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The scope and limitations of central bank mandates and risk management in the era of climate change

Amylouise-Marinella De Fabiani-Turvey

Abstract: Prompted by Rachel Reeves's Letter to the Financial Policy Committee identifying climate change as "the greatest long-term global challenge", this paper examines the extent to which central banks, acting within their statutory mandates, can integrate climate-related financial risks (CRFR) into monetary and prudential policy. Employing the European Central Bank (ECB) and the Bank of England (BoE) as case studies, the author demonstrates that CRFR fall squarely within their objectives to safeguard financial stability, thereby legitimising a protective approach to supervision. Yet operationalisation is constrained by a duality of risks. Exogenous shocks – physical, transition, and liability – are compounded by endogenous challenges, including conservative institutional cultures. While the ECB has progressively translated climate risk into binding prudential standards, the BoE's continued reliance on soft-law leaves it vulnerable to political vicissitude. Unless these qualitative weaknesses are addressed, expansive mandates risk becoming hollow, with institutional inertia magnifying the destabilising effects of climate change. To overcome these limitations, three recommendations are proposed: i) codifying the BoE's 'two-pronged' approach into statute; ii) adopting a doctrine of 'precaution under uncertainty' to reframe epistemic uncertainty as a trigger for proportionate intervention; and iii) recognising 'soft capital' – values, behaviours, and governance norms – as a determinant of supervisory ambition. Grounded in mandate attribution, proportionality, and the precautionary principle, this working paper contributes to a nascent but expanding literature by offering one of the first studies that illustrates how qualitative institutional weaknesses intersect with quantitative assessments of CRFR to constrain climate action. It advances an original conceptualisation of institutional culture as a structural variable in climate risk governance and proposes a mechanism for translating existing mandates into effective risk management. The findings confirm that legal capacity alone is insufficient: only when statutory mandates are reinforced by resilient institutional cultures can

central banks convert protective supervision into strategically resilient governance for the net-zero transition.

Keywords: climate change, central banking, monetary policy, prudential policy, precautionary principle, prudential supervision.

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Corresponding author email address: ad109@soas.ac.uk

The Scope and Limitations of Central Bank Mandates and Risk Management in the Era of Climate Change

Amylouise-Marinella De Fabiani-Turvey

ABBREVIATIONS

- ‘**CRFR**’ – Climate Related Financial Risks
- ‘**ECJ/CJEU**’ – Court of Justice of the European Union
- ‘**ESG**’ – Environmental, Social and Governance
- ‘**EU**’ – European Union
- ‘**GFC**’ – Global Financial Crisis
- ‘**ICAAPs**’ – Internal Capital Adequacy Assessments
- ‘**NGO**’ – Non-Governmental Organisation

Banks/Departments/International Organisations:

- ‘**BCBS**’ – Basel Committee on Banking Supervision
- ‘**BIS**’ – Bank for International Settlements
- ‘**BoE**’ – Bank of England
- ‘**EBA**’ – European Banking Authority
- ‘**ECB**’ – European Central Bank
- ‘**FCA**’ – Financial Conduct Authority
- ‘**FMIs**’ – Financial Market Infrastructures
- ‘**FPC**’ – Financial Policy Committee
- ‘**IMF**’ – International Monetary Fund
- ‘**MPC**’ – Monetary Policy Committee
- ‘**NBB**’ – Belgian National Bank
- ‘**NGFS**’ – Network for Greening the Financial System
- ‘**PRA**’ – Prudential Regulation Authority

Statutes/Regulations/Supervisory Instruments:

- ‘**CFR**’ – Charter of Fundamental Rights of the European Union 2000
- ‘**CP**’ – Consultation Paper
- ‘**CRD**’ – Capital Requirements Directive
- ‘**CRR**’ – Capital Requirements Regulation
- ‘**CSA**’ – Climate Scenario Analysis

‘**CST**’ – Climate Stress Testing

‘**FSMA**’ – Financial Services and Markets Act 2000

‘**PPP**’ – Periodic Penalty Payments

‘**SS**’ – Supervisory Statement

‘**SSM**’ – Single Supervisory Mechanism Regulation

‘**TEU**’ – Consolidated Version of the Treaty on European Union 2016

‘**TFEU**’ – Consolidated Version of the Treaty on the Functioning of the European Union 2012

‘**UNFCCC**’ – United Nations Framework Convention on Climate Change 1992

‘**VaR**’ – Value-at-Risk

Schemes:

‘**CBES**’ – Climate Biennial Exploratory Scenario

‘**CSPP**’ – Corporate Sector Purchase Programme

‘**PSPP**’ – Public Sector Purchase Programme

‘**SREP**’ – Supervisory Review and Evaluation Process

DEFINITIONS

For the purposes of this paper, these terms shall be defined as the following within the context of central banking:

Climate change – a change of climate (primarily driven by anthropogenic greenhouse gas emissions) attributed directly or indirectly to human activity that alters the composition of the global atmosphere, and which is in addition to natural climate variability observed over comparable time periods.¹ In the context of central banking, climate change is analysed not as an environmental concern *per se*, but as a systemic source of financial risk with the capacity to impair price and financial stability.

Decarbonisation – the process of reducing greenhouse gas emissions by shifting financial activity away from carbon-intensive activities and towards low-carbon, sustainable

¹ UNFCCC 1992, Article 1(2).

alternatives. This might involve reallocating capital, and adjusting investment portfolios to support the transition to a net-zero economy (where the total amount of greenhouse gases emitted is balanced by an equivalent amount removed from the atmosphere).

Effectiveness of risk management – in the context of the climate crisis, practices that lead to a material shift in financial flows away from unsustainable financing.

Endogenous challenges – challenges arising within the financial system or central bank (of which institutional conservatism and groupthink are examples).

Environment – relevant insofar as environmental degradation, particularly through climate change, generates systemic financial risks that intersect with the statutory mandates of monetary and prudential authorities.

Epistemic uncertainty – knowledge-based uncertainty, arising from incomplete or imperfect quantitative data and modelling limitations, which constrains the ability of central banks to predict and quantify CRFR with precision.

Exogenous shocks – unexpected events that disrupt the financial system but originate outside of it (of which physical, transition, and liability risks are examples).

Hard capital – financial resources held by central banks – such as equity and reserves – that are recorded on balance-sheets and provide loss-absorbing capacity to ensure solvency and stability in the face of shocks.

Hard-law – binding legal obligations that can be enforced before a court.²

Horizon – the temporal span over which risks and policy effects are assessed.

² BoE, ‘Climate change: what are the risks to financial stability?’ (BoE, 10 January 2019) <<https://www.bankofengland.co.uk/explainers/climate-change-what-are-the-risks-to-financial-stability>> accessed 11 August 2025.

Liability risks – risks that arise from actions initiated by claimants who have suffered loss or damage due to climate change.³

Market Neutrality – an operational principle, linked to the EU objective of an open market economy, used by the ECB in asset purchase programmes whereby assets are bought in proportion to their presence in the eligible market in order to avoid distorting relative prices.⁴

Mitigation/Adaptation/Transition – used interchangeably to describe the measures through which the financial system reduces vulnerability to CRFR. For central banks, these processes are operationalised by integrating climate considerations into monetary and prudential practices.

Monetary policy – action that a central bank can take to influence how much money is in the economy and how much it costs to borrow.⁵

Operational resilience – the capacity of the financial system to continue delivering critical functions during disruptive events, such as climate shocks. It focuses on ensuring stability in the face of immediate and tangible threats.⁶

Physical risks – financial disruptions arising from acute weather events (e.g., floods) and chronic shifts (e.g., rising sea levels).⁷

Policy discretion – the authority conferred upon an institution to choose between multiple legitimate policy options within the scope of its mandate.

Precautionary approach – a principle-based strategy that permits intervention even where climate risks are not yet fully quantifiable. It reflects the view that waiting for perfect data would expose the financial system to irreversible losses from climate shocks. Accordingly,

³ *Ibid.*

⁴ Isabel Schnabel, ‘From Green Neglect to Green Dominance?’ (*ECB Online Seminar*, 3 March 2021) <https://www.ecb.europa.eu/press/key/date/2021/html/ecb.sp210303_1~f3df48854e.en.html> accessed 28 August 2025.

⁵ BoE, ‘Monetary Policy’ (BoE, 20 August 2025) <<https://www.bankofengland.co.uk/monetary-policy>> accessed 27 August 2025.

⁶ European Banking Authority, ‘Operational Resilience’ (European Banking Authority, 15 October 2024) <<https://www.eba.europa.eu/regulation-and-policy/operational-resilience>> accessed 24 June 2025.

⁷ BoE, n(3).

climate-related measures are justified by the need to anticipate CRFR under epistemic uncertainty, and mitigate their adverse effects.⁸

Protective approach – a mandate-based approach whereby central banks integrate CRFR into their policies because such risks pose threats to financial and monetary stability. Action is justified on the basis that climate change is recognised as a material risk.⁹

Prudential supervision – the oversight of financial institutions by central banks to ensure their safety, soundness, and resilience, thereby safeguarding the stability of the financial system as a whole.

Risk management – the processes by which central banks identify, assess, monitor, and mitigate risks that may threaten monetary and financial stability.

Soft capital – non-financial resources, such as values, behaviours, and governance norms, that do not appear on balance-sheets yet condition how formal powers and resources are exercised within central banks.¹⁰

Soft-law – agreements, principles, and declarations that are not legally binding; predominantly found in the international sphere.¹¹

Statutory mandate – a directive, established by legislation, that entrusts a central bank with specific objectives that it is legally required to pursue.¹² Mandates usually distinguish between primary and secondary objectives, with the former enjoying hierarchical primacy. Such objectives set out the goals of central banking (e.g., maintaining price stability), and are achieved through central bank *functions* (e.g., the implementation of monetary policy), which are underpinned by their *powers* (e.g., the authority to conduct collateralised lending).

⁸ UNFCCC, Article 3(3).

⁹ Megan Bowman and Anat Keller, ‘Through the Lens of Legal Mandate: Central Bank Capital in a Time of Climate Crisis’ in *Central Bank Capital in Turbulent Times* (Springer, 2025) 308.

¹⁰ *Ibid* 296.

¹¹ European Centre for Constitutional and Human Rights, ‘Hard-law/Soft-law’ (ECCHR) <<https://www.ecchr.eu/en/glossary/hard-law-soft-law/>> accessed 21 August 2025.

¹² Christoph Bertsch, Isaiah Hull, Robin L. Lumsdaine, Xin Zhang, ‘Central Bank Mandates and Monetary Policy Stances: Through the Lens of Federal Reserve Speeches’ (2025) 249 *Journal of Econometrics* 105948 <<https://doi.org/10.1016/j.jeconom.2025.105948>> accessed 30 August 2025.

Together, objectives, functions, and powers delineate both the purpose and scope of a central bank's lawful activity.¹³

Strategic resilience – the capacity of financial institutions to realign their functions with the transition to a net-zero economy.¹⁴ This entails ensuring that the financial system remains legally compliant, economically sustainable, and capable of supporting the decarbonisation agenda in the long-term.

Systemic resilience - the ability of the financial system, as a whole, to withstand shocks without major disruptions in the provision of its services to the economy.¹⁵

Systemic risk – the risk that financial instability becomes so widespread across the financial system that it impairs its core functions, materially undermining growth and welfare.¹⁶ It typically arises when exogenous shocks or endogenous challenges simultaneously affect multiple significant institutions. It manifests along two dimensions: procyclicality, whereby financial institutions amplify economic upswings and downturns (e.g., exemplified by excessive mortgage lending in the GFC);¹⁷ and interconnectedness, where distress in one institution spreads quickly through networks of exposures and obligations (e.g., as illustrated by the Eurozone Sovereign Debt Crisis).¹⁸

Technical discretion – the margin of judgment conferred upon an authority when applying the law to complex factual situations characterised by uncertainty, speculation, or competing assessments.¹⁹

¹³ Mario Tamez, Hans Weenik, and Akihiro Yoshinaga, 'Central banks and Climate Change: Key Legal Issues' (2024) IMF WP/24/192 7 <<https://www.imf.org/en/Publications/WP/Issues/2024/09/10/Central-Banks-and-Climate-Change-Key-Legal-Issues-553517>> accessed 20 August 2025.

¹⁴ Dave Coffaro, 'Strategic Resilience' (*Lead Change*, 27 July 2020) <<https://leadchangegroup.com/strategic-resilience/>> accessed 24 June 2025.

¹⁵ ECB, 'A Quick Guide to Macroprudential Policies' (ECB, 24 May 2017) <<https://www.ecb.europa.eu/ecb-and-you/explainers/tell-me-more/html/macroprudentialpolicies.en.html>> accessed 16 June 2025 April 2025.

¹⁶ ECB, 'The Concept of Systemic Risk' (*Financial Stability Review*, December 2009) 134 <https://www.ecb.europa.eu/pub/pdf/fsr/art/ecb.fsrart200912_02.en.pdf> accessed 22 August 2025.

¹⁷ Zijun Liu and others, 'Banking sector interconnectedness: what is it, how can we measure it and why does it matter?' (*Quarterly Bulletin*, 2015) 1 <<https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/2015/banking-sector-interconnectedness-what-is-it-how-can-we-measure-it-and-why-does-it-matter.pdf>> accessed 23 August 2025.

¹⁸ Philip Hamill and others, 'Was a Deterioration in "Connectedness" a Leading Indicator of the European Sovereign Debt Crisis?' (2021) 74 *Journal of International Financial Markets, Institutions and Money* 101300 <<https://doi.org/10.1016/j.intfin.2021.101300>> accessed 23 August 2025.

¹⁹ Jens van't Klooster, 'Technocratic Keynesianism: A Paradigm Shift Without Legislative Change' (2021) 27 *New Political Economy* 772 <<https://doi.org/10.1080/13563467.2021.2013791>> accessed 19 August 2025.

The real economy – the production, transportation, and selling of goods and services within an economy.²⁰

Transmission mechanism – the process by which monetary policy decisions (e.g., changing interest rates) affect financial conditions such as credit availability, inflation, and ultimately the real economy.²¹ This mechanism may be disrupted by climate-related shocks (e.g., stranded assets) that distort the effectiveness of monetary policy in achieving its statutory objectives.

Transition risks – financial disruptions associated with the structural shift to a low-carbon economy.²²

Ultra vires – a decision taken by an entity that exceeds the legal authority or powers granted to it by law.

²⁰ Nicholas G. Pironakis, ‘Aspects of the “Real” Economy’ in *The Greek Economy* (Palgrave Macmillan, London, 1997) Ch 8. 1 <https://link.springer.com/chapter/10.1057/9780230374867_9#citeas> accessed 30 August 2025.

²¹ BoE, ‘The transmission mechanism of monetary policy’ (MPC) 162 <<https://www.bankofengland.co.uk/-/media/boe/files/quarterly-bulletin/1999/the-transmission-mechanism-of-monetary-policy>> accessed 29 July 2025.

²² *Ibid.*

INTRODUCTION

While economists continue to debate the role of central banks in addressing climate change, a broader trend highlights the growing importance of law in financial policy and governance.²³ Central banks are administrative bodies whose authority is conferred and limited by statute: accordingly, any assessment of their engagement with CRFR must be grounded within their constitutional limits.²⁴ Since the primary responsibility for defining, coordinating, and delivering contributions to climate change rests with elected legislatures,²⁵ central banks may only intervene derivatively, by integrating CRFR into monetary and prudential policy insofar as such measures fall within their statutory objectives.

Climate change – comprising physical, transition, and liability risks – poses material threats to price and financial stability²⁶ across horizons that conventional macroprudential tools struggle to capture.²⁷ Yet central banks' response capacity is constrained not only by the exogenous nature of climate risks, but also by endogenous factors such as institutional conservatism, political dependency, and narrow interpretations of mandate boundaries.²⁸ This duality renders legal analysis decisive: the central question is not whether central banks *should* engage with CRFR, but how far they *can* do so within their statutory frameworks, without displacing the prerogatives of elected governments.

This working paper argues that the urgency of the climate crisis necessitates a re-examination of the legal, methodological, and institutional cultures shaping central bank engagement in climate governance. Existing economic studies analyse central bank climate action through an optimisation framework, but rarely interrogate the constitutional and administrative law

²³ Chiara Zilioli and Michael Ioannidis, 'Climate Change and the Mandate of the ECB: Potential and Limits of Monetary Contribution to European Green Policies' (2022) 59(2) CML Review 363, 363 <<https://doi.org/10.54648/cola2022029>> accessed 20 July 2025.

²⁴ TEU, Article 5; TFEU, Articles 2-6; Bank of England Act 1998 Introductory Text, Chapter 11.

²⁵ For example, see TFEU Articles 191-192.

²⁶ Emanuele Campiglio, Yannis Dafermos, Pierre Monnin, Josh Ryan-Collins, Guido Schotten, and Misa Tanaka, 'Finance and Climate Change: What Role for Central Banks and Financial Regulators?' (2018) 8 Nature Climate Change 462 <<https://www.cepweb.org/wp-content/uploads/2017/12/Campiglio-paper.pdf>> accessed 3 August 2025.

²⁷ NGFS, A Call For Action: Climate Change as a Source of Financial Risk (*First Comprehensive Report*, April 2019) 13 <<https://www.ngfs.net/en/publications-and-statistics/publications/first-comprehensive-report-call-action>> accessed 19 June 2025.

²⁸ Sabine Lautenschläger, 'Guardians of Stability – Central Banks, Supervisors and the Quest for Financial Stability' (*ECB Speech*, 12 October 2018) <https://www.ecb.europa.eu/press/key/date/2018/html/ecb.sp181012_1.en.html> accessed 24 August 2025.

constraints that govern the attribution, limits, and justiciability of central bank powers. This omission is critical: questions of legitimacy and effectiveness cannot be resolved by economic reasoning alone, but require engagement with legal principles that structure and limit institutional competence. Indeed, by interrogating the scope of permissible intervention through principles of administrative law governing institutional mandate, this paper offers a novel contribution by demonstrating how legal capacity and institutional culture jointly determine the ambit of permissible intervention. It contends that evidence of the scale and severity of climate risks should serve as the impetus for operationalising statutory mandates more ambitiously: shifting from a purely *protective* posture towards a *precautionary* facilitation of the net-zero transition, consistent with the NGFS framework.²⁹ In light of this, particular credence will be afforded to the theory that where threats of serious or irreversible damage exist, lack of full scientific certainty should not justify postponement of mitigation.³⁰

The analysis proceeds in two parts. Chapter I undertakes a comparative analysis of the statutory mandates of the ECB and BoE, demonstrating that the primary and secondary objectives of both institutions are sufficiently capacious to encompass CRFR. Yet, a critical endogenous challenge is identified: the BoE's reliance on soft-law instruments – remit letters and supervisory statements – renders its mandate vulnerable to narrow interpretation and political vicissitude, undermining its expansive potential. The absence of hard-law, coupled with wide discretion, enables entrenched conservatism to marginalise climate considerations. The author therefore underscores the need for binding obligations to ensure the BoE leverages its statutory mandate in a precautionary manner, rather than retreating behind a protective approach which manifests in the form of institutional inertia.

Chapter II examines how far statutory capacity is operationalised within risk management, employing CSA and CSTs as case studies to assess whether practices advance strategic resilience (considered synonymous with the precautionary approach). Two limitations emerge: first, methodological weaknesses (e.g., static balance-sheet models, the neglect of long-horizons, and severe data gaps) generate epistemic uncertainty which regulators construe as a barrier to action. Second, reliance on soft-law in the face of such epistemic uncertainty renders

²⁹ NGFS, 'Survey on Monetary Policy Operations and Climate Change: Key Lessons for Further Analysis' (*NGFS Technical Document*, December 2020) 3

<https://www.ngfs.net/system/files/import/ngfs/medias/documents/survey_on_monetary_policy_operations_and_climate_change.pdf> accessed 15 August 2025.

³⁰ *Ibid.*

enforcement legally tenuous. Taken cumulatively, these deficiencies confine prudential supervision to a defensive model characterised by operational resilience. The chapter concludes that effective risk management requires reframing uncertainty as a driver of institutional learning and cultural resilience, while ensuring that diagnostic outputs are anchored in binding enforcement mechanisms. Only by institutionalising both precaution and enforceability can statutory capacity be translated into strategic resilience.

The final section advances three reforms to overcome the weaknesses identified in the preceding analysis. First, it calls for codification of supervisory guidance to overcome reliance on unenforceable soft-law, ensuring expectations are explicit, binding and defensible under BoE statute. Second, it proposes a doctrine of ‘precaution under uncertainty’, drawing upon the precautionary principle³¹ and the forward-looking ethos of macroprudential policy, to legitimise proportionate intervention despite epistemic gaps. Third, it reconceptualises ‘capital’ to include organisational and cultural resources to confront endogenous limitations within central banks.³² These recommendations reinforce the paper’s central argument: only through the combined force of binding law and institutional resilience can central banks transform mandates into effective supervision, since conservative cultures risk rendering even the most capacious legal frameworks redundant. Embedding resilience *from within* the institution is therefore indispensable if central banks are to operationalise their statutory authority in a manner consistent with strategic resilience.³³

1. Chapter I: Central Bank Mandates

1.1 Primary Objectives

1.1.1 The ECB

Article 127(1) TFEU establishes the ECB’s primary objective: the maintenance of price stability. This objective anchors the ECB’s monetary policy operations, which rely on the assessment of inflationary pressures and the identification of economic shocks.³⁴ Under the

³¹ TFEU, Article 191.

³² *Bowman and Keller*, n(10) 295.

³³ *Ibid* 305.

³⁴ NGFS, ‘Macroeconomic and Financial Stability Impacts of Climate Change: Research Priorities’ (NGFS, 2020) 6 <https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs_research_priorities_final.pdf> accessed 12 August 2025.

Treaties, this mandate enjoys hierarchical primacy; secondary objectives may only be pursued insofar as they do not compromise the primary goal.³⁵

The ECJ has interpreted the scope of this mandate pragmatically rather than formalistically.³⁶ In *Gauweiler*, the Court affirmed that the ECB may adopt all measures “necessary to safeguard monetary policy”, since the transmission mechanism is a precondition for price stability.³⁷ The mandate therefore extends beyond direct inflation control to encompass actions needed to prevent systemic disturbances from fragmenting monetary policy across the Eurozone.

Climate risks are increasingly recognised as relevant to monetary policy within emerging economic literature. For example, the IMF recognises that climate shocks disrupt supply, demand, and distort monetary transmission channels.³⁸ Additionally, empirical work by Dilip and Kundu demonstrates consistent effects across short-, medium-, and long-term horizons: extreme weather events, global warming, and the structural transition to a carbon-neutral economy will directly and materially affect investment, employment, consumption, productivity, growth, and inflation.³⁹ These are core economic variables relevant to the formulation of monetary policy.⁴⁰

The Court’s reasoning in *Guweiler* also frames the “singleness” of monetary policy as a dynamic concept, covering any scenario in which systemic risk undermines the uniform application of monetary policy across Member States.⁴¹ By extension, if an abrupt transition to net-zero were to trigger sharp divergences in bond yields across carbon-intensive and low-carbon sectors, or disproportionately affect certain Member States, safeguarding the transmission mechanism would be essential to preserving price stability and,

³⁵ TFEU Article, 119(2); TFEU, Article 282(2); Protocol (No 4) on the Statute of the European System of Central Banks and of the ECB, Article 2; TEU Article, 3(3).

³⁶ C-370/12, *Thomas Pringle v. Government of Ireland and Others* [2012] ECLI:EU: C:2012:756.

³⁷ C-62/14, *Peter Gauweiler and Others v. Deutscher Bundestag* [2015] ECLI:EU: C:2015:400, paras 49-50.

³⁸ *Tamez, Weenik, and Yoshinaga*, n(14) 19.

³⁹ Archana Dilip and Sujata Kundu, ‘Climate Change: Macroeconomic Impact and Policy Options for Mitigating Risks’ (*FMOD Reserve Bank of India*, April 2020) 1 < https://www.researchgate.net/publication/342378529_Climate_Change_Macroeconomic_Impact_and_Policy_Options_for_Mitigating_Risks > accessed 16 August 2025.

⁴⁰ NGFS, ‘Climate Change and Monetary Policy: Initial Takeaways (NGFS, June 2020) 4, 5 < <https://www.ngfs.net/en/publications-and-statistics/publications/climate-change-and-monetary-policy-initial-takeaways> > accessed 12 August 2025.

⁴¹ *Gauweiler*, n(38) paras 47-50.

as such, would fall squarely within the primary objective. By parity of reasoning, CRFR that jeopardise uniformity in monetary policy fall within the ECB's primary mandate.

In *Weiss*,⁴² which reviewed the legality of the ECB's PSPP, the CJEU held that what characterises monetary policy is chiefly its objective.⁴³ The Court accepted that measures aimed at maintaining price stability will often produce economic side-effects in other policy domains (such as environmental policy or the broader economy). Such spill-overs, however, do not alter the underlying character of the measure,⁴⁴ provided that its principal aim remains monetary in nature.⁴⁵ To require the Bank to avoid all crossover with other policy areas would deprive it of the necessary means conferred upon it by the Treaties, for the purpose of achieving its objectives.⁴⁶ Thus, as long as price stability remains the principal aim, ECB action remains within mandate, even when it exerts indirect influence on adjacent fields.

It follows that a macro-financial environment characterised by recurring shocks, non-linear climate impacts, or volatile prices constitutes a structural impediment to monetary control. In accordance with *Weiss*, CRFR can therefore be framed as obstacles to the conduct of monetary policy, insofar as they impair the ECB's ability to maintain price stability.⁴⁷ The ECB's 2021 Monetary Strategy Review explicitly acknowledged this connection, noting that CRFR may disrupt monetary transmission channels by increasing the likelihood of stranded assets, distorting valuations, and triggering nonlinear shocks from climate-related disasters that destabilise inflation expectations.⁴⁸ *Weiss* affirms that the ECB may act pre-emptively against such challenges. Adapting its policy to incorporate CRFR therefore falls within its discretion to prevent insurmountable obstacles to price stability.

ClientEarth's 2021 action against NBB challenged the legality of the CSPP, introduced as part of quantitative easing to improve financing conditions for euro-area businesses.⁴⁹ The claimant argued that the programme was unlawful because it failed to integrate climate

⁴² C-493/17, *Heinrich Weiss and Others* [2018] ECLI:EU:C:2018:1000.

⁴³ *Gauweiler* n(38), paras 46, 53; *Pringle* n(37), paras 53-55.

⁴⁴ *Gauweiler* n(38), paras 51, 52 and 57-59.

⁴⁵ *Ibid.*

⁴⁶ *Weiss* n(43), paras 57-59, 67.

⁴⁷ *Ibid.*

⁴⁸ Rens van Tilburg and Aleksandar Simić, 'Legally Green: Climate Change and the ECB Mandate' (*Sustainable Finance Lab*, July 2021) 21 <<https://sustainablefinancelab.nl/wp-content/uploads/sites/334/2021/07/Legally-Green.pdf>> accessed 20 July 2025.

⁴⁹ ClientEarth, 'ClientEarth Withdraws Belgian Central Bank Lawsuit after EU Greens Monetary Policy' (ClientEarth, 2022) 1 <https://climatecaselaw.com/wp-content/uploads/non-us-case-documents/2022/20221129_2138C_press-release.pdf> accessed 22 August 2025.

considerations – an omission publicly acknowledged by the former ECB President⁵⁰ thereby breaching Article 127(1), conflicting with Union climate policy, and undermining EU emissions reduction targets. ClientEarth further alleged that, in purchasing corporate bonds, the NBB had failed in its legal obligations to consider environmental protection and human rights.⁵¹ However, the Brussels Tribunal dismissed claims on procedural grounds of inadmissibility, avoiding the substantive question concerning whether the CSPP contravened Treaty obligations.

Upon appeal, however, the ECB pre-emptively introduced a package of reforms in 2022 that reoriented CSPP reinvestments towards climate-strong issuers, restricted high-carbon assets in the collateral framework, and conditioned eligibility on compliance with the Corporate Sustainability Reporting Directive.⁵² With reforms aligning closely with its demands, ClientEarth withdrew its appeal.

This sequence underscores two critical points for the present analysis. First, since the Tribunal dismissed ClientEarth’s action at the preliminary stage, the absence of a published judgment means the exact grounds remain unclear; however, the most plausible basis for inadmissibility falls under Article 263 TFEU. Under the *Plaumann* test for standing, applicants must demonstrate “individual concern”, a criterion notoriously difficult to satisfy in actions challenging macroeconomic measures of general applicability.⁵³ Indeed, if dismissal rested on this ground, the case would illustrate the structural barriers to judicial scrutiny of ECB action: narrow interpretations of preliminary requirements enable courts to avoid the merits of a case, and thereby insulate the ECB from direct legal accountability.⁵⁴ This reflects a broader pattern in which preliminary requirements filter, rather than merit, judicial review when they are fundamentally dependent on judicial independence.

Second, the ECB’s subsequent decision to reform the CSPP indicates implicit recognition that reliance on such a narrow interpretation of preliminary grounds does not eliminate

⁵⁰ *Ibid* p2.

⁵¹ TFEU, Article 11; CFR, Article 37.

⁵² ECB, ‘ECB Provides Details on How it Aims to Decarbonise its Corporate Bond Holdings’ (*Press Release*, 19 September 2022) <<https://www.ecb.europa.eu/press/pr/date/2022/html/ecb.pr220919~fae53c59bd.en.html>> accessed 20 July 2025.

⁵³ Advocate General’s Opinion in C-731/23 *P, Nicoventures Trading Lts v Commission* ECLI:EU:C:2025:435, para 18.

⁵⁴ Tom Boekestein, ‘Plaumann and the Rule of Law: The Importance of Judicial Independence for the System of Preliminary References’ (*Verfassungsblog*, 12 November 2021) <<https://verfassungsblog.de/plaumann-and-the-rule-of-law/>> accessed 30 August 2025.

liability risk altogether: had the court adopted a broader interpretation of these grounds, the claim may have succeeded. Indeed, by explicitly framing its reforms as monetary policy measures, the ECB recognised that failure to mitigate CRFR could expose it to challenge for dismissing threats to the monetary transmission mechanism. This institutional response demonstrates that addressing CRFR is not ancillary but integral to the fulfilment of the ECB's primary mandate, particularly in light of the well-evidenced systemic risk posed by climate change. In practice, the reforms attest to what *Gauweiler* and *Weiss* established doctrinally: where CRFRs impede fulfilment of price stability, the ECB is not merely permitted but compelled to act.

Drudi has argued that the ECB's climate interventions remain constrained by proportionality.⁵⁵ In my analysis, however, this characterisation overstates the extent to which proportionality operates as a substantive barrier on climate-related action. Properly interpreted, proportionality is not an obstacle but a foundational standard of EU administrative law, requiring that ECB measures be suitable, necessary, and not manifestly disproportionate to their stated aim.⁵⁶ The manifest error standard reflects the equilibrium between deference to the ECB's technical expertise and discretion, and the preservation of sufficient judicial oversight.⁵⁷

Although, in theory, applicants may challenge the adequacy and internal coherence of ECB reasoning (and the Court has clarified that "manifest" does not confine review to solely obvious errors),⁵⁸ in practice the intensity of review in cases involving complex assessments, such as monetary policy, is highly deferential to technical discretion. Judicial scrutiny tends to focus on procedural regularity, the accuracy and reliability of evidence, and whether the ECB's conclusions fall outside the range of legally permissible options.⁵⁹ As the case law demonstrates, once a plausible link to the ECB's primary mandate is articulated, the Court has been reluctant to second-guess the Bank's technical judgment.

⁵⁵ Francesco Drudi, Cornelia Holthausen, Emanuel Moench, Pierre-François Weber, 'Climate Change and Monetary Policy in the Euro Area' (*ECB Occasional Paper Series No 271*, September 2021) 143 <<https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op271~36775d43c8.en.pdf>> accessed 29 August 2025.

⁵⁶ TEU, Article 5(4).

⁵⁷ C-413/06, *P Bertelsmann AG and Sony Corporation of America v Independent Music Publishers and Labels Association* [2007] ECLI:EU:C:790, para. 240.

⁵⁸ Article 47 CFR.

⁵⁹ C-295/12, *P Telefónica and Telefónica de España v. Commission* [2014] EU:C:2014:2062, para 54.

Building on this jurisprudence, the author's critique is that proportionality, far from constraining climate-related intervention, functions primarily as a legitimating framework once the ECB reasons that CRFR threaten price stability. The deferential approach evident in *Gauweiler and Weiss* shows that, where the ECB identifies systemic risks capable of impairing the monetary transmission mechanism - as in the CSPP reforms - judicial review does not operate as a substantive barrier. Instead, it affirms the legality of such measures by recognising them as a proportionate and necessary exercise of the ECB's mandate. Properly analysed, proportionality therefore does not restrict climate interventions under Article 127(1) but provides the doctrinal vehicle through which they can be justified as legitimate, and integral, to fulfilling the ECB's primary duty to safeguard the monetary transmission mechanism.

1.1.2 The BoE

The BoE's primary mandate, under Section 11(a) of the Bank of England Act 1998, establishes price stability as its statutory objective, supplemented by a secondary duty to support government economic policy.⁶⁰ In parallel, Section 9C(2) codifies the Financial Stability Objective to "*protect and enhance the stability of the financial system of the UK*", ascribing the FPC responsibility for identifying, monitoring, and reducing systemic risks with a view to enhancing resilience.⁶¹ Comparatively, while EU law under Article 127(1) TFEU establishes a hierarchy between primary and secondary objectives, no express hierarchy exists between Section 11(a) and the Financial Stability Objective of Section 9C. Throughout this analysis, such an absence of textual prioritisation indicates functional parity between the two mandates, each imposing independent duties on the Bank.

Traditionally, the primacy of price stability has been operationalised by the MPC's duty to formulate monetary policy.⁶² Such primacy requires accounting for any factor capable of affecting inflation dynamics or impairing the monetary transmission mechanism.⁶³ While the drafters of Section 11(a) almost certainly did not contemplate climate-related financial risks, nothing within the statutory text confines the MPC's remit to 'traditional' drivers of inflation.

⁶⁰ Section 1(b) Bank of England Act 1998.

⁶¹ Section 9C(2) Bank of England Act 1998.

⁶² Alvaro Angeriz and Philip Arestis 'Monetary Policy in the UK' (*Cambridge Centre for Economic and Public Policy*, 2007) 1 <<https://www.landecon.cam.ac.uk/sites/default/files/2023-03/wp02-06.pdf>> accessed 3 August 2025.

⁶³ BoE, n(20) 161.

CRFR also satisfy the statutory threshold under the Financial Stability Objective since they affect the resilience of the financial system and must therefore be monitored and addressed in monetary and prudential policy.⁶⁴ This has been affirmed by the Treasury's 2020 Remit Letter, which expressly recognised the relevance of CRFR to both the Bank's price stability and financial stability mandates.⁶⁵

In 2017 the BoE articulated what became known as its two-pronged approach to climate risk: first, promoting safety and soundness through enhanced PRA supervision of climate risks; and second, supporting an orderly transition to a low-carbon economy to bolster the resilience of the UK financial system.⁶⁶ The logic underpinning the second prong is explicitly systemic: financial stability risks are minimised where the transition begins early, proceeds predictably, and allows markets to adjust to the transition of a 2-degree world.⁶⁷ Legally, both prongs fall within the purview of Section 9C's Objective, especially given the link between an early transition and systemic resilience.⁶⁸ While these revisions created significant opportunity for the Bank to assume a leading role in the decarbonisation of monetary policy, in practice its implementation has been impeded by an endogenous constraint: operational conservatism. The CBPS exemplified this phenomenon, drawing criticism for its limited ambition, uneven execution, and reluctance to depart from incumbent market structures.⁶⁹

Decarbonising the CBPS exposed tensions between the MPC's/FPC's statutory objectives and the institution's own operational caution. Two limitations are particularly instructive. First, the bank delayed punitive measures in the form of substantial penalties for poor climate performers, raising doubts about whether its response is commensurate with the urgency of the

⁶⁴ Claudio Borio, '1.3 The Macroprudential Approach to Regulation and Supervision.' (CEPR, 14 April 2009) <<https://cepr.org/voxeu/columns/macroprudential-approach-regulation-and-supervision>> accessed 20 July 2025.

⁶⁵ Sam Woods, 'Dear Chief Executive Officer' (PRA, 1 July 2020)

<<https://www.bankofengland.co.uk/prudential-regulation/letter/2020/managing-the-financial-risks-from-climate-change>> accessed 15 August 2025.

⁶⁶ BoE, 'Transition in thinking: The Impact of Climate Change on the UK Banking Sector' (PRA, September 2018) <<https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/report/transition-in-thinking-the-impact-of-climate-change-on-the-uk-banking-sector.pdf>> accessed 22 August 2025.

⁶⁷ Mark Carney, 'Breaking the Tragedy of the Horizon – Climate Change and Financial Stability' (BIS, 9 October 2015) <<https://www.bis.org/review/r151009a.htm>> accessed 17 June 2025.

⁶⁸ BoE, 'Results of the 2021 Climate Biennial Exploratory Scenario' (BoE, 24 May 2022) <<https://www.bankofengland.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario>> accessed 14 June 2025.

⁶⁹ New Economics Foundation, 'Decarbonising the Bank of England' Pandemic QE' (Green Central Banking, 4 August 2020) <<https://greencentralbanking.com/research/decarbonising-boe-pandemic-qe/>> accessed 30 August 2025.

risks identified.⁷⁰ Second, the BoE maintained its commitment to market neutrality in bond purchases – even after recognising the framework’s inherent carbon bias – thereby reinforcing existing market failures and weakening the credibility of a climate-aligned monetary regime (a point examined further under a subsequent section).⁷¹ This illustrates the gap between the Bank’s protective stance and the strategic precaution required to fulfil its Financial Stability Objective. The result is a legally defensible climate strategy (*in principle*) that is rendered hesitant and fragmented *in practice*. This example demonstrates that endogenous constraints – cultural conservatism and narrow interpretations – compound exogenous shocks such as climate change by delaying intervention, thereby amplifying systemic vulnerabilities that statutory mandates are designed to mitigate.

A deeper analysis regards how courts treat challenges to the BoE’s primary mandate(s) in relation to CRFR. Although no domestic case law has yet addressed climate change in this context, NGO litigation against government departments for inadequate emissions policy has become commonplace.⁷² The contrast between *BEIS*⁷³ and *Ithaca* is instructive for understanding how judicial review differentiates between ministers and expert regulators.⁷⁴

In *BEIS*, the court was willing to intervene because the Climate Change Act 2008 imposes quantifiable, legally enforceable duties on the Secretary of State.⁷⁵ Compliance with carbon budgets is therefore a question of legality rather than technical discretion conferred to the ECB. By contrast, in *Ithaca*, the court emphasised that the FCA, acting as an ‘expert regulator’, was required to exercise judgment in determining whether Article 16(2) of the Prospectus Regulation had been satisfied.⁷⁶ Despite evidence that *Ithaca*’s disclosures inadequately addressed CRFR,⁷⁷ the court declined to engage with the merits of the FCA’s

⁷⁰ Yannis Dafermos, Daniela Gabor, Maria Nikolaidi, Frank VanLerven, ‘An Environmental Mandate, Now What?’ (*SOAS*, January 2022) 1 <https://gala.gre.ac.uk/id/eprint/35865/7/35865_NIKOLAIDI_An_environmental_mandate_Now_what.pdf> accessed 20 July 2025.

⁷¹ Isabel Schnabel, ‘When Markets Fail – the Need for Collective Action in Tackling Climate Change’ (*ECB*, 28 September 2020) <https://www.ecb.europa.eu/press/key/date/2020/html/ecb.sp200928_1~268b0b672f.en.html> accessed 28 August 2025.

⁷² *Plan B Earth v. BEIS Secretary* [2022] EWHC 1841 (Admin).

⁷³ *Ibid.*

⁷⁴ *R (on the application of ClientEarth) v Ithaca Energy Plc* [2023] EWHC 3301, para 25.

⁷⁵ Climate Change Act 2008, Part 1.

⁷⁶ *Ithaca*, n(75), para 25.

⁷⁷ MacFarlanes, ‘ClientEarth’s application to challenge the approval of a prospectus is dismissed’ (*MacFarlanes*, 11 January 2024) <<https://www.macfarlanes.com/what-we-think/2024/clientearth-s-application-to-challenge-the-approval-of-a-prospectus-is-dismissed/>> accessed 11 August 2025.

assessment and deferred to its technical evaluation, consistent with the established boundaries of judicial review.⁷⁸

By analogy, where Parliament entrusts expert regulators with technical discretionary authority, courts afford a wide margin of appreciation; judicial review is correspondingly confined to ensuring legality, rationality, and procedural propriety rather than reassessing the Bank's substantive policy choices.⁷⁹ In practice, this insulates the MPC's monetary policy decisions from challenge, provided they are reasoned and procedurally compliant.

Accordingly, the MPC should enjoy considerable latitude in incorporating CRFR into monetary policy under its primary mandate, since this is likely to be considered a legitimate exercise of technical judgment – particularly in light of the 2021 remit directing it to support the transition to net zero.⁸⁰

Yet the same deference also implies that a failure to consider CRFR would not readily be found unlawful. Absent an explicit statutory weighting, the courts are unlikely to interpret the two-pronged approach as creating an enforceable and positive duty on the MPC.

It follows that, by extension of *Ithaca*, if judicial scrutiny were applied to an MPC decision that did not *actively* consider CRFR, the courts would not substantively reassess the Bank's underlying risk assumptions. The jurisprudence indicates that it is for the Bank, rather than the judiciary, to determine the scope and extent of climate integration within monetary policy. In my analysis, this means that the substantive barrier to CRFR incorporation is not legal but endogenous: where expansive statutory capacity exists but is exercised conservatively, narrow interpretations of mandate and discretion can hollow out their potential. An inward-facing institutional conservatism therefore risks treating precautionary action in the face of the climate crisis as a discretionary option rather than a systemic necessity. The effectiveness

⁷⁸ Raphael Hogarth, 'What is Judicial Review?' (*Institute for Government*, 18 December 2019) <<https://www.instituteforgovernment.org.uk/explainer/judicial-review#:~:text=There%20are%20three%20main%20grounds,less%20discretion%20than%20they%20thought.>> accessed 21 August 2025.

⁷⁹ **Council of Civil Service Unions v Minister for the Civil Service [1985] AC 374.**

⁸⁰ James Jackson and Daniel Bailey, 'Facilitating the Transition to Net Zero and Institutional Change in the Bank of England: Perceptions of the Environmental Mandate and its Policy Implications Within the British State' (*SageJournals*, 31 July 2023) <<https://journals.sagepub.com/doi/10.1177/13691481231189382>> accessed 18 July 2025; Rishi Sunak, 'Remit for the MPC' (*HM Treasury Policy Letter*, 3 March 2021) 1, 5 <https://assets.publishing.service.gov.uk/media/603d3422e90e077dda006171/2021_MPC_remit_FINAL_1_March_.pdf#:~:text=is%20symmetric%20and%20applies%20at,that%20the%20government%E2%80%99s%20economic%20policy> accessed 30 August 2025.

of the Bank's mandate thus turns less on its wording or the prospect of judicial enforcement, and more on the institution's willingness to overcome cultural inertia and exercise its discretion ambitiously.

1.2 Secondary Objectives

1.2.1 The ECB

A secondary objective to support the Union's general economic policies, provided price stability is not compromised, is conferred via Articles 119(2), Article 127(1), and 282(2) TFEU. The ECB is likewise tasked with promoting systemic resilience.⁸¹

The secondary mandate endows the ECB a supporting – not leading – role in general economic policy. It does not authorise the ECB to exercise independent authority or substitute its own normative preferences for those of the Union's democratically accountable organs.⁸² This limit is constitutionally entrenched in the principle of institutional balance,⁸³ which prevents overreach in domains such as climate policy, where legislative competence rests with Parliament and the Council.⁸⁴ Likewise, the principle of democracy reinforces the need to distinguish between technocratic support and policymaking.⁸⁵

This does not render the secondary mandate toothless, it provides a constitutional basis for the ECB to support CRFR-mitigation, provided such action remains consistent with the Union's general economic strategy. Given that climate policy has become central to EU governance - particularly through the European Green Deal and the Net Zero Industry Act - this mandate has broad scope.⁸⁶

It is the *object* of the secondary objective that needs to be clarified to obtain a comprehensive understanding of this clause. Therefore, what does the ECB actually have to support, and to what extent do climate-related policies qualify as general economic policies in the Union under Article 127(1) TFEU?

⁸¹ ECB, n(16).

⁸² C-409/13 *Council v Commission* [2015] ECLI:EU:C:2015:217, para 64.

⁸³ Article 13(2) TEU.

⁸⁴ Articles 191-192 TFEU.

⁸⁵ Article 2 TEU.

⁸⁶ EU Commission, 'The European Green Deal' (EC, Priorities 2019-2024) <https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en> accessed 17 July 2025; Regulation (EU) 2024/1735 Of the European Parliament and of the Council of 13 June 2024.

A narrow reading would confine the term to policies directly influencing the economy,⁸⁷ thereby excluding sectoral policies such as environment.⁸⁸ A broader reading, however, proves more persuasive: since the Treaties do not rigidly separate economic and environmental policy in a binary sense, general economic policies should encompass all Union and Member State policies with a general economic dimension, including those regarded as environmental.

Furthermore, as a Union institution, the ECB is bound by Article 3(3) TEU, which frames the internal market as a vehicle for sustainable development based on growth, price stability, and a high level of environmental protection and improvement.⁸⁹ Read alongside Article 127(1), these provisions imply that economic governance must integrate economic, social and environmental objectives. This integrated approach underpins instruments such as the EU Taxonomy Regulation and the Paris-aligned and Climate Transition Benchmarks, which embed environmental goals within economic regulation.⁹⁰ Indeed, Recital 16 clarifies that a Union-level classification of environmentally sustainable activities is intended not only to inform sustainable finance products, but to guide future Union policies and serve as a basis for broader regulatory measures.⁹¹ Such instruments situate climate policy firmly within general economic policy, rather than as a distinct environmental *silo*.

Nevertheless, a recurring critique of the secondary objective is that climate-sensitive measures risk exceeding the ECB's statutory competences, amounting to *ultra vires* activism.⁹² This claim rests on two propositions: that climate is an environmental - rather than a monetary - objective, and that differentiated eligibility breaches market neutrality. Both arguments are contestable, since they mischaracterise the scope and function of the ECB's secondary mandate.

Beyond Article 3(3) TEU, the first argument is made redundant when analysed through the lens of Articles 11 and 7 TFEU. Article 11 mandates environmental protection be integrated into the definition and implementation of all Union policies and activities, with particular

⁸⁷ Chapter I of Title VIII TFEU.

⁸⁸ Title XX TFEU.

⁸⁹ Article 3(3) TEU.

⁹⁰ Commission Delegated Regulation (EU) 2020/1818 of 17 July 2020 supplementing Regulation (EU) 2016/1011 of the European Parliament and of the Council as regards minimum standards for EU Climate Transition Benchmarks and EU Paris-aligned Benchmarks [2020] O.J. L 406/17.

⁹¹ Regulation (EU) 2020/852 of the European Parliament and of the Council of 18 June 2020.

⁹² BVerfG, 2BvR 859/15, para 117 118.

view to promoting sustainable development (meeting the needs of the present without compromising the ability of future generations to meet their needs).⁹³ Reinforced by Article 3(3) TEU and Article 37 CFR, this imposes a binding procedural obligation across *all* areas of EU policy, including monetary.⁹⁴ The ‘integration clause’ is thus not a mere aspiration but a binding legal duty.⁹⁵

Caselaw suggests that integration, at minimum, requires institutions to consider environmental objectives when exercising their functions, even outside the scope of Title XX TFEU.⁹⁶ The ECJ has repeatedly affirmed Article 11’s normative force,⁹⁷ describing environmental protection as one of the essential objectives of the Union⁹⁸ that “all [Union] measures must satisfy”.⁹⁹ Accordingly, environmental protection requirements must be integrated into the Union’s monetary policy.¹⁰⁰

Jurisprudence across diverse fields corroborates this horizontal reach.¹⁰¹ In *Aftón Chemical*, the Court held that environmental considerations must be factored in even in non-environmental domains, provided institutions act within conferred competences.¹⁰² This does not confer power to the ECB to set climate policy *in lieu* of the legislature; it merely acts through its supportive function, primarily through the re-calibration of existing monetary tools. For example, reweighting asset-purchase reinvestments to reflect climate-adjusted risk is an operational choice within the ECB’s remit.¹⁰³ Such measures remain ancillary to

⁹³ Friends of the Earth, ‘High Court Judgment on Government’s Climate Plan’ (*Friends of the Earth*, 3 May 2024) <<https://friendsoftheearth.uk/climate/high-court-judgment-governments-climate-plan#:~:text=The%20judgment%20references%20the%20Divisional,generations%20to%20meet%20their%20needs.%E2%80%9D>> accessed 31 August 2025.

⁹⁴ Garcia Marín Durán and Elisa Morgera, ‘Commentary on Article 37 of the EU Charter of Fundamental Rights: Environmental Protection’ (*Europa Working Paper No 2013/02*, 2013) 6 <https://www.research.ed.ac.uk/files/13481328/Morgera_2013_Commentary_on_Article_37_of_the_EU_Charter_of_Fundamental_Rights.pdf> accessed 22 August 2025.

⁹⁵ *Ibid.*

⁹⁶ C-487/06 *P, British Aggregates Association v Commission* [2008] EU:C:2008:757, para 91.

⁹⁷ *Ibid*, para 60; Opinion of A.G. Kokott in C-298/12, *Confédération paysanne v. Ministre de l’Alimentation* [2013] EU:C:2013:319, para 30.

⁹⁸ C-176/03 *Commission v. Council* [2005] ECLI:EU:C:2005:542.

⁹⁹ C-62/88 *Greece v. Council*, [1990] ECLI:EU:C:1990:153, para 20.

¹⁰⁰ C-440/05, *Commission v. Council* [2007] ECLI:EU:C:2007:625, para 60.

¹⁰¹ C-155/91 *European Communities v. Council of the European Communities* [1993] ECLI:EU:C:1993:98.

¹⁰² C-343/09 *Aftón Chemical Limited v. Secretary of State for Transport* [2010] ECLI:EU:C:2010:419.

¹⁰³ Balazs Koranyi, ‘ECB to Consider ‘Climate Factor’ when Lending to Banks’ (*Reuters*, 29 July 2025) <[https://www.reuters.com/sustainability/climate-energy/ecb-consider-climate-factor-when-lending-banks-2025-07-29#:~:text=FRANKFURT%2C%20July%202029%20\(Reuters\),to%20reduce%20its%20carbon%20footprint](https://www.reuters.com/sustainability/climate-energy/ecb-consider-climate-factor-when-lending-banks-2025-07-29#:~:text=FRANKFURT%2C%20July%202029%20(Reuters),to%20reduce%20its%20carbon%20footprint)> accessed 2 August 2025.

democratically set decarbonisation targets but enhance monetary and financial stability by internalising material CRFR into the statutory mandate, in support of Union policy.

Therefore, substantively, Article 11 empowers the ECB to promote environmental protection; procedurally, it obliges it to integrate such requirements into the design and implementation of monetary policy.¹⁰⁴ These duties are not discretionary but emerge from the Treaties' constitutional framework.

This analysis would have strengthened ClientEarth's 2021 challenge to the CSPP, had the case not been dismissed on procedural grounds, since Article 11 exposes a significant vulnerability in the programme's original design before reform. Judicial authority supports the view that Article 11 may be subject to a strict standard of review: in *Sweden v Commission*, the General Court annulled the Directive in question because the Commission failed to engage with scientific evidence, setting a precedent for rigorous procedural compliance.¹⁰⁵ By analogy, failure to consider evidenced climate impacts could have rendered the CSPP unlawful, despite the ECB's broad discretion in monetary affairs. The weakness of the original scheme was therefore its disregard of Article 11's procedural and substantive obligations, which condition the lawful exercise of the ECB's secondary mandate.

The principle of consistency under Article 7 TFEU reinforces this obligation, requiring coherence across Union policies in line with the principle of conferral.¹⁰⁶ The court has reasoned that inconsistency with EU policy constitutes a breach of the legal principles governing that area.¹⁰⁷ By extension, where the ECB exercises discretion under its mandate, and faces monetary policy options which are equally effective in achieving price stability, Article 7 obliges it to favour those most consistent with broader Union objectives, including climate and sustainability targets under Article 11, with a view to promoting the achievement of such policies. Accordingly, institutions must not only avoid undermining other Union policies but positively consider them in shaping their own, while refraining from supporting those which prove incompatible with the Union's economic objectives.¹⁰⁸

¹⁰⁴ Joana Setzer, Catherine Higham, Andrew Jackson, Javier Solana 'Climate Change Litigation and Central Banks' (*ECB Legal Working Paper Series No. 21*, ECB, December 2021) 53 < <https://www.econstor.eu/handle/10419/278130> > accessed 4 August 2025.

¹⁰⁵ T-229/04, *Sweden v. Commission* [2007] ECLI:EU:T:2007:217.

¹⁰⁶ TEU Article 5; TFEU Articles 2-6.

¹⁰⁷ T-512/12, *Front Polisario v. Council* [2015] ECLI:EU:T:2015:953, para 153.

¹⁰⁸ Joana Setzer, Catherine Higham, Andrew Jackson, Javier Solana, n(94) 53.

Furthermore, the second aforementioned argument: that preferential eligibility breaches neutrality, mischaracterises its status. Market neutrality is not a treaty principle but an operational doctrine, developed by the ECB as a self-imposed standard for asset purchases,¹⁰⁹ deriving from a broader obligation in Article 127 TFEU to act in accordance with an open market economy. Neutrality reflects a presumption that central bank operations should not distort relative prices by interfering in market allocation. However, as the ECB has recognised, Article 127 must be read alongside its supporting secondary mandate, which expressly includes sustainable development and environmental protection, as per the analysis above.¹¹⁰ It follows that neutrality cannot be elevated above primary law duties of environmental integration and consistency. Furthermore, *Gauweiler* and *Weiss* confirmed that the legality of monetary operations depends not on neutrality but on pursuing price stability and satisfying proportionality, objectivity, and non-discrimination.¹¹¹ Neutrality, therefore, carries no autonomous legal weight and is displaced where differentiated treatment serves to safeguard price stability and the transmission mechanism (where proportionality and transparently reasoned).

Moreover, neutrality is dynamic, not static.¹¹² There is persuasive evidence that market prices systematically underestimate the risks and opportunities associated with the transition to net zero.¹¹³ In such conditions, “neutral” asset purchases replicate mispriced risks and entrench carbon bias, running in contradiction with the ECB’s statutory duty to act objectively and proportionately. Thus, where markets fail to internalise climate risks, climate-sensitive interventions are not distortive but corrective: they align monetary operations with the ECB’s primary and secondary objectives.¹¹⁴ Accordingly, neutrality cannot be invoked to negate the ECB’s legal obligations under Articles 7 and 11 TFEU, since it is subordinate in status.

Taken together, these arguments have substantiated that climate-sensitive measures do not risk exceeding the ECB’s statutory competences under its secondary mandate.

¹⁰⁹ Javier Solana, Marco Goldoni, ‘The Legal Nature of Market Neutrality in the Euro Area’s Monetary Policy’ (2024) 3 European Law Open 7, 2 <<https://www.cambridge.org/core/journals/european-law-open/article/legal-nature-of-market-neutrality-in-the-euro-areas-monetary-policy/A798CA379B2704CEA628CEB35CCD440A>> accessed 26 August 2025.

¹¹⁰ *Schnabel*, n(5).

¹¹¹ *Tamez, Weenik, and Yoshinaga*, n(14) 17.

¹¹² *Ibid.*

¹¹³ *Schnabel*, n(72).

¹¹⁴ *Ibid.*

1.2.2 The BoE

The BoE's secondary objective, under Section 11(b), similarly requires it to support the government's economic policy, including its objectives for growth and employment, subject to maintaining price stability. Unlike the ECB's secondary mandate under Article 127(1) TFEU, this duty is anchored in national rather than supranational policy; meaning that the scope of relevant economic policies is narrower in jurisdictional reach.

Nevertheless, in effect the law is similar. In both systems, the secondary objective functions as a support competence, not a power to set policy. Given the government's commitments under the Climate Change Act 2008 and Net Zero Strategy,¹¹⁵ climate goals fall within the government's economic policy and, by extension, within the BoE's secondary mandate.

The secondary objective is operationalised through the Treasury's annual remit letter to the FPC, which sets out priorities for price and financial stability within government economic policy.¹¹⁶ For example, the Treasury's 2020 letter explicitly required the FPC to regard climate risk as relevant to its statutory mandate, and to support the government's Green Finance Strategy by "*facilitating finance to support the delivery of the UK's carbon targets and clean growth*".¹¹⁷ These statements signalled governmental support for integrating CRFR and urged the BoE to contribute to a greener economy. While non-binding, remit letters create a soft-law expectation, encouraging the Bank to calibrate existing policy tools – as opposed to creating new ones – in support of the net zero transition.

Even where the FPC is not formally bound by legislation, soft-law principles exert *indirect* normative pressure, particularly through the Bank's supervisory role over FMIs.¹¹⁸ Under section 30E of the 1998 Act, the Bank must apply the same regulatory principles as the PRA and the FCA when exercising its FMI supervision. Section 30D(2) further requires these

¹¹⁵ UK Government, 'Net Zero Strategy: Build Back Greener' (*Government Policy Paper*, 19 October 2021) <<https://assets.publishing.service.gov.uk/media/6194dfa4d3bf7f0555071b1b/net-zero-strategy-beis.pdf>> accessed 24 August 2025.

¹¹⁶ Bank of England Act 1998, Section 9E, 12.

¹¹⁷ Letter from the Governor of the BoE to the Chancellor of the Exchequer (*BoE*, 25 June 2020) <<https://www.bankofengland.co.uk/-/media/boe/files/letter/2020/governor-letter-250620-fpc.pdf>> accessed 19 August 2025.

¹¹⁸ Supervisory Statement, 'Fundamental Rules for FMIs' (Bank of England, 18 July 2025) <<https://www.bankofengland.co.uk/financial-stability/financial-market-infrastructure-supervision>> accessed 19 August 2025.

principles be considered consistently with advancing the Financial Stability Objective, and contributing to the UK net-zero emissions target¹¹⁹ where the exercise of its FMI functions is relevant.¹²⁰ The latter clause on ‘relevancy’ is doctrinally significant since it preserves central bank discretion to determine when climate considerations interact with FMI supervision, but once such relevance is acknowledged, the duty in theory should crystallise into an obligation. Relevance is most evident where CRFR threaten the systemic resilience of FMIs – such as central counterparties accepting high-carbon collateral that could rapidly lose value under transition shocks. In such cases, climate considerations are not ancillary but directly impact the statutory purpose of FMI oversight to safeguard financial stability.

Thus, although the FPC is not formally subject to environmental duties in section 3B FSMA 2000,¹²¹ climate integration within the Bank’s operations – especially its FMI functions – is underpinned by a consistent framework, albeit indirect. This situates CRFR within the Bank’s technical discretion: it must make forward-looking judgments on relevance, but once that threshold is crossed, the law obliges their integration into supervisory practice.

Although the aforementioned arguments are defensible, the secondary mandate in Section 11(b) introduces a structural difficulty by layering three distinct objectives – growth, employment, and support for government policy – into a single provision. Koop and di Vettimo contend that this multiplication of aims generates an accountability deficit, since their relative weight is undefined.¹²² Their insight is compelling not simply because objectives proliferate, but because such proliferation disrupts the legal architecture upon which central bank autonomy rests. This autonomy is conditional on the principle of legality: legitimacy derives from a statute that delineates its objectives, functions, and powers with sufficient clarity against which the institution’s actions can be reviewed.

Where secondary aims are numerous and only implicitly prioritised, the Bank’s actions cannot be falsified against stable evaluative criteria. The proportionality assessment that ordinarily anchors administrative review becomes indeterminate, as the ‘objective’ of monetary policy is itself plural and fluid. This ambiguity increases vulnerability to political

¹¹⁹ Climate Change Act 2008, Section 1; Environment Act 2021, Section 5.

¹²⁰ 30E(1)c.

¹²¹ 3B(1)c.

¹²² Christel Koop, Michele Scotto di Vettimo, ‘How Do the Media Scrutinise Central Banking? Evidence from the Bank of England’ (2022) European Journal of Political Economy 102296 <<https://doi.org/10.1016/j.ejpoleco.2022.102296>> accessed 23 August 2025.

suasion: the more diffuse the statutory aims, the easier it becomes for governments to exert influence under the guise of directing the Bank towards one dimension of its secondary mandate rather than another.¹²³ Importantly, this risk is not merely theoretical. The IMF's guidance on central bank best practices emphasises the need for clear, explicit, and limited mandates to preserve independence and to guard monetary policy from fiscal or political encroachment.¹²⁴ Applied to the BoE, the author's analysis suggests that an effective secondary mandate should be composed of measurable, time-bound, and reviewable targets set by Government, accompanied by transparent reasoning standards - as explored in Chapter III. In the absence of such statutory precision, however, the Bank's secondary objectives become increasingly exposed to political reinterpretation. Ed Balls' remark, before the House of Lords Economic Affairs Committee, illustrates this point: by asserting that climate change should remain primarily a government responsibility and may exceed the Bank's toolkit, he implicitly reframes mandate boundaries through political discourse rather than statutory instruction.¹²⁵

It is in this context that the inherent fragility of soft-law tools, such as remit letters and supervisory statements, becomes especially salient. While useful for cultivating voluntary compliance, they lack the coercive authority of legislation and are vulnerable to political continuity and institutional will, both of which have proven susceptible to change.¹²⁶ This was exposed in 2023, when the House of Lords Inquiry questioned the legitimacy of the BoE's climate focus, citing concerns of overreach in light of its primary objective.¹²⁷ Climate change was briefly removed from the BoE's priorities - despite criticism that this would heighten systemic risk exposure, given the well-evidenced link between CRFR and financial stability.¹²⁸ Although the 2024 letter reversed course, framing climate change as "the greatest

¹²³ Dr Ana Carolina Garriga, 'Written Evidence – Inquiry on the Bank of England: How is Independence Working?' (*House of Commons Treasury Committee IBE0019*, 27 April 2023) <<https://committees.parliament.uk/writtenEvidence/120739/html/>> accessed 26 August 2025.

¹²⁴ Tamez, Weenik, and Yoshinaga, n(14).

¹²⁵ Economic Affairs Committee, 'Bank of England: How is Independence Working?' (*House of Lords Corrected Oral Evidence*, 25 April 2023) <<https://committees.parliament.uk/oralevidence/13068/html/>> accessed 25 August 2025.

¹²⁶ Bowman and Keller, n(10) 303.

¹²⁷ Thomas Weston, 'Economic Affairs Committee: Making an Independent Bank of England Work Better' (*House of Lords Library In Focus*, 15 April 2024) <<https://lordslibrary.parliament.uk/economic-affairs-committee-report-making-an-independent-bank-of-england-work-better/#ref-12>> accessed 3 August 2025.

¹²⁸ Finance Innovation Lab, 'Open letter to Andrew Bailey: The Bank of England Must Step Up, not Back, on Climate Change' (*Bank of England Open Letter*, 16 March 2024) <<https://financeinnovationlab.org/wp-content/uploads/2024/04/Letter-to-Andrew-Bailey-.pdf>> accessed 25 August 2025.

long-term global challenge”¹²⁹ and reaffirming sustainable finance under the FPC’s secondary objective,¹³⁰ the episode illustrates the instability of an elastic secondary mandate reliant on non-binding expectations.

Furthermore, the 2021 extension of the MPC’s remit exemplifies not a paradigmatic shift in governance but another soft-law, incremental adjustment. While it spurred amendments to the CBPS¹³¹ and the introduction of CST,¹³² it fell short of establishing a statutory threshold. Its undefined terms, such as “transition” and “facilitation”, reflect a thermostatic logic of institutional behaviour: climate is incorporated only when it maps into pre-existing risk metrics, consistent with Cashore and Howlett’s theory of policy thermostats.¹³³ Collaboration with the Climate Hub highlighted this pattern: the remit is interpreted within the *context of* and *conditioned by* pre-existing methodological practices,¹³⁴ with traditionally “higher-priority” objectives conditioning its application.¹³⁵ This has manifested through an internal focus on CRFR as the lens through which climate issues are measured, rather than projections of the net-zero transition. Climate change has therefore become synonymous with market failures and significant financial losses.¹³⁶ The result is that action is more *validatory* than *catalytic*.¹³⁷ Yet economists stress that the urgent revision of institutional culture demanded by the climate crisis cannot be achieved by marginal modification of existing tools.¹³⁸

Where statutory objectives remain ambiguous, the resulting interpretive discretion amplifies endogenous challenges within the Bank. As van’t Klooster theorised, the remit typifies ‘strategic ambiguity’ wherein technocrats exercise discretion defensively under soft-law, relegating climate considerations to the margins of operational resilience.¹³⁹

¹²⁹ HM Treasury, n(1).

¹³⁰ The Labour Party, ‘Rachel Reeves Mais Lecture 2024’ (Press Release, 19 May 2024) <<https://labour.org.uk/updates/press-releases/rachel-reeves-mais-lecture/>> accessed 20 August 2025.

¹³¹ BoE, ‘Greening our CBPS’ (BoE, 31 January 2023) <<https://www.bankofengland.co.uk/markets/greening-the-corporate-bond-purchase-scheme>> accessed 26 August 2025.

¹³² BoE, ‘Results of the 2021 CBES’ (BoE, 24 May 2022) <<https://www.bankofengland.co.uk/stress-testing/2022/results-of-the-2021-climate-biennial-exploratory-scenario>> accessed 23 August 2025.

¹³³ Benjamin Cashore and Michael Howlett, ‘Punctuating With equilibrium? Understanding Thermostatic Policy Dynamics in Pacific Northwest Forestry’ (2007) 51(3) *American Journal of Political Science* 532-551 <<https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1540-5907.2007.00266.x>> accessed 21 August 2025.

¹³⁴ Jackson and Bailey, n(81).

¹³⁵ *Ibid* 353.

¹³⁶ *Ibid* 350.

¹³⁷ *Ibid* 351.

¹³⁸ *Ibid*.

¹³⁹ van’t Klooster, n(20) 772.

Another shortcoming of statutory ambiguity is its production of liability anxiety: in the absence of binding benchmarks, supervisors become reluctant to act decisively for fear that climate-sensitive interventions may later be characterised *ultra vires* or disproportionate. This uncertainty generates what the author identifies as an ‘accountability deficit’, in which central bankers default to a protective, defensive posture, privileging caution over strategic resilience. Crucially, this dynamic is self-reinforcing since fear of liability entrenches inertia, leaving systemic risks unaddressed precisely because the legal framework is not perceived to provide sufficient certainty to justify a decisive alignment of the financial system with decarbonisation.¹⁴⁰ This cyclical relationship between legal ambiguity, liability risk, and operational hesitancy forms a core part of the paper’s contribution to the literature, highlighting how endogenous interpretations of mandate boundaries can inhibit climate action even where statutory capacity is ample.

1.2.3 The Relationship between Primary and Secondary Objectives

By establishing the primacy of price stability, both the TFEU and the Bank of England Act 1998 imply that secondary aims may, in principle, conflict with the primary mandate.¹⁴¹ Issing, for example, argues that the ECB would need to neutralise the inflationary effects of climate-driven financial policies, such as carbon taxes, to avoid undermining the inflation target.¹⁴² This paper argues, however, that this framing misconceives the legal question. The issue is not whether transition policies, such as carbon taxes, prove inflationary/disinflationary in economic terms – a debate that lies beyond the scope of this paper – but whether integrating such measures risks rendering central bank action *ultra vires*.

Legal reasoning collapses the aforementioned purported contradiction. First, climate risks are temporarily asymmetric: physical risks are compounding and irreversible, meaning that delay amplifies medium-to long-term threats to financial stability far beyond the temporary price

¹⁴⁰ Moritz Baer, Emanuele Campiglio, and Jérôme Deyris, ‘It Takes Two to Dance: Institutional Dynamics and Climate-Related Financial Policies’ (*Grantham Research Institute on Climate Change and the Environment No. 356*, April 2021) 3 <<https://www.cccep.ac.uk/wp-content/uploads/2021/04/working-paper-356-Baer-et-al.pdf>> accessed 20 June 2025.

¹⁴¹ Michael Ioannidis, Murphy Hlásková and Chiara Zilioli, ‘The Mandate of the ECB: Legal Considerations in the ECB’s Monetary Policy Strategy Review,’ (*ECB Occasional Paper Series No 276*, September 2021) 19,20 <<https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op276~3c53a6755d.en.pdf>> accessed 24 August 2025.

¹⁴² Otmar Issing, ‘Central banks - Independent or almighty?’ (*SAFE Policy Letter No. 92*, November 2021) 7 <https://safe-frankfurt.de/fileadmin/user_upload/editor_common/Policy_Center/SAFE_Policy_Letter_92_fin.pdf> accessed 21 August 2025.

shocks associated with transition.¹⁴³ On this view, sustained high-carbon capital allocation risks breaching the BoE's Section 9C duty to protect and enhance financial stability. This legal hierarchy therefore does not prohibit climate integration; rather, in the author's interpretation, it justifies it.

Second, the CJEU has recognised the Governing Council's broad discretion to determine which instruments best secure price stability.¹⁴⁴ Where climate risks impair monetary transmission, they cease to be 'secondary' considerations and fall squarely within the ECB's primary mandate under Article 127(1) TFEU. Accordingly, unmanaged climate risks that destabilise markets or distort transmission mechanisms render inaction most inconsistent with both primary and secondary mandates.

1.3 Chapter I Summary

This chapter has demonstrated that the statutory mandates of both the ECB and BoE are sufficiently capacious to integrate CRFR. Climate-sensitive monetary policy does not constitute *ultra vires* activism but a necessary extension of existing obligations where CRFR impair price stability and/or financial resilience. While neither institution may autonomously redefine economic policy or pursue redistributive climate policy goals, support for climate objectives within their jurisdiction is legally permissible so long as measures remain anchored in their monetary and prudential functions. Indeed, for the ECB, jurisprudence under Articles 7 and 11 TFEU indicates that a failure to consider environmental factors where relevant may itself be challengeable. No equivalent positive duty exists in the UK, rendering the BoE's climate engagement formally discretionary.

This chapter has also shown that the decisive constraints are endogenous, not legal. For the ECB, case law establishes a duty to address impediments to monetary transmission, enabling the incorporation of CRFR within its primary mandate. For the BoE, by contrast, reliance on soft-law and the indeterminacy of its multi-faceted secondary mandate leaves climate action vulnerable to political fluctuation and narrow interpretation. This fosters a conservative culture that inhibits the operationalisation of an otherwise expansive statutory mandate, relegating CRFR integration to a reversible policy preference rather than a systemic

¹⁴³ Hughes Chenet, Josh Ryan-Collins, and Frank van Lerven, 'Finance, climate-change and radical uncertainty: Towards a precautionary approach to financial policy' (2021) 183 *Ecological Economics* 106957, 9 <<https://doi.org/10.1016/j.ecolecon.2021.106957>> accessed 17 August 2025.

¹⁴⁴ Gauweiler, n(38); Weiss, n(43).

imperative. Such endogenous weaknesses magnify exogenous climate shocks, thereby exacerbating the very systemic risks the mandates are designed to mitigate.

2. Chapter II

Mandates in Practice: CRFR-Management as a Test of Strategic Resilience in Central Banking

The preceding chapter established that both the ECB and BoE possess mandates sufficiently capacious to integrate CRFR. This chapter turns from legal authority to institutional practice. It evaluates whether such capacity is being operationalised through the risk management tools that are intended to deliver strategic resilience - employing CSA and CST as examples of the primary instruments through which central banks ought to anticipate, diagnose, and mitigate CRFR.

Emerging from post-GFC reforms, scenario analysis enables institutions to assess performance under a range of plausible future conditions, and can be used by firms and regulators for varied purposes.¹⁴⁵ Stress testing, by contrast, is expressly designed to expose systemic vulnerabilities, focusing on an institution's ability to withstand severe (but plausible) shocks.¹⁴⁶ Within the prudential framework, stress testing carries particular regulatory weight: its outputs inform Pillar-1 capital adequacy requirements and, through Pillar-2, determine whether additional capital buffers are needed.¹⁴⁷

The BCBS Principles affirm the conceptual strengths of these tools: they provide forward-looking risk assessments that move beyond the limitations of backward-looking VaR models;¹⁴⁸ they require consideration of system-wide risks and amplification channels; and

¹⁴⁵ Tim Vipond, 'Scenario Analysis' (*Corporate Finance Institute*) <<https://corporatefinanceinstitute.com/resources/financial-modeling/scenario-analysis/>> accessed 27 August 2025.

¹⁴⁶ David Clarke and Eren Can Ileri, 'What are Climate Stress Tests and How Effective Are They?' (*Green Central Banking*, 14 May 2022) <<https://greencentralbanking.com/2022/03/14/what-are-climate-stress-tests/>> accessed 24 August 2025.

¹⁴⁷ BoE, 'The BoE's Approach to Stress Testing in the UK Banking System' (BoE, 29 November 2024) <<https://www.bankofengland.co.uk/stress-testing/2024/boes-approach-to-stress-testing-the-uk-banking-system>> accessed 26 August 2025.

¹⁴⁸ Thomas E. Klaffky, Francis D. Glenister, Judith B. Otterman, 'Risk Management Process for Central Banks' (*IMF E-Library*, 5 July 2000) <<https://www.elibrary.imf.org/display/book/9781557756947/ch014.xml>> accessed 16 June 2025.

emphasise the importance of rigorous documentation and governance.¹⁴⁹ Yet these principles are not legally binding. In practice, national stress testing remains constrained by short-horizons in monetary policy, linear shock models, and static balance sheet assumptions – limitations that undermine their reliability as predictors of CRFR, and impede their usefulness as supervisory tools.¹⁵⁰

This chapter argues that the effectiveness of risk management hinges on two conditions: (i) central banks transforming uncertainty into a driver of institutional learning and cultural resilience, and embedding precaution as a supervisory norm rather than an optional add-on; and (ii) diagnostic outputs being supported by enforceable supervisory measures. The absence of these two conditions explains why, despite expansive statutory capacity, the operationalisation of CRFR within both the ECB and BoE remains hesitant, fragmented, and insufficiently aligned with the demands of strategic resilience.

2.1 Epistemic Uncertainty

Prudential law requires that risk management tools satisfy certain standards. Under Article 177 CRR III,¹⁵¹ testing must deliver robust,¹⁵² regular, and risk-reflective outputs capable of informing capital adequacy in a manner that reflects the institution's actual risk profile.¹⁵³ The analysis below, however, demonstrates that current CST methodologies struggle to meet these requirements when applied to CRFR.

Although the NGFS recommends long-horizon assessments,¹⁵⁴ the translation of climate variables (e.g., temperature increases) into financial metrics (e.g., credit losses) remains methodologically underdeveloped, particularly over multi-decade timespans extending upwards of 50-years.¹⁵⁵ This limitation also affects CSA: the NGFS scenarios, heavily relied upon by both the BoE and the ECB, have been criticised for their “overly smooth” transition

¹⁴⁹ BCBS, ‘Stress Testing Principles’ (BCBS, October 2018) <<https://www.bis.org/bcbs/publ/d450.pdf>> accessed 21 August 2025.

¹⁵⁰ Simon Dikau, Ulrich Volz, ‘Central Bank Mandates, Sustainability Objectives and the Promotion of Green Finance’ (*SOAS Department of Economics Working Paper No 222*, March 2019) 8 <<https://www.soas.ac.uk/sites/default/files/2022-10/economics-wp222.pdf>> accessed 23 August 2025.

¹⁵¹ Regulation (EU) No 575/2013 of the European Parliament and of the Council, Article 177(2)a.

¹⁵² *Ibid*, Article 286.

¹⁵³ *Ibid*, Article 290; CRD IV, Article 97.

¹⁵⁴ NGFS, ‘Guide to CSA for central banks and supervisors’ (NGFS, June 2020) 14 <https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs_guide_scenario_analysis_final.pdf> accessed 26 August 2025.

¹⁵⁵ BCBS, ‘CRFR – Measurement Methodologies’ (BCBS, April 2021) <<https://www.bis.org/bcbs/publ/d518.pdf>> accessed 23 August 2025.

narratives that fail to account for disorderly, path-dependent shocks – such as abrupt regulatory bans that generate sudden acute repricing.¹⁵⁶ The resulting disconnect between real-world trajectories and modelled financial impacts generates epistemic uncertainty, casting doubt on whether CSA and CST outputs accurately reflect actual risk exposures.¹⁵⁷

Reliance on static balance-sheet assumptions further exacerbates these weaknesses. Despite the ECB's 2022 CST Methodology calling for dynamic portfolio modelling,¹⁵⁸ most ECB CSTs – alongside the BoE's 2021 CBES – assume unchanged balance sheets over multi-decade horizons; such as a fixed 2020 balance-sheet as the baseline for scenarios projecting risks into 2050 and 2080.¹⁵⁹ This assumption is legally problematic: EU legislation requires the use of dynamic balance-sheet models,¹⁶⁰ while Section 2B FSMA requires supervisors to assess risks as they materialise.¹⁶¹ By disregarding balance sheet evolution – for example, their doubling in scale relative to GDP since the 1980s –¹⁶² these exercises risk failing to capture the full spectrum of material risks, thereby falling short of statutory duties for comprehensive risk assessment.¹⁶³

Availability and usability of data are central to any credible assessment of CRFR;¹⁶⁴ yet financial institutions lack sufficient granularity required for CRFR analysis,¹⁶⁵ despite the

¹⁵⁶ Mark Cliffe, 'Simplistic NGFS climate scenarios are stuck in 'model land'' (*Green Central Banking*, 14 May 2025) <<https://greencentralbanking.com/2025/05/14/ngfs-short-term-climate-scenarios-simplistic/>> accessed 25 August 2025.

¹⁵⁷ EBA, 'Guidelines on Specification of Types of Exposures to be Associated with Higher Risk under Article 128(3) of Regulation (EU) No 575/2013' (*Final Report*, 17 January 2019) 5 <<https://www.eba.europa.eu/sites/default/files/2025-05/e2092eda-80f3-48aa-84b8-eef19be33aa0/Final%20Report%20on%20EBA%20GL%20on%20High%20Risk2.pdf>> accessed 28 August 2025.

¹⁵⁸ ECB, 'CST' (*SSM Stress Test*, October 2021) <<https://www.bankingsupervision.europa.eu/ecb/pub/pdf/ssm.climateriskstresstest2021~a4de107198.en.pdf>> accessed 26 August 2025.

¹⁵⁹ Spyros Alogoskoufis, et al. 'ECB economy-wide CST' (*Occasional Paper Series 281*, September 2021) 17 <<https://www.ecb.europa.eu/pub/pdf/scpops/ecb.op281~05a7735b1c.en.pdf>> accessed 20 August 2025.

¹⁶⁰ Directive 2013/36/EU of the European Parliament and of the Council, Article 98(5)a(b)(iii).

¹⁶¹ ECB, 'The Role of Central Banks in Prudential Supervision' (ECB) 3 <https://www.ecb.europa.eu/pub/pdf/other/prudentialsupcbrole_en.pdf> accessed 18 August 2025; FSMA, Article 2B(2).

¹⁶² Hughes Chenet, Josh Ryan-Collins, and Frank van Lerven, n(144) 5.

¹⁶³ CRD, (n161) Article 97-98.

¹⁶⁴ Centre for Climate Aligned Finance, 'Identification, Access, and Use of Transition-Relevant Data and Metrics' (*Green Finance Platform*, September 2022) 6 <https://www.greenfinanceplatform.org/sites/default/files/downloads/resource/finance_transition_data_insight_brief.pdf> last accessed 27 August 2025.

¹⁶⁵ Sarah Breeden, 'Climate Change – Plotting our course to Net Zero – speech by Sarah Breeden' (*BoE*, 18 May 2021) <<https://www.bankofengland.co.uk/speech/2021/may/sarah-breeden-managing-the-impact-of-climate-change>> accessed 17 June 2025.

legal obligation to use reliable data under Article 75 CRD IV and the EBA's Guidelines on Loan Origination and Monitoring (extending to ESG factors).¹⁶⁶ The PRA imposes comparable expectations,¹⁶⁷ yet its 2024 Dear CEO letter identified three persistent deficiencies across UK institutions: incomplete portfolio coverage, insufficient data granularity, and the use of overly narrow climate scenarios. Each deficiency undermines effective risk pricing and capital allocation,¹⁶⁸ raising concerns in light of Basel Pillar-2 requirements, which mandate prudential assessments capable of capturing risks that impair capital adequacy across institutions.¹⁶⁹ These omissions also fall short of NGFS expectations for severe-but-plausible scenarios which incorporate dynamic feedback modelling, and lack the granularity required to align financial flows with net-zero targets.¹⁷⁰ The result is structurally incomplete modelling: scenarios underestimate contagion effects (e.g., insurance-linked weather losses), fail to capture disorderly or worst-case outcomes, and create an optimism bias that systematically understates capital needs.¹⁷¹

Together, these limitations intensify epistemic uncertainty, which by definition obstructs precise *ex ante* modelling of behavioural adaption during transition shocks - for instance, firms relocating from climate-exposed regions or altering capital structures in anticipation of regulatory change. Consequently, supervisory tests are not only analytically incomplete, but legally deficient as they do not meet statutory expectations for reliable, risk-reflective assessments. Indeed, as Monasterolo and Nieto opine, the absence of granular and reliable translation mechanisms compromises the credibility of CST outputs as supervisory evidence.¹⁷² The author's contribution extends this point: without robust data, CST

¹⁶⁶ EBA, 'Guidelines on Loan Origination and Monitoring' (*Final Report*, 29 May 2020) <https://www.eba.europa.eu/sites/default/files/document_library/Publications/2020/Guidelines%20on%20loan%20origination%20and%20monitoring/884283/EBA%20GL%202020%2006%20Final%20Report%20on%20GL%20on%20loan%20origination%20and%20monitoring.pdf> accessed 19 August 2025.

¹⁶⁷ BoE, 'CP10/25 – Enhancing Banks' and Insurers' Approaches to Managing CRFR' (PRA, 30 April 2025) <<https://www.bankofengland.co.uk/prudential-regulation/publication/2025/april/enhancing-banks-and-insurers-approaches-to-managing-climate-related-risks-consultation-paper>> accessed 21 August 2024

¹⁶⁸ BoE, 'Dear CFO Letter' (PRA, 27 September 2024) 21 <<https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/letter/2024/thematic-feedback-on-accounting-for-ifrs-9-ecl-and-climate-risk.pdf>> accessed 25 August 2025.

¹⁶⁹ Statement of Policy, 'The PRA's Methodologies for Setting Pillar-2 Capital' (PRA, May 2025) 29 <<https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/policy-statement/2025/may/ps725app1.pdf>> accessed 27 August 2025.

¹⁷⁰ NGFS, 'The Future is Uncertain' (*Scenarios Portal*) <<https://www.ngfs.net/ngfs-scenarios-portal/>> accessed 12 August 2025.

¹⁷¹ CCRF, 'Learning from the 2021/2022 CBES Exercise in the UK: Survey Report' (CGFI, 2023) 9, 10 <<https://www.fca.org.uk/publication/corporate/ccrf-scenario-analysis-2023-learning-biennal-exploratory-scenario-cbes.pdf>> accessed 12 August 2025.

¹⁷² *Ibid.*

projections cannot be considered legal defensible bases for prudential decision-making. Inadequate data therefore represent not merely a technical limitation but a structural impediment to the lawful operationalisation of climate-aligned supervision.¹⁷³

Accordingly, the inability to provide substantiated reasons in prudential supervision raises procedural fairness concerns: supervisory measures predicated on inconsistent or incomplete data risk challenge as disproportionate. Under PRA proportionality standards and Union law, regulators must show that interventions rest on objective, transparent, and evidence-based criteria.¹⁷⁴ Yet the lack of historical loss data for CRFR necessitates heavy reliance on expert judgment and qualitative narratives, thereby increasing exposure to judicial scrutiny. In *Holmcroft*, the Court of Appeal underscored that delegated regulatory decisions must be guided by transparent criteria and objective standards capable of external verification.¹⁷⁵ By extension, CSTs that understate systemic fragility may fall short of proportionality under CJEU jurisprudence, which requires that precautionary risk management be commensurate to the scale of identified risks.¹⁷⁶ It follows that prudential measures grounded in flawed or incomplete climate data therefore risk legal challenge for insufficient evidential robustness.

Some scholars take from this that effective risk management hinges primarily on methodological precision,¹⁷⁷ arguing that CSA and CST useful only insofar as they capture the non-linear, uncertain, and irreversible dynamics of climate risks with technical rigour. However, this paper advances that methodological weaknesses should not be construed as barriers, particularly since prudential supervision routinely operates under conditions of incomplete evidence. A salient example is the ECB's inaugural cyber stress test, which relied on speculative assumptions about contagion dynamics yet was promptly incorporated into the SREP framework.¹⁷⁸ This paper therefore advances that epistemic uncertainty does not negate

¹⁷³ Stefano Battiston, Irene Monasterolo, Keywan Riahi, Bas van Ruijven, 'Accounting for Finance is Key for Climate Mitigation Pathways' (SSRN, 28 May 2021) 4, 5 <<https://ssrn.com/abstract=3748041>> accessed 10 August 2025.

¹⁷⁴ BoE, 'The PRA's approach to banking supervision' (PRA, July 2023) 11 <<https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/approach/banking-approach-2023.pdf>> accessed 10 August 2025.

¹⁷⁵ *Holmcroft Properties Ltd v KPMG LLP* [2017] EWHC Civ 2093.

¹⁷⁶ T-13/99 *Pfizer Animal Health SA v. Council of the European Union* [2002] ECR II-3305, para 410, 411.

¹⁷⁷ *Hughes Chenet, Josh Ryan-Collins, and Frank van Lerven*, n(144) 3.

¹⁷⁸ ECB, 'ECB Concludes Cyber Resilience Stress Test, (Press Release, 26 July 2024) <[https://www.banksupervision.europa.eu/press/pr/date/2024/html/ssm.pr240726~06d5776a02.en.html#:~:text=The%20European%20Central%20Bank%20\(ECB,but%20areas%20for%20improvement%20remain.](https://www.banksupervision.europa.eu/press/pr/date/2024/html/ssm.pr240726~06d5776a02.en.html#:~:text=The%20European%20Central%20Bank%20(ECB,but%20areas%20for%20improvement%20remain.)> accessed 2 August 2025.

supervisory responsibility; rather, it reinforces the need for precautionary intervention anchored in transparent reasoning.

Indeed, the BIS and Banque de France identify CRFR as paradigmatic cases of Knightian uncertainty:¹⁷⁹ outcomes cannot be reliably quantified due to the absence of historical precedent from which probability distributions may be inferred.¹⁸⁰ The NGFS similarly contends that perfect knowledge might never be available *ex ante*,¹⁸¹ and that regulators have never articulated what evidentiary threshold would be sufficient to trigger action, leaving intervention vulnerable to indefinite postponement.

Yet the scientific consensus is unequivocal that surpassing certain thresholds will lock in severe and irreversible consequences, even if the precise timing or magnitude of such impacts remains uncertain.¹⁸² To delay intervention until methodologies achieve an unattainable degree of precision would frustrate the statutory objective of financial stability - particularly given that ‘absolute certainty’ is required neither under the mandates of the ECB or BoE. More critically, as Articles 7 and 11 TFEU embed climate integration into EU policy, where climate risks have material monetary or prudential implications, ECB inaction could be construed as inconsistent with Treaty obligations. A precautionary approach is therefore required to build strategic resilience: uncertainty should operate not as a justification for inertia, but as a trigger for proportionate intervention, as will be proposed under Chapter III.

Adopting precaution as a supervisory norm also requires an institutional shift. In reframing uncertainty as a catalyst for adaptive learning, central banks should be able to counter the conservatism and risk-aversion that have historically constrained ambitious engagement with CRFR. Strategic resilience thus depends not only on quantitative methodologies but also on qualitative resources – most notably, the institutional cultures that shape how discretion is exercised under uncertainty. Embedding precaution would cultivate responsiveness, reducing the risk that CRFR are side-lined by narrow or overly defensive interpretations of mandate and discretion. Whether such cultural adaptation translates into effective practice, however,

¹⁷⁹ Patrick Bolton, Morgan Despres, Luiz Awazu Pereira Da Silva, ‘The Green Swan’ (BIS, January 2020) 25 <<https://www.bis.org/publ/othp31.pdf>> accessed 27 August 2025.

¹⁸⁰ *Ibid.*

¹⁸¹ NGFS, ‘First Comprehensive Report - A Call for Action’ (NGFS, April 2019) 30 <https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs_first_comprehensive_report_-17042019_0.pdf> accessed 30 August 2025.

¹⁸² NGFS n(30), 12.

depends on a second condition: the extent to which diagnostic outputs are linked to enforceable supervisory measures. The next subsection turns to this challenge.

2.2 Enforcement

The critical question is how far supervisory tools advance strategic resilience. Both the UK's SS3/19¹⁸³ and the ECB's 2020 ECB's Climate Risk Guide¹⁸⁴ articulate broad expectations on governance, risk management, scenario analysis, and disclosure, formally linking CRFR to their respective price – and financial – stability mandates. Yet their effectiveness depends not on the sophistication of the expectations themselves but on the degree to which those expectations are rendered enforceable.

As highlighted in Chapter I, the UK regime is hindered by the absence of binding guidance. Indeed, SS3/19 and successive Dear CEO/CFO letters remain non-binding supervisory materials,¹⁸⁵ as confirmed by the PRA's Executive Director.¹⁸⁶ In practice, this means that although banks are 'expected' to integrate climate risks into governance committees and risk models, compliance is uneven because the PRA's reliance on persuasion lacks the coercive force required to shift institutional behaviour.¹⁸⁷ For example, the 2019 deadline for CRFR integration passed without consequence, and subsequent supervisory letters revealed widespread shortfalls attributable precisely to the absence of sanction.¹⁸⁸ The 2025 Report reinforced this pattern: while governance frameworks are now widely in place, the

¹⁸³ BoE, 'Enhancing banks' and insurers' approaches to managing the financial risks from climate change' (SS3/19, 15 April 2019) <www.bankofengland.co.uk/prudential-regulation/publication/2019/enhancing-banks-and-insurers-approaches-to-managing-the-financial-risks-from-climate-change-ss> accessed 29 July 2025.

¹⁸⁴ ECB, 'Guide on Climate-Related Environmental Risks' (ECB, November 2020) <<https://www.banksupervision.europa.eu/ecb/pub/pdf/ssm.202011finalguideonclimate-relatedandenvironmentalrisks~58213f6564.en.pdf>> accessed 24 June 2025.

¹⁸⁵ PRA, 'Non-binding PRA materials: The PRA's approach after the UK's withdrawal from the EU' (SS1/19, December 2020) 3 <<https://www.bankofengland.co.uk/-/media/boe/files/prudential-regulation/supervisory-statement/2020/ss119-december-2020.pdf>> accessed 2 August 2025.

¹⁸⁶ BoE, 'Maintaining Momentum: Managing Climate risk in a changing world – speech by David Bailey' (Climate Financial Risk Forum, 30 April 2025) <<https://www.bankofengland.co.uk/speech/2025/april/david-bailey-speech-at-a-climate-financial-risk-forum>> accessed 7 August 2025.

¹⁸⁷ Jonathan Rogers, Dr. Henning Berger, Laura Kitchen, David Shoo, 'How Should EU and UK Banks Manage CRFR?' (White&Case, 24 April 2025) <<https://www.whitecase.com/insight-alert/how-should-eu-and-uk-banks-manage-climate-related-risks>> accessed 6 August 2025.

¹⁸⁸ Michael Raffan, Elisabeth Overland, Emily Smith, 'The PRA's Updated Supervisory Expectations for Managing Climate-related Risks: What This Means for Banks and Insurers' (Freshfields, 28 May 2025) <<https://riskandcompliance.freshfields.com/post/102kcq8/the-pras-updated-supervisory-expectations-for-managing-climate-related-risks-wh#:~:text=Following%20the%20publication%20of%C2%A0SS3%2F19%2C%20the%C2%A0PRA%C2%A0s,aid,related%20risks%20on%20balance>> accessed 27 August 2025.

consistency and depth of implementation remain highly variable.¹⁸⁹ The reliance on soft-law exposes an endogenous weakness: without enforceability, expectations cannot mature into an approach characterised by strategic resilience.

Early supervisory measures granted firms considerable discretion, leading to greenwashing rather than compliance by substance.¹⁹⁰ As Khil and Cullen warn, soft-law creates ambiguity, both in the scope of obligations and the grounds for legal challenge.¹⁹¹ CP10/25 illustrates this issue: it requires “appropriate metrics” and “prudent assumptions” where data gaps exist, yet leaves both terms undefined; rendering it impossible to embed CRFR into risk appetite frameworks and capital adequacy assessments purposively.¹⁹² This indeterminacy perpetuates inconsistent application: conservative banks overstate risks while vulnerable banks downplay them in the absence of legal benchmarks. Such discretion not only facilitates greenwashing but also renders supervisory measures legally deficient, since proportionality in prudential law requires obligations to be sufficiently precise to enable consistent review. Without formal standards, supervision risks devolving into discretionary inconsistency, as opposed to strategic resilience.

This weakness extends to CSA. The BoE’s 2021 CBES tested balance-sheet resilience over a 30-year horizon and considered mitigation strategies.¹⁹³ In principle, the CBES had considerable potential as a transition-aligning tool, capable of steering capital away from high-carbon exposures. In practice, however, the exercise revealed persistent deficiencies in banks’ ability to integrate and mitigate climate risk effectively.¹⁹⁴ A key reason lies in its design: the CBES was expressly “exploratory”, with outputs deliberately excluded from capital requirements,¹⁹⁵ and the CST component framed as diagnostic rather than

¹⁸⁹ BoE, ‘PRA Climate Change Adaptation Report 2025’ (PRA, 30 January 2025) <<https://www.bankofengland.co.uk/prudential-regulation/publication/2025/january/pra-climate-change-adaptation-report-2025>> accessed 22 August 2025.

¹⁹⁰ Simona Galletta, Sebastiano Mazzù, Valeria Naciti, Andrea Paltrinieri, ‘A PRISMA Systematic Review of Greenwashing in the Banking Industry: A Call for Action’ (2024) *Research in International Business and Finance* (69) <<https://doi.org/10.1016/j.ribaf.2024.102262>> accessed 20 August 2025.

¹⁹¹ Zulmai Mola Khil, ‘Theoretical Foundations of Soft Law: Conceptual Boundaries, Normative Distinctions, and Taxonomic Feasibility’ (SSRN, 1 December 2024) 6 <https://papers.ssrn.com/sol3/papers.cfm?abstract_id=5040139> accessed 24 August 2025.

¹⁹² BoE, n(168).

¹⁹³ BoE, ‘Key Elements of the 2021 CBES: Financial Risks from Climate Change’ (BoE, 8 June 2021) <<https://www.bankofengland.co.uk/stress-testing/2021/key-elements-2021-biennial-exploratory-scenario-financial-risks-climate-change>> accessed 28 July 2025.

¹⁹⁴ BoE, n(133).

¹⁹⁵ *Ibid.*

predictive.¹⁹⁶ As a result, both tools identified vulnerabilities without generating enforceable corrective measures. In effect, this entrenched a model of operational resilience, rather than advancing the strategic reallocation of capital required by prudential mandates.

This sits uneasily with the BoE's net-zero commitments, articulated in both its secondary mandate and its 2021 Climate Strategy.¹⁹⁷ The Bank's Climate Transition Plan pledged to "support the transition to a net-zero economy"¹⁹⁸ through scenario analyses, disclosures, and quantitative assessments.¹⁹⁹ Yet the ambiguity and discretion vested within SS3/19, CP10/25, and the CBES undermine this ambition, by enabling inertia and superficial compliance. As the Grantham Research Institute's 2025 submission to the PRA consultation observed, the absence of clear criteria for defining good practice²⁰⁰ leaves firms either exploiting ambiguity or paralysed by it; frustrating the statutory objectives that underpin the UK's net-zero commitment.²⁰¹

By contrast, the ECB's framework is anchored in hard-law, facilitating the translation of diagnostic outputs directly into binding measures through the SSM.²⁰² This limits supervisory discretion, and ensures consistent compliance standards across institutions. Indeed, following its 2022 Climate Risk Review, which identified pervasive deficiencies, the ECB imposed fixed deadlines for remediation. When several banks failed to conduct climate materiality assessments by March 2023, the ECB issued binding supervisory orders and applied PPPs for noncompliance under Article 16 SSM.²⁰³

¹⁹⁶ Sarah John, 'The Bank of England Climate-Related Financial Disclosure 2025' (BoE, 26 June 2025) <<https://www.bankofengland.co.uk/climate-change/the-bank-of-englands-climate-related-financial-disclosure-2025>> accessed 23 August 2025.

¹⁹⁷ UK Export Finance, 'Climate Change Strategy 2021-2024' (UK Government, September 2021) <https://assets.publishing.service.gov.uk/media/6148b3ffe90e070438c9463d/UKEF_Climate_Change_Strategy_2021.pdf> accessed 26 August 2025.

¹⁹⁸ BoE, 'Bank of England Climate Transition plan of July 2023' (BoE, 6 July 2023) <[https://www.bankofengland.co.uk/climate-change/the-bank-of-englands-climate-transition-plan#:~:text=The%20Bank%20published%20its%20Climate,gas%20emissions%20for%20physical%20operations.](https://www.bankofengland.co.uk/climate-change/the-bank-of-englands-climate-transition-plan#:~:text=The%20Bank%20published%20its%20Climate,gas%20emissions%20for%20physical%20operations.>)> accessed 25 June 2025.

¹⁹⁹ UK Government, 'Mobilising Green Investment: 2023 Green Finance Strategy' (Policy Paper, 11 April 2023) <<https://www.gov.uk/government/publications/green-finance-strategy/mobilising-green-investment-2023-green-finance-strategy#:~:text=intention%20to%20move%20towards%20makings%20it%20mandatory>> accessed 27 August 2025.

²⁰⁰ Nicola Ranger, 'Submission to BoE consultation CP10/25 – Enhancing Banks' and Insurers' Approaches to Managing CRFR' (Grantham Research Institute on Climate Change and the Environment, August 2025) 3 <<https://www.lse.ac.uk/granthaminstiute/wp-content/uploads/2025/08/CP10251.pdf>> accessed 17 August 2025.

²⁰¹ *Ibid.*

²⁰² SSM Council Regulation (EU) No 1024/2013, Article 16.

²⁰³ Rogers n(188).

Recent reforms have codified the ECB's 2020 Climate Risk Guide into Union law, with the 2024 CRR/CRD amendments²⁰⁴ obliging banks to integrate climate risks into governance and risk management.²⁰⁵ Even prior to these legislative developments, the ECB's 2021-2022 Climate Risk Stress Tests generated binding supervisory outcomes,²⁰⁶ feeding into the SREP and prompting capital and governance adjustments.²⁰⁷ This marks a paramount distinction from the UK framework: under the FSMA and the PRA Rulebook, the PRA may only take binding enforcement action where a breach of rules can be evidenced;²⁰⁸ supervisory statements, by contrast, do not create justiciable obligations and therefore cannot ground sanctions. Comparatively, since 2023 the ECB has issued twenty-eight binding supervisory decisions and sanctioned nine institutions (under Article 18 of the SSM²⁰⁹ and Articles 64-65 of CRD VI) for climate governance failures, imposing PPPs of up to 5% daily revenue for non-compliance.²¹⁰

The ECB's 2025 introduction of a climate factor into its collateral framework exemplifies this binding, forward-looking approach. By adjusting asset valuations based on issuer-level CRFR exposures,²¹¹ the ECB formally recognises climate vulnerability as a credit risk parameter comparable to traditional metrics, such as default probability or liquidity risk. This not only aligns credit allocation with EU decarbonisation objectives but embeds climate risk into the legal architecture of prudential supervision – an unprecedented move among central banks.

These competences have enabled the ECB to require banks to integrate climate risks into governance, ICAAPs, and disclosure frameworks – obligations now codified in CRR III and CRD VI, which mandate the management of environmental risks across all relevant time

²⁰⁴ Regulation No 575/2013 of the European Parliament and of the Council (CRR); *CRD*, n(161).

²⁰⁵ ECB, 'Latest Updates on the Banking Package' (*Business, Economy, Euro*, 14 December 2023)

<https://finance.ec.europa.eu/news/latest-updates-banking-package-2023-12-14_en> accessed 10 August 2025.

²⁰⁶ ECB, '2022 Climate Risk Stress Tests' (*Banking Supervision*, July 2022)

<https://www.banksupervision.europa.eu/ecb/pub/pdf/ssm.climate_stress_test_report.20220708~2e3cc0999f.en.pdf> accessed 27 August 2025).

²⁰⁷ CRD, (n161) Articles 87-104.

²⁰⁸ FSMA 2000, Section 206.

²⁰⁹ Article 18(1) SSM n(203).

²¹⁰ ECB, 'ECB Annual Report on Supervisory Activities' (ECB, 2024)

<<https://www.banksupervision.europa.eu/press/other-publications/annual-report/pdf/ssm.ar2024~700cba1314.en.pdf>> accessed 24 June 2025.

²¹¹ ECB 'ECB to Adopt Collateral Framework to Address Climate-Related Transition Risks' (ECB, 29 July 2025) <https://www.ecb.europa.eu/mopo/coll/html/ecb.faq_climate_factor.en.html> accessed 18 August 2025.

horizons.²¹² This reflects the ECB's deliberate positioning of CSTs and CSA within a broader supervisory ecosystem,²¹³ where diagnostic tools feed into enforceable expectations. This trajectory is evident from the ECB's 2022-2024 supervisory agenda, which prioritised transparency, disclosure quality, and climate-risk governance as core pillars.²¹⁴

2.3 Chapter II Summary

Chapter II has demonstrated that the operationalisation of statutory mandates in CRFR-management is constrained as much by endogenous institutional weaknesses as by the law itself. The chapter has suggested that supervisors must reframe epistemic uncertainty as a catalyst for institutional learning, embedding precaution as a supervisory norm, since treating uncertainty as a barrier frustrates statutory objectives and entrenches the very inertia that magnifies systemic risk.

The chapter further showed that effectiveness depends on the translation of diagnostic tools into binding supervisory measures. The BoE's reliance on soft-law has confined its approach to operational resilience – illuminating risks without mandating their remediation – whereas the ECB has advanced strategic resilience through the enforceability embedded in the SSM framework and reinforced by recent legislative reforms.

The overarching conclusion is that capacious mandates are a necessary but insufficient condition for effective climate governance: strategic resilience demands both a cultural reorientation (that treats uncertainty as a trigger for action), and a legal framework capable of converting expectations into enforceable obligations. Without these dual foundations – precaution and enforceability – the promise of statutory capacity remains unrealised.

3. Chapter III: Recommendations

3.1 Binding Standards for the BoE

²¹² ECB, 'Guide on Climate-Related Environmental Risks' (ECB, November 2020) 4 <<https://www.banksupervision.europa.eu/ecb/pub/pdf/ssm.202011finalguideonclimate-relatedandenvironmentalrisks~58213f6564.en.pdf>> accessed 24 June 2025.

²¹³ *Ibid.*

²¹⁴ ECB, 'Supervisory Assessment of Institutions' Climate-Related and Environmental Risks Disclosures ECB Report on Banks' Progress Towards Transparent Disclosure of their Climate-Related and Environmental Risk Profiles' (*Banking Supervision*, March 2022) <https://www.banksupervision.europa.eu/ecb/pub/pdf/ssm.ECB_Report_on_climate_and_environmental_disclosures_202203~4ae33f2a70.en.pdf> accessed 19 August 2025.

Chapters I and II demonstrated that although the BoE's statutory mandate is sufficiently capacious to incorporate CRFR, its effectiveness remains constrained by two structural weaknesses: first, the multiplicity of objectives contained in Section 11(b) FSMA, which provides no relative hierarchy between 'growth', 'employment', and 'support for government policy'); and second, the absence of hard-law instruments capable of translating supervisory expectations into binding obligations. In my analysis, these weaknesses materialise as endogenous obstacles – manifesting in conservative institutional cultures and unduly narrow interpretations of discretion – which impede the operationalisation of an otherwise expansive legal mandate. The following recommendations seek to mitigate these deficiencies.

Consistent with IMF guidance that central bank mandates must be clear, explicit, and limited, Parliament should amend Section 11(b) to refine the BoE's secondary objective.²¹⁵ Any supportive function – such as the integration of climate considerations – should be linked to measurable, time-bound, and reviewable government targets, accompanied by a statutory duty of reason-giving to ensure transparent calibration of monetary tools. Codification would confine discretion to Parliament's intent and reduce the interpretive ambiguity that currently enables conservative decision making and heightens perceived liability risks.

Crucially, any reform must acknowledge that the pursuit of secondary objectives may at times place short-term pressure on price stability. Statutory recognition of this trade-off would provide the legal certainty required when climate measures generate temporary inflationary effects, insulating the Bank from allegations of mandate drift or policy activism while affirming its authority to act in pursuit of strategic resilience.

Codifying the BoE's two-pronged approach into primary legislation – either via amendment to the Climate Change Act 2008 or the Bank of England Act 1998 – would complement reform of Section 11(b) by embedding measurable, time-bound, and reviewable targets at the statutory level. Mirroring the ECB's secondary mandate to support government economic policy, such codification would formally align the Bank with the UK's climate commitments and require consistent pursuit of those objectives. Two refinements are essential: 'resilience' must be expressly defined as *strategic* rather than merely operational; and the verb 'enhance'

²¹⁵ Tamez, Weenik, and Yoshinaga, n(3) 17.

should be replaced with a more substantive duty – such as ‘promote’ – to impose a positive obligation rather than a permissive expectation. These reforms would confer enhanced technical discretion on the BoE, consistent with the judicial deference recognised in *Ithaca*, thereby insulating climate-related measures from claims of *ultra vires* activism or disproportionality. Anchoring climate resilience in BoE-applicable statute would render the integration of CRFR legally robust and judicially defensible.

Finally, as Chapter II demonstrated, SS3/19 and CP10/25 leave compliance discretionary, enabling regulated firms to adopt conservative interpretations of what constitutes ‘appropriate’ or ‘prudent’ practice. This variability undermines supervisory consistency and frustrates the BoE’s secondary mandate to support the government’s net-zero strategy.

To address these gaps, core obligations – such as integrating CRFR into risk appetite frameworks and ICAAPs – should be transposed into binding national law. Minimum scenario features should likewise be codified to counter the optimism bias embedded in existing CST and CSA frameworks, including the requirement to model abrupt policy shocks, dynamic balance-sheet modelling, and macro-financial feedback loops. Embedding such obligations in the PRA Rulebook or a binding Statement of Policy would reduce arbitrariness, and ensure that exercises contribute directly to the PRA’s statutory objective under S2B(1) FSMA while satisfying proportionality and evidential standards.

These reforms could be implemented through Part 9A FSMA, enabling the PRA to codify SS3/19 into the Rulebook²¹⁶ subject to FCA consultation and the regulatory principles of Section 3B FSMA.²¹⁷ This would provide legal certainty and convert soft-law expectations into justiciable obligations, thereby closing the accountability gap.

3.2 Precaution Under Uncertainty

Chapter II exposed what may be termed an *uncertainty paradox*: the tendency to equate uncertainty with risk to justify inaction.²¹⁸ However, EU jurisprudence adopts a far broader understanding of uncertainty: it arises not only from divergent expert opinion or evidential

²¹⁶ FSMA, Section 138J(3).

²¹⁷ FSMA, Section 3B(1)b.

²¹⁸ Anne-May Janssen, Marjolein Van Asselt, ‘The Precautionary Principle in Court - An Analysis of Post-Pfizer Case Law,’ (Routledge, 2013) 213 <<https://www.taylorfrancis.com/chapters/edit/10.4324/9780203109908-13/precautionary-principle-court-anne-may-janssen-marjolein-van-asselt>> accessed 22 August 2025.

gaps, but from the absence of *full safety* (a condition that is almost always present within prudential supervision).²¹⁹ As will be argued below, the jurisprudence has confirmed that neither consensus nor evidential completeness is a prerequisite for intervention. Rather, the mere *possibility* of risk, or the impossibility demonstrating its absence, is sufficient to trigger precautionary action.²²⁰

Given this low evidentiary threshold, the courts have recognised that uncertainty is an inherent feature of risk management and must be treated as such. Uncertainty cannot, therefore, function as a justification for delay. This reasoning dissolves the uncertainty paradox: if uncertainty is ever-present, the legal question is not *whether* regulators may act, but *how they justify* their actions within the bounds of administrative law. The appropriate legal interpretation is accordingly one in which uncertainty is reconceived not as a barrier to action, but as trigger *for* it.

The doctrine advanced within this recommendation rests on two foundations: the broad margin of discretion already accorded to central banks, and the precautionary principle under administrative law, which treats the prospect of serious or irreversible harm as grounds for anticipatory intervention even where causal pathways remain uncertain. This means that uncertainty strengthens, rather than weakens, the case for supervisory action, since inaction under radical uncertainty poses a greater systemic threat.

In *ECB v Crédit Lyonnais*,²²¹ Advocate General Emiliou emphasised that, in exercising its technical discretion, the ECB often acts amid inherent uncertainty or speculative situations.²²² He noted that Type I errors (false positives leading to excessive strictness) are generally *less harmful* than Type II errors (false negatives resulting in excessive leniency).²²³ This is critical: it affirms that supervisors enjoy greater latitude when acting cautiously,²²⁴ a position

²¹⁹ Anne-May J.P Janssen, Nele F. Rosenstock, ‘Handling Uncertain Risks: An Inconsistent Application of Standards?’ (*CUP*, 20 January 2017) 146 <<https://www.cambridge.org/core/journals/european-journal-of-risk-regulation/article/handling-uncertain-risks-an-inconsistent-application-of-standards/E9FB21F9434208F5D7B9C161694C683B>> accessed 13 August 2025.

²²⁰ *Ibid.*

²²¹ C-389/21 *ECB v Crédit Lyonnais* [2022] *ECLI:EU:C:2022:884*.

²²² *Ibid.*, para 84.

²²³ *CRR* n(205), Recital 90.

²²⁴ *Crédit Lyonnais*, n(222) para 86.

consistent with caselaw granting wide deference to supervisory bodies in forward-looking, predictive judgments.²²⁵

Applied to CRFR, this jurisprudence reinforces the argument that prudential supervisors may rely on precautionary assessments even where data remain incomplete. Predictive judgments aimed at mitigating uncertain, but systemic, climate risks fall squarely within the CJEU's conception of technical discretion. Under the Type I/Type II error framework, certainty is not required before supervisory intervention; to the contrary, the SSM Manual mandates forward-looking risk management in the face of uncertainty.²²⁶ This legitimises the use of CSA and CST as supervisory tools despite data gaps or modelling limitations, situating climate risk management comfortably within the wide latitude recognised by the CJEU.

Although jurisprudence on scientific uncertainty is not uniform,²²⁷ case law on the precautionary principle confirms that certainty is not a precondition for regulatory action.²²⁸ In *Artegodan*,²²⁹ the Court held that precaution permits intervention under uncertainty, subject to proportionality.²³⁰ Likewise, in *Pfizer*,²³¹ the court affirmed that institutions should act without waiting for risks to materialise.²³² Together, these rulings establish that uncertainty heightens – rather than diminishes – the duty to intervene. Applied to CRFR, prudential supervisors are not merely permitted, but may be under a legal duty, to act pre-emptively where there is a credible prospect of serious or irreversible harm.

International guidance reinforces this interpretation. The NGFS expressly calls for supervisory action under 'radical uncertainty', including through non-linear scenario modelling,²³³ while BCBS Principles require forward-looking, scenario-based prudential oversight even in the absence of historical data.²³⁴ Yet reliance on non-binding instruments

²²⁵ *Ibid.*

²²⁶ ECB, 'Supervisory Manual' (*Banking Supervision*, January 2024) 42 <https://www.banksupervision.europa.eu/ecb/pub/pdf/ssm.supervisory_guides202401_manual.en.pdf> accessed 12 August 2025.

²²⁷ *J.P Janssen, Rosenstock*, n(220) 144.

²²⁸ *Ibid* 144.

²²⁹ T-74/00 *Artegodan GmbH and Others v. Commission of the European Communities* [2002] ECLI:T:2002:283, para 185.

²³⁰ *Ibid.*

²³¹ T-13/99, n(177).

²³² *Ibid*, para 417.

²³³ NGFS, 'Synthesis Report on the Greening of the Financial System' (*Occasional Paper*, November 2024) 30 <https://www.ngfs.net/system/files/import/ngfs/medias/documents/ngfs_synthesis_report_on_the_greening_of_the_financial_system.pdf> accessed 12 August 2025.

²³⁴ BIS, 'BCBS Principles for the Effective Management and Supervision of Climate-related Financial Risks: Principle 5' (BCBS, June 2022) <<https://www.bis.org/bcbs/publ/d532.pdf>> accessed 2 August 2025.

renders risk management vulnerable to institutional conservatism and political shifts, enabling narrow mandate interpretations and limiting the enforcement of precautionary measures.

In light of this, codifying a doctrine of ‘precaution under uncertainty’ would serve three critical functions. First, it would clarify that epistemic gaps are triggers – not barriers – to action, consistent with jurisprudence on discretion and precaution.²³⁵ Second, it would legitimise the use of supervisory measures (such as Pillar-2 add-ons, collateral haircuts) despite methodological imperfections. Third, it would discipline supervisors to reason transparently; importantly, they would be required to demonstrate that their measures are suitable and necessary to mitigate identified risks, that no less intrusive alternatives are available, and that the balance struck is proportionate given the greater systemic harm associated with delayed intervention. Such a framework would materially insulate supervisory decisions from proportionality and liability challenges.

Institutionalising this doctrine would embed strategic resilience at the core of prudential supervision. Rather than confining climate policy to operational resilience – which merely equips institutions to withstand shocks once they arise – precaution under uncertainty would authorise regulators to act anticipatorily in support of structural decarbonisation. This would enable central banks to deploy their mandates in a manner commensurate with the systemic risks posed by climate change.

3.3 Soft Capital

Banks empowered to act under uncertainty require institutional resilience – the capacity to exercise discretion ambitiously and without succumbing to political pressures.²³⁶ As Chapters I and II demonstrated, expansive statutory mandates risk becoming hollow unless supported by internal cultures capable of operationalising them.²³⁷ Accordingly, the author proposes a reconceptualisation of ‘capital’: supervisory resilience must be grounded not only in financial resources, but in soft capital.

²³⁵ Article 191(2) TFEU.

²³⁶ *Van't Klooster*, n(22) 772.

²³⁷ Manali Kumar, ‘Making Decisions under Uncertainty: The Prudent Judgment Approach’ (2023) 8(1) *European Journal of International Security* 109 <<https://www.cambridge.org/core/journals/european-journal-of-international-security/article/making-decisions-under-uncertainty-the-prudent-judgement-approach/1086E9F8C4635E03CC95D1341C9D5605>> accessed 22 August 2025.

Both the ECB and the BoE exhibit endogenous weaknesses – most notably the BoE’s propensity toward narrow mandate interpretation – that frame uncertainty as a barrier to action and confine supervision to operational rather than strategic resilience. Such conservatism raises transition costs by delaying decisive intervention.²³⁸ While inertia is often attributed to quantitative weaknesses (data gaps and methodological fragility), this focus obscures equally significant qualitative deficiencies: governance shortcomings, implicit bias, and groupthink within supervisory teams. The Financial Stability Board has warned that, absent cultural reform, the BoE risks inaction bias²³⁹ when confronted with systemic climate threats.²⁴⁰ Strategic resilience therefore requires not only statutory capacity but the *cultural* capacity to deploy authority ambitiously.

Keller and Bowman identify organisational *cultural* capital as a necessary complement to regulatory discretion²⁴¹ – a form of institutional capacity that Barret describes as the shared beliefs and behaviours that underpin institutional credibility.²⁴² Though absent from balance-sheets, soft capital materially shapes how the MPC, FPC, and PRA exercise their technical discretion. As Advocate General Emiliou observed,²⁴³ courts defer to predictive judgments under uncertainty, but such discretion is legitimate only to the extent that regulators possess the cultural resilience required to resist inertia, bias, and politicisation.²⁴⁴ In my analysis, cultural resilience is not ancillary to the legal authority of central banks; it is constitutive of it.²⁴⁵ Without it, the scope of statutory powers is narrowed in practice by internal hesitation rather than the law.

²³⁸ Sam Woods, ‘Climate capital – speech by Sam Woods’ (BoE, 24 May 2022) <<https://www.bankofengland.co.uk/speech/2022/may/sam-woods-speech-on-the-results-of-theclimate-bes-exercise-on-financial-risks-from-climate-change>> accessed 24 August 2025.

²³⁹ ERSB, ‘Features of a macroprudential stance: initial considerations’ (ERSB, April 2019) <https://www.esrb.europa.eu/pub/pdf/reports/esrb.report190408_features_macroprudential_stance_initial_considerations~f9cc4c05f4.en.pdf> accessed 20 August 2025.

²⁴⁰ FSB, ‘Peer-Review of the UK’ 18 (FBS, September 2013) <https://www.fsb.org/2013/09/r_130910/> accessed 14 August 2025.

²⁴¹ *Keller and Bowman*, n(12) 296.

²⁴² Richard Barret, ‘Cultural Capital: The New Frontier of Competitive Advantage’ (Butterworth-Heinemann, 1998) 1 <<https://citeseerx.ist.psu.edu/document?repid=rep1&type=pdf&doi=986d30d0bdc582384963672f298a5eaa51f4722f>> accessed 12 August 2025.

²⁴³ *Crédit Lyonnais*, n(222) para 84.

²⁴⁴ *Ibid.*

²⁴⁵ *Sam Woods*, n(239).

For the BoE - whose mandate is uniquely exposed to political shifts – institutional culture is a determinant of its credibility to act.²⁴⁶ CRFR-supervision, with its distributive implications, intensifies scrutiny and amplifies perceived liability risks. Strengthening soft capital would promote diversity of thought, reinforce the legitimacy of precautionary interventions, and provide insulation from accusations of regulatory overreach. Empirical evidence supports this claim: the BoE's 2014 '*One Bank*' initiative and its 2020 Diversity Review illustrated that cultural reforms – flattening hierarchies and broadening recruitment –²⁴⁷ bolstered responsiveness and legitimacy.²⁴⁸ They were proven to encourage innovation, which is essential for interpreting CSA and CST outputs under uncertainty,²⁴⁹ and cultivate evolutionary learning cultures that reinforce independence against political pressure.²⁵⁰ By contrast, conservatism risks hollowing out even the most capacious mandates through unduly narrow interpretations, rendering climate governance reactive rather than strategic.

This paper therefore recommends that central banks broaden their conception of 'capital' to explicitly encompass qualitative resources that sustain legitimacy, accountability, and adaptive learning.²⁵¹ Hard capital may protect balance-sheets, but only soft capital cultivates the institutional resilience necessary to align the financial system with a net-zero trajectory. Embedding cultural reform into risk management practices directly complements the preceding recommendations: resilient institutional cultures legitimise binding climate standards, mitigate inaction, and enable supervisors to apply precaution with confidence rather than hesitation. Only by cultivating such soft capital can the ECB and BoE convert expansive statutory capacity into strategically resilience governance capable of addressing the systemic risks posed by climate change.²⁵²

²⁴⁶ Joanne Martin, 'Organizational Culture' (*Stanford School of Business Working Paper No. 1847*, 2004) 1 <<https://www.gsb.stanford.edu/faculty-research/working-papers/organizational-culture>> accessed 27 August 2025.

²⁴⁷ Mark Carney, 'One Mission. One Bank. Promoting the good of the people in the United Kingdom' (BoE, 18 March 2014) 2 <<https://www.bankofengland.co.uk/-/media/boe/files/speech/2014/one-mission-one-bank-promoting-the-good-of-the-people-of-the-uk.pdf>> accessed 4 August 2025.

²⁴⁸ BoE, 'Court Review of Ethnic Diversity and Inclusion' (BoE, September 2020) <<https://www.bankofengland.co.uk/report/2021/court-review-of-ethnic-diversity-and-inclusion#:~:text=Our%20findings,minority%20ethnic%20and%20White%20colleagues.>> accessed 26 August 2025.

²⁴⁹ BIS, 'Issues in the Governance of Central Banks: A report from the Central Bank Governance Group' (BIS, May 2009) 164 <<https://www.bis.org/publ/othp04.pdf>> accessed 3 August 2025.

²⁵⁰ Bessima Momani and Samantha St. Amand, 'Organisational culture, learning and structure in central banks' (CIGI No. 41, September 2014) 4 <<https://www.cigionline.org/static/documents/no41.pdf>> accessed 22 August 2025.

²⁵¹ Bowman and Keller; n(12) 297.

²⁵² *Ibid* 305.

4. Conclusion

This paper has examined the scope and limitations of central bank mandates and risk management practices in the face of climate change, with a view to clarifying the extent to which CRFR may be integrated into the core functions of the ECB and BoE. Framed by the intersection of administrative law, monetary policy, and prudential supervision, it has treated both institutions as administrative bodies whose authority derives strictly from their governing statutes.

By situating CRFR within the monetary and prudential objectives, this study has advanced the debate beyond the *permissibility* of climate action to the more pressing question of how such action can be rendered effective, thereby foregrounding strategic resilience as the operative benchmark. The conclusion is clear: central banks already possess the legal and institutional foundations to act decisively; the challenge lies in exercising those powers with the ambition and forward-looking orientation commensurate to the systemic nature of climate risk.

The paper was divided into three sections. Chapter I confirmed that both the ECB and the BoE possess mandates sufficiently capacious to encompass CRFR, but demonstrated that statutory capacity is not self-executing: endogenous challenges, such as institutional conservatism and interpretive restraint, can undermine their expansive potential.

Chapter II tested the robustness of Chapter I's findings by examining the operationalisation of mandates through risk management, revealing a gap between statutory capacity and supervisory practice. It found that effectiveness depends on (i) embedding uncertainty into precautionary supervision through institutional learning and resilient culture, and (ii) linking diagnostic tools to enforceable measures. The BoE's reliance on discretionary soft-law confines supervision to operational resilience, as shown through the CBES, whereas the ECB's integration of climate obligations into binding prudential rules enables enforcement through the SREP. The comparison underscored that effectiveness is determined not only by the capacity of mandates, but by enforceability and the institutional culture within which supervision is exercised.

Finally, Chapter III proposed three recommendations to translate latent authority into action: (i) amending the BoE's secondary mandate to include measurable government targets by codifying the BoE's two-pronged approach into hard-law; (ii) adopting a doctrine of 'precaution under uncertainty' to treat epistemic gaps as triggers for proportionate intervention; and (iii) reconceptualising 'soft capital' as a determinant of institutional resilience needed to overcome inertia and politicisation. Together, these reforms would equip central banks to leverage their statutory mandates into strategically resilient governance against CRFR.

It is hoped that the BoE will amend its legislation in line with the recommendations proposed herein, and that the ECB will embed strategic precaution more firmly into supervisory practice. Further research, both empirical and doctrinal, should assess whether such reforms achieve their aims, and a valuable line of inquiry lies in how judicial review will respond to strategic precaution. Yet this paper's comparative analysis – most notably the divergences between the ECB and BoE in capacity and practice, alongside jurisprudence affirming broad regulatory discretion – already indicates that codified obligations yield more consistent and effective outcomes than soft-law expectations, and that courts are likely to defer to expert regulators when supplied with transparent reasoning. If implemented purposively, such reforms would align prudential governance with the realities of CRFR while illustrating the capacity of administrative law to legitimise forward-looking regulation in the monetary and prudential spheres.

Collectively, these findings have offered a novel contribution to the literature by demonstrating that an effective response to climate change requires more than broad statutory mandates. By bridging administrative law with monetary and prudential policy, this paper has illustrated that only through an interdisciplinary approach – combining legal reform, enforceable supervisory standards, and cultural change – can central banks transform protective mandates into strategically resilient governance.

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