



Climate Safe
Lending Network



Climate-KIC

Climate-KIC is supported by the
EIT, a body of the European Union



ALIGNING FINANCE FOR THE NET-ZERO ECONOMY:

new ideas from leading thinkers

#6 FINANCIAL STABILITY IN A PLANETARY EMERGENCY: **The role of banking regulators in a burning world**

James Vaccaro and David Barmes

in partnership with

UN
environment
programme

finance
initiative

THOUGHT
LEADERSHIP
SERIES



ADVISORY PANEL

Giel Linthorst
Guidehouse

Maria Mähl
Arabesque

Nancy Saich
European Investment Bank

Jakob Thomä
2 degrees investing initiative

MANAGEMENT

The project was managed and coordinated by EIT Climate-KIC and the UN Environment Finance Initiative, specifically:

Ian Willetts
Project Manager
EIT Climate-KIC

Remco Fischer
Climate Lead
UNEP FI

Paul Smith
Climate Consultant
UNEP FI

ACKNOWLEDGEMENTS

This report was made possible thanks to the generous support of The William and Flora Hewlett Foundation and The Sunrise Project. We also thank and acknowledge the following individuals for their contributions to this report:

Nick Robins
LSE Grantham Institute

Frank van Gansbeke
Middlebury College

Jerome Tagger
Preventable Surprises

Hilal Atici
The Sunrise Project

Jeremy McDaniels
International Institute
for Finance

Benoit Lallemand
Finance Watch

Lydia Hascott
The Finance Innovation Lab

Zack Livingstone
Positive Money UK

Disclaimer

This paper is part of a series commissioned by Climate-KIC and supported by UNEP FI. This paper reflects the views of the author(s) and not necessarily those of the Climate Safe Lending Network, EIT Climate-KIC, UNEP FI, nor those of the Advisory Panel participants or their organisations.

Copyright

© Climate Safe Lending Network, (April 2021)

The Climate Safe Lending Network either owns or has the right to use or licence all intellectual property rights in this publication, and the material published on it. These works are protected by copyright laws and treaties around the world. All rights are reserved. You may print off one copy, and may use extracts, of any page(s) from this publication to which you have access, for your personal use. However, you must not use any illustrations, photographs, video or audio sequences or any graphics separately from any accompanying text. You must not use any part of the materials in this publication for commercial purposes without obtaining a licence to do so from the Climate Safe Lending Network or its licensors. The status of the Climate Safe Lending Network (and that of any identified contributors) as the authors of material in this publication must always be acknowledged.

Foreword

Eric Usher, Head of UNEP FI &
Dr. Kirsten Dunlop, CEO of Climate-KIC

Since the 2015 Paris Agreement, conditional pledges have fallen well short of the target of holding the global temperature increase to well below 1.5°C above pre-industrial levels. To reach the aim of decreasing global greenhouse gas emissions annually by 7.6% up to 2030¹, we need to increase collective ambition by more than fivefold over the next ten years.

The low-carbon transition will require the integration of climate action into the economic, social and environmental dimensions of development: a distinguishing feature of the 2015 UN Sustainable Development Goals (SDGs). Interlinkages within and across the goals have been created to build on lessons from the past that sustained systemic change cannot be achieved through single-sector goals and approaches. Investing in climate-resilient infrastructure and the transition to a zero-carbon future can drive job creation while increasing economic, social and environmental resilience. Investing in innovation will further reduce the costs of climate change and generate

options for alternative business models and ways of living that contribute to economic stability and to a smooth transition.

Short-term thinking in investment cycles and in ideas of economic value are acting to prevent the 1.5°C transition we need, and this will require transformation and innovations in the financial system. Financial institutions play a leading role in allocating and pricing the investment necessary for business development and economic growth. Our financial systems cannot afford to view investments in economic recovery as separate from the sustainability agenda. Therefore, financial actors need to embrace new concepts of value, monetization and externalities, and to address underlying behaviours and mindsets, including short-termism, that govern choices and decisions. Above all, the financial system needs to redefine what it is in service of.

Reviews of the effectiveness of research and innovation activities funded by Europe's Horizon 2020 programme have led to calls for more systemic and cross-sectoral approaches, breakthrough thinking

¹ United Nations Environment Programme (2019) Emissions Gap Report 2019. Nairobi, Kenya. Available at: unenvironment.org/resources/emissions-gap-report-2019

and solutions, deep demonstration projects and social inclusion through citizen engagement and participation. The final Report from the High Level Panel of the European Pathways to Decarbonisation initiative, released in November 2018, specifically calls for a focus on: “system-level innovation, promoting sector-coupling so that the individual elements of decarbonisation fit together in a coherent whole” and recommends the establishment of large mission-oriented programmes of a cross-cutting nature for the deployment of system-level transdisciplinary innovation.²

In the meantime, the coronavirus pandemic has triggered a major global public health and economic shock. We can draw comparisons between pandemics and the climate emergency: as systemic, non-stationary, non-linear, risk-multiplying and regressive shocks. Many countries have been unprepared for a global shock of this scale and it is clear that we must collectively build a more coherent response to the potentially more disruptive climate emergency and build an anti-fragile capability for resilience and renewal.

The pandemic has also shown that business-as-usual cannot deliver the necessary emissions reductions. Despite international travel plummeting, factories scaling down production, and employees working from home, the annual drop in emissions has only been around 8% and unemployment has soared. Emergence from lockdown in China, for example, has shown that emissions quickly reach or even exceed pre-COVID levels,³ while government stimulus packages have only partially delivered transition-oriented funding and, in some cases, thrown a lifeline to high emissions industries.

Leading banks and investors have recognised that there is no alternative to a low-emissions, sustainable economy. Convened by UNEP FI and partners, the Net-Zero Asset Owners Alliance and the Collective Commitment to Climate Action by banks worldwide, have brought together over 70 financial institutions, committed to working with governments and other stakeholders, to support the financial and economic transformation needed to help deliver the Paris Agreement by aligning financial portfolios with the corresponding emissions pathways – a step that was hitherto unheard of – and deliver what the IPCC report calls, “rapid, far-reaching and unprecedented changes in all aspects of society”.⁴

However, the climate emergency will require current thinking and paradigms to be challenged and questioned. This is why EIT Climate KIC, in partnership with UNEP Finance Initiative, is convening leading thinkers to present their ideas for sustainable financial and economic transformation. We hope that this inspires financial actors to work across the field to draw up a financial system that enables the low emission societies of the future.



Eric Usher
Head of UNEP FI



Dr. Kirsten Dunlop
CEO of Climate-KIC

2 European Commission (2018) Final Report, High Level Panel of the European Pathways to Decarbonisation. Brussels, Belgium. Available at: op.europa.eu/en/publication-detail/-/publication/226dea40-04d3-11e9-adde-01aa75ed71a1

3 World Economic Forum (2020) China's air pollution has overshot pre-pandemic levels as life begins to return to normal. Geneva, Switzerland. Available at: weforum.org/agenda/2020/07/pollution-co2-economy-china/

4 IPCC (2018) Summary for Policymakers of IPCC Special Report on Global Warming of 1.5°C. WMO, Geneva, Switzerland. Available at: ipcc.ch/2018/10/08/summary-for-policymakers-of-ipcc-special-report-on-global-warming-of-1-5c-approved-by-governments/



THERE IS
NO

PLANET
B

Aligning Finance to the zero carbon economy: new ideas from leading thinkers

Series Introduction

The IPCC Special Report, released in late 2018, highlighted the urgency of minimising global temperature rise to 1.5°C and emphasised the need for systems transitions that can be enabled by investments in climate change mitigation and adaptation, policy and acceleration of technological innovation and behavioural changes (IPCC; 2018). Amongst the emissions pathways scenarios, it proposed, for the first time, a limited or no overshoot scenario – the P1 low energy demand (LED) scenario, where future energy demand could be met through low-emission energy sources and enhanced energy efficiency. This scenario presupposes that system changes are more rapid and pronounced over the next two decades.

Five years after the Paris Agreement, and with calls by the IPCC for urgent action in the coming decade to prevent climate change catastrophe, 2020 was billed as a key year for climate action. The COVID-19 crisis that has accompanied this year marks a point of transformation for the economy and society: it has demonstrated how remarkable and rapid systems change can be. The global pandemic has given us a clear opportunity to pave the way for building back better and establishing new norms,

as well as lessons that can inform how we might face the unabated climate crisis and future climate shocks.

A paradigm shift is needed if we are to move towards a limited or no-overshoot climate scenario. Stakeholders in financial markets, capital and investment represent important levers of change, as they have a key allocative role in society, and can enable investment into a net-zero low-energy future. Financial intermediaries can effectively support and enable societies to mobilise the investment required for the systems change needed to transition economy and society onto a net-zero pathway that is compatible with 1.5°C by 2100.

EIT Climate KIC has been working over the past decade to catalyse systemic transformative change through innovation and has supported the development and uptake of innovations that could help financial markets scale up investment in green technologies and transformative alignment. Action has to move beyond disclosure of climate-related financial risks towards proactive interventions, from engaging the world's emitters to set GHG reduction targets that are sufficiently ambitious, credible and science-based to investing in, financ-

ing and helping enable the breakthrough technologies and business models of the future. Moreover, a focus on the role of regulators, fiduciary duty and other fiscal incentives is imperative to understand how we might reset the rules to develop a more regenerative and resilient economy.

The United Nations Environment Finance Initiative (UNEP FI) is a partnership between UNEP and the global financial sector to mobilise private sector finance for sustainable development. UNEP FI has been leading two initiatives, which aim to move beyond a passive risk disclosure perspective to a more active engagement of private sector actors in committing to meet the objectives of the Paris Agreement and support the low-carbon transition. 38 banks have committed to align their portfolios with Article 2.1c of the Paris Agreement under the aegis of the Principles for Responsible Banking, while UNEP FI has partnered with PRI, WWF, and Mission 2020 to launch the Net Zero Asset Owner Initiative, bringing together 29 institutional investors as of September 2020 to commit to net zero emissions by 2050.

EIT Climate-KIC has therefore partnered together with UNEP FI to produce this thought leadership series that aims to inspire financial actors worldwide to move from risk to alignment, challenge current assumptions around climate alignment and develop ideas and concepts on how alignment can best be achieved. We hope to encourage stakeholders that a proactive climate response is not only about disclosing risks, but also about investing in green opportunities that can enable the low emissions societies of the future. This series convenes innovators and industry experts to provoke discussion, challenge the status quo and guide the transformation of business and finance towards a sustainable future.

THE PAPERS IN THIS SERIES WILL RESPOND TO A NUMBER OF KEY QUESTIONS :

- What economic system transformation is actually required to deliver the Paris Agreement?
 - How do financial institutions achieve alignment with the Paris Agreement and how does it differ from transition risk transparency as captured in the TCFD?
 - What is the future of financial institutions as a result of these changes?
 - What are the various strategies and action tracks through which financial institutions can enhance and achieve full portfolio alignment?
 - What are the pathways and choices needed for financial institutions and the financial system to drive an active transition to a net zero-carbon economy?
-



James Vaccaro

James Vaccaro is the Executive Director of the Climate Safe Lending Network. He provides strategic direction for the Network and oversees its growth and development. James is a strategist and systems thinker with a background in finance and impact investment. He has over 20 years of senior management experience as Managing Director of Investments and Strategy Director at Triodos Bank. James served on the Global Steering Committee of UNEP FI and was one of the founding developers of the UN Principles for Responsible Banking. He is a Senior Associate of the Cambridge Institute for Sustainable Leadership, senior advisor to several NGOs, member of Now Partners via his consulting practice RePattern.org, has held directorships at a wide range of environmental and social businesses, and is a former Chair of the Finance Innovation Lab. James is also a member of national and international sustainable finance advisory groups (including Bankers for Net Zero in the UK) and is the author of several papers on sustainable finance and impact investing.



David Barmes

David Barmes is an economist leading Positive Money UK's research programme and supporting the Climate Safe Lending Network. He received his academic training in mainstream and heterodox economics from McGill University and the Vienna University of Economics and Business. At Positive Money, he specialises in sustainable finance, monetary and financial policy, and wellbeing economics. David has also previously worked on international projects in environmental politics and natural resource conflicts.

Contents

Executive Summary	11
Introduction	18
1. Managing Systemic Risks	23
Crunch time for stress tests	23
Get tougher on buffers	26
Stuck in neutral: a 'polluter pays' principle for finance	27
2. Regulating Impact	30
Policing the journey	30
From KYC to KYCO2	32
3. Managing Credit out of Fossil Fuels and Deforestation	35
Hitting the emergency brakes	35
A 'bad bank' for bad assets	37
4. Greening Portfolios	39
A green light for lending	39
5. Regulating the Just Transition	41
Leaving no one behind	41
Call of fiduciary duty	43
Summary of Results	45
Conclusion	48
Endnotes	50
References	51
Acknowledgements	55

⋮ Executive summary

The transition of the financial sector and its role in accelerating progress towards addressing the risks of climate change and breakdown of natural systems is firmly in the spotlight. Whether it is US Special Envoy on Climate, John Kerry, talking to banks about mobilising capital for green technology and clean energy; the rapid growth of the Network for Greening the Financial System (NGFS) as a forum for central banks and supervisors to collaborate on environmental issues; or former Bank of England governor Mark Carney's position as COP26 Finance Adviser to the UK Prime Minister and UN Special Envoy for Climate Action and Finance, the role of finance is centre stage.

But are the proposed changes enough to meet the challenges of a planetary emergency? Given that we may have as few as six years left (e.g. until 2027) of carbon emissions at today's rates before locking

in climate change above 1.5 degrees (Matthews, Tokarska et al, 2021), are the scale and design of the regulatory changes in proportion to the significant behavioural shifts that are necessary? Do we have the right tools in the toolbox and the right discussions on the table?

In this report, we highlight the need for a bold approach to financial regulation. One based on the premise that financial stability is 100% conditional on planetary stability. We outline practical policies a regulator could adopt if given the responsibility of regulating the financial system in line with the needs of society and the planet. Based upon a review of existing literature on climate risks and financial policymaking, together with interviews with leading thinkers on sustainable finance and policy, we outline 10 cutting-edge proposals, summarised below.

PROPOSAL 1

Crunch time for stress tests

Few foresaw the 2008 financial crash: even fewer still, the global pandemic. So how can we know if our financial systems are prepared for the impacts of climate change or the rapid transition to a sustainable economy?

The answer is to model scenarios that deliberately stress our financial infrastructure to breaking point. No matter what happens in the next 30 years, the most significant consequences of climate change could happen beyond 2050. Yet, these can only be realistically averted by changes in investments made in the next 10–20 years. There is also a strong case for targeting net-zero by 2030 in some economies (even with limited carbon dioxide removal), involving an accelerated transition the financial system may not be ready for. It is crucial we assess the financial impacts of both these scenarios.

PROPOSAL 1: EXPAND SYSTEM-WIDE CLIMATE STRESS-TESTING EXERCISES TO INCLUDE A SCENARIO FOR THE PHYSICAL RISKS BEYOND 2050 AND A SCENARIO FOR THE TRANSITION TO NET-ZERO BY 2030.

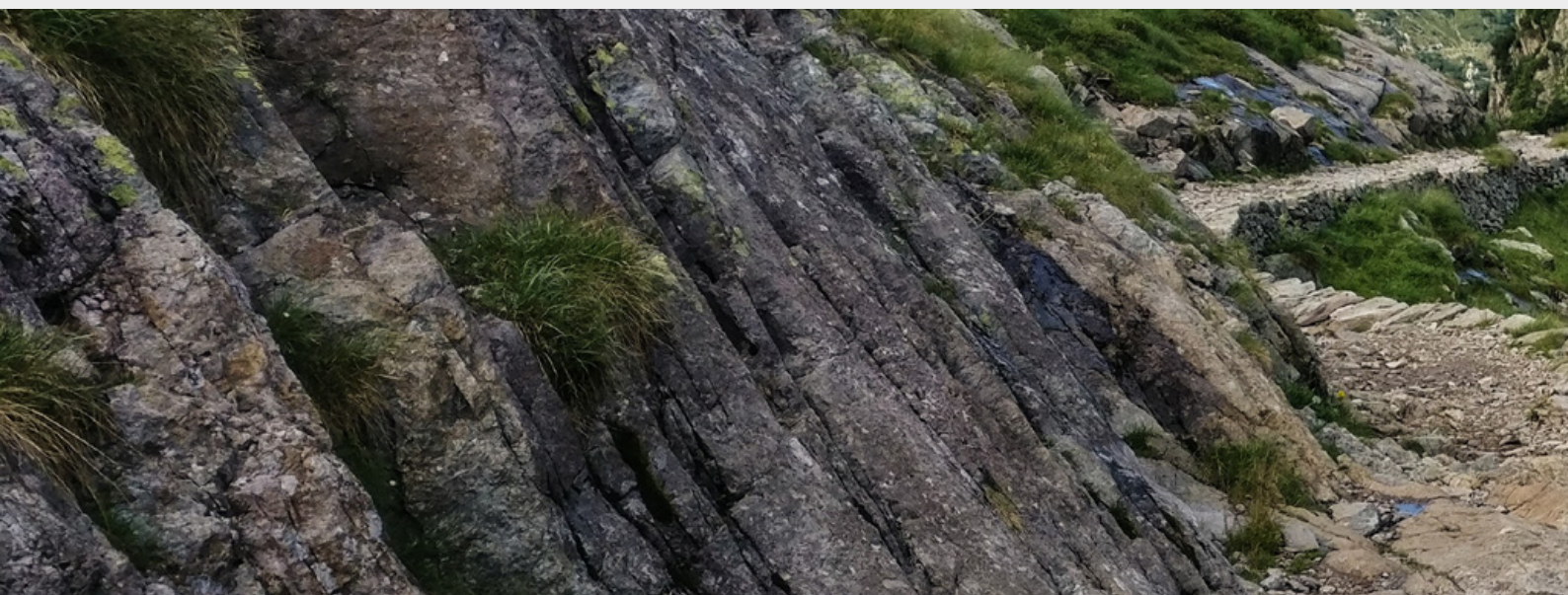
PROPOSAL 2

Get tougher on buffers

We know climate change, caused by high-carbon activities, is coming. So why don't capital buffers for lending for these activities reflect their major contribution to systemic risk?

At the moment, it is cheap for banks to lend to fossil fuel companies, because risk-weights for fossil exposures don't account for their impact on systemic risks. By adjusting capital instruments to account for the high risk of carbon-intensive exposures, banks will lower their exposure to risk, build up capital buffers to absorb losses from defaults of carbon-intensive loans, and shift investment away from carbon-intensive activities in the first place. This would protect banks from climate-related financial risks, and more importantly, protect the climate from the banks.

PROPOSAL 2: ADJUST CAPITAL INSTRUMENTS TO ACCOUNT FOR CLIMATE-RELATED FINANCIAL RISKS. THIS WILL LIMIT EXPOSURE TO CARBON-INTENSIVE LOANS, BUILD UP CAPITAL BUFFERS, AND INCENTIVISE INVESTMENT IN LOWER-CARBON SECTORS.



PROPOSAL 3

Stuck in neutral: a 'polluter pays' principle for finance

The financial system's alleged 'neutrality' excludes it from a 'polluter pays' principle. Is this fair if it creates the conditions for pollution by financing high-polluting companies?

Of course not. And given the scale of fossil-fuel finance, a polluter pays principle for the financial sector is evermore urgent. How about a flat carbon fee—paid by the issuer and levied by an independent third-party—that reflects the systemic risk banks cause when making fossil fuel loans? The money raised could go to deposit guarantee schemes, supporting renewable energy initiatives, and contributing to a just transition to a sustainable economy.

PROPOSAL 3: DEVELOP POLLUTER-PAYS MECHANISMS FOR THE FINANCIAL SECTOR THAT REFLECT CONTRIBUTIONS TO HIGHER LEVELS OF SYSTEMIC RISK FROM FOSSIL FUEL FINANCING AND ALLOCATE PROCEEDS TO DEPOSIT GUARANTEE SCHEMES AND/OR GREEN PROJECTS.

PROPOSAL 4

Policing the journey

The Paris Agreement sets the goal of limiting global warming to 1.5 degrees Celsius. What does Paris and net-zero alignment mean for financial institutions in practice? What can financial regulators do to define the rules and police the journey?

Financial regulators need to ensure banks comply with previous climate commitments, while clearly defining minimum criteria for future sustainability commitments and actions. They must work with other government authorities and international bodies to define which financial instruments and assets are consistent with net-zero or IPCC temperature scenarios. All in a way that is impervious to lobbying. National bodies made up of central banks, securities regulators, and climate change and environmental protection agencies could set clear frameworks, based on the best science, for what Paris-Alignment and net-zero mean—along with the consequences of falling short of the required expectations.

PROPOSAL 4: REGULATORS SET OUT A CLEAR FRAMEWORK FOR WHAT PARIS AND NET-ZERO ALIGNMENT MEAN IN PRACTICE, AND THE CONSEQUENCES OF FALLING SHORT OF EXPECTATIONS.



PROPOSAL 5

From KYC to KYCO₂

A lack of data is no excuse when it comes to complying with the Know Your Client standard. Why not compel all lenders to collect a similar level of data on the environmental impact of high-carbon borrowers?

KYCO₂ processes could involve collecting data on climate risks and impacts in line with the Taskforce for Climate-related Financial Disclosures (TCFD). The TCFD will soon recommend full portfolio carbon accounting for financial institutions, paving the way for regulators to make it mandatory across the financial sector. But why stop there? KYC due diligence could also extend to other forms of environmental damage, such as deforestation. The significant cost of KYC is carried by the financial sector, so regulators will need to work with institutions to find the best way to cover the costs of KYCO₂.

PROPOSAL 5: INTRODUCE MANDATORY KYCO₂ RULES BASED ON ID VERIFICATION PROCESSES TO ENSURE BANKS ARE COLLECTING SUFFICIENT CLIMATE AND ENVIRONMENTAL IMPACT DATA FROM CLIENTS, PARTICULARLY CLIENTS THAT HAVE THE GREATEST CLIMATE IMPACT.

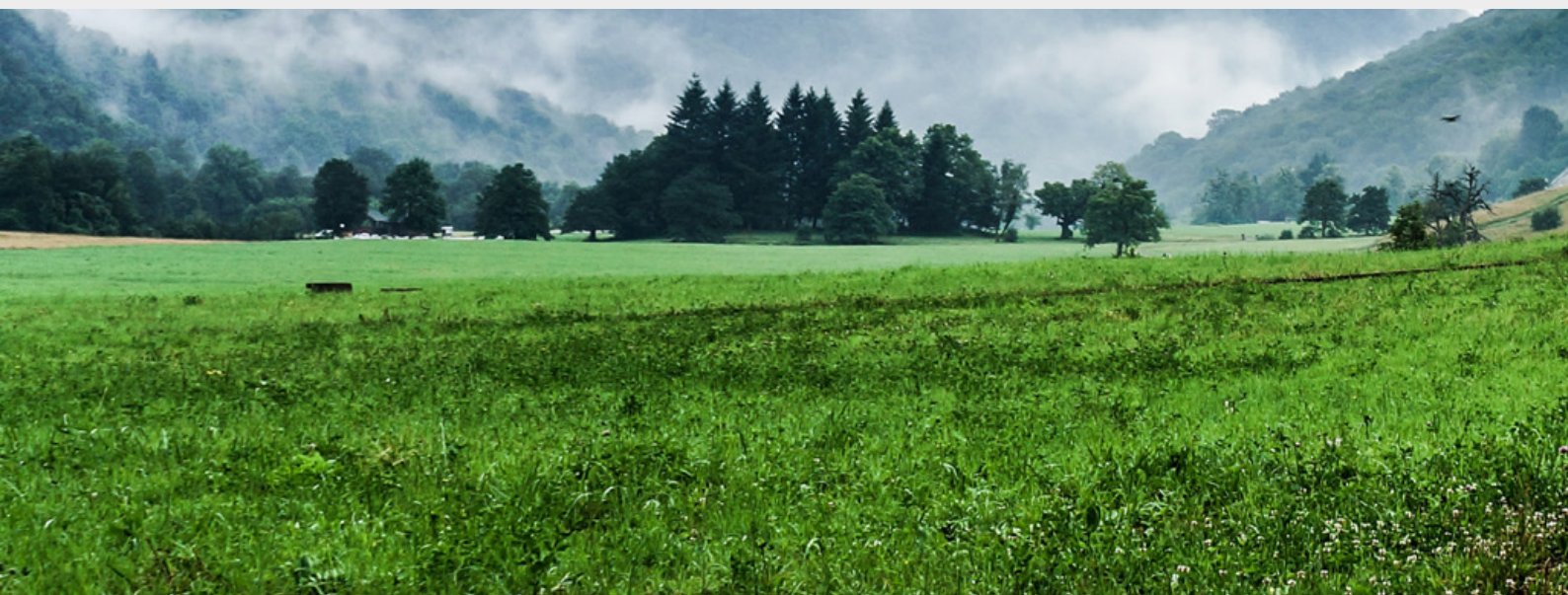
PROPOSAL 6

Hitting the emergency brakes

Renewable energy investments are increasingly financially attractive. But the shift away from fossil fuel investments is not fast enough for an effective and timely transition. Can we be more ambitious in speeding up the process?

Ending fossil fuel and deforestation investment is necessary to meet environmental goals. Private financial institutions are starting to develop net-zero plans, and some central banks are beginning to question and address the carbon bias of their monetary policy operations. However, this needs a global approach for it to have anything other than just marginal effects. A non-proliferation treaty signed by central banks and financial institutions would be the most ambitious, direct, and effective way of bringing fossil fuel and deforestation finance to a halt.

PROPOSAL 6: A FINANCIAL NON-PROLIFERATION TREATY ON FOSSIL FUEL AND DEFORESTATION FINANCE, SIGNED BY CENTRAL BANKS AND ALL REGULATED BANKING INSTITUTIONS.



PROPOSAL 7

A 'bad bank' for bad assets

Carbon-intensive and ecologically destructive assets will generate financial instability unless managed adequately. Could we encourage banks to sell them off at a loss to be managed and addressed fairly by separate entities?

One tactic to de-risk and stabilise banks after financial crises is to set up asset management companies (or bad banks) to manage non-performing loans. Using the same principle, a climate bad bank could take on assets that would become financially destructive in the transition to a zero-carbon economy. There are challenges to consider in how to minimise moral hazard, account for financial losses in a fair manner, and develop ways to incentivise banks to sell relevant assets at a discount that rises the later they leave it. Starting sooner rather than later is crucial to avoid instability down the line and would push banks towards lending aligned with climate commitments.

PROPOSAL 7: NATIONAL AND REGIONAL CENTRAL BANKS CREATE A 'BAD BANK' TO MANAGE THE LEGACY EXPOSURES TO ASSETS AT HIGH RISK OF BEING STRANDED BY TRANSITION POLICIES.

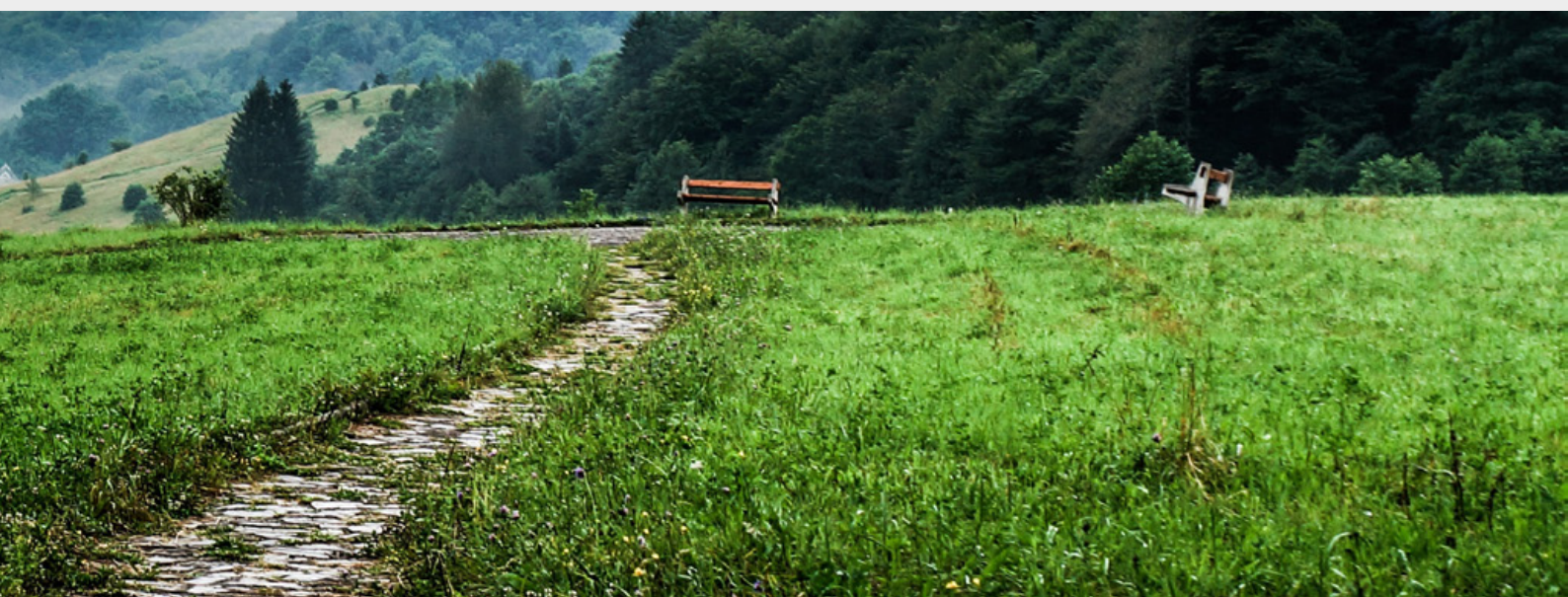
PROPOSAL 8

A green light for lending

Ending finance for fossil fuels and reforestation is one thing. How about incentivising bank lending to green projects?

The greening of funding and refinancing facilities is a promising way for central banks to accelerate the transition to a zero-carbon economy, by offering favourable conditions for banks that lend to green projects, and also ensure they have mechanisms to provide smaller institutions with equivalent incentives to lend to green projects. These funding and refinancing schemes should incorporate climate-related criteria to provide cheap funding for sustainable investments—in particular, for SMEs and social enterprises providing goods and services in the real economy. Alternative mechanisms will be necessary for smaller institutions to ensure they receive equivalent incentives.

PROPOSAL 8: CREATE INCENTIVISED GREEN WHOLESALE LENDING, REFINANCING OR CREDIT ENHANCEMENT FACILITIES TO ACCELERATE THE TRANSITION TO NET-ZERO.



PROPOSAL 9

Leaving no one behind

Typically, banks stop lending and insurers pull out in regions deemed too risky. Predictably, this adversely affects society's most vulnerable. How can we ensure a just transition for communities at risk from climate change?

Developing a Climate and Communities Reinvestment Act (CCRA) would support investment in hard-to-reach parts of the economy. This would involve community investment to encourage resilience and a just transition, as well as innovative locally applied blended finance from specialist providers to unlock green and sustainable investment opportunities. Creating partnerships across institutions with different expertise and risk appetites may enable new business models to develop, scale and flourish locally, ultimately, supporting a transition to a climate-safe world that cares for all citizens.

PROPOSAL 9: INTRODUCE AN UPDATED CLIMATE AND COMMUNITIES REINVESTMENT ACT THAT REDIRECTS CAPITAL TOWARDS SUPPORTING COMMUNITY RESILIENCE AND CLIMATE ACTION THROUGH DIVERSE NETWORKS OF LOCAL AND SPECIALIST FINANCIAL INSTITUTIONS.

PROPOSAL 10

Call of fiduciary duty

The definition of 'fiduciary responsibility' is too narrow and legally vague. Why not broaden it to cover financial and non-financial interests, including the wellbeing of future generations?

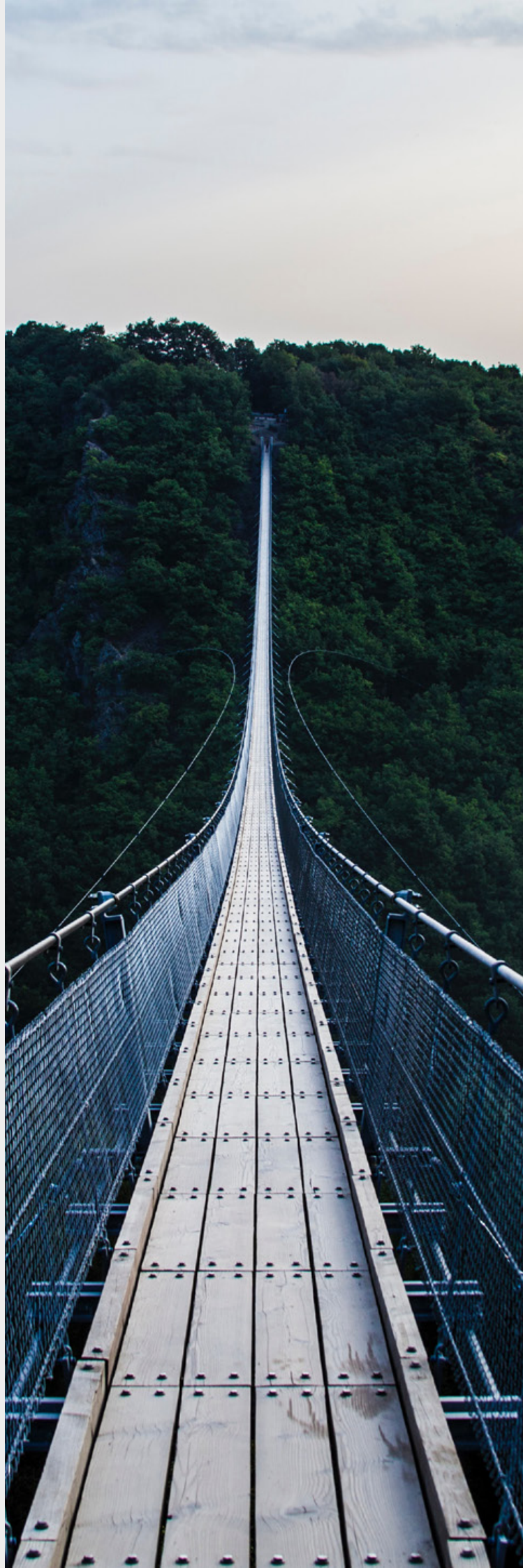
Fiduciary responsibility is already being invoked in legal cases regarding managing climate risks of pensions. So being clearer about acting in customers' interests—beyond optimal risk-adjusted returns—not only makes sense legally, it reflects society's overwhelming concerns about the impact of climate change on generations to come. For example, if there was clarity about how fiduciary responsibility applied to savings, citizens could see how banks think about, and act on, the sustainability impacts of their deposit funds. The consequences being real commercial and regulatory liabilities for banks failing to account for this.

PROPOSAL 10: A GLOBAL RESET ON THE DEFINITION OF 'FIDUCIARY RESPONSIBILITY' BASED ON A LEGAL FRAMEWORK FOR IMPACT TO BE ENACTED INTO LAW AND APPLIED TO A BROADER SET OF FINANCIAL RELATIONSHIPS AND INSTITUTIONS, INCLUDING SAVINGS HELD IN BANKS.

SURVEY & NEXT STEPS

We consulted 50 sustainable finance experts from across academia, civil society, commercial banks, central banks, and the investor community to assess the feasibility and potential impact of our proposals. Proposals 1, 2, 4, 5, 8, 9 and 10 were all rated as both impactful and feasible (see 'Summary of Results' for a detailed analysis). As such, this global consultative process has illuminated a latent consensus amongst a diverse array of actors on policies that could be both impactful and feasible.

Moving forward, we intend to build on the momentum of this exercise to broaden the debate in the climate finance community, refine and improve the policy proposals discussed in this paper, and engage bodies such as the Network for Greening the Financial System and COP26 Finance Hub.



⋮ Introduction

THE COMPLEX RELATIONSHIP BETWEEN FINANCIAL REGULATORS AND PLANETARY REGULATORS

A decade after the global financial crisis and before the onset of the Covid-19 pandemic, the banking sector was looking relatively stable. There was a spirit of positivity at the launch of the UN Principles for Responsible Banking at the UN General Assembly in September 2019 and Deloitte's banking market outlook reported the banking sector was "more resilient than at any time in the last 10 years" (Srinivas et al., 2019). The top 1000 banks in the world had \$123.7 trillion in assets and \$8.2 trillion of capital.

18 months on, and it is now reported that banks could lose \$3.7 trillion globally as a result of Covid-19 (McKinsey, 2020)—around a third of their capital. And this comes after significant levels of government intervention to stabilise the economy.

Covid-19 has been a real-life stress test. Not just for banks, but for the whole of society. For most of us, it is the most dramatic global event in our lifetimes, and has shown how adaptable and resilient humanity can be over a short space of time. The pandemic has laid bare the tensions between the protection of short-term GDP growth and the protection of human life. Economists will need to fundamentally rethink their models and understanding of future global risk events like climate change and biodiversity loss in the context of the lessons learned in 2020. Achieving stability in the face of these existential threats is a huge challenge.

Economic and financial models have largely ignored our dependence on the natural environment, as they were built during a period of planetary stability, where the financial system's impact on the environment was considered negligible. We now have sufficient evidence that our highly unequal socio-economic and financial systems have destabilised natural regulation, with destructive consequences for life on earth. We have lost two-thirds of wildlife populations in the last 50 years (WWF, 2020) and our climate is heading towards a temperature increase

threatening the conditions for our own survival. We are currently at 1.2°C warming and likely to exceed 1.5°C before 2030. Existing levels of atmospheric greenhouse gases, which may have already locked in warming of the planet to between 1.75°C to 2.4°C later this century, are triggering dangerous feedback loops (Climate Reality Check, 2020).

As our fundamental dependence on stable natural systems becomes increasingly evident, central banks and financial regulators face the challenge of safeguarding financial stability in this rapidly changing world. They monitor the risks taken by financial institutions and intervene in the economy via prudential and monetary policy to underpin the system's stability. But traditional tools are no longer sufficient for regulation. In the face of acidifying oceans, rising sea levels, a disappearing arctic shelf, deforestation and degraded soils, the guardians of the financial system need to drastically adapt their practices to manage these threats and minimise the system's negative environmental impact. When managing risks, financial institutions and regulators like to work with data, but there is simply no reliable dataset for our future. The human species has never seen global warming and ecological collapse as rapidly as is expected in the decades ahead. We are racing into the unknown.

In environmental and public health policymaking, the 'precautionary principle' - an approach to policymaking that legitimises adopting preventative measures to address potential risks to the public or environment associated with certain activities or policies - is commonly embraced by decision-makers. For central banks and regulators, adopting a precautionary approach would entail a completely new way of managing climate-related financial risks—one that acknowledges the full complexity of these risks, the radical uncertainty that characterises them, and the inability of markets to efficiently price them into their activities (Chenet et al., 2021).

Can we afford the corresponding action being called for? We recall only too well the impact of the global financial crisis, and many policymakers may be highly sensitive to any intervention that might jeopardise the banking sector. If countries implemented policies in a way that treated climate change and breakdown of biodiversity as planetary emergencies, we might see significant carbon prices around \$125/tCO₂ (Carleton and Greenstone, 2021) which, if introduced, might cause similar losses to Covid-19 (Reinders et al., 2020), perhaps significantly less if managed globally and phased in rather than introduced abruptly. It is material, but survivable for the banks, whereas the feedback loops that cause runaway climate change and breakdown of natural systems are unlikely to be survivable for the planet, let alone the financial sector.

A dominant myth in finance is that the financial system is 'neutral' and 'efficient', so has no driving effect on the economy. This undermines the case for proactive and precautionary regulation. Financial actors are sometimes guilty of promoting the role of finance in supporting positive economic policy goals, while refusing to take responsibility for its ills. Yet since the Paris Agreement, the world's largest banks have funneled over \$2.7 trillion into fossil fuels (Kirsch et al., 2020), continuing to finance emissions and deplete the world's carbon budget. The evidence is clear: finance is not neutral in this planetary crisis.

Once we accept the reality of finance's agency and responsibility in driving the climate crisis, the case for a 'polluter pays' principle for the financial sector becomes obvious (see Proposal 3). All institutions involved in, and profiting from, the process of emitting greenhouse gas emissions—including financial actors that allow the conditions for companies to pollute—should be required to compensate society for their actions. Equally, society needs a greater say over what these institutions choose to finance and how they operate.¹

An additional step in shifting the way we think about finance and climate, which further supports the case for a polluter pays principle for finance, is to think of the global carbon budget and consequently the amount of emissions that can still be financed within the budget, as a commons (Ostrom, 2015).² There is only a finite amount of emissions to be financed to retain a climate-safe world. Without a set of rules and norms in place, it may be impossible to stop individual financial institutions from financing more emissions than is fair and safe.

In our previous paper, *Taking the Carbon Out of Credit* (Vaccaro, 2020), we set out the leadership path for banks to take action on climate change:

1. Taking responsibility for climate risk
2. Being accountable for climate impact
3. Stopping the flow to fossil fuels
4. Decarbonising economies and balance sheets
5. Financing innovation for a sustainable future

In this report, we examine the corresponding actions for regulators and central banks, based on the premise that financial stability is 100% conditional on planetary stability. We outline practical policies a regulator could adopt if it was responsible for regulating the financial system, while addressing the needs of society and the planet. Rather than providing a review of existing literature on climate risks and financial policymaking, we outline 10 cutting-edge proposals across the following five sections:

1. Managing systemic risks
2. Regulating impact
3. Managing credit out of fossil fuels and deforestation
4. Greening portfolios
5. Regulating the just transition

While many of the proposals could be implemented alongside each other, they are presented here as stand-alone policies—detailed analysis of their potential interaction with each other lies beyond this paper's scope.

From the outset, it is important to clarify that central banks and financial regulators should not be the leading institutions tackling climate change. There is a broad consensus amongst economists that fiscal authorities must lead the macroeconomic shift to a zero-carbon economy (Krogstrup and Oman, 2019), and many of the proposals we outline would require collaboration and mandate changes from treasuries and finance ministries. That said, central banks and financial regulators nonetheless have an important role to play. And even though most of them do not have explicit sustainability mandates, their core objectives of price and often financial stability will not be achieved in the long-run without ramping up efforts to green the financial system (Dikau and Volz, 2020). This will require building capacity and expertise on climate issues, and closely coordinating with academics, civil society organisations, independent committees, and governmental departments that already have expertise. Entirely new institutions combining these different actors, such as an International Panel on Climate Finance, could also play a role (Waygood, 2020). An intermediate step may be more collaboration across national and regional actors—modelled by interagency cooperation. One could envisage deeper collaboration between entities such as central banks and lead environmental/climate expert groups, such as the Climate Change Committee (CCC) in the UK.

In view of the potential efficacy of green stimulus packages in tackling climate change (Hepburn et al., 2020) central banks and regulators also have a moral responsibility to support green recoveries from the pandemic. Covid-19's roots lie in the very same environmental destruction that is causing climate change (Vidal, 2020), and the likelihood of future pandemics increases with rising temperatures (Goodell, 2020). Despite this daunting reality, Dikau et al. (2020) found that "less than 1% of central banks and supervisors from 188 economies have directly connected their crisis response with sustainability factors". Failing to ensure a green recovery from Covid-19 would guarantee not only life-threatening environmental disasters such as droughts, rising sea levels and food crises, but also life-threatening pandemics—all within the next few decades. In the face of a climate and ecological emergency—the greatest threat ever experienced by the human species—central banks and financial regulators must adapt with ambitious new policies to steer financial flows for a climate-safe future.

While the main focus of this paper is climate change, we recognise climate solutions require we address other natural and social systems. This is why the concept of a 'just transition', as well as ecological issues such as deforestation and biodiversity loss, feature in our proposals. These topics have received far less attention from central banks and financial regulators, but they are fundamentally interlinked and no less important than the climate crisis.³



Methodology

To evaluate the potential impact and feasibility of our proposals, we invited a wide-range of sustainable finance experts from across academia, civil society, commercial banks, central banks, and the investor community to participate in a survey administered by the Climate Safe Lending Network.

The survey provided summaries of the proposals and asked respondents to rate the impact of each proposal on a scale of 1 (lowest impact) to 5 (highest impact), and assess the feasibility as either 'low', 'medium' or 'high'. We recorded 'low feasibility' answers as a score of -1, 'medium feasibility' as 0, and 'high feasibility' as 1. Average scores for each proposal are outlined beneath each proposal throughout the report, and summarised further below in the 'Summary of Results' section.

We also asked respondents to provide quotable and non-quotable feedback on the proposals. Following a review of all the feedback provided, we included a selection of quotable comments alongside the quantitative results for each proposal. We selected quotes that cover a range of different perspectives, highlighting the strengths as well as the limitations and drawbacks of each proposal.

Lastly, we asked respondents: "If you were to suggest one other policy proposal not contained in this survey, what would it be?" Responses to this question are outlined in the summary of results.

1. Managing Systemic Risks

Managing financial risks is the primary goal of prudential policy. Being prudential (from the Latin *prudential*—*foresight and sagacity*) is about applying wisdom from collective learning to the unknown future. In financial regulation, this means doing all we can to understand the mechanics of the financial system in the context of systemic global risks. A macroprudential approach means taking rigorous consideration, not just of the direct (micro) impacts on a particular institution, but also of the broader (macro) risks in the system. This section outlines three proposals for managing systemic risks.

1.1

CRUNCH TIME FOR STRESS TESTS

.....

The Covid-19 outbreak did not come as a shock to everyone. The risk of a pandemic, and society's lack of preparedness for it, has consistently featured in

the World Economic Forum's Global Risks report since it was launched in 2006. Scientists started warning of the increased likelihood of a pandemic decades ago (Henig, 2020), and the evidence is clear that both climate change and ecological destruction heighten the risk of virus transmission (Ryan et al., 2019; Settele et al., 2020).

However, stress-testing frameworks intended to prepare the financial system for shocks to the economy never included a 'pandemic scenario'. As such, the financial system was unprepared and governments bore the responsibility for potential losses. If governments had not stepped in to protect the income streams of banks, Covid-19 would have generated far greater systemic financial instability. For example, in the UK, 32% of furlough money has gone directly to debt repayments (Berry et al., 2020), and the government has backed emergency loans to SMEs, insulating the financial system from the impacts of the pandemic (Youel, 2020). To ensure long-term financial stability in a planetary emergency, central banks and regulators must learn from their failure to adequately prepare the financial system for Covid-19.

In June 2021, the Bank of England is launching its climate stress-testing exercise to assess the physical and transition risks from climate change, based on the three representative scenarios outlined by the NGFS.⁴ While these exercises are a step in the right direction, they could be improved on in at least two significant ways.

First, the time horizon of the physical risks for stress-testing exercises need to be extended (e.g. 60–80 years) based on IPCC scenarios. Using a thirty-year modelling horizon, the Bank of England's system-wide climate stress test does go further than standard stress tests.⁵ However, given the most significant physical consequences of climate change are likely to be felt beyond 2050 no matter what happens in the next 30 years, the most glaring open risk is regulators not taking the necessary actions now to secure financial stability beyond 2050.⁶ In 2°C+ scenarios, the physical risks in 2070 are likely to be much greater than in 2050 and can only be averted by dramatic changes in investment allocation in the next 10–20 years, as it is estimated we have around six to eleven years of carbon budget remaining at existing rates to limit warming to 1.5°C (Matthews, Tokarska, 2021).

Second, climate stress tests should include a more ambitious transition scenario (Ioualalen and Schreiber, 2021). In its alternate scenarios, the NGFS includes a 1.5°C scenario with limited carbon dioxide removal (CDR), which goes a considerable way to introducing a high-transition-risk scenario. But even this does not go as far as more challenging net-zero pathways that may be required to tackle climate change in a way that is globally just. Given the strong scientific case for a net-zero by 2030 target in high-income economies (Jackson, 2019), as well as the fact climate change has so far

exceeded previous predictions,⁷ a more meaningful climate stress test would involve adopting a scenario that included a net-zero by 2030 target with limited CDR. This would allow regulators to gain a better understanding of the financial system's preparedness—or lack of it—for the rapid transition we need, which is unlikely to be helped by negative emissions technology that is increasingly the subject of scientific concern.⁸

Additionally, as set out in Ceres (2020), it is important to look at the wider impacts in a stress test and beyond the direct losses in fossil fuel portfolios. Central banks and regulators need to consider the associated losses in other energy intensive sectors, which could be around six times higher, taking the levels of losses—around 21% in US syndicated portfolios—far beyond the levels of loss-absorbing capital held by banks (Ceres, 2020). This is precisely the architecture of many financial crises: assets presumed to have value, fuelled by financial sector activity, turning out to be valueless, with the losses passed on to governments and citizens.

Furthermore, most stress-testing frameworks rely on Integrated Assessment Models (IAMs) to determine the impact of climate shocks on particular economic sectors. Given the limitations of IAMs, central banks should also explore alternative ways to determine the potential impacts of climate-related financial risks, as proposed by Bolton et al., (2020) in a joint Bank of International Settlements (BIS) and French central bank (BdF) report. These approaches include non-equilibrium models, sensitivity analyses, and case studies focusing on specific risks and transmission channels. Central banks and regulators should also explore how to incorporate nature-related financial risks into these analyses and stress testing exercises.

PROPOSAL 1:

Expand system-wide climate stress-testing exercises to include a scenario for the physical risks beyond 2050 and a scenario for the transition to net-zero by 2030.

PROPOSAL 1 SURVEY RESULTS

Impact score (scale 1 to 5): **3.18**

Feasibility score (scale -1 to 1): **0.3**

Lastly, financial institutions should not be expected to adjust their capital buffers of their own volition following scenario analysis exercises, as is currently the plan in the UK (Bailey, 2020). The 2008 financial crisis showed the dangers of relying on self-regulation when it comes to systemic risk management. When Alan Greenspan appeared before the House Committee on October 23, 2008, he admitted: *“I made a mistake in presuming the self-interest of organisations, specifically banks and others, were such that they were best capable of protecting their own shareholders and equity in their firms.”*

Greenspan’s mistake is being repeated today with climate risk. Central banks and regulators must recognise their duty to take the initiative to adjust prudential regulations in line with climate stress testing results. That said, as outlined in the next section, adjusting capital instruments to better account for climate risks should begin even before completing climate stress tests.

Kurt Horne—Enterprise Risk Management Consultant at Vancity—highlighted the importance of incorporating these scenarios into stress testing exercises: *“Financial institutions need to include*

scenarios of this nature and magnitude in order to adequately and appropriately stress test climate risk. Failure to do so is akin to recognizing pandemic risk but failing to stress test for a global pandemic that lasts for months or over a year.”

Jon Dennis—Sustainable Finance Manager at the World Wide Fund for Nature (WWF) UK—argued that ambitious short term scenarios are particularly important: *“Including a transition risk scenario for 2030 is key. IPCC has clearly outlined the consequences of 1.5°C to the natural world. The battle for 1.5°C is now won or lost in decisions made in the first half of this decade.”* While there was less enthusiasm among respondents regarding the longer term scenario, Nick Stewart—Partner at Baringa Partners—highlighted: *“if we don’t do this then the real emergency on physical risk in that time period will not be captured and measured. The regulator may effectively be ignoring a material and global risk event.”*

On the other hand, multiple respondents addressed limitations of this policy proposal. For example, Katie Kedward—Policy Fellow at UCL’s Institute for Innovation and Public Purpose—argued: *“climate scenario analysis is important for central banks to *explore* relevant financial risks, but it is only as useful as the realism of its underlying assumption. But modelling insights alone will not ensure *management* of climate-financial risks. Central banks must take additional measures to safeguard financial stability from climate change.”*

Along similar lines, Ivan Frishberg—Director of Impact Policy at Amalgamated Bank—expressed concern that the implementation of additional measures could be delayed by stress testing exercises: *“If the implementation of stress testing and scenario testing by large financial institutions takes several years, followed by a few years of policy responses from central bankers, it could create a dynamic where other near-term actions are forestalled in advance of receiving the risk assessment.”*

1.2

GET TOUGHER ON BUFFERS

While more ambitious and well-informed stress tests would help regulators prepare the financial system for climate-related financial risks, Bolton et al. (2020) recognise that due to the deep uncertainty associated with climate change, even the best methodologies cannot provide a precise picture of the risks. Climate stress tests should be used to help inform prudential regulation, but a precautionary approach also requires bold and immediate action to reduce climate risks, protect financial stability, and foster the transition to a low-carbon economy.

A Finance Watch report (Philipponnat 2020) makes a strong case for effective macroprudential regulation through the repricing of capital based on the assets' contribution to climate risk. The report outlines how capital requirements regulations in the EU can be amended to increase the risk weights of existing fossil fuel exposures to 150% and 1250% for the financing of new fossil fuel exploration,

exploitation, and production. The latter would result in new fossil fuel projects being entirely equity-funded. This is justifiable from a prudential perspective given the build-up of systemic risk they create by accelerating climate change, as well as the likelihood they'll become stranded assets. Central banks and regulators should also explore the option of lowering the risk weights of green exposures.⁹ However, this is no substitute for higher risk weights on unsustainable exposures and is only consistent with responsible prudential policy if green loans are less risky than their high-carbon counterparts.¹⁰

Adjusting risk weights would address a current bias towards dirty loans. Since the current credit ratings for most major oil and gas companies is better than AA-, the actual capital risk-weighted assets for loans under the BIS' standardised approach can actually be as little as 20%, as shown in Table 1. On the other hand, many renewable energy projects owned by smaller companies or financed on a project-finance basis are weighted between 75% - 100% (BIS, 2017). This is effectively a 'grey discount', making capital far cheaper for lending to the most polluting activities in the energy sector.

Table 1: BIS risk-weights by ratings under the Basel III regulation

Exposures to general corporates						
Risk weights in jurisdictions where the ratings approach is permitted						
External rating of counterparty	AAA to AA-	A+ to A-	BBB+ to BBB-	BB+ to BB-	Below BB-	Unrated
Risk weight	20%	50%	75%	100%	150%	100% or 85% if corporate SME

Source: (BIS, 2017)

Central banks should also consider adjusting other capital instruments, such as countercyclical capital buffers, to manage climate risks. For example, a carbon countercyclical capital buffer (D'Orazio et al., 2019) would account for the carbon intensity of credit growth at the aggregate level during the recovery phase from the pandemic. It would also protect financial stability by limiting banks' expo-

sure to carbon-intensive loans during expansionary phases of the credit cycle, and build up capital buffers capable of absorbing losses resulting from defaults of carbon-intensive loans as transition risks materialise. Additionally, a carbon countercyclical capital buffer would lower the carbon intensity of credit growth in the first place, as it would incentivise a shift towards lower-carbon assets.

PROPOSAL 2:

Adjust capital instruments to account for climate-related financial risks. This will limit exposure to carbon-intensive loans, build up capital buffers, and incentivise a shift towards lower-carbon sectors.

PROPOSAL 2 SURVEY RESULTS

Impact score (scale 1 to 5): **4.13**

Feasibility score (scale -1 to 1): **0.3**

Thinking more broadly, and prudentially, regulators should also consider the biodiversity and nature risks carried by the financial system,¹¹ and their implications for the adjustment of capital instruments. Recently, the Dutch Central Bank (DNB) calculated the Netherlands' financial sector alone has exposure of €510 billion to companies with a high dependency on one or more 'ecosystem services' (van Toor et al., 2020). As outlined by Kedward et al. (2020), managing complex nature-related financial risks will also require a precautionary approach to financial policymaking.

Overall, respondents scored Proposal 2 as the most impactful policy proposal in the survey, and under-scored its importance in their written responses. One leading international economist stated: *"This is an essential step in shifting financial sector incentives and supporting the net zero transition."* Equally, Jesse Griffiths—CEO of the Finance Innovation Lab—claimed this was *"a centrally important proposal to give financial institutions the right incentives."* A number of respondents from the financial sector also recognised the relevance of this proposal. For example, Andrew Turvey—Prudential Risk Director

at Belmont Green Finance Limited—explained that *"Stranded assets create a credit risk that is not captured by the current framework. Pillar 2 capital additions are a logical place to incorporate this."*

Regulators also expressed cautious support for this proposal, but questioned its short-term feasibility. Sarah Breeden—Executive Director for UK Deposit Takers Supervision at the Bank of England—said *"Once there is clarity on the path of forward climate policy this option would be more feasible—we would have better sight on how risks might arise and more data to support policy change."* This signals that from a regulator's perspective, there may be challenges to implementing this policy until governments make progress in determining their climate policy plans.

1.3

STUCK IN NEUTRAL: A "POLLUTER PAYS" PRINCIPLE FOR FINANCE

While adjusting capital instruments can go a long way to protecting the financial system against climate risks and incentivising a shift from dirty to green loans, it is insufficient for the task at hand. When a bank lends to a carbon-intensive company, this contributes to a build-up of systemic risk across the financial system and directly generates negative repercussions for society via the company's contribution to climate change. Increased capital buffers can only go so far in accounting for the system-wide risks and societal impacts created by such loans.

Going a step further, central banks and regulators should consider a 'polluter pays' principle for the financial sector, so financial actors are obliged to contribute to the protection and compensation of those harmed by their actions. This includes other financial institutions that are making greater

efforts to shift away from dirty assets, as well as society as a whole. The European Commission, which defined a polluter as “someone who directly or indirectly damages the environment or creates the conditions leading to such damage”, adopted the polluter pays principle in 1973, shortly after a recommendation from the OECD (Munir, 2013).

The polluter pays principle was subsequently applied to multiple industries, but never the financial system, whose alleged ‘neutrality’ precluded it from the definition of a ‘polluter’. However, once we establish the financing of polluting companies creates the conditions for pollution, it becomes clear financial actors should not be absolved of the ‘polluter’ label or any of the obligations that come with it. The pace and scale of fossil fuel finance being so misaligned with the Paris Agreement only increases the urgency of a polluter pays principle for the financial sector.

Along these lines, Van Gansbeke (2020a) proposed a flat carbon fee “payable by the issuer over and above the traditional coupon of any bond issue and/or credit margin of any bank loan”. The fee would be set and levied by an independent third-party authority, and the proceeds redeployed

towards renewable energy initiatives. This policy could be applied across the financial system and be tweaked in various ways. For example, in banking portfolios, contributions towards collective deposit insurance could apply specific climate criteria to further account for the systemic risk generated by banks when they make fossil fuel loans.

Furthermore, while high-climate risk loans might be priced up by banks integrating ESG risk analysis, this could have the effect of earning the bank more money on such loans in the meantime. This creates a potentially perverse incentive for the bank to enjoy additional profitability from loans doing the most damage. Rather than this being captured in the profit and loss of a bank, the additional interest-rate surcharges could be levied on a centralised basis—effectively a ‘margin tax’.

Ideally, a just and progressive economy-wide carbon levy would ‘internalise’ to some extent the ‘externalities’ fossil fuel extraction and consumption cause. Policymakers should consider this the first best option, but until such a levy becomes a reality, polluter pays mechanisms for finance could contribute to creating a more resilient and Paris-aligned financial system.



PROPOSAL 3:

Develop polluter-pays mechanisms for the financial sector that reflect contributions to higher levels of systemic risk from fossil fuel financing, and allocate proceeds to deposit guarantee schemes and/or green projects.

PROPOSAL 3 SURVEY RESULTS

Impact score (scale 1 to 5): 3.35

Feasibility score (scale -1 to 1): -0.3

Multiple survey respondents expressed very positive views on this proposal. Tom Jess—Programme Manager at the Club of Rome—said: *“the concept would make a big difference and utilise the position of finance as an enable to steer change”*, while Katie

Kedward—Policy Fellow at UCL’s Institute for Innovation and Public Purpose—stated: *“the ‘polluter pays’ principle for finance is an important idea that could appeal across a broad political spectrum.”*

On the other hand, multiple respondents felt this policy proposal was barely different to, nor necessarily better than, a standard carbon tax, and highlighted its potential limitations. Pablo Berutti—Senior Investment Specialist at Stewart Investors and Founder of Altioem—argued that: *“this needs to be done at the asset/company level rather than the finance/investment level”*, but there would be value in: *“having financial institutions purchase offsets for their total portfolio emissions”* as long as they are “high quality offsets [...] that achieve climate, biodiversity and social benefits.”

J. Mijin Cha—Assistant Professor at Occidental College—explained she is: *“not opposed to carbon pricing or polluter pays proposals”*, but she *“do[es] not see a scenario where it is priced high enough to make a meaningful difference.”* Commenting on the feasibility of the proposal, she added: *“The opposition to a price high enough to make behavioral changes will be enormous.”*



2. Regulating Impact

As argued in our previous report *Taking the Carbon out of Credit*, “institutions need to go beyond managing their own financial risks and consider their impacts and, therefore positive and negative contributions, to systemic risks” (Vaccaro, 2020). The CCC in the UK argued along similar lines in its report on *The Road to Net Zero Finance*, stating “the UK financial system must go beyond managing climate risk and focus on net-zero as a key goal” (Robins, 2020). This section puts forward proposals on how to accomplish this.

For most central banks, introducing impact-focused regulation alongside risk-based policies will require updates to their mandates, which often focus exclusively on price and financial stability. However, in a study of 135 central bank’s mandates, Dikau and Volz (2020) show “12% have explicit sustainability objectives, and another 40% are mandated to support their government’s policy priorities, which in most cases include sustainability goals.”

2.1

POLICING THE JOURNEY

One key way banks can move towards their own alignment is by pressuring their clients to align their activities with climate commitments. For example, ClientEarth’s (2020) Principles for Paris-alignment state that: “As banks develop insights on best practices for decarbonisation by sector, they should start engaging counterparties on their Paris-aligned business strategies before they provide new financing or refinancing, which may include setting targets or deadlines to achieve their net-zero objective.” However, Boston Common Asset Management (2019) found only 29 out of 58 banks surveyed were engaging their clients on TCFD and only seven had formally asked their clients to adopt TCFD guidelines.

As banks consider signing voluntary commitments, such as the Science Based Targets initiative (SBTi) and other initiatives that form part of the UNFCCC's Race to Zero, engaging clients will become more common. Many are already involved in sector-wide agreements, such as the UNEP FI's Collective Commitment on Climate Action, which requires financial institutions to report publicly on progress. As these commitments and reporting cycles become the norm, regulators have a clear role in ensuring compliance with previous commitments made, as well as in defining minimum criteria for commitments and subsequent actions.

While it is not common to give financial institutions detailed green guidance, a significant precedent is currently being set via the recent EU Sustainable Finance Taxonomy. Initially drawn up by a technical expert group, the taxonomy sets out the minimum criteria for sustainability by different types of assets. As argued by Sweatman and Hessenius (2020), these kinds of standardisation exercises can be helpful: "Taxonomies, classification systems and standards require intense technical work, they rely on comprehensive data sets, information and resources and are never finalised as the world continues to evolve. Yet, without naming and classifying species, human DNA, computer code, and industrial classes, the progress of science, industry and human innovation would have been forestalled. As we share global commons, like the atmosphere, a common language is required to connect the physical currency of greenhouse gas emissions to economic and financial ones." A danger is that such

exercises can be heavily influenced by industry lobbyists seeking excessively lax standards (Schreiber and Pinson, 2020). This among other concerns has generated much scepticism around the EU's taxonomy in its current form (Reclaim Finance 2020).

A system of defining which financial instruments and assets are consistent with net-zero, or specific IPCC temperature scenarios should be integrated into regulatory rules, and lead by central banks in collaboration with international bodies. Waygood (2020) argues that an International Panel on Climate Finance is required to govern this process, but even before setting up an intergovernmental panel, action could already be taken today by central banks based on initiatives such as SBTi (for target setting) or PCAF (for carbon accounting). Furthermore, there would be value in forming national bodies based on joint committees of central banks and securities regulators with climate change and environmental protection bodies. Such institutions could set out clear frameworks, based on the best available science, for what Paris-alignment and net-zero should mean, as well as setting out the consequences for falling short of required expectations.

Caldecott (2020) provides a framework regulators could build on, outlining three areas for financial institutions to achieve alignment with climate outcomes: (i) "properly measuring, tracking and targeting (in)compatibility"; (ii) "making a real economy contribution"; and (iii) "perseverance and consistency" highlighting necessary governance structures, behaviours, and principles.

PROPOSAL 4:

Regulators set out a clear framework for what Paris and net-zero alignment mean in practice, and set out the consequences for falling short of expectations.

PROPOSAL 4 SURVEY RESULTS

Impact score (scale 1 to 5): 4.00

Feasibility score (scale -1 to 1): -0.3

Survey respondents from academia, NGOs, and civil society found this proposal to be less feasible compared to bankers, investors, and central bankers. For example, Xavier Lerin—Senior Banking Analyst at ShareAction—stated: *“this would be highly desirable but it would be complex to build a consensus in the industry for potentially diverging climate stress-testing and Paris-alignment methodologies.”*

However, there was broad consensus regarding the potential high impact of this proposal. Lauren Compere—Managing Director of Boston Common Asset Management—stated that *“this is the type of guidance that could be a game changer.”*

An independent regulatory advisor explained how this had the potential to significantly shift market behaviour: *“Clarity by governments is the crucial precondition for any change in market behavior. The biggest uncertainty among finance actors seems to be about governments’ own responses to climate dynamics, which can be paralyzing.”*

As the banking sector sets its path on the Race to Zero at COP26, there are likely to be debates about the details and data which will define the real impact of decarbonisation. In the global finan-

cial crisis, some banks were taking profits out of risky lending that was then pushed off its balance sheet. What role should regulators take today to avoid a similar phenomenon where banks might continue to lend to fossil fuel expansion, deforestation-linked agriculture and other non-aligned sectors whilst defining their own rules about how to appear net-zero?

2.2

FROM KYC TO KYCO₂

One of the most persistent barriers to making progress in setting effective climate targets and strategies has been a lack of data. This can be used as an excuse for inaction, especially when there may be relevant proxies for the climate emissions of loan portfolios that could very easily guide policies. However, good data is essential for banks, and cannot be left as a voluntary effort but rather must be integrated into core banking responsibilities.

Personal identity verification has become a normal part of financial institution responsibility. ‘Know your customer’ (KYC) procedures are the main strategy for tackling financial crime and money-laundering. Institutions with insufficiently rigorous processes can incur substantial fines.

If environmental risks are likely to outstrip financial crime in the longer term, the financial sector could help achieve transparency and data awareness by implementing Know Your Carbon (KYCO₂) processes for borrowers. Using a ‘risk-based approach’, smaller and greener exposures could have a lighter process than larger, more carbon-intensive ones. This is likely to have implications at a systemic level for high-carbon borrowers who will be forced to disclose the relevant data on their environmental footprints.

KYCO₂ processes would support the data collection required for the reporting of climate risks and impacts. In 2020, the UK and New Zealand governments outlined plans for making climate risk disclosures mandatory (HM Treasury, 2020; New Zealand Government, 2020), in line with the eleven recommendations made by the Taskforce for Climate-related Financial Disclosures (TCFD). The TCFD is now going a step further and incorporating full portfolio carbon accounting for financial institutions into its recommendations. This will pave the way for regulators to make carbon accounting mandatory across the financial sector, which would provide regulators and the public with a full view of a financial institution's contributions to climate change.

KYC processes could also be extended to other forms of environmental damage, such as deforestation. In the UK, the government's Department for Environment, Food, and Rural Affairs (DEFRA) commissioned a Global Resource Initiative (2020) report, which recommended the financial sector be covered by a "mandatory due diligence obligation, requiring them to exercise due diligence in order to avoid their lending and investments funding deforestation." Between 2013 and 2019, 300 financial institutions across the globe provided \$44 billion to six of the world's largest agribusinesses fuelling deforestation (Global Witness, 2019). As argued by Global Witness et al. (2020), ensuring financial institutions are subject to due diligence regulation would go a long way to cutting off deforestation's financial support.

Despite the introduction of efficient technology, KYC represents a significant cost that is borne by the financial sector through general profitability. Inevitably, KYCO₂ processes would add to this cost. Regulators should work with financial institutions to determine the most appropriate way to transparently cover the costs of new KYCO₂ processes.



PROPOSAL 5:

Introduce mandatory KYCO₂ rules based on ID verification processes to ensure banks collect sufficient climate and environmental impact data from clients, particularly clients that have the greatest climate impact.

PROPOSAL 5 SURVEY RESULTS

Impact score (scale 1 to 5): **3.49**

Feasibility score (scale -1 to 1): **0.1**

Andrew Turvey—Prudential Risk Director at Belmont Green Finance Limited—was very supportive of the proposal, arguing that data is essential for climate action and *“banks have a real challenge to find that data right now.”* He added: *“KYCO₂ is a fundamental building block that will support the work to come and help banks make better and more impactful decisions.”* Xavier Lerin—Senior Banking Analyst at ShareAction—was also in favour of the policy, commenting on how frequently KYCO₂ processes should be used compared to traditional KYC processes: *“In the context of financial institutions using this information to assess alignment of their portfolios it would perhaps make sense to ensure KYCO₂ is conducted on more frequently for the highest emitters than KYC.”*

On the other hand, two respondents raised particular concerns about the impact of this policy on smaller businesses and financial institutions. Tony Greenham—Executive Director at South West Mutual—stated: *“For much SME and personal lending this is likely to be impractical as a regulatory requirement. It could perhaps even be an own goal in winning the hearts and minds in those customer groups, unless it came with free advice and support on how to improve their carbon footprint so there is a clear customer benefit.”*

Similarly, Kurt Horne—Enterprise Risk Management Consultant at Vancity—referred to the negative impact of KYC processes on smaller financial institutions: *“While a mandatory disclosure and verification process will mean better data and better decisions, they could also spell the end of smaller, even green businesses. [...] much of the credit risk regulation to prevent fraud and money laundering, though essential, caused the shuttering of smaller financial institutions and in particular credit unions that could not comply fully with the requirements.”*

To address these concerns, regulators would have to provide accessible guidance and ensure KYCO₂ requirements are imposed proportionately, making sure larger financial institutions are collecting sufficient climate-related information on the largest and most ‘high-risk’ emitters, while not overburdening smaller financial institutions and businesses.

3. Managing Credit out of Fossil Fuels and Deforestation

Simply put, new flows of finance to expand fossil fuel exploration and extraction, as well as deforestation, must grind to a halt in order to tackle climate and ecological breakdown. The competitiveness of new renewable energy sources is already starting to displace investment in new fossil fuel assets and may soon be more competitive than continuing existing fossil fuel infrastructure. But this process is not happening fast enough. This section outlines bold policies that would accelerate finance's transition out of fossil fuels and deforestation, and effectively manage any resulting financial losses in a socially just way.

3.1

HITTING THE EMERGENCY BRAKES

A growing movement of civil society organisations is calling on finance departments, central banks,

and financial institutions to put an end to fossil fuel and deforestation finance. Once these sectors are no longer on the balance sheets of banks, the risks to governments in accelerating the transition reduce, and the risks in the capital markets of fossil fuel investments increase correspondingly.

The UK CCC's recent report *The Road to Net-Zero Finance* (Robins, 2020) recommended that the Treasury and the Bank of England make net-zero targets and plans mandatory for financial institutions. Assuming banks are not allowed to place excessive speculative faith in negative emissions technology, this requirement—which should also be extended to include 'no deforestation' targets—would gradually force them out of fossil fuels and other carbon-intensive activities.¹²

Ultimately, bringing fossil fuel and deforestation finance to a halt, however, will require global cooperation. A non-proliferation treaty signed by central banks, financial regulators, and financial institutions would be the most ambitious, direct, and effective way of achieving this goal. Certain institutions, such as the European Investment Bank,

have already committed to ending their fossil fuel financing (EIB, 2019), but these commitments will only have marginal effects unless they are made on a global scale in a coordinated way.

A non-proliferation treaty would have implications for central banks as well as private financial institutions. Central banks would have to exclude fossil fuel and deforestation assets from their own portfolios as well as their monetary policy operations (see Robins et al., 2021 for recent proposals on “net-zero central banking”). This would mean abandoning the ‘neutrality’ principle, which is already being challenged by senior central bankers including Christine Lagarde, President of the European Central Bank.

Increasingly, central banks are considering excluding environmentally harmful assets from monetary policy operations.¹³ For example, the Bank of England (2021) recently confirmed that it would incorporate climate considerations into its corporate bond purchase scheme, and the Banque de France published a report on aligning collateral policy with climate targets in December 2020 (Oustry et al., 2020). Implementing such policies would send a clear signal to the private sector that central banks will no longer support these assets.

Finance departments, central banks and financial institutions are starting to take steps away from fossil fuels and deforestation, but avoiding climate and ecological breakdown will require faster and more ambitious global cooperation. Of course, given the broad scope of a non-proliferation treaty, if it were to become a reality, it would render certain other proposals in this paper redundant, such as higher risk weights for fossil fuel exposures (Proposal 2).

PROPOSAL 6:

A financial non-proliferation treaty on fossil fuel and deforestation finance, signed by central banks and all regulated banking institutions

PROPOSAL 6 SURVEY RESULTS

Impact score (scale 1 to 5): 3.96

Feasibility score (scale -1 to 1): -0.3

Respondents displayed a degree of consensus on the potential impact of this ambitious proposal. One leading international economist claimed: *“the signaling effect of such a treaty or declaration would amplify the policy impact, shift market expectations and change behaviors.”* An independent regulatory advisor, while sceptical of the feasibility of this proposal, stated: *“Clarity about governments’ own behavior will be crucial for any other measure in finance regulation. A clear role model example such as a non-proliferation agreement by those that are serious about fighting climate emergency would be welcomed by the market.”*

For Sarah Dougherty—Senior Green Finance Manager at the Natural Resources Defense Council—concerns around feasibility of the proposal were limited to the USA. She argued *“this would be feasible in Europe and many other central banks, but would be very challenging for the Fed (USA) to frame it as stated”* as it would be difficult to justify this action under the Fed’s current mandate.

3.2

A 'BAD BANK' FOR BAD ASSETS

In the aftermath of financial crises, asset management companies (AMCs), also known as 'bad banks', can be used to purchase and manage non-performing loans from commercial banks. For example, multiple AMCs were set up in at least 12 European Union member states following the 2008 financial crisis to de-risk the balance sheets of banks and minimise financial instability (Gandrud and Hallerberg, 2014). AMCs are now being discussed in the context of managing non-performing loans resulting from the Covid crisis (Ainger, 2020).

AMCs could also help in the transition to a zero carbon economy, as carbon-intensive and ecologically destructive assets will become stranded and generate financial instability unless they are adequately managed (Semeniuk et al., 2021). At a recent Institute for International Finance climate summit, Larry Fink—CEO of BlackRock—proposed that companies should 'emulate' the bad bank model, creating separate entities to hold and wind down their dirtiest assets (Tett et al., 2021). Governments, with support from central banks and in consultation with financial institutions and civil society representatives, could set up networks of climate AMCs (CAMCs) to purchase environmentally harmful assets from banks and contribute towards ensuring a just transition. Van Gansbeke (2020b) outlines six purposes of a bad bank in this context, including keeping fossil fuels in the soil and safeguarding financial stability.

CAMCs would also push banks to build capacity in green finance. As risky assets are removed from balance sheets, banks will have to explore new lending opportunities aligned with climate commitments. This would require hiring the necessary expertise and putting in place the processes to seize these new opportunities.

To be effective, the structure of CAMCs would have to be different to traditional AMCs, which often aim to sell assets back to the market as stability returns (Cas and Peresa, 2016). The purpose of a CAMC, however, would be to permanently remove risky assets from the market. Combining the establishment of CAMCs with policies that restrict new investment in fossil fuels and deforestation would minimise any potential moral hazard concerns associated with CAMCs.

A key challenge related to CAMCs would be determining how losses are borne and accounted for. In the Eurozone, Eurostat rules determining whether AMC losses are added to national debt have interacted with fiscal rules to restrict the policy space of governments in setting up AMCs (Gandrud and Hallerberg, 2014). Given the purpose of CAMCs, and for them to help ensure a fair distribution of the costs of the zero carbon transition, they should be predominantly public, with costs taken on by national governments and any unequal effects redressed via fiscal policy.

However, varying levels of fiscal policy space in different countries will affect the degree to which effective public CAMCs are feasible. For example, while the US federal government would have the fiscal flexibility to take on significant losses from CAMCs, EU member states (under current fiscal rules and monetary arrangements) and low-income countries would not have the same degree of fiscal capacity. This also raises the question of international coordination and equivalence in the setting up of CAMCs. Given financial institutions frequently operate internationally, governments would have to agree how to manage international bad debts, and assess the impacts of any resulting cross-border financial flows.

Another key challenge in establishing CAMCs will be developing mechanisms that incentivise banks to agree to sell their relevant assets sooner rather than later. Traditional AMCs are usually set up in the aftermath of financial crises, once assets have

already gone bad. CAMCs, on the other hand, would be set up in anticipation of a crisis, so would require careful negotiation to be effective. For example, CAMCs could offer to purchase assets at relatively small discounts initially, and outline that every year the banks refuse to sell those assets, the discounts will get bigger. This would mean the longer banks hold on to their fossil fuel and other carbon-intensive assets, the less they would get for them.

While setting up CAMCs will be challenging, starting on this path now would help avoid large and sudden losses further down the line. CAMCs should be a key pillar of the careful financial planning required to make the zero-carbon transition successful and just.

Figure 1: Example of incentive structure for purchasing high carbon assets from banks

YEAR 1–3	YEAR 4–9	YEAR 10
Offer to purchase high carbon assets at a discount	Offer to purchase high carbon assets at a deep discount	Compulsory purchase of loans (at a very deep discount)

PROPOSAL 7:

National and regional central banks create a ‘bad bank’ to manage the legacy exposures to assets at high risk of being stranded by transition policies.

PROPOSAL 7 SURVEY RESULTS

Impact score (scale 1 to 5): 2.82

Feasibility score (scale -1 to 1): -0.3

Written responses to Proposal 7 displayed a wide range of perspectives. Multiple respondents expressed concerns about the costs of the low-carbon transition being shifted on to the public, rather than being borne by the private actors that have fuelled the climate crisis. Joshua Farley—Professor of Ecological Economics at the University of Vermont—stated: *“This policy is likely to receive considerable support from the banking sector [...]. It is feasible precisely because it socializes the risks of existing bad loans.”*

On the other hand, Angelique van Gerner—Corporate Strategy Advisor at Triodos Bank—explained she *“see[s] no other way to manage the systemic risk related to the transition”* but acknowledged that *“implementation must be carefully crafted.”* Xavier Lerin—Senior Banking Analyst at ShareAction—also provided a balanced assessment of the policy: *“The bad bank concept is interesting but we think it should be a last resort mechanism to limit financial instability. Implemented ex-ante, it could discourage banks from decarbonising portfolios in a timely manner.”*

Jacob Waslander—senior associate at the World Resources Institute—brought up the prospect that this could deflect from the risk of other investors taking up toxic assets which might displace the problems to other parts of the world: *“Bad banks could help avoid offloading of depreciated assets from developed markets to emerging/new frontier markets. One of my concerns is that [...some] investors seeking short-term returns may aim for fossil fuel assets sold by Western oil majors. In the end, these investors (and potentially through lobbying, the countries which these investors originate from) may delay the global transition to a net zero economy.”*

4. Greening Portfolios

As well as ending fossil fuel and deforestation finance, aligning bank lending with the Paris Agreement will require mechanisms that incentivise green lending. This section outlines how central banks can offer favourable conditions for banks that lend to green projects in the real economy.

4.1

A GREEN LIGHT FOR LENDING

.....

It is possible to specifically enhance the efforts of lenders to incentivise the decarbonisation of their portfolios. Credit enhancement (e.g. loan guarantees, co-lending, preferential lending rates) can be particularly useful for certain parts of the economy (for example, small and medium-sized businesses or social organisations) who need additional help to transition to net-zero. The greening of funding and refinancing facilities is a particularly promising way central banks could accelerate the transition.

Funding schemes and refinancing operations provide liquidity to the banking system. In recent years, many central banks have introduced new features or versions of these facilities to incentivise lending to the real economy, and SMEs in particular. The ECB introduced Targeted Long-Term Refinancing Operations (TLTROs) with a favourable interest rate for real economy lending, and targeted funding for lending schemes have grown in number since the start of the Covid-19 crisis. For example, the Bank of England announced the Term Funding Scheme with additional incentives for SMEs (TFSME), offering four-year funding at or very close to Bank Rate, and the Federal Reserve, the Reserve Bank of Australia, and the Saudi Arabian Monetary Authority among others have introduced similar schemes.

Funding and refinancing schemes should incorporate climate-related criteria to provide cheap funding for sustainable investments. Using these schemes, central banks have already recognised, and sought to address, commercial banks' insufficient lending to the real economy. Now, they must do the same for green lending. In the UK, 125 experts have backed this proposal (Fahnbulleh et al., 2020), and in Europe, a joint Positive Money EU

and Sustainable Finance Lab report (van't Klooster and van Tilburg, 2020) outlining the case for “Green TLTROs” has caught the favourable attention of European Central Bank President Christine Lagarde and ECB member of the Executive Board Isabel Schnabel. These proposals outline a key way central banks can support a green recovery, and reduce climate risks in doing so, thereby protecting financial stability in the long-run.

Central banks should consider, however, smaller banks and building societies that are not wholesale funded will not benefit from the greening of funding schemes. To not give larger banks an unfair advantage, central banks should ensure they have alternative mechanisms to provide smaller institutions with equivalent tangible incentives to lend to green projects.

PROPOSAL 8:

Create incentivised green wholesale lending, refinancing or credit enhancement facilities to accelerate the transition to net-zero.

PROPOSAL 8 SURVEY RESULTS

Impact score (scale 1 to 5): 3.54

Feasibility score (scale -1 to 1): 0.6

Angelique van Gerner—Corporate Strategy Advisor at Triodos Bank— expressed support for this proposal, arguing that *“non-sustainable industries have*

been supported by subsidies over many decades” and it is now time to *“adjust to where we need the growth in current times.”* Sarah Dougherty—Senior Green Finance Manager at the Natural Resources Defense Council—was also in favour of this proposal, stating: *“Green banks in particular have already been helping to speed up investment in new types of financial products. Scaling up this work could help speed up the adoption of clean energy financing and, thus, clean energy deployment rapidly.”* Fatima Pires—Deputy Director General of Macroeconomic Policy and Financial Stability at the European Central Bank—added that *“progress on data and taxonomies—in order to avoid greenwashing—are key developments that would need to be in lockstep if not leading.”*

Overall, however, respondents from academia, NGOs and civil society scored Proposal 8 as less impactful than respondents from the financial sector and regulatory community, which was reflected in their written feedback. Joshua Farley—Professor of Ecological Economics at the University of Vermont—expressed concern about the proposal benefiting financial institutions: *“The financial sector has tripled its share of GDP in recent decades, leading to an outsize political influence. Policies that reward good behavior help the sector retain its dominance, while policies that penalize bad behavior have the advantage of reducing its influence.”*

Katie Kedward—Policy Fellow at UCL’s Institute for Innovation and Public Purpose—proposed an alternative, more interventionist and potentially more impactful tool: *“Another option to consider is quantity-based mechanisms such as credit quotas. This has the advantage of being far more direct than price-based tools such as TLTROs because banks will be forced to seek out lending opportunities in order to meet requirements.”*

5. Regulating the Just Transition

5.1

LEAVING NO ONE BEHIND

Without the upsides of equity investment, bank lending generally is predicated on managing downside risks. Once an activity becomes too risky, banks manage their risk by stopping lending. If this were to happen regionally, for example, if a part of the world became too prone to floods or forest fires, businesses and assets in that region would become less insurable and lenders would pull out. These regional credit crunches are most likely to impact those least able to protect themselves, or to move elsewhere. Affected individuals are more likely to be from lower income groups and among the society's most vulnerable.

When assessing the full range of climate risks that can affect communities, it is not just the 'obvious' sectors that are exposed. Keen (2020) details the

flaws in the economic theories of William Nordhaus who claimed in 1991 that many sectors, including manufacturing, mining, transportation, communication, finance, insurance and non-coastal real estate, retail and wholesale trade, would remain unaffected by climate change. This seems self-evidently wrong today, not least because experience has shown industries can rarely adapt perfectly or instantly. Consequently, communities' economic viability is challenged severely, right at the time when banks restrict credit.

The Community Reinvestment Act (CRA) in the US was implemented to help reinvest in communities the conventional banking sector overlooked. It created a mechanism for banks to invest in Community Development Finance Institutions (CDFIs) who could work in hard-to-reach parts of the economy. Effective community development often needs innovative and complex financing. CDFIs have frequently been at the forefront of initiatives to address community needs for social enterprise that some banks have been less willing to explore.

As climate risks undermine community development and social cohesion, there are two lessons we can learn when considering an updated CRA 2.0 (in the US) or similar initiatives in other countries:

- Firstly, the need for place-based investment to promote resilience and a just transition in communities. The recently formed Place-Based Climate Action Network (PCAN) in the UK is exploring mechanisms to mobilise climate action investment from and into regions based on the *Banking the Just Transition in the UK* report (Robins et al., 2019).
- Secondly, in a similar way to community investment being overlooked by the mainstream financial sector, so too are some specialist areas of innovative finance required to unlock green and sustainable investment. Diversity in the financial system is not only required geographically; it can also be necessary in terms of specialisation. For example, it can accelerate investment into sectors where new business models may need to be developed rapidly, such as nature restoration, hydrogen and regenerative agriculture.

By calculating contributions from financial institutions based on their scale and the degree to which they are not currently addressing community development or climate change, investments could be made on a preferential basis into CDFIs, local/regional green banks or a new wave of 'Climate-solution Catalysing Finance Institutions' (CCFIs), enabling locally blended finance. Not only would this make a difference in allocating capital to support communities, but being revenue-neutral could be used with other public-finance instruments to leverage investment to accelerate progress and bolster community resilience.

Diversifying the types of finance available from specialist providers alongside conventional sources of finance including public funds would enable more locally applied blended finance to be developed.

Creating partnerships across institutions with different expertise and risk appetites may enable new business models to develop, scale up and flourish in a local context, thereby supporting a transition to a climate safe world that cares for all citizens.

PROPOSAL 9:

Introduce an updated Climate and Communities Reinvestment Act that redirects capital towards supporting community resilience and climate action through diverse networks of local and specialist financial institutions.

PROPOSAL 9 SURVEY RESULTS

Impact score (scale 1 to 5): 3.67

Feasibility score (scale -1 to 1): 0.3

Ivan Frishberg—Director of Impact Policy at Amalgamated Bank—expressed strong support for this proposal: *“The tab for resilience and adaptation is going to be staggering and it will need tools like this to mobilise the capital necessary to do the job.”* Equally, Lauren Compere—Managing Director of Boston Common Asset Management—commented on how this could foster a just transition: *“Reinventing CRA to include climate resilience could provide the focus we have long needed to address climate vulnerable communities which are predominately low-income and communities of color in the US.”*

A sustainable finance expert argued *“amending the existing CRA legislation to broaden the definitions to include climate is realistic and should be pursued”* but

warned that *“creating a new CRA for climate legislation seems to be a very hard hill to climb”* suggesting the pursuit of other policies first would be prudent.

Kurt Horne—Enterprise Risk Management Consultant at Vancity—focused again on the proposal’s impact on smaller institutions: *“This could be an important driver for larger financial institutions in making progress towards Paris-aligned emissions targets, but would need to be rightsized for smaller, and particularly geographically concentrated financial institutions.”*

5.2

CALL OF FIDUCIARY DUTY

.....

Fiduciary duties to act in the best interests of beneficiaries have required clarification in recent years. In the groundbreaking report *Fiduciary Duty in the 21st Century* (Sullivan et al., 2015), the responsibility for investors such as pension fund managers to incorporate ESG (including climate risk) factors in their investment decisions was explicitly recognised. Frameworks such as the TCFD have also encouraged greater disclosure.

However, what if we were to go a step further in defining the best interests of beneficiaries beyond optimal risk-adjusted returns? What if fiduciary responsibility was clarified to include the best interests of beneficiaries based on an informed interpretation of their financial and non-financial interests. Recent research by Schneider-Mayerson and Leong (2020) found that among 27–45 year olds in the US, 96.5% of respondents were ‘very’ or ‘extremely concerned’ about the well-being of their existing, expected, or hypothetical children in a climate-changed world. This was largely due to an overwhelmingly negative expectation of the future with climate change.

Fiduciary responsibility in pension savings is already being invoked in legal cases. Recently a major Australian pension fund settled with one of its fund holders, a 25-year old who argued they were not doing enough to manage the climate risks of his pensions (Pandey, 2020). When it comes to banking and bank savings, however, fiduciary responsibility rarely applies under the law, and when it does, it is often extremely vague. When individuals deposit money in a bank, they are trusting the bank to look after their money safely. If fiduciary responsibility applied to pension savings should ensure the integration of ESG risks, then why not of bank savings?

By extension, the concept of fiduciary responsibility could be broadened to include a responsibility for the long-term best interests of citizens, perhaps worded to take into account the wellbeing of future generations. The *Fiduciary Duty in the 21st Century* report mentioned above, has been hugely influential in catalysing the integration of ESG analysis for asset owners and asset managers. The next step being considered is the setting out of a “Legal Framework for Impact” (PRI, 2020) which incorporates the responsibility to consider sustainability impact (or the “inside-out” materiality) of financial decisions. If there was clarity about how this was to be applied to bank savings, then most citizens would be able to ask their banks to show them how they were considering and acting on sustainability impacts with their deposit funds. The consequences being there would be real liabilities for banks failing to take this into account.

PROPOSAL 10:

A global reset on the definition of 'fiduciary responsibility' based on a legal framework for impact to be enacted into law and applied to a broader set of financial relationships and institutions, including savings held in banks.

PROPOSAL 10 SURVEY RESULTS

Impact score (scale 1 to 5): **3.49**

Feasibility score (scale -1 to 1): **0.1**

Overall, respondents from academia, NGOs and civil society rated the potential impact of this proposal very highly, which was reflected in their written comments. J. Mijin Cha—Assistant Professor at Occidental College—powerfully stated: *"This begins to break the relentless drive toward quarterly profits and allow for longer time-horizons and*

longer-term planning, which would be better for the financial system, better for people, and better for the planet." Expressing a similar view, Tom Jess—Programme Manager at the Club of Rome—suggested *"this policy could have a significant impact, helping to redefine the purpose of banking to incorporate non-financial interests, empower citizens and help to avoid opting in to climate damage."*

Christina Herman—Program Director at the Interfaith Center on Corporate Responsibility—commented on the feasibility of the proposal, expressing an expectation of pushback from investors: *"Even with the new Administration in the US, it is unlikely that this would be accepted. Investors are still fighting off efforts by conservatives to de-legitimize a broader definition of fiduciary duty."*

Wojtek Kalinowski—Co-Director of the Veblen Institute—conveyed a degree of ambivalence, arguing the new definition of fiduciary responsibility would have to be sufficiently ambitious and binding to have an impact: *"This would be effective only if the new definition of fiduciary duty actually forces financial actors to renounce short-term gains in the name of ecological benefits. It won't help to just increase the transparency and let the investors choose by themselves."*

Summary of Results

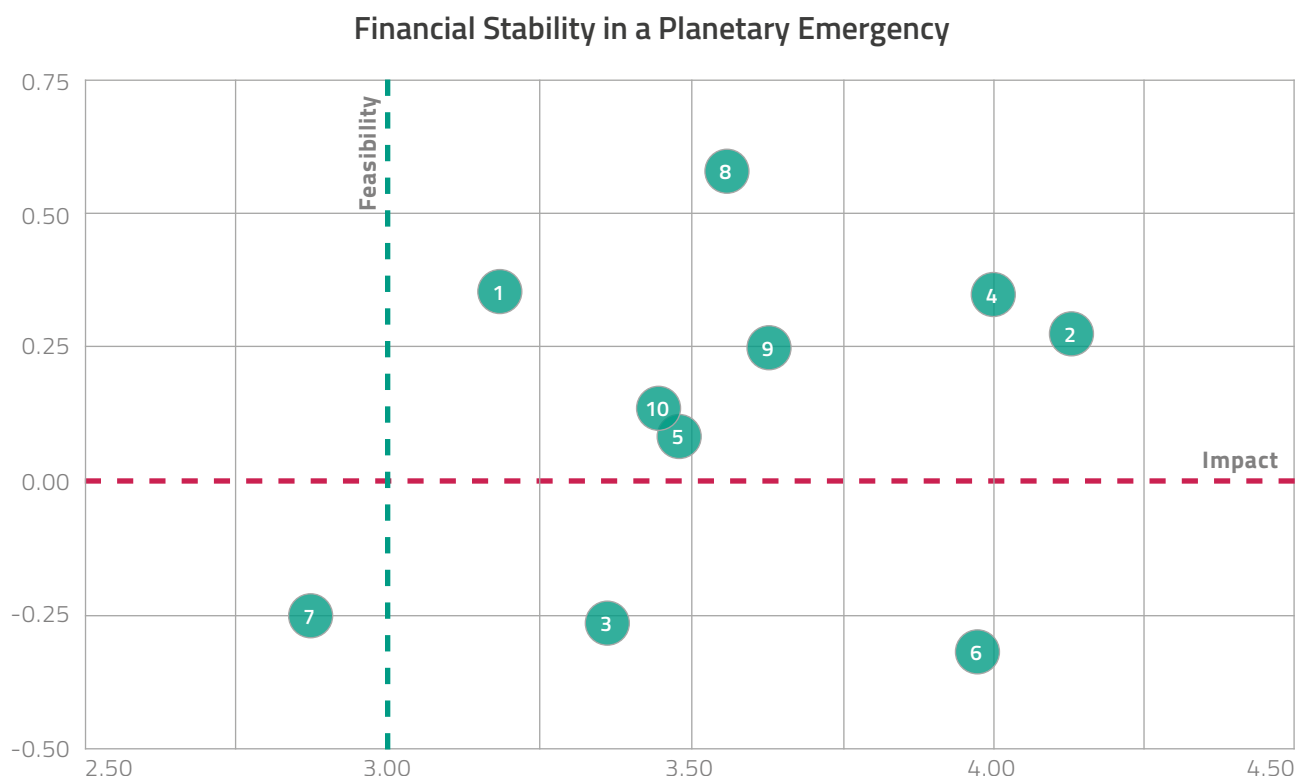
Table 2: Survey respondents categorised by sector

Academia	6	12%
NGO/ Civil Society/ Think Tank/ Consultants	19	38%
Banks & Banking organisations	15	30%
Central Banks/ MDB/ Regulators	5	10%
Institutional Investors	5	10%

Table 3: Survey respondents categorised by geographical region

Global	6	12%
US / Canada	18	36%
UK	11	22%
EU	15	30%

Figure 2: Map of survey results on impact and feasibility



Policy Proposal #1:

Crunch time for stress tests. Expand system-wide climate stress-testing exercises to include a scenario for the physical risks beyond 2050 and a scenario for the transition to net-zero by 2030.

Policy Proposal #2:

Get tougher on buffers. Adjust capital instruments to account for climate-related financial risks. This will limit exposure to carbon-intensive loans, build up capital buffers, and incentivise investment in lower-carbon sectors.

Policy Proposal #3:

Stuck in neutral: a 'polluter pays' principle for finance. Develop polluter-pays mechanisms for the financial sector that reflect contributions to higher levels of systemic risk from fossil fuel financing and allocate proceeds to deposit guarantee schemes and/or green projects.

Policy Proposal #4:

Policing the journey. Regulators set out a clear framework for what Paris and net-zero alignment mean in practice, and the consequences of falling short of expectations.

Policy Proposal #5:

From KYC to KYCO₂. Introduce mandatory KYCO₂ rules based on ID verification processes to ensure banks are collecting sufficient climate and environmental impact data from clients, particularly clients that have the greatest climate impact.

Policy Proposal #6:

Hitting the emergency brakes. A financial non-proliferation treaty on fossil fuel and deforestation finance, signed by central banks and all regulated banking institutions.

Policy Proposal #7:

A 'bad bank' for bad assets. National and regional central banks create a 'bad bank' to manage the legacy exposures to assets at high risk of being stranded by transition policies.

Policy Proposal #8:

A green light for lending. Create incentivised green wholesale lending, refinancing or credit enhancement facilities to accelerate the transition to net-zero.

Policy Proposal #9:

Leaving no one behind. Introduce an updated Climate and Communities Reinvestment Act that redirects capital towards supporting community resilience and climate action through diverse networks of local and specialist financial institutions.

Policy Proposal #10:

Call of fiduciary duty. A global reset on the definition of 'fiduciary responsibility' based on a legal framework for impact to be enacted into law and applied to a broader set of financial relationships and institutions, including savings held in banks.

Major differences between stakeholder categories:

Academia / NGO/ Civil Society groups, compared with Banks, Investors, Central Banks:

- found Proposal 4 less feasible
- found Proposal 6 less impactful
- found Proposal 8 less impactful
- found Proposal 10 more impactful

Table 4: Survey results for each proposal

Policy Proposal		Impact (scale 1 to 5)	Feasibility (scale -1 to +1)
#1:	Crunch time for stress tests	3.18	0.3
#2:	Get tougher on buffers	4.13	0.3
#3:	A 'polluter pays' principle for finance	3.35	-0.3
#4:	Policing the journey	4.00	0.3
#5:	From KYC to KYCO2	3.49	0.1
#6:	Hitting the emergency brakes	3.96	-0.3
#7:	A 'bad bank' for bad assets	2.82	-0.3
#8:	A green light for lending	3.54	0.6
#9:	Leaving no one behind	3.67	0.3
#10:	Call of fiduciary duty	3.49	0.1

Additional proposals from survey respondents:

We received several suggestions for additional proposals in the responses to our survey. We've listed a few notable ideas below:

- Many mentioned monetary policy, including central bank collateral frameworks and criteria for bond purchases. This was not directly in our paper's scope, which focused on the regulation of private finance flows in the banking sector, but monetary policy is clearly relevant to decarbonising the economy.
- Given the proportion of private finance flows outside the regulated banking sector ('shadow banking'), governmental mandates and jurisdictions of regulators could be widened to (re) regulate or broaden the scope of regulation for currently under-regulated firms.
- Within Basel banking rules, there are specific limitations on connected lending and large exposures. Given the common risk in high-GHG sectors, these sectors could be considered as connected, thereby giving rise to much firmer enforcement of existing large exposure limits.
- Rather than a binary system of charges on assets based on a classification system, 'concentration charges' could be applied to bank lending based on a client's 'GHG-emission intensity' (the higher the GHG-emission intensity, the higher the charge). This is a variant of Proposals 2 and 3 in this report. Banks could include new structures in their governance to incorporate the needs of future generations. For example, introducing a 'Future Generations Panel' representing the long-term interests (e.g. 25 years into the future) with veto/approval rights on relevant lending criteria, policies and strategies.
- Beyond KYCO₂ (Proposal 5), banks' due diligence requirements could be extended to all aspects of integrated social and environmental sustainability for clients. This could be linked to elevated due diligence requirements in relation to deforestation-linked lending but additionally for any SDG or broader social/environmental impact criteria.

Conclusion

Our findings demonstrate a consensus amongst a wide diversity of actors from across the financial system for climate finance proposals which are not currently being implemented. These represent opportunities to make a tangible impact on climate change and could be feasible to implement with the right level of preparation.

The most impactful feasible proposals (starting with the most impactful) were:

Proposal		Impact	Feasibility
#2:	Get tougher on buffers	4.13	0.3
#4:	Policing the journey	4.00	0.3
#9:	Leaving no one behind	3.67	0.3
#8:	A green light for lending	3.54	0.6
#5:	From KYC to KYCO2	3.49	0.1
#10:	Call of fiduciary duty	3.49	0.1
#1:	Crunch time for stress tests	3.18	0.3

The Climate Safe Lending Network, which sponsored this report, would like to extend the conversation about how these proposals can be refined, improved, and considered for implementation. We will be planning wider dialogues in the months leading up to COP26 in November 2021 as a first stage in this process. This process is just starting - so we would be very keen to hear from you if you are a stakeholder engaged in this field. In particular, we would like to engage the key decision makers in the process relating to each proposal as set out in the table overleaf:

Table 5: Where next for each policy proposal?

Policy Proposal		Which forums, organisations, or authorities are most suited to carry the policy forward
#1:	Crunch time for stress tests	Network for Greening the Financial System (NGFS) and their guidance to central banks on stress test scenarios.
#2:	Get tougher on buffers	NGFS, Central Banks, BIS and the Basel Committee; Potential to discuss the inclusion of science committees (e.g. the Climate Change Committee in the UK) to inform financial regulator guidance at a national level with governments.
#3:	A 'polluter pays' principle for finance	Coalition of Finance Ministers for Climate Action
#4:	Policing the journey	NGFS, the COP26 Finance Team and RacetoZero (UNFCCC) governance committees.
#5:	From KYC to KYCO2	The Taskforce for Climate-related Financial Disclosures (TCFD) committee
#6:	Hitting the emergency brakes	COP26 Presidency, G7, John Kerry's office
#7:	A 'bad bank' for bad assets	Finance and Environment Ministers at national government (and EU) level
#8:	A green light for lending	NGFS, MDBs, Finance ministries
#9:	Leaving no one behind	National government social, environmental and economic development departments.
#10:	Call of fiduciary duty	Legal advisors, national governments and policymakers.

Endnotes

1. Accordingly, transparency and accountability in central banking and financial regulation is essential to ensure democratic legitimacy as these institutions seek to align themselves and the financial systems they regulate with a climate-safe future (Macquarie et al., 2019).
2. Based on a lifetime of studying the management of common pool resources in communities across the globe, Nobel Laureate Elinor Ostrom devised 8 principles for managing the commons, including monitoring systems and graduated sanctions for rule violators (Ostrom, 2015). Efforts to develop rules and norms for shifting the financial system away from fossil fuels should take inspiration from Ostrom's pioneering work.
3. Speaking on biodiversity loss, Frank Elderson – executive board member of the European Central Bank – recently stated: “it is high time to go beyond climate: the world cannot afford to focus on climate change for the next decades and then turn its attention to biodiversity loss. By then there will be no biodiversity left to save” (Elderson, 2020).
4. The NGFS representative scenarios include an ‘orderly’ transition where net zero emissions are achieved by 2060 in a gradual manner, a ‘disorderly’ transition where climate action is delayed but then implemented in a stringent manner, and a ‘hot house world’ where climate action is not taken and warming exceeds 3 degrees C by 2070 (NGFS, 2020)
5. This lengthy time horizon has drawn criticism from some – including a number of Congressional Republicans in the US (Warmbrodt, 2020) – who claim that uncertainty about what will happen in the future minimises the usefulness of such an exercise. However, whilst there is uncertainty about specific events (e.g. exactly when and where major storms, fires and floods might break out, and how society might react to them) the overall direction from climate science and the IPCC forecasts is clear. It is also clear that climate emissions trapped in the atmosphere would continue warming the planet even after emissions have ceased (Frölicher et al., 2014).
6. Oddly, there is no clarity in the mandates of central banks around the timescale of the financial stability that they are meant to be protecting.
7. Bradshaw et al. (2021) suggest that this may be due to “the IPCC’s reliance on averages from several models and the language of political conservativeness inherent in policy recommendations seeking multinational consensus”.
8. Negative emissions technologies are untested at scale and present their own environmental and social threats, given the vast amount of land they would require in order to have a significant impact on atmospheric GHG concentrations. McLaren et al. (2019) propose that we should separate emissions reductions targets and negative emissions targets, rather than aiming for a single ‘net-zero’ target.
9. Increasing risk weights of high-carbon exposures is often referred to as a ‘penalising factor’ and decreasing them for green exposures as a ‘supporting factor’. To the extent that these policies are based on risk differentials, they could perhaps more suitably be referred to as ‘correcting factors’, as they simply account for the higher or lower risks of particular exposures.
10. While evidence is lacking on this issue, there are emerging signs that green loans are indeed less risky in certain sectors. For example, a Bank of England working paper (Guin and Korhonen, 2020) found that mortgages against energy-efficient properties in the UK are less frequently in payment arrears than mortgages against energy-inefficient properties. The Hungarian central bank, assuming that green housing loans are indeed less risky due to savings on energy bills and higher value of the homes in the future, has implemented a modest ‘green supporting factor’ in the housing sector, which accounts for 40% of the country’s carbon emissions (Fatin, 2020). This is expected to stimulate bank lending for the purchase and construction of energy efficient houses as well as retrofits on existing homes.
11. In late 2019, the Partnership for Biodiversity Accounting in Financials (PBAF) – voluntary biodiversity-accounting initiative – was initiated to support banks in understanding and reporting their biodiversity impacts, and in July 2020 a Taskforce for Nature-related Financial Risks was launched.
12. It is also essential that these emissions targets address not only CO₂, but greenhouse gas emissions as a whole.
13. Exclusion of certain assets from central banks’ non-policy portfolios is also starting to occur. For example, in January 2021 the French central bank announced a strengthening of its exclusion criteria for coal, oil, and gas (Banque de France, 2021).

References

- Ainger, J. (2020, October 10). EU May Weigh Creating a Network of Bad Banks. *Bloomberg*. <https://www.bloomberg.com/news/articles/2020-10-10/eu-weighs-creating-a-network-of-bad-banks-boersen-zeitung-says>
- Bailey, A. (2020, November 8). *The time to push ahead on tackling climate change—Speech by Andrew Bailey*. Bank of England. <http://www.bankofengland.co.uk/speech/2020/andrew-bailey-speech-corporation-of-london-green-horizon-summit>
- Bank of England. (2021, March 3). *MPC Remit statement and letter and FPC Remit letter*. Bank of England. <http://www.bankofengland.co.uk/news/2021/march/mpc-remit-statement-and-letter-and-fpc-remit-letter>
- Banque de France. (2021, January 18). *Politique d'investissement responsable: Renforcement des exclusions en matière d'énergies fossiles*. Banque de France. https://www.banque-france.fr/sites/default/files/medias/documents/cp_politique_dinvestissement_responsable.pdf
- Berry, C., Macfarlane, L., & Nanda, S. (2020). *Who Wins and Who Pays? Rentier Power and the Covid Crisis* (p. 42). IPPR Centre for Economic Justice. https://www.ippr.org/files/2020-05/1589291707_who-wins-and-who-pays-may20.pdf
- BIS. (2017). *High-level summary of Basel III reforms*(p. 16). BIS. https://www.bis.org/bcbs/publ/d424_hlsummary.pdf
- Bolton, P., Despres, M., Pereira da Silva, L. A., Samama, F., & Svartzman, R. (2020). *The green swan: Central banking and financial stability in the age of climate change*. Bank of International Settlements. <https://www.bis.org/publ/othp31.pdf>
- Boston Common Asset Management. (2019). *Banking on a Low-Carbon Future: Finance in a Time of Climate Crisis*[Impact Report]. Boston Common Asset Management. <http://news.bostoncommonasset.com/wp-content/uploads/2019/11/Banking-on-a-Low-Carbon-Future-2019-11.pdf>
- Bradshaw, C. J. A., Ehrlich, P. R., Beattie, A., Ceballos, G., Crist, E., Diamond, J., Dirzo, R., Ehrlich, A. H., Harte, J., Harte, M. E., Pyke, G., Raven, P. H., Ripple, W. J., Saltré, F., Turnbull, C., Wackernagel, M., & Blumstein, D. T. (2021). Underestimating the Challenges of Avoiding a Ghastly Future. *Frontiers in Conservation Science*, 1. <https://doi.org/10.3389/fcosc.2020.615419>
- Caldecott, B. (2020). *Achieving Alignment in Finance*(No. 1; Thought Leadership Series: Aligning Finance for the Net-Zero Economy: New Ideas from Leading Thinkers, p. 40). UNEP FI and Climate KIC. https://www.unepfi.org/wordpress/wp-content/uploads/2020/08/200915_J932-CKIC-UNEP-ThoughtLeadershipSeries-DrBenCaldecott-11.pdf
- Carleton, T., & Greenstone, M. (2021). Updating the United States Government's Social Cost of Carbon. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3764255>
- Cas, S. M., & Peresa, I. (2016). *What Makes a Good Bad Bank ? The Irish, Spanish and German Experience*(European Economy Discussion Papers, p. 48). European Commission. https://ec.europa.eu/info/sites/info/files/dp036_en.pdf
- Ceres. (2020). *Financing a Net-Zero Economy: Measuring and Addressing Climate Risk for Banks*. Ceres. <https://www.ceres.org/resources/reports/financing-net-zero-economy-measuring-and-addressing-climate-risk-banks>
- Chenet, H., Ryan-Collins, J., & van Lerven, F. (2021). Finance, climate-change and radical uncertainty: Towards a precautionary approach to financial policy. *Ecological Economics*, 183, 106957. <https://doi.org/10.1016/j.ecolecon.2021.106957>
- ClientEarth. (2020, October). *Our principles for Paris-aligned business plans*. ClientEarth. <https://www.clientearth.org/latest/latest-updates/news/our-principles-for-paris-aligned-business-plans>
- Climate Reality Check. (2020). *Climate Reality Check 2020*. Climate Reality Check. <https://www.climateRealitycheck.net>
- Matthews, H.Damon, Tokarska, K.B., Rogelj, J. et al. (2021) An integrated approach to quantifying uncertainties in the remaining carbon budget. *Commun Earth Environ* 2, 7. <https://doi.org/10.1038/s43247-020-00064-9>
- Dikau, S., Robins, N., & Volz, U. (2020). *A Toolbox of Sustainable Crisis Response Measure for Central Banks and Supervisors, Second Edition: Lessons from Practice* [INSPIRE Briefing Paper]. Grantham Institute on Climate Change and the Environment, London School of Economics and Political Science and SOAS Centre for Sustainable Finance. https://www.lse.ac.uk/granthaminstitute/wp-content/uploads/2020/11/INSPIRE-toolbox_-_2nd-Edition-1.pdf

- Dikau, S., & Volz, U. (2020). *Central bank mandates, sustainability objectives and the promotion of green finance*(SOAS Department of Economics Working Paper No. 232). SOAS University of London. <https://linkinghub.elsevier.com/retrieve/pii/S092180092100080X>
- D'Orazio, P., Popoyan, L., & Monnin, P. (2019, February 13). Prudential Regulation Can Help in Tackling Climate Change. *Council on Economic Policies*. <https://www.cepweb.org/prudential-regulation-can-help-in-tackling-climate-change/>
- EIB. (2019). *EU Bank launches ambitious new climate strategy and Energy Lending Policy*. European Investment Bank. <https://www.eib.org/en/press/all/2019-313-eu-bank-launches-ambitious-new-climate-strategy-and-energy-lending-policy>
- Elderson, F. (2020). *Climate Finance: Towards carbon neutrality by 2050*. One Planet Summit. <https://www.bis.org/review/r201218k.pdf>
- Fahnbulleh, M., Boait, F., Mazzucato, M., Roubini, N., Buiter, W. H., Varoufakis, Y., Kelton, S., Tooze, A., McKibben, B., Raworth, K., Mitchell, W., Pettifor, A., Keen, S., Jackson, T., Volz, U., Watts, B., Gabor, D., Dodd, N., Hickel, J. et al. (2020, November 16). *Response to the Chancellor on ambition for future of UK financial services*. <https://positivemoney.org/wp-content/uploads/2020/11/PUB-Letter-to-Chancellor-on-green-finance.pdf>
- Fatin, L. (2020, January 7). How the Hungarian Central Bank could help solve the energy efficiency puzzle: MNB goes for green on housing loans. *Climate Bonds Initiative*. <https://www.climatebonds.net/2020/01/how-hungarian-central-bank-could-help-solve-energy-efficiency-puzzle-mnb-goes-green-housing>
- Frölicher, T. L., Winton, M., & Sarmiento, J. L. (2014). Continued global warming after CO₂ emissions stoppage. *Nature Climate Change*, 4(1), 40–44. <https://doi.org/10.1038/nclimate2060>
- Gandrud, C., & Hallerberg, M. (2014). *Bad banks in the EU: The impact of Eurostat rules* (Working Paper No. 2014/15). Bruegel Working Paper. <https://www.econstor.eu/handle/10419/126729>
- Global Resource Initiative. (2020). *Global Resource Initiative: Final Recommendations Report*. DEFRA. https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/876465/gri-taskforce-executive-summary.pdf
- Global Witness. (2019). *Money to Burn: How iconic banks and investors fund destruction of rainforests*. Global Witness. <https://en/campaigns/forests/money-to-burn-how-iconic-banks-and-investors-fund-the-destruction-of-the-worlds-largest-rainforests/>
- Global Witness, BankTrack, Amazon Watch, Australasian Centre for Corporate Responsibility, Centre for Research on Multinational Corporations, Feedback, Fern, & Finance for Biodiversity et al. (2020). *Open letter: Don't leave finance out of a future law on imported deforestation*. Global Witness. <https://www.globalwitness.org/en/press-releases/open-letter-dont-leave-finance-out-future-law-imported-deforestation/>
- Goodell, J. (2020, December 7). How Climate Change is Ushering in a New Pandemic Era. *Rolling Stone*. <https://www.rollingstone.com/culture/culture-features/climate-change-risks-infectious-diseases-covid-19-ebola-dengue-1098923/>
- Guin, B., & Korhonen, P. (2020). *Does Energy Efficiency Predict Mortgage Performance?*(Staff Working Paper No. 852). Bank of England. <https://www.ssrn.com/abstract=3532373>
- Henig, R. M. (2020, April 9). *Experts warned of a pandemic decades ago. Why weren't we ready?* National Geographic. <https://www.nationalgeographic.co.uk/science-and-technology/2020/04/experts-warned-of-pandemic-decades-ago-why-werent-we-ready>
- Hepburn, C., O'Callaghan, B., Stern, N., Stiglitz, J., & Zenghelis, D. (2020). Will Covid-19 fiscal recovery packages accelerate or retard progress on climate change? *Oxford Review of Economic Policy*, 36(Supplement_1), S359–S381. <https://doi.org/10.1093/oxrep/graa015>
- HM Treasury. (2020, November 9). *Chancellor sets out ambition for future of UK financial services*. GOV.UK. <https://www.gov.uk/government/news/chancellor-sets-out-ambition-for-future-of-uk-financial-services>
- Ioualalen, R., & Schreiber, P. (2021). *NGFS Scenarios: Guiding finance towards climate ambition or climate failure?* Reclaim Finance and Oil Change International. <https://reclaimfinance.org/site/wp-content/uploads/2021/02/NGFS-scenarios-final.pdf>
- Jackson, T. (2019). *Zero Carbon Sooner: The case for an early zero carbon target in the UK*(p. 12) [CUSP working paper]. Centre for Understanding Sustainable Prosperity. <https://www.cusp.ac.uk/wp-content/uploads/WP18—Zero-carbon-sooner.pdf>
- Kedward, K., Ryan-Collins, J., & Chenet, H. (2020). *Managing Nature-Related Financial Risks: A Precautionary Policy Approach for Central Banks and Financial Supervisors*. UCL Institute for Innovation and Public Purpose. <https://www.ssrn.com/abstract=3726637>
- Keen, S. (2020). The appallingly bad neoclassical economics of climate change. *Globalizations*. <https://www.tandfonline.com/doi/full/10.1080/14747731.2020.1807856?journalCode=rglo20>

- Kirsch, A., Opara Disterhoft, J., Marr, G., McCully, P., Gürsöz, A., Aitken, G., Hamlett, C., Saldamando, A., Louvel, Y., Pinson, L., Cushing, B., Brown, G., & Lorne, S. (2020). *Banking on Climate Change: Fossil Fuel Finance Report 2020*[Fossil Fuel Finance Report]. Rainforest Action Network. https://www.ran.org/wp-content/uploads/2020/03/Banking_on_Climate_Change_2020_vF.pdf
- Krogstrup, S., & Oman, W. (2019). *Macroeconomic and Financial Policies for Climate Change Mitigation: A Review of the Literature*(Working Paper WP/10/185). International Monetary Fund.
- Macquarie, R., Boait, F., & Clarke, D. (2019). *Seeking Legitimacy: A new settlement for the Bank of England*. Positive Money. <http://positivemoney.org/wp-content/uploads/2019/10/Positive-Money-Seeking-Legitimacy.pdf>
- McKinsey (2020). *Global Banking Annual Review 2020: A test of resilience*. <https://www.mckinsey.com/industries/financial-services/our-insights/global-banking-annual-review>
- McLaren, D. P., Tyfield, D. P., Willis, R., Szerszynski, B., & Markusson, N. O. (2019). Beyond "Net-Zero": A Case for Separate Targets for Emissions Reduction and Negative Emissions. *Frontiers in Climate*, 1. <https://doi.org/10.3389/fclim.2019.00004>
- Munir, M. (2013). *History and Evolution of the Polluter Pays Principle: How an Economic Idea Became a Legal Principle*(SSRN Scholarly Paper ID 2322485). Social Science Research Network. <https://doi.org/10.2139/ssrn.2322485>
- New Zealand Government. (2020, September 15). *New Zealand first in the world to require climate risk reporting*. The Beehive. <http://www.beehive.govt.nz/release/new-zealand-first-world-require-climate-risk-reporting>
- NGFS. (2020). *Guide to climate scenario analysis for central banks and supervisors*. Network for Greening the Financial System. https://www.ngfs.net/sites/default/files/medias/documents/ngfs_guide_scenario_analysis_final.pdf
- Ostrom, E. (2015). *Governing the Commons: The Evolution of Institutions for Collective Action*. Cambridge University Press. <https://doi.org/10.1017/CBO9781316423936>
- Oustry, A., Erkan, B., Svartzman, R., & Weber, P.-F. (2020). *Climate-related Risks and Central Banks' Collateral Policy: A Methodological Experiment*(Working Paper No. 790). Banque de France. <https://www.banque-france.fr/sites/default/files/wp790.pdf>
- Pandey, S. (2020, November 2). Australian pension fund settles landmark climate lawsuit. *Reuters*. <https://www.reuters.com/article/us-australia-climatechange-pensions-laws-idUKKBN27I0DT>
- Philipponnat, T. (2020). *Breaking the climate-finance doom loop: How banking prudential regulation can tackle the link between climate change and financial instability*(p. 44). Finance Watch. https://www.finance-watch.org/wp-content/uploads/2020/06/Breaking-the-climate-finance-doom-loop_Finance-Watch-report.pdf
- PRI. (2020). *A legal framework for impact*. PRI. <https://www.unpri.org/policy/a-legal-framework-for-impact>
- Reclaim Finance. (2020, December 15). EU Taxonomy: 130 organisations call for science-based green finance rules. *Reclaim Finance*. <https://reclaimfinance.org/site/en/2020/12/15/eu-taxonomy-130-organisations-science-green-finance/>
- Reinders, H. J., Schoenmaker, D., & Van Dijk, M. A. (2020). *A Finance Approach to Climate Stress Testing*(SSRN Scholarly Paper ID 3573107). Social Science Research Network. <https://doi.org/10.2139/ssrn.3573107>
- Robins, N. (2020). *The Road to Net-Zero Finance*. Climate Change Committee. <https://www.theccc.org.uk/wp-content/uploads/2020/12/Finance-Advisory-Group-Report-The-Road-to-Net-Zero-Finance.pdf>
- Ryan, S. J., Carlson, C. J., Mordecai, E. A., & Johnson, L. R. (2019). Global expansion and redistribution of Aedes-borne virus transmission risk with climate change. *PLOS Neglected Tropical Diseases*, 13(3), e0007213. <https://doi.org/10.1371/journal.pntd.0007213>
- Schneider-Mayerson, M., & Leong, K. L. (2020). Eco-reproductive concerns in the age of climate change. *Climatic Change*, 163, 1007–1023. <https://link.springer.com/article/10.1007/s10584-020-02923-y>
- Schreiber, P., & Pinson, L. (2020). *Behind the Curtains: When the gas and nuclear lobbies reshape the EU sustainable taxonomy*(p. 7). Reclaim Finance. <https://reclaimfinance.org/site/wp-content/uploads/2020/08/Reclaim-Finance-Media-Briefing-EU-Sustainable-Taxonomy-1.pdf>
- Settele, J., Diaz, S., Brondizio, E., & Daszak. (2020, April 22). Covid-19 Stimulus Measures Must Save Lives, Protect Livelihoods, and Safeguard Nature to Reduce the Risk of Future Pandemics. *IPBES*. <http://ipbes.net/covid19stimulus>
- Srinivas, V., Wadhvani, R., Ramsay, T., Jain, A., & Singh, Y. (2019). *2019 Banking and Capital Markets Outlook: Reimagining Transformation* (Banking and Capital Markets Outlook). Deloitte Center for Financial Services. <https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Financial-Services/gx-fsi-dcfs-2019-banking-cap-markets-outlook.pdf>
- Sullivan, R., Martindale, W., Feller, E., & Bordon, A. (2015). *Fiduciary Duty in the 21st Century*. UNEP Inquiry. <http://www.ssrn.com/abstract=2724866>

- Sweatman, P., & Hessenius, M. (2020). *Applying the EU Taxonomy: Lessons from the Front Line*. Climate & Strategy Partners. https://www.climatestrategy.com/en/information_15.php
- Tett, G., Nauman, B., Temple-West, P., & Edgecliffe-Johnson, A. (2021, February 24). *BlackRock's Fink proposes a 'bad bank' model for fossil fuels*. <https://www.ft.com/content/9a2f12ca-8b26-43f7-a2b3-9327b277c490>
- Vaccaro, J. (2020). *Taking the Carbon out of Credit: An integrated approach to removing climate emissions from lending*. Climate Safe Lending Network. <https://static1.squarespace.com/static/5e0a586857ea746075c561a3/t/5f15c0bdae159535431280f9/1595261122282/Taking+the+Carbon+Out+of+Credit.pdf>
- Van Gansbeke, F. (2020a). Climate Change And Debt Capital Allocation. *Forbes*. <https://www.forbes.com/sites/frankvangansbeke/2020/07/31/climate-change-and-debt-capital-allocation/?sh=156a771a4754>
- Van Gansbeke, F. (2020b). Climate Change, CFTC, CBDC, And Federal Reserve Bank Audacity. *Forbes*. <https://www.forbes.com/sites/frankvangansbeke/2020/09/16/climate-change-cftc-cbdc-and-federal-reserve-bank-audacity/?sh=74773b3620d8>
- van Toor, J., Piljic, D., Schellekens, G., van Oorschot, M., & Kok, M. (2020). *Indebted to nature: Exploring biodiversity risks for the Dutch financial sector*. De Nederlandsche Bank. https://www.dnb.nl/en/binaries/Indebted%20to%20nature%20_tcm47-389172.pdf
- van't Klooster, J., & van Tilburg, R. (2020). *Targeting a Sustainable Recovery with Green TLTROs*. Positive Money EU. <http://www.positivemoney.eu/wp-content/uploads/2020/09/Green-TLTROs.pdf>
- Vidal, J. (2020). "Tip of the iceberg": Is our destruction of nature responsible for Covid-19? *The Guardian*. <https://www.theguardian.com/environment/2020/mar/18/tip-of-the-iceberg-is-our-destruction-of-nature-responsible-for-covid-19-aoe>
- Warmbrodt, Z. (2020). *Republicans warn Powell about Fed plans for climate regulation*. POLITICO. <https://www.politico.com/news/2020/12/10/republicans-federal-reserve-climate-regulation-444194>
- Waygood, S. (2020, April). Guest Viewpoint: Steve Waygood. *IPE*. <https://www.ipe.com/home/guest-viewpoint-steve-waygood/10044453.article>
- WWF. (2020). *Living Planet Report 2020: Bending the Curve of Biodiversity Loss*(Living Planet Report). <http://www.deslibris.ca/ID/10104983>
- Youel, S. (2020, November 2). *Banks have done little to help the country through the pandemic, so why is the government rewarding them?* The Independent. <https://www.independent.co.uk/news/business/banks-coronavirus-government-support-profit-b1529540.html>

LIST OF CONSULTATION RESPONDEES:

ABN Amro Bank	Damo Menon	ShareAction
Altiolem	Democracy Collaborative	South West Mutual
Amalgamated Bank	Earth Capital	Triodos Bank
Anna Fielding	European Central Bank	University College London
Bank of England	Finance Innovation Lab	Institute for Innovation & Public Purpose
BankFWD	Finance Watch	UK Sustainable Investment & Finance Association (UKSIF)
Baringa Partners	Interfaith Center on Corporate Responsibility (ICCR)	University of Vermont
BBVA (Banco Bilbao Vizcaya Argentaria)	Ideas42	Vancity
Belmont Green Finance Limited	Main Street Launch	Veblen Institute
Big Society Capital	Natural Resources Defense Council, Inc. (NRDC)	World Resources Institute (WRI)
Boston Common Asset Management	Occidental College	WWF
Club of Rome	Piraeus Bank	
Confluence Philanthropy	Reclaim Finance	

ANONYMISED PARTICIPANTS:

Bank, UK	Philanthropic Organisation, UK	Regulatory Expert, Europe
Bank, USA	Philanthropic Organisation, Europe	Academic, Europe
Bank, Western Europe		Regulatory Authority, UK
Bank, Eastern Europe	Impact Investor, USA	



OUR GOAL: BY 2025, BANK LENDING IS CONSISTENT WITH A 1.5-DEGREE CELSIUS SCENARIO ALIGNMENT TO THE PARIS CLIMATE AGREEMENT WITH NET ZERO (SCOPE 1–3) CLIMATE IMPACT REACHED BEFORE 2050.

We started the [Climate Safe Lending Network](#) to help lending institutions collaborate with each other and other parts of the broader financial system—including investors, clients, regulators, policymakers, academics, and NGOs—to accelerate the global shift to a climate-safe world. Aligning flows of lending from banks and non-banks with the transition to a net-zero economy, on a timeline that helps us avoid the most severe destruction from climate change, requires rapid progress from across the financial sector. It is not enough to understand the science or methodologies for assessment—making an impact in the real economy will take implementing critical strategies, organizational processes, and deep culture changes.

The [Climate Safe Policy Initiative](#) is influencing policy to help meet the Climate Safe Lending Network’s goal of aligning bank lending with the Paris Climate Agreement. A particular focus of our work is identifying ways that climate change can be integrated into the policies and operations of Banking Regulators and Central Banks.

The [Climate Safe Learning Lab](#) supports banking professionals who are leading the climate finance agenda within their institutions and creates spaces for peer-to-peer learning, solution development and action planning. Together with banking professionals, the Climate Safe Learning Lab explores the organizational, behavioural and cultural changes banking professionals must influence internally in order for climate finance strategies to embed in business as usual as well as the personal leadership dimension of driving the transition to a low-carbon economy from within a financial institution.

Fran Boait

Positive Money

Alisa Gravitz

Green America

Leslie Harroun

The Democracy Collaborative

Lauren Compere

Boston Common
Asset Management

Jesse Griffiths

The Finance Innovation Lab

Tjeerd Krumpelman

ABN-AMRO Bank, N.V.

Ivan Frishberg

Amalgamated Bank

Membership of the Climate Safe Lending Network is open to individuals from banks, regulators, NGOs, think tanks, investors or other stakeholder groups connected to the issue of climate safe lending and the transition to a Paris-aligned net zero economy. Participants actively engage in initiative groups and constructive multi-stakeholder dialogues across the network to accelerate progress towards our goal. For more information contact us at connect@climatesafelending.org



About EIT Climate-KIC

EIT Climate-KIC is Europe's largest climate innovation initiative, leveraging the power of innovation in pursuit of a zero-carbon, climate-resilient, just, and inclusive society. Established in 2010 and headquartered in Amsterdam, EIT Climate-KIC orchestrates a community of more than 400 organisations including large corporations and SMEs, municipal and regional governments, universities and research institutes, as well as non-governmental organisations and uncommon actors. The organisation uses a portfolio approach for developing and deploying innovation to achieve systemic change in those human systems that matter for long-term prosperity, combining activities and innovation outputs from applied research, education, start-up incubation, and innovation ecosystem building. EIT Climate-KIC is supported by the European Institute of Innovation and Technology (EIT), a body of the European Union.

climate-kic.org



About UNEP FI

United Nations Environment Programme Finance Initiative (UNEP FI) is a partnership between UNEP and the global financial sector to mobilize private sector finance for sustainable development. UNEP FI works with more than 350 members—banks, insurers, and investors—and over 100 supporting institutions—to help create a financial sector that serves people and planet while delivering positive impacts. We aim to inspire, inform and enable financial institutions to improve people's quality of life without compromising that of future generations. By leveraging the UN's role, UNEP FI accelerates sustainable finance.

unepfi.org