TheCityUK

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Sustainable digital finance:

How technology can accelerate the transition to a sustainable economy

October 2021

About TheCityUK

TheCityUK is the industry-led body representing UK-based financial and related professional services. We champion and support the success of the ecosystem, and thereby our members, promoting policies in the UK, across Europe and internationally that drive competitiveness, support job creation and ensure long-term economic growth. The UK's financial and related professional services industry contributes over 10% of the UK's total economic output and employs more than 2.3 million people. It is the largest tax payer, the biggest exporting industry and generates a trade surplus exceeding that of all other net exporting industries combined. It also makes a real difference to people in their daily lives, helping them save for the future, buy a home, invest in a business and protect and manage risk.

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Contents

Foreword

In 2021, the UK will host the 26th United Nations (UN) Climate Change Conference of the Parties (COP26). The event brings together governments, businesses, and civil society organisations with the aim of accelerating action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change.

The next decade will witness concerted efforts to make progress, both in the UK and globally, on milestones to achieving net-zero, greening economies and developing the human capital necessary to fuel the growth of new approaches across all sectors.

Many governments and businesses have already made bold commitments to tackle climate change and other key sustainability and societal issues. The intelligent application of technology will be at the heart of expediting and further stretching those commitments and meeting the funding needs for the transition to a sustainable economy and society.

The financial and related professional services industry is already playing a leading role in these efforts, using data and technology in new ways to monitor and measure both its own impact and that of its customers and clients. The development and deployment of these new products and services are already happening at pace. They will be further accelerated by developments in areas like the UK's green taxonomy and the expansion of reporting under the Task Force on Climate-related Financial Disclosures (TCFD) framework.

Realising the opportunity sustainable digital finance can offer of harnessing technology for sustainable finance whilst mitigating potential risks will require a clear framework, with alignment between future policies in sustainability, financial technology and the provision of finance. Achieving this will enable sustainable digital finance to demonstrate its ability to address barriers and promote sustainable economic growth.

This is an agenda that demands urgent action. By acting now, governments and policymakers, working in partnership with industry, can set the framework needed to realise the benefits of sustainable digital finance in future decades.

Executive summary

The UK is at the forefront of international environmental, social and governance (ESG) developments and the Chancellor of the Exchequer has made clear his ambition for the UK to be a world leader in green finance. To date, there has been limited focus on how ESG issues and sustainable finance intersect with the increasing use of technology in the finance sector. While the use of technology in finance (and more broadly) can have clear benefits in supporting the transition to a sustainable economy, the potential risks or negative impacts on ESG factors must also be considered.

The UK must act now to harness the benefits that technology can bring to accelerate the availability and use of green and sustainable finance, as well as to address the growing challenges and potential harms. In this report, we explore policy objectives that could be adopted and the regulatory or practical challenges that need to be overcome. We also highlight five recommendations for policymakers to ensure that the UK retains its leadership in sustainable digital finance, while meeting its international obligations and other applicable targets.

Recommendations

1. UK policymakers should take a joined-up approach and ensure ESG issues are considered in all new FinTech legislative and regulatory initiatives.
2. New legislative and regulatory initiatives should strike an appropriate balance between robust ESG standards, while ensuring that FinTech innovation is not stifled.
3. The UK should encourage broad international alignment of standards, while reflecting UK-specific needs – following the example of market leaders such as Singapore.
4. In particular, the UK should exert its influence on the world stage to shape standard setting for big data and ESG disclosures.
5. Flexible regulation is key so that regulators can respond quickly and effectively to new FinTech developments and accelerate the use of technology in sustainable finance.

Sustainable digital finance describes the intersection of the use of technology in finance with ESG objectives. Although there is no universally accepted definition, this concept often refers to the use of technology, including artificial intelligence (AI), distributed ledger technology (DLT) or the internet of things, to further ESG or sustainability initiatives in the finance sector and the wider economy.

What is ESG?
ESG is a broad term often used interchangeably with 'sustainability', encompassing environmental, social and governance issues.

Environmental – this limb often focuses around addressing climate change but also includes issues such as deforestation, waste and pollution, and animal welfare.

Social – this limb covers a wide array of initiatives for the benefit of society, including aspects such as human rights, health and safety, financial inclusion, equality, diversity and fair trade.

Governance – this limb includes aspects such as corporate governance, data protection, employee relations, ethics and standards, stewardship, anti-money laundering and anti-corruption.

Sustainable digital finance: an overview

Sustainable digital finance can be viewed both through the lens of how technology can be an enabler of sustainable finance, and how challenges for sustainable technology can be addressed to make digital finance and FinTech more sustainable. For example:

How technology is accelerating sustainability	Challenges for sustainable technology
• FinTech has played a key role in advancing financial inclusion for consumers underserved by traditional financial institutions by providing access to financial products and services that would otherwise be out of reach. For example, wealth management services provided by robo-advisers, budgeting tools, instant payment notifications and no-fee or low-fee brokerage accounts. • AI has assisted, and will continue to assist, with the detection and prevention of fraud, money laundering and terrorist financing. • AI and machine learning (ML) are being used to analyse organisations' environmental risks and carbon emissions to assist with meeting disclosure and reporting requirements. • The Covid-19 pandemic has seen an accelerated transition towards digital payments and other online financial services which have provided for greater convenience and accessibility. • Technology is helping to digitise analogue processes and reduce paper-based trade and communication. For example, the use of DLT and other electronic platforms is anticipated to make significant time and cost savings in international trade. In recognition of these benefits, the Law Commission has recently consulted on draft legislation to help facilitate the use of electronic trade documents.[1] • Beyond financial services, technology is being used to meet ESG goals. For example, AI is being used for optimising crop yields, route mapping for truck drivers and analysing traffic to reduce congestion.	• New technologies such as big data, AI and DLT may have a significant carbon and energy footprint. For example, AI and ML have been criticised for their energy consumption during the coding, 'learning' and testing phase due to high energy demand by data centres, varying efficiency levels of hardware and inefficient coding practices. Similarly, the considerable energy and emissions resulting from mining cryptocurrencies. For example, Bitcoin have also attracted high-profile criticism, creating reputational risks and scrutiny for businesses using cryptoassets. • Hardware used in these technologies including central processing units, circuit boards and hard drives often require components made from precious metals, which has led to potentially harmful mining practices and deforestation. There are also difficulties with recycling this hardware which has led to large amounts of waste. • Cryptocurrencies which enable anonymous or pseudonymous use may fund illicit activities, including terrorism, be used for money laundering or otherwise perpetuate fraud. • The transition to online financial services creates new risks of financial exclusion for members of society who are not willing or physically or financially unable to make use of online services. • Dependence on technology presents a risk of disruption due to their vulnerability to operational glitches, system failures or cyber-attacks.

[1] https://www.lawcom.gov.uk/project/electronic-trade-documents/

State of current regulatory and policy approach

To date, the UK's policy approaches to sustainability and FinTech have generally been considered separately and have developed in parallel. There are a host of existing initiatives in each of these areas which impact the current UK regulatory and policy landscape and are likely to influence any future approach taken on sustainable digital finance.

Key:

Environmental

Social

Governance

International drivers

International agreements and initiatives establish overarching objectives and standards, which provide a platform for the development of the UK's sustainable digital finance policy and regulatory framework. These include:

The Paris Agreement: This legally-binding international treaty signed by nearly 200 countries in December 2015 set a goal for all parties to limit global warming to below 2, or preferably 1.5, degrees Celsius by 2050 and provide funding to climate-related initiatives. All parties are required to produce nationally determined contributions (NDCs), which set out how that country aims to achieve this goal, for example, by formally creating climate change policies. This has led to the creation of policies in the UK to limit carbon emissions and incentivise decarbonisation, as outlined below.

Sustainable Development Goals (SDGs): Established by the UN in September 2015, the SDGs encompass a wide array of climate and social objectives which aim to address some of the biggest environmental and social problems the world faces today. The 17 interrelated SDGs have already formed the basis of policy in the UK through Outcome Delivery Plans in various government departments[2], focusing on aspects such as increasing economic growth through improved digital connectivity and maximising employment across the country.

TCFD Framework: The Task Force on Climate-related Financial Disclosures (TCFD) framework[3] was established by the Financial Stability Board in 2015 to develop reliable disclosure standards and recommendations for businesses. These include climate-related disclosure recommendations published in 2017. The TCFD recommendations are recognised by regulators and industry alike as the gold standard of disclosures with nearly 60% of the world's 100 largest public companies claiming to report in line with TCFD recommendations.

Conference of the Parties 26 (COP26): With the UK hosting COP26 in November 2021, this global, annual summit provides a platform for discussion, accountability and collaboration between countries to agree and achieve various climate-related goals. COP26 will see signatories of the Paris Agreement report on the progress they have made on reducing carbon emissions, as well as the potential for agreement on previously unresolved areas such as carbon market mechanisms and financial aid. Discussions regarding public and private finance for funding ESG-focused technology, innovation and infrastructure are also a priority of the summit.

Group of Seven (G7) Conference: The G7 conference in June 2021 highlighted policymaker interest in climate change (such as the climate-related financial disclosures based on the TCFD framework and sector-specific carbon emission reduction) and social justice (for example, G7 participants pledged ongoing commitment to gender equality initiatives that aim to eradicate inequality of education and gender-based violence). The push for a global minimum corporate tax rate may also be seen as a societal benefit, provided these funds are allocated to appropriate initiatives.

[2] Please see https://www.gov.uk/government/publications/implementing-the-sustainable-development-goals/implementing-the-sustainable-development-goals--2

[3] Reference: TCFD, "2020 Status Report" https://www.fsb.org/wp-content/uploads/P291020-1.pdf"

Existing UK legislative and regulatory requirements – ESG

There are a wide range of existing UK regulatory and legislative requirements and initiatives relating to ESG issues, and climate change in particular. Some relate specifically to financial services, while others are broader in scope. They include:

Climate Change Act 2008: The Climate Change Act 2008 commits the UK to reduce its emissions to net-zero by 2050, but it does not itself set out how the UK will achieve this goal. In any case, there will be a significant role for the finance sector, including in funding the investment and changes (i.e. via green finance initiatives) needed to realise this ambitious target.

Climate-related disclosures – rules for companies and asset managers: The Financial Conduct Authority (FCA) has introduced regulatory requirements for UK premium listed commercial companies to include climate-related disclosures based on TCFD standards in their annual reports, or to explain why they have not done so, in order to increase transparency. The FCA intends to extend these requirements to issuers of standard listed shares, and to further introduce similar disclosure requirements for FCA-regulated asset managers, life insurers and pension schemes. Furthermore, the Government has even proposed to expand this to cover a wider range of larger companies and Limited Liability Partnerships (LLPs). For firms seeking to make such TCFD-aligned disclosures, technology will be able to assist with data gathering, which is a key challenge they face. In addition, it can also be used to assess such data and compare it against investors' benchmarks, thereby allowing firms and investors to assess, disclose and analyse the financial impact of climate risks more accurately and efficiently.

Companies Act reporting: The Companies Act 2006 requires UK companies to disclose, in their annual report, the risks and uncertainties facing the company and, to the extent necessary and depending on the type or size of the company, information on various matters including environmental and employee matters, social, community and human rights issues, and anti-corruption and anti-bribery matters.

FCA – guidance on designing sustainable investment funds: The FCA has published guiding principles in a recent 'Dear chair' letter to assist firms with meeting the FCA's expectations for the design, delivery and disclosure of ESG investment funds. The FCA's Dear chair letter notes that "ESG and sustainable investment funds are currently the fastest growing segment of the European funds market, reflecting increasing investor appetite for these investments." However, this raises the policy challenge of ensuring that such funds merit those titles, and that "greenwashing" risks are addressed. The FCA experience is that a number of funds do not meet its expectations in providing sufficiently clear information in this regard in their applications.

What is greenwashing?

Greenwashing refers to organisations providing misleading information or statements which give the impression that the organisation is addressing and negating ESG concerns to a greater extent than it is. For example, describing a fund as sustainable or ESG-focused without having sufficient evidence to support that claim.

Financial Reporting Council (FRC) – UK Stewardship Code 2020: The UK Stewardship Code 2020 establishes 'comply or explain' principles for asset owners, asset managers and related service providers around the responsible allocation, management and oversight of capital to create long-term value for clients and beneficiaries, as well as sustainable benefits for the economy, the environment and society.

FCA and Prudential Regulation Authority (PRA) – Governance, Culture, Diversity and Inclusion: The FCA and PRA expect regulated firms to comply with well-established governance standards, as set out in its regulatory rules and guidance. The introduction of the Senior Managers and Certification Regime (SM&CR) has increased accountability of senior managers and underlined the importance of good conduct throughout regulated firms. Ongoing initiatives in this area include the publication in July 2021 of a discussion paper addressing diversity and inclusion concerns in the financial sector.

PRA and FCA – Climate Financial Risk Forum: Members of the forum consist of regulators, banks, insurers and asset managers, among others, with the goal of sharing experience, expertise and best practice with regards to a firm's approach to addressing climate change.

Existing UK legislative and regulatory requirements – FinTech

With respect to FinTech policy and developments, existing UK rules and guidance cover a broad range of topics, including use of cryptoassets, cyber-security, data protection and the use of AI. These include:

AML registration for crypto exchanges and wallet providers: The UK has sought to address the risks of cryptoassets being used in financial crime, including by bringing cryptoasset exchange providers and custodian wallet providers into the scope of anti-money laundering (AML) regulation. These firms need to register with the FCA and, while not a full authorisation regime, the FCA will only register firms where it is confident that relevant AML processes are in place. This has led many firms which have been unable to meet FCA expectations to withdraw applications for registration to provide these services in the UK.

FCA ban on selling crypto derivatives to consumers and risk warnings: In January 2021, the FCA imposed a ban on marketing, distribution and sale to retail clients of derivatives and exchange-traded notes referencing unregulated transferable cryptoassets, such as cryptocurrencies, citing the risks to consumers of these products. Subsequently, in June 2021 the FCA published a consumer warning that Binance Markets Limited (an unregulated firm operating an online cryptocurrency exchange from overseas) is not permitted to undertake any regulated activities in the UK. The FCA also reminded consumers to be wary of adverts promising high returns on investments in cryptoassets or cryptoasset-related products, as such products are generally unregulated, meaning that consumers do not have access to the UK Financial Ombudsman or Financial Services Compensation Scheme if things go wrong.

UK plans to broaden regulation of stablecoins and cryptocurrency adverts: During 2021, HM Treasury consulted on proposals to: (i) bring firms carrying on activities relating to stablecoins into the scope of licensing requirements under the Financial Services and Markets Act 2000 (FSMA); and (ii) expand the financial promotion regime under FSMA to apply to unregulated cryptoassets, including cryptocurrencies.

Payment services and Open Banking: Open Banking and related rules under the Payment Services Regulation 2017 give FinTechs and other third-party payment service providers (TPPs) rights to access customer bank account data (where the account is held with another institution) and initiate online payments on their behalf. At the same time, the rules also introduced authorisation or registration requirements for TPPs and standards for secure communication and strong customer authentication, aiming to balance the risks of opening up customer data and accounts to TPPs against the policy objective of allowing innovation to flourish. The UK has also consulted on whether the Open Banking model can be used as a blueprint for opening up other financial services, such as insurance, to third-party providers.

Spotlight on sustainability challenges for cryptocurrencies

It is widely acknowledged that there are environmental concerns with the use of certain types of DLT. Such concerns are particularly apparent for large public DLT platforms such as the blockchain network underlying Bitcoin, which relies on computationally and energy-intensive proof-of-work validation in relation to transactions, including the mining of new bitcoins. The Cambridge Bitcoin Electricity Consumption Index recently found that the Bitcoin network consumed more energy than Argentina on an annual basis.

There has been increasing public criticism of such energy consumption, and resulting emissions, with companies using or investing in cryptocurrencies, such as Bitcoin, facing scrutiny and the risk of reputational damage.

While such concerns are typically reduced by using permissioned, private DLT networks of the type more often utilised by financial sector participants, clear metrics for measuring the environmental impact of the relevant DLT and consistent guidance around firms' disclosure standards would be helpful for the industry. This would ensure that such concerns do not act as a barrier to the take-up of new technology by allowing businesses to clearly demonstrate any impact. This is an area where there is certainly room for improvement, and solutions may draw on a range of commercial and regulatory incentives, including disclosures on emissions and energy consumption.

It is likely that new cryptoasset legislation in other jurisdictions will increasingly address environmental concerns. For example, in September 2020, the European Commission published a proposal for a Markets in Crypto-Assets Regulation (MiCA), which aims to establish a harmonised regulatory framework for the administration, offering and trading of cryptoassets as part of a broader Digital Finance Strategy. Several MEPs have proposed amendments to MiCA to address environmental concerns relating to cryptoassets, including proposals for disclosure requirements on energy consumption and setting minimum energy standards for cryptoassets. The proposal remains subject to the agreement of the European Parliament and the European Council and it will take some time to see the final form of the proposal. However, in line with the EU's broader ESG focus, it seems likely that the final regulation will reflect some environmental considerations and there will be some pressure from the European Council in this respect.

By acting now, the UK has the ability to put itself at the forefront of development of policy in this space and help to shape international standards. For example, any new UK legislation which extends the regulatory perimeter to stablecoins or other types of cryptoasset could incorporate minimum standards and disclosure requirements in relation to energy consumption as well as requiring or otherwise offering incentives for the operation of more sustainable data centres and DLT validation techniques.

Alongside this, there are ongoing initiatives looking at how DLT may be used as an enabler of sustainable finance products, such as green bonds. For example, the Bank for International Settlements (BIS) and the Hong Kong Monetary Authority launched a new initiative in August 2021 to explore the use of DLT to create an efficient and transparent digital infrastructure for tokenised green bonds.

Department for Digital Culture, Media & Sport (DCMS) – Trust Framework: The Trust Framework outlines a set of rules organisations should follow, including the principles, policies, procedures and standards governing the use of digital identity. The requirements centre around the need for a comprehensive data management policy, information security and encryption, among others.

UK Government – AI Roadmap and National AI Strategy: The AI Roadmap outlines 16 recommendations to help drive the UK Government's strategic direction on AI which have formed the basis of the National AI Strategy. The National AI Strategy is effectively a statement of intent for the UK to focus on AI-related development and growth opportunities, with a focus on keeping the UK at the heart of technological innovations in this space. As part of the AI Roadmap, governance of data and AI is seen as a central focus for future developments in the UK. The AI Roadmap also identifies AI as a solution for achieving net zero carbon emissions.

Information Commissioner's Office (ICO) – guidance on AI and data protection: The ICO has published several comprehensive pieces of guidance for firms working with AI and data, including in relation to how data protection law applies to AI and explaining decisions made with AI. The guidance includes recommendations and practical considerations for good practice for organisational and technical measures to mitigate the risks to individuals that AI may cause or exacerbate. The ICO has also published a Data Analytics Toolkit for organisations considering using data analytics, highlighting the importance of data protection and best practice for building systems within a business to ensure that data is appropriately collected, used, stored and destroyed.

Spotlight on ethical data and AI use

Data and AI form the basis of many potential solutions to ESG concerns, from facilitating effective reporting and expanding access to a wide range of financial products to reducing traffic congestion and emissions through analysing traffic patterns. However, the use of data and AI also raises governance issues which it is critical to consider and address. For example, the risk of unfair or discriminatory outcomes in credit assessments or in recruitment produced by AI and ML tools which have been unintentionally trained on biased or inadequate data sets or based on poor coding practices. There is a growing expectation from UK and global regulators that directors and senior managers should understand how their organisations are using AI and data. There is also increased scrutiny of how organisations approach these topics in the press, and how they are perceived by the wider public and their employees.

While many large businesses have been proactive in setting their own policies around best practice for ethical use of data and AI, for example, through setting up internal frameworks and governance boards, a key challenge is the lack of consistent, legally binding requirements for organisations to follow. Nevertheless, we have begun to see growing government and regulatory initiatives in this space.

In January 2021, the UK Government published an AI Roadmap report prepared by the AI Council, with recommendations on the development of a national AI strategy including around research and development, infrastructure and public trust. A National AI Strategy factoring in these recommendations was published in September 2021, recognising ethics, trustworthy AI and skills as paramount to positioning the UK as an AI leader globally. A white paper on how UK AI regulation and governance might look will follow. The ICO has also been instrumental in moving the dial by offering comprehensive, practical guidance for businesses in this space, including in relation to AI and data protection, explaining decisions made with AI and an AI and data protection risk toolkit.

In October 2020, the Bank of England and the FCA launched the Artificial Intelligence Public Private Forum (AIPPF) to facilitate dialogue between the public and private sectors, enhance the understanding of the use and impact of AI in financial services and to help further the Bank of England's objective of promoting the safe adoption of this technology. The AIPPF focuses on data, model risk management, and governance.

Industry, academic and charitable organisations also offer extensive guidance to businesses on the governance of AI and data. For example, the Alan Turing Institute has also issued guidance on AI ethics and AI in financial services, highlighting the importance of transparency, while the Oxford Internet Institute has issued a report on integrating AI and good governance, and the Ada Lovelace Institute and the AI Council have issued a report exploring legal mechanisms which could help facilitate responsible data stewardship.

With international developments in this space increasing – for example the EU's proposed AI Regulation and the release of the People's Republic of China's long-term action plan 'New Generation Artificial Intelligence Development Plan' – it is important that this also remains an area of focus for the UK.

New legislation incorporating standards for appropriate and ethical use of data and AI by businesses would give organisations greater certainty around applicable requirements and offer consumers greater transparency and confidence in the use of this technology across the sector.

UK policymakers may find it instructive to consider the approach being taken in other jurisdictions, including Singapore, which launched its national AI strategy based around a human-centric approach in November 2019.

In line with this strategy, the Monetary Authority of Singapore (MAS), working with financial industry partners, has established the Veritas initiative – a framework for promoting the responsible adoption of artificial intelligence and data analytics (AIDA) solutions.

The MAS previously issued foundational principles to promote fairness, ethics, accountability and transparency in the use of AIDA in the financial services industry (FEAT principles) to ensure that market participants have clear guidance and that there is effective governance and use of AIDA in the finance sector.

The Veritas initiative aims to give institutions clear and practical guidance on measuring their AIDA products against the FEAT principles, including the publication of open source code for the assessment of certain AIDA use cases.

ESG priorities in UK FinTech

It is important to consider how existing policy initiatives supporting the growth of sustainable finance and FinTech interact with each other. In some cases, they may naturally reinforce each other, particularly where technology acts as an enabler for sustainable finance. However, in other cases there may be a tension between different policy objectives, such as supporting innovation and competition on one hand and the imperative to transition to a sustainable economy on the other, which must be carefully balanced. There is an opportunity for the UK to take a truly holistic approach to its development of sustainable digital finance policies to reinforce the synergies between sustainable finance and FinTech and to ensure that potential tensions between different policy objectives are not overlooked.

Recently, we have begun to see a recognition of the intersection between FinTech and ESG in regulatory and policy initiatives. The Kalifa Review of UK FinTech[4], published in 2021, powerfully articulated the purpose of FinTech as being about delivering better financial outcomes for customers, particularly consumers and SMEs. Regulators were encouraged to partner with FinTechs and financial institutions through regulatory sandboxes so that regulation could develop alongside innovation. See the spotlight box on the next page for the FCA and City of London Corporation's latest Digital Sandbox offering in this regard. Use of FinTech to assist with financial inclusion was highlighted as a policy and regulation recommendation whereby FinTech could enable consumers to access a wider range of financial products. From an environmental standpoint, FinTech also has a role to play by making processes more efficient and cutting emissions. Technology can also enhance disclosure through better, more efficient and more accurate data collection and processing.

There are a growing number of UK FinTech firms which specifically aim to address ESG concerns in the financial sector. For example, challenges with the availability of data for ESG disclosures have driven growth in the market for products to assist financial institutions with ESG reporting and planning. There are now also carbon offsetting challenger banks, and

Spotlight on industry-led initiatives

While the past few years have seen a proliferation of legislation and regulatory rules on sustainable finance, these often follow and build upon existing 'soft law' and industry-led initiatives developed to articulate and meet ESG and sustainability goals in key market segments.

For example, the International Capital Market Association (ICMA) first published its Green Bond Principles (GBPs) in April 2014. The GBPs aim to support issuers in financing environmentally sound and sustainable projects and recommend that issuers report on the use of green bond proceeds. Since 2014, ICMA has also developed Social Bond Principles, Sustainability Bond Guidelines and Sustainability-Linked Bond Principles. The EU is now considering developing its own Green Bond Standard (EU GBS) as part of the EU Sustainable Finance Action Plan.

The Loan Market Association (LMA), the Asia Pacific Loan Market Association (APLMA) and the US Loan Syndications & Trading Association (LSTA) have similarly developed a set of Green Loan Principles or voluntary guidelines building on the GBPs, to offer a consistent methodology for use across the green loan market and to preserve the integrity of the market while it develops. The LMA, APLMA and LSTA have also published a related Sustainable Lending Glossary of Terms.

While the derivatives market is less suited to a set of consistent market-wide principles in the vein of the GBPs, the International Swaps and Derivatives Association (ISDA) has also played an important role in explaining the role of derivatives in sustainable finance, through its publications and active member working group.

[4] Kalifa Review of UK FinTech: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/978396/KalifaReviewofUKFintech01.pdf

impact investing platforms that create ESG-related portfolios and financial products for consumer consumption. There is also growing interest in and use of carbon credits and offsetting mechanisms, including among consumers. In parallel, incumbent financial institutions in the UK are also increasingly looking towards technology (including collaborations with FinTechs) as a solution for growing ESG concerns. Rise, created by Barclays, published a climate report for FinTech in May 2021[5] highlighting the importance of data, policy and technology for achieving climate-related goals.

Spotlight on the City of London Corporation and FCA's Digital Sandbox

The Digital Sandbox[6] is run in collaboration between the City of London Corporation and the FCA. It is a novel platform to accelerate tech development that solves current market challenges.

The Digital Sandbox provides a space where innovators can access tools to help them develop and test their proofs of concept. Access to data in the quantity and quality needed to train algorithms is a huge challenge to technology development today. The tools in the Digital Sandbox are designed to tackle such problems, thereby allowing technology activity to reach the market faster.

The Digital Sandbox also acts as a wider space to bring together the financial services ecosystem. Current innovation across sectors is fragmented and in silos. Problem statements do not match solutions, and this leads to frustration by users. This results in a less open and more risk-averse attitude towards digital transformation. The Digital Sandbox's features are designed to encourage collaboration and mentorship, to tackle this silo approach and encourage the implementation of new ideas and a seamless consumer experience.

The Digital Sandbox was piloted over three months in 2020-21 and has since advanced into a second 12-month phase with a programme of activity over 2021-22.

Accelerating the sustainable finance market

Building on the lessons learnt from the pilot, the second phase of the Digital Sandbox will provide support to innovators looking to build and validate tech solutions in the area of ESG data and disclosures.

This sustainable finance cohort will run between November 2021 and March 2022. Its purpose is to accelerate innovation and to address the following market challenges:

- How can technology enable transparency in sustainability disclosure and reporting, especially on the characteristics of corporate assets and the profile of their supply chains? For example, open source and eco-friendly decentralised ledgers, centralised platforms.
- How can technology be used to automate the assurance of a listed issuer's ESG data and validation of its ESG-labelled corporate bond issuance? For example, internet of things, decentralised ledgers, centralised platforms, satellite imaging, AI.
- How can technology help consumers understand the ESG characteristics of the products and providers they engage with, as well as provide visibility around alternatives aligned with their needs and preferences?

[5] https://rise.barclays/news/reports/climate-fintech/
[6] Visit https://www.cityoflondon.gov.uk/supporting-businesses/business-support-and-advice/digital-sandbox-pilot to learn more about the pilot's lessons learned, current use cases, and other insights.

International alignment and disclosure standards

Sustainability is a truly global issue and challenges such as climate change and the impact of social and economic inequalities, particularly in the wake of the Covid-19 pandemic, cannot be addressed or resolved by the UK alone. In parallel, finance is becoming increasingly cross border as the use of online, digital technologies means that (theoretically) businesses can operate internationally more easily and customers have increasing access to cross-border financial products and services. In a digital world, international alignment and standard setting is particularly important for firms operating cross-border, as the burden of duplicative and inconsistent regulation can have significant negative impacts, such as stifling innovation and creating high barriers to entry.

Therefore, it is imperative that the Government considers the approaches adopted in other jurisdictions, not only to ensure alignment with existing international approaches where appropriate, but also to ensure the UK remains at the forefront of new initiatives and is in a position to shape international best practice in this area going forward. Disclosure standards are a prime example of where consistency will be important as it can be particularly challenging for international firms to navigate multiple standards and regimes.

Disclosure standards seek to standardise and establish minimum requirements for the information which companies share with the public, to ensure consistency and to assist investors and consumers with making informed decisions about such companies.

While requiring listed companies and financial institutions to make certain disclosures of their financial and operational information is not a new development, there has been an increasing focus in recent years to require such disclosures to include certain ESG-related information.

International approaches to disclosure

- **International – International Financial Reporting Standards (IFRS) standards:** At an international level, the trustees of the IFRS Foundation have consulted on the establishment of an international sustainability reporting standards board, which would set global sustainability reporting standards, building on existing TCFD standards. A final determination on establishment of the new board is expected ahead of COP26.
- **European Union – Corporate Sustainability Reporting Directive (CSRD):** The proposed CSRD would replace the existing Non-Financial Reporting Directive and is expected to mandate that large companies established or listed in the EU will need to report according to new EU sustainability reporting standards, with a simplified regime for SMEs.
- **European Union – Sustainable Finance Disclosure Regulation (SFDR):** The SFDR introduces disclosure obligations for financial market participants. Disclosure under the SFDR needs to take place both at an entity level, as well as a product level. Disclosure obligations at an entity level focus on ESG-related risks and an entity's framework for calculating and assessing these risks. At a product level, disclosure requirements are generally more burdensome and may vary depending on the type of product being offered.
- **United States of America – ESG Disclosures:** The US Securities and Exchange Commission (SEC) has requested input from the market on climate change disclosures showing an increasing appetite from the US to put in place mandatory ESG disclosures. In May 2021, President Biden signed an Executive Order tasking the Financial Stability Oversight Council, which will include the SEC, with reporting on, and providing recommendations for climate change disclosures. The wider remit of the Executive Order is to establish a regulatory framework for disclosure and put pressure on the establishment of mandatory climate change disclosures.

UK approach to disclosure

Instead of transposing the SFDR, the UK has opted to align its disclosure requirements with the recommendations of the TCFD, as highlighted above. While both regimes have the aim of establishing sufficient and standardised disclosure, the UK proposal is currently limited to climate-related disclosure (although the consultation paper notes that it might be expanded in the future), and the regimes do also diverge in terms of their technical requirements. For example, while both regimes require entity-level and product-level disclosures, the content, requisite level of detail and focus area of the actual disclosures themselves are vastly different. This is likely to be a concern for asset managers who are regulated in the UK and the EU as they will be required to make disclosures that comply with two parallel, but different regimes.

While the USA is still looking to establish a disclosure framework, US companies are already making ESG disclosures in their annual reports, with many of the largest companies using the TCFD's recommendations[7]. Assuming that this may ultimately encourage the adoption of a TCFD-aligned approach in the US and other major economies which have yet to implement standards, this may work to the benefit of the UK.

Effectiveness of disclosure obligations

Disclosure obligations are a relatively recent regulatory tool in the context of holding companies accountable for their ESG impact. There is disagreement on whether increased disclosure requirements are effective at changing behaviour and driving lower emissions. Corporate reporting using the Global Reporting Initiative standards increased by roughly 8,500% between 2000 and 2015, while global carbon dioxide emissions have continued to increase over the same period to just over 35 billion tons.[8] While this might suggest disclosure has not been effective in changing behaviour to date, it is important to consider that disclosure requirements are not standardised and mandatory ESG disclosures have only recently started to be introduced.

In parallel, stakeholder and consumer awareness of ESG issues has grown in recent years, translating into increased pressure on companies (for example, via increased shareholder activism from both institutional and retail investors) and governments to address ESG concerns and achieve goals that have been set. Shareholder pressure has also resulted in greater accountability-based measures being adopted by businesses, for example, by linking executive remuneration to the business meeting certain ESG goals.[9] Increasing shareholder engagement is also crucial if disclosure obligations are to be effective in changing companies' behaviour. Where securities are held through chains of intermediaries, there is an opportunity for FinTechs to make it easier for investors to engage with companies and voting matters. In any case, it is likely that the true effectiveness of disclosure standards will only emerge in the coming years. However, even if it does, it may be difficult to separate the results from other concurrent initiatives in order to accurately isolate and quantify the effect of the disclosure standards.

[7] TCFD, "2020 Status Report" https://www.fsb.org/wp-content/uploads/P291020-1.pdf
[8] Harvard Business Review, "Overselling Sustainability Reporting" https://hbr.org/2021/05/overselling-sustainability-reporting
[9] For more, see the Clifford Chance briefing Remuneration and ESG: what do you need to know?

Challenges for policy setting

The current picture is fragmented, with piecemeal and sometimes inconsistent ESG and FinTech initiatives impacting some, but not all, of the broader financial services market. While progress has been made in specific areas, it is clear that there is much more to be done and that specific, coordinated steps taken with both FinTech and ESG in mind will have the greatest impact.

Overall approach

An important initial step for policymakers will be to determine whether there is appetite, time and investment to introduce a coordinated, wholesale sustainable digital finance policy versus continuing to make improvements on a piecemeal basis. Realistically, recognising the pace at which developments in the digital finance space are occurring, a targeted strategy identifying priority areas will allow quicker progress, although this may result in some ongoing fragmentation.

Striking the right balance

Whatever approach is chosen, striking the right balance between introducing robust ESG policies that change behaviour and achieve a transition to a sustainable economy, while ensuring that innovation is not stifled is key, given the proliferation of smaller firms active in this space. The UK has a key opportunity to distinguish itself as a leader in this area, demonstrating its commitment to ESG goals as well as the continued attractiveness of the UK as a global financial and business centre.

Designing a clear framework

Ensuring that market participants and consumers have clarity on applicable ESG requirements is crucial, particularly as the digital finance market is constantly evolving. Green taxonomies, i.e. classification systems that provide a harmonised approach to identifying sustainable economic activities, can play a central role in any new regime. The UK Government has already signalled that it intends to adopt a green taxonomy, to be largely aligned with the EU's green taxonomy, in the short-term at least. While it is important that the UK taxonomy takes account of jurisdiction-specific needs and considers whether the EU taxonomy is wide enough to cover a range of FinTech products, such alignment in principle is likely to be welcomed by many cross-border businesses.

Singapore's approach to the introduction of a green taxonomy may be helpful for UK policymakers to consider. A MAS-backed taskforce has issued a consultation on a proposed taxonomy for financial market participants designed to provide a sector-wide standardised framework for the identification and classification of financial products and services that can be considered green or in transition. Although the framework is largely aligned with the EU approach, it is also mindful of the needs of the Asian market, and has been designed with greater flexibility, including incorporation of a traffic light system that will more effectively address transition activities according to their level of alignment with environmental objectives.

While the benefits of harmonisation are not unique to sustainable digital finance, a particular challenge that businesses face in emerging areas is that new, typically non-binding guidance is regularly published as market practice evolves, as we have seen for data and AI ethics. This can make it difficult for firms to identify best practice and legal obligations, and again poses a particular difficulty for smaller firms, which form a key market segment.

Designing an effective framework

Considering the type of rules that will ultimately be effective and change behaviour is critical. A successful framework for the sustainable digital finance space will be flexible enough to encourage innovation and adapt as new technologies develop and market practices emerge around them. The framework will also need to adequately cater for firms ranging in size from larger financial institutions to emerging players, and, importantly, to facilitate collaborations between firms of different sizes. The efficacy of disclosure regimes versus accountability-based regimes must be considered, but as we are at an early stage of regulation in this area, evidence of relative effectiveness is still limited.

Case studies – regulatory challenges

To illustrate the challenges for effective policymaking, we consider several different sustainable digital finance focus areas, and how regulation has developed, or is developing in each case, together with the pain points.

Environmental – reporting and disclosure requirements

Regulatory challenge: lack of data and technology lagging the regulatory requirement

As highlighted above, there has been a growing move towards mandatory ESG disclosure standards and requirements in recent years, particularly for financial market participants. However, the data required to make such disclosures is not always readily available and many firms struggle to locate, analyse and present the data they have in line with reporting requirements using existing internal systems.

Availability of data for ESG disclosures and how technology can help is a focus area for the City of London Corporation and FCA's new Digital Sandbox. We have already seen how challenges with lack of data availability have driven market growth for products that assist financial institutions with ESG reporting. FinTechs and other data firms have seen this gap in the market, and have established themselves as providers of such technologies, as well as other services associated with ESG disclosures such as assistance with establishing governance and data collection frameworks. In this case, regulation has created the demand, and has become the driver for further adoption and utilisation of technology. However, at the same time, new regulation must also be mindful of the time needed for corresponding technology to fill the gap in the market and assist participants with the effective roll out of the requisite changes.

Social – consumer finance

Regulatory challenge: regulating at the right stage of development

The relative social benefits versus harms of any FinTech product or service are often shaped by their regulatory environment. Innovation can benefit consumers through the development of new products and increasing competition and should generally be supported and encouraged, while monitoring risks that may arise if the regulatory framework is not well suited to new products and services, or if there are gaps in regulation. In order to avoid stifling innovation while avoiding excessive risks of harm, it is important to introduce regulation at the right stage of development. A flexible and proportionate approach to regulation, including the use of pilot schemes, can assist with this.

Open banking offers an example of how regulation can enable innovation in a safe and sustainable manner. Open banking regulations in the UK and EU permit third-party service providers to be given access to the financial data held by banks about a consumer, when the consumer grants its consent. This sharing of customer data is protected by an array of UK and transposed EU regulation aimed at ensuring that the data is shared, stored and processed in a safe way. The regulation has benefited competition and consumer choice by facilitating the introduction of new products and services by new market entrants in a cost-effective way. Take-up of open banking services grew relatively slowly in the first couple of years following introduction of the new rules in 2018, but this has accelerated more recently, including as use of online and digital payments has grown during the Covid-19 pandemic.

This can be contrasted with the recent growth in buy-now-pay-later (BNPL) lending services largely outside the current regulatory perimeter. BNPL services provide consumers with short-term unsecured credit for small to medium cost purchases, usually with low or no interest, assuming that certain conditions are met. The majority of BNPL lending is currently carried out on an unregulated basis in reliance on an exemption from UK financial services regulation. While such services have proved popular with consumers, BNPL lending may trigger potential consumer harms (for example, excessive spending by an individual). There have been repeated calls for regulation in this area, including from the financial commentator Martin Lewis, highlighting that BNPL services increase default risks for consumers and that the consequences of not meeting repayment conditions are not always clear. In February 2021, the Woolard Review Report was published by the FCA, recommending among other things that BNPL lending should urgently be brought within the scope of existing regulations. Given the media attention, we anticipate that the FCA will move quickly on this recommendation.

Governance – bias in AI systems

Regulatory challenge: unclear obligations and conflicting guidance

AI is increasingly used by organisations within and outside financial services, for example to collect and analyse data and to automate the provision of certain services. Most organisations are now aware of the extensive obligations and safeguarding requirements that apply in relation to data being collected, stored, processed and used, particularly where personal data is involved. However, ensuring that ethical requirements are met in relation to such data and AI use is an area that many firms are still finessing effective policies on, even for the largest of regulated institutions. In recent years, multinational companies have been caught out by bias inadvertently being built into their AI systems and an inability to give appropriate explanations for how such systems work. Some recruitment software programs have been found to discriminate by gender and some credit application processes have discriminated by race, in each case due to the data used to train AI programs being inadequately screened and tested. Governance in the context of AI and data therefore requires the establishment of processes and frameworks that are specifically designed to address these concerns.

Many firms are now conducting AI audits and impact assessments, and establishing internal frameworks for ethical data and AI use, including creating specific governance boards and explainability protocols designed to enable transparency around how algorithms have made particular decisions.

A key challenge for firms using AI responsibly is to understand the strict legal and regulatory obligations that apply to such use, which are not always obvious. In addition, firms have to also navigate the multitude of best practice principles and guidance that have been issued by regulators and industry bodies. As outlined above, a new holistic piece of UK legislation incorporating standards for appropriate and ethical use of data and AI by businesses would give organisations greater certainty around applicable requirements, which would enable greater innovation using AI while also protecting consumers more effectively.

Proposed roadmap and recommendations

The UK has a valuable opportunity to harness the benefits that FinTech can bring in achieving ESG goals by helping to remove key legislative or regulatory barriers, but at the same time also addressing the growing challenges and potential harms that increased use of certain types of technology may bring. By acting now the UK can ensure that technology is best utilised to accelerate the penetration and use of green and sustainable finance products to help achieve the UK's broader ESG targets, and to maintain the UK's role at the forefront of sustainable digital finance developments.

Below are our five recommendations for policymakers.

1. ESG thinking with tech regulation

UK policymakers should take a joined up approach and ensure ESG issues are considered in all new FinTech legislative and regulatory initiatives.

Law and regulation are constantly evolving in the FinTech space. It is critical that specific focus is given to relevant ESG considerations as part of any new FinTech legislative or regulatory initiative, including during the consultation process, in order to ensure that ESG risks are appropriately mitigated and no obstacles to new technology use are inadvertently created. While some new consultations do include questions on ESG and sustainability considerations, such as HM Treasury's July 2021 Wholesale Markets Review consultation, this approach is not yet applied consistently across all new finance and digital finance consultations. For example, considerations around the potential environmental impact of blockchain and DLT were absent from the January 2021 HM Treasury consultation on cryptoassets and stablecoins. We therefore recommend a more systematic approach to ensuring ESG issues are considered in all new FinTech legislative and regulatory initiatives, in line with overarching sustainability objectives.

2. Striking the right balance

New legislative and regulatory initiatives should strike an appropriate balance between robust ESG standards, while ensuring that FinTech innovation is not stifled.

It is vital that the UK achieves the appropriate balance between driving robust ESG policy and standards setting within the UK and on the global stage, while also ensuring there is no stifling of innovation and growth for new and established FinTech businesses. As outlined above, the UK is already at the forefront of fostering innovation with initiatives such as the City of London Corporation and FCA's Digital Sandbox. However, it is critical that lessons learned from the sandbox environment don't just benefit the small number of firms participating, but are shared more widely and where appropriate, harnessed as changes that will have much broader application. At the same time, the principle of 'same activity, same risk, same regulation' should continue to shape developments in the UK regulatory framework for sustainable digital finance.

3. International alignment

The UK should encourage broad international alignment of standards, while reflecting UK-specific needs – following the example of market leaders such as Singapore.

Good regulation is easily accessible and clear to follow. A proliferation of different disclosure and other standards internationally presents challenges and costs for both businesses and regulators. It is crucial that the UK continues to align with international standards where they exist, and plays an active role in their development through engagement with relevant international bodies such as IOSCO and the Financial Stability Board. However, it is also important for the UK to adjust such international standards as appropriate to reflect UK-specific requirements, following the approach of other market leaders in this area, such as Singapore. While being mindful of potential conflicts, the UK should not be afraid to help set the new gold standard and encourage international cooperation, for example via the International Platform on Sustainable Finance of which the UK became a signatory in February 2021.

4. Achieving data's potential

In particular, the UK should exert its influence on the world stage to shape standard setting for big data and ESG disclosures.

Big data has vast potential to continue transforming the financial landscape. However, some practical obstacles must be addressed to reap these benefits. Harmonised standards and ways of defining information are crucial, as we have seen with taxonomy and disclosure initiatives to date. There is an opportunity to harness technology to an even greater extent when defining and implementing new standards, to ensure consistency of format and maximum compatibility. Greater standardisation of reporting and the use of machine-readable formats for data outputs could also assist with presenting assessments of ESG performance, including how financial products meet new ESG standards, in a user-friendly and easily comparable manner. The UK should continue to exert its influence on the global stage and shape international standard-setting initiatives in this space, such as IOSCO's ongoing work on ESG ratings and data providers.

5. Flexible regulatory framework

Flexible regulation is key so that regulators can respond quickly and effectively to new FinTech developments and accelerate the use of technology in sustainable finance.

Flexible regulation is key. Technological capabilities and our understanding of the impact of sustainability considerations are both quickly evolving, which often means that we can't assess the success of the UK's current approach and new initiatives, for example, around disclosure requirements or the role that technology plays in Bank of England stress tests to help assess the resilience of the UK financial system, without ongoing monitoring of regulatory outcomes using technology solutions. Thus, going forward, the flexibility of the UK regulatory framework to adapt and factor in such conclusions and apply lessons learned on an ongoing basis will be a defining factor for success of the UK's approach to regulation in this area.

Post-Brexit, it is even more crucial that the UK's new regulatory framework allows for agile changes so that regulators can respond quickly and effectively to new FinTech and ESG market developments.

Conclusion

The UK has been at the forefront of international ESG developments in recent years and the Chancellor of the Exchequer has made clear his ambition for the UK to be a world leader in green finance. However, to date, there has been limited focus specifically on how ESG issues intersect with increasing use of technology across the finance sector. The UK can firmly establish its position as a world-leader in sustainable digital finance by acting now to harness the benefits of technology as an enabler of sustainable finance and continue developing a flexible, proportionate regulatory framework to encourage the development of sustainable digital finance to ensure the financial services industry can continue to play its part in meeting the critical challenges ahead.

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