

STABILITY AND SUSTAINABILITY IN BANKING REFORM

Are environmental risks missing in Basel III?



**UNIVERSITY OF
CAMBRIDGE**
INSTITUTE FOR
SUSTAINABILITY LEADERSHIP

in association with



UNEP Finance Initiative
Changing finance, financing change

Abstract

This report aims to trigger a deeper reflection amongst financial policymakers and regulators concerning the relevance of systemic environmental risks to banking sector stability. Recent history demonstrates linkages between risks arising both from the environment itself (e.g. extreme weather events) and from humanity's management of environmental resources (e.g. soil quality) and banking instability. Evidence suggests this trend will become more pronounced and complex as humanity breaches more planetary boundaries.

However, international banking regulation (i.e. the Basel Capital Accord or 'Basel III') does not address the financial stability risks associated with systemic environmental risks. Nevertheless, a group of countries including Brazil, China and Peru, along with their banking industries, have adopted regulatory and governance practices to address systemic environmental risks. The Basel Committee should learn more from their experiences and consider reforms to the Basel III Pillar 2 Supervisory Review framework and the Pillar 3 Market Discipline framework that would involve recognising systemic environmental risks as material risks that potentially threaten banking stability.

In addition to Basel III, certain financial policies should be considered. Central bank monetary policy measures could enhance the provision of bank credit to environmentally sustainable economic activity. Also, the role of financial innovation should be considered as it relates to an array of credit risk transfer instruments that can be used to enhance the amount and quality of funding available for environmentally sustainable economic activity. Finally, financial policy and regulation should be aligned with environmental policy and regulation and coordinated so that the objectives and understanding of each area of expertise can be shared between the relevant agencies. This would create synergies for policy development and regulatory practices and standards.

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The opinions expressed in this report are the author's own and do not represent an official position of CISL, the BEI or UNEP, or of any of their individual members.

Copies

This full document can be downloaded in English, and its Executive Briefing in a range of different languages, from the CISL and UNEP FI websites: www.cisl.cam.ac.uk & www.unepfi.org.

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Foreword – The Banking Environment Initiative and Cambridge Institute for Sustainability Leadership

The Banking Environment Initiative (BEI) was founded by a group of leading bank Chief Executives in 2010 and is convened by the University of Cambridge Institute for Sustainability Leadership (CISL). It was formed out of the belief that a fresh approach was needed by banks to help support socially and environmentally sustainable economic activity.

The BEI's initial focus has been threefold: first, developing customer partnerships to re-align banks' goals with those of the real economy; second, driving industry-level consensus on standards to accelerate what banks can do individually, and third, supporting innovation in products and services to stimulate the market through commercially viable action.

With the help of CISL's networks of corporate leaders and its ability to drive learning and change across diverse groups, the BEI has demonstrated how this model can be applied to financing activities that support commodity supply chains. The BEI's 'Soft Commodities' Compact with the Consumer Goods Forum is triggering an evolution in how banks and their corporate customers, through trade finance product and services, direct capital towards sustainable practices in agricultural supply chains.

However, we have always known that it takes more than strong corporate leadership to change practices at an industry level; those who set the rules that govern the system also have a role.

Since the financial crisis of 2008, we have witnessed some regulators, especially in the faster-growth economies, concluding that

financial stability may not only emanate from within the financial system itself. As was powerfully demonstrated at the China-focused BEI Forum 2014 in Hong Kong, some countries are already acting on their view that systemic environmental risks can also affect stability.

In anticipation that momentum behind this trend would only build – as well as the simple fact that some of the emerging economies where this thinking is already further progressed will be increasingly influential on the global stage – the BEI decided, on behalf of its members, to initiate an independent process to look at these issues and how regulators around the world are addressing them. We were delighted that Professor Kern Alexander, a CISL Fellow and Chair in Law and Finance at the University of Zurich, agreed to lead the study. We were also very pleased that UNEP FI, with its unique perspective at the interface between governments and the finance sector, also recognised the value of this inquiry and decided to co-commission the work with us.

This study assesses the links between systemic environmental risks and financial stability and offers insights into how some members of the Basel Committee are already acting on such links. Building on this leadership at a national level, the focus then turns to how such approaches might be harmonised internationally.

As the report itself says, this is a study that clearly has profound implications. Further analysis will certainly be required to assess the feasibility of implementing its various recommendations and we look forward to playing an active role in that debate.



A handwritten signature in black ink that reads "Polly Courtice".

Polly Courtice LVO
Director, University of Cambridge Institute
for Sustainability Leadership (CISL)



A handwritten signature in black ink that reads "Jeremy Wilson".

Jeremy Wilson
Chair – Banking Environment Initiative
(BEI) Working Group

Foreword – United Nations Environment Programme – Finance Initiative

While the global economy continues to be affected by the profound financial crisis of 2008, the world faces the twin challenges of dealing with the consequences of climate change and an unsustainable path for economic growth.

These trends are not unrelated and, since its inception in 1992, UNEP Finance Initiative (UNEP FI) has been a firm believer in the role of the finance sector in setting a new course towards a greener economic model.

UNEP FI, the UN's unique and dedicated finance and sustainability partnership, was initiated by a pioneering group of commercial banks and now counts a strong, international banking membership that coalesced in 2010 as the Initiative's Banking Commission.

The Banking Commission has pursued an agenda with a strong focus on catalytic action on the ground - it has supported, and continues to support, many of the country frameworks on sustainable finance alluded to in this report.

UNEP FI's Position Paper at Rio+20 and the subsequent holding of its Global Roundtable in Beijing in 2013 with a focus on policy and regulation have been instrumental in bringing this topic to an international audience.

Professor Alexander's report is the natural and necessary next step in exploring the role that financial – and in particular banking – regulation can play in the transition to a green economy.

Not only does this report provide clarity on the links between environmental sustainability and economic stability; clarity that is needed to establish the pertinence of addressing environmental risk in banking regulation. It also shows that in today's world, practitioners and their regulators can be found to be willing to engage constructively in the global policy debate on how to build 'the future we want'.

Indeed, while a banking regulatory regime which is cogniscent of environmental challenges and which as a consequence provides appropriate guidance to banks is important, of greater importance still is the emergence of a robust and continuous dialogue between financial and environmental policy-makers. The changes required will not be possible without greater policy coherence and cohesion between these two constituencies.

We are proud to have partnered with the BEI and CISL for this first research piece on international financial regulation and environmental risks, harnessing the full power of Cambridge's academic excellence. Professor Alexander's paper is intended to provoke debate, and it is our aspiration that the content, the conclusions and the recommendations will serve to inspire the financial policy community to a new way of thinking about the interdependence of finance and sustainability. We look forward to participating in the engagement which will follow, and in the further research and analysis which will contribute to this dialogue.



Charles Anderson.

Charles Anderson
Head, UNEP FI Secretariat



Dag Arne Kristensen

Dag Arne Kristensen
Chair, UNEP FI Banking Commission

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This report was made possible by a partnership between the Banking Environment Initiative (BEI), which is convened by CISL, and UNEP FI's Banking Commission, with additional support from Bloomberg LP.

The principal investigator and lead author of the report was Professor Kern Alexander, Faculty of Law, University of Zurich and CISL Fellow. Professor Alexander led a research team at the University of Zurich that included Thomas Strahm and Alexandra Balmer.

The study design and editorial process were led by Andrew Voysey (Director – Finance Sector Platforms, CISL), Dr Jake Reynolds (Director – Business Platforms, CISL) and Careen Abb (Banking Commission Coordinator, UNEP FI). Rosie Jennings (CISL) managed the production process.

The study was further supported by the valuable guidance of an Advisory Group made up of BEI and UNEP FI members.



Executive briefing

The role of the financial system in the economy and broader society is to provide the necessary financing and liquidity for human and economic activity to thrive – not only today but also tomorrow. In other words, its role is to fund a stable and sustainable economy. The role of financial regulators is to ensure that excessive risks that would threaten the stability of the financial system – and hence imperil the stability and sustainability of the economy – are not taken.

In the wake of the 2007-08 financial crisis, an extensive reform of banking regulation was initiated to “generate strong, sustainable and balanced global growth”. At the same time, the Earth’s planetary boundaries – defined as thresholds that, if crossed, could generate unacceptable environmental changes for humanity – are under increasing stress and represent a source of increasing cost to the global economy. Experts argue that such ‘systemic environmental risks’ may be amongst the biggest risks that humanity faces today. This study analyses whether the Basel Capital Accord (‘Basel III’) adequately addresses systemic environmental risks in the context of its overriding objective of banking stability.

Core Findings

The analysis presented in this report suggests that the regulatory framework that governs today’s banking system may not be being used to its full capacity; with some notable exceptions, systemic environmental risks appear to be in the collective blind spot of bank supervisors.

Despite the fact that history demonstrates direct and indirect links between systemic environmental risks and banking sector stability and that evidence suggests this trend will become more pronounced and complex as humanity breaches more planetary boundaries, the current Basel Capital Accord does not take explicit account of, and therefore only marginally addresses, these issues.

By failing to address systemic environmental risks, Basel III is arguably overlooking an important source of risk to the financial system

and broader economy, despite its overriding objective of guaranteeing banking stability.

However, this report also offers insights that solutions are within reach, should regulators and industry practitioners work together proactively.

A number of national authorities, especially in emerging markets such as Brazil, China and Peru, are already acting to use the existing regulatory framework to address these links. Opportunities exist within the current Basel Capital Accord to learn from these practices and to raise the standard of how systemic environmental risks are managed internationally.

Additional options relating to monetary policy and measures to increase the potential for long-term investors to allocate capital to environmentally sustainable activities are also available to regulators.

“...the regulatory framework that governs today’s banking system may not be being used to its full capacity [...] Basel III is arguably overlooking an important source of risk to the financial system and broader economy”

Recommendations

1. The Basel Committee should **explicitly acknowledge environmental risks** and their increasing impact on the stability and sustainability of the economy as an emerging source of systemic risk for banks and banking stability. On this basis it should encourage and support bank regulators to work with banks to adopt current best practice in the management of environmental issues, and to collect the necessary data and conduct analysis to refine the banking sectors' understanding of, and ability to address, systemic environmental risk in the future.
2. Bank supervisors should then explore the feasibility of incorporating forward-looking scenarios that estimate the potential financial stability impact of supplying credit to environmentally unsustainable or sustainable activities over time into their **Pillar 2 – Supervisory Review** stress tests.
3. Bank supervisors should also examine **Pillar 3 – Market Discipline** to assess the feasibility of banks disclosing information about their exposure to, and management of, systemic environmental risks in a standardised manner across countries.
4. National financial authorities should consider their role in developing targeted **monetary policy** measures, such as accepting certain high-quality 'green' assets from banks as collateral for central bank loans that would assist banks in providing more funding for environmentally sustainable economic activity.
5. As financial regulators are assessing standards and rules that allow banks and other financial institutions to use simple and transparent financial instruments and investment structures to facilitate longer-term investment, they should aim to **encourage more investment in 'green' assets and other forms of environmentally sustainable economic activity**. For instance, sustainable asset-backed securities issued in transparent and simple structures could increase long-term investment in 'green' credit and related assets.
6. Finally, far greater effort must be made to ensure that **financial and environmental policies and regulations** are coordinated across government agencies and departments in their promulgation, implementation and enforcement.

Next steps

These findings and recommendations clearly have profound implications. Further research is necessary to assess the feasibility of their implementation. CISL and UNEP FI are keen to engage a multi-disciplinary and international process to this effect. This would include learning lessons from those national authorities that have already taken leadership steps and working with market actors to establish the most appropriate roles for them to play.

Introduction

The role of the financial system in the economy and broader society is to provide the necessary financing and liquidity for human and economic activity to thrive – not only today but also tomorrow. In other words, its role is to fund a stable and sustainable economy. The role of financial regulators is to ensure that excessive risks that would threaten the stability of the financial system – and hence imperil the stability and sustainability of the economy – are not taken.

In the wake of the financial crisis of 2007-08 that resulted in trillions of dollars in losses and bank bail-outs, banking regulation has undergone, and continues to go through, an extensive reform process, the core aim of which is to “generate strong, sustainable and balanced global growth” (G20 Summit Leaders’ Statement 2009).

At the same time, the Earth’s planetary boundaries – defined as thresholds that, if crossed, could undermine “the safe space for human development” (Rockström et al 2009) – are under increasing stress, and represent a source of increasing cost to the global economy. Appendix A explains the concept of planetary boundaries in more detail. Experts argue that such ‘systemic environmental risks’ may be amongst the biggest risks that humanity faces today.¹ The scale of the economic and social impacts of such risks and of the economic transformation required to address them are both significant. A study by the United Nations estimates that the annual cost to the global economy of maintaining the current scale of unsustainable economic activity will reach nearly \$28.6 trillion by 2050, equivalent to 18 per cent of global GDP.² Meanwhile, estimates indicate that around \$1 trillion of additional investment in new green infrastructure in energy, transport, buildings and industry is needed annually to 2030 *(WEF, 2013).

This study analyses whether the Basel Capital Accord (“Basel III”) adequately addresses systemic environmental risks in the context of its overriding objective of banking stability. It examines the hypothesis that banking reform, despite its best intentions, could actually be overlooking – and even aggravating – an important source of risk to the financial system and broader economy, namely systemic environmental risks.

Origins and rationale for the study

This report was made possible by a partnership between the Banking Environment Initiative (BEI), which is convened by CISL, and UNEP FI’s Banking Commission, with additional support from Bloomberg LP. CISL and UNEP FI have been working together with partners in the banking industry for many years to address issues on finance and sustainability. In the context of this work, the role of financial regulation and policy in maintaining environmental sustainability has become increasingly apparent. CISL and UNEP FI are keen to promote research on this complex and under-studied topic as part of their work towards a financial sector that fully understands, and plays its role in achieving, environmentally sustainable, financially stable and socially inclusive economic development.

This work arrives at a critical moment. In January 2014, the United Nations Environment Programme launched its two-year Inquiry into the alignment of the global financial system with long-term, sustainable development.³ This comes in the wake of Rio+20, in which context the United Nations is striving to establish a set of Sustainable Development Goals (SDGs), and is exploring the means of implementing and financing them. In parallel, in 2012, the International Finance Corporation (IFC) started gathering financial policymakers and regulators around sustainability issues via the newly created Sustainable Banking Network.

¹ World Economic Forum ‘Global Risks 2010’: “The biggest risks facing the world today may be from slow failures or creeping risk...These are risks linked to big shifts that are recognized....For example, global population growth, ageing and the ensuing rise in consumption, have implications for resources, climate change, health and fiscal policy”. http://www3.weforum.org/docs/WEF_GlobalRisks_Report_2010.pdf (accessed 07.08.2014)

² United Nations Environment Programme Finance Initiative ‘Universal Ownership: Why environmental externalities matter to institutional investors’ www.unepfi.org/fileadmin/documents/universal_ownership_full.pdf (accessed 07.08.2014)

³ See United Nations Environment Programme (UNEP) Background Paper: ‘Inquiry: Design of a Sustainable Financial System’ (2014) http://www.unep.org/greeneconomy/financialinquiry/portals/50215/Inquiry_expanded.pdf (accessed 07.08.2014)

Methodology

The report is based on research that involved interviews and written questionnaires for practitioners in the banking industry, bank regulators from selected developed and emerging-market economies, officials from international organisations, and representatives from non-governmental organisations (details are listed at the end of the report). The research also consisted of analysis of the provisions of Basel III and selected national banking laws and regulations along with the official publications of international organisations on systemic environmental risks, such as the reports of the UN International Panel on Climate Change. The analysis and recommendations in the report were considered and debated by members of the study's advisory group, consisting of academics, financial sector and legal practitioners, regulators and representatives of governmental bodies and the banking industry.

Report structure

Part 2 explores the evidence relating to the question of **whether systemic environmental risks and banking sector stability are linked**. It reviews the experience of recent history as well as a selection of available evidence to show that systemic environmental risks are associated with banking sector instability.

Part 3 examines **how Basel III currently addresses systemic environmental risks**. The question of whether Basel III creates a bias against finance for environmentally sustainable economic activities is explored and examples of some countries that have already incorporated systemic environmental risks into bank capital regulation are highlighted. Part 3 then considers what the Basel Committee might learn from the example of these jurisdictions and **identifies how these lessons might be taken forward by the Basel Committee**, focusing on Basel III's Pillar 2 'Supervisory Review' and Pillar 3 'Market Discipline' frameworks.

Part 4 considers **what other financial policy options are available** outside of Basel III. This includes an examination of the utility of certain other monetary policy measures and the use of innovative financial instruments – such as 'green' asset-backed securities (ABS) – to enhance the flow of bank funds to environmentally sustainable economic activity.

Part 5 presents specific **recommendations for financial policymakers and regulators** about how Basel III and related areas of monetary and financial policy can be used more effectively to address systemic environmental risks. Finally, Part 5 sets out the **conclusions** of this study overall, and identifies next steps. It presents specific recommendations for financial policymakers and regulators about how Basel III and related areas of monetary and financial policy can be used more effectively to address systemic environmental risks.

2

Are systemic environmental risks and banking instability linked?

Economic historians have demonstrated relationships between weather, agricultural markets and financial markets to show that there are linkages between natural disasters (e.g. drought) and financial market instability.⁴ For example, the British economist William Jevons (1884) famously argued that financial crises were produced by sunspots, which could be shown to cause drought and poor harvests in key agricultural producing countries, which led to a downturn in international trade resulting in significant bank losses and related financial market stresses. The United States suffered from dust bowls in the farm belt states in the 1880s and 1890s and again in the 1930s due to soil erosion caused by unsustainable farming methods.⁵ The ensuing economic downturns during these periods resulted in substantial losses on bank loans and related financial market distress which spread contagion-like through the regional economy.⁶

More recently, in the late twentieth and early twenty-first century, increased hurricane activity in the Caribbean and south eastern United States caused huge bank losses to businesses and individuals directly impacted by these high wind storms. Hurricane Andrew caused \$24 billion in damages to the south Florida economy in 1992, while hurricanes Rita, Wilma and Katrina each caused widespread and extensive damage to Caribbean economies and to the south eastern United States. Hurricane Katrina came ashore in south Florida in August 2005, causing in excess of \$200 billion in damages and ranks as one of the costliest natural disasters in U.S. history (Lambert, Noth and Schüwer 2011). The damages led to high loan losses and provisioning for banks that were based in the impacted areas. The bank losses led US regulators to review the adequacy of bank risk models regarding credit risk and hurricane damage.

Geological disasters such as earthquakes and volcanoes can also result in banking and financial market distress. The Great Kanto Earthquake of 1923, which struck the south part of the Kato district in Japan, is among the causes of the 1927 Showa financial crisis which culminated in the closure of numerous banks (Shimizu & Fujimura 2010). Similarly, the series of earthquakes which hit Turkey in 1999 required international financial assistance to rebuild the economy and avoid the collapse of the banking system (Brinke 2013). Finally, the eruption of the Soufriere Hills volcano on the island of Montserrat in 1998 destroyed Plymouth, the capital, and forced 90 per cent of the inhabitants to leave the island. The financial system was severely impacted, as the most important bank on the island, the Montserrat Building Society (MBS) collapsed due to a bank run (Clay et al 1999).

Clearly, not all of these examples relate to environmental risks that have been made more likely or severe by human activity – sunspot activity and geological disasters being cases in point. However, there are conceptual parallels between these natural disasters and those that can be aggravated by human activity in that, while inevitable in their occurrence, specific incidents are difficult to predict and can have significant impacts on banking instability unless sufficient precautions are taken. History therefore raises the fundamental question of how bank regulation can take into account the financial stability risks that can arise from environmentally unsustainable practices.

⁴ See generally for a review of the literature, J. Landon-Lane, H Rockoff, R.H Steckel, (2011) *The Economics of Climate Change: Adaptations Past and Present* pp 73-84.

⁵ See R Hornbeck, 'The Enduring Impact of the American Dust Bowl : Short and Long Run Adjustments to Environmental Catastrophe' (2012) *American Economic Review* 102 (4), 1477-1507

⁶ The United States economy was suffering a severe depression in the 1930s that had already caused hundreds of banks to fail across the country. Economists have demonstrated how some of the banking sector distress experienced in these farm belt states can be attributed to the dustbowl phenomenon. Hornbeck (2012) pp 1481-1483.

Further, scientists have now identified nine biophysical thresholds for the Earth, which, if crossed, could undermine “the safe space for human development”. These thresholds – known colloquially as ‘planetary boundaries’ – represent “the ‘planetary playing field’ for humanity if we want to be sure of avoiding major human-induced environmental change on a global scale” (Rockström et al 2009). Three of these boundaries (namely climate change, biological diversity and nitrogen input to the biosphere) are thought to have been crossed already.

Climate change is the boundary about which we know the most. The International Panel on Climate Change (2007, 2013, 2014) has documented the scientific evidence in support of the proposition that global warming and ocean acidification are caused by the carbon-intensive activities of humans. Carbon-intensive activities lead in the longer-term to global warming, rising sea levels, and ocean acidification. More immediately, they can lead to increasingly volatile weather patterns, including extreme temperatures and intensified flooding of coastal and low-lying areas, water shortages, and the health costs of pollution. Existing extreme weather risk is therefore being exacerbated by human activity; moreover climate systems (in manner analogous to financial systems) are likely to show non-linear responses to increased stress.

Some believe these externalities are controlled and even mitigated through adaptations in the economy, such as alternative production processes, or re-directing transport routes to avoid flooded coastlines (Nordhaus 2013). According to this view, investors, aware of the scientific evidence on the risks of climate change, would be expected to discount the value of high-carbon assets and increase the value of low carbon assets, resulting in investment shifting over time to low carbon assets (Bank of England 2012). Nevertheless, the history of financial crises demonstrates that financial markets suffer from serious over and under-estimation of risks because of asymmetric

information and moral hazard. These risks translate into large externalities for the economy and society (Kindleberger and Aliber, 2011, 29-33; Schinasi, 2006, 47-66; Eichengreen, 1999, 80-82). Moreover, financial stability is a public good; market participants do not have the incentive to invest the necessary capital to provide it themselves because the benefits of stability spill over to free-riders who do not pay for it.

The absence of regulatory intervention to address such market failures has been criticised by some international organisations.⁷ In January 2014 World Bank President Jim Yong Kim, speaking at the World Economic Forum, recognised the regulatory gap in this area by stating that “financial regulators must take the lead in addressing climate change risks”, and that they should use pricing mechanisms to more effectively control negative externalities or systemic risks associated with global warming.⁸

Therefore, the key questions addressed in the following sections are:

- To what extent are the economic and financial costs associated with systemic environmental risks currently being considered in banking regulation, and
- How might existing banking regulation frameworks be utilised better to ensure that systemic environmental risks are appropriately managed and do not contribute to banking sector instability in the future?

“...the history of financial crises demonstrates that financial markets suffer from serious over and under-estimation of risks [...] These risks translate into large externalities for the economy and society”

⁷ OECD (2013) p 12

⁸ OECD (2013) p 12

See World Bank Group President: ‘This Is the Year of Climate Action’: <http://www.worldbank.org/en/news/speech/2014/01/23/world-bank-group-president-jim-yong-kim-remarks-at-davos-press-conference> (accessed 06.08.2014)

Does Basel III adequately address systemic environmental risks?

By way of introduction, Basel III represents the most important international financial regulation agreement. The first Accord (Basel I) was adopted in 1988 with two main objectives: 1) that internationally active banks hold a minimum amount of capital against their risk-based assets, and 2) to promote an internationally level playing field for cross-border banking (Norton 1995). Although Basel III is not legally binding under international law, it is remarkable that most countries have adopted it and claim to have implemented it. The IMF observed that countries and banking institutions which demonstrate that they have implemented the Accord benefit from a lower cost of capital than countries and banks that have not done so (Financial Stability Forum 2000). Some countries implement the Accord faithfully and strictly enforce its requirements.⁹ However, the Accord is not mandatory; some countries pick and choose what provisions to comply with, while others impose stricter standards.

Although **Basel I** achieved its main objective of increasing the level of regulatory capital in the international banking system, it contained many national discretions, loopholes and incentives for banks to make riskier short-term loans and to transfer less risky assets off their balance sheets (Goodhart 2011). Basel II was proposed in 1999 to address many of these gaps and weaknesses. In doing so, Basel II introduced the 'three pillars' concept – 1) Minimum Capital, 2) Supervisory Review, and 3) Market Discipline. The three pillars are designed to reinforce each other and to create incentives for banks to enhance their risk measurement and management. This framework is represented in Figure 1.

Pillar 1 (Minimum Capital) allows banks to calculate their regulatory capital by using

statistical models that rely mainly on their own historic default and loss data to estimate their credit, market, and operational risks. Pillar 2 sets forth principles of supervisory review that authorise regulators to require banks to comply with broad principles of corporate governance and to adopt an internal capital adequacy assessment process (ICAAP) designed to enhance risk measurement and management. Pillar 3 uses market discipline to require banks to provide more information to the market so shareholders and creditors can monitor bank management more effectively to ensure the bank's soundness and future prospects.

Basel II expanded the use of risk weightings for banks to estimate the riskiness of their assets. A number of parameters determine an asset's risk weighting, including the maturity of the loan, the probability of default, and the bank's loss and exposure given default. Assets with lower risk weightings generally attract lower capital charges, whereas assets with higher risk weightings generally attract higher capital charges. Corporate loans with short-term maturities attract lower risk weightings (lower capital charges), while corporate loans with long-term maturities (7 years or more) attract higher risk weightings (higher capital charges).

Basel II allowed banks to use their own estimates of credit and market risks to lower their risk weightings for certain asset classes. This risk management approach was shown to be seriously flawed when the global financial crisis began in August 2007; the risk weightings of most European and US banks were shown to be poor indicators of the financial risks to which banks were exposed.¹⁰

⁹ For example, the South African Reserve Bank (South Africa's Bank Regulator) strictly implements and enforces the Basel Accord. See South African Reserve Bank, 'South Africa's implementation of Basel II and Basel III' www.resbank.co.za/RegulationAndSupervision/BankSupervision/TheBaselCapitalAccordper cent28Baselper cent20Iper cent29/Pages/accordImplementationForumper cent28AIFper cent29.aspx (accessed 24.07.2014) and South African Reserve Bank, 'Guidance Note 9/2012 issued in terms of section 6(5) of the Banks Act, 1990- Capital Framework for South Africa based on the Basel III Framework', www.resbank.co.za/Lists/Newsper cent20andper cent20Publications/Attachments/5154/G9per cent20ofper cent202012.pdf (accessed 24.07.2014)

¹⁰ Specifically, bank models to estimate their counter-party credit and liquidity risks in the asset-backed securities and derivatives markets underestimated correlations across asset classes. Moreover, the opaqueness of the risk-weightings in the banking book made it very difficult, if not impossible, for investors to understand the true risk exposure of a bank. These factors contributed significantly to an undercapitalisation of the banking system which weakened its ability to absorb losses in the crisis.

The Basel Committee responded to the 2007-2008 financial crisis by adopting further amendments to Basel II, which became known as **Basel III**. Basel III requires an increased level of Tier One regulatory capital to 4.5 per cent from 2 per cent plus a 2.5 per cent capital conservation buffer, a tighter definition of tier one capital to include mainly ordinary common shares and retained earnings, and up to an additional 2.5 per cent countercyclical capital ratio that will be adjusted across the economic cycle.¹¹ Basel III also contains liquidity requirements that include a ratio for stable wholesale funding, liquidity coverage ratios, and an overall leverage ratio. Also, an additional capital charge of up to 2.5 per cent regulatory capital will be required for large and inter-connected systemically important financial institutions (SIFIs).

Despite significant increases in capital and liquidity requirements, Basel III essentially builds on the edifice of Basel II by leaving in place the Basel II risk-weighting regime. However, Basel III requires regulators to challenge banks more in the construction of their models and broadens regulatory authority under Pillar 2 to require banks to undergo more frequent and demanding stress tests. The Pillar 2 review also consists of a supervisory review enhancement process (SREP) that includes separate assessments of bank capital and governance. The SREP can be utilised to forecast the bank's exposure to systemic risks and related macro-prudential risks.

Basel III's 3-Pillar Framework		
Pillar 1	Pillar 2	Pillar 3
Minimum Capital Requirements	Supervisory Review Process	Market Discipline
Additional/Refined Capital Basis <ul style="list-style-type: none"> - Liquidity Coverage Ratio (LCR) - Net Stable Funding Ratio (NSFR) - OTC Derivatives Charge - Quality and Level of Capital - Leverage Ratio - Capital Conservation Buffers - Countercyclical Buffers - Enhanced Loss Absorption Clause (Write-Off or Debt Conversion) 	Supervision (Dialogue) <ul style="list-style-type: none"> - Firm-wide Corporate Governance - Managing Risk Concentrations - Alignment of LT Incentives - Sound Compensation Practices - Supervisory Colleges - Capital (ICAAP) - Firm-wide Risk Management - Valuation Practice, Stress Tests - Supervisory Review Evaluation Process (SREP) <ul style="list-style-type: none"> - Capital - Governance 	Additional/Enhanced Disclosure <ul style="list-style-type: none"> - Risk Management <ul style="list-style-type: none"> • Market • Credit • Operational - Regulatory Capital components - Detailed Reconciliation of Capital - Regulatory Capital Ratios - Securitisation Exposures

Figure 1: Overview of the '3 Pillars' Framework of Basel III.
Changes implemented in Basel III are highlighted in red.

¹¹ See Basel Committee on Banking Supervision (2013) 'Basel III Regulatory Consistency Assessment Program (RCAP)', <https://www.bis.org/publ/bcbs264.pdf> (accessed 14.06.2014)

a) How does Basel III currently treat systemic environmental risks?

Pillar 1 of Basel II (now Basel III) does require banks to assess the impact of specific environmental risks on the bank's credit and operational risk exposures, but these are mainly transaction-specific risks that affected the borrower's ability to repay a loan or address the 'deep pockets' doctrine of lender liability for damages and cost of property clean-up. For example, paragraph 510 of Basel II and III (Pillar 1) requires banks to 'appropriately monitor the risk of environmental liability arising in respect of the collateral, such as the presence of toxic material on a property'. This would involve the bank in due diligence and transaction screening to mitigate the credit and operational risks associated with this type of lending. These transaction-specific risks are narrowly defined and do not constitute broader macro-prudential or portfolio-wide risks for the bank.

b) Do Basel III's Pillar 1 'Minimum Capital Requirements' discourage the financing of environmentally sustainable economic activities?

A concern that has arisen in relation to Pillar 1 of Basel III is the extent to which higher capital charges on longer-term project finance loans might have had the unintended consequence of undermining finance for environmentally sustainable economic activities, particularly lending for long-term endeavours such as infrastructure. Commentators holding this view argue that unless capital and liquidity requirements are relaxed, long-term project

finance for environmentally sustainable economic activities will be severely restricted. This study has investigated this concern.

Basel II and III apply a lower risk weighting to short-term (1-3 year) recourse balance sheet corporate loans in comparison to longer-term (7 years or more) project finance loans to off-balance-sheet entities because the latter type of loans are riskier due to their longer maturity and non-recourse structure. The risk-weighting framework therefore results in higher capital requirements for bank lending in countries that rely mainly on longer-term specialised lending arrangements as opposed to countries that rely mainly on short-term corporate loans for such credit.

However, the form of bank lending for environmentally sustainable economic activities varies substantially between countries. In some countries (e.g. Brazil and China), this takes place almost wholly through recourse balance sheet short-term corporate lending, while in other countries (e.g. Peru and South Africa), it is mostly long-term non-recourse off-balance-sheet specialised lending (i.e. project finance). Across most countries, however, most bank exposures to financing environmentally sustainable economic activities will be through short-term corporate lending. A much smaller percentage of lending will be long-term (7 years or more), which will mainly be specialised (i.e. project finance) lending for large-scale renewable energy projects.

Do capital requirements matter?

Christopher Wells, Senior Vice President for Environmental and Social Risk for Santander's Brazilian subsidiary, explained in an interview for this study that as far as bank risk management is concerned, managing a bank's environmental risk exposure in respect of short-term corporate loans was not a capital allocation issue, as broader governance issues were implicated and outweighed in importance the calculation of regulatory capital.

In Brazil, a major systemic environmental risk for small and medium-sized farmers is deforestation of the Amazon and related soil erosion and productivity decline. Most Brazilian bank lending to mitigate these risks takes the form of recourse balance sheet loans, which are typically short-term corporate (1-3 years) whilst longer-term maturities are up to 3 to 5 years. In conclusion, the importance of capital requirements depends on the market context.

Based on interviews with regulators and bank practitioners from Brazil, China, India and Peru, it was uniformly observed that Basel III's stricter capital and liquidity requirements would have only a marginal impact on lending to support environmentally sustainable activity. This is not least because bank financing of infrastructure projects, such as those relating to renewable energy, is influenced by a number of factors that relate to the economic and political riskiness of the project. These criteria are much more important in determining whether the bank lends than the regulatory capital or liquidity requirements. In fact, regulatory capital is considered by project finance specialists to be an insignificant factor in influencing the bank's pricing of the loan or its willingness to lend.

Moreover, interviewees stated that lowering capital and liquidity requirements to benefit environmentally sustainable economic activities may create an undesirable trade-off between financial stability and environmental sustainability,¹² and that Pillar 1's primary role should be to support a sound financial system through higher capital and liquidity requirements. There was also a concern that lowering capital requirements for the financing of environmentally sustainable economic activities may lead to arbitrage and poor incentives for banks.¹³

Further, the Financial Stability Board (2013) has observed in a research paper that "The Basel III reform package does not specifically target long-term bank finance, although it may affect it...[as Basel III does] alter the incentives for different types of financial institutions to participate in this market." The FSB further notes that "pre-crisis models and levels of financing were unsustainable and should not be the appropriate benchmark for assessing the impact of reforms on the availability and cost of longer-term finance" (FSB 2013).

Based on the above, the evidence suggests that regulatory capital and liquidity requirements as currently set forth in Basel III's

Pillar 1 approach play at most a marginal role in influencing a bank's decision to provide specialised lending on project finance for environmentally sustainable economic activities such as renewable energy infrastructure projects.

c) Are there existing regulatory and market practices outside of Basel III that are relevant to this study?

Despite little action at the international level, some countries have already engaged in a variety of regulatory and market practices to assess systemic environmental risks and adopt practices to mitigate the banking sector's exposure to environmentally unsustainable activity.

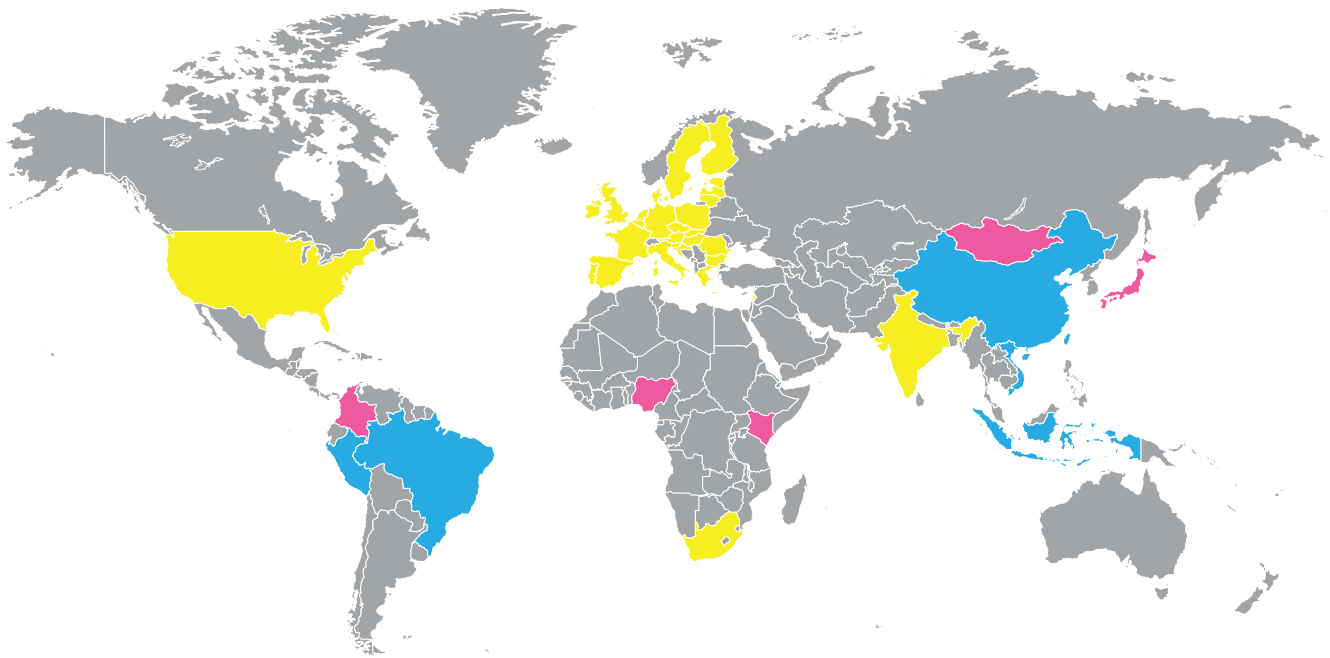
These initiatives have been based on existing regulatory mandates to promote financial stability by acting through the existing Basel III framework to identify and manage banking risks both at the transaction-specific level and at the broader portfolio level. What is significant about these various country and market practices is that the regulatory approaches used to enhance the bank's risk assessment fall into two areas: 1) Greater interaction between the regulator and the bank in assessing wider portfolio level financial, social and political risks, and 2) Banks' enhanced disclosure to the market regarding their exposures to systemic environmental risks. Figure 2 highlights countries where notable innovation is taking place. For a full review of current regulatory and voluntary frameworks aiming to promote the consideration of sustainability issues in banks, please see Appendix B.

“Despite little action at the international level, some countries have already engaged in regulatory and market practices to assess systemic environmental risks”

¹² Interviews with Christopher Wells, Banco Santander Brazil (30 May 2014), Dr Rubens Sardenberg, Brazilian Federation of Banks (17 June 2014) and Malcolm Athaide, YES Bank (10 July 2014).

¹³ Interview, Mr Paul Collazos, Superintendencia de Banca, Seguros y AFP, (20 May 2014).

Sustainable banking policy & regulation



Legend:

pink = voluntary frameworks **blue** = financial regulation **yellow** = other relevant policy & regulation

Figure 2: Countries with notable examples of initiatives to reflect environmental risks in banking regulation and policy

These innovative regulatory approaches and market practices are often the result of proactive policymakers and regulators adjusting to a changing world. A number of financial development institutions, such as the International Finance Corporation (IFC) which currently hosts an informal group of bank regulators and banking associations called the Sustainable Banking Network (SBN), have sought to further promote dialogue between practitioners and regulators on environmental sustainability issues and to encourage a better understanding of these issues by financial regulators. China, Brazil and Peru, among others, have all embarked on innovative risk assessment programmes to assess systemic environmental risks from a macro-prudential perspective as they recognise the materiality of systemic environmental risks to banking stability.¹⁴

China has adopted a more proactive enforcement approach to promote the management of systemic environmental risks by requiring banks to include in their loan documentation covenants to comply with environmental standards. Through its 2012 Green Credit Guidelines, the **China Banking Regulatory Commission (CBRC)** works towards promoting bank lending to environmentally sustainable economic activities such as the manufacturing of renewable energy infrastructure and companies that have developed lower-carbon production processes. China has multiple long-term environmental sustainability goals, including a number that focus on transportation and buildings. Banks are requested to collect data from these projects and turn them over to the CBRC, which in turn is strongly interconnected with other ministries, including the Environment

¹⁴ Interview, Ms Rong Zhang, International Finance Corporation (9 May 2014). Ms Zhang explained that the SBN membership has a mission to enhance the importance of financing environmentally sustainable activities in the global financial system and to adjust financial regulation so that it can incorporate environmental sustainability objectives in support of their existing financial stability objectives.

Ministry which can use the information to initiate an investigation of environmental regulation violations. In 2012, the CBRC began requiring banks to monitor its borrowers' compliance with environmental regulations and to begin implementing loan contract changes that either allows the bank to accelerate loan repayments of a customer in violation of environmental laws or else to demonstrate compliance in a certain timeframe. If compliance cannot be shown, the bank could suspend further lending and trigger accelerated loan repayment.

In 2014, **Brazil** adopted similar requirements relating to the financing of sustainable activity, as well as disclosure, that are mandatory for banks as part of their Pillar 2 Supervisory Assessment and Pillar 3 Market Disclosure requirements. Unlike the supervisory practices of most other Basel Committee members, the **Banco Central do Brasil (the Central Bank of Brazil)** has utilised the Pillar 2 Internal Capital Adequacy and Assessment Process (ICAAP) to encourage banks to assess their individual exposures to carbon risk. Moreover, the Banco Central do Brasil implemented a regulation in 2014¹⁵ which establishes guidelines for financial institutions in connection with the Pillar 2 Supervisory Review and Evaluation Process (SREP) to consider the bank's "degree of exposure to the social and environmental risk of the activities and transactions of the institution".¹⁶ This regulation also requires the bank to publicly disclose its environmental and social risks (with penalties if disregarded) as part of the market discipline disclosure rules of Pillar 3 of Basel III.

The **Peruvian regulators'** approach has been to develop the principle of due diligence as the most effective way to persuade project managers to rethink how they go about project development. The due diligence process requires banks to require the project manager to complete a due diligence report on the project, which must be approved by the bank before it makes credit available. In using this approach, the regulator is not primarily imposing pressure on the company over whether or not to invest in the project, or on

the bank to decide whether or not to make the loan. Instead, the company is required to more deeply analyse the underlying social, environmental and economic risks related to the loan, and to recognise these before they manifest during project development. Long before substantial amounts are invested, the developer is asked to assess the risk factors – social, environmental, economic and financial – relevant for planning, building and operating the project. The bank oversees this assessment in order to determine at a deeper level the riskiness of the loan and the extent to which it should provide credit for the project.

According to senior management at Peru's Financial Regulation Authority, since this innovation was introduced, social conflicts have decreased markedly and affected stakeholders and community groups feel they now have more influence in shaping the investment decision. This has also resulted in improved financial risk management for banks, as defaults and restructurings on such loans have fallen dramatically.¹⁷ This has enhanced banks' financial risk management and also improved broader macro-economic development for communities and the country as a whole. Based on such due diligence risk assessments, banks can obtain more information and can therefore act sooner and more effectively in managing their own risk by, for example, requiring higher quality collateral and sensitising the manager to potential social unrest because of the project and its related systemic environmental risks.

d) How might the Basel Committee take forward the lessons of this study?

The evidence assessed during this study suggests that systemic environmental risks are material to banking stability. The study has found that the existing Basel Capital Accord does require banks to assess the impact of specific environmental risks on the bank's credit and operational risk exposures, but that these transaction-specific risks are narrowly defined and do not constitute broader macro-prudential or portfolio-wide risks for the bank.

¹⁵ Regulation No. 4,327 (28 April 2014).

¹⁶ Ibid.

¹⁷ Interview, Dr Daniel Schydrowsky, Director Peru's Financial Regulation Authority, and Paul Collazos, Economist, Peru's Financial Regulation Authority (4 June 2014).

The impact of Basel III's Pillar 1 Minimum Capital Requirements was explored with the conclusion that regulatory capital and liquidity requirements, as currently set forth in Basel III's Pillar 1, play at most a marginal role in influencing a bank's decision to provide specialised lending on project finance for environmentally sustainable economic activities. In addition, it is thought that lowering capital and liquidity requirements to benefit environmentally sustainable economic activities may create an undesirable trade-off between financial stability and environmental sustainability.

How, then, might the Basel Committee improve the banking sector's management of systemic environmental risks in keeping with its responsibility to safeguard banking sector stability and sustainability? Supervisory Review under Pillar 2 and Market Discipline under Pillar 3 offer some promising avenues.

Using Pillar 2 – Supervisory Review

The Pillar 2 Supervisory Review process is designed to complement Pillar 1 and concerns risk management. Risk management is about diversification of risk exposures by reducing, for instance, concentration risk exposures to certain asset classes or economic sectors.

Pillar 2 of Basel III requires banks to measure and manage risks at the broader portfolio level by applying the "fundamental principles of sound capital assessment", including "policies and procedures designed to ensure that the bank identifies, measures, and reports all material risks" (i.e. stress tests) across its portfolio.¹⁸ Pillar 2 allows the supervisors to have wide powers of oversight to test the bank's corporate governance structures and its risk management practices in assessing transaction-specific risks as well as broader portfolio-level risks. Based on these assessments, modifications can be made to the Pillar 1 capital and liquidity calculation processes.

Banks should address all 'material' risks in the capital assessment process and, while it is recognised that not all risks can be measured

precisely, the process should be developed to estimate risks by making a list of risk exposures that should "by no means constitute a comprehensive list of all risks".¹⁹ This study argues that exposure to economic activity that is environmentally unsustainable falls within the scope of Pillar 2.

To be incorporated in the Pillar 2 portfolio risk assessment framework, risks must be considered 'material' and included in the bank's list of material risks. However, the Basel Committee has not been addressing systemic environmental risks, nor has it been encouraging national regulators to ask bank risk officers whether they are measuring the bank's exposure to environmentally unsustainable activities. For example, most bank supervisors have not utilised Pillar 2's supervisory approaches to incorporate forward-looking models that estimate the potential stability impact of supplying credit to environmentally unsustainable or sustainable activities over time into their stress tests. Such an approach could equally be applied to recognise the positive impact of bank lending for environmentally sustainable activity as the negative impact for environmentally unsustainable activity.

This very limited approach to addressing banking risks that can arise from environmentally unsustainable activity could pose serious longer-term risks to the stability of the banking sector. It is an omission that is unsupported by the economic and scientific data and that is within the mandate of the Basel Committee to address. Recent studies show that the cost of environmentally unsustainable activity to the economy is becoming increasingly material in terms of financial risk exposure for banking institutions. The World Bank estimates that the average annual economic cost of human-induced environmental depletion was approximately \$6.6 trillion in 2008, equivalent to 11 per cent of global GDP. The same study estimates that if environmentally unsustainable activity continues at this scale, the annual costs for the global economy will reach nearly \$28.6 trillion by 2050, equivalent to 18 per cent of global GDP (UNEP FI 2011).

¹⁸ Basel II Pillar 2, para 731.

¹⁹ Basel II Pillar 2, para 732.

The evidence therefore suggests that systemic environmental risks are material for bank regulation purposes and therefore should be expressly incorporated into Pillar 2's list of material risks. This would provide an internationally level playing field to guide bank risk officers and regulators in assessing the portfolio-level risks of bank lending for environmentally sustainable and unsustainable activities. This could potentially involve regulators and risk officers developing, among other things, exclusion lists, phase-out or phase-in targets for certain types of activities (e.g. replace high-carbon assets with low-carbon assets), and conduct impact screening – both negative and positive – to develop a better understanding of banks' risk exposure to environmentally unsustainable activity.

Using Pillar 3 – Market Discipline

The Pillar 3 – Market Discipline – element of Basel III could also play an important role in enhancing risk management in respect of systemic environmental risks. It largely relies on developing a set of disclosure requirements which will allow market participants to assess relevant information about a bank's capital, risk exposures, risk assessment processes, and hence the capital adequacy of the institution. By providing disclosures to the capital markets, it is intended that investors should learn fully of the risks to which banking institutions are exposed – including the bank's exposure to systemic environmental risks.

Public disclosure of these risks raises a number of questions. Firstly, whether or not the public is able to comprehend the long-term effects of their investment choices. Regulators in both Brazil and Peru doubt the willingness of the individual investor to question the long-term risk exposure to carbon and other systemic environmental risks of a short-term investment, or to differentiate between a stock doing badly due to its exposure to environmentally sustainable or unsustainable activity as compared to other bad business choices. Peru's bank regulator also questioned the usefulness of

requiring banks to disclose publicly their exposure to systemic environmental risks on the grounds that this could expose banks to potential legal liability for mis-stating such risks in their disclosures. Secondly, the effectiveness of these kinds of disclosures was questioned based on the availability of data and related information, and the difficulty of forecasting systemic environmental risk exposures far into the future.

That said, the market discipline approach has been utilised by shareholders of some US banks to require the bank's board to disclose the institution's exposure to high-carbon activities. This has been criticised as a rather *ad hoc* and inflexible approach to obtaining information on a bank's carbon exposure.²⁰ Instead, our findings suggest that the market discipline approach in Pillar 3 could be enhanced to include rules on both qualitative disclosures (e.g. voluntary codes and industry standards) and quantitative disclosures (as defined by the financial regulator). This would provide an effective and a more economically efficient tool which would also improve accountability through further clarifying the fiduciary duties of the bank board to undertake risk assessments to obtain this information.²¹

Pillar 3's market discipline framework should be considered as another lever to enhance the banks' governance frameworks with respect to systemic environmental risks. Basel III, however, does not require or encourage banks to disclose information about systemic environmental risks or risk management practices. In some countries, such as France,²² all environmental and social risk exposures must be publicly disclosed by listed companies and financial institutions. The Basel Committee should consider how Pillar 3 can be used to encourage or require banks to disclose, on a harmonised and standardised basis, information about exposure to systemic environmental risks and consequent management practices that could be useful for investors in assessing the bank's longer-term soundness and profitability.

²⁰ According to a recent WSJ report, shareholder resolutions have become increasingly political and less relevant to average shareholders with respect to climate risk reporting, as 'special-interest groups' have allegedly hijacked the shareholder resolution process, as the guidance (on disclosing emissions stemming from fossil-fuel related loans) released by regulators has not led to an increase in the quality or quantity of the disclosures.

²¹ What exactly could amount to a breach of fiduciary duty is, in itself, a widely contested area. Trustees who do not act on Environmental and Social Governance issues arguably increase the risk of a long-term portfolio and therefore may not be acting in the best interest of the beneficiaries. The problem is that, in practice, various financial managers believe that considering issues other than financial returns could constitute a breach. The findings of a UNEP FI legal study issued in 2005 (A legal framework for the integration of environmental, social and governance issues into institutional investment, UNEP FI, 2005), found that fiduciary duty is inclusive rather than exclusive of environmental, social and governance considerations, however differences of opinion persist in the market as regulation continues to be permissive rather than obligatory.

²² France has adopted legislation mandating banking and financial institutions to publicly disclose their environmental and social risks as they relate to the company's financial performance and soundness. See Conseil d'Etat Decree, Regulation, Article 225. The disclosure of social and environmental

Looking ahead

Figure 3 illustrates where this study suggests the Basel Committee should focus if Basel III is to adequately address systemic environmental risks.

Pillar 1	Pillar 2	Pillar 3
Minimum Capital Requirements	Supervisory Review Process	Market Discipline
Additional/Refined Capital Basis <ul style="list-style-type: none"> - Liquidity Coverage Ratio (LCR) - Net Stable Funding Ratio (NSFR) - OTC Derivatives Charge - Quality and Level of Capital - Leverage Ratio - Capital Conservation Buffers - Countercyclical Buffers - Enhanced Loss Absorption Clause (Write-Off or Debt Conversion) 	Supervision (Dialogue) <ul style="list-style-type: none"> - Firm-wide Corporate Governance - Managing Risk Concentrations - Alignment of LT Incentives - Sound Compensation Practices - Supervisory Colleges - Capital (ICAAP) - Firm-wide Risk Management - Valuation Practice, Stress Tests - Supervisory Review Evaluation Process (SREP) <ul style="list-style-type: none"> - Capital - Governance 	Additional/Enhanced Disclosure <ul style="list-style-type: none"> - Risk Management <ul style="list-style-type: none"> • Market • Credit • Operational - Regulatory Capital components - Detailed Reconciliation of Capital - Regulatory Capital Ratios - Securitisation Exposures

The management of certain transaction-specific environmental risks on credit and operational risks is already required by paragraph 510

ICAAP and SREP can be used to assess portfolio risk exposures to systemic environmental risks

Standardised or harmonised disclosure of information about exposure to, and management of, systemic environmental risks could form part of additional or enhanced disclosure requirements

Figure 3: Areas of Basel III on which this study suggests the Basel Committee should focus – highlighted in orange (areas in green indicate existing coverage)

Evolving bank capital and governance frameworks to include systemic environmental risks may ultimately lead regulators and banks to agree on different risk weightings for certain activities depending on their classification as environmentally sustainable or unsustainable. This could potentially result in different capital and liquidity requirements under Pillar 1 for activities depending on whether they are classified as environmentally ‘sustainable’ (lower requirements) or ‘unsustainable’ (higher requirements).

Properly incorporating systemic environmental risk issues as suggested in this report will of course raise challenges. In the first instance, there would be a need to do sufficient data collection, analysis and modelling to estimate the financial stability risks associated with environmentally sustainable and unsustainable activity. These issues should be considered by financial policymakers and the Basel Committee, and further studied by central banks, regulators, bank risk officers, and researchers in institutes and universities.

What other financial policy options are available?

Part 2 of this study has considered how Basel III could adequately take account of systemic environmental risks. However, there are other financial policy options available to policymakers and regulators, which are also worth exploring.

a) Monetary policy

Monetary policy could play a role in supporting liquidity provision for finance to support environmentally sustainable economic activities.

In recent history, central bank monetary policy has revolved around the targeting of retail price inflation at a low rate of around 2 per cent and using an array of measures to ensure that the target is achieved and that the monetary policy transmission mechanism works effectively throughout the economy and banking system. The economic slowdown in Europe, the US and Japan in the aftermath of the financial crisis has led the world's most influential central banks – the US Federal Reserve, the European Central Bank, the Japanese Central Bank, and the Bank of England – to follow extraordinarily loose monetary policies involving quantitative easing and generous liquidity and other financial support for the banking sector with a view to encouraging banks to lend more to the broader economy.

For example, between 2009 and 2014, the Bank of England followed a 'funding for lending' scheme that involved the British central bank lending money at a zero-interest rate to banks with the hope that the banks would then lend the funds on to homebuyers to support the British housing market. Banks were not obliged to lend the money, but were obliged to report the amount of funds they provided for home mortgage loans.

Experts are divided over the effectiveness of the policy. In the context of this report, however, it raises the question of whether central banks should make funding available

to banks on generous terms in order to promote lending to environmentally sustainable economic activities. An example of this has been demonstrated by the Lebanese Central Bank through its Decree number 7835 to support financing for investment in environmentally sustainable projects, including green buildings and renewable energy projects.

Brazilian and Peruvian authorities and bankers explained that their central banks are very conservative and would probably not agree to the use of loose monetary policy measures to increase such lending because it might send a signal to the global capital markets that they were following an undisciplined monetary policy that could lead to higher inflation. They further asserted that monetary policy conditions in most emerging-market economies were not greatly affected by the recent financial crisis and monetary policy should therefore remain conservative and orthodox.

That said, Dr Rubens Sardenberg, Chief Economist of the Brazilian Federation of Banks, expressed the personal view that he thought there were ways that central banks could facilitate financial support for lending to environmentally sustainable economic activities. These could involve, for example, the central bank accepting 'green bonds' or asset-backed securities that were AAA rated as collateral for liquidity support. Dr Sardenberg also emphasised that Brazilian banks are largely well-capitalised and financed at this time and would not need such liquidity support from central banks to provide more lending to environmentally sustainable economic activities.

In contrast, Mr Han Fe of the CBRC stated that, because of recent banking stresses in 2013 in the inter-bank loan market, the Chinese central bank (the People's Bank of China – PBOC) was considering more proactive measures to provide additional liquidity support to Chinese banks, such as

the acceptance of 'green' asset-backed securities as collateral for liquidity support for Chinese banks.

b) Financial innovation

Financial innovation could play a further important role in identifying sources of finance for bank lending to support environmentally sustainable economic activity.

Chinese regulators are already acting in accordance with this view. Because China's capital markets are evolving and becoming more sophisticated, credit risk transfer instruments, such as asset-backed securities, are increasingly viewed by regulators and bankers as potential sources of additional finance for the Chinese economy. This could perhaps play an important role in allowing Chinese banks to make more funding available for initiatives that target environmentally sustainable economic activity.

This view was supported by Dr Sardenberg, who emphasised how fast the Brazilian wholesale debt and secondary trading markets are evolving and the growing interest by banks in utilising credit risk transfer instruments that are subject to regulatory controls to attract more investment in 'green credit'. He observed that the Brazilian market was not quite ready for these instruments yet, but when the time comes there will be a quick transition because Brazil has already been through a painful regulatory reform of its banking sector in the 1990s after a crisis that resulted in the Banco Central do Brasil obtaining broad macro-prudential supervisory powers to control and monitor the so-called 'shadow banking' sector. Therefore, any new financing instruments or ABS green assets would be subject to central bank oversight.

As discussed above, the involvement of central bank oversight may not be a bad thing as demonstrated in the case of the Chinese authorities considering the merits of allowing the PBOC to accept certain simple and transparent green asset-backed securities

(ABS) as collateral for bank liquidity support measures. This could potentially lead to much greater bank lending for environmentally sustainable economic activities and provide more sustainable sources of funding for such initiatives.

Even without central bank acceptance of green ABS as collateral, however, Chinese regulators are considering more favourable regulatory treatment to be applied to certain innovative financial instruments, such as green asset-backed securities. Under consideration are proposals that would allow companies to issue 'green bonds' and for banks to securitise 'green assets' as a way to generate more funding for environmentally sustainable economic activity. The CBRC considers simple and transparent asset-backed securities as an important source of finance for such economic activity. Moreover, the CBRC hopes that the Chinese central bank will approve the use of certain monetary policy tools to increase green lending, such as the central bank accepting green bonds or high quality asset-backed securities as collateral for providing liquidity support to banks.

In addition, the growing sophistication of China's wholesale securities and debt markets creates the potential for increased investment in green assets by institutional investors along with the creation of a secondary market for trading these securities. All of which would bode well for increased investment into Chinese green credit.

c) Joining up banking regulation with environmental policy

A major weakness with existing approaches to financial and environmental policy and regulation has been lack of coordination in developing, implementing and enforcing rules and standards. The problem of a lack of coordination and mutual recognition of standards arises all the way to the international level, involving the G20 and international environmental initiatives. There has been a failure of policymakers at the highest level to join up financial policy and

environmental policy with respect to putting the global economy on a more stable and sustainable footing. For instance, many bank supervisors do not believe that they have a policy mandate from their Finance Ministries to require banks and financial institutions to manage or report their systemic environmental risks.

Although the G20 has failed to recognise the importance of the linkage between financial policy and environmental policy, some countries have made much progress in establishing institutional and legal linkages between environmental and financial regulation.

The efforts of China and Peru should be noted, as they have adopted coordination mechanisms between environmental and finance ministries and banking regulators to ensure the exchange of information, data and mutual support in the investigation and enforcement of environmental laws. Both the bank and environmental regulator are required to coordinate their regulatory practices and supervision where environmental regulatory compliance and financial regulatory compliance implicate one another. Other countries, such as Brazil, have embarked on similar coordination policies by ensuring that databases of infringements of environmental laws and regulations are made publicly available, enabling banks to access them.

Most advanced developed countries, however – including most members of the Basel Committee – have no policy to coordinate environmental and banking regulation. Moreover, in EU states and the United States bank regulators and supervisors do not have an official mandate to take account of systemic environmental risks when applying and implementing their own regulatory frameworks.

Many central banks in the Sustainable Banking Network have developed national approaches that could serve as a model for the G20 and other international bodies to recommend to all countries although, of

course, country-specific approaches may not be wholly transferable. Successful approaches generally involve countries developing a strong dialogue between their environmental and the financial ministries with respect to financial exposures to systemic environmental risk. It is certainly necessary as a first step for finance ministries to provide bank regulators with a mandate to supervise the banking sector's exposure to systemic environmental risks. This will ultimately enhance bank risk management in the areas of credit, market, liquidity and operational risk.

“ Most advanced, developed countries – including members of the Basel Committee – have no policy to coordinate environmental and banking regulation”

Conclusions and recommendations for financial policymakers and regulators

The role of the financial system in the economy and broader society is to provide the necessary financing and liquidity for human and economic activity to thrive – not only today, but also tomorrow. In other words, its role is to fund a stable and sustainable economy. The role of financial regulators is to ensure that excessive risks that would threaten the stability of the financial system – and hence imperil the stability and sustainability of the economy – are not taken.

The analysis presented in this report suggests that the regulatory framework that governs today's banking system may not be being used to its full capacity; with some notable exceptions, systemic environmental risks appear to be in the collective blind spot of bank supervisors.

Despite the fact that history demonstrates direct and indirect links between systemic environmental risks and banking sector stability, and that evidence suggests this trend will become more pronounced and complex as humanity breaches more planetary boundaries, the current Basel Capital Accord does not take explicit account of, and therefore only marginally addresses, these issues. **Although Basel III provides a flexible framework for regulators and bank risk management to assess and measure the financial stability risks associated with environmental risks, this has not been utilised by most bank regulators in their supervisory frameworks.**

By failing to address systemic environmental risks, Basel III is arguably overlooking an important source of risk to the financial system and broader economy, despite its overriding objective of guaranteeing banking stability and sustainability. Because financial stability is a public good, regulation has a role to play to ensure that environmental risks do not threaten financial stability.

However this report also offers insights that solutions are within reach, should regulators and industry practitioners work together proactively.

A number of national authorities, especially in emerging markets, are already acting to use the existing regulatory framework to address these links. Opportunities exist within the current Basel Capital Accord to learn from these practices and to raise the standard of how systemic environmental risks are managed internationally. This report suggests a roadmap for how Basel III can be used to begin assessing and measuring the systemic environmental risks that have material impact on banking stability and which can assist banks in diversifying their risk exposures to more environmentally sustainable economic activities.

Additional options relating to monetary policy and measures to increase the potential for long-term investors to allocate capital to environmentally sustainable activities are also available to regulators. On this basis, a number of recommendations are offered overleaf.

“ Opportunities exist within the current Basel Capital Accord [...] to raise the standard of how systemic environmental risks are managed internationally ”

Recommendations

1. The Basel Committee should **explicitly acknowledge environmental risks** and their increasing impact on the stability and sustainability of the economy as an emerging source of systemic risk for banks and banking stability. On this basis it should encourage and support bank regulators to work with banks to adopt current best practice in the management of environmental issues, and to collect the necessary data and conduct analysis to refine the banking sectors' understanding of, and ability to address, systemic environmental risk in the future.
2. Bank supervisors should then explore the feasibility of incorporating forward-looking scenarios that estimate the potential financial stability impact of supplying credit to environmentally sustainable or unsustainable activities over time into their **Pillar 2 – Supervisory Review** stress tests.
3. Bank supervisors should also examine **Pillar 3 – Market Discipline** to assess the feasibility of banks disclosing information about their exposure to, and management of, systemic environmental risks in a standardised manner across countries. It is important that such disclosures be comparable across banks and jurisdictions. The Basel Committee should determine its role in creating an internationally level playing field.
4. Meanwhile, national financial authorities should consider their role in developing targeted **monetary policy** measures that would assist banks in providing more funding for green lending. For instance, central banks could consider whether to accept certain high quality green assets as collateral for central bank loans to banks.
5. As financial regulators are assessing standards and rules that allow banks and other financial institutions to use simple and transparent financial instruments and investment structures to facilitate longer-term investment, they should aim to **encourage more investment in 'green' assets and other forms of environmentally sustainable economic activity**. For instance, sustainable asset-backed securities issued in transparent and simple structures could increase long-term investment in 'green' credit and related assets.
6. Finally, far greater effort must be made to ensure that **financial and environmental policies and regulations are coordinated** across government agencies and departments in their promulgation, implementation and enforcement.

Next steps

These findings and recommendations clearly have profound implications. Further research is necessary to assess the feasibility of their implementation. This should happen on a multi-disciplinary and international basis, and should include continuing to learn lessons from those national authorities that have already taken leadership steps and working with market actors to establish the most appropriate roles for them to play.

Appendix A – Planetary boundaries explained

A growing number of scientists think we have entered a new geological epoch that needs a new name — the Anthropocene — to reflect the rapid expansion of human activities since the industrial revolution, which has now generated a global geophysical force equivalent to some of the great forces of nature. They have been seeking to characterise the conditions needed for our planet to continue in a stable, Holocene-like state — the state of the Earth over the past ~10,000 years in which human civilizations have thrived.

In 2009, a group of 28 internationally renowned scientists identified and quantified a set of nine planetary boundaries within which they argued humanity can continue to develop and thrive for generations to come. In their paper published in the journal, *Nature* (461, 472-475, 24 September 2009), they argued that “[t]ransgressing one or

more planetary boundaries may be deleterious or even catastrophic due to the risk of crossing thresholds that will trigger non-linear, abrupt environmental change within continental- to planetary-scale systems.” They contended that respecting planetary boundaries reduces the risks to human society of crossing these thresholds.

This diagram, taken from their *Nature* paper, presents these nine planetary boundaries. The inner green shading represents the proposed safe operating space for nine planetary systems. The red wedges represent an estimate of the current position for each variable. The boundaries in three systems (rate of biodiversity loss, climate change and human interference with the nitrogen cycle), have already been exceeded.

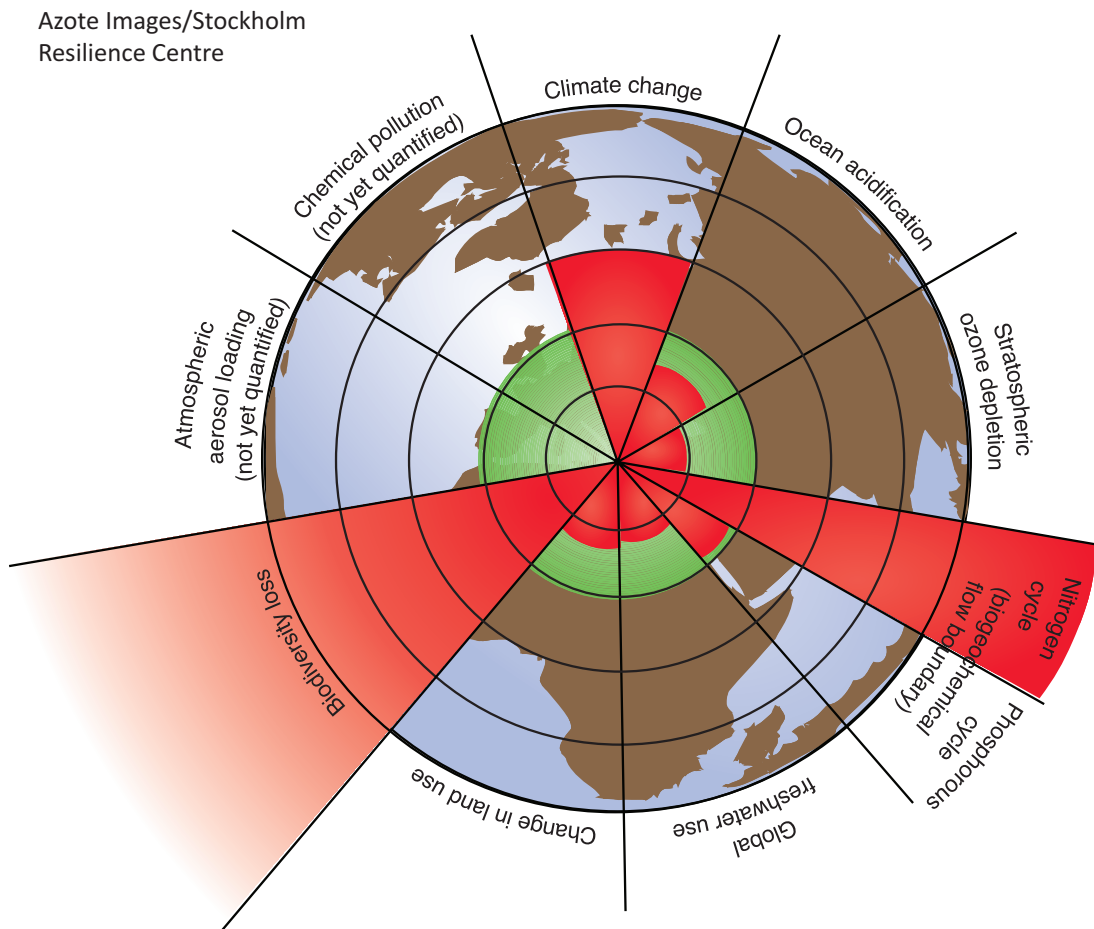


Figure 4: The nine planetary boundaries

Appendix B – Overview of current frameworks to include environmental risks in banking

Source: UNEP Finance Initiative (UNEP FI), 2014. The information below is partly based on information released by Environment, Social and Governance Department of the International Finance Corporation (IFC). UNEP FI would like to thank the IFC for its kind contribution.

Country	Date	Name of Framework (& sub-parts)	Type of Framework	Scope	Main stakeholders involved in development of guidance	Targeted Constituency	Responsibility for implementation
AFRICA-MIDDLE EAST							
Kenya	2014	Kenya Sustainable Banking Principles	Voluntary guidelines	TBD	<ul style="list-style-type: none"> - Kenyan Banking Association - A Working Group of commercial banks 	Commercial banks	N/A
Lebanon	2011	Decree nr. 7835 on central bank reserve requirements	Incentives embedded in central bank regulation	Loans financing energy efficiency and renewable energy projects	<ul style="list-style-type: none"> - Central Bank of Lebanon (Banque du Liban/BdL) as part of Lebanon's national economic and development plan 	Commercial banks	Central Bank of Lebanon
Nigeria	2012	Nigerian Sustainable Banking Principles and Guidance Note, including 3 Sector-Specific Guidelines	Quasi mandatory regulation	<ul style="list-style-type: none"> - Environmental & Social Risk Management 	<ul style="list-style-type: none"> - Central Bank of Nigeria (CBN) - Nigeria Bankers Committee - Commercial banks 	Banks, discount houses and development finance institutions	<ul style="list-style-type: none"> - Adviser on Sustainability (recruited from MOE) at CBN - Deputy Director of the Policy and Regulation Department (CBN) - Sustainability Committee comprising members of 13 departments of the CBN
South Africa	-1994 -2002 -2009	<ul style="list-style-type: none"> - King Code of Governance I - King Code of Governance II - King Code of Governance III 	Voluntary Guidelines, now partially integrated into law (e.g. the Companies Act of South Africa, the Public Finance Management Act, and the Promotion of Access to Information Act)	<ul style="list-style-type: none"> - Corporate Governance - Corporate Governance & Sustainability - Corporate Citizenship, Sustainability & Leadership 	King Committee on Corporate Governance (formed upon a request of the Institute of Directors of Southern Africa)	<ul style="list-style-type: none"> - Listed companies and large public entities, including banks and other financial institutions. - Listed companies and a variety of public entities, including banks and other financial institutions. - All Public, Private and non-profit institutions 	N/A
<i>Other countries where practitioners and/or regulators are significantly* engaged on sustainability issues: Morocco.</i>							

Country	Date	Name of Framework (& sub-parts)	Type of Framework	Scope	Main stakeholders involved in development of guidance	Targeted Constituency	Responsibility for implementation
ASIA-PACIFIC							
Bangladesh	2011	Environmental Risk Management Guidelines for Banks and Financial Institutions in Bangladesh	Mandatory regulation	- Environmental & Social Risk Management	- Bangladesh Bank (BB) - Commercial banks	Banks and Financial Organizations under the Financial Institutions Act (former Non-Bank FIs)	- Supervision department of BB - Since 2013: newly established Green Banking and CSR Department of BB
China	2007 2012	- Green Credit Policy (GCP) - Green Credit Guideline (GCG)	Mandatory regulation	GCG - Environmental & Social Risk Management - Internal Management and management structure - Information disclosure	GCP - Ministry of Environmental Protection - China Banking Regulatory Commission - People's Bank of China GCG - China Banking Regulatory Commission	Policy banks, state-owned commercial banks, joint-stock commercial banks, financial assets management companies, Postal Savings Bank of China, provincial rural credit unions; all trust firms, enterprise group finance companies and financial leasing firms directly regulated by the CBRC	GCP - N/A GCG: - Statistics and Research Departments of the CBRC
India	2007	"Corporate Social Responsibility, Sustainable Development and Non-Financial Reporting – Role of Banks"	Non mandatory	- Triple bottom- line Reporting - Resource management - Corporate Social Responsibility	Issued by the Reserve Bank of India (RBI) following consultations with Public and private sector banks	Commercial banks	N/A
India	2014	Companies Act 2013	Mandatory regulation (amendment to Companies Act 1956)	Investments in CSR activities (including environmental sustainability)	Enacted by the Parliament of India	All large Indian corporations	Ministry of Corporate Affairs
Indonesia	2014	Green Banking Regulation	TBD	TBD	- Bank Indonesia - Ministry of the Environment	All Indonesian banks	Banking supervisory agency (OJK)
Japan	2011	Principles for Financial Action towards a Sustainable Society	Voluntary guidelines	- Environmental and Social risk management - Information disclosure - Supporting SMEs, society's environmental performance and disaster readiness	- Ministry of Environment - All Japanese financial institutions	All Japanese financial institutions	N/A
Mongolia	2014	Sustainable Banking Principles	Voluntary guidelines	To be completed	Environmental & Social Risk Management	- Mongolian Banking Association - 14 leading commercial banks in Mongolia	N/A
Vietnam	2014	Environmental and Social Risk Management Circular	Mandatory regulation	Environmental & Social Risk Management	State Bank of Vietnam (SBV)	All Vietnamese banks	State Bank of Vietnam (SBV)
<i>Other countries where practitioners and/or regulators are significantly* engaged on sustainability issues: Laos, Philippines, Thailand.</i>							

Country	Date	Name of Framework (& sub-parts)	Type of Framework	Scope	Main stakeholders involved in development of guidance	Targeted Constituency	Responsibility for implementation
EUROPE							
EU	2003	Directive on annual and consolidated accounts of certain types of companies, banks and other financial institutions and insurance undertakings	Mandatory for EU states to transpose in national legislation	Reporting: states that it should not be restricted to the financial aspects of the company's business, but, where appropriate, include analysis of environmental and social aspects	European Parliament and Council (proposed by Commission)	Most credit institutions and other financial institutions	EU States, but under the directive they might choose to waive the obligation to provide non-financial information. Overseen by DG Internal Market
	2004	Environmental Liability Directive	Mandatory for EU states to transpose in national legislation	Prevention and remedying of environmental (species, natural habitats, water and soil) damage – enacting the 'polluter pays' principle.	European Parliament and Council (proposed by Commission)	All businesses	EU States. Overseen by DG Environment
	2011	EU Strategy for CSR 2011-2014	Recommendations for States; guidance	Promoting CSR in the EU space	European Commission communication to European Parliament, Council, Economic and Social Committee and Committee of the Regions	All businesses	EU States, invited to develop / update by mid 2012 national action plans to promote CSR. Overseen by DG Enterprise and Industry
	2012	Energy Efficiency Directive	Mandatory for EU states to transpose in national legislation	Countries are required to use energy more efficiently at all stages of the energy chain	European Parliament and Council (proposed by Commission)	Indirectly, all private companies, through implementation of countries measures to comply with the Directive	EU States. Overseen by DG Energy
	2014	Directive on disclosure of non-financial and diversity information by certain large companies and groups	Mandatory for EU states to transpose in national legislation	Disclosure on policies, risks and outcomes as regards environmental matters, social and employee-related aspects, respect for human rights, anti-corruption and bribery issues, and diversity in their board of directors	European Parliament and Council (proposed by Commission)	Large public-interest entities with more than 500 employees (includes listed as well as some unlisted companies, such as banks, designated by Member States because of their activities, size or number of employees)	EU States. Overseen by DG Internal Market and Services
	2014	Communication on long term financing of the European economy	Proposal to lead to mandatory requirements	Proposal to lead to legislation on how to mobilize long-term financing for the European economy, including mobilizing private sources of long-term financing and enhancing the wider framework for sustainable finance	European Commission communication to European Parliament and the Council	Private and public sectors (including banks as a specific target)	Potentially EU states. Overseen by DG Internal Market and Services
France	2001	New Economic Regulations Act (NRE)	Mandatory Regulation	Requirement to disclose in annual report the way companies address the social and environmental impacts	Voted by Parliament	Companies whose securities can be traded on a regulated market	Various Ministries, in matters that concern them
	2002	NRE implementing Decree; and Ministerial Order	Mandatory Regulation	Reporting according to a list of 19 environmental and social topics; and emissions and pollution	State Council	Companies whose securities can be traded on a regulated market	
	2010	Grenelle II Act, followed by Decree regarding sustainability reporting requirements	Mandatory Regulation	Corporate sustainability reporting; requirement to disclose certain environmental and social information and information relating to sustainable development commitments; or provide substantive information on why certain data is not reported	Voted by Parliament Further to nationwide multi-stakeholder dialogue on sustainable development	All listed companies and companies with an annual balance and turnover of 100 million Euros and an average of 500 permanent employees	Ministry for Ecology, Sustainable Development and Energy, multi-stakeholder consultations
	2013	Preparation National Plan for the Development of CSR	Action plan for implementation of EU CSR strategy 2011-2014	Embed CSR issues in French corporate sector, including responsible finance in support of the ecological transition, basic rights and competitiveness	Ministry for Ecology, Sustainable Development and Energy, multi-stakeholder consultations	Private and public sector; financial sector to be specifically mentioned	Ministry for Ecology, Sustainable Development and Energy, multi-stakeholder consultations

Country	Date	Name of Framework (& sub-parts)	Type of Framework	Scope	Main stakeholders involved in development of guidance	Targeted Constituency	Responsibility for implementation
EUROPE							
UK	2006	Companies Act	Mandatory	Requirements to report on environmental, workplace, social, and community matters that are material to their business	Parliament	Companies listed in the London Stock Exchange	Department for Business, Innovation and Skills
	2008	Climate Change Act	Mandatory	Report CO ₂ emissions on an annual basis	Parliament (upon recommendation of the Royal Commission on Environmental Pollution)	Listed companies	Secretary of State for Energy and Climate Change Committee on Climate Change
	2010	CRC Energy Efficiency Scheme Order (amendment in 2013)	Mandatory	Report emissions related to energy use	Environment Agency Department for Environment Food & Rural Affairs	Companies that use more than 6,000MWh per year	Environment Agency
	2012	Combined Code on Corporate Governance	Guiding principles; contains Listing Rules, requiring listed companies to apply and report on main principles; voluntary for wider private sector	Corporate Governance	The Financial Reporting Council (FRC)	Listed companies	Financial Reporting Council
Denmark	2008	Amendment of The Danish Financial Statements Act (2001) to include accounting for CSR in large businesses	Mandatory Regulation	Requirement to report on CSR policies and how policies are translated into action, or expressly state that the company will not be engaging in CSR	Voted by Parliament	State owned companies and companies with total assets of more than EUR 19 million, revenues more than EUR 38 million and more than 250 employees. xtended also to listed financial businesses not covered by the Danish Financial Statements Act by the Danish Financial Supervisory Authority	Danish Business Authority
	2012	New amendment of Danish Financial Statements Act to include human rights and climate change issues	Mandatory Regulation	Danish companies have to also specifically address human rights and climate change			
	2011	Government Action Plan for Corporate Social Responsibility 2012-2015	Guidelines, comprising voluntary and mandatory measures	Businesses - integrate CSR in their core business; investors - use their investments as a driving force for sustainable growth	Danish Business Authority	Wide business community, among other stakeholders	The Danish Business Authority
Norway	1996	National White Paper on CSR	Action plan / voluntary	Placed CSR in the context of competitiveness of Norwegian business in the global Economy	Ministry of Foreign Affairs	Open to all stakeholders	
	1998	Accounting Act	Mandatory	Requirement to include sustainability-related topics in company Director's report, such as work place environment, gender equality and environmental issues		All Norwegian-registered companies	
	2013	Extension of the Accounting Act on CSR reporting	Mandatory	Disclosure on integration of considerations for human rights, labor rights and social issues, the environment and anti-corruption in business strategies, daily operations, and their relations with their stakeholders	Voted by Parliament, further to proposal from Ministry of Finance	Large companies	Ministry of Finance to adopt implementing and transitional measures

Other countries where practitioners and/or regulators are significantly engaged on sustainability issues:*

- *Government-led, mostly focused on CSR Reporting: Austria (2003), Netherlands (2005), Sweden (2007), Finland (2011), Germany (2011), Spain (2011)*
- *Industry-led: Greece, Switzerland, Turkey*

Country	Date	Name of Framework (& sub-parts)	Type of Framework	Scope	Main stakeholders involved in development of guidance	Targeted Constituency	Responsibility for implementation
LATIN AMERICA							
Brazil	2008	- Green Protocol (Protocolo de intenções) for Public Banks	Voluntary guidelines	- Environmental & Social Risk Management - General Environmental Management - Green Products & Services	- Ministry of Environment - Public Banks - Banking Association (Febraban) and Private Banks	Public and private banks who are signatories to the protocols	N/A
	2009	- Green Protocol for Private Banks					
	2008	- Resolution 3545 on the Amazon Biome	Mandatory regulation	- Conditions for granting rural credit - Financing biofuel production - Prohibiting slave labour - Risk assessment and capital sufficiency	- Central Bank of Brazil	Regulated financial institutions, financial institutions integrated in the National Rural Credit System (SNCR)	N/A
	2009	- Resolution 3813 on Sugar Cane					
	2010	- Resolution 3876 on Slave Labor					
	2011	- Circular 3547 on ICAAP					
	2014	Resolution N.4.327	Mandatory regulation	- Social and Environmental Responsibility Policy (PRSA) guidelines (governance structure and management of environmental risks)	- Central Bank of Brazil - Banking Association (Febraban) and Private Banks	Financial institutions and other entities authorized by the Central Bank of Brazil.	- Central Bank of Brazil
Colombia	2012	Green Protocol	Voluntary guidelines	- Environmental & Social Risk Management - General Environmental Management - Green Products & Services	- Ministry of Environment and Sustainable Development - Banking Association (Asobancaria) - Commercial banks - Public banks	The financial sector in general, signatories are public and private banks	N/A
Peru	2014	TBD	Mandatory regulation	- Environmental & Social Risk Management	- Superintendence of Banks, Insurance and Pension Funds (SBS)	All Peruvian banks	SBS
<i>Other countries where practitioners and/or regulators are significantly* engaged on sustainability issues: Mexico, Paraguay.</i>							

NORTH AMERICA							
USA	2010	- SEC Commission Guidance Regarding Disclosure Related to Climate Change	Implementation Guidance	Disclosure related to Climate Change Issues as regards: - compliance with environmental laws. - risk investment - liquidity, capital resources and results of operations - material risks - environmental issues affectation to assets	Securities and Exchange Commission (SEC)	Public companies & Foreign Private Issuers	N/A
<i>*E.g. further instances where frameworks may be under preparation or where some form of on-going dialogue / collaborative action is underway (e.g. via dedicated networks or "clubs").</i>							

Appendix C – Glossary of financial regulation terms

For readers that are less familiar with some of the technical financial regulation language used in this study, a glossary of key terms is presented below. Useful resources for further explanations can be found at www.bis.org and www.oecd.org.

Capital buffer	Mandatory capital that financial institutions are required to hold in addition to other minimum capital requirements.
Credit risk	The risk that one party to a financial contract will fail to discharge an obligation and thus cause the other party to incur a financial loss.
Leverage ratio	A ratio used to calculate the financial leverage of a company to get an idea of the company's ability to meet financial obligations.
Liquidity coverage ratio	The liquidity coverage ratio is designed to ensure that financial institutions have the necessary assets on hand to ride out short-term liquidity disruptions. Banks are required to hold an amount of highly-liquid assets, such as cash or Treasury bonds, equal to or greater than their net cash over a 30 day period (having at least 100% coverage).
Liquidity risk	The risk that assets may not be readily available to meet a demand for cash.
Macroprudential analysis	The assessment and monitoring of the strengths and vulnerabilities of financial systems.
Market risk	The risk of losses on financial instruments arising from changes in market prices. Market risk covers interest rate, foreign exchange, equity price, and commodity price risk.
Net stable funding ratio	The net stable funding (NSF) ratio measures the amount of longer-term, stable sources of funding employed by an institution relative to the liquidity profiles of the assets funded and the potential for contingent calls on funding liquidity arising from off-balance sheet commitments and obligations.
Operational risk	The risk arising from inadequate or failed internal processes, people and systems, or from external events (including legal risk).
OTC derivatives	A security traded in some context other than on a formal exchange. The phrase 'over-the-counter' can be used to refer to stocks that trade via a dealer network as opposed to on a centralised exchange.
Systemic risk	The risk that the inability of one institution to meet its obligations will cause other institutions to be unable to meet their obligations. Such a failure may cause significant liquidity or credit problems and, as a result, could threaten the stability of or confidence in markets. Systemic risk therefore refers to the risks imposed by interlinkages and interdependencies in a system or market.

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Interviews and seminars

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21.11.2013	Buglass, Andrew	Managing Director, Head of Energy Structured Finance, The Royal Bank of Scotland, England Discussion and presentation at Bloomberg New Energy Finance
25.03.2014	Dhumale Rahul, Dr.	Head of Risk Control, UBS Investment Bank
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21.05.2014	Turner, Philip	Economist, Bank for International Settlements
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28.05.2014	Prudential Regulation team	Prudential Regulation Authority, Bank of England
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