



CLIMATE FINANCIAL RISK FORUM GUIDE 2021

Innovation



This chapter provides commentary on ***actionable innovation opportunities to mobilise financial capital and help steward the economy to net zero*** identified by members of the Innovation Working Group of the Prudential Regulation Authority and Financial Conduct Authority's Climate Financial Risk Forum. The document aims to promote understanding of the opportunities and gaps for scaling the mobilisation of financial capital into the real economy to help steward the economy to net zero, through a series of case studies.

This CFRF guide has been written by industry, for industry. The recommendations in this guide do not constitute financial or other professional advice and should not be relied upon as such. The PRA and FCA have convened and facilitated CFRF discussions but do not accept liability for the views expressed in this guide which do not necessarily represent the view of the regulators and in any case do not constitute regulatory guidance.

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While all members participated in the drafting of this document, the innovation case studies and any suggested proposals or ideas herein do not necessarily represent the views of all firms involved.

Key Messages

There is a shared responsibility across financial institutions and regulators to help steward the real economy to net zero. While much of the focus has been on the risks to financial firms associated with physical impacts of climate change and the transition to net zero – the ‘greening finance’ agenda – the Innovation Working Group note that the opportunity and upside potential of moving to a net-zero, resilient economy tends to be underappreciated.

- This ‘financing green’ agenda suggests the need for firms to have a **capital allocation framework as well as a climate risk management framework**.
- Innovation on this issue is happening at pace, through the activities of multiple firms, public agencies, and non-profits, nationally and internationally. However, to meet national and international climate targets, this **innovation needs to be both actionable and scalable**.
- While there are many good innovations happening, **few innovations exist which will scale sufficiently** to transform whole economic sectors (buildings, land use, hard-to-abate sectors, energy) to meet the necessary £50Billion/year finance required¹. Pension funds provide a critical opportunity in this space.
- This will require **regulators to work closely with industry** to ensure regulations (e.g., prudential regulation in insurance) take the macro-risks of not addressing climate change as seriously in practice as more traditional financial risk factors.

Our case studies of actions to **expand financing into the real economy** through **increasing supply of finance and enabling on the demand side**:

- ***Encouraging more long-term capital aligned with UK climate goals through Long Term Asset Funds (LTAFs)***
New authorised fund regime to enable UK-authorised open-ended funds to invest in long-term private market assets, with potential to help UK pension funds direct half a trillion pounds of capital to net zero goals.
- ***Developing local green / climate bond markets (Abundance/GFI)***
Opening bond markets and peer-lending to help direct retail and community investors to green projects, routed through local authorities to reduce delivery risk, with potential to raise £Billions across 400 local authorities.
- ***Using public funding to leverage private finance into levelling up (WMCA)***
Developing skills and capabilities, and new blended public-private financial models, to leverage private capital into ‘place-based investing’ to meet the demand for £’00sBillions investment in net zero places.
- ***Redefining asset classes in areas – place-based investments – in which we want to see pension fund contributions directed (IIGCC & RLAM)***
Developing new methods for changing asset allocation models to support and enable investment in the real economy at the scale required, requiring optimisation of investments for outcome, considering risk, return and impact.

¹ As per Climate Change Committee recommendations.

- ***Investing policyholder money into private market assets (Phoenix/abrdn)***

Using a change in the insurance permitted link to enable policyholders to benefit from private market assets with a green/ESG theme, directing potentially £'00Millions to climate solutions.

- ***Investing in scaling climate solutions (Barclays)***

Building pipelines of growth companies to scale climate solutions, by providing an ecosystem finance model, led by equity growth capital, to help companies scale rapidly, with the opportunities of directing £'00Millions to climate solutions.

Our case studies of **actions to finance transition assets** – delivering structural changes in sectors – include:

- ***Mechanisms to scale up investment into building retrofit (GFI)***

Suite of interventions to scale investment from pump priming the green mortgage market, efforts to stimulate consumer demand, disclosures, phase-in of LENDERS recommendations on affordability calculations and property assessed financial instruments. Impact remains uncertain.

- ***Mechanisms to support structural changes in the maritime sector (Citi)***

Creating a framework for assessing and disclosing the climate alignment of ship finance portfolios, using agreed common and consistent baselines, driving financial transactions to address climate alignment. The framework can be adopted for other sectors needing transition.

- ***Mechanisms to support structural changes in agriculture sector (NatWest)***

Developing metrics to measure farm sustainability, enabling effective financing strategies for supporting net zero transition, given the lack of homogenous unit of output for farming activities, and seeking to create an industry standard.

Our case studies of innovation actions to **improve use of data and metrics**:

- ***Open Data Standards: transforming industry data (Icebreaker One)***

Developing the open data standards to create marketplaces for commercial and open data, delivering interoperability to unlock metrics and reduce the burden of reporting, and help direct finance to deliver maximum impact.

- ***Building portfolio alignment with climate goals (Blackrock)***

Tackling the need for investors to both quantify the current impact and vulnerability of their portfolios, but also to measure and demonstrate the benefit of changing their capital allocation decisions to align with goals.

COP26 in Glasgow in November is the marker or inflection point needed to scale finance rapidly into transitioning the real economy.

Introduction & Purpose

The Climate Financial Risk Forum (CFRF) was established by the PRA and FCA in 2019 to bring together senior financial sector representatives to share their experiences in managing climate-related risks and opportunities. The CFRF has four working groups on disclosures, scenario analysis, risk management and innovation and published a series of guides on each in June 2020. The Innovation 2020 chapter can be found [here](#).

The CFRF has focused on the climate challenge through a **financial risk lens**, in line with the PRA's objectives to promote safety and soundness and FCA's remit to ensure sound, stable and resilient markets and financial systems. Managing the financial risks from climate change requires a strategic approach, which involves both **climate risk management** and **financial stewardship** of an economy-wide transition.

A critical component of this latter stewardship of an economy-wide transition is the **need to mobilise financial capital, at a scale and speed not previously seen, to deliver solutions and place-based investments to enable real economy systems – energy, buildings, transport, land use, industry – to transition to net zero**. The nature of this stewardship means:

- Managing down climate risk in an investor's own portfolio is not enough, there is also a need in parallel for a capital allocation framework **to steer capital actively to need** – both to climate solutions and place-based investments. "While individual investors can divest, the financial system as a whole cannot. Indeed, seemingly rational individual actions that delay the transition make our collective future problems much bigger...we will simply not be able to divest our way to net zero"².
- To ensure an orderly transition, investors need to support structural change over time in real world systems. This means moving beyond weighting investment in green denoted assets alone **to support investment in transition assets**, those assets that are currently not aligned with global or national climate goals – whether net zero or resilience - and which need to transition over the coming decade. This requires effective metrics and ratings to capture forward-looking plans by industry, retail and public sectors to decarbonise, and recognition of the systemic nature of the systems in which we are investing. This will mean addressing intractable issues, which have persisted despite years of concerted effort, such as the disconnect between financial decisions and their wider place-based implications.
- The importance of reliable, consistent and comparable **data and metrics** to support effective decision making, and so price and manage climate-related opportunities as well as risks, is critical and widely recognised and is covered in the report of the Joint Working Group of the Climate Financial Risk Forum. This is particularly the case with forward-looking metrics that seek to capture real economy interventions and intent.

² "Leading the change: climate action in the financial sector": speech by Sarah Breeden, Executive Director for Financial Stability Strategy and Risk at Bank of England, given to UK Finance during London Climate Action Week 2020.

The Innovation Working Group of the Climate Financial Risk Forum has focused on identifying and sharing actionable innovation opportunities to mobilise financial capital and steward an economy-wide transition to meet climate targets. The focus is on illustrating, with short video talks, practical pilots and emerging and active innovation activities across the sector (given the growing issue of 'report fatigue'), particularly where they help inform regulators. This short briefing paper provides associated commentary on where sector innovation gaps remain.

In seeking to progress understanding, the Innovation Working Group of the Climate Financial Risk Forum is mindful that innovation is happening at pace, through the activities of multiple firms, public agencies and non-profits, nationally and internationally. The case studies provided are not exhaustive, instead they seek to illustrate examples of leading-edge activities which are emblematic of innovation on levers of change in the financial system which could be scaled and replicated by others.

Specifically, the report

- **Provides brief context** on the financial industry role in stewarding the economy to net zero and climate resilience.
- **Signposts the case studies**, which are introduced separately through video talks, and which reflect **actionable** and **scalable** efforts to (a) steer capital to need; and (b) manage and support transition assets; and (c) improve the data and metrics used by financial firms.
- **Offers informed commentary** on where gaps and opportunities exist to scale the mobilisation of capital at the pace required to align with public policy goals.

The report has been informed by quarterly meetings of the Innovation Working Group, and seeks to build on, and contribute to, the many wider initiatives underway.

Lessons from practice: case studies

1. Steering capital to need

Central Banks across multiple jurisdictions are undertaking climate stress tests, such as the Bank of England's Climate Biennial Exploratory Scenario (CBES), to assess system-wide risks and prompt discussions of the role firms can play to steward an economy wide transition. Regulators are also strengthening stewardship requirements, for example, through the UK's Stewardship Code, to clarify responsibilities for financial market participants to address systemic risks, including those from climate change.

However, the Innovation Working Group note that the opportunity and upside potential of moving to a net-zero, resilient economy tends to be underappreciated. The following case studies seek to showcase innovation actions that are steering capital to need.

This 'financing green', rather than the risk-led inward focus on 'greening finance', is at the heart of efforts to place more capital in service of climate solutions (high impact but high-risk efforts to change whole economy sectors) and in service of place-based investing (to connect investment with the necessary transition required in places).

The UK goal is to mobilise up to £50Billion per year – from current flows of c. £10Billion/year – by 2030 to meet its net zero aspirations, as per Climate Change Committee recommendations³. Internationally, the IEA notes that clean energy investment in emerging and developing economies must rise from current \$150Billion / year to over \$1Trillion / year by 2030 to meet net zero plans⁴.

As with any complex system, there are several levers of change available to different actors to mobilise capital and steer it to need. The scale of the challenge demands innovation action on all these levers, and by all participants across the financial system, since we cannot know, *ex ante*, which will have the greatest impact.

These levers include a mix of:

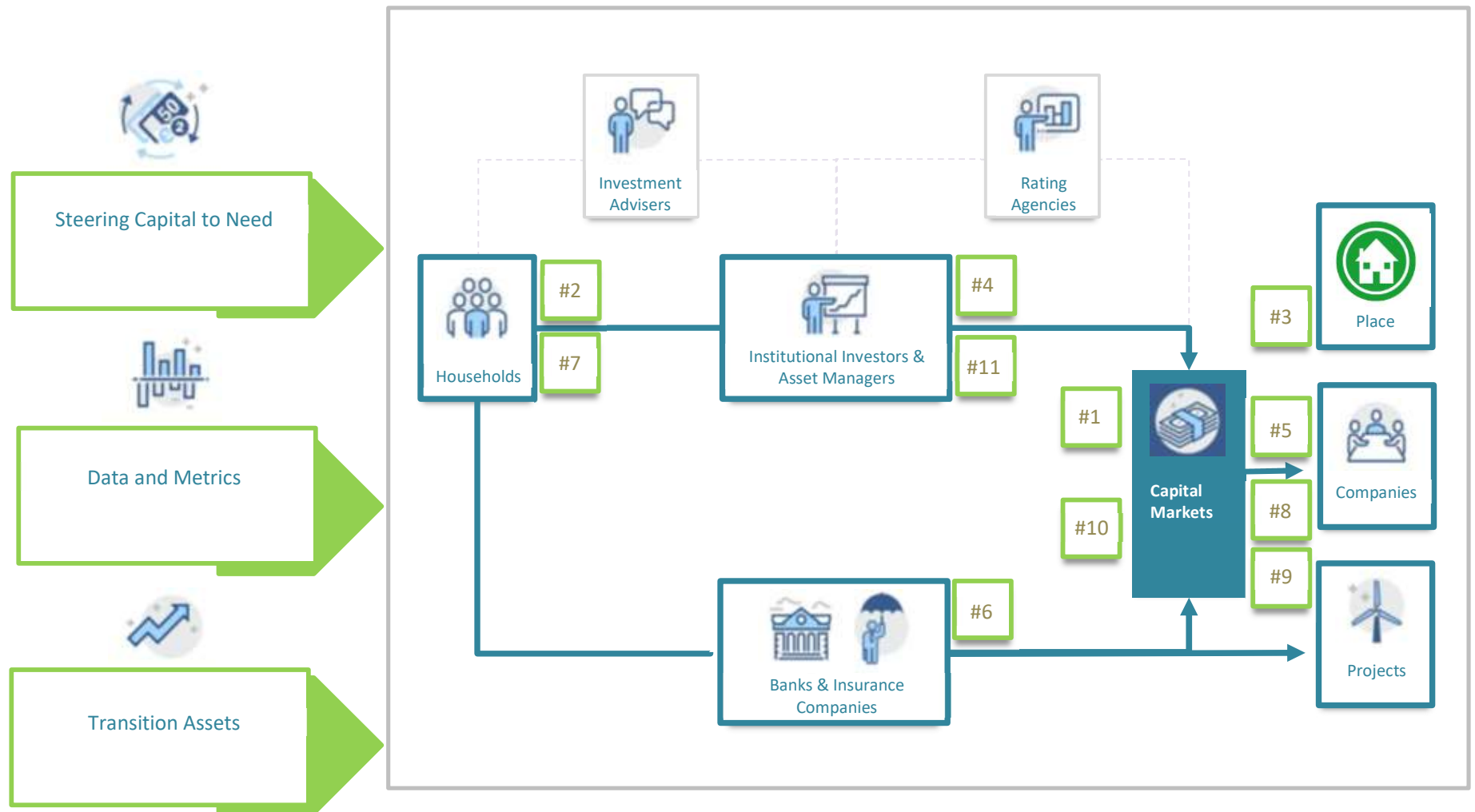
- Policy and regulatory levers
- Making new markets (e.g. new asset classes)
- Developing/applying new financial instruments
- Building new skills and capabilities, both on the demand and supply side
- Improving information / data to support more effective decision-making
- Enhancing citizen participation to drive financial flows
- Changing cultures, both on the demand and supply side of finance
- Giving confidence to investors that they will not be 'greenwashed'

For regulators, a key issue will be to ensure that regulation – and the application of regulations – take the macro-risks of not addressing climate as seriously in practice as the more traditional financial risk factors. For example, in insurance, the prudential regulation (how Solvency 2 is applied) is unhelpful for climate solutions both for life and pension industry, as well as Lloyds. At present, it would appear to be easier to invest in a listed coal mine rather than an unlisted wind farm with cashflow determined by CfDs.

³ <https://www.theccc.org.uk/publication/the-road-to-net-zero-finance-sixth-carbon-budget-advisory-group/>

⁴ <https://www.iea.org/reports/financing-clean-energy-transitions-in-emerging-and-developing-economies>

Figure 1: Our case studies in the FINANCIAL SYSTEM



Our case studies fall broadly into 3 groups:

- A) Actions to **expand financing into the real economy** through:
- a. **Increasing the supply side of finance** that is directed towards investments into 'place' or climate solutions, for example directing investment to private equity, venture capital, infrastructure, and real estate; in building the green and climate bond market (and peer-to-peer lending); and through reshaping asset classes to direct finance to where it is needed.
 - b. **Working on the demand side of finance** to build capacity and capabilities, to develop new blended financial models, and to increase citizen participation to build more investable propositions.

Our case studies:

1. Encouraging more long-term capital aligned with UK climate goals through Long Term Asset Funds (LTAFs)
2. Developing local green / climate bond markets (Abundance/GFI)
3. Using public funding to leverage private finance into 'places' (WMCA/UK100)
4. Redefining asset classes in areas – place-based investments – in which we want to see pension fund contributions directed (RLAM)
5. Investing policyholder funds into Venture Capital (Phoenix / abrdn)
6. Investing in pipelines of climate solutions: banks (Barclays)

- B) Actions **to finance transition assets** – delivering structural changes in sectors – using examples from building retrofit and in the maritime industry sector:

Our case studies:

7. Mechanisms to scale up investment into building retrofit (GFI)
8. Mechanisms to support structural changes in the maritime sector (Citi)
9. Mechanisms to support structural changes in agriculture sector (NatWest)

- C) Actions to **improve use of data and metrics**:

Our case studies:

10. Open Data: transforming the transparency of industry data (Icebreaker One)
11. Building portfolio alignment of investors with climate goals (Blackrock)

1. Long Term Asset Funds

What is it?

A new authorised fund regime to enable UK-authorised open-ended funds to invest more efficiently in long-term private market assets, such as venture capital, private equity, private debt, real estate, and infrastructure. Regulatory details to be announced later in 2021.

What is innovative about it?

The main objective of the LTAF regime is "to enable investors, particularly Defined Contribution (DC) pension schemes, to more confidently invest in illiquid assets (such as venture capital and infrastructure) than they can using existing fund structures".

What impact will it have?

If successful, LTAFs could "encourage UK pension funds to direct more of their half a trillion pounds of capital towards [the UK's] economic recovery".

Commentary:

This [LTAF model](#) has real potential to facilitate investment into appropriate private market assets helping to support the UK's economic recovery and wider climate goals. Providing investors access to private market asset classes, including private equity and infrastructure, is being encouraged by regulators both through reform of the European Long Term Investment Fund (ELTIF) and the introduction of the [LTAF](#) in the UK.

Since investments in many alternative asset classes attract a performance fee, and the proportion of a portfolio allocated to those asset classes varies over time, there is a risk that alternative investments may lead to a breach of the DC default fee cap (even if the cap is smoothed over 5 years), which in turn can act as a deterrent to trustees considering taking advantage of these opportunities on behalf of their members. This speaks to the need to ensure alignment of regulations – from the pension regulator and FCA – to deliver the mobilisation of capital we seek.

One suggestion is to have a proportion of a fund (10-20%, perhaps up to 35%) in alternative investments with unrestricted charges on the upside (i.e. no performance cap), or some alternative for trustees who breach the cap because of strong performance, so they are not penalised when securing stronger returns for their members.

A further challenge is that the pension system as a whole can sometimes be overly concerned with costs rather than value for money, given previous adverse experiences, but the need to ensure adequate retirement outcomes needs to be just as much a priority.

Proposal:

Pension funds and the UK Government should aim for a much greater proportion of pension funds directly invested into climate and/or transition solutions. Recognising that the net zero ambition will only be realised if there is a whole of economy transition and that capital allocation decisions are taken within the context of fiduciary responsibilities. These responsibilities include helping end-savers to navigate the transition, and sustainability and climate-integrated portfolios can provide better risk-adjusted returns to investors in order to achieve this.

2. Building the green / climate bond market

What is it?

There are multiple activities to build the UK green / climate bond market, including (a) UK Government offering institutional investors a minimum of £15B of green gilts in 2021 with a range of maturity dates 'to build a green curve'. <https://dmo.gov.uk/data/gilt-market/green-gilt-issuance/>; (b) offering UK retail savers the opportunity to support green/ESG projects through NS&I products, though total issuance, term length and interest rates remain unknown at present, but are key to scaling the opportunity <https://www.nsandi.com/get-to-know-us/green-saving>; and (c) new local climate bonds.

How is it innovative?

These actions help open up the UK market for green/climate bonds, and related peer lending, which have largely lagged the rapid growth elsewhere, and are a key tool for directing private finance (from institutional investors, retail investors and community investors) to green projects.

What impact will it have?

Abundance suggests this model could raise £Billions across 400 local authorities.

Case Study: Local Climate Bonds (formerly Municipal Community Investments) developed by Abundance Investments (with GFI)

Commentary:

Given the relatively small size of the UK green bond market, these efforts - to create a **sovereign green bond** aimed at institutional investors, opening opportunities for retail investors to support green/sustainable projects **via NS&I**, and the development of local climate bonds by **Abundance Investments** with support from the Green Finance Institute - are welcome. A key challenge for green bonds is to ensure that they avoid 'green washing' and lead to green projects being financed. This puts the wider components of the green bond jigsaw - the project evaluation and selection, the forthcoming UK Taxonomy, the proposed 'Green Register', and the reporting of the allocation and impact of the bonds - to the fore.

The development of **Local Climate Bonds** ('municipal climate investments') provides an excellent way of [engaging local communities in financing local needs](#), using a local authority balance sheet. To reduce risk to citizens (who are the lenders) this mechanism routes the funds through local councils (who then carry project execution risk). For the Councils, the benefit is that it diversifies their funding away from Public Works Loan Board funding (at lower cost of capital to Council - and it brings a valuable local lens to the project). This doesn't change the prudential borrowing of Councils - it must be within their agreed borrowing limits - so while potentially very effective at mobilising very visible local funding / finance to support local projects, it has clear limits to scaling, at least until ISAs can be used. Abundance Investments suggest that this model could raise £3Billion across 400 local authorities.

LINK TO [CASE STUDY INTERVIEW – Bruce Davies, Abundance Investments](#)

3. Leveraging private capital with public funds into levelling up

What is it?

Multiple efforts now exist to leverage private capital into 'place-based investing' to meet the massive investment requirement of delivering net zero cities and regions. These efforts include (a) efforts by cities and regions to develop the internal capacity and capabilities to develop a pipeline of 'investable propositions' and to develop effective blended financial models – using public funding to leverage private finance; and (b) the launch of new institutions such as the UK Infrastructure Bank (and Scottish National Investment Bank) which have a remit to deliver public funding and leverage private funding into infrastructure.

What is innovative about it?

Using public funding to support and leverage a flow of private capital – blended concessional finance – is widely used in development contexts, but for various reasons has not been widely used and scaled by public authorities in UK. The innovation is in creating the institutions; the skills and the capabilities at the appropriate scale to meet local/regional needs (the 'missing middle'); and the financial models that scale private capital in service of levelling up regions and deliver net zero ambitions.

What impact will it have?

Effective blended financial models provide huge potential for scaling investment of '00s Billions into place-based transitions to net zero.

Case Study: Net Zero Neighbourhoods scalable funding model – West Midlands Combined Authority

Commentary:

There is increasing recognition of the need to overcome major bottlenecks preventing the mobilisation and scale-up of investment into 'places' (local authorities, city regions) to support their plans for net zero. These include:

- the 'missing middle' of people with the skills and capabilities in local and regional public institutions (and the financial sector) to match supply of capital to demand for local low/net zero carbon projects in ways that deliver multiple carbon, economic and social benefits with financial returns. See, for example, the work of **PCAN**: <https://www.pcancities.org.uk/finance-platform> and the work of the **Financing for a Just Transition Alliance**: <https://www.lse.ac.uk/GranthamInstitute/financing-a-just-transition/>
- effective financial models that enable the scale-up of private investment into initiatives that meet both public (climate) goods and commercial outcomes, such as the efforts to create a scalable financial model for leveraging private investment into new net zero neighbourhoods by **West Midlands Combined Authority**. See also the work of **City Climate Investment Commission**. <https://cp.catapult.org.uk/project/uk-cities-climate-investment-commission/>
- institutional frameworks to support the mobilisation of finance. The newly created **UK Infrastructure Bank** can fill a distinctive gap in the UK for place-based investing following the loss of European structural and EIB funds, but it will need to crowd-in, not crowd out, private investment, learning the lessons from the Green Investment Bank. <http://www.gov.uk/government/publications/policy-design-of-the-uk-infrastructure-bank>

LINK TO [CASE STUDY INTERVIEW: Ed Cox, West Midlands Combined Authority](#)

4. Rethinking Institutional Investment for real world impact

What is it?

It is widely recognised that existing asset classes available to institutional investors do not support and enable investment in the real economy at the scale that is required. As a result, there are various efforts to expand the asset classes and financial instruments available to institutional investors to provide stable, risk-adjusted returns and low volatility alongside real world impact.

To direct capital to new asset classes or financial instruments will require a rethink of how investors allocate capital to recognise that our customers will live in the society we mutually help to create.

What is innovative about it?

The traditional capital allocation model adopted by institutional investors focuses on maximising risk-adjusted returns based on traditional asset classes. This work aims to challenge this model and instead asks institutional investors to optimise their investments for outcome, considering risk, return and real-world impact.

What impact will it have?

The [ABI Climate Roadmap](#) identifies £0.9trn which could potentially be made available from now to 2035 to invest in meeting Net Zero targets if these challenges are met.

Commentary:

Current capital allocation models and processes are focused on risk adjusted returns, with minimal – if any – consideration of the real economy impact of such investments. An evolution in how investors make capital allocation decisions is needed to mobilise financial capital, at a scale and speed not previously seen, to deliver solutions and place-based investments to enable real economy systems – energy, buildings, transport, land use, industry – to transition to net zero.

Policy makers and regulators are increasingly calling on finance to remember the central **role the sector plays in society**, through the provision of services to investors, borrowers, and lenders to ensure proper risk management and **efficient allocation of capital**. This signals a shift in regulatory and industry sentiment towards the consideration of broader customer outcomes. See the [BSI work on sustainable finance](#); the FCA consultation on Consumer Duty ([CP21/13](#)) and [viewpoints from Royal London](#) as examples.

Both the UN sponsored [Principles for Responsible Investment \(PRI\)](#) and the [Institutional Investors Group on Climate Change \(IIGCC\)](#) propose methods for **changing asset allocation models** to better incorporate real-world impacts. In these examples the traditional asset allocation process is followed and following the identification of the candidate portfolios a further assessment – based on a third dimension – is undertaken.

The Impact Investing Institute note that if just 5% of local government pension funds were allocated to such local investments, it would unlock £16Billion, providing both risk-adjusted returns and support local and regional economic development. See for example, this [exploration of place-based investing](#)

LINK TO [CASE STUDY INTERVIEW: Kaisie Raynor, IIGCC & Royal London](#)

5. Investing funds into Venture Capital assets and climate solutions

What is it?

There is a need to scale investments in future climate (and other) solutions to deliver long term social, economic, and environmental goals. For insurers, there has been a clear conflict to date between this need and the regulatory demands for liquidity of policyholder funds.

A change in the insurance permitted-link enabled the creation of a venture capital fund – **Phoenix Venture Capital Partners** – for unit-linked and with-profits policyholders of Phoenix Life, partnering with abrdn, to diversify into an asset class – Venture Capital – that has, until now, been largely reserved for institutional investors.

What is innovative about it?

This is an early example of a fund that enables policyholders to benefit from private market assets with a green/ESG theme, via an insurance wrapper into Venture Capital funding solutions. It directs investment towards small innovative private companies that are developing solutions to support the transition of the economy.

What impact will it have?

Currently the impact is in the £'00s Millions, so a key question is how to scale up this type of approach to £ Billions.

Case study: Phoenix Venture Capital Partners / abrdn

Commentary:

Phoenix Venture Capital Partners aims to invest mainly in disruptive early-stage UK-based start-ups and businesses pursuing an ESG approach within sectors including green energy, with an initial allocation of £100M and seeking to scale to £500M. It provides a good example of a fund that has taken advantage of the changes in insurance permitted-link to enable policyholders to benefit from private market assets with a green / ESG theme, via an insurance unit-linked wrapper, [into Venture Capital funding solutions](#).

A key question is how to scale up this type of approach from £Millions to £Billions invested in growth and disruptive companies. This will require regulators and regulations to be open and flexible in positively encouraging money into early-stage green companies. It also suggests that principles-based regulation – such as Solvency 2's Prudent Person Principle – is more appropriate than the permitted link limits that are currently in place, which appear rather arbitrary.

6. Investing capital into climate solutions

What is it?

In order to address the climate challenge, we will need to see significant investment in new and clean technologies. For banks, there is a wider strategic interest in being part of that investment.

One example is **Barclays' Sustainable Impact Capital Programme**, which invests in fast-growing, innovative, environmentally focused companies that are helping accelerate the transition to net zero. As well as providing investment in the form of equity, Barclays gives these entrepreneurs access to the financial services ecosystem they are part of. By sharing their knowledge, providing introductions to other clients and partners they work with, and offering access to different kinds of financial services products, the SIC programme aims to help companies grow more rapidly and succeed.

What is innovative about it?

This Sustainable Impact Capital programme is an example of a bank financing model that builds value in a way that is distinct from traditional Venture Capital models. It gives companies backed by the programme the ability to access Barclays' network, which in turn enables them to scale up, enter new markets and build more value.

What impact will it have?

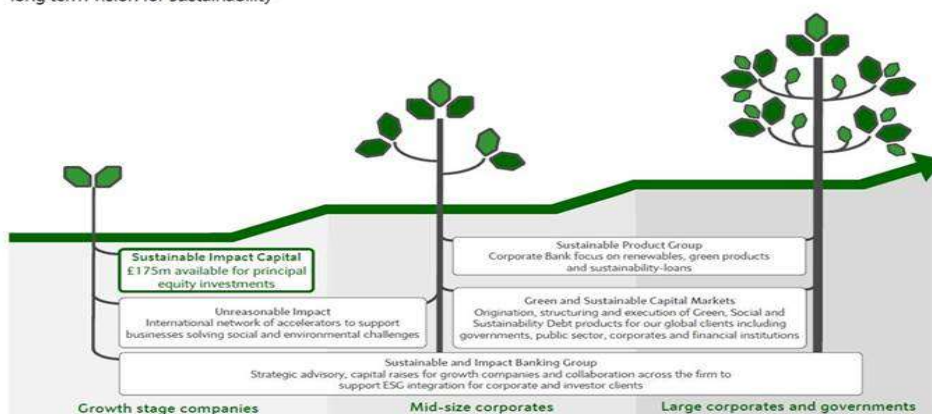
Currently in the £'00s Millions, but with future opportunity to scale.

Commentary:

Barclays' Sustainable Impact Capital Programme seeks to leverage its resources to build an environment that supports green financing. Unlike traditional linear Venture Capital models which take start-up companies to market, this model builds value through the networks in Barclays' wider corporate ecosystem, which enables early-stage companies to scale into new markets and build impactful value. For example, entrepreneurs backed by the Sustainable Impact Capital Programme have Barclays' other banking services – including those designed for high-net worth clients, high-growth companies, and investment banking clients – to help them find solutions and overcome challenges. Through the ecosystem, the Programme's companies can connect with existing Barclays' clients. These connections help entrepreneurs to scale more quickly into new markets and unlock collaborations with businesses looking to accelerate their own net zero transition.

The Journey Through Our Ecosystem

Through Barclays network and service offerings, we are here to help address evolving strategic needs and achieve the long term vision for sustainability



Transition Assets

The second set of case studies are concerned with how finance can support the structural changes needed in sectors to transition to net zero.

7. Enabling structural change in building retrofit to meet national ambitions

What it is?

While new build can be improved (operational net zero, modular), the real challenge for net zero lies with the existing building stock. Multiple finance initiatives are being undertaken to deliver the finance and investment required to retrofit the UK's building stock, working on different levers of change in the system. These include action to pump prime the green mortgage market, with sandbox environments to develop and test new products; government funding support for R&D (e.g. the Green Home Finance Innovation Fund); efforts to stimulate consumer demand (e.g. interest rate offset scheme); disclosures and targets for energy efficiency improvements; the phase-in of the LENDERS recommendations to use more accurate energy bill estimates in mortgage affordability calculations; and new property assessed financial instruments, building on US PACE financing mechanisms that tie energy efficiency costs (debt) to the property, which serves as collateral.

What is innovative?

Actions by multiple players to tackle the suite of barriers to financing energy efficiency and deliver systemic improvements in building quality.

What impact will it have?

Yet to be determined, but potentially large structural changes in energy efficiency.

Case study: Work by Green Finance Institute's CEEB

Commentary:

There is no single financing solution to solve the structural challenges of retrofitting the UK's building stock. Many new initiatives to support house holders to invest in retrofit are being developed through the [Coalition for the Energy Efficiency of Buildings \(CEEb\)](#) which was established by the **Green Finance Institute, with support from E3G**, in 2019. Its members hold 70% of the UK's mortgage book. CEEb initiatives include supporting PACE energy efficiency financing, green ISAs, Green Home Retrofit Finance Principles, and building renovation passports amongst others. New products have been launched: a Santander green mortgage product and Nationwide's £1B green mortgage fund, along with a NatWest green mortgage, reflecting pledges but also a need to pivot balance sheets to reflect action.

Key regulatory challenges include the need to embed property-specific energy estimates into mortgage affordability calculations, replacing the current practice of using ONS averages for all properties, a lack of regulatory drivers - along with competing priorities - on banks/building societies for using energy bills for mortgage affordability calculations; the need for greater protections for lenders in relation to energy efficiency financing; and difficulties for lenders of offering favourable terms on green loans without eroding their P&L because of the requirement to hold the same risk-weighted assets for green / non-green loans. Regulatory enablers include the forthcoming UK taxonomy to underpin what are green investments; and resolving the Green Deal issue of whether mortgage or green deal loan is the senior debt on a house. Other approaches - which assume that householders will not be able to afford deep retrofit required for net zero places - are explored in Case Study 3 by WMCA.

LINK TO [CASE STUDY INTERVIEW: Emma Harvey, Green Finance Institute](#)

8. Enabling structural change in industry sectors: example of POSEIDON PRINCIPLES led by Citi in Maritime Sector

What is it?

Work led by Citi with other global shipping banks to support long term structural change in the 'hard to abate' maritime sector. This involved creating a framework for assessing and disclosing the climate alignment of ship finance portfolios by creating common and consistent baselines for banks and financial institutions to measure their portfolio against. The principles are: 'Assessment' of carbon intensity and alignment of their shipping portfolios; 'Accountability' of source IMO data, portfolio alignment calculation, vessel alignment and average efficiency ratio calculations (gCO2/tonne mile) and disclosure; 'Enforcement' with a standard covenant clause to simplify loan process (including data collection); and 'Transparency' of annual portfolio report.

What is innovative about it?

The Poseidon Principles are applicable to all lenders, relevant lessors and financial guarantors. Signatories agree to apply the Principles in all business activities that are (1) credit products – including bilateral loans, syndicated loans, club deals, and guarantees secured by vessel mortgages, finance leases secured by title over vessel, or unmortgaged loans tied to a vessel; where (2) a vessel falls under the purview of IMO (i.e. 5,000 gross tonnage and above). It forces financial transactions in the maritime industry to address climate alignment.

What impact will it have?

Structurally change the emissions from global maritime sector and provide a framework which can be extended to other 'hard to abate' transition sectors.

Commentary:

The [Poseidon Principles](#) provide an excellent model of using financial transactions to drive climate positive behaviours in a 'hard to abate' industry sector. It forces financial institutions to align with an agreed sector (in this case, IMO) emissions trajectory by focusing future transactions on vessels with improved emission intensities, and also sends a financial signal to the sector to improve technical and operational efficiencies.

This approach is now being taken forward with other 'hard to abate' industry sectors, for example the RMI-facilitated collaboration aiming to create an industry-backed agreement for the [decarbonisation of the steel sector](#)

These approaches play a key role in allocating capital to transition assets – sectors which are not 'green' but need to transition over the coming 20-30 years to net zero. With the demand for green / ESG products driving a green premium in capital markets, there is a need and an opportunity to incentivise disclosure that supports investment into these transition assets / sectors. This involves forward-looking data and metrics, perhaps combining short and long term ratings for companies involved in this transition; a challenge remains the mis-aligned incentives along the whole finance supply chain, from regulators to investment consultants (3 month risk-reward maximisation) to rating agencies.

LINK TO [CASE STUDY INTERVIEW: JAMES BARDRICK, CITI](#)

9. Enabling structural change in industry sectors: example of the GLOBAL FARM METRIC led by NatWest Group and Sustainable Food Trust (SFT) in Agriculture

What is it?

An assessment framework for the agriculture sector, to support the measurement of climate, environmental and land-use impacts.

With 10% of total UK GHG emissions, there is significant opportunity for the agriculture sector to tackle climate change. As primary farming activities do not have a homogenous unit of output base (i.e. farmers produce different products), constructing an environmental impact or emissions intensity metric based on physical output is challenging. The 'Global Farm Metric' is a flexible solution for measuring farming sustainability, thereby enabling effective financing strategies for supporting the transition to a net zero agricultural sector.

What is innovative about it?

This approach will provide those in the Agriculture sector with the ability to measure whole farm performance across a broad range of sustainability metrics, such as biodiversity, energy use & social capital, gain insight on their strengths & areas for development, and through potential benchmarking against sector/peer averages.

This single source for data sharing in the industry will be widely accessible in the UK & beyond and will remove the duplication of effort for multiple information requests, saving agricultural practices significant amounts of time every year and providing common metrics for investors.

What impact will it have?

Impacts still to be assessed but will help shape sector emission reductions

Commentary:

The agriculture sector faces unique challenges in reducing their footprint, given the many and complex variables that contribute to emissions, and the pace of change. The approach taken by NatWest, with the Sustainable Food Trust, has been to develop a metric that seeks to provide a holistic tool that goes beyond carbon, by capturing sector-specific factors such as plant & crop health, livestock management, and soil. It empowers the user by providing data and actionable insights, which are key in helping the agriculture sector with its climate alignment. It also supports the UK National Farmers Union's 2040 goal of reaching net zero GHG emissions across the whole of agriculture in England and Wales.

It seeks to create an industry standard framework which, in turn, could support simplified journeys for users to obtain sustainability related funds & grants, and other support to facilitate their climate transition, enabling them to match the pace of change they are experiencing. Furthermore, consolidating key data enables users to share insights on their practices, empowering more informed consumer and supply chain choice, rewarding proactive climate action.

The [Global Farm Metric](#) is a strong example of collaboration, between [NatWest Group and the Sustainable Food Trust](#), and using sector data to drive climate positive behaviours in a multifaceted industry sector.

Data and Metrics

10. Unlocking access to data using open standards

What is it?

Lack of access to trusted data is a critical blocker to Net Zero opportunities and to demonstrable impact. It increases the chances of green washing. Better access to commercial and open data builds the market for target-based investments, procurement, products, and services, as well as addressing transparency and disclosure. Open standards deliver **cohesion & interoperability** to unlock metric-based innovation and reduce the burden of reporting as standards proliferate.

For the UK to hit its national targets we must both de-risk investment and make impact accountable. This will require opening access to commercial data using low-friction, secure, trusted networks. In addition, data that is in the national interest needs to be published for access by anyone using open licenses.

Examples of open standards for data sharing include Open Banking, Open Energy and insurance and asset-level data such as [SERI](#)

How is it innovative?

Open data standards create marketplaces for commercial and open data. They rapidly expand proven sector trust frameworks and help the finance sector to direct finance towards the greatest impact; they create incentives, improve decision making and radically increase transparency, reducing issues of green washing.

What impact will it have?

Potentially very large on sector, as it builds new market opportunities from data sharing. Example: [Icebreaker One](#)

Commentary:

The aim is to make data work harder to deliver Net Zero—to unlock data flows for better metrics, risk assessment and incentive creation, to model Net Zero strategies and returns, unlock high-resolution economic analysis, and enable the practical application of real-world data down to the asset level. The opportunity is to deliver an open marketplace for commercial data that incentivises the whole value chain. This can be achieved through the implementation of open standards for data sharing.

To deliver this future requires changes to institutional frameworks of data sharing and access (governance, regulation, transparency). For example, a regulatory mandate not only 'to' disclose but 'how to' disclose. A **trust framework** can inform mandates for policy and regulation, legal, operational and technical standards for interoperability. This is a systems-based approach in which financial, engineering, consumption and environmental data can be activated and operationalised. The approach can enable:

- Operational open marketplaces for commercial data sharing across sectors
- Distributed, decentralised activity with a minimum-viable centralised service
- Delivery of co-developed, policy-aligned solutions that address market needs
- Cohesion and interoperability, radically reducing cost and friction
- Risk-managed and cost-effective solutions for governance and compliance
- Industry innovation to support, de-risk and incentivise Net Zero

Icebreaker One has, in collaboration with government, regulators and industry, created a market-wide solution for secure commercial data sharing and is implementing this across energy, transport, water, agriculture and the built environment. This is based on a proven blueprint: with Treasury backing, Open Banking opened secure access to shared financial data. It has since transformed the fintech sector, creating tens of billions of pounds in value. This is expanding to Open Finance and Open Energy.

LINK TO [CASE STUDY INTERVIEW: Gavin Stark – Icebreaker One](#)

11. Portfolio alignment with climate goals

What is it?

There is a need to reallocate tens of trillions of financial capital over the next 25 years. This presents an urgent issue for investors, who need to respond in two ways. The first is to engage with, price and protect against the risks and capture the upside opportunity for returns that are created by this reallocation of capital. The second dimension is to measure and optimise the impact that capital allocation decisions are having on the speed and success of the broader transition ('stewarding the economy').

To take such informed, evidence-led, capital allocation decisions, it is necessary for investors to be able to quantify both the current impact and vulnerability of their portfolios, but also to measure and demonstrate the benefit of changing their capital allocation decisions. This requires access to better scenarios and data. This case study uses the example of BlackRock's partnership with Baringa.

How is it innovative?

Capturing portfolio level benefit of changing their capital allocation requires financial institutions to address portfolio questions they have not addressed before.

What impact will it have?

Yet to be determined, but likely to reshape and redirect \$'00s Billions in capital in the coming years.

Commentary:

Insights from thematic work of the [Climate Financial Risk Forum](#) on data and metrics suggest five primary use cases for climate-related metrics: transition risks, physical risks, portfolio decarbonisation, mobilising transition finance, and engagement. It notes the need to address improved availability, accessibility and quality of climate data at a granular level specific to each use case. It notes the need for forward-looking, and financial metrics, to ensure climate factors are translated into financial decision making. And it notes the need for frameworks and metrics to address system-wide risks as a key area for development.

This case study explores how BlackRock is tackling the challenge of assessing the impact of the transition to a net zero economy at both the security and portfolio level. As policy evolves, new technology emerges, and more companies adapt their business models to align with the transition to a net-zero economy, there are a variety of potential paths and outcomes that the world could take. Investors and risk managers need robust data and analytics to understand the impact of the various potential transition pathways on their assets and the assets of their beneficiaries.

BlackRock recently acquired Baringa Partners' transition risk measurement models as part of a long-term strategic partnership. Through BlackRock's Aladdin Climate offering, scenario and transition models are overlayed with BlackRock's financial models in order to measure transition risk in investment portfolios alongside traditional financial risk metrics.
