exclusively on operational safety without specific mandates on environmental impact or 'greenwashing'. In contrast, climate regulations emphasise sustainability and environmental accountability but do not specifically address the implications of AI technologies. Since the bulk of ongoing work leverages sector-specific regulators to enforce AI principles, there is a constant risk present due to inconsistent application of environmental considerations across different sectors using AI, as each regulator interprets guidelines within its own remit. It is worth mentioning that the AI framework in the UK remains non-statutory and heavily reliant on existing laws, while new climate regulations are backed by strong legislative measures. This disparity can lead to weaker enforcement of environmental standards in AI development and deployment, which can delay the green transition due to the growing appetite of the former for energy and primary resources[12] or its capacity to initiate systemic misinformation[13,14].

To address these gaps and harness the full potential of AI for climate and nature, the UK government should integrate sustainability targets and verification into its AI strategy. This can be achieved by effectively mobilising and integrating relevant policies, identifying

[4] The Future of Farming: AI Innovations That Are Transforming Agriculture. Forbes.
[5] How Manufacturing with AI Can Drive a Sustainable Future. World Economic Forum.
[6] 4C Open Source Outputs. University of Cambridge.
[7] AI Safety Summit. UK Government.
[8] PM Speech on Net Zero. UK Government. (20 September 2023).
[9] AI Regulation: A Pro-Innovation Approach. UK Government. (White Paper).
[10] UK Environment Act 2021. UK Legislation.
[11] Transition Plan Taskforce.
[12] AI Energy Demands: Water Impact in Internet Hyper-Consumption Era. Wired.
[13] Hey GenAI, How Do You Solve a Problem Like Greenwashing?. Banking Risk and Regulation.
[14] Keeling & Street (2024) On the attribution of confidence to large language models.

funding sources and engaging multilateral working groups comprising authoritative actors from both public and private sectors. Embedding sustainability into AI policy frameworks can ensure that all AI developments contribute to environmental goals; therefore, mandating sustainability assessments for AI projects and incentivising green AI innovations could significantly lower the barriers for holistic risk management frameworks. Secure financial support and resources for AI projects focused on climate action is crucial. The government should establish grants, tax incentives, and public-private partnerships to drive AI research and deployment in sustainability. Also, existing ethical standards and regulatory frameworks for AI should also play a part in preventing adverse environmental impacts. These regulations should be upgraded and encompass - alongside existing and well-known risks, such as data privacy, transparency and bias - the environmental footprints and benchmarking of AI systems.

The possible practical steps for the UK government can consider include:

- Developing a cohesive framework that integrates AI and climate regulations ensures that AI innovations adhere to environmental standards. This could involve amending the existing AI framework to include specific environmental impact assessments and sustainability criteria.

- Establishment of a central body to oversee the integration of AI and climate regulations, ensuring consistent application across sectors. This body could facilitate collaboration between existing regulators and provide clear guidelines on the environmental impacts of AI technologies.

- Introduction of statutory measures within the AI regulatory framework to mandate environmental considerations. This would provide a stronger legal basis for enforcing sustainability in AI developments taking place within private and public research labs.

In addressing this challenge, the UK should not build such a holistic policy package from scratch; it can draw inspiration from the numerous existing international frameworks, such as the NIST Generative AI Risk Management Framework[15], EU's Sustainable Finance Disclosure Regulation (SFDR)[16], European Green Deal[17], the Montreal Declaration for Responsible AI[18] and the UN's Sustainable Development Goals (SDGs)[19], to name a few.

The NIST framework emphasises comprehensive risk management, including environmental risks, which can be adapted to ensure AI developments in the UK are environmentally sustainable. Similarly, the SFDR's rigorous disclosure requirements can serve as a model for enhancing transparency and accountability in AI's environmental impact. The EU's comprehensive strategy includes measures to ensure AI developments contribute to climate neutrality by 2050; The deal emphasises sustainable innovation and resource efficiency, serving as a model for integrating climate goals with AI policies. The Montreal Declaration for Responsible AI advocates for responsible AI development, including considerations for environmental sustainability. It also promotes transparency,

[15] NIST.AI.600-1.GenAI-Profile.ipd. National Institute of Standards and Technology.
[16] Sustainability-Related Disclosure in the Financial Services Sector. European Commission.
[17] European Green Deal. European Commission.
[18] Montreal Declaration for a Responsible AI.
[19] Sustainable Development Goals. United Nations.

accountability, and the ethical use of AI in addressing global challenges. And finally, the SDGs provide a global blueprint for sustainability, including targets for climate action (Goal 13), alignment of which with existing AI initiatives could ensure a comprehensive and well-rounded approach to sustainable transition with green AI.

While the UK has robust individual frameworks for AI and climate regulation, a fully integrated approach is still needed. By aligning these regulatory areas, the UK can ensure that AI innovations contribute positively to environmental sustainability and set a global example for responsible technology development. Implementing a unified framework, enhancing legislative backing, and drawing on international best practices will be crucial steps in achieving this alignment.

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## ABOUT THE AUTHOR

Dr Nataliya Tkachenko is an environmental computer scientist, specialising in multimodal AI ethics for climate and nature analytics. Nataliya completed her BSc in Agricultural Genetics at Kyiv National University (2007), followed by MSc in Earth Observation from AgroParisTech (2009), PhD in NLP from the University of Warwick (2015-2018), and postdoctoral research in sustainable finance at the University of Oxford (2019-2023). She is currently leading generative AI assurance programme at the Chief Data & AI Office at the Lloyds Banking Group, as well as researching AI-driven financial fraud and 'greenwashing' at the Judge Business School. In her free time, she is building UK-wide public-private collaborations to ensure that emerging AI applications are deployed ethically and responsibly.

# MARKET INCENTIVES

# GO BOLD OR GO BUST: THE CASE FOR A UK NET-ZERO INVESTMENT PLAN

Heather McKay, E3G

*Britain faces a critical decision: embrace green growth or risk economic stagnation. The economic case for green growth is clear – but capturing this opportunity requires urgent mobilisation of the finance needed to get us back on track for net zero, a goal hampered by the lack of a comprehensive plan. To lead globally, a new Labour Government must first lead at home to unlock green finance for growth. The Chancellor has the opportunity to set out a ground-breaking approach by announcing a UK Net-Zero Investment Plan - unlocking significant private sector investment and restoring market confidence in the UK's trajectory.*

With a new Prime Minister installed in Number 10, Britain faces a big choice: go bold or go bust. The new Government is inheriting an economy creaking at its seams – with sluggish growth, declining public and private sector investment and the lingering scars of the pandemic and energy-price crisis still hitting pay packets across the country. Growth is understandably the priority for our new Chancellor – the first woman to hold this post in 800 years. However, this historic appointment comes with historically challenging circumstances. Kickstarting growth will require ambition from the offset.

In recent years, the UK economy has stagnated. GDP is just 1.7% above pre-pandemic levels (compared to 3.4% in the EU and 8.7% in the US),[1] and UK productivity is now lower than in France, Germany and the US, primarily due to a lack of investment in capital and skills.[2] Public sector investment has never exceeded the G7 average, and UK private sector investment is the lowest of all G7 nations.[3] Britain has also experienced the steepest decline of its industrial base across the G7. Casualties include industries like offshore wind manufacturing, where despite the UK having the highest level of offshore capacity per capita, which is relocating to countries with more supportive policy and investment environments. Years of policy chop-and-change and numerous attempts by the previous government to inflate the green political football have undermined market confidence and reduced investor appetite in the UK's transition.

In contrast, the US, with the Inflation Reduction Act (IRA), the EU, with the Green Deal Industrial Plan (GDIP), and China, with the Made in China 2025 plan (MIC2025), have all established comprehensive strategies to secure the industries of tomorrow. These plans promise domestic dividends in job creation and energy security and enhanced competitiveness in the fast-growing global market for sustainable products and services. The UK cannot afford to be left behind.

[1] OECD (2024) Quarterly National Accounts: G7 GDP.
[2] LSE, UKRI (2023) Cracking the Productivity Code: An international comparison of UK productivity.
[3] IPPR (2023) Now is the Time to Confront the UK's Investment Phobia.

Thankfully, the new Government has an opportunity to right this wrong. To lead globally, a new Labour Government must first lead at home to unlock green finance for growth. The UK's Net-Zero Transition was defined by 2023's independent 'Net-Zero Review' as 'the economic opportunity of the 21st century'. This opportunity is not limited to the UK. With 92% of global GDP now covered by net-zero targets[4] and the production of high-carbon goods less competitive in the UK than in countries like China and India, it is the green economy that offers Britain economic salvation.[5] Swiftly pivoting to our strengths in clean technology, renewables, advanced manufacturing, and services, the UK economy could benefit by up to £1 trillion annually by 2030.[6] The transition is already bearing fruit: in 2020, the UK's green economy grew four times faster than the rest of the UK economy,[7] and in 2023, grew 9%, compared to just 0.1% across the broader economy.[8] Government analysis suggests the green economy could add £266 billion to the UK economy over the next 30 years[9].

The UK is also well placed to leverage its competitive advantage in the fast-growing global ESG market. Consistently ranked as the top global green investment hub, early leadership by the new Government to implement a regulatory framework fit for the 21st Century will ensure that the City of London is at the heart of global transition finance and attract significant private sector investment. With the global ESG market estimated to be worth $30 trillion by 2030[10], and expected to cover a third of global asset value in 2050,[11] the potential is clear. Swift action by the new Government to deliver the much-delayed Sustainability Disclosure Requirements – including rapidly introducing legislation for high-credibility corporate Transition Plans for the largest companies across the country – will ensure Britain is the best place to do business on green and captures the market on reinsurance, assurance and net-zero arbitration.

Capturing this green growth opportunity requires decisive action from our new Chancellor. Without swift action to mobilise investment, Britain will miss out. The Climate Change Committee estimates public and private investment must scale to £50 billion annually by 2030. Fortunately, the majority of this can come from the private sector. However, this investment will not materialise without confidence in the government's overall trajectory.

Currently, there is no comprehensive plan to finance the net-zero transition. Despite publishing the Net-Zero strategy and Green Finance Strategy, the Conservative Government failed to provide a detailed investment plan, having not listened to repeated calls from business and finance leaders[12]. In a tight fiscal context, the UK must think smart

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[4] Energy and Climate Intelligence Unit, Data-Driven EnviroLab, NewClimate Institute, Oxford Net Zero (2024) Net Zero Tracker.
[5] HM Treasury (2022) Mission Zero: Independent Review of Net Zero.
[6] McKinsey (2021) Opportunities for UK Businesses in the Net Zero Transition.
[7] ONS (2023) Low Carbon and Renewable Energy Economy, UK: 2021.
[8] CBI and ECIU (2024) The UK's Net Zero Economy: The scale and geography of the net zero economy in the UK.
[9] Powering Up Britain: Net Zero Growth Plan - GOV.UK (www.gov.uk).
[10] Broadridge (2021) ESG and sustainable investment outlook: $30 trillion by 2030 on the way to net zero.
[11] Bloomberg (2021) ESG Assets May Hit $53 Trillion by 2035, a third of Global AUM.
[12] UK Finance, Mobilising Capital for the Net Zero Transition: Key Financial Services Sector Asks, www.ukfinance.org.uk.

about mobilising investment. Committing to a Net-Zero Investment Plan[13] in her first 100 days as Chancellor would be the transformative step the UK needs.

This announcement would be timely, given the recent legal challenge in the UK on the Net-Zero Strategy which found it wanting. The next government is required to provide an updated Net-Zero Strategy by May 2025, after the existing one was deemed inadequate by the High Court.[14] To meet the Climate Change Act's requirements and to provide clarity of direction and certainty to the private sector, particularly for 1.5°C aligned transition planning, the Government should include sector-level transition pathways, clear targets and milestones in this updated strategy.

However, market confidence depends as much on targets as credible delivery. Simply updating the UK's financial regulatory framework will not drive investment at the pace and scale required to meet our net-zero targets. A coherent and credible financing delivery mechanism will reassure the market that a Labour Government means business.

A UK Net-Zero Investment Plan would be a pioneering approach to removing the barriers and supporting the catalysts for growth – using data-led policy-making and targeted public investment to crowd in private investment at an unprecedented scale.[15] The plan would combine independent investment flow tracking with sectoral investment roadmaps, which set out the package of regulations, policies, and public spending that will be deployed to leverage the private investment required to meet sectoral decarbonisation targets and pathways. Regular and independent financial flow tracking will be essential for tracking progress against these targets by identifying where and why net-zero investment gaps exist and enabling data-led course correction to address gaps through the sectoral investment roadmaps. This approach would also ensure public finance is targeted to the sectors where it will deliver biggest bang for buck, brokering a new era of partnership between business and government to deliver on the shared goal of reaching net zero while delivering sustainable growth in the UK.

In turn, setting out a clear domestic delivery plan on net zero will enable a Labour Government to credibly champion the adoption of similar approaches abroad, such as endorsing the mounting calls for National Transition Plans in international fora like COP, the G20 and G7. The Labour Government can also ensure that the private finance reforms set out in the Plan[16] set the agenda internationally, working hand in hand with catalytic international public finance institutions—e.g., MDBs—to derisk and scale high-growth green sectors worldwide and enable UK multinationals to capture the benefits.

The economic prize of UK net zero is clear, but time is running out to capture it. By committing to a comprehensive Net-Zero Investment Plan within her first 100 days, Rachel Reeves can provide the clear, credible framework needed to attract large-scale private investment and restore market confidence. With this bold step forward, Reeves can bolster Britain's reputation as a global climate leader and secure a brighter future for Britain.

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[13] Unlocking the Economic Opportunity of the 21st Century through Private Finance. E3G.
[14] ClientEarth, 2023, We've won in court against the UK government for the second time.
[15] CBI (2023) The need for a UK Net Zero Investment Plan.
[16] Financing Growth. Labour Party.

## ABOUT THE AUTHOR

As a Senior Policy Advisor leading E3G's UK Sustainable Finance team, Heather advises a range of government, civil society and non-state actors on the intersection between the climate crisis, finance and investment.

With over 8 years of experience working on climate finance, green investment and fiscal policy, Heather works closely with CSOs, Business and Investors to drive and deliver transformative finance outcomes in the UK. Heather also supports global ambition setting by the UK on green finance - including leading the campaign to secure then Chancellor Rishi Sunak's commitment at COP26, Glasgow, to transform the UK into the world's first Net-Zero Aligned Financial Centre, and commit to Transition Plan disclosure, leading to Transition Plans becoming a global norm. She led the leading coalition of business, CSOs and academics to establish the UK Infrastructure bank as one of the world's only net-zero aligned public bank. Heather was also seconded into DESNZ to help write and deliver 2023's Green Finance Strategy.

# SOME THOUGHTS ON GLOBAL ACTIONS TO PROMOTE SUSTAINABLE FINANCE

Hitoshi Mio, PwC Consulting

*Addressing climate change through sustainable finance faces three key challenges: insufficient carbon pricing, rigid loan criteria, and uneven investment in decarbonisation technologies. Governments must raise carbon costs to encourage investment in green alternatives. Financial product standards should be reviewed to balance ambition with practicality, reducing greenwashing concerns. Additionally, diversified funding for innovative technologies is essential to ensure a balanced and effective approach to decarbonisation.*

"*We have no time to delay. The financial crisis will come to an end. Without action, the same cannot be said for climate change*" - Nicholas Stern and Haruhiko Kuroda

Almost a decade has passed since Mark Carney, then governor of the Bank of England, sounded the alarm about the risks of climate change, describing it as a "tragedy of the horizon" (Carney, 2015). He then launched the Task Force on Climate-related Financial Disclosures (TCFD), encouraging companies to report climate-related financial information. The ringing alarm went beyond the challenges for risk management in financial institutions. It has significantly influenced discussions among policymakers, businesses and investors worldwide. The author is currently assisting Japanese financial institutions in improving their sustainable finance. Every day, my clients encounter new opportunities created by their customers' response to climate change. Based on my experience, I would like to point out three global policy challenges in using sustainable finance to address climate change issues.

First, the government should raise the cost of carbon emissions to an appropriately high level, for example, through a carbon tax. Global warming is a pollution problem, and the prescription for how governments should deal with it is clear. The role that governments should play does not disappear or change because it is difficult for them to reach a consensus, nor because finance can help solve the problem.

Once a secular and sufficient rise in the cost of carbon emissions is embedded in people's expectations, the investment demand for alternative technologies will be encouraged, and there will be more opportunities for diverse and high-potential technologies to be funded. For instance, many companies in Japan are pioneering technologies that use ammonia, a $CO_2$-free fuel, to power ships and generate thermal power. Although there remain significant hurdles to reducing carbon emissions from ammonia production, experts believe a $CO_2$ price of at least $60 per tonne could make this a reality (International Renewable Energy Agency, 2022).

In principle, it would be ideal if the international community could work together to raise the carbon tax. Indeed, such coordination has succeeded in putting the ozone layer on the road to recovery through concerted efforts to phase out the use of ozone-depleting CFCs. However, in the case of the carbon tax, the same will not be easy because the cost of reducing carbon emissions is far greater than the cost of restoring the ozone layer. Nevertheless, more focused cooperation, for example, among OECD countries, including the UK and Japan, would be feasible and effective in encouraging the development of alternative technologies.

Second, there is scope to review the criteria for products such as Sustainability Linked Loans (SLLs) and Green Loans in order to make them more accessible as financial instruments to address climate change. Traditionally, the criteria for these products have given priority to greenwashing concerns.

Looking at the substance of the criteria, using a Sustainability Linked Loan as an example, the borrower is required to select Key Performance Indicators (KPIs) that are material to the business as a whole, set ambitious, KPI-aligned Sustainability Performance Targets (SPTs) that go beyond the business-as-usual trajectory and, if the loan is externally stated to be SLL-financed, disclose the timeline for achieving the SPTs and details of the monitoring status, among other provisions (Loan Syndications and Trading Association, 2023).

In actual SLL transactions, there are many SPTs for which it is difficult to determine whether they are ambitious. It is, therefore, fair to argue, in general terms, that the ambition and achievement status of SPTs should be strictly monitored. But what would be the impact on market functioning if wider stakeholders, including the public, became excessively concerned about the greenwashing of SLL transactions?

For example, consider the case of a firm that sets a truly ambitious GHG reduction target, uses SLLs to raise funds from financial institutions to meet that target, and fails to meet the target. Where there are information asymmetry problems, it is not easy, even for financial institutions, to properly assess the extent to which this firm has made serious efforts to meet the target. Potential borrowers and financial institutions considering using SLLs will be more cautious about setting ambitious SPTs if the firm is criticised for being complicit in greenwashing simply because the target has not been met. The more ambitious the SPTs, clearly the more difficult they are to achieve. However, the more criticism there is of greenwashing from the outside world, which is not in a position to assess the efforts of borrowers to reach the target, the more difficult it will be for parties to SLL transactions to set ambitious SPTs.

Globally, after peaking in 2022-2023, SLL and Green Loan issuance has declined sharply (Environmental Finance Database, 2024). The steep reduction of investment in renewable energy is likely to be one of the main reasons for this, but growing criticism of greenwashing may also be putting the brakes on the market. The concept that 'the more disclosure, the more climate change solutions using sustainable finance will be facilitated' may be naive, and there is scope for a rethink of the standards that SPTs should meet and how monitoring and external disclosure should be carried out.

Third, and very much related to the first two, a mechanism should be considered and implemented to channel funds to diversified decarbonisation technologies in proportion to their risk-adjusted potential.

In 2024, the International Energy Agency (IEA) estimates that global investment in solar power will be around USD 500 billion, more than the total investment in all other power generation technologies (IEA, 2024). As a result of this global investment bias towards solar PV, a variety of distortions are occurring across the world, including competition for resources and negative impacts on human rights.

While electricity demand is expected to grow significantly due to advances in AI, the current situation raises concerns about the uneven distribution of funds to certain technologies, such as solar and wind. No one yet knows which technologies will succeed and ensure humanity's decarbonisation progress in the future. Facilitating such technological progress is an important societal role for finance. For example, many recognise that fusion technology is a game changer, yet cumulative investment in private start-ups in this sector merely amounts to USD 7.1 billion (Fusion Industry Association, 2024). Compared to the USD 500 billion annually for solar PV, is this an appropriate amount given the scale of its risk-adjusted potential?

Today's sustainable finance standards, if properly applied, could help create a healthy market free from greenwashing. However, they can also have the effect of limiting the overall amount of sustainable finance and helping to focus the flow of funds on technologies that deliver tangible, short-term results. It is estimated that the world will need to invest almost three times more in clean energy by early 2030s than it does today if it is to meet the 2050 net-zero target (IEA, 2023). To radically change the status quo, it may be necessary to design a new sustainable finance mechanism that fosters world-changing innovation, even if it means accepting some greenwashing risk.

**The author would like to thank Dinah Heybourn and Eri Ueda for their excellent support. The opinions expressed in this article are the author's own and do not reflect the view of PwC.**

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# ACCELERATING CARBON PRICING FOR UK EMISSIONS REDUCTION

Raúl Rosales, King's College London and Michael Wilkins, Imperial College London

*Linking the UK ETS with the EU ETS, along with integrating the Woodland Carbon Code (WCC), would enhance market liquidity, efficiency, and competitiveness, driving significant economic and environmental benefits. This linkage would also mitigate the financial impact of the EU's Carbon Border Adjustment Mechanism (CBAM) on UK exports and support the UK's afforestation targets by increasing carbon credit prices and making woodland creation more economically viable.*

The opportunity for the inclusion of the Woodland Carbon Code (WCC) into the UK Emissions Trading Scheme (ETS), the linkage of the UK ETS and the EU ETS, and the link between the UK and EU Carbon Border Adjustment Mechanism (CBAM). Why this opportunity and the linkage of both emissions trading schemes is a priority for the UK Government?

Emissions Trading Schemes (ETS), also known as cap-and-trade systems, are a type of carbon pricing scheme, which also includes mechanisms like direct carbon taxes. According to the International Carbon Action Partnership, income from auctioned allowances is a significant revenue source for governments. In 2023, global emissions trading systems generated nearly $74 billion. The EU ETS led with $47 billion in revenue, while the UK ETS, established in 2021 post-Brexit, generated just over $5 billion.[1]

In the past the UK government has shown willingness to potentially link the scheme internationally in the future but has not yet decided on preferred partners for linking. The post-Brexit Trade and Cooperation Agreement between the EU and UK stipulates that the jurisdictions "shall give serious consideration to linking their respective carbon pricing systems in a way that preserves the integrity of these systems and provides for the possibility to increase their effectiveness".[2]

Linking the UK ETS with the EU ETS offers several key benefits. Economically, it would provide UK participants access to a significantly larger market with over 1.5 billion allowances and more than 15,000 stationary installations, compared to the UK ETS's initial cap of 156 million allowances and around 1000 installations at launch in May 2021. Moreover, linking would bolster market liquidity by integrating more participants and allowances, addressing long-term concerns on the UK ETS risks low liquidity highlighted in a 2021 House of Commons briefing paper about potential liquidity risks as the UK ETS

[1] International Carbon Action Partnership; ID 1325989 Statista 2024.

[2] UK and EU Emissions Trading Schemes drifting in different directions?.

allowance cap decreases.[3] This integration would also enhance market efficiency and competition, allowing participants to capitalise on price differentials between UK allowances (UKA) and EU allowances (EUA). Such linkage could create a more robust and dynamic carbon market environment, ensuring effective carbon pricing mechanisms across borders[4].

The EU-UK ETS link could potentially be operational by 2029, with the following proposed timeline: In Spring 2025, the UK Government initiates ETS linking discussions with the EU. As an interim measure, the UK may align its Auction Reserve Price (ARP) with the EU ETS to demonstrate equivalence and mitigate financial impacts from the EU Carbon Border Adjustment Mechanism (CBAM) anticipated in 2026. By Autumn 2025, negotiations for ETS linking commence between the EU and the UK, showcasing joint climate action ahead of COP30, where updated Nationally Determined Contributions (NDCs) are due. Simultaneously, the EU and UK agree to exempt CBAMs from EU-UK (and EEA-UK) trade until 2030. By the end of 2026, the EU-UK ETS linking agreement is anticipated, paving the way for full operationalisation of the EU-UK ETS link by January 2029.

Another benefit of the ETS linkage is to ensure that UK exports of high-carbon products to the EU are fully exempt from the EU's CBAM. Starting January 1, 2026, importers into the EU must acquire and surrender CBAM certificates to offset imported CO2 emissions. EU importers can recognise foreign carbon pricing, like the UK's, but still need to meet new reporting requirements. However, compliance with new reporting requirements remains mandatory, regardless of price equivalence, adding administrative complexity and costs.

Full exemption from CBAM obligations requires either full participation in the EU ETS (as done by Iceland, Liechtenstein, and Norway) or full linkage to the EU ETS (as achieved by Switzerland). Without linkage, UK exporters of CBAM-covered goods will face new administrative hurdles when selling to the EU, potentially reducing their market appeal. CBAM also poses unique challenges for Northern Ireland, especially if the UK implements its own CBAM scheme, currently under consideration. This also aligns with the ongoing efforts in the UK to integrate greenhouse gas removals (GGRs) into its ETS, as confirmed by the UK ETS Authority in June 2023[5] and the new consultation launched in May 2024[6] (Integrating Greenhouse Gas Removals in the UK Emissions Trading Scheme). Such integration and convergence of voluntary carbon markets with established ETS frameworks can strengthen the foundation for future linkages, making systems more resilient and comprehensive, paving the way for broader regional and global carbon market cooperation.

What would be the impact of a potential inclusion of the WCC in the UK ETS on WCU prices and how would it help to meet the UK's woodland targets? A recent policy paper "The Carbon Credit Price and National Tree Planting Impact of Woodland Carbon Code Admittance to the UK-ETS" from King's College London, the Centre for Climate Finance & Investment at Imperial College Business School, and Foresight Sustainable Forestry

[3] Research Briefings: CBP-9212, UK Parliament, researchbriefings.files.parliament.uk..

[4] Written Evidence 113156, UK Parliament Committees.

[5] UK Emissions Trading Scheme Consultation: Government Response, UK Government.

[6] Integrating Greenhouse Gas Removals in the UK Emissions Trading Scheme, UK Government

Company suggests that admitting the Woodland Carbon Code (WCC) into the UK-ETS could unlock significant economic and environmental benefits.[7]

The paper estimates this move could increase land for woodland creation by up to 26% in the UK, equating to approximately 107,000 hectares, and helping the UK reach its Net Zero by 2050 target. Currently, low prices for voluntary carbon credits hinder national tree-planting efforts, causing the UK to fall behind its targets, managing less than half of the annual 30,000-hectare goal.[8]

Admitting the WCC into the UK-ETS would raise carbon credit prices by up to 67%, unlocking land for afforestation making woodland creation more economically viable and potentially removing up to 19 million tonnes of carbon emissions. These estimates are conservative as they account for commercial forestation land and not additional broadleaf-focused afforestation, suggesting greater potential benefits.

Currently, only about half of the UK's land with commercial afforestation potential is economically viable for afforestation at these prices. This situation is significantly worse in England and Wales compared to Scotland. Without a substantial increase in WCC voluntary carbon credit prices, it is unlikely that the UK will meet its tree planting targets by 2050.

This policy change could transform afforestation efforts overcome economic barriers almost overnight and bring the UK closer to its national tree-planting goals.

The Authority sees enabling UK-based GGRs to be included in the UK ETS as the right approach, balancing complexity and ease of compliance, whilst being key to achieving the UK's ambitious climate goals. The Authority will only consider GGRs for inclusion in the UK ETS where there is sufficient confidence that the greenhouse gas storage provided is highly durable, and risks of leakage are minimal and can be sufficiently managed.

UK woodland can provide durable carbon storage. UK woodlands sequester carbon as they grow until their carbon stocks stabilise between years 100 and 300, depending on species mix and management approach. At the old-growth stage, any forest will have natural disturbances and decay which are offset by new growth, providing the forest with a long-term carbon average stock.

The UK WCC's woodland carbon units are of high integrity, as described in this consultation. "WCC carbon units obtain a much higher price than average carbon units globally, demonstrating that buyers recognise their integrity due to high permanency, independent verification and trusted regulation, and are therefore willing to pay more; in

[7] The Carbon Credit Price and National Tree Planting Impact of Woodland Carbon Code Admittance to the UK-ETS – King's College London.
[8] The Carbon Credit Price and National Tree Planting Impact of Woodland Carbon Code Admittance to the UK-ETS | Imperial College Business School.

2023, the UK woodland carbon price was £25/tonne, compared to the international VCM price of $7/tonne."[9]

Why the need for the WCC to have higher Woodland Carbon Unit (WCU) prices to foster afforestation? Creating new woodlands is less profitable than other land uses, especially in England, which makes it less attractive to landowners. A higher carbon price is needed to cover the costs of creating and managing woodlands and to compete with other land use options, and therefore to make it commercially viable.

It is important to emphasise that the Authority will only consider GGRs for inclusion in the UK ETS. Therefore, considering the admittance or inclusion of the WCC in the UK ETS requires a whole systems approach concerning the EU ETS to ensure they work together effectively and efficiently and prevent technical issues between the markets in the future.

The policy priority of integrating the Woodland Carbon Code (WCC) into the UK ETS aims to influence Woodland Carbon Unit (WCU) pricing and promote afforestation across the UK. Simultaneously, this initiative seeks to navigate the complexities of linking the UK ETS with the EU ETS, ensuring coherence in carbon pricing mechanisms across borders.

Additionally, it aims to manage the potential impact of the EU's Carbon Border Adjustment Mechanism (CBAM) on the UK, illustrating a whole systems approach to environmental and economic sustainability in the context of international climate policy.

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[9] Integrating Greenhouse Gas Removals in the UK Emissions Trading Scheme. UK Government.

# SECURING THE UK'S RENEWABLE FUTURE: ADDRESSING CBAM CHALLENGES

Luca Taschini and Gian Luca Vriz, University of Edinburgh Business School

*The European Union's introduction of the Carbon Border Adjustment Mechanism (CBAM) could significantly impact UK electricity exports. Historically, the United Kingdom has imported electricity from neighbouring countries, but recently it has increased its exports. With the UK government plans to push for more renewables, the United Kingdom is expected to become a net exporter of electricity within the next decade. However, the CBAM could undermine these plans. To mitigate potential adverse effects, the United Kingdom could link its Emissions Trading Scheme (ETS) with the EU ETS, collaborate for reciprocal CBAM exemptions on electricity trades, or implement implicit power market coupling with the European Union. Each option presents challenges requiring substantial coordination and regulatory adjustments.*

## The Rationale for Border Carbon Adjustment

Carbon pricing policies around the globe exhibit significant variation, with some nations enforcing stringent restrictions on GHG emissions, while others maintain minimal or no such restrictions. This asymmetry in climate policy implementation has critical implications, particularly in the context of energy generation and energy-intensive industries. These industries frequently face the temptation to move to areas with lenient or non-existent emissions policies or to import from such regions; a situation known as 'leakage'. This could lead to two interrelated issues: firstly, it could diminish the global environmental effectiveness of emissions regulations; secondly, it could reduce the global competitiveness of regulated firms.

In this context, a "*border carbon adjustment*" (BCA) becomes a viable solution. It aims to ensure that companies from different countries face the same carbon-related costs when competing in the same market. Essentially, a BCA adds a fee to the carbon content of imports, adjusted for the difference between the carbon prices in the importing and exporting countries. The aim is to ensure that the carbon emissions from foreign producers' products are subject to the same fiscal pressure as those from local producers.

## Enter the EU carbon border adjustment mechanism

In that spirit, in October 2023, the European Union introduced the Carbon Border Adjustment Mechanism (CBAM). Initially, the CBAM will only apply to cement, iron and steel, aluminium, fertilisers, hydrogen, and certain intermediate inputs and downstream products.[1] Electricity is also subject to CBAM. Consequently, electricity flow to the

[1] These products are considered to be at the highest risk of carbon leakage and account for about 50 percent of overall European Union Emission Trading System (EU ETS) emissions.

European Union is set to become more expensive, with the United Kingdom and Western Balkans expected to be significantly impacted.

## The impact of EU CBAM on UK electricity export

The United Kingdom may be the country most impacted by the application of CBAM to electricity flows.

Historically, the United Kingdom has imported electricity from neighbouring countries, benefiting consumers from reduced bills and enhanced security of supply. Recently, however, the country has increased its electricity exports to the European Union, driven by a rise in renewable generation (primarily wind) and various factors affecting European energy markets, such as reduced reliance on Russian gas, technical issues with the French nuclear fleet, and low water levels in Norway. With the decisive actions of Rachel Reeves, the new Chancellor, who recently ended the nine-year-old *de facto* ban on onshore wind power, the United Kingdom is expected to become a net exporter of electricity within the next decade. Nonetheless, there will still be significant levels of imports, bringing in green power from the continent and contributing to our security of supply.

A challenge with applying CBAM to electricity imports is the difficulty in identifying the exact source of imported electricity and any carbon price already paid in the exporting jurisdiction. Electricity is traded anonymously via exchange-based platforms, and a single electron of electricity may have been traded multiple times before crossing borders. This issue has led to the design of CBAM adjustments based on historical carbon intensity.

However, due to the difficulty in determining whether an imported electron originates from renewables or a thermal power plant, combined with the rapid decarbonisation of UK power in recent years, the calculation of the CBAM adjustment may not accurately reflect the country's current, significantly lower carbon intensity.

A potential negative outcome is that electricity flows from the United Kingdom to the European Union could diminish, forcing EU countries to rely more on domestic thermal power generation to fill the supply gap instead of importing UK electricity, which the new UK government has pledged to increasingly generate from renewables. Additionally, this could deter investment in domestic renewable power plants, as the business incentive of exporting to the EU bloc would diminish.

## Possible solutions

**Link the UK ETS with the EU ETS:** The ideal solution would be to formally link the UK ETS with the EU ETS. This would facilitate *virtual exemptions* for UK electricity exports from the EU CBAM. By linking the two systems, carbon prices in the United Kingdom and the European Union would align or become very similar, effectively eliminating or significantly reducing the cost associated with CBAM adjustments.

Linking the UK ETS with the EU ETS can be politically challenging, especially if carbon prices continue to diverge between the two regions. It requires strong collaboration and negotiation between the UK government and the European Commission to ensure alignment and compatibility of the two systems. We advocate for the UK government to work proactively with the European Commission to facilitate this alignment and make linking possible, ensuring a seamless and fair trading environment for electricity.

**Develop Reciprocal CBAM Exemptions for Electricity Trades:** Another approach would be for the UK government to collaborate closely with the European Commission to develop and implement their respective CBAM policies, focusing on exempting electricity trades from CBAMs on a reciprocal basis. This means both the United Kingdom and EU countries would agree not to impose CBAMs on electricity traded between them.

This collaborative effort would enable the continued (albeit not carbon-efficient) flow of power across borders between Great Britain and EU Member States, collectively optimising the use of renewable energy sources and promoting energy security.

**Implement Implicit Power Market Coupling:** Another option is to move towards implicit power market coupling between the United Kingdom and the EU bloc. This would involve integrating the electricity markets of the two jurisdictions more closely, allowing for seamless electricity trading without the need for explicit CBAM adjustments for UK exports.

While implicit market coupling is a potential solution, it presents its own set of challenges. Under this system, several criteria would need to be met to exempt UK electricity exports from the EU CBAM. This approach requires significant coordination and regulatory adjustments on both sides.

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# PUTTING THE WIND BEHIND THE SUSTAINABILITY SAILS: THINGS CAN'T ALWAYS GET BETTER, SO WE MIGHT AS WELL JUST STOP WAITING.

James Vaccaro, Climate Safe Lending Network

*Achieving impactful sustainability policies that capture public and business enthusiasm remains a formidable challenge, as seen with past disappointments like the UK's Green Deal and Green Homes Grant. Despite significant technological advancements that have drastically reduced costs for sustainable solutions such as solar and energy storage, progress is hindered by policy responses that inadvertently encourage delay rather than immediate action. A proposed "Golden Rule" in policy design could incentivise timely adoption by consistently favouring present action over future expectations, thereby catalysing transformative momentum across sectors from energy to infrastructure.*

For any new government seeking to make a real impact on sustainability, the holy grail is a policy that people fall in love with; one that takes off beyond the wildest expectations, changing behaviours that turn headwinds into tailwinds. However, the experience of sustainability policy initiatives in the United Kingdom (like the 'Green Deal' and 'Green Homes Grant') has seen more initiatives fizzle out unsuccessfully rather than sizzle. Many will remember painful memories of the rapid reduction in the solar feed-in tariff several parliaments ago.

It might be concluded that it is just too difficult to get people and businesses to 'do the right thing' or that it will be too expensive for a government to afford. And for most governments in today's world, cash is likely to be constrained, so there is a premium on well-designed policy.

But are we applying too simplistic a lens to the lessons from our history? Are we applying linear thinking to a world which is not linear, and thereby overlooking some important insights for policy?

Firstly, we have known for some time that the costs of sustainable solutions are reducing. Solar costs have plummeted by around 90 percent globally since the United Kingdom introduced its feed-in tariff. Across the world, solar is now on average 29 percent cheaper[1] than the lowest cost fossil fuel alternative, and it is even becoming cheaper to install than to continue operating the old fleet of high-carbon generation. And it is only predicted to get cheaper and easier, with solar costs predicted to fall by a further 55 percent by 2030, and with generation from floating offshore wind reducing by 84 percent over the same period.

[1] Solar is globally 29% cheaper than the lowest cost fossil fuel alternative (EY, 2023).

Batteries and energy storage is going the same way, with 90-percent reduction[2] over the past 15 years and a further 40-percent drop over the rest of this decade.

So why are we not making more progress despite all of these positive developments? Ironically, it may be 'because' of these developments (and our prevailing policy response) that we are being held back. If given the choice between doing something now, or doing it in a few years when it is easier and cheaper, many people and businesses will choose to wait. It is often easier to be part of a bigger crowd. Plus, when there is a cost-of-living squeeze, economic uncertainty, and anticipation of huge disruption to employment through technologies like AI, "now" feels like a particularly challenging time to "take action" - no matter how much the urgency on issues like climate and nature are understood.

In fact, the majority collective response to policy plans (whether those that come out before elections or any other time) is to conclude that if "things can only get better" then maybe we should just wait for that. On the other hand, there is no behavioural driver more powerful than the pending withdrawal of a subsidy, which invariably stimulates a mass scramble to get something done before the deadline.

## The New 'Golden Rule' for Transition Momentum

What if this principle was integrated into policy design on a continuous basis? A golden rule that would set policy to tilt the balance (or 'nudging' the decision logic) to ensure that it would *always be advantageous to "act now" rather than wait until later*. Not only can this drive demand from individuals and businesses, it sets up a chain of events that change the parameters for future development that makes further progress easier.

This is what the history of the feed-in tariff for new solar energy demonstrated. The original price was set at a level that made it economic for anyone to install. So that is what they did. Developers, installers, planners, lawyers, bankers, and investors all became rapidly familiar with how to set up schemes. Their processes became rapidly more efficient as funds were deployed. The growth in demand coupled with global manufacturing efficiency meant that the underlying cost of deployment fell. But this seemed to take the UK government by surprise. The sudden announcement of a drastic cut to the feed-in tariff sent shockwaves through the industry, leading some to regret the policy. In reality, however, it was a communication issue rather than a flaw in the underlying principle. More than a decade on, we are seeing unsubsidised solar being installed in the United Kingdom, with the major barrier being the potential to connect to the grid rather than renewables technology itself.

This was not an accident. It is a feature of how new approaches take off. Once a 'positive tipping point'[3] is reached, then there follows an internal flywheel of growth, driven by all of the relevant stakeholders 'endogenously'.[4] This could be replicated for other areas of the transition, such as the deep retrofits of buildings.[5] The key is designing a policy intervention that engineers a short-cut to the positive tipping point, applying a systemic investment[6] approach. Such an approach must recognise that all of the necessary elements need to be in

[2] Battery costs fallen 90% in last 15 years, and could reduce a further 40% by 2030, (IEA, 2024).
[3] Positive tipping points: Prof Tim Lenton, University of Exeter.
[4] Endogenous growth theory: Paul Romer.
[5] Retrofit Revolution (Volans, 2021) – tipping points for whole-house (deep) retrofit in the UK.
[6] Systemic Investment.

place at the same time, and that an investment chain is only as strong as its weakest link. Government support can then be put in place with the up-front signal that it will be reduced at regular intervals using a formula designed to ensure that it is *always better to act now rather than later*.

Would it not be really difficult to design policy that is consistently on the right side of the 'act now' tipping point? Yes, but only if policy is established on a rigid basis of being set in stone and hoping it works over the course of the next few years. But our repertoire of interventions is much greater in the digital era. Governments can be 'consistent' not by fixing their levels of support (like a fixed level of grant for retrofit) but by committing to an open formula that will adapt and respond to evolving market conditions, levels of need, and affordability. By showing up as an active participant in the transition, governments can become far more reliable partners to the entrepreneurs and developers most likely to lead the transition efforts.

Given the interconnectedness of our challenges at the moment, effective policy might also need to consider how it can address multiple issues at the same time. What we have witnessed in policy design is a focus on a single variable which drives decision-making. Most governments are habitually fixated on GDP growth as the ultimate benchmark for progress. That creates a tension when trying to integrate climate goals into policy, with climate generally losing out in that particular duel. But then there is nature restoration, biodiversity, water quality, food security, climate adaptation, social inequality, health and wellbeing for an ageing population and everything else to attend to. That sounds potentially overwhelming for anyone. And for a policymaking system based upon siloed governmental departments that are in competition with each other for scarce resources and that make top-down decisions based on narrow indicators, it seems near impossible.

What we overlook is the vast amount of value that could be unlocked by optimising across multiple forms of impact. We have constructed a sub-optimal form of either-or economics based on cost-benefit analysis that ignores most of the costs and most of the benefits. At a time where there is ongoing legal battles for solar farms in competition with agricultural land, we are seemingly blind to the opportunities of agrisolar[7] (which can, in some cases, increase agricultural production by 70 percent, save around 70 percent of water usage, and provide increasingly necessary shade for livestock and crops). It is more than the win-win of 'both-and'. Instead, it might become a necessity: a 'through-through'. The need to make buildings resilient to extreme heat risks could be delivered 'through' the electrification of heating in the form of Air-to-Air heat pumps that also provide cooling. Natural flood management schemes can prevent future costs of damage, enable necessary housing schemes, increase biodiversity, and provide cleaner water. In a recent natural flood management case study on the Wyre Valley,[8] the future benefits accruing to the relevant stakeholders over a 30-year period were 15 times the cost of the initial investment, demonstrating the huge uplift in potential collective value. This needs supportive policy to kickstart new approaches and push them to their positive tipping points, as well as more effective partnership and collaboration. This is where organisations can come together to catalyse progress more rapidly and effectively than on their own.*

[7] Agrisolar can increase production by 70% and save 70% water.
[8] Wyre Valley NFM, Green Finance Institute ; "15-times return on investment", Catchment Based Approach.

We would not be starting from scratch on policy in the United Kingdom. The Scottish government's National Performance Framework[9] and the Welsh government's Future Generations Continuous Learning and Improvement Plan[10] already model how to integrate multiple forms of value into decisions. The final frontier for policy is designing sustainable finance policy to go beyond classifications and disclosure. There is an irony here: if this agenda descends into compliance and reporting burdens, then it could become a distraction from what is needed most rather than an effective amplifier for transition efforts.

How could policy stimulate real change that drives momentum and prevents people from holding out for a better scheme in the future? Price support mechanisms (like feed-in tariffs or similar) and fiscal incentives (perhaps modelled on previous schemes like EIS / CITR) could be used to influence investors and banks to step up finance for key pillars of the sustainability transition (everything from regenerative agriculture to green transport solutions). These could be offered on the basis of a limited 'stock' of incentives; the pioneers and leading financial players who moved farthest and fastest would be rewarded by receiving a greater proportion of the benefits, thereby developing the skills and markets underpinning their future success. Insurance or guarantees could be provided directly by the government to help overcome the challenges of First-of-a-Kind projects.

The costs of our maladaptation to climate change and loss of nature is piling up with every flooding event, every field with no seeds sown this year, and with the impending risk of heat stress and fuel poverty in inadequately insulated houses. The drag on our economy caused by the estimated £22 billion of higher bills since 2015 because of "not-zero" (the missed opportunity to drive renewables and energy efficiency in the past decade) has depleted both households and the nation's resources.

But the United Kingdom is still blessed by abundant natural resources that could be harnessed for all our benefits if the political winds were to blow in the right direction. A decade of regeneration starts with a radical realignment of thinking on what it takes to ensure that the seeds of change take root and flourish. Optimising for multiple impacts is a new national habit that we need to acquire – and in doing so we could create more economic value than all the billions of badly spent stimulus funds one could possibly imagine.

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[9] Scottish Govt: National Performance Framework.
[10] Welsh Govt: Future Generations Continuous Learning and Improvement Plan.

# IS THERE A ROLE FOR UK INSOLVENCY LAW IN THE NET-ZERO TRANSITION?

Fiona Watson, World Business Council for Sustainable Development

*As we rightly focus tremendous levels of intellectual and regulatory energy on how to channel unprecedented levels of finance towards extensive systemic decarbonisation, to date there has been less focus on how to keep it there. This contribution makes the case for an exploratory review of how UK insolvency laws could be aligned with a net-zero future. This has the potential to not only increase the speed and conviction with which such capital is deployed in the UK, but also to protect and nurture the long-term benefits of such capital deployment from the prevailing commercial realities around transition and adaptation finance. With no necessary draw on the taxpayer, the effect would be to quickly give the UK a strong competitive edge for international capital, enhancing its economic and physical resilience to the impacts of climate change.*

There are many reasons why capital is not being deployed at the pace and scale required, but a common complaint is that there are not sufficient "bankable" or investable projects. In simple terms, the commercial risk and return profile is still not aligned. As decision-useful information on climate-related financial risks remains lacking, environmentally destructive commercial activity is still incentivized by the financial markets (and government subsidies) with a cost of capital and associated credit ratings enduring against more 'sustainable' alternatives. This perpetuates a system in which emissions continue to rise and inhibits the innovation and entrepreneurship required to transform our society and economic system to net zero. With increasing calls for reform of the global financial system, there are many existing initiatives seeking to address this paradox, not least the work of the International Sustainability Standards Board (ISSB). But with our carbon budget disappearing fast, we need to look for bold, systemic solutions that can quickly start to change our current course, ideally with limited cost to an increasingly burdened taxpayer.

The biggest boost for climate finance in recent years has come with Inflation Reduction Act in the US, a policy mechanism that uses fiscal policy to create incentives for climate finance with great effect.[1] Almost overnight it inspired changes to corporate strategy and capital allocation so profound that they triggered geopolitical responses. However, this use of fiscal policy to stimulate innovation is not new, especially in the US. The US has used its federal and state tax codes to encourage innovation and entrepreneurship for decades. But it is not just tax. The other policy tool that has historically influenced systemic shifts towards entrepreneurial innovation is insolvency law.[2]

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[1] The Inflation Reduction Act's Benefits and Costs | U.S. Department of the Treasury (1 March 2024).

[2] Prusak, B., Morawska, S., Łukowski, M. *et al.* The impact of bankruptcy regimes on entrepreneurship and innovation. Is there any relationship?. *Int Entrep Manag J* 18, 473–498 (2022).

Insolvency law has played a pivotal role in creating the conditions for innovation in developed economies. In countries characterised by an effective legal system and, at the same time, debtor-friendly bankruptcy law, the level of risk acceptance among entrepreneurs is higher, which translates into higher levels of entrepreneurship and innovation.[3] As economic actors, few of us wish to experience the intricacies of insolvency law, but at a systemic level, it serves to set the atmospheric pressure under which commercial endeavours can rise or fall and the associated risk – and cost – of credit. Perceived by many as the pathology of commerce, its regulation and practice are infused with social norms. In the UK both voluntary and involuntary bankruptcy often comes with lasting sanctions for the individuals involved and – depending on the process involved – assets are often stripped of their purpose to realise any value from the highest bidder for remaining creditors.

The tremendous opportunity for His Majesty's Government now is to leverage the scientific, commercial, legal and legislative expertise available to the Government to support an initial exploratory review of existing UK insolvency laws.[4] Guided by our existing obligations under the Paris Agreement, the UK Climate Change Act, as well as HMG's and the Bank of England's own risk scenarios, this review could have a dual purpose to (i) improve the credit environment for sustainable finance, and (ii) review the duties and procedures associated with administration, receivership and liquidation procedures.

Even modest amendments could quickly de-risk and accelerate the deployment of finance to key sectors and activities and have a tremendous catalytic effect on innovation in the UK. Perhaps a more benevolent form of receivership could be considered for certain types of industry or activity to ensure the continued use of assets and technologies (e.g. associated with renewable energy generation or distribution) in case commercial realities threaten their purpose. The public interest in preserving such beneficial impact is heightened if direct or indirect subsidies are part of the funding mix. Taken further, such reforms could also serve to quickly challenge the credit risk profile of carbon-intensive entities and assets by raising the bar for on-going commercial viability (i.e. through the application of accepted transition scenarios to the credit profile) and creating mechanisms whereby they are more rapidly decommissioned.[5]

Such a review would ideally form part of a wider review of all existing UK laws and regulations in line with the country's net-zero obligations and imperative but the case for prioritizing this critical mechanism is particularly strong and could present a significant near-term opportunity to the UK economy.

Note: The author – quite obviously – is not an insolvency expert. As a capital markets lawyer and the Treasury lawyer for RBS Group from 2011-2020, I was involved in

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[3] *Supra*

[4] The main domestic legislation governing restructuring and insolvency matters, in England and Wales includes but is not limited to: the Insolvency Act 1986 and the Insolvency (England and Wales) Rules 2016 (in each case, as amended by the Corporate Insolvency and Governance Act 2020); the Companies Act 2006 (as amended by the Corporate Insolvency and Governance Act 2020), in relation to schemes of arrangement and restructuring plans; and the Company Directors Disqualification Act 1986.

[5] For a discussion of such concepts under US law, see *Gouzoules, Alexander, Going Concerns and Environmental Concerns: Mitigating Climate Change Through Bankruptcy Reform (January 15, 2022). Boston College Law Review, Forthcoming, Loyola University New Orleans College of Law Research Paper No. 2022-19*,

development and adoption of many post-financial crisis regulatory reforms, most of which were informed by reactions to insolvency regimes. High-level discussions of this concept indicate support, with more expert commentators recognising the technical complexity it entails.

**The opinions expressed in this article are the author's own and do not reflect the view of World Business Council for Sustainable Development.**

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## ABOUT THE AUTHOR

Fiona leads WBCSD's work on Corporate Performance & Accountability, working internally and externally across the Climate, Nature and Equity Imperatives and sector Pathways. This includes matters relating to integration and transformation, impact and valuation, performance and reporting as well as accountability and finance. Outside of WBCSD, she is a member of the EFRAG Sustainability Reporting Technical Expert Group (SR TEG) and supports on the UK Transition Planning Taskforce (TPT) Delivery Group.

Fiona's role leverages her corporate legal background and international experience working on transformative agendas in the finance and business worlds, first at RBS/NatWest in the aftermath of the 2008 financial crisis and more recently on the sustainability imperative including roles at Amazon. Before joining NatWest (RBS) in 2011, she practiced law in New York and London in the corporate practice of Davis Polk & Wardell, having started her career in assurance and advisory at PWC in New York. She has a LLM in International Trade and Business Law (cum laude) from Fordham University and LLB in Law with German Law from University College London.

# INTERNATIONAL FINANCE

# FIVE POLICIES TO MAKE LONDON A GLOBAL CENTRE FOR GREEN AND TRANSITION FINANCE

Lily Burge, Magali Van Coppenolle and Sean Kidney, Climate Bonds Initiative

*The City of London is pivotal in global sustainable finance, hosting nearly 40% of GSS+ bonds listed globally on the LSEG. While UK institutions lead with initiatives like the LSEG Sustainable Bond Market and FCA's Sustainability Disclosure Requirements, enhancing Paris-aligned investments and integrating robust transition pathways and resilience criteria into the UK Taxonomy is crucial. This can bolster London's global green financial centre status. Key policy recommendations include incorporating transition pathways in the UK Taxonomy, leading on adaptation finance, introducing transition plan regulations, expanding the green gilt program, and leveraging public financial institutions to catalyse private investment.*

The City of London is one of the main global financial centres and, importantly, it is at the centre of international sustainable finance with nearly 40 percent by volume of GSS+ bonds globally listed on the London Stock Exchange (LSEG) in 2023 (LSEG, 2024).

Financial regulation provides the infrastructure through which the credibility and information required by financial actors to make informed and robust investment decisions is provided. When it comes to Paris-aligned investment decisions, however, more needs to be done - and done quickly. For example, the Climate Bonds Initiative's (Climate Bonds) market tracking shows that while 80 percent of the global labelled bond market is Paris-aligned (2024a), transition finance instruments are currently limited by a lack of credibility, with only 14 percent of sustainability-linked bonds (SLBs) showing alignment (Climate Bonds, 2023a and 2024a).

The United Kingdom has an opportunity to leapfrog other jurisdictions and provide a productive model of green finance regulation. Indeed, UK institutions are already driving ambition in green finance: the LSEG Sustainable Bond Market listing requirements upholds world-leading standards for labelled issuance, entailing strong disclosure from issuers (LSEG, 2021), while the Financial Conduct Authority's (FCA) Sustainability Disclosure Requirements provide clarity on sustainability labelling (FCA, 2023). There are also several regulations currently in development in the United Kingdom that have been further developed in other jurisdictions over the past few years, including taxonomy, transition plan disclosure requirements (HM Government, 2023), and Labour's plans to restore climate considerations to the Bank of England's mandate. The United Kingdom can 'take the best and forget the rest' by learning from others in the development of its domestic framework and pushing for an ambitious agenda internationally. This would further enhance London's status as a global green financial centre.

Five policy actions can tilt the regulatory framework and boost the country's position as an international climate finance centre, open up new industrial opportunities domestically, and provide global leadership on how to align the economy with net zero.

***Including transition pathways in the UK taxonomy will provide the foundation for a whole-economy transition***

Many taxonomies lack forward-looking guidance. The inclusion of transition pathways would position the UK Taxonomy at the forefront of the transition. If it is also interoperable with other taxonomies, it would make the UK taxonomy world-leading as it could be used internationally, enabling cross-border capital flows (Climate Bonds, 2024b). Sector-specific transition pathways provide important guidance on credible emissions reductions and viable low-carbon technologies, informing transition planning, investment decisions, and real economy policy development.

Voluntary guidance has been developed by organisations, including the Rocky Mountain Institute, the Science-Based Target Initiative, and the Transition Pathway Initiative. One fifth (20 percent) of the global green bond market has been Certified against the Climate Bonds Standard (Climate Bonds, 2024b), including Hybar's USD330m bond certified under the Climate Bonds' Steel Criteria (Climate Bonds, 2023a).

***The United Kingdom can leapfrog to include adaptation and resilience in its taxonomy and lead the way on adaptation finance, which is lagging globally***

Including clear resilience criteria covering physical, economic, social, and ecosystem dimensions of resilience will provide much-needed guidance on credible resilience investments in the United Kingdom (Climate Bonds, 2024c). Globally, it will enable alignment of international development finance, make these expenditures eligible for sustainable financing, and form the basis of productive engagement with and support to emerging market nations. There is a major adaptation finance gap globally, accounting for only 5 percent of total climate finance (US$63 billion per year) and almost entirely publicly financed (Wignarajah et al., 2023). Resilience criteria would enable issuers, investors, banks, and insurers to identify credible resilience projects to include in transition plans and financial products.

In addition, investment under the proposed National Wealth Fund (Labour Party, 2024) can be aligned with the UK Taxonomy to ensure it contributes to resilient future-proof infrastructure development.

***Introduce transition plan regulations to unlock credible and scalable transition finance***

Robust transition plans can be used as the basis for credible labelled bond issuance, particularly SLBs. This is because an SLBs' key performance indicators (KPIs) can be linked to transition plan targets, providing alignment in commitment and ambition in KPIs, as well as demonstrating credible transition contribution. Transition plan disclosures not only encourage issuers to make long-term, net-zero-aligned business plans; they also provide a wealth of information to investors and policymakers on the expected impact of these investments.

Even without transition planning requirements, many companies are already publishing transition plans. There are already linkages between quality of transition plans and SLBs, for example, with all Paris-aligned SLBs in the steel sector issued by companies that have published a robust transition plan (Climate Bonds, 2024a).

The United Kingdom already requires transition plan disclosure from listed companies and asset managers/owners on a comply-or-explain basis (FCA, 2023). Extending this requirement to financial institutions would encourage them to address climate transition-related financial risks and to tilt lending towards green assets. Green lending currently significantly lags behind GSS+ bonds, with the former at $30bn/year and the latter at $870bn/year (Climate Bonds, 2024b).

Transition plan requirements should be integrated into existing reporting requirements to reflect their central role to an entity's planning process – a transition plan is a business plan for the future. This can also minimise regulatory burden. The planned Regulatory Innovation Office (Labour Party, 2024) could play a key role in ensuring green regulations are not layered on top of existing regulations, minimising the reporting burden and providing a regulatory landscape that is efficient, streamlined, and sustainable for UK businesses.

***Build a deeper and broader green gilt programme***

Linking the green gilt framework to a national transition plan that also includes resilience would provide a clear signal of the UK government's climate commitments, while also setting out a best-practice example to the market.

Only 2 percent of the UK's £1.8-trillion gilt market is labelled, compared to 18 percent in France and 46 percent in Chile (Bloomberg, 2024 and Climate Bonds, n.d.). Incorporating resilience expenditures can help increase this proportion, as can green budget tagging. This is not a case of increasing debt issuance, but of ensuring new debt is issued under the green gilt framework or outstanding debt is rolled over as green debt.

Green budget tagging and growing proportions of labelled issuance would encourage UK government departments to tilt expenditure to green to access this borrowing. Public procurement accounts for one third of the UK budget (Booth, 2023). Introducing taxonomy-aligned green public procurement would strengthen demand for low-carbon products (World Economic Forum, 2022). Public procurement accounts for up to 25 percent of steel and 40 percent of cement global demand (Skinner et al, 2022), and it can drive large-scale, price-reducing demand for green products.

***Use public financial institutions to crowd in more private investment***

A focus on catalytic financing maximises the impact of UK Infrastructure Bank, British Business Bank, UK Export Finance, British International Investment, and the planned National Wealth Fund that will target a mobilisation ratio of £3 for every £1 of public investment (FT, 2024).

Green guarantee provision by UK Export Finance would transform UK exports. While it has a 2050 net-zero target and has not financed fossil-fuel extraction since 2021, it retains

exposure to existing projects and still supports other carbon-intensive projects (UK Export Finance, 2023). Tilting all products and services to climate mitigation and adaptation, while also providing preferential terms and fast track applications for Taxonomy-aligned projects, does not entail increased guarantee provision.

British International Investment can become a champion for green development finance institutions (DFIs), aligning all new investment with the Paris Agreement and fostering collaboration with other DFIs in concessional finance provision, accessibility, and coordination (British International Investment, 2024). While 87 percent of European Development Finance Institutions have a climate target, only 35 percent have a private capital mobilisation target.

The UK government can use its influence as a shareholder in key development institutions (e.g. the European Bank for Reconstruction and Development, the International Monetary Fund, the World Bank, and the Inter-American Development Bank.) to further drive ambition on crowding in private finance.

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# MAKING BRITAIN THE GLOBAL CAPITAL OF SUSTAINABLE FINANCE

David Carlin, King's College London and Cambium Global Solutions

*With the right policies, the UK can become a global sustainable finance superpower. Four specific and actionable recommendations with clear benefits for Britain are explored. They include scaling international development funding, supporting innovators with incentives at home and export credit abroad, promoting low-carbon finance listings in London, and providing technical assistance on climate mitigation and adaptation.*

## Introduction

Once the cradle of the industrial revolution, the UK now can become a catalyst for sustainable growth. It can do so not just from a sense of historical responsibility, but because doing so will create a vibrant, prosperous, and future-ready Britain. The new UK government can leverage the power of the financial sector to support the green transition. This piece presents four tangible actions with global and local impact: increasing funding for international development, supporting innovators at home and export credit abroad, promoting the listing of low-carbon projects in London, and providing technical assistance to developing nations on sustainable finance.

## Accelerate Development Finance Flows

The first recommendation is to significantly scale up commitments to international sustainable finance, particularly through UK development agencies. Current climate finance for decarbonisation (mitigation) and adaptation is falling well short of needs, with estimates that current levels need to scale 3-5 times by 2030 (CPI, 2023). The situation is even more dire in emerging economies, which receive only a trickle of climate finance and very limited private capital (CPI, 2023). However, it is in the emerging economies where the climate challenge will be won or lost. Emerging economies already represent 66% of global emissions and are the nation's most vulnerable to climate-driven displacements (UNDP, 2023).

Development agencies, such as British International Investment (BII), play a critical role in mobilizing capital in emerging economies. They also are catalysts to private sector investment by providing local data and on-the-ground experience. These institutions have the expertise and networks necessary to navigate complex regulatory landscapes and project-specific challenges. These attributes enable them to build markets and create conditions favourable for private capital investment in green and resilient projects.

Beyond enabling private financial actors to understand new markets, development agencies also play important roles in overcoming two of the biggest barriers to private sector investment in emerging markets. These challenges are deal size and risk (WEF, 2024). Development agencies can help to streamline the due diligence process, reducing costs and delays for private investors. They can also aggregate small projects into larger, more

manageable investments to attract a wider range of institutional investors. This aggregation can also help to address the second barrier of risk, by distributing it across a broader portfolio. However, development agencies also can provide direct derisking to private investors by offering guarantees and insurance that address issues of currency, political, economic, and project-specific risks.

By increasing funding to BII and global initiatives like the World Bank, the UK can increase the scale of global mitigation and adaptation efforts. Increased funding should be contingent on the ability to crowd in private capital for high-quality deals, ensuring that public funds catalyse private investment, creating a multiplier effect. Such policies will open up some of the fastest growing and most dynamic economies to UK investors.

### Support British Innovators with Local Incentives and Export Credit

The second recommendation involves boosting support for British innovators both at home and abroad. Domestically, the government can expand programs like Innovate UK that spur entrepreneurship in cutting-edge areas like machine learning and green technology (UKRI, 2024). However, it is not just early-stage entrepreneurs who need funding. Many technically successful technologies fall into the "valley of death" – between initial funding rounds and mass market adoption. To maximise impact, innovators need to be able to deploy at scale. Wright's Law is critical here for understanding dynamics in young markets. Wright's Law was developed in the aviation industry and says that doubling production typically yields a 20% fall in cost (Canadian COR, 2020). Such dynamics are at play in markets from heat pumps to EVs. Government policies should the production of green innovations to drive them down the cost curve, a strategy effectively applied across the world for wind and solar power.

Gaining scale also means looking beyond the UK market to those across the world. Iconic British brands are known and loved the world over, and it is past time that the UK's green innovators take their place among them. To do that, the government should provide strong export credit support. Funding should be increased to the UK's Export Credit Agency (ECA), UK Export Finance. Export credit can offer favourable financing terms, insurance, and guarantees to British exporters of sustainable technologies. This not only helps UK companies penetrate new markets but also supports global emission reduction efforts. For example, the UK could make increased export credit available to companies involved in renewable energy, electric vehicles, and energy-efficient technologies (HSBC, 2024). UK Export Finance already has a strong framework for considering low-carbon exporters and is one of the founding members of the UN-convened Net-Zero Export Credit Alliance (NZECA).

Promoting British innovation abroad has significant domestic benefits as well. It stimulates local production, creates high-quality jobs, and strengthens the UK's position as a leader in sustainable technologies.

### Encourage Listing in London for Emerging Market Actors

The third recommendation is to restore London's leadership in public listings by reforming listing rules and encouraging green listings from emerging markets. London was once preeminent in global listings. Following Brexit and growth in other financial centres, that primacy has ebbed away, to the detriment of the City and the UK overall (Politico, 2024).

However, London's financial markets still retain many highly desirable features. The markets are respected for their stability, transparency, and strong regulatory frameworks. These attributes make London an attractive destination for emerging markets looking to raise capital for sustainable projects. Listing in London offers the security and stability of the British legal system and the reputable London markets. This can attract significant investment into sustainable projects in emerging markets, accelerating their transition to a low-carbon future.

Recent reforms to listing rules have been applauded by financial leaders, but still ought to go further. Areas of improvement centre around increased incentives for research, better policies for attracting talent, and support for employee stock option schemes (Bloomberg, 2024). Coupling these with an active effort to court high-quality green issuances from emerging markets can help make London into a global capital of sustainable finance.

To facilitate this, the UK government should create incentives for emerging markets to list in London. This could include streamlined listing processes, improved tax treatment, and support services to help navigate regulatory requirements. By making it easier for emerging markets to access London's capital markets, the UK government can spur green investment and attract leading companies to London.

The UK will benefit from these new listings through increased tax revenue, improved talent retention, and growing influence in global financial markets, reinforcing its leadership in climate finance. Additionally, promoting the listing of emerging market projects in London can foster stronger economic ties and partnerships with these countries.

### Expand Technical Assistance on Adaptation and Mitigation Efforts

The fourth recommendation is for the UK to expand technical assistance to emerging countries for sustainable projects and financing. Technical assistance can include training programs, capacity building, and sharing best practices on sustainable finance and risk management. This support helps emerging markets build resilient financial systems capable of withstanding climate-related risks and capable of seizing green development opportunities. For example, the UK could provide expertise on developing green bond frameworks, implementing climate risk assessments, and integrating sustainability into financial regulations.

The UK has already developed several leading frameworks and standards in the field of sustainable finance that are well-known and well-regarded around the world. The work of the UK's Transition Plan Taskforce (TPT), created at COP 26 in Glasgow, has developed detailed guidance for transition plans for multiple sectors. It has now been adopted by the IFRS Foundation's International Sustainability Standards Board, a global sustainability standard-setter (TPT, 2024). In addition, on climate stress testing, the Bank of England has been deeply involved in the creation of climate risk scenarios as part of the Network for Greening the Financial System (NGFS), a network of supervisors and central banks, and has conducted one of the first climate stress tests on a financial system. These are clear examples where technical assistance can promote UK good practices around the world.

When it comes to aligning finance with climate commitments, the UK already has a successful pilot programme on technical assistance in the Climate Finance Accelerator,

which is operational in 10 countries today (UK Gov, 2024). Similar programmes should be launched to reach more countries and increase the benefits of knowledge sharing.

## Time for Bold Steps

As the new UK government takes the reins, there is a unique opportunity to position the nation as a global leader in sustainable finance. Increasing development finance, supporting innovation and export credit, encouraging listings in London, and promoting technical assistance are four proactive policies that will help the UK reach its climate and economic goals. For a vibrant, resilient, global, Britain, the time for ambition is now.

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## ABOUT THE AUTHOR


David Carlin is an acknowledged authority on climate change and its implications for the financial system. He is the founder of Cambium Global Solutions, an advisor to governments, corporates, and financial institutions on climate and ESG topics. He has authored numerous reports that provide practical tools for financial actors looking to address climate change and has run capacity-building programs for financial institutions and supervisors around the world.

David led the creation of UN Environment Programme's- Finance Initiative (UNEP FI)'s Risk Centre as the head of Risk. Over the past years, he has worked with over 100 global banks, investors, and insurers on climate scenarios, climate risk assessments, and climate governance. He has also been a technical advisor to the Glasgow Financial Alliances for Net Zero (GFANZ). David is also a contributor to Forbes and a senior associate at Cambridge's Institute for Sustainability Leadership (CISL) as well as a visiting fellow at King's College London.

# WHY IT IS IN THE UK'S INTEREST TO SHOW LEADERSHIP IN CLIMATE FINANCE

Sagarika Chatterjee, Climate Finance Expert

*The UK has the opportunity to lead in global climate finance by scaling international development funding, supporting innovators, and promoting low-carbon finance listings in London. Addressing the pressing issues of mitigation, adaptation, and nature finance in developing countries, the UK can catalyse private finance and leverage its influence in global financial institutions. Prioritising adaptation finance and engaging youth in decision-making roles can foster inclusive and sustainable growth. COP29 presents a critical moment for the UK to showcase its climate finance credentials.*

There is already a race to the top to lead the energy technologies of the future across China, Europe and the United States. Global renewable energy capacity has grown at the fastest pace in the last twenty years. The UK has the ability to lean into the opportunities this race presents, with climate finance one of the main "unlocks" for transformation globally.

We are already at 419.3 parts per million in terms of global average atmospheric carbon dioxide. Key questions are what we need to finance and how, based on the money available, to move as quickly and effectively as possible. In response to "what" - we need to finance mitigation, adaptation and nature in developing countries. Part of the answer to the "how" and "money available" is catalysing private finance - although this is not a silver bullet and many hurdles including de-risking, need to be overcome.

The UK is starting to ratchet its domestic climate credibility through the National Wealth Fund with the Green Finance Institute, the appointment of Chris Stark to Mission Control and in its renewable energy decisions. Nevertheless, the success of UK efforts will rely partly on other parts of the world - from renewable energy supply chains to the value chains of high-emitting sectors. Financial institutions with a presence in the UK have offices, balance sheets, underwriting books and investment portfolios worldwide. The logical approach for the UK therefore is to position itself as a leader in the global climate finance agenda.

Leadership on climate finance means getting to the heart of very significant challenges. The quantum of the UK's climate finance for developing countries matters, as does the New Collective Quantified Goal that is set to be agreed by parties to the Paris Agreement in 2024. Nevertheless, topics outside of these negotiations matter enormously, including evolution of the MDBs, debt, adaptation finance, advancing climate project pipelines and the youth voice. Winning the UK public's hearts and minds on why the global climate finance agenda matters must underpin all efforts.

## Which 5 climate finance topics could the UK prioritise to lead in?

In every conversation with developing countries, the narrative must be that **the Sustainable Development Goals** (SDGs) **and climate finance including transition finance go hand-in-hand.** Greater emphasis on the SDGs is essential to breaking the stalemate of Finance Ministers believing they are being asked to choose between advancing their economies or taking climate action. Putting this into practice would involve the UK enabling financing of the SDGs and climate solutions like clean energy and nature finance, as well as transition of high-emitting sectors from energy to heavy industry. Global finance industry work underway on transition finance and just transition could be of great relevance. The UK Transition Finance Market Review holds potential for generating useful dialogue on transition finance in developing countries.

**Debt in developing countries** must be tackled in order for climate action to be scaled. Global public debt stood at US$ 97 trillion in 2023, with a record 54 developing countries spending heavily on interest, outpacing critical public expenditure on other areas. Around 3.3 billion people live in countries spending more on interest than on education and health. We cannot expect developing countries that carry a heavy debt burden to tackle climate change. We must rise to the immediate debt challenge that developing countries face through the full suite of solutions or they will be unable to finance climate action. The UK could lean into discussions on debt restructuring, debt relief and debt-for-nature swaps, and encourage other countries to put debt higher up the global climate finance agenda.

The UK could play a significant role **in advancing climate projects pipelines in developing** countries. Commercial financiers are keen on "deals" and pipelines of climate projects. Convening regional and national-level policymakers, corporates and financiers together on sectors and technologies is key to understanding project pipeline priorities and building the ecosystem needed. The UK could help facilitate such multi-actor convenings and look to build investable climate project pipelines. This would involve boosting technical assistance to earlier stage, smaller government sponsored projects and private ventures in priority sectors and technologies, aggregating smaller ticket projects and advancing de-risking - using a full range of solutions from blended finance structures to bringing in the insurance industry's de-risking expertise. As a result, money would move faster into investment opportunities.

The UK must prioritise **adaptation finance** across its work. The adaptation finance gap is estimated at US$194-366 billion per year. Acting early on physical impacts on people, cities and infrastructure makes sense rationally; without adaptation, businesses will likely be exposed to additional losses and damages. **The UK could lean in to financial sector efforts underway to build a new adaptation economy, including enabling policy for finance instruments, data and taxonomies,** and supporting implementation of the Sharm Adaptation Agenda. The Sharm Adaptation Agenda provides a framework for key sectors such as food, water, health and infrastructure, bringing an array of willing implementation partners together including first movers from the finance sector.

Today we have the largest generation of youth in history, with 1.8 billion young people between the ages of 10-24 in the world. A final topic where the UK could lead **is putting young people into decision-making roles in the global climate finance agenda**. This would foster a vibrant and inclusive approach towards climate finance. As an example, the

Tunisian Young Climate Change Negotiators Group brings youth into global climate negotiations. **Youth climate projects and young entrepreneurs** are topics the UK could lean to to support youth on a practical basis. The Global Environment Facility's The Small Grants Programme for example enables 3,000 youth-led climate projects in over 120 countries.

All of the topics below need to be brought into international Paris Agreement-related discussions on Nationally Determined Contributions 3.0 and the New Collective Quantified Goal on Finance.

## Where to go from this?

The significant opportunity that the UK government is presented with is to draw on climate finance to rewrite the shape of our future. To go from debt, disaster risk and a downwards debate on net zero, to opportunity, energy security and inclusive growth.

The UK can leverage its strong connections with developing countries and its reputation as a global finance hub to engage on priorities to guide future climate finance leadership. The UK also has the benefit of a vast array of innovators, thought leaders and do-ers in climate finance on its doorstep.

A potential time for the UK to signal its intention to step up on the climate finance priorities proposed above is COP29 in Baku, four months after the UK election. This will be a moment for parties to the Paris Agreement to consider how updated country climate plans help crowd in finance and to agree on a new collective quantified goal on finance. Leadership on climate finance will be needed more than ever.

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## ABOUT THE AUTHOR

Sagarika initially joined the Climate Champions on secondment and helped establish GFANZ with the COP26 Private Finance Hub. Sagarika was PRI's first Director of Climate Change and the Environment, having helped found the UN-convened Net Zero Asset Owner Alliance. Sagarika worked for over ten years in the city at F&C Asset Management, was as an investment committee member for the Joseph Rowntree Foundation and a trustee at Earthwatch.

Sagarika is Department Director, Climate Finance for the UN Climate Change High-level Champions, HE Ms Razan Al Mubarak (UAE) and Ms Nigar Arpadarai (Azerbaijan). The Champions catalyse climate action and are a bridge to parties to the Paris Agreement. There are 13,000 non-state actors in their network including cities, corporates and 600+ financial institutions. The Champions engage finance players on net zero transition, adaptation, nature and investment opportunities in developing countries. The Champions engage the private finance sector through campaigns, convening and practitioner groups.

Sagarika has an MSc in Development Studies from University of London, a post-graduate diploma in Management Studies from the University of Oxford and a BA in Social and Political Sciences from the University of Cambridge.

# PIONEERING A SUSTAINABLE FUTURE: A WHOLE-OF-ECONOMY APPROACH TO CLIMATE FINANCE IN THE UK

David Marriage, PwC

*Adopting a comprehensive approach to making finance sustainable is essential, integrating individual actions, government, financial services, and the real economy to build a resilient, sustainable future. The UK, as a global financial leader, is uniquely positioned to drive this transition by attracting purpose-driven investments and fostering innovation. By leveraging its strengths and creating a supportive regulatory environment, the UK can set global standards for sustainability, ensuring economic growth, environmental protection, and social inclusivity. This whole-of-economy strategy is vital for addressing climate challenges and securing long-term prosperity.*

Taking stock of the post-election landscape the UK has a unique opportunity to build a resilient and sustainable future not just for the UK but globally. We need a holistic strategy that brings together government, financial services, real economy and us as individuals, creating a whole-of-economy approach to lead the way. With the right vision, the UK can use its leadership position in financial services to enable the global markets to effectively value our collective values; making the markets the most protective force on the planet.

As an international financial hub, the UK should aim to attract the £71 trillion of assets globally that is moving from baby boomers to millennials over the next seven years. As millennials increasingly prioritise purpose-driven investments, we need to create the new frameworks and trustworthy information flows to meet this demand. If this money can find a safe and productive home in the UK market, with new market mechanisms that promote transparency of impact through the supply chain, we unlock huge value for UK plc.

The benefits of this approach are multifaceted. Economically, it strengthens the UK's position as a leader in the global financial market, attracting investment and fostering innovation. Environmentally, it reduces emissions and promotes sustainable development, contributing to global climate goals. Socially, it promotes inclusive growth, ensuring that the benefits of sustainability are shared widely across society. Technologically, it drives advancements that create new industries and job opportunities, positioning the UK at the cutting edge of the global economy.

Beyond capital attraction, the UK can establish itself as a global hub for an enhanced form of capitalism and become a centre for purpose-led investing, sustainable finance education and continued market innovation. Creating dedicated institutions for research and fostering collaborations between universities, industry leaders, and government agencies will accelerate the development and adoption of groundbreaking whole of economy solutions. This will not only enhance the UK's intellectual capital but also ensure a continuous pipeline

of skilled professionals dedicated to advancing the financial system sustainably whilst growing the economy.

Innovative policies are crucial for facilitating cross-sector collaboration and technological advancement. The UK's robust legal frameworks and progressive policies should be further enhanced to support sustainable innovation and market mechanisms. By creating a regulatory and fiscal environment that encourages sustainable practices, the UK can position itself as the safest and most sustainable market for investment. Regulatory and fiscal foresight is essential in ensuring that the market not only attracts but also retains sustainable investments, setting a global benchmark. To achieve true market leadership, the UK must embrace policy innovations that go beyond compliance and actively promote sustainability.

To push the boundaries further, the UK should consider challenging key assumptions that potentially hold us back. For example, every shared vehicle on the road takes seven off and increases the use of public transport. As we move to a future where autonomous vehicles will become the norm, is there an opportunity to start positioning a market where people tend not to own their own car – i.e. ordering the exact type of vehicle you need for a specific job when you need it rather than have one type of vehicle mostly sitting on the drive. What would need to happen across government, financial services, corporates and individuals for this to happen?

Another example is housing. There are an estimated 25 million unused bedrooms in the UK. Rather than build huge amounts of housing stock how do we ensure that we more closely align use and need. Would we be better creating incentives to insulate and downsize, improving overall housing quality, whilst saving the biodiversity and nature we so desperately need to protect. What would need to happen across government, financial services, corporates for this to happen?

These types of questions enable a new discussion around how we build a robust foundation for long-term economic and environmental health. By adopting a whole-of-economy approach, and engaging the public in the debate, the UK can ensure that these investments are not just isolated efforts but part of a broader strategy that integrates various sectors for maximum impact.

The UK’s leadership in making markets sustainable and its global supply chains will amplifying the global impact of its initiatives. By integrating financial expertise with strategic investments, regulatory foresight, innovative fiscal measures and a commitment to sustainability, the UK can lead the way in the global transition towards more sustainable economies. The whole-of-economy approach ensures that all sectors are aligned and working towards common goals, maximising the impact of each initiative. This comprehensive strategy not only addresses immediate climate priorities but also lays the groundwork for long-term resilience, societal improvement and wider prosperity.

In conclusion, the whole-of-economy approach is not just a strategy; it is a necessity for addressing the complex challenges of a more purposeful public. By integrating various sectors, leveraging financial expertise, and fostering innovation, the UK can lead the global transition towards a sustainable future. The UK's unique position in the financial services industry, combined with its progressive regulatory frameworks, could position it as the safest and most sustainable market for investment. The UK can drive global standards for

sustainability and create a resilient, inclusive, and prosperous economy for generations to come.

**The opinions expressed in this article are the author's own and do not reflect the view of PwC.**

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David is the Sustainability, Disruption and Innovation Lead at PwC. David has been tasked with creating a vision that enables the financial markets to make the systemic changes required to remain effective as ESG data becomes increasingly price sensitive.
A chartered accountant by trade, David's varied career has spanned Energy, Airlines, Asset Management, Banking, Audit, Corporate Recovery, Finance, Investor Relations, Advisory, large transformations and increasingly systemic change. David focuses on enabling markets to benefit from emerging trends and latest technologies. David's particular focus is the combination of business understanding and human insights, applied to the ever-increasing and impactful range of data sources that shape and measure our world.

# CREATING A UK TRANSITION FINANCE HUB: SUSTAINABILITY-LINKED DEBT AS THE NEXT FRONTIER

Krista Tukiainen, ClimateAligned

*The UK government's ambitions to become a transition financing hub require greater policy cohesion in tandem with utilising its well-established role as a green debt issuer. Exploring the next frontier of sustainability-linked debt offers significant opportunities for the government and its climate ambitions, as well as corporates, financial institutions, and investors active in the country's capital markets. Mandatory transition plans and disclosure of green activities can help to maximise the benefits for issuers seeking to raise capital, and coherent labelling and disclosure framework for investors managing sustainable financial products.*

The new Labour-led UK government has an opportunity to press ahead with its plans to make the country the world's leading hub for raising capital for the climate transition, and London the leading net-zero financial centre.

The terms of reference of the Transition Finance Market Review set out several focus areas, one of which is encouraging "investible instruments that can unlock long term capital (such as sustainability linked debt and transition bonds), while maintaining the integrity of climate goals and helping to build trust in financial solutions" (Department for Energy Security & Net Zero & HM Treasury, 2023). To meet this goal, the government can lead both by creating favourable conditions for the issuance and investment into such capital instruments in a credible way, as well as by building on its own market position as a sustainable bond issuer.

The UK was among the world's first 25 governments to issue a green bond, with its maiden green gilt priced in 2021 (Climate Bonds Initiative, 2021). The green gilt programme and accompanying National Savings & Investments (NS & I) green savings bond for retail were initially well-received by the market (Milliken & Bahceli, 2021), but despite the issuance programme having grown to about £20bn with more underway (Crown & HM Treasury, 2024), investors have since expressed their frustration at the lack of policy certainty around the government's climate ambitions (Webb, 2023, Kemplay, 2024).

To signal its dedication to the necessary transformation for a climate-resilient economy and society, the government should revisit an idea proposed by the Social Market Foundation in 2022: Issuing climate transition focused sustainability-linked bonds (SLBs) (Corfe et al., 2022). SLBs are a performance-based mechanism that involve an issuer's cost of capital tied to the achievement of predetermined sustainability targets, embedded in the bond contract. In comparison with typical green bonds, where the use of proceeds are outlined as a list of eligible project and activity categories identified prior to issuance, SLBs are general-purpose funding instruments and can therefore help to manage long-term uncertainties related to the

viability of technologies required for the transition (Flugge et al., 2021, Lehmann & Martins, 2023, Monnin et al., 2024). When adopted by governments, they can help to reflect a commitment to policy coherence and offer predictability to investors, as well as allowing for a broader scope to share the costs of issuance between various policy use cases beyond just debt financing (Sustainability-Linked Sovereign Debt Hub, 2023).

Sovereign SLBs were pioneered by emerging market issuers, and the UK government would be the first developed market sovereign to issue a SLB if it made it to market within the next six months (Khadbai, 2024). The format could complement the green gilt programme, expanding the government's green financing framework to cover funding linked to climate performance. This would see the Debt Management Office coordinating closely with other government agencies to calibrate the performance targets. The government should consider portioning its Paris target, the Nationally Determined Contribution (NDC), for this purpose in light of its upcoming revision in 2025 (UNFCCC, n.d.). Other countries, such as Chile and Uruguay, have previously used their NDCs to set targets for SLBs (Almeida, 2024). The UK could also look to incorporate applicable policy elements similar to those in the Japanese government's Green Transformation Plan, which are in part financed by the global first sovereign transition bond issued by the country earlier in 2024. Such areas include for example financing to decarbonisation subsidies and R&D spending (Burge et al., 2024).

Irrespective of the issuer's sector, credible SLBs include a clear articulation of the entity's sustainability and climate transition strategy (Almeida, 2024). This aspect is also featured in the EU's upcoming market standard for green bonds, the European Union's Green Bond Standard (EU GBS). The UK government has already catalysed work on transition planning through the Transition Plan Taskforce, and it should look to make such plans mandatory for green and other sustainable bond issuers as quickly as possible. Transition plans can offer great value and clarity to investors on the suitability and contribution of a labelled bond's use of proceeds and the performance targets in a SLB. This is especially powerful when coupled with disclosures relating to the alignment to a green classification system for assets, projects, and economic activities. For EU GBS, issuers will use the EU Taxonomy. A UK-specific green taxonomy has been in development since 2020 (Green Finance Institute, 2023). The UK is home to the world's fifth-largest bond market that includes many European issuers (World Economic Forum, 2023). Many of these entities will want to continue raising capital in the UK and vice versa, given the significant trading relationships and significant investor overlap between the two markets. In order to support interoperability and to boost growth in raising capital for the climate transition, the government should speed up finalising and publishing the taxonomy per the final recommendations submitted to it last year by the Green Technical Advisory Group (Green Finance Institute, 2023). It should look to clearly outline the differences and overlap between the UK and EU (and other major taxonomies) to minimise friction between entities operating in multiple jurisdictions and tapping into global capital markets. This will help the government maintain the UK as an attractive place to raise funds.

To ensure that any taxonomy and potential mandatory transition plans are quickly harmonised with investor disclosure rules, the government should continue its collaboration with the Financial Conduct Authority and other relevant parties. For example, offering a more prescriptive approach on the role of the proposed investment labels in the UK's

Sustainability Disclosure Rules (SDR) will see the UK avoid some of the confusion around the treatment of sustainable bonds in the fund labelling as part of the EU's Sustainable Finance Disclosure Regulation. In addition, the government should invite direct contributions from other entities that govern guidance used by market participants, including industry associations such as the International Capital Markets Association (ICMA) for bonds, and Loan Market Association (LMA) for loans. Fast adoption and active shaping of market guidance can help the government to take advantage of opportunities to incentivise key sectors for the economy to transition. For example, the financial services sector makes up more than 8% of the UK's gross domestic product (Shalchi et al., 2024), a majority of which is banks. ICMA and LMA recently published joint guidance on Sustainability-Linked Loan Bonds (SLLBs) (LMA & ICMA, 2024), a mechanism where a financial institution issues a SLB exclusively to borrow money in the form of sustainability-linked loans (SLLs) to its customers. This mechanism can help banks to bring more customers along its climate and sustainability journey by introducing SLLs as an entry point to the bond market, and as a complement to bond issuance when lending is better suited to a borrower's financing needs. Importantly, SLLs are a key mechanism for Small and Medium Enterprises, which are essential to unlocking the UK's net zero ambitions (Postings, 2024). Well-structured SLLBs can also offer much-needed transparency to the loan segment itself, often criticised for opacity (Frost, 2023), as well as giving issuing banks recognition for the work done behind closed doors to arrange loan transactions with sustainability characteristics.

The UK government's ambitions to become a transition financing hub can benefit greatly from policy cohesion and its continued role as a green debt issuer. Exploring the next frontier of sustainability-linked debt offers great opportunities for the country, especially when paired with mandatory transition plans and disclosure of green activities for issuers, and a coherent labelling and disclosure framework for investors managing sustainable financial products.

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Krista is co-founder and Chief Commercial Officer of ClimateAligned, a leading climate fintech company using AI to help finance professionals uncover opportunities and risks in the climate transition by matching their queries, preferences, and frameworks to the sea of information available on financial assets and issuers globally. Before starting ClimateAligned, Krista spent nearly a decade working on sustainable finance topics across sectors and markets. Most recently she was Head of Market Intelligence at the Climate Bonds Initiative, developing and implementing green finance standards and products for issuers, investors and banks. Krista continues to serve as Senior Advisor to Climate Bonds as well as being a member of several industry working groups.

# THE UK IS NO ISLAND WHEN IT COMES TO PRIVATE CLIMATE FINANCE

Andrea Webster, World Benchmarking Alliance

*The UK government cannot scale up climate finance alone. Whilst this book will have recommendations on incentivising financial innovation, domestic policy, and capacity building, the bigger challenge is reaching an international agreement around the demand and supply of private finance. There are numerous positive reasons for the UK government to increase ambition and lead calls internationally to create clarity around the role of private finance. Not least of these is the help it can provide to renew investor confidence in the United Kingdom around climate commitments.*

## Scaling Up Climate Finance Is Both A National And Global Issue

Thinking that existing international initiatives are sufficient to scale private funding levels in climate finance is unrealistic. The funding gap is expanding, and although noble, current initiatives are insufficient. Financial institutions are in unchartered territory as policy and politics fragment internationally. The United Kingdom can show leadership and set the agenda by taking a leading role in calling for certainty and clarity on the global expectations of private finance.

Without action, funding at the needed scale will not materialise in the United Kingdom or internationally. The consequence of this will inevitably be social instability, which will ripple through the financial system and ultimately affect the domestic agenda.

With global agreement on the responsibilities of financial institutions, the supporting organisations and ecosystem can respond and embed private finance into global accountability mechanisms. Government clarity will bring the certainty that the financial system thrives upon. In turn, such certainty will reward those institutions that become part of the solution while penalising those that continue to cause harm and hold up progress. This will drive market forces and help move money at scale.

## Global financial stability hinges on social and environmental stability

Stability is the main anchor of any well-functioning financial system, all of which depend on thriving economies. Thriving economies are dependent on thriving societies and healthy systems. Given the symbiotic relationship between a thriving society and a thriving economy, the different actors in finance need clarity on their collective responsibility to create and support thriving economies.

There are many examples around the world where failing to tackle climate change is worsening global inequalities. This is especially evident in the gulf between developed and developing economies. The result is an amplification of social disruption, which is ironically slowing down the world's ability to make progress. This negative feedback loop is only going to accelerate.

The increase in severe climate events globally will increase conflict and social unrest internationally, which then threatens to spill over to the United Kingdom, thus increasing pressure on border security, food security, energy security, and supply chains. These are all major issues that the UK government will have to grapple with, yet cannot solve alone.

### Creating clarity on the responsibility of private finance

Despite investor-led initiatives and increasing attempts within pockets of finance to increase climate funding, it is ineffective without alignment. The global landscape for action by private finance is becoming fragmented and risks slowing down action rather than accelerating it.

Before governments deepen competition on climate-related technology and finance, we must first collaborate globally, given the global nature of finance. There is an opportunity for the United Kingdom to be a leading voice at the United Nations, bringing member states together around the agreed responsibilities of private finance - much as it has done with business and human rights. A clear signal to financial institutions on global consensus will also empower the City of London, as an international centre, to engage and collaborate with peers on a level playing field.

### International negotiations where the UK can take a prominent role

The 4th Financing for Development meeting and update of the Addis Ababa Agenda provides a key opportunity to strengthen language that articulates the responsibility of private finance. This needs to fundamentally address how public and private actors interact with each other in the intergovernmental systems to strengthen private sector responsibility. This also supports the goals of the Summit of the Future.

Beyond the Financing for Development agenda, there are many more conversations at a United Nations level on International Financial Architecture Reform to strengthen financial flows for the Sustainable Development Goals and climate action. Not least of these is COP29 (dubbed the 'finance COP'), which aspires to an agreement on a New Collective Quantified Goal (NCQG) for climate finance to move from the billions to the trillions. While progress on this front has been slow at the Bonn intersessional in June 2024, there is an opportunity for the United Kingdom to prominently call for a strengthened agenda ahead of COP29 while building links to the Brazil G20 and COP30 presidencies.

The risk of inertia in the multilateral system will only increase the future costs on every level imaginable, and the United Kingdom has a new chapter to take the leadership on preventing this.

### Reframing the narrative positively around global prosperity

There is general acknowledgement of the disconnect between society's expectations and private finance's acceptance of its responsibilities. This disconnect is fuelled by a conflict of narrative and culture between policy and private finance. Its foundations lie in alarmingly high levels of distrust between civil society, government, business, and investors. This truth must be faced and addressed at the highest level.

Moving away from short-term, political point-scoring of the past to longer-term leadership to tackle the over-the-horizon issues that climate change poses is crucial to rebuilding trust. Equally essential to creating a positive environment for private climate finance is a narrative

around the long-term prosperity of the United Kingdom alongside the international community, coupled with the provision of energy security and a just transition that tackles inequality through opportunities in the green economy.

### Emphasis on the role of private finance:

- Recognise that the funding gap will not be closed without further action from private finance.
- Agree to the need of the United Nations and its member states to clearly define the responsibility of private finance globally to support the global agenda for long-term stability.
- Lead discussions on articulating these responsibilities to create demand from investors for climate finance, as well as strengthen and build the necessary systems and processes.
- Recognise domestic responsibilities as well as international responsibilities of private finance to create more synchronised cooperation.
- Specifically articulate the need for innovation and action around climate finance linked to society to support funding for a just transition.
- Ensure that there is clarity and accountability on the quality and type of finance needed, not just the quantity.
- Create a common, globally relevant narrative that all stakeholders can support and rally action around.

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## ABOUT THE AUTHOR

Andrea Webster is Head of Financial System Transformation at the World Benchmarking Alliance, assessing banks, asset owners, asset managers and life insurers against global frameworks and principles. She is championing collaboration across government, civil society and business to accelerate action through best practices across the sector, peer-to-peer learning as well as supporting various global initiatives.

Before joining World Benchmarking Alliance, Andrea has spent over 25 years in the finance sector as a licensed practitioner as well as management and advisory positions, with a strong focus on emerging markets. She has a Masters in Philanthropy focusing on the role of institutional investors in funding the Sustainable Development Goals. She actively contributes to industry debate through the think tank SustainFinance.org.

# BUILT ENVIRONMENT

# ENHANCING PUBLIC-PRIVATE COLLABORATION FOR GIGAFACTORY INVESTMENT IN THE UK: THE ROLE OF PLANNING REFORM AND INVESTMENT PROSPECTUSES

James Alexander, UK Sustainable Investment and Finance Association

*This paper examines the ways that the UK government could remove barriers to public-private collaboration and attract greater private investment into gigafactories in the United Kingdom. Looking at planning reform and detailed investment prospectuses, UKSIF analyses how these strategies can provide more clarity to private investors and stimulate the growth of the UK's battery manufacturing industry. The paper considers the current investment landscape, international comparisons, and the principles of the just transition to suggest a framework for more effective collaboration between the UK government and the private sector.*

## Introduction

The United Kingdom stands at a critical juncture in its economic and environmental trajectory. As the nation strives to revitalise its infrastructure and achieve the ambitious target of hitting net zero by 2050, as well as meeting our legally binding nearer-term targets under the Climate Change Act, the need to drive billions of pounds of private investment into the country has become more apparent and more urgent. One area in which we are substantially behind our neighbours is in our gigafactory offering and encouraging the development of our domestic battery manufacturing industry and supply chains. This paper examines the potential of enhanced public-private collaboration, with a specific focus on planning reform and detailed investment prospectuses, to attract the necessary investment in gigafactories across the country.

The importance of this issue is underscored by the consistent underperformance of UK investment levels – both public and private – compared to other G7 nations.[1] Lord Harrington's review of Foreign Direct Investment highlighted a stark annual disparity of approximately £50 billion in business investment between the United Kingdom and its competitors.[2] The investment gap we face not only hinders the development of major capital projects but also impacts associated supply chains, job creation, and skills development.

[1] IPPR's report highlighted that the United Kingdom has had the lowest public and private investment among G7 countries in 24 out of the last 30 years.
[2] HM Government: Harrington Review of Foreign Direct Investment (November 2023).

## Current Investment Landscape in the UK

The United Kingdom is falling behind our neighbours in the United States and European Union, as well as some markets in Asia, in terms of attracting investment towards the clean energy transition, including in battery manufacturing and new battery technology. The United Kingdom's stated ambition to become a world leader in the battery value chain has been hampered by challenges in promoting and incentivising the growth of a domestic battery manufacturing industry. The House of Commons Business and Trade Committee has criticised the government's approach, noting significant policy gaps related to gigafactories and emphasising the need for a long-term vision and clear action plan to improve battery manufacturing capacity.

Both major political parties have committed to bolstering gigafactory investment. The former Conservative government under Prime Minister Rishi Sunak secured a £4 billion investment from Tata (with £500 million in government subsidy), while Labour has pledged to invest £1.5 billion from the National Wealth Fund.[3] But these efforts fall short of meeting the country's projected investment needs. Current forecasts from the Faraday Institution suggest that by 2040, the United Kingdom will host only eight gigafactories, each with an average production capacity of 15GWh per year. This is far below the estimated requirement of ten gigafactories producing 200GWh of battery capacity annually for the United Kingdom to compete globally.[4]

## International Comparisons

The contrast between the United Kingdom's approach and that of other nations is stark. The United States' Inflation Reduction Act (IRA) has catalysed over $110 billion in clean-energy investments from the private sector, including more than $70 billion in electric vehicle supply chains. The IRA is projected to create an additional 1.5 million jobs in the next decade. Crucially, the IRA provides potential investors with clear, easily identifiable rules of engagement, offering transparency regarding tax credits, job creation incentives, and planning laws.

The European Union is following suit, developing similar initiatives to attract gigafactory investments. In failing to keep pace, the United Kingdom risks becoming a major importer of these technologies, missing out on the jobs, skills and economic benefits of domestic production and supply chain development. The success of neighbours like the United States and Germany ought to highlight the importance of transparency, consistency, and clear incentives to give investors confidence and thereby attract private sector investment towards battery technology.

## The Role of Planning Reform

One key strategy to make the United Kingdom more attractive for gigafactory investment is planning reform for potential sites. Planning is frequently cited as a key barrier to private sector investment in major energy infrastructure and renewables projects in the United Kingdom. A new approach to planning, including pre-application approvals for certain sites, could significantly streamline the development process, thus reducing uncertainty, risk,

[3]UK Government. (2024). "Welsh steel's future secured as UK Government and Tata Steel announce Port Talbot green transition proposal."; Labour Party. (2024). "Labour Party manifesto 2024."
[4]Faraday Institution. (2022). "2040 Gigafactory Report."

costs of capital, and delays for investors. By pre-approving suitable locations for gigafactory development, the government can demonstrate its commitment to facilitating these crucial projects and provide investors with a clearer path forward.

However, implementing this strategy requires careful consideration of potential challenges, such as environmental concerns and local community impacts. Mitigation strategies could include environmental impact assessments and community engagement processes conducted in advance of granting planning permission (see Section 6 for more).

### Investment Prospectuses as a Tool for Attracting Investment

The development and publication of detailed investment prospectuses for potential gigafactory locations represent another powerful tool for attracting private sector investment. These prospectuses should outline the economic and social benefits of hosting a gigafactory, including job creation potential, infrastructure development opportunities, and supply chain advantages.

Effective investment prospectuses should provide transparency around what incentives are available, including potential government subsidies, tax breaks, or other financial support. They should also clearly articulate the government's commitment to supporting the development of the country's battery manufacturing industry.

By providing this level of detail and clarity, investment prospectuses can facilitate more informed decision-making by potential investors, reducing uncertainty and highlighting the United Kingdom's competitive advantages in the global race for gigafactory investment.

### Just Transition Principles in Gigafactory Development

Putting the principle of just transition first in our gigafactory investment strategy is crucial to ensure that the benefits of the green transition are widely shared.

Investment prospectuses should prioritise locations with existing skills and infrastructure that can be adapted for the green economy. Additionally, they should outline requirements for gigafactory developers regarding local employment, skills training, and fair wages. Collaboration with organisations such as the Trades Union Congress can ensure worker representation and support in these initiatives.

### Policy Recommendations

To maximise the effectiveness of these strategies, we propose the following policy recommendations:

1. Develop a standardised framework for creating and issuing investment prospectuses for gigafactory sites, ensuring consistency and comprehensiveness across potential gigafactory locations. This framework should undergo careful consultation in advance with industry stakeholders and investors.
2. Implement planning reform, including a more streamlined process for granting pre-application planning permission to certain suitable gigafactory sites, incorporating necessary environmental and community safeguards as part of this.
3. Clarify for investors and businesses the engagement channels within government departments, including consideration of establishing a dedicated civil service team to

engage with potential investors on gigafactory sites, providing clear and consistent information without prejudicing decision-making processes.

4. An updated strategy from the Department for Business and Trade and the Department for Transport on the country's investment approach and support for gigafactories, covering planning, skills, details on target locations for sites, regulatory frameworks, and financial and tax incentives for the private sector, among other areas.

## Conclusion

Our ability to attract significant investment in gigafactories is essential for the future of the automotive industry and our transition to a net-zero economy. By issuing pre-application planning approvals in certain cases and detailed investment prospectuses, the UK government can provide the clarity and certainty that private investors need to put their confidence in the United Kingdom. These strategies, combined with a commitment to just transition principles, can create a win-win situation: attracting vital investment and jobs, while ensuring a skilled and supported workforce for a green economy.

The success of these initiatives will depend on consistent implementation, transparent communication, and lockstep collaboration between public and private sectors. By learning from international examples and adapting them to the UK context, the nation can position itself as a leader in the global battery manufacturing industry, driving economic growth and environmental progress.

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## ABOUT THE AUTHOR

James Alexander is Chief Executive of the UK Sustainable Investment and Finance Association (UKSIF), and the Chair of the Global Sustainable Investment Alliance (GSIA). UKSIF is the membership organisation for Sustainable Finance in the UK, convening 320+ organisations, collectively managing over £19 trillion in assets.

# WARMER HOMES FIT FOR THE FUTURE: THE SHORT-TERM ACTIONS GOVERNMENT SHOULD TAKE

Ian Bhullar and Tom Reynolds, UK Finance

*UK homes remain some of the least energy efficient in Europe. In their piece Ian Bhullar and Tom Reynolds examine the short-term measures the new government should take to unlock progress towards a more sustainable housing market, mobilising lending to deliver warmer homes.*

Raising the UK carbon price is crucial for decarbonisation, but it must be alongside smarter decision making. By strategically investing in the power grid, policymakers can maximise the impact of limited resources and optimise the potential of the wind resource to achieve deeper emission reductions at a lower overall cost, particularly if onshore wind was prioritised. However, the reality is electricity costs will rise in a decarbonised future regardless. To ensure consistent action across political cycles and minimise the cost uplift, strong communication of the long-term benefits to the public and political consensus are essential.

Improving energy efficiency and delivering warmer homes presents a sizeable opportunity to boost a key growth industry; help put money in the pockets of people up and down the country; and create localised jobs, while helping the country meet its climate targets.

We estimate this would deliver almost £40 billion of cumulative benefits by 2030, including £24 billion in consumer bill savings.[1]

UK homes remain among the least energy efficient in Europe, and account for around 20 per cent of UK greenhouse gas emissions. In 2022 our report, Net Zero Homes: Time for a Reset, drawing on extensive engagement with the lending sector, we estimated it will cost UK homeowners around £300 billion to reach the government's required Energy Performance Certificate (EPC) ratings.

Tackling the issue needs sustained focus and a suite of policy measures. Our Net Zero Homes report set out a policy roadmap, including clearer long-term expectations from homeowners, public support for more vulnerable households, and tax rebates to stimulate action. UK non-profit Nesta has recently made its own case for similarly deep and wide-ranging policy change.[2]

[1] UK Finance, May 2024, Building a Better Society: A Financial Services Manifesto for the UK.
[2] Nesta, July 2024, Delivering clean heat: a policy plan.

But this long-term list of requirements should not stop Government from taking important short-term actions. Earlier this year, we surveyed UK Finance member banks to set out the measures they felt Government should take immediately to stimulate short-term demand among "able to pay" homeowners.

## Identifying the challenges

Many homeowners and landlords lack the confidence and knowledge to embark on retrofitting projects. Only around a third feel financially prepared to make significant changes to their homes which would improve their energy efficiency.[3]

The banking sector has a wealth of knowledge and research to demonstrate how this lack of confidence and awareness is hampering take-up. Households report that high upfront costs act as a disincentive, but that they are unwilling to take on debt for the necessary improvements.[4] Homeowner action is being blocked by confusion around what "retrofitting" is, with almost a third of homeowners saying they have never heard the term;[5] as well as "not knowing where to start" and the inconvenience of building work.[6] Homeowners tend to overestimate the time and cost of retrofit.[7] [8] And in 2022 only 12 percent of landlords polled said they would use net additional borrowing to fund EPC improvement.[9] Homeowners need guidance to navigate the market.

Other barriers also hamper action. The UK lacks the skills and supply chains to deliver more energy efficient homes.[10] More skilled workers are needed to deliver home improvements, which can be achieved through joint action from government, employers and workers. Grants, subsidies and a proper policy framework are needed to upskill the many thousands of tradespeople needed to deliver these improvements.

Finally, mechanisms for measuring and demonstrating improvements to home energy efficiency are not fit for purpose. Many homes do not have an EPC rating. For those that do, they are sometimes many years out of date and do not reflect upgrades homeowners or landlords may have made over the years. This only adds to the confusion experienced by homeowners about what they need to do to make their properties more energy efficient.

## A plan for progress

Previous governments did not fully exploit opportunities to stimulate demand among "able to pay" cohorts. UK Finance and its members have identified four short-term steps that can address obstacles and unlock progress towards greater energy efficiency within those groups.

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[3] UK Finance, May 2024, Building a Better Society: A Financial Services Manifesto for the UK
[4] NatWest, January 2024, Consumer attitudes towards greener homes.
[5] Santander, September 2023, Seven in ten homeowners find "retrofitting" too overwhelming, as Santander encourages small steps towards greener streets.
[6] Lloyds Banking Group, November 2023, Upfront costs biggest barrier to green home improvements.
[7] Barclays, July 2023, Homeowners put off energy efficiency upgrades due to misconceptions about cost and installation time.
[8] Ipsos, July 2023, New Ipsos research for Barclays explores homeowners' experiences making energy efficiency improvements to their homes.
[9] OSB Group, November 2022, Landlord Leaders: A new environment for the Private Rented Sector.
[10] Ashden, September 2022, Retrofit: Solving the Skills Crisis.

- **Communicate:** To address the knowledge and confidence gap, homeowners need better communication from government. They need a public-facing, government-led campaign involving all stakeholders – public and private – in the housing market driven forward by the Government to provide customer education. Previous efforts suffered from a lack of depth in the advice provided and minimal promotion.

- **Advise:** An advisory service could also quickly improve progress. Homeowners will need independent advice from a trusted source to limit the emergence of rogue traders and ensure improvements are fit for purpose. UK Finance found that among voters, 72 percent would support a new government in establishing a new source of independent advice on how to make their homes more energy efficient.[11] Creating a government-backed, independent Retrofit Advisory Service could achieve this. The service should act as a 'one stop shop' for free, impartial retrofitting advice, modelled on similar services in Ireland.

- **Train:** Our nascent supply chains can be boosted by training skilled retrofitters to green the housing stock through a new apprenticeship scheme. Action taken to raise industry capacity for the greening of the housing stock must work in tandem with wider initiatives to grow the capacity of the construction industry.

- **Update:** Government should also implement improvements to the monitoring of home energy efficiency and emissions performance so that it is fit for purpose. This could include, for example, expediting the long-awaited reform of the EPC system, or offering new mechanisms for demonstrating the carbon performance of homes.

These steps could be quickly implemented and boost demand for retrofit in a share of UK homes while the government devises its longer-term strategy. They are low-cost measures which could lay the foundations for more ambitious policy when the fiscal position allows.

## Working together

The Green Finance Institute, which tracks the range of green mortgage products available, now lists some 60 available products.[12] However, we need to be clear about the banking sector's limits on this agenda. Green mortgage products have so far had limited take-up and even where they are taken up, mortgage products and loans will only form a part of the financing package – lending will not be the right or preferred option for some homeowners.

While large sums of finance are available, as demonstrated by the range of concessionary lending products, not all homeowners will be willing or able to borrow more, due to affordability and cost-of-living challenges. That is why, in the medium-to-long-term, Government needs to incentivise and deploy other forms of financing to reach all households. The banking sector is keen to play its part.

The financial services sector is committed to working with policymakers, in collaboration with other sectors, to address the challenge of helping homeowners, housing associations, and landlords make their homes more energy efficient. To facilitate this, government should

[11] UK Finance, May 2024, Building a Better Society: A Financial Services Manifesto for the UK.
[12] Green Finance Institute, Green Mortgages [accessed July 2024].

create a forum with the private sector to accelerate energy efficiency improvements to homes and businesses, learning from the lessons of the Energy Efficiency Taskforce.

By working together on these crucial initiatives, we can empower homeowners, support vulnerable groups, and build a skilled workforce. It will boost a key green industry and provide savings to households across the country. This will unlock the immense potential of home retrofitting, leading to a more sustainable, affordable, and energy-efficient housing market for all.

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## ABOUT THE AUTHOR

Ian Bhullar is Head of Sustainability Policy at UK Finance, a representative body for the financial services sector. He held climate policy roles in the UK Government and European Commission, including as senior advisor to former Bank of England Governor Mark Carney for the COP26 climate conference.

Tom Reynolds is a Strategic Policy Manager at UK Finance. He works with member firms from across the banking sector covering issues around financial services regulation and sustainability policy.

# POWER GRID INVESTMENT – THE KEY TO FASTER, LOWER-COST DECARBONISATION

Paul Butterworth, CRU Group

*Raising the UK carbon price is crucial for decarbonisation, but it must be alongside smarter decision making. By strategically investing in the power grid, policymakers can maximise the impact of limited resources and optimise the potential of the wind resource to achieve deeper emission reductions at a lower overall cost, particularly if onshore wind was prioritised. However, the reality is electricity costs will rise in a decarbonised future regardless. To ensure consistent action across political cycles and minimise the cost uplift, strong communication of the long-term benefits to the public and political consensus are essential.*

## The current UK carbon price is not high enough to achieve emission reduction aims

The United Kingdom was one of the first major economies to make net zero legally binding and the UK Emission Trading Scheme (UK ETS) was created as a main driver of that commitment. However, the current structure of the UK ETS will not deliver the decarbonisation that it was created for due to excess allowances and a low carbon price.

Despite a 2023 restructuring of the UK ETS, the carbon price has remained low, hovering at ~£35 /t$CO_2$ for most of 2024 with a recent increase to ~£45 /t$CO_2$. This falls short of the European price by some 20–30 percent, which itself is depressed by a weak economy. Modelling indicates that the current UK ETS structure can only incentivise emission reductions up to 4 percent annually by 2030, lower than reductions achieved over the last decade and half that needed to reach net zero.

Using a carbon abatement cost approach, we assess that, by 2030, the UK carbon price needs to be ~£100 /t$CO_2$ (real 2024) to incentivise sufficient low-carbon investment to keep on track with net zero, subsequently rising towards ~£200 /t$CO_2$ (real 2024) by 2050 (n.b. this assumes carbon price remains the main decarbonisation lever, rather than subsidies). This has implications for costs and competitiveness but is a necessary precursor for decarbonisation.

## Grid investment far more effective than hydrogen for emission reductions today

The abatement curve used to determine the required carbon price above –gives a cost-based hierarchy of decarbonisation options. Higher cost options on the right use hydrogen and require significant process change; lower cost options on the left relate to grid decarbonisation and electrification and require only ‘plug in’ technology replacements. Carbon capture sits in the middle. Further, options towards the right engender greater risk, given the level of technology development and commercialisation required. We believe this differentiation can inform policy choice.

For example, based on the abatement curve, it is clear that an investment in low-carbon options on the right of the curve would reduce $CO_2$ emissions by three, four or five times if that same investment was directed towards options on the left. And there is further rationale for such a focus:

- the world is currently on a 2.5–3.0˚C temperature pathway and high emissions today will impact temperature this century and beyond. Maximising reductions today will have long term benefits.

- Such reductions are based on proven technologies (e.g. wind, solar, batteries etc.) that can be implemented at lower risk.

- The build-out of plant and equipment needed to meet decarbonisation goals mean there are constraints on capital, engineering capacity, supply chains, and materials; these will become more pronounced over time. Investment on the left of the curve maximises the benefit from constrained resources.

To achieve the fastest and most significant emission reductions, we need to optimise the use of limited resources. This means prioritising policies and investments that fall on the left side of the abatement curve.

Decarbonising the power grid is key for maximising emission reductions and offers a trifecta of benefits, as the lowest-cost, lowest-risk option with the highest impact. Not only is it cost effective, but it also lays the groundwork for broader economy decarbonisation, including deeper industry electrification, faster roll-out of electric vehicle charging points and grid-connected electrolysers for effective hydrogen production. But decarbonisation of the grid requires improved grid infrastructure.

Without this, deep decarbonisation will not be possible, but there are two issues: first, power demand will increase with decarbonisation and electrification, so the overall size of the grid needs to expand; second, capacity constraints within the grid need to be eliminated to allow the free flow of power from wherever it is generated to wherever it is needed. Tackling these issues will go together.

To illustrate, payments made to generators by National Grid in response to grid constraints have increased in line with renewables penetration and equate to ~£27/MWh of renewable power generated. This is essentially a cost to absorb variable renewables on to a grid that is ill-configured to do so.

These payments will continue to increase with the penetration of renewables. A simplified net-benefit calculation suggests that up to ~£150 billion would be a viable spend to overcome these issues, assuming overall costs to the consumer remain the same after investment.

We believe spend of this magnitude is needed to both expand the grid and eliminate constraints, such that renewables penetration can lift to high levels by 2050 to meet the net-zero target.

But there are two problems. Firstly, although benefits from emission reductions will be great, investment of this sort provokes negative responses from the public; the benefits are in the future, conceptually vague, and broadly spread, whereas the impact today is on communities and individuals and costs will go directly onto energy bills. This is an issue not only of cost and infrastructure, therefore, but also one of communication and education.

Secondly, benefits will run beyond a single parliament, making it more difficult to justify action today, particularly when it leads to higher costs. Political consensus is therefore needed to maintain momentum and ensure decarbonisation does not become a political battleground.

The reality is that electricity costs will rise in a decarbonised future, regardless of grid investment. But costs will be even higher if grid upgrades are neglected, as we struggle to manage an ill-configured power system, limiting our ability to optimise wind power and so hindering our ability to decarbonise with renewables overall. Conversely, prioritising grid investment offers a win-win solution. It maximises the country's decarbonisation potential while minimising the overall cost of achieving a clean energy future - critically, by allowing the optimal integration of the wind-solar resource. Added costs could be further minimised if onshore wind was given greater priority.

The United Kingdom already has plans for grid investment to support net-zero goals. However, to unlock the grid's potential as a driver of decarbonisation, a stronger commitment is needed. This includes increased funding, improved planning, and ambitious action. This will help ensure that the grid leads, and is not a drag on, the country's ambitious decarbonisation aims.

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## ABOUT THE AUTHOR

Paul joined CRU's Steel team in 2012, responsible for CRU's analysis across the whole steel value chain, from raw materials through to finished steel, as well as CRU's Steel cost services – a comprehensive suite of cost models covering iron ore mining, coal mining, steelmaking, and ferroalloys operations worldwide. Paul moved to CRU's newly-formed Sustainability team in August 2021 where he is working closely with clients and internally on issues related to the carbon market and energy transition.

Paul has 33 years' experience in the steel industry, having worked for Tata Steel, Corus, British Steel, and WorldSteel Association in a range of environmental, strategic, business development, planning, and technical roles.

He holds an MBA from Warwick Business School, as well as a PhD in Theoretical Chemistry and a BSc. Honours Chemistry degree from Manchester University. He is a Chartered Chemist and Member of the Royal Society of Chemistry. Paul is based in CRU's London office.

# WHAT IF WE ALREADY HAD THE FINANCIAL TOOLKIT TO DECARBONISE BRITAIN'S BUILDINGS?

Ian Cochran, University of Edinburgh Business School and Changeworks

*Emissions from buildings in the United Kingdom have remained the second highest across sectors, with progress stalled since 2010. A significant challenge to decarbonisation remains the cost of finance for all actors, whether households, local governments, social landlords or SMEs. The failure to successfully bridge the financial gap appears to be due to political ideology, with many proposed solutions being seen as too far to the left or right to be feasible. As a result, significant focus in recent years has been on finding new 'blended' finance models, maximising private finance for a minimum of public resources. But what if the United Kingdom already has the tools it needs to solve the buildings' decarbonisation challenge? Market-led solutions combined with targeted use of the government's capacity to pair grant funding with below-market rate debt could kickstart and accelerate the necessary transformation of both the built environment and broader supply chains. Rather than seeking a set of tools that fall cleanly within each party's 'ideological' lines, government across the United Kingdom should focus on the solutions most fit for purpose for each segment of the challenge.*

## Introduction

Emissions from buildings in the United Kingdom have remained the second highest across sectors, with progress stalled since 2010 (CCC, 2023). This is despite the issue receiving attention in almost every political party's platform and being the focus of countless policies at both the union and national levels. Nevertheless, the investment and finance needed to change how the UK's 28 million buildings use energy (CCC, 2023) has failed to materialise. This failure appears at times to be due to political ideology: on one extreme, grant-funding only approaches have had impacts but are struggling to scale given the weight on public balance sheets; on the other, market-based and commercial solutions have offered promises of finance, but often at a cost of capital that is too high to work in practice. As a result, significant focus in recent years has been on finding new 'blended' finance models, maximising private finance for a minimum of public resources.

However, what if we recognised that we already have many of the tools we need to bridge the financial 'gap' to action? What if, rather than needing further 'financial engineering innovation,' the real challenge was finding the courage to buck norms or perceived political mandates to use them? In this context, market-led solutions, combined with targeted use of government capacity to pair grant funding with below-market rate debt, can help kickstart and accelerate the necessary transformation of both the built environment and the broader supply chains.

## Buildings: a complex decarbonisation challenge

The benefits of scaling up building retrofitting are multiple. Beyond direct energy savings, reduced GHG emissions and indirect improvements for health and wellbeing outcomes, this investment can help scale up supply chains and job creation. However, decarbonising the building sector is a complex challenge. Success requires not only making houses more energy efficient, so as to reduce the need for heating and cooling; it also demands a decarbonisation of the energy used. While estimates vary, the overall investment needs for the sector in the United Kingdom are typically estimated in the hundreds of billions.[1]

Unfortunately, these estimates typically exclude the investments needed in the supply chain and skills, as well as 'transaction' costs implied in retrofitting hundreds of thousands of properties per year. These additional costs cannot be discounted given that the building sector involves complex national and international supply chains as well as a large number of micro- and small-scale companies that typically lack the resources to re-train and change tack without tangible signs of future work.[2]

Furthermore, there is recognition across political lines that the sector is in crisis – from the cost of housing to maintenance costs of public buildings through to the impacts of changing working patterns and commercial trends affecting the non-domestic properties. Decarbonising this sector in a 'just' manner means solutions cannot make access to housing even more expensive for occupants nor have economics that rely purely on increasing future resale values. This implies that the UK government must build an approach that proactively manages the risks and opportunities for both those in the construction trades, as well as those occupying the buildings themselves.

## A focus on mobilising additional private finance

Over the last few years, discussions have focused on the politically enticing but practically difficult hope of 'mobilising private finance' for the decarbonisation of the building stock has taken hold. Both the UK and Scottish governments have convened taskforces[3] with the hope of finding the silver bullet - namely, 'blended finance' solutions. Unfortunately, all have had little to no success beyond confirming what the commercial financial sector has known from the start: investor appetite is limited by the relatively high (policy) risks and comparatively low long-term returns, spread across millions of small-scale transactions.

Nevertheless, some private sector-driven models have emerged. For example, Octopus Energy's "Get a Heat Pump"[4] approach has scaled heat-pump deployment in some market segments, although controls seem needed to ensure that players do not begin to take advantage of their dominant market position or lock households into conditions hidden in the fine print. Furthermore, joint ventures for large-scale infrastructure such as heat networks are also promising, particularly when short-term costs and long-term benefits are

[1] In 2020, the CCC estimated that the building sector is one of the costliest with total investments of £360 billion to 2050 split between upgrading homes (£250 billion) public and commercial buildings (£110 billion).
[2] In 2023, there were 882,770 small and medium sized enterprises in the construction industry in the UK. (statista, 2023)
[3] The Scottish Government's Green Heat Finance Taskforce of which the author is a member was convened in February 2022 was tasked with identifying 'innovative financial solutions for building owners'. (Scottish Government, 2024)
[4] Octopus Energy. (n.d.). "Get a Heat Pump."

equitably shared between parties. Other options like 'green' mortgages and similar financial products can work in certain situations, such as properties with already high EPC scores. However, they do not clearly address challenges such as financing retrofits nor providing assistance for those for whom accessing commercial finance is already difficult.

Significant time and resources have been spent attempting to find new forms of 'blending'. However, these efforts appear to be attempting to reinvent the wheel, given that governments already have extensive experience 'blending' public and private resources via public bond issuance and other established financial instruments. The barrier, however, is that these simplest solutions do not completely 'offload' this debt from the public balance sheet and, therefore, are typically perceived as politically impossible.

### Learning from existing examples of government leveraging low-cost finance

Finance remains out of reach for many to drive this transition forward, principally due to the highest cost of long-term borrowing seen in more than a decade. There is little chance that a purely commercial investment and lending approach can reduce the costs of long-term capital (i.e. anything with a maturity exceeding one year, much less a decade) down to what is feasible for those who need to invest in their properties – whether households, registered social landlords, councils, or many small and medium-sized enterprises. Nevertheless, from today, the UK government could rapidly deploy tools that could reduce the cost of that finance for both public and private actors investing in their building stock.

Firstly, the UK government could leverage the over £100 billion of private capital held in government-guaranteed and controlled National Savings & Investment accounts. Learning from what countries such as France have already done for centuries,[5] a part or all of these savings could be used to provide (relatively) low-interest, long-term loans to social landlords, councils and other public actors for infrastructure. This could be done via existing institutions such as the UK Infrastructure Bank or the Scottish National Investment Bank. While debt priced at only a few percentage points above the NS&I's guaranteed return of between 3 to 4.5 per cent will not solve all financial woes,[6] it would represent an improvement on the typically higher-rate and shorter-term finance that they are resorting to today. Furthermore, making access to financing contingent on the inclusion of decarbonisation measures in works could help accelerate action.

Secondly, the UK government could pass on the comparatively lower rate at which it can borrow to households and SMEs to support investments in energy efficiency. Many countries already use 'on-lending programmes' where a public development bank or agency issues bonds on international capital markets. These funds are then used to refinance lower-than-market rate loans via retail bank partners for predefined uses, such as energy efficiency measures. In the German Energy Efficient Construction and Rehabilitation Programme, for instance, repayable loans to households are combined with retrofit ambition-linked grants.[7]

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[5] In France, the government-backed Livret A funding is used to provide long-term loans to social landlords for energy efficient improvements to their properties at rates typically below market average. Éco-prêt logement social | Ministère de la Transition écologique et de la Cohésion des territoires (ecologie.gouv.fr).

[6] The French Livret A funds are lent at a rate of a few basis points above the guaranteed returns to account holders. A similar model could be adopted for lending using funds collected in NS&I accounts. Our saving products | National Savings & Investments | NS&I (nsandi.com).

[7] For an overview, see Existing Properties | KfW and Hennes, 2018.

This can help reduce the relative cost of debt, ease access to affordable finance, and facilitate more ambitious retrofit when paired with grant-funded technical support and advice.

### The political courage to differentiate between "good investments" and "bad debt"

Accelerating blended finance in the building sector requires a recognition that well-structured investments can deliver benefits both for households and for countries as a whole. Thankfully, the UK government and its devolved governments already have a good toolkit that spans the existing political divides on these issues. The scope and scale of the challenge require that governments put all options on the table.

However, solving the buildings' decarbonisation challenge will require political compromises and foresight on all sides. On the one hand, not all private finance and market-based solutions should be avoided purely on the basis of who provides the funding. Rather, the focus should be on determining what an acceptable expectation of return is for all parties involved. On the other hand, facilitating access to low-cost borrowing will likely lead to an increase in debt on the government's books. However, not all public debt should be labelled as 'bad' as it is essential to clearly differentiate between borrowing for operational spending and borrowing for asset-backed capital investment.

Rather than seeking a set of tools that fall cleanly within each party's 'ideological' lines, governments across the United Kingdom should focus on the solutions most fit for purpose for each segment of the challenge.

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## ABOUT THE AUTHOR

Ian has worked in the area of climate and environmental policy for close to fifteen years, focusing on domestic and international climate finance, and the role of public financial institutions in the low-carbon transition. He is the Head of Consultancy at Changeworks, a Scotland-based social enterprise where he works to accelerate decarbonisation through research, evaluation, dissemination, and influencing. He is also a part-time Lecturer on the MSc Change Finance & Investment at the University of Edinburgh Business School and a member of the Scottish Government's Green Heat Finance Taskforce.

Ian holds a PhD in economics from Université Paris-Dauphine (France), a Master of Public Affairs (MPA) from Sciences-Po Paris (France) and a BA in Policy Studies from the Syracuse University Maxwell School of Public Affairs (USA).

# TRIPLE BOTTOM LINE OF RETROFITTING THE UK'S HOUSING STOCK

Emily Farrimond, Baringa

*The UK's economic challenges and the net-zero transition require urgent government action, particularly in retrofitting buildings. With 15 million energy-inefficient homes contributing significantly to GHG emissions, retrofitting could reduce emissions by 5%, support 580,000 jobs annually by 2030, and deliver substantial economic and social benefits. Despite the high costs, a comprehensive approach involving increased awareness, support for the supply chain, financial services, and policy environment is crucial. Attracting private sector finance and addressing market barriers can drive widespread adoption, ensuring economic, climate, and social improvements.*

The current state of the United Kingdom's economy and its position in the global transition to net zero demands urgent and strategic action from the government. The need for green investment is paramount in addressing the challenges of income inequality, regional disparity, and net-zero transition. This report outlines the priorities for green investment post-election, with a specific focus on retrofitting buildings.

The United Kingdom has been experiencing a state of managed decline for over a decade, characterised by worsening inequality and low levels of economic growth. Household wealth in the United Kingdom lags behind that of its European counterparts, with the average UK household being 10 per cent poorer than its French counterpart.[1] We have the leakiest buildings in Europe, only exacerbating inequality[2] due to increased costs to heat homes.

There are 15 million energy-inefficient homes in Britain[3], making up 16% of the country's GHG emissions[4]. Of those energy-inefficient homes, around 13 million are EPC 'D' or below,[5] requiring some form of retrofitting measure. Approximately 31 million people live in these poorly insulated properties, many of whom consequently face higher energy bills and have to contend with cold, draughty, and often damp conditions. These inefficient homes have significant potential to improve their energy efficiency through upgrading to EPC 'C', providing residents with warmer homes that cost less to run and have lower GHG emissions.

[1] How can Britain pull itself out of its economic decline? | LSE Research.
[2] A lost decade for home insulation | New Economics Foundation.
[3] *Domestic Energy Performance Certificates*, National Records of Scotland, statistics.gov.scot.
[4] *Europe's Energy Crisis in Data: Which Countries Have the Best and Worst Insulated Homes?*, Euronews, December 9, 2022, www.euronews.com.
[5] *Energy Performance Certificates*, Open Data Communities, epc.opendatacommunities.org.

Retrofitting the country's homes will have many positive impacts on the UK P&L, both economic and social:

- Retrofitting 13m homes could reduce total emissions by 5 per cent [6].
- Retrofits and energy efficiency upgrades are expected to support up to 580,000 jobs per year by 2030[7], driving £17–23 billion into the jobs market per annum.
- Deliver close to £40 billion in cumulative social and network benefits to Britain by 2030 alone. Further benefits of £70-£100 billion would be expected over the following decade to 2040.[8]
- Save consumers £24 billion on energy bills by 2030, helping households trapped in fuel poverty. Energy efficiency improvements would deliver the strongest benefits to regions with the highest levels of deprivation.
- Improve the nation's mental and physical health, including stopping 670,000 children from developing asthma and preventing 6,000 excess winter deaths every year. These improvements would reduce strain on health services, saving the NHS £2 billion within six years.[9]

The estimated cost of retrofitting the country's 13 million homes comes to around £500 billion. This covers in-home retrofitting measures, training and skills building for those fitting new technologies, and continued investment into the development of new technologies.

- It will cost between £250 to £350 billion to decarbonise homes, providing a range of retrofitting measures from home insulation, boiler upgrades, window replacements, and smart building technology, as well as opportunities to provide cooling through nature-based solutions.
- To meet the demand necessary to retrofit homes, 275,000 people need to be trained in new technologies at an estimated cost of around £275 million.[10]
- The market value for technology installations will reach around £9.4 billion per annum. By 2030, this will cover an expected 1.6 million low-carbon technology installations annually.
- Financing the development of nascent technologies for home retrofit is also essential, albeit lacking robust cost estimates for market sizing. Challenges here include the development of heat pumps that enable more homes to keep their existing radiators and air conditioning units that do not use PFCs.

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[6] *How retrofitting the UK's old buildings can generate an extra £35bn in new money,* The Guardian, March 6, 2023, www.theguardian.com.
[7] *Making homes more energy efficient could sustain 500,000 jobs*, PwC UK, www.pwc.co.uk.
[8] *The Great British Retrofit*, Baringa Partners, www.baringa.com.
[9] *Home advantage: unlocking the benefits of energy efficiency*, Citizens Advice, www.citizensadvice.org.uk.
[10] *The Great British Retrofit*, Baringa Partners, www.baringa.com.

However, there are numerous challenges, as seen by previous government-backed initiatives that have achieved little progress. The lack of appropriate economic stimulus has hindered the development of sustainable business models and effective financing options to make retrofitting affordable for customers. Existing schemes have been complex, posing challenges for both firms and customers to access, and have suffered from limited collaboration across industries. Insufficient customer demand has been a primary factor preventing the scaling of the supply chain. Furthermore, negative media coverage on retrofitting, particularly concerning heat pumps, has exacerbated supply challenges.

In addition to these challenges, the market for home retrofitting lacks several essential structural enablers. Increasing the level of customer demand is crucial, with the vast majority of people not knowing about the need to retrofit their homes and the potential benefits. Additionally, anecdotal evidence suggests that individuals interested in retrofitting often struggle to find assistance. As such, they frequently turn to plumbers or electricians with whom they have existing relationships, despite these professionals lacking the necessary expertise. Ultimately, this can result in higher-carbon solutions.

Moreover, there is a shortage of skilled individuals capable of undertaking retrofitting, compounded by the retirement of many existing workers and the insufficient influx of new entrants into the market. The availability of suitable products and services in the supply chain, at the appropriate scale and price point, presents a significant challenge. Moreover, despite substantial incentives offered by financial services companies to promote green home propositions, demand has not met expectations.

These challenges underscore the necessity for a comprehensive approach to address the structural deficiencies in the home retrofitting market. This approach should encompass understanding customer demand, providing accessible and skilled advisory and installation workforce, and ensuring the availability of appropriate financial products.

The challenges outlined can be effectively addressed through a comprehensive and multifaceted approach:

*Increase Awareness*

- Raise awareness about the social and economic benefits of retrofitting homes. Highlight the potential cost savings and improved energy efficiency resulting from retrofitting, promoting the concept of warmer and more cost-effective homes.
- Address customer concerns regarding disruption to their homes and ensure proper installation of technology.
- Correct misconceptions about waiting for advanced technologies, emphasising the need for immediate action.

*Provide Comprehensive Support:*

- Offer advice and guidance through a centralised platform, making it easier for customers to access support.

- Develop integrated home retrofit solutions such as a one-stop shop, enabling customers to engage with a single supplier for a holistic approach, rather than piecing together solutions themselves.[11]

*Support Supply Chain Scaling:*

- Address the green skills gap by supporting the entry of new skills into the market and facilitating the retraining of existing workforce.
- Establish new quality standards and simplify existing standards for easier adoption.
- Promote the development of sustainable retrofit materials to support environmentally friendly practices.

*Support Financial Services Providers:*

- Address concerns of financial services providers regarding customer recourse due to poorly fitted appliances.
- Facilitate access to low-cost capital for financial services providers.

*Deliver Strong Policy Environment:*

- Implement policies requiring various customer segments to retrofit their homes within appropriate timelines to drive the necessary levels of customer uptake and attract financial providers.

This multi-pronged approach aims to address the barriers and challenges in the home retrofitting market, thus promoting awareness, providing comprehensive support, facilitating supply chain scaling, supporting financial services providers, and establishing a conducive policy environment to drive widespread adoption of retrofitting practices.

Focussing specifically on the financing gap, an essential aspect of any green investment is the ability to attract private sector finance. There is an expectation that for every £1 invested by the government, it should attract at least £3 of private sector finance.[12] This underscores the need for a robust and attractive investment framework that encourages private sector participation in green initiatives. Investment could focus on all areas of the market, across critical customer segments:

- Able-to-pay segment: for this segment of the market, finance should be easily and readily accessible through their mortgage provider, or through specific retrofit lending providers within the market. These retrofit lending providers can and should provide a large opportunity for private sector investment, with early moves by some companies in asset financing such as for heat pumps or solar panels.

- Unable-to-pay segment: there is also scope for private investment here, as well as government intervention. Private finance can play a role in this market, through

[11] *Insights and Green Homes: The New Centre of Residential Energy Services*, Baringa Partners, www.baringa.com.
[12] *Britain's green homes plan faces major hurdles*, Financial Times, www.ft.com.

propositions such as subscription services[13] that support the homeowner paying lower monthly energy bills in order to repay upfront lending for assets such as solar panels or heat pumps. These types of schemes have been challenged in the past. However, with government backing, they can provide scale at pace.

For investors, there is a significant opportunity to capitalise on the 'green premium' starting to develop across the UK housing market, with homes that have been retrofitted commanding up to a 15% premium.[14] This provides the opportunity to access further finance on the secondary markets with growth in the green bond market.[15]

The retrofitting of the UK housing stock can provide improvements not only in the country's decarbonisation; it can also provide economic benefit in terms of new jobs, as well as delivering social equality for those most in need for warmer, lower-cost homes. Decarbonising the UK housing stock will deliver large positive economic, climate, and social benefits, and should be a priority for any incoming government.

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## ABOUT THE AUTHOR

Emily has been responsible for building the ESG & Sustainability practice for Financial Services at Baringa. She is passionate about supporting the Financial Services Industry in creating a more sustainable world. Emily works with FS clients on a broad range of ESG-related topics: from setting ESG strategies, ESG & Climate measurement & reporting, to the the application of climate risk management, setting net-zero strategies, credible transition planning and developing new products and services. Greenwashing and greening the UK's housing stock are two topics she is particularly passionate about.

Emily has over twenty years' experience shaping strategy and delivering large scale business and technology change programmes in the Financial Services sector. She is a trusted advisor to C-level client executives and has shaped and delivered numerous mission critical change initiatives working for three blue chip organisations: IBM, KPMG and Accenture.

[13] *Solar Panels and Energy Storage Systems - Sunsave Energy*, Sunsave Energy, www.sunsave.energy.
[14] *Rightmove Greener Homes Report 2023*, Rightmove, www.rightmove.co.uk.
[15] *Quarterly Market Report Q1 2024*, Climate Bonds Initiative, www.climatebonds.net.