

THE ROAD TO

NetZero

SPRING 2026

MEASURE, MODEL,
TACKLE, TAILOR. JAMES
TALBOT DISCUSSES
HOW TO MANAGE
CLIMATE IMPACTS

FRANK ELDERSON
CALLS FOR STRONGER
GLOBAL COOPERATION TO
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REWIRING TRADE FOR A
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SUSTAINABLE DEVELOPMENT

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elcome to the Spring edition of *The Road to Net Zero*, a *World Commerce Review* supplement. This publication has been prepared in response to readership demand for an overview of the steps being taken in the transition to a cleaner and greener sustainable world.

All aspects of climate action are examined, with the most respected authors providing the reader with the most comprehensive information available. Our brief is to provide all the data necessary for the readership to make their own informed decisions. All editorials are independent, and content is unaffected by advertising or other commercial considerations. Authors are not endorsing any commercial or other content within the publication. ■

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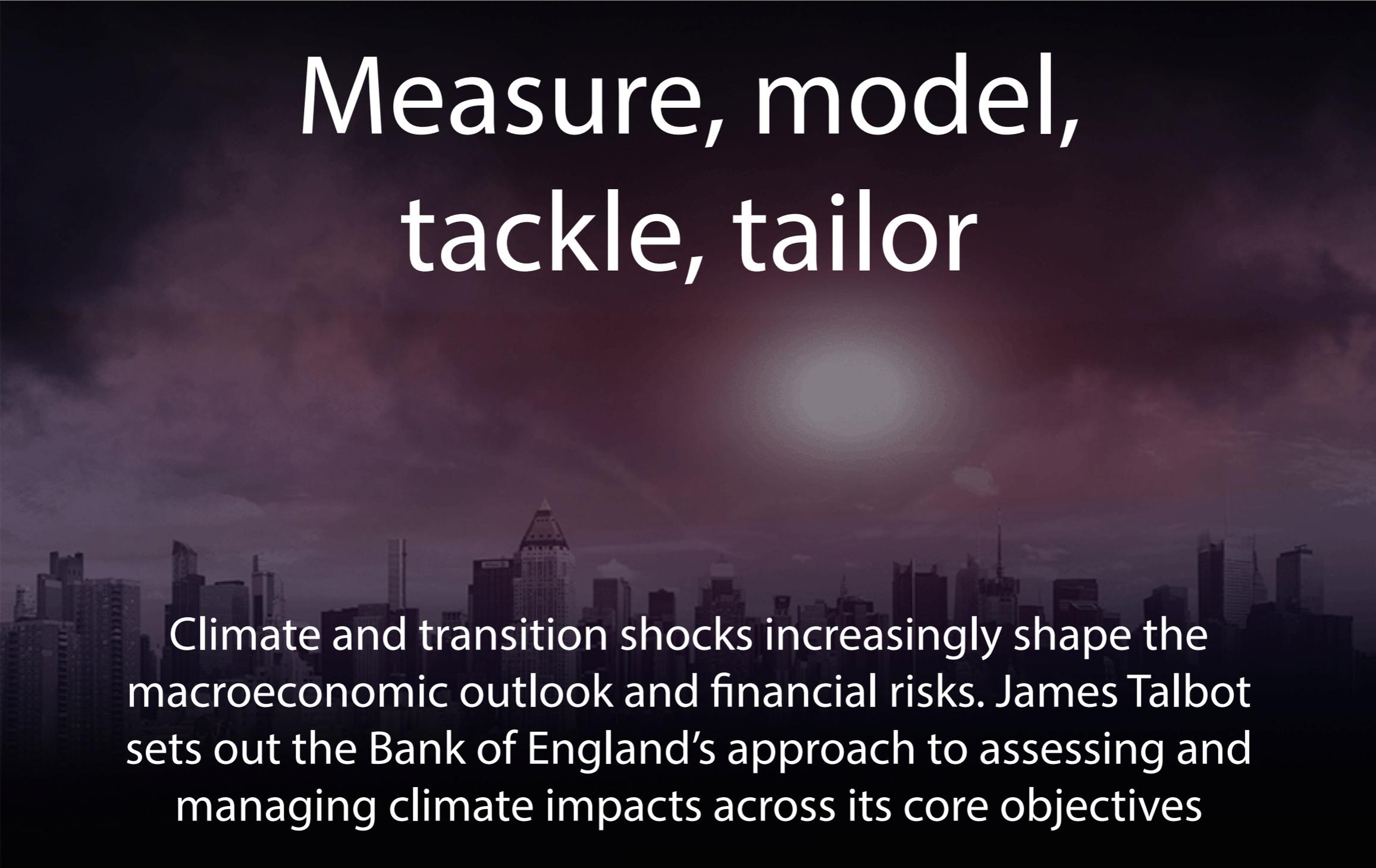
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Measure, model, tackle, tailor

Climate and transition shocks increasingly shape the macroeconomic outlook and financial risks. James Talbot sets out the Bank of England's approach to assessing and managing climate impacts across its core objectives

It is nearly twenty years since the Stern review, which showed that climate change could, among other things, have a serious impact on GDP in the long run. Indeed, we are well used to thinking about climate change as something that happens in the long run. Scientists have been thinking about this issue for around forty years, economists for thirty years and governments have been taking policy action for more than twenty-five years. While economists may debate what horizon the long run refers to, those time periods would surely qualify...

Central banks are still a relative newcomer to thinking about these issues. At the Bank of England, our work on climate began around twelve years ago with an initial focus on the insurance sector. For the economists in the audience, that might qualify as at least approaching the long run...

Nine years ago, we were one of eight founding members of the [Network for Greening the Financial System \(NGFS\)](#), which was set up as a voluntary forum to enhance the role of the financial system in responding to climate change.

Today, we are responding to the implications of climate change right across the Bank's policy objectives. In addition, the NGFS counts around 150 member institutions worldwide¹. Considering the impact of climate as a central banker is now the norm, not the exception.

That is because the impacts from climate change are intensifying, and the effects are felt increasingly today. Global temperatures are estimated to have averaged more than 1.5 degrees higher than pre-industrial levels over the past three calendar years².

The rise in temperatures has already increased the frequency and intensity of extreme weather events, with heavy precipitation becoming more frequent and more intense globally³. Unsurprisingly therefore, the economic impact of climate change is rising.

At the same time, central banks have assessed the implications for the financial system and worked with firms to assess the impacts of climate-related risks under different scenarios⁴. Action to respond to a changing climate and to drive the transition can have an impact on both the economy and financial system.

While the policies needed to mitigate climate change are for governments, not central banks, to decide, if they have an impact on the economy and financial sector, central banks will need to understand them, just like any other shock.

If climate shocks and the transition affect the economy and financial system, then we need to understand their impacts, just like any other shock. In doing so, we can make sure that the financial system remains stable and that price stability is maintained

The Bank of England's mission is to promote the good of the people of the United Kingdom by maintaining monetary and financial stability. Our objectives are set by parliament and are defined through remits set by the government for our policy committees. To summarise:

- For the Monetary Policy Committee (MPC), the primary objective is price stability. When climate-related shocks move inflation and activity over the policy horizon – for example, through their effects on energy, food or supply chain disruption – the MPC will need to understand those impacts⁵.
- For the Prudential Regulation Committee, the primary objective is the safety and soundness of the firms we supervise and, for insurers, policyholder protection. Because climate change and the transition create operational and financial risks for firms, supervisors of banks and insurers will expect firms to understand and manage these risks appropriately and to take a strategic view of how to tackle them moving forwards.
- And for the Financial Policy Committee, the primary objective is to protect and enhance the stability of the UK financial system. In order to do that, we need to monitor and assess how the impacts of climate change build and transmit across the system as a whole.

Different central banks have different mandates. For the Bank of England, the impact of climate change matters for our primary objectives, given to us by Parliament. In addition, each of these committees is asked to have regard to the government's economic policy objectives, which include the transition to a net zero economy.

Climate also matters to the PRA's secondary competitiveness and growth objective because failing to address climate risks effectively could, in time, hinder firms' ability to support their customers and ultimately wider economic growth.

But considering climate change does not rest on a specific mandate. My point is simple: if climate change and the transition are impacting the macroeconomy and financial system, then this matters for our primary goal of maintaining monetary and financial stability. That is why so many central banks are now focused on these issues.

You'll be pleased to hear that I am not going to try to summarise everything we have done on climate over the past decade and more this evening. Many of my colleagues – past and present – have done that very eloquently. Instead, I will highlight what's new in our work in the last few years and where we are headed next.

What have we been up to?

Broadly speaking, there have been three phases:

1. Establish whether climate change is relevant to our objectives;
2. Size the impacts where it is; and
3. Work out how to address these impacts so that we can deliver on our objectives.

Our work is at different stages across our different responsibilities. We started with the risks to the firms we supervise, first insurers and then banks. We then moved onto scenario analysis and the impact on the financial system as a whole. And finally, as the economic impacts of climate begin to manifest themselves over the shorter-run horizon relevant for monetary policy, we have increased our focus there too.

This has not been a straight line. There is a feedback loop. We have reassessed and refined our approach to support better decision making. Our recently updated supervisory expectations for banks and insurers are a practical example of how we have improved our understanding over the past six years from talking to firms.

We have also learned from international best practice too. When we began this work, the rooms where we met were small, and the ideas were novel, but with more central banks and supervisors now working on this agenda, we are able to draw on the thinking and analysis of many others to improve our own understanding.

This is the strength of international fora like the NGFS and industry networks such as the [Climate Financial Risk Forum \(CFRF\)](#). That also means we do not need to lead on everything, which is especially important in a world where central banks need to understand an increasingly broad set of risks⁶.

Where we have established that climate matters for our objectives, we are increasingly focused on factoring that into our core policy-making responsibilities. As our work has moved from the conceptual to the applied, we've spent more time building the tools, data and approaches to take necessary action. I want to share some of that progress – setting out the current state of play, the lessons so far and the priorities we will pursue next.

Monetary policy – how climate links to our objectives

The monetary policy horizon is typically short – usually around two to three years. While that is not the long run under anyone's definition, as we begin to see climate change affect the economy, those impacts become a relevant consideration for monetary policy.

While monetary policy is the most nascent part of our climate work, our focus is beginning to intensify. Over the past four years, my work as chair of the NGFS Workstream on Monetary Policy, has brought together more than sixty central banks to set out a framework and analytical foundation to assess the impact of climate change on the economy.

These central banks bring different skills and experiences – they include oil exporters and importers; low income, emerging market and advanced economies; and countries where the physical effects of climate have already become much more prominent.

In doing this work, we take both the scientific evidence and government climate policies as given. What we want to understand is how climate change affects the economy. There are two main channels. First, physical hazards like rising temperatures, floods and storms that hit supply, demand, trade and productivity. Second, transition policies can drive large and sometimes persistent relative price movements, shifts in investment and reallocation of production across sectors of the economy.

We began by building a conceptual framework to understand how [acute physical impacts from climate change](#) and the [transition policies](#) implemented by governments can affect the macroeconomy over horizons relevant for policymakers. We are now moving from that framework to modelling – exploring how to incorporate those channels into central bank toolkits so the analysis is usable in practice. In a forthcoming NGFS publication, we will also publish an assessment of how climate change affects monetary policy strategy.

Let me briefly summarise the conclusions of the work that we have done so far at the Bank of England and the NGFS.

Central banks have long noted weather as a key driver of prices and activity, responding accordingly. Back in 1805, the Bank installed a wind dial in its boardroom, connected to a weathervane on the roof. An easterly wind signalled an increase in trade, as it allowed merchant ships to sail up the Thames to the Port of London – and a need to increase the supply of banknotes in circulation.

Over two hundred years later, the impact of weather on the economy is somewhat different, but arguably just as important. Sizing these effects is difficult. Much of the analysis is based on periods when shocks were smaller. An increase in the frequency, scale and persistence of climate-related events means that historical relationships may under-estimate the impacts. If climate dynamics are non-linear, we may also understate tomorrow's risks. For example, there is growing evidence that climate change is affecting food and energy prices⁷.

Research by the European Central Bank found that the summer 2022 extreme heat caused a cumulative impact of 0.7 percentage points on annual food price inflation and an increase of 0.3pp on annual headline inflation in Europe⁸. But projections under plausible but severe warming scenarios signal much larger and more persistent effects within the next ten years⁹.

More frequent heatwaves, droughts, floods and severe storms can interrupt production and raise transportation costs¹⁰. For example, De Winne and Peersman (2021) have shown that a 10% increase in global agricultural commodity prices stemming from weather-related shocks lowers GDP by 0.5% after six quarters across a panel of 75 countries¹¹.

Climate transition policies can also have an impact. Let me pick out three examples, based on analysis at the Bank of England:

- The size and composition of business investment will change. The UK's Climate Change Committee (CCC) estimates that a net zero-consistent pathway for the UK requires average financing of around £37 billion per year between 2025 to 2050¹². Evidence from the Bank of England's 2023 Decision Maker Panel survey of UK firms¹³ suggested that climate-related investments were set to rise from 2.5% of capital expenditures 2020-2023 to 5.5% over 2023-2026.

- Our models suggest that an increase in carbon prices in the Emissions Trading Scheme operate much like other supply-side shocks: increasing inflation, and decreasing output, within the monetary policy horizon¹⁴. For the UK, we estimate that a 7% rise in the carbon price leads to an increase in energy CPI inflation of 1pp after a year, followed by a smaller, but more persistent, rise in non-energy CPI inflation of just over 0.1pp four months later, and a 0.05% temporary fall in GDP around two years after the initial shock.
- The composition of the UK energy market is also changing. As more renewable electricity is generated under fixed-price contracts for difference (CfDs), household bills should become less exposed to gas price spikes, with the CfD share of electricity supply rising to around 25% by 2027/28.

Last year I [discussed](#) work at the Bank using a DSGE model adapted to incorporate climate-related policies. A forthcoming NGFS report uses the IMF's GMMET model to show the impact of an orderly phase-in of policies aligned with countries' nationally determined contributions. It shows that while carbon taxes can be very effective in reducing emissions, they can push up headline inflation and reduce output in the near term, creating a trade-off for policymakers.

Our modelling suggests that these trade-offs can be reduced when carbon tax revenues are spent on subsidies to green sectors. It also shows that if the transition is more abrupt, or agents doubt the credibility of announced policies, the inflationary effects are likely to be higher in the short-term.

This analysis shows that climate change can have important macroeconomic effects. In light of that, it becomes one of the factors we consider when setting monetary policy. My colleagues [Sarah Breeden](#) and [Catherine Mann](#) have spoken about some of these effects in recent speeches.

Physical climate shocks often look like supply shocks, pushing inflation up and output down, creating a trade-off for policymakers to manage. If shocks are temporary, for example isolated weather events, then it makes sense for policymakers to 'look through' the first-round effects. But if climate shocks become larger and more frequent, monetary policy may need to lean further against second round effects. So our work to understand these shocks better will be increasingly valuable.

The financial system – sizing the risk

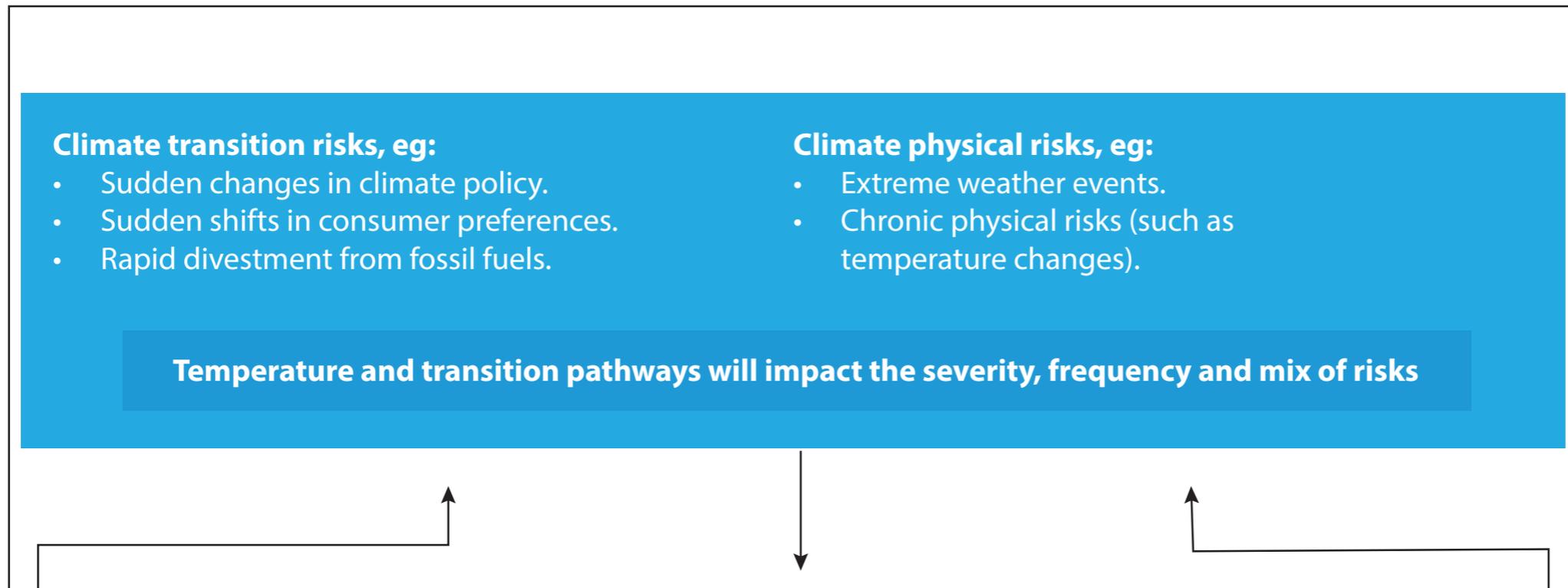
Our financial stability work has followed the same arc as that of monetary policy - but is further along. In 2021, the [Climate Biennial Exploratory Scenario \(CBES\)](#), our learning-by-doing exercise, was a first step in quantifying the impact of climate-related risks on the UK financial system in the long-run. It also found that a timely, well-managed transition keeps system costs lower relative to late or no action pathways.

But what of the near term? In the [November 2024 Financial Stability Report](#), we set out a framework to help identify and assess climate-related risks to UK financial stability (see Appendix). One of the things we flagged was that some financial markets could be under-pricing the risks to corporate borrowers' resilience posed by climate change and the transition.

So what if markets did start to price in risks suddenly – referred to by [some](#) as a climate 'Minsky moment'? In the [December 2025 FSR](#), we showed that a sudden reassessment of the costs of transitioning to net zero or the increase in physical risks from persistently elevated emissions could lead to a material adjustment in asset prices.

If such a repricing happened quickly it could have implications for financial stability, including by exposing non-bank financial institutions to material losses. In that case, it could also be amplified by the responses of financial market participants, in line with the findings of the Bank's 2024 [system-wide exploratory scenario exercise](#)¹⁵.

Figure 1. Framework from the November 2024 Financial Stability Report showing how climate-related risks could impact the financial system and the real economy



Impacts on the financial system and real economy

Risks to the financial system, affecting banks and NBFIs (including insurers)

- Sharp falls in some asset prices and increased risk of borrower default.
- Sharp increases in insurance claims and reductions in value of collateral.
- Increase liquidity demand due to rise in volatility and uncertainty.

Eg: reduced lending, higher insurance premia

Eg: more credit risk

Risks to the macroeconomy, affecting households, businesses and governments

- Sharp increase in uncertainty and contraction in some sectors, leading to more insolvencies and unemployment.
- Physical disruption to economic activity and rapid depreciation or destruction of assets.
- Higher borrowing costs and reduced provision of vital services (lending and insurance).
- Increased spending pressures on government budgets.

Potential longer-term feedback and amplification effects, eg:

- Disruption to financing of the transition could make an orderly transition harder to achieve and increase physical risks.
- Disruption to financing of adaption increases the potential impacts of physical risks.

This accumulation of evidence points to climate risks to financial stability becoming more proximate, albeit with significant uncertainty about when and where they will crystallise. These risks have a lot in common with other financial vulnerabilities that we monitor. Accordingly, we are working to make climate risk assessment part our day-to-day financial stability analysis.

In order to do that, we are investing in our own risk assessment capabilities, using scenario analysis, among other things, to understand how climate factors interact with traditional risk drivers and to assess the materiality and proximity of risks under different transition and physical pathways¹⁶.

We are also developing the tools to assess and monitor the build-up of risks to financial stability over longer-term time horizons, for example through increasing physical impacts of climate change. A key channel here are changes in insurance protection, where lower coverage could transfer risks to households, businesses, banks and governments.

In the short-term, the impacts on households are likely to be cushioned by a combination of Flood Re - the joint Government-industry reinsurance scheme that improves insurance affordability and availability for some UK households – and high insurance coverage¹⁷.

But as physical risks intensify, cover could become harder or costlier to obtain, and the protection gap could widen. Today 6.3 million properties in England are in flood risk areas, rising to about 8 million by mid-century¹⁸. Flood Re also ends in 2039 and has a statutory objective to manage the transition of the market to risk reflective pricing. Longer-term, households could face materially higher insurance premia or repair bills, lower house prices and difficulty remortgaging.

Corporates could face potential capital losses and banks higher credit losses¹⁹. For the Bank of England, understanding those interactions will be vital²⁰, as will assessing how actions on physical adaptation and resilience (eg. better defences or smarter land-use) can reduce risks to financial stability.

Supervision – from principles to day-to-day practice

The supervision of banks and insurers is where our climate work is most developed. Having focused on developing our understanding and supervisory capabilities in recent years, our priority going forward is on supporting firms to develop the tools and drive capabilities they need to manage these risks in a way that works for them.

We started a decade ago with insurance, showing how physical risks could feed through underwriting, claims and asset exposures²¹. We then broadened the focus to include banking, setting expectations on governance, risk management, scenario analysis and disclosure in [supervisory statement 3/19](#) - the first of its kind by a prudential regulator²².

Our supervisory expectations mattered. Boards and senior management were expected to treat climate as a financial risk - with clear accountability, risk monitoring and regular oversight through existing governance and risk-management structures. From 2022, we moved from setting expectations to integrating climate into normal supervisory engagement with firms.

Since the expectations were issued, banks and insurers have taken concrete and positive steps²³. However, firms' level of readiness to manage climate-related risk vary and our overall assessment was that all firms needed to make further progress.

By 2024, the feedback from both firms and supervisors was clear: the work we had done was helpful, but more clarity and practical detail was needed²⁴. While our work was cutting-edge in 2019, thinking had moved on – both internationally and domestically.

In April 2025 we consulted on enhancements to our expectations, and in December 2025 we published a [policy statement](#) with an updated [supervisory statement \(SS5/25\)](#). Our approach is proportionate, risk-based and pragmatic. It recognises that materiality depends not only on a firm's size, but also on its business model and geography²⁵. This allows firms to scale their response to reflect the risks they actually face.

We want banks and insurers to have the capabilities – and the senior level engagement – needed to treat climate-related risks like any other operational or financial risk and manage them through their existing governance and risk management arrangements. That means clear senior ownership, information flowing to the board, and evidence that climate considerations are shaping strategy and day-to-day decisions. That is why we have provided clear expectations on how firms should identify, assess, monitor and manage climate-related risks in a decision-useful way.

The aim is a more consistent and credible standard of practice across the industry, while still allowing flexibility in how firms get there. At the core of our approach is a robust, credible assessment of risk. We've tried to strike a balance – with more detailed expectations, where needed, while allowing flexibility and innovation and avoiding a one-size-fits-all burden for firms with limited exposures.

Climate scenario analysis is a good example of this. Our expectation is that firms begin with the question they are trying to answer, whether that is portfolio resilience or how risks evolve over different time horizons, and then pick

and tailor the scenarios accordingly. Done well, scenarios help boards and risk committees spot vulnerabilities, set priorities and inform strategy, particularly where historical data or backward-looking models fall short.

We also recognise that firms are building capability in an area where methods, data and best practice are still evolving. That is why, together with the FCA, we co-convene the Climate Financial Risk Forum (CFRF), which works in partnership with industry to provide practical guidance, case studies and tools to help firms accelerate their capabilities and support better decision-making²⁶.

Risk management of the Bank of England balance sheet

We expect the firms we supervise to both manage and disclose their climate-related risks. So, we are holding ourselves to the same standards.

First of all, we need to manage the risk on our own balance sheet. In order to help protect against climate-related financial risks, we have increased the insurance – or so called ‘haircuts’ – and tightened the criteria for, the mortgage-loan collateral we take in our lending operations²⁷.

This is designed to protect our balance sheet from any potential losses on these assets arising from energy price shocks and flood risks and to ensure that buy-to-let mortgage collateral meets the government’s energy efficiency standards²⁸. Taken together these measures cover more than three quarters of the collateral underpinning lending in the Sterling Monetary Framework (SMF)²⁹.

We have also conducted extensive work to better understand – and where appropriate manage – climate risks to our financial counterparties as well as the assets we own outright as part of our circa £500 billion sovereign bond holdings³⁰.

Second, the Bank of England publishes an annual climate-related financial disclosure, aligned with the [TCFD framework](#), covering governance, strategy, risk management, metrics and targets. The [2025 disclosure](#) covers each of these areas, including analysis of the climate-related risks to our financial operations, including sovereign holdings and collateralised lending. Publishing a stand-alone climate disclosure aligns the Bank with our own updated supervisory expectations.

Where next?

We've achieved a lot in the past decade or so, but climate change isn't standing still, so neither are we. Going forward, our aim is to mature and evolve our work through the cycle of repeated challenge, analysis and implementation. We've done the foundational work to assess how climate change impacts central bank objectives. A lot of what's to come is about ensuring it's embedded in the 'business as usual' of what we do.

We have further to travel on monetary policy. This work is important against the backdrop of the shocks we have experienced in the UK over the past few years. Repeated and persistent supply shocks have previously pushed up food and energy prices. These pressures were driven largely by geopolitical events, but they underline how future shocks - including those linked to climate change - could also influence the path of inflation.

While we expect inflation to return to target later this year, our challenge won't necessarily get any easier as our climate changes. My colleague [Megan Greene](#) noted that *"the supply side demands more attention"* and the [Governor](#) has recently flagged four headwinds to growth.

Climate shocks are squarely on both lists. As we move forward, like any other shock, the challenge is to judge persistence early, explain our reasoning clearly, and keep expectations anchored, particularly where temporary weather-related disturbances morph into longer-term structural trends.

The need to assess more frequent climate shocks also reinforces the value of scenario analysis. Physical hazards, transition policies, and policy uncertainty all shift the distribution of risks around the baseline. One of the recommendations of the recent Bernanke review of forecasting at the Bank of England is to make more systematic use of scenarios for monetary policy.

We have begun to include such scenarios as part of the MPC's regular communications. In the future, as our modelling of climate-related risks improves, these insights could increasingly feed into how we calibrate monetary policy in an uncertain world.

On the financial stability side, we will also continue to use scenarios and system wide analysis to run targeted deep dives, so we can improve our understanding of where risks might build or spill over. We also need more and better data on these risks.

Last year we did a targeted data collection to improve our understanding of the materiality of banks' exposures to physical and transition risks, and we are now considering how such risks should best be captured within our regular stress testing framework.

Following the publication of our recent supervisory statement at the end of last year, our focus is turning to implementation. A key next step – for firms and for us – is investment in climate scenario analysis capabilities, tools and best practice. The ask is not to run scenarios for their own sake, but to use them as a meaningful decision tool, supported by strong governance, clear objectives, and a proper understanding of their limitations. In doing so, firms should remain strategically ambitious as they continue to evolve their capabilities to address climate-related risks.

We know from experience that maintaining financial stability is much more than the sum of its parts. Ensuring individual firm resilience is important, but we want to make sure the financial system provides vital services – like payments, credit and insurance – to households and businesses reliably in all states of the world. That creates a genuine, and legitimate tension for insurers and regulators.

Insurers must manage their own risk prudently, but if they decide to increase pricing or withdraw cover so that losses are no longer insured, impacts can spill over into the rest of the system. Our role is not to tell insurers how to underwrite. Rather it is to understand and monitor these interlinkages while promoting proportionate safety and soundness, and innovation. Both of which are directly relevant to the PRC and FPC.

As we make progress across each of these areas, it helps to embed climate-risk assessment into everyday practice across the Bank. But there are also important feedback loops too. More effective supervision – clearer governance, better data, improved modelling and decision-useful scenario practice – will help support our system-wide risk monitoring.

Likewise, our work to manage our own climate exposures helps shape the climate scenarios we use. And our efforts to improve the quantification of macroeconomic impacts of climate change can refine the questions we ask of ourselves, as policymakers, and as supervisors, of firms.

Of course, as the impact of climate evolves - so too will our thinking – especially as we look to also learn from the experience of others, drawing on expertise including across climate science and economics.

My main message today is that we're doing the work and analysis to understand the impacts of climate on our mandate and we're working out how to respond to it. We're increasingly learning from others and our plan is to

'Measure, Model, Tackle, Tailor'. In doing so, we're not going beyond our mandate, we're making sure we achieve it. We're not trying to shape the path of climate transition policies; that's for elected officials.

But if climate shocks and the transition affect the economy and financial system, then we need to understand their impacts, just like any other shock. In doing so, we can make sure that the financial system remains stable and that price stability is maintained. That is the best contribution that we can make to the climate transition. ■

James Talbot is Executive Director for International at the Bank of England and Chair of the NGFS workstream on monetary policy

Endnotes

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3. [IPCC Sixth Assessment Report \(AR6\)](#).
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15. [Financial Stability Report – December 2025 | Bank of England](#).
16. [Financial Stability Report - November 2024 | Bank of England](#).
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18. [Environment Agency: National assessment of flood and coastal erosion risk in England 2024](#).
19. [Financial Stability Report – December 2025 | Bank of England](#).
20. That is also why we welcome the publication of [FSB's analytical framework](#), which helps illuminate how climate-related vulnerabilities emerge and propagate through the global financial system. This framework builds on the existing

FSB Financial Stability Surveillance Framework and focuses on assessing climate-related vulnerabilities holistically, particularly from a crossborder and cross-sectoral point of view.

21. [The impact of climate change on the UK insurance sector.](#)

22. [Climate-related financial risk management and the role of capital requirements.](#)

23. [Thematic feedback on the PRA's supervision of climate-related financial risk and the Bank of England's Climate Biennial Exploratory Scenario exercise.](#)

24. [SS5/25 - Enhancing banks' and insurers' approaches to managing climate-related risks.](#)

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28. [The Bank of England's climate-related financial disclosure 2024.](#)

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30. [Report on the Bank's official market operations March 2024–February 2025](#) | Bank of England.

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Five reasons why attacking the EU carbon market is economic self-sabotage

The ETS is the EU's key climate policy instrument. Simone Tagliapietra and Georg Zachmann write that when discussing the emissions trading system policymakers should remember five risks of undermining the system

The last few weeks have witnessed mounting attacks on the European Union's key climate policy instrument: the emissions trading system (ETS). A major push has come from energy-intensive industries, but also from several European governments, including Italy, which has even [called for a suspension of the system](#).

However, watering-down the ETS would not save European industry; rather, it would be a blow to both fiscal stability and long-term economic resilience. This debate will continue as EU leaders convene at the European Council on 19–20 March in Brussels to discuss the future of European competitiveness. The following five points show how undermining the ETS would harm – not benefit – EU economic competitiveness.

1. The ETS is a remedy for electricity price volatility, not the cause of it

The current political debate often proceeds as if European electricity prices are still at crisis levels. In reality, prices have largely stabilised at pre-crisis levels, even accounting for the jump in electricity prices following United States-Israel action against Iran. Yet the misconception persists that the ETS drives higher electricity costs. Natural gas – not the carbon price – is the dominant factor in setting marginal electricity prices.

The only sustainable way to lower electricity costs is to reduce the number of hours during which gas sets the marginal price. This entails accelerating the deployment of renewables. Watering-down the ETS would disrupt confidence in the system, deter private investment and prolong dependence on expensive and geopolitically risky imported gas.

2. Policy reversals create a 'laggard's dividend' at the expense of innovators

Europe's industrial competitiveness problem is not a result of carbon pricing, but rather of a broader failure to manage technological transformation. If policymakers reverse course on the ETS, they will effectively penalise the frontrunners who invested early in decarbonisation while rewarding the laggards who resisted change.

If companies believe that political pressure can simply 'wave away' the cost of carbon, they will stop investing in the low-carbon technologies of the future. To borrow [Mario Draghi's words](#), this would condemn EU industrial competitiveness to prolonged 'slow agony'.

3. The hidden fiscal cost of watering down the carbon price

Weakening the ETS would bring two fiscal penalties that its proponents appear to overlook. First, it would directly reduce the auction revenues that EU countries can and should use to fund industrial transition and social support. Since inception, ETS auctions have raised over [€258 billion in revenues](#), an amount that will keep growing as the carbon price increases.

Europe's industrial competitiveness problem is not a result of carbon pricing, but rather of a broader failure to manage technological transformation

Second, because many renewable energy projects are supported through instruments called [contracts for difference](#), a lower carbon price often forces electricity prices down in the short term, which paradoxically increases the subsidy gap governments must fill. For Germany alone, a 10% reduction in wholesale electricity prices would increase the cost of renewables support by some €3 billion to €4 billion per year. By attacking the ETS, policymakers are inviting adverse impacts on their own national budgets.

4. Preventing a rent shift to fossil-fuel exporters

Perhaps the most overlooked economic benefit of the carbon price is its role in aggregating EU demand for fossil-fuel imports. By making carbon-intensive energy more expensive, the ETS reduces gas consumption across a massive market. Because the EU imports huge volumes of gas, primarily as liquified natural gas (LNG), this reduced demand puts downward pressure on global LNG prices, meaning that part of the carbon 'tax' is effectively paid by the exporters.

Dropping the ETS would signal to consumers that they do not need to reduce consumption, and to other importers that they should also subsidise their gas consumers, putting upward pressure on global gas prices. The carbon market revenues that previously went to European budgets would then be sent abroad as pure profit for LNG exporters.

5. Undermining a valuable institution has long-term cost

The ETS is a mature, unified, market-based framework that ensures a level playing field across the EU's single market. Undermining this would trigger dangerous fragmentation, forcing EU countries to revert to a patchwork of national subsidies and contradictory regulations, causing major market distortion.

The ETS is an ally, not an enemy, of Europe's competitiveness. Rather than dismantling it, EU leaders should strengthen the system as the central pillar of clean industrial policy. While adjustments are possible, the system's long-term credibility must be protected.

Any watering down of the carbon price signal would destroy the investment certainty that frontrunners and innovators rely on. Strengthening the ETS first and foremost requires making strategic use of the scheme's multi-billion euro revenues to secure Europe's future prosperity. ■

Simone Tagliapietra and Georg Zachmann are Senior Fellows at Bruegel

This article is based on a [Bruegel First Glance](#).



Nature in decline, economy on the line

Nature is the economy's life support system, and it is under strain. Frank Elderson calls for stronger global cooperation to tackle nature related financial risks

We are living in unprecedented, turbulent times. Almost by the week, we see the proliferation of conflicts, an erosion of the international rule-based order and collapsing international cooperation across several domains. In the face of multiple challenges, the very urgent often overtakes the vitally important. It is tempting, and quite frankly a natural human reaction, to focus on the most immediately visible issues.

With numerous severe challenges vying for our attention, this event – where we are welcoming representatives from all six continents to focus on the ongoing climate and nature crises – conveys a powerful and hopeful message. It shows that coming together, cooperating and engaging with one another across borders is possible and indeed imperative in times of profound disruption and volatility.

At a time when some question the value of international cooperation, interest in the coordinated, pragmatic and evidence-based work of the central banks' and supervisors' Network for Greening the Financial System (NGFS) remains high – as participation shows¹. This is a testament to the undeniable significance of the climate and nature crises for the economy and for the financial system – and hence our mandates as central bankers and supervisors². The NGFS is well-established as the go-to forum for exchanging good practice, consolidating knowledge and helping supervisors maintain forward momentum.

Growing evidence of nature affecting the economy

Nature is the life-support system on which our economies depend. The World Bank estimates that as much as half of the world's GDP relies on biodiversity, nature capital and ecosystem services³.

In the euro area, nearly 75% of banks' corporate lending goes to firms that are highly dependent on at least one ecosystem service⁴. To take a very specific example: over half of essential medicines like antibiotics and painkillers depend on plants and other natural resources⁵.

And yet while nature sustains us, we continue to strain it: intensive land use, climate change, pollution, overexploitation and other anthropogenic pressures are critically depleting our planet's resources at a rapid pace. We are running an ecological deficit by using natural resources 1.7 times faster than ecosystems can regenerate them. Put simply: we are in a structural deficit with nature, year after year.

Put bluntly: if we keep destroying nature, we keep destroying economic activity. And this leads to risks surging, prices rising and instability spreading to every part of society and across borders

What's more, degraded nature also impedes our ability to mitigate the climate crisis and strips away our capacity to adapt to its effects. Healthy nature acts as our first line of defence against global heating and related extreme weather events. Take, for instance, marine and terrestrial ecosystems, such as swamps, oceans or forests; they act as natural carbon sinks, absorbing roughly half of all human-induced carbon emissions⁶.

Or consider another example: wetlands around rivers act as giant sponges, storing excess rainwater and releasing it slowly, which protects urban infrastructure and agricultural land from flooding and prevents widespread business disruption.

Accounting for nature in banking supervision

If nature degradation continues at its current pace, business revenues will be even more starkly affected than they are now. This will impede loan repayments from firms, take a toll on bank balance sheets and may ultimately put financial stability at risk. In this context, it is no surprise that many supervisors have taken action to incorporate nature-related risks into their prudential oversight⁷.

Take Brazil, for example, where 46% of corporate credit portfolios in the banking sector are allocated to companies that are highly or very highly dependent on one or more ecosystem services⁸. Back in 2021, Brazil's central bank drafted a social, environmental and climate risk document with the goal of collecting relevant information from financial institutions.

Or think of Hungary, where the central bank launched a two-year project with the OECD aimed at mapping the financial risks arising from declining biodiversity⁹. Or look at the Swiss Financial Market Supervisory Authority, which has published a new circular on climate and nature-related financial risks with proportional timelines for implementation¹⁰.

Later this month, the NGFS will publish a guide that includes clear recommendations designed to help supervisors and financial institutions address nature-related risks. In addition to providing practical advice on metrics, data and risk monitoring, the guide also stresses the importance of forward-looking tools like scenario analyses and stress testing. With the foundational toolkit developed by the NGFS, all central banks and supervisors around the world can get started, go deeper and move further when it comes to good practices on nature.

At the ECB, in our role as banking supervisor, we already began taking action some time ago¹¹. Since 2020 and the very start of our supervisory engagement with banks on climate and nature, we have been consistent in our clear expectation that banks under our supervision not only manage climate risks, but also material nature-related risks.

In 2022 almost 40% of banks had no defined approach to managing nature-related risks, whereas today 75% of banks have quantitative approaches to assess nature-related risks as part of their materiality assessment.

Despite this progress, most banks do not yet systematically link their materiality assessment to a risk management response – there is clearly more work required to move from risk awareness to risk preparedness.

Even if banks' practices to manage climate-related risks are still more advanced, we are also seeing many banks across Europe adopting a growing set of good practices in the area of nature-related risk. This is the case, for example, in scenario analysis, real estate collateral and capital calculations.

To further support banks, we will also include good practices on nature-related risks in the updated compendium that will be published in May this year.

Improving risk assessments related to ecosystem services

Admittedly, accounting for nature and ecosystem services is not an easy task. Unlike for the climate crisis – which can be quantified through carbon emissions and their direct links to rising temperatures – there is no single obvious metric that can be used to quantify the wide range of ecosystem services.

Encouragingly, a range of stakeholders – in academia, firms, banks, central banks and supervisory authorities – are taking action to better account for the implications of ecosystem degradation for variables of economic interest like growth, inflation and financial risks.

To that end, the ECB has teamed up with experts from the University of Oxford and the London School of Economics with the objective of improving our understanding of how much economic activity is actually at risk from nature degradation.

Our analysis finds that too much water, too little water or polluted water pose the most urgent risk to economic output in the euro area from a value-added perspective. Surface water scarcity alone could put up to 24% of euro area economic output at risk.

Using AnaCredit data covering about €4.4 trillion of bank loans, we found that 19% are exposed to surface water scarcity, rising to 22% when also considering groundwater scarcity. The economic sectors most affected are real estate, manufacturing and trade. This tells us that worsening water scarcity and declining water quality could become material sources of credit risk, potentially amplifying systemic vulnerabilities in the euro area financial system.

In the coming months we will publish research that analyses in detail how much banks' credit portfolios will deteriorate in the economic sector most affected by dwindling ecosystems.

The Banque de France recently published a study that shows how ecosystem service disruptions in France could drive up food prices by over 2% and add about 0.5% to inflation¹², highlighting once again the relevance of nature degradation for central banks' price stability mandate¹³.

Work by the Banco de España shows that a combination of extreme weather events and environmental degradation in the Mar Menor – Europe's largest saltwater lagoon – has resulted in real estate losses of more than €4 billion. Strikingly, this figure is ten times higher than the amount earned over the last 20 years from converting the surrounding land into irrigated farmland, which is one of the main drivers of the environmental degradation¹⁴.

And a nature stress test conducted by McKinsey on five African banking systems – in Ghana, Mauritius, Morocco, Rwanda and Zambia – found that an orderly transition scenario could significantly reduce credit risk in most countries. In the case of Zambia, losses would be reduced by almost 20% by 2050¹⁵.

Close cooperation is more important than ever

Clearly, the effects of nature degradation are far-reaching and material, and the contribution nature can make to our economies – and our way of life – is steadily diminishing.

Today around 80% of arable land worldwide is affected by soil erosion, salinisation and biodiversity loss¹⁶. These pressures are projected to reduce global food productivity by 12% by 2040, increasing food prices by up to 30%¹⁷.

In its recent landmark report, approved by more than 150 member governments, the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) warns that biodiversity loss is among the most serious threats to businesses¹⁸.

Put bluntly: if we keep destroying nature, we keep destroying economic activity. And this leads to risks surging, prices rising and instability spreading to every part of society and across borders.

Therefore, all of us – central banks, supervisors, banks and the research community – must work closely together in lockstep with the latest scientific evidence to further develop practices for addressing nature-related risks. The NGFS is really the place where all these initiatives and actions come together to better grasp risks and ultimately keep financial systems resilient in the face of the accelerating nature crisis.

Working together within the NGFS we can make sure that a foundational climate and nature toolkit for central banks and supervisors is readily available for whoever wants to get started and make further progress in this field.

So let us keep moving forward. Let us refine our approaches and continue sharing sound practices. Let us shape solutions that match the scale of the task at hand. Because in the face of the ongoing nature crisis, inaction is never neutral.

Where fragilities form, where risks rise, where resilience recedes, we must continue to act. ■

Frank Elderson is a Member of the Executive Board and Vice-Chair of the Supervisory Board of the European Central Bank

Endnotes

1. Despite political headwinds, the NGFS today is a global coalition of 149 members and 24 observers.
2. Central banks and supervisors are not nature policymakers, rather they are policy-takers. Preventing nature degradation is the responsibility of elected governments, as they set environmental policy. For our part as central banks and supervisors, we must take nature-related risks into account in the pursuit of our price stability and financial stability mandates.
3. World Bank (2025), [Mainstreaming Nature into World Bank Macroeconomic Models: Overview Report](#), Washington, DC.
4. For dependency analysis, see Boldrini, S et al (2023), [“Living in a world of disappearing nature: physical risk and the implications for financial stability”](#), Occasional Paper Series, No 333, ECB.
5. World Health Organization (2025), [“Biodiversity”](#), Fact Sheets, 18 February.
6. According to the [2025 carbon budget assessment](#), land and ocean have drawn down 21% and 29% of human-induced CO₂ emissions in the past decade. Owing to the effects of climate change and deforestation, land and ocean CO₂ sinks are 25% and 7% smaller, respectively, than they would otherwise have been. Combined, this is equivalent to the total sink (land and ocean) being nearly 20% smaller than it should be.
7. In doing so, many supervisors took inspiration from the [NGFS conceptual framework on nature-related risks](#) that details how nature degradation can create physical and transition risks.
8. Financial Stability Board (2024), [“Stocktake on Nature-related Risks – Supervisory and regulatory approaches and perspectives on financial risk”](#), 18 July.
9. Magyar Nemzeti Bank (2024), [“The joint biodiversity project of MNB and OECD with the support of the European Commission”](#).
10. Swiss Financial Market Supervisory Authority FINMA (2024), [“FINMA publishes new “Nature-related financial risks” circular”](#), press release, 17 December.

11. In addition to the steps taken from a supervisory perspective, the ECB takes nature degradation into account equally seriously in the pursuit of its price stability mandate. See Elderson, F (2025), [“Deepening our commitment to confronting the climate and nature crises”](#), welcome address at the International Monetary Fund OEDNE/World Bank Group EDS19 Constituency Meeting, Luxembourg, 4 July; and Lagarde, C (2025), [“Strategy assessment: lessons learned”](#), introductory speech at the opening reception of the ECB Forum on Central Banking, Sintra, 30 June.
12. It finds that a one-off shock to major crop yields could raise food inflation by over 2 percentage points and add about 0.5 percentage points to headline CPI inflation (within one to two years) in France. Repeated or intensified shocks would risk more persistent inflation. See Wegner, O et al (2025), [“Seeds of Inflation: Macro Modelling of Nature-Related Risks through Agricultural Prices”](#), Working Paper Series, No 1006, Banque de France, Paris, 29 July.
13. Considering the pivotal role of nature in fulfilment of the price stability mandate, the ECB’s Governing Council – in its latest strategy assessment – committed, within its mandate, to ensuring that it fully takes into account the implications of both climate change and nature degradation for monetary policy and central banking. See ECB (2025), [“ECB’s Governing Council updates its monetary policy strategy”](#), press release, 30 June.
14. Lamas, M and Pérez Quirós, G (2024), [“What is the economic impact of climate change and environmental degradation? The case of house prices in the Mar Menor area”](#), Banco de España Blog, Banco de España, 20 June.
15. FSD Africa and the African Natural Capital Alliance (2024), [Nature stress test: Assessing exposure of five African banking systems](#), McKinsey & Company, July.
16. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) estimates that between USD 235 billion and USD 577 billion worth of annual global food production is at risk due to the decline of pollinators, as outlined in IPBES (2025), [The assessment report on pollinators, pollination and food production – summary for policymakers](#).
17. Wegner, O et al (2025), op. cit.; United Nations Environment Programme (2021), [Becoming #GenerationRestoration: Ecosystem restoration for people, nature and climate, Nairobi](#); Kopittke, PM et al (2019), “Soil and the intensification of agriculture for global food security”, *Environment International*, Vol. 132, Elsevier, Amsterdam, November.

18. Jones, M et al (2026), [IPBES Business and Biodiversity Assessment: Summary for Policymakers](#), United Nations, Manchester, United Kingdom, 8 February.

This article is based on opening [remarks](#) delivered at the NGFS Annual Plenary Event panel discussion on 'Incorporating nature into supervisory practices', Pretoria, 9 March 2026.

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The challenge for policymakers is to build rules that function amid disagreement in a divided world. Dennis Snower discusses how COP30 can turn climate goals into trade rules

COP30 in Belém has made one thing unmistakably clear: environmental sustainability can no longer be siloed from global trade. The next frontier in climate policy lies in reshaping the rules of international commerce so they reflect the real ecological costs – and benefits – of economic exchange. Yet we live in a divided world, fractured not only by wealth and power but by fundamentally different value systems across generations, regions, and discount rates.

In this column, I outline how trade rules can be made responsive to environmental costs in such a context – by distributing policy authority across institutions, leveraging ‘coalitions of the willing’, and aligning finance with principles of precaution and proportionality.

The proposals build on insights from climate economics (Stern 2007, Weitzman 2014), global governance (Hovi *et al* 2016), policy analysis under deep uncertainty (Lempert *et al* 2024), as well as policy contributions on climate clubs, carbon pricing, and sustainable trade (eg. Campolmi 2024, Lashkaripour 2022, Snower 2022, Pisani-Ferry *et al* 2023, Weder di Mauro and Zettelmeyer 2025).

Mapping the political economy of environmental trade rules

Environmental trade measures inevitably generate winners and losers – not only across countries, but also across time. Four major divides define the problem:

1. Current versus future generations, where short-term economic interests dominate long-term ecological sustainability.
2. Rich versus poor countries, where carbon-intensive exporters fear ‘green protectionism’.
3. Politically powerful versus weaker states, where the latter struggle to shape standards.
4. High versus low discount-rate constituencies, which value environmental risks differently.

A robust trade framework must remain operational even when actors disagree about environmental costs. That requires procedural fairness, redistributive mechanisms, and adaptive governance – principles familiar to economists but still absent from trade law.

Trade must now serve as a channel for managing uncertainty, not amplifying it. That means institutionalising precaution, embedding redistribution, and rewarding participation in coalitions of the willing

From principles to practice: institutional roles

National governments

Governments remain the central actors in implementing climate-responsive trade rules. They can:

- Conduct trade and environment impact assessments (TEIAs) that include long-term, low-discount evaluations of environmental externalities in export sectors.
- Enact border carbon adjustments compatible with WTO rules under Article XX (General Exceptions) – provided they use transparent, internationally verified emissions data.
- Earmark carbon revenues for intergenerational investment funds, similar to sovereign wealth funds but targeted at ecosystem restoration.

These measures align with the precautionary principle, ensuring trade does not cause irreversible harm before evidence is complete (Cooney 2004).

International organisations

The WTO, UNEP, and OECD can establish shared methodologies for measuring the carbon and biodiversity footprints of traded goods. The WTO's Committee on Trade and Environment can help clarify how Article XX applies to climate-linked trade measures, reducing litigation risk.

The World Bank and regional development banks can co-finance adjustment costs for developing countries – aligning with the 'common but differentiated responsibilities' (CBDR) principle.

Businesses and consumer organisations

Firms can internalise environmental costs via green certification schemes and supply chain disclosures (such as

the EU's Corporate Sustainability Reporting Directive). Consumer associations can amplify these mechanisms by verifying that labels and digital product passports reflect real environmental data.

Insurers and financial institutions

Insurers and institutional investors can price environmental risk into trade finance. By linking premiums or credit spreads to carbon and biodiversity metrics, they create a financial gradient that rewards low-impact trade.

This market-driven risk adjustment aligns with Weitzman's (2014) argument that fat-tailed climate risks justify higher precautionary costs today to avoid catastrophic losses later.

The role of coalitions of the willing

Because universal agreement is improbable, coalitions of the willing – clusters of like-minded states – can pioneer climate-trade integration. Climate clubs (Hovi *et al* 2016) or sectoral alliances (eg. the Clean Energy Materials Club or the Zero Deforestation Supply Chain Coalition) can set common standards for carbon accounting, circular production, or deforestation-free trade.

These clubs can offer:

- Reciprocal trade preferences (eg. lower tariffs or procurement access for members).
- Technology-sharing agreements and joint certification systems for green exports.
- Revenue-sharing schemes, where proceeds from BCAs finance green transitions in low-income partners.

Club-like structures can overcome global coordination failures by creating credible incentives for cooperation while avoiding free-riding.

Financing the transition

Implementing climate-aligned trade policy requires new fiscal architecture:

- Carbon border revenues can be recycled into green transition funds under international supervision, with disbursement linked to measurable outcomes (emission cuts, reforestation).
- Green bonds and blended finance mechanisms can leverage private capital for exporters facing adjustment costs.
- Insurance and reinsurance pools, backed by development banks, can cover climate-related export disruptions.

This financing logic reflects Stern's (2007) insight that upfront investment in mitigation and adaptation yields long-term welfare gains – effectively treating ecological stability as capital formation.

Balancing precaution and proportionality

A recurring tension in trade governance is whether to apply the precautionary principle (restrict potentially harmful trade until safety is proven) or to maintain the onus of proof on regulators (allow trade unless harm is demonstrated).

For climate-linked trade, the answer must be context-dependent:

- When environmental harm is irreversible (eg. deforestation, biodiversity collapse), the precautionary principle should dominate.
- When evidence is ambiguous but reversible, proportionality and due process should guide policy, ensuring restrictions are temporary, targeted, and reviewable.

This pragmatic balance is consistent with WTO jurisprudence and EU environmental law, allowing environmental ambition without violating the principle of open trade.

Towards a resilient global trade system

COP30 has reframed trade as an instrument of planetary stewardship. The challenge for policymakers is not to reach universal agreement on the exact 'price' of carbon, but to build rules that function amid disagreement – rules that redistribute fairly, evolve adaptively, and reflect long-term ecological value.

Trade must now serve as a channel for managing uncertainty, not amplifying it. That means institutionalising precaution, embedding redistribution, and rewarding participation in coalitions of the willing.

The 2026 US G20 presidency will test whether an 'America First' mindset can evolve into 'Earth First Trade' – one that recognises that in an interconnected economy, the health of global trade depends on the health of the planet. ■

Dennis Snower is Founding President of the Global Solutions Initiative; a Visiting Professor at the Institute for Global Prosperity, University College London; a Professorial Research Fellow of INET Oxford, Oxford University; an International Research Fellow of Said Business School, Oxford University; and a Non-Residential Senior Fellow at Brookings

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