VALUING NATURE PROGRAMME

**UK Research and Innovation —
High-level Sector Round Tables**

Round Table 3
**Valuing and Measuring Natural Assets
for the Insurance / Financial Services Sector**

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valuing-nature.net/business-round-tables

Round Table 3

**Valuing and Measuring Natural Assets
for the Insurance/Financial Services Sector**

Contents

This paper presents the objectives and captures key points made during the Round Table.

The Round Table followed Chatham House rules for the discussion of research an innovation (R&I) needs, thus comments and opinions in Section 3 are not attributed to specific participants.

Annex 1 provides a list of participants.

The following RT3 papers are separately available:

- **RT3 01: Background Paper.** This paper outlines the objectives, the expected output and longer-term outcomes of the Round Table. It also provides brief context for the Round Table, including an overview of the relevance of, and drivers for, measuring and valuing nature for the insurance/financial services sector, some examples of current activity, and direction of travel.

- **RT3 02: Overview of relevant UKRI funding instruments/ programmes for research and innovation.** This paper outlines why the Research Councils engage with business, policy-makers and wider society, why NERC is investing in this Round Table, and provides an overview of existing mechanisms to support academic-policy-business collaboration.

- **RT3 03: Relevant Research and Knowledge Exchange.** This paper provides an overview and specific relevant examples of (predominantly NERC-funded) research and innovation output relating to measuring and valuing natural assets with potential relevance for insurance/financial services.

Executive summary

The objective of the Round Table was to identify the research and innovation (R&I) needs and priorities of businesses and policy-makers in the insurance/financial services sector related to measuring and valuing natural assets, so that current and future research has enhanced utility for the sector.

The Round Table considered: current activity to measure and value nature in the sector, drivers for this activity, and barriers and challenges to expansion of activity; the extent to which knowledge needs may be supported by existing output from R&I (e.g. data, tools, methods, models) and how uptake of this output may be accelerated; and what further R&I investment may be needed to support the sector in measuring and valuing nature. Finally, it considered what role the Natural Environment Research Council (NERC) and other funders within UK Research & Innovation (UKRI) or beyond, may have in supporting that.

The Round Table revealed somewhat limited activity for measuring and valuing natural assets (the term incorporates the concepts of natural capital, ecosystem services and biodiversity) across the insurance/financial services sector, including by banks and institutional investors, insurance companies, insurance brokerage and advisor companies, benchmarking agencies, innovators and asset owners, trade bodies, finance sector think-tanks and consultancies. This activity included:

- Larger multinational banks and institutional investors (e.g. HSBC, UBS) have for some time applied the International Finance Corporation (IFC) Performance Standard 6 (PS6) on biodiversity conservation and sustainable management of living resources;

- Investors are increasingly addressing sustainability in asset management, wealth management, investment and retail banking, e.g. adopting the UN Principles for Responsible Investment;

- Investors are mobilising the bond market for resilience in forestry, agriculture and fisheries;

- The European Investment Bank and others are working to develop and pilot blended finance instruments that de-risk investments in natural assets;

- Collaboratives, such as the Natural Capital Coalition and the Coalition for Private Investment for Conservation, have respectively developed guidance for the sector on natural capital assessment, and blueprints for bankable projects.

- At a local level, some areas are developing natural capital investment plans (e.g. Surrey Nature Partnership)

- Benchmarking, analytics and data providers (e.g. FTSE Russell, S&P Trucost) are developing data sets and tools to assess natural capital (e.g. to support EP&L accounts), and working to identify 'stranded assets' in relation to water and land use.

- Think tanks such as CISL are exploring impacts of specific declines in natural assets (e.g. pollination) on financial markets, and linking the issues of water, deforestation, biodiversity, etc. with a view to addressing climate change adaptation in investment.

- Insurers (e.g. Willis Towers Watson) are beginning to consider whether risk assessment methods may be applied for impact investment.

There was general consensus that the direction of travel was towards greater attention from the insurance/financial services sector to the measurement and valuation of natural assets and the integration of natural asset considerations in decision-making, but that this is way behind consideration of climate related issues.

Key drivers for this activity include:

- Financial reporting requirements (e.g. Task Force on Climate-related Financial Disclosures).

- Environmental, Social and Governance (ESG) decision-making requirements.

- Global sustainability targets (e.g. Sustainable Development Goals) with an increasing emphasis on resilience.

- UK Government policy, e.g. plans for post-Brexit agricultural payments for 'public goods' including natural capital, plans to develop new markets for environmental public goods.

- Growing client demand, e.g. from farmers, wealthy investors (notably from female and younger clients).

- The need to provide transparency to clients in background for investments and reporting.

Barriers/challenges include:

- **Data issues** including: understanding what data is required; data availability; data quality; data format and compatibility with existing financial systems; appropriate granularity of data; scaling data from local to portfolio to global; data interpretation; limited resources for longer-term monitoring and datasets; and the challenge of verifying impact without costly ground-truthing.

- **Issues relating to metrics and tools,** including: the complexity of biodiversity and the related challenge to develop simple metrics; the absence of ideal metrics and the need for proxies; difficulties in applying methods and tools across differing scales from asset level to corporate to investment portfolio; difficulties in comparing risk and impact between assets and companies and investment portfolios given the geo-specific nature of natural capital; the plethora of valuation techniques, tools and metrics and questions around their credibility.

- **Market issues,** including: demonstrating a return on investment in natural assets; absence of markets for natural assets; demonstrating materiality of biodiversity and natural capital in investment.

- **Issues related to knowledge exchange, training,** including; limited UKRI funding available for co-creation of research by business and academia; limited training in hard, technical and numerical skills in doctoral training programmes; shortage of skills, knowledge and interfaces across the project pipeline from proponents to investors; absence of an accepted vocabulary relating to biodiversity and natural capital for the insurance/financial services sector.

Research and innovation needs include:

- **New Knowledge** including: foresight work on natural assets and materiality; linking risk assessment with impact assessment; exploring the intersection between physical risk and transition risk; identifying stranded assets related to natural capital; developing a more conducive regulatory framework to drive consideration of natural assets in insurance and investment decisions.

- **Data,** including: assessing ideal data needs, the extent to which these are met by existing monitoring and datasets and to what extent new monitoring and datasets are required; developing data across spatial scales (local, regional, national, global); enhancing transparency on data quality; enhancing investment in long-term monitoring of natural assets; assessing the role that can be played by earth observation in supplying relevant data and data products; developing a global map of the geo-location of the real economy; re-purposing relevant data from research and compliance monitoring to inform financial decision-making; bringing to bear quality data from NGOs and volunteer networks; clarifying the roles of the various players in gathering, interpretation and use of data on natural assets; and enhancing date accessibility.

- **Models, frameworks, tools, metrics** including: providing steer through the plethora of tools and metrics emerging in relation to natural capital assessment and accounting; and developing algorithms and statistical techniques to interpret key datasets in support of financial decisions.

- **New technologies,** including identifying what further technological development in satellite imagery may be required to improve data on natural assets.

- **Enhanced collaboration, knowledge exchange, training** including: developing a road-map for R&I in support of accelerating uptake of natural assets by the insurance/financial services sector; increasing UKRI investment in co-creation of R&I on natural assets, involving collaboration between academia and the insurance/financial services sector; facilitating knowledge exchange across the insurance/financial services sector and with academia; requiring researchers to produce a short finance-friendly summary of each relevant research report; brokering interaction across academia, project proponents and investors to build the pipeline of investable projects; developing a lexicon for communicating on natural assets; and developing PhD programmes that train academics to engage with the insurance/financial services sector on natural assets.

Different players in the insurance/financial services sector will have different roles to play in further defining the barriers and the R&I needs to overcome these, but partnership working will be vital. NERC/UKRI are keen to continue the conversation about what is needed for the sector to deliver better outcomes for natural assets, what role academic data/research and public funding for innovation can have in supporting that, and who are the key players and key initiatives that are leading the way and can help NERC/UKRI define its role.

Next Steps

The Valuing Nature Programme ran two other sector Round Tables for NERC: RT1 (June 2018) addressed the infrastructure sector and RT2 (Nov 2018) addressed the land management sector. There is a good deal of common ground in terms of research and innovation needs across these three sectors.

The findings from all three Round Tables will be analysed with a view to identifying this common ground (as well as differences), and where there may be greatest opportunity for academia to contribute to business (and policy) in the realm of measuring and valuing nature. This analysis will be shared in due course with participants of all three Round Tables to obtain feedback and will subsequently be published in an options and analysis paper in 2019.

A longer-term view is towards the co-creation, with business and policy-makers, of a future research and innovation agenda related to measuring and valuing natural assets. This would involve further activity, such as a possible cross sector workshop bringing together the sectors involved in Round Tables 1, 2 and 3.

1. Introduction

1.1 Objective and expected outcomes of the Round Table

The objective of the Round Table was to identify the research and innovation (R&I) needs and priorities of businesses in the insurance/financial services sector, related to measuring and valuing natural assets, so that current and future research has enhanced utility for the sector.

Expected outcomes include: (a) better integration of nature in insurance and investment decisions; (b) knowledge needs and priorities identified by the sector influence R&I funding.

The Round Table considered:

- **current activity to measure and value nature in the sector,** the direction of travel in this respect, and the related knowledge needs;

- **the extent to which these knowledge needs may be supported by existing output from university-based R&I** (e.g. data, tools, methods, models) and **how uptake of this output may be accelerated** (e.g. through collaborative working between the research and business communities, filling knowledge gaps); and

- **what further R&I investment may be needed** to support the sector in measuring and valuing nature, and **what role the Natural Environment Research Council (NERC), or other funders, may have** in supporting that.

This was the third in a series of Round Tables commissioned by NERC[1] and delivered by the Valuing Nature Programme[2]; RT1 addressed the infrastructure sector (June 2018), and RT2 (November 2018) addressed the land management sector.

NERC, as part of UK Research & Innovation (UKRI) are interested in stimulating **benefit to the UK economy from publicly funded UK environmental research,** by enabling business and policy-makers to access the latest research. The Round Tables therefore focus on involving businesses with significant operations in the UK (not necessarily UK-owned), but may also consider how these businesses are integrating natural capital in their business decision-making internationally.

1.2 Participants

The Round Table brought together representatives *(see List of Participants, Annex 1)* from across the insurance/financial services sector, including:

- wealth managers,
- banks and institutional investors,
- insurance brokerage and advisors,
- benchmarking agencies,
- innovators and asset owners,
- trade bodies,
- finance sector think tanks and consultancies.

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[1]   https://nerc.ukri.org/innovation

[2]   http://valuing-nature.net

2. Overview of current activity

Participants recognised the area of measuring and valuing natural assets was a fast developing one, and noted it is difficult to be fully aware of current work. Each organisation was therefore asked to first address the following questions to set the context for subsequent discussion:

- *What is your organisation currently doing in relation to measuring and valuing natural assets? What are you aware others are doing?*

- *What is your organisation's future ambition in this regard?*

- *What are the drivers for this?*

- *What are the enablers and barriers?*

UBS

UBS is an institution based in Switzerland, but with fully global operations. There are huge discrepancies in how different regions and nations address the issue of valuing natural assets. UBS requires methods that can be applied worldwide, and data that is available worldwide. UBS operations consist of different divisions: asset management, wealth management, investment banking, retail banking. These divisions have differing client bases such as institutional investors (e.g. pension funds, insurance companies), high net worth individuals and retail clients. UBS is also a lender, but the primary focus is investment. The attention spans of investors can be short — UBS needs to provide investors with simple information/statements/measures about what difference an investment will make, e.g. to Carbon emissions or water quality. UBS has four teams looking at sustainability across the business, including at a UBS level related to corporate responsibilities. UBS works with universities, usually approaching them on a specific topic making a one-off business case for the research work. UBS does not normally ask for datasets.

Drivers

- Providing transparency to clients including relevant background and reporting — in an easily digestible format. Second and third parties assist in this process.

- Differing investors have differing drivers. UBS has experienced a growing interest in sustainable investing, particularly from younger and female clients. Some may be interested in particular issues, e.g. water, carbon, rather than sustainability in general.

Barriers/limitations/challenges

- Sustainability assessment methods must work across the business and provide information on a global scale.

- Any new data must work within the existing bank data system. Banking systems are extremely expensive to adjust to incorporate new data; it is a complicated process that takes a long time. A business case is required to understand the benefit (will it open up any new business areas?) and longevity of any change.

Reports/tools used

- Intermediaries are key to transform data into a form that is usable by banks and hold liability for the datasets (e.g. **MSCI** who provide indices and analytics).

WILLIS TOWERS WATSON (WTW)

Current activity/direction of travel

WTW is re-insurance broker. WTW has a global perspective, writing re-insurance globally. WTW are also institutional investors. WTW has put 25—30 years of investment into natural hazard research and modelling. This has delivered datasets and models that are used by WTW and clients to inform underwriters and disaster risk reduction efforts.

Climate risk, biodiversity and natural capital are deeply connected but are not well linked by the insurance industry in practice. Risks associated with natural capital depletion are 'behind' climate risks in terms of prominence with and understanding by corporates and investors.

There are two sides to the business balance sheet — assets and liabilities. These two sides are not well linked when it comes to considering natural assets. Investment in natural assets can reduce liabilities in terms of losses. Natural hazard risk modelling is used widely to inform insurance underwriting decisions — the focus being on the liabilities side of the balance sheet — what is at risk? But such modelling is not used to inform investment management. There may be opportunities to use risk management methods across the business, and to consider better the risk associated with degradation of natural assets and the 'resilience dividend' from investment in natural assets.

Natural capital and ecosystem services are largely public goods — who pays to maintain them? WTW are working with University of York (through a **grant** funded under the NERC-DFID and ESRC "Building resilience to natural disasters using financial instruments" programme) to assess the role of coral reefs in alleviating coastal flooding from cyclones and related storm surges and consider how to insure the coral reef ecosystem itself — for example by developing an insurance product for fishermen whose livelihoods depend on the reef and investing part of the proceeds in reef conservation. This requires understanding of complex ecosystem dynamics including tipping points, and understanding the needs of clients and producing a meaningful set of metrics for that audience.

Barriers/limitations/challenges

- **Challenge:** understanding complex ecosystem dynamics.

- **Challenge:** creating insurance products that help to protect/restore ecosystems.

SPAINS HALL ESTATE

Current activity/direction of travel

Spains Hall Estate is an agri-business in Essex, managed in a sustainable way. The Estate is piloting various environmental management techniques using natural processes such as introduction of beavers for flood management.

Drivers

- The Estate is interested in the longer-term and the 'so what?' question — what impact are we having on regions/societies?

Barriers/limitations/challenges

- **Challenge:** There is a huge array of valuation techniques — it's hard to know which tools to use and which are appropriate. Which tools should you use for what?

- **Challenge:** There is a challenge working with metrics for measuring impact at the micro scale (field level) and aggregating up to global scale. A lot of available metrics have only a UK or regional focus — how can we develop tools that investors can rely on to work at different scales: local, national, global?

Reports/tools used

- The Estate relies on third parties to provide insight on data and translate data into useable tools.

CLIMATE BONDS INITIATIVE (CBI)

Current activity/direction of travel

CBI works to mobilise the bond market for climate change solutions, in particular for the resilience of forestry, agriculture and fisheries. CBI provides guidance to both investors and those seeking finance.

Barriers/limitations/challenges

- **Challenge:** Ideal metrics, for example actual GHG emissions, are not available, so there is a need for proxies, such as land use change or forestry data. This then requires a huge communication effort to both investments and investors, to describe how and why the proxy is appropriate.

- **Challenge:** Verification of the environmental performance of bonds is a challenge, given that verification is typically not done on the ground but relies on reporting of metrics. Can satellite data help with this?

EUROPEAN INVESTMENT BANK (EIB)

Current activity/direction of travel

The EIB is a multi-lateral development bank primarily financing major projects (e.g. infrastructure) across Europe and worldwide. As a public institution EIB has a different role to commercial banks, in that it is accountable to shareholders and to civil society.

The EIB can require borrowers to apply certain standards, and has more leverage than private investors in this regard. Like all multi-lateral banks, the EIB adheres to the International Finance Corporation (IFC) Performance Standard 6 on **'Biodiversity Conservation and Sustainable Management of Living Natural Resources'**.

EIB are working with **WAVES**, Eurostat and the European Environment Agency to look at how to bring national-level Natural Ecosystem Assessments down to project level. Current methodologies don't go down to the level of granularity needed for infrastructure projects. EIB are working with eftec on this.

The EIB sits on the **Coalition for Private Investment for Conservation (CPIC)** with Credit Suisse, IUCN, Cornell University and The Nature Conservancy. CPIC is working on the enabling conditions to increase investment in conservation.

Barriers/limitations/challenges

- **Challenge:** bringing natural capital accounting down to the project level.

- **Challenge:** a plethora of natural capital valuation methodologies are available and it's hard to know which are the most appropriate. There is a need to determine the credibility of the methodologies and the underlying data.

- **Challenge:** how to demonstrate a return on investment in biodiversity, how to measure this? There is a need for credible metrics which are easy to-use and understandable by investors.

- **Barrier:** what do you do for data in developing countries — biodiversity data is a particular difficulty.

- **Challenge:** how can metrics account for context, e.g. how do you assess water use of different businesses, one operating in a water-rich environment but using water inefficiently, with another operating in a water-scarce environment but using water efficiently?

Reports/tools used

- **Integrate Biodiversity Assessment Tool (IBAT)** managed by the World Conservation Monitoring Centre (WCMC) — provides rapid visual screening for critical biodiversity (habitats, species) data on critical habitats.

UK SUSTAINABLE INVESTMENT AND FINANCE ASSOCIATION (UKSIF)

Current activity/direction of travel

UKSIF is a membership organisation for those in the finance industry committed to growing sustainable and responsible finance in the UK. The Financial sector is interested in market risk and investment opportunity. Decisions are based on value and price. Intermediaries (e.g. MSCI, FTSE-Russell) play a key role in providing the data.

UKSIF believes that government can be an important ally in helping to focus investor attention on sustainability, for example by requiring pension funds to report on how they address environmental, social and governance (ESG) factors — but government should not force investors hands on this by specifying how. UKSIF is working with the BSI on a Standard for Green Bonds.

Barriers/limitations/challenges

- **Challenge:** developing metrics that offer accuracy, integrity, simplicity and comparability — across sectors and geographies (e.g. to compare the UK food sector with the IT sector in California) — and available at the level of the corporation.

HSBC GLOBAL ASSET MANAGEMENT (HSBC)

Current activity/direction of travel

Natural capital is the 'poor cousin' of climate. Climate risk is a key frame for thinking about natural assets — in terms of risk and resilience, mitigation and adaptation. Despite this connection, it remains a challenge to raise awareness and attract investor focus — in large part this is because of the difficulty of attaching revenue to natural capital.

For sustainable investment, data is needed at the level of the individual security or individual asset, yet most data are currently reported at company level. Remote sensing geo-spatial data offers a huge opportunity to provide such data, circumventing company reporting. However, data needs to be consistent enough to allow aggregation from individual asset to portfolio level. Impact measurement can provide a suitable entry point for consideration of natural capital.

Impact investing is a useful driver in taking forward impact measurement and should help growth in natural capital investment.

Barriers/limitations/challenges

- **Challenge:** attaching revenues to natural assets.

- **Challenge:** obtaining data at the level of the individual security/asset that can also be aggregated to investment portfolio level.

BARCLAYS AGRICULTURE BUSINESS BANKING

Current activity/direction of travel

In the UK Barclays has a 25% market share in the agriculture sector, which covers 80% of the UK land area, giving it an interest in 20% of UK land and involving 240,000 clients. In providing loans to farmers, Barclays has a longer-term perspective than other parts of the banking sector.

A key challenge is how to put a value on and commoditize natural capital. For example, and increase of soil carbon by 1% across 10% of UK land is valued at £2.5 billion — how can this be made tangible? Can farmers sell carbon credits for increasing soil carbon? And in the same vein, can we put value on quality landscapes?

Barclays also has a green bank, looking at green bonds and green lending. The bank offers a lower interest rate for investments that reduce carbon footprint.

Drivers

- Working for the good of the industry — Barclays has been working with many farming families and communities for several generations.

- Pressure from clients (farmers, NFU) to consider natural capital

- Pressure from Government through increasing emphasis on public goods in agriculture

- Commercial markets (pressures from above)

Barriers/limitations/challenges

- **Challenge:** developing markets for natural assets.

GREEN PURPOSES COMPANY

Current activity/direction of travel

Green Purposes Company is the 'watch-dog' of the recently privatised Green Investment Bank. The Green Investment Bank has five green purposes to guide sustainable investment: carbon emissions reductions; effective use of resources; biodiversity gain; protecting/enhancing the natural environment; and a sustainability catch-all. So far, they have concentrated on the first two, where there are good metrics and more mature markets.

Barriers/limitations/challenges

- **Challenge:** data on biodiversity, the natural environment and overall sustainability.

ALDERSGATE GROUP

Current activity/direction of travel

Lots of the points raised resonate with the Aldersgate group. Many organisations say they've fulfilled ESG criteria but are in fact only looking at carbon emissions as a proxy for climate change. There is a need to raise awareness and investor focus on the issues of natural capital.

Drivers

- Internationally, the next UN General Assembly has a focus on resilience, while the CBD Conference of the Parties 2020 (COP 15) may help bring the CBD closer to the UNFCCC. But are these helpful at influencing at investor and project level?

- Biodiversity metrics are mentioned as part of Defra's 25 Year Environment Plan. Are these useful and credible from an investor perspective?

Barriers/limitations/challenges

- **Barrier:** identifying and realising revenue streams, proving return on investment from natural capital.

- **Barrier:** lack of accurate, simple metrics for natural capital.

CENTRE FOR SUSTAINABLE FINANCE, CAMBRIDGE INSTITUTE FOR SUSTAINABILITY LEADERSHIP (CISL)

Current activity/direction of travel

The Centre for Sustainable Finance draws on the work of CISL's leadership groups across the financial system, bringing together research and education programmes on sustainable finance. CISL works long term with over 50 financial institutions from across five continents. With support from academics and expert practitioners, CISL develops solutions to challenges firms cannot tackle alone and impact both policy and market practice. Across leadership groups in insurance, banking and investment, CISL has developed particular expertise in three key areas of sustainable finance: risk and resilience, positive impact, and innovation finance.

The risk and resilience core area addresses embedding resilience to environmental risk in routine financing decisions. Here, CISL works with insurers, banks and investors to develop practitioner-owned methodologies that help industry address how to integrate environmental scenario analysis into their decisions and direct capital towards sustainable infrastructure. CISL advises central banks and financial regulators on appropriate actions they can take and develops research insights that deepen collective understanding of the links between environmental and social trends and financial risk. In particular, jointly launched by the Consumer Goods Forum and the Banking Environment Initiative in 2014, the **Soft Commodities Compact** focuses upon the four food and timber commodities that have the largest impact upon deforestation and biodiversity. Since its launch a dozen major global banks have championed the Soft Commodities Compact to help achieve net zero deforestation in the four commodities of soy, palm oil, beef and PP&T (paper, pulp and timber).

The positive impact core area addresses enabling investors to achieve positive impact against the Sustainable Development Goals. Decision-makers in business, government and finance need help to understand how to measure and prioritise positive impact in the context of the natural and social systems represented by both the Sustainable Development Goals and the transition to a net zero carbon economy. They need multi-disciplinary expertise that is authoritative, independent and worthy of their trust. Against this backdrop, CISL convenes industry groups to develop commercial strategies and performance metrics that help financial institutions embed business change with confidence. CISL also works with financial regulators and policymakers to ensure that planned interventions orientate the market appropriately towards enabling greater allocation to positive impact. Finally, within innovation finance, CISL harness the digital revolution and financial innovation to direct capital to sustainable business models.

Financial firms are focused on risk, return and impact. Within this framework, awareness of climate risk is increasing within the financial sector, followed by a basic level of understanding about issues such as water and air pollution. However issues such as biodiversity are more complex and currently not seen as material enough to a particular financial portfolio. How can we increase the awareness of risks of biodiversity loss and impact on the natural capital? Getting a handle on risk involves modelling and scenario analysis — e.g. the concentration of the Centre for Sustainable Finance on scenario analysis. What data are needed to assess risk related to biodiversity and natural capital? What impact frames should be used — perhaps building on the **Cambridge Impact Framework**?

There is a change in the distribution of wealth and in investor perceptions, driven in part by younger investors looking for environmental and/or social impact as well as financial return as well by incoming regulatory focus on impact. However there is still a lack of understanding of the difference between declared focus on impact and actual investment choices. In this area, CISL are currently conducting a virtual investment experiment analysis actual investment choices.

UKRI requires researchers to address impact in 'Pathways to Impact' statements in proposals — but these are typically evaluated by academics. Knowledge Transfer Partnerships embed academics in business to help transfer knowledge from academia to business. But there is a gap in R&I funding instruments for co-creation of research by business and academia. This may in some cases be less about new knowledge and more about collaboration in martialing and translating existing knowledge. This might address some of the barriers around demonstrating materiality of biodiversity and natural capital, and around data. The data needed by financial institutions is typically one step on from the data that NERC can provide.

Barriers/limitations/challenges

- Limited awareness of the financial sector of environmental issues wider than climate.

- **Barrier:** limited UKRI funding available for co-creation of research by business and academia to address issues of risk, impact, materiality, data.

Reports/tools used

There are a number of research projects that CISL is pursuing in the area of valuing and measuring natural assets for the insurance and financial sector. Supporting progress against SDGs has become one of the main objectives of the sustainable finance industry. However, measurement of this progress at fund level from both institutional and retail investors is still only developing. Although many challenges remain to be solved, the Investment Leaders Group, convened by the University of Cambridge Institute for Sustainability Leadership (CISL) has designed the **Cambridge Impact Framework** a set of six open-source metrics, which investors can use as proxies for their progress towards the SDGs.

In February Centre for Sustainable Finance launched two practitioner toolkits for understanding physical and transition source of risk. **Physical risk framework: Managing the physical risks of climate change** offers a practical guide for investors and lenders based on natural catastrophe models to help them understand changing physical risks and the impacts on their portfolios. The second report entitled **Transition risk framework: Building capacity to manage the impacts of the low carbon transition on infrastructure investments** explores how to quantify policy changes, reputational impacts, and shifts in market preferences, norms and technology as areas of possible risk and opportunity for investors.

S&P TRUCOST

Current activity/direction of travel

S&P Trucost provides ESG data, tools and analytics. Trucost is active in the natural capital space, having produced **the first environmental profit and loss account (EP&L) for Puma** and led development of the **Finance Sector Supplement** to the Natural Capital Protocol (NCP). Trucost are now focusing on supporting decision-making around Environmental, Social and Governance (ESG) issues by making these more tangible, for example putting together datasets around carbon and water for valuation of investments. There is rising demand for ESG data that is forward-looking. For example, Trucost have developed a carbon pricing risk dataset describing how investment portfolios may be at risk from carbon price increases in the future.

Drivers

- Financial reporting and ESG decision-making requirements.

- Rising demand for ESG data that is forward-looking.

Barriers/limitations/challenges

- **Challenge:** moving from physical measures of natural assets to monetizing values of these assets to measuring impact on a company.

- **Limitation:** timeliness of data, out-of-date data.

- **Challenge:** the geo-specific nature of risks relating to biodiversity and natural capital — and how geo-specific risks aggregate up from corporate assets to an investment portfolio (working directly with corporates makes this easier).

- **Barrier:** vocabulary relating to biodiversity and natural capital — we need a lexicon that is meaningful for business and can be embedded in existing decision-making processes.

Reports/tools used

- NCP Finance Sector Supplement.

UN PRINCIPLES FOR RESPONSIBLE INVESTMENT (UNPRI)

Current activity/direction of travel

UNPRI has 2000 global investor signatories (asset owners, investment managers) and work in many different markets, with different needs. UNPRI provides a platform to encourage collaboration between members and also works with an academic network.

UNPRI agree that materiality and lack of data are key barriers. The required granularity of data differs for different audiences — e.g. portfolio managers, ESG managers — and for investment decisions at different levels, from the individual asset (e.g. a mine), to corporate (e.g. the mining company) to investment portfolio.

Impact investors typically looking at specific commodities (e.g. palm oil, cotton) or specific environmental issues (e.g. deforestation, water) rather than biodiversity, ecosystem services or natural capital, for which the data needs are more complex. Data is sparse even for a single ecosystem service such as pollination. UNPRI relies on publicly disclosed information, rather than data/analytics supplied by **MSCI** or **Sustainalytics**, etc.

UNPRI is interested in identifying 'stranded assets', not only in relation to carbon but also in relation to water and land use, e.g. are there high-water-use companies operating in regions which will become increasingly water stressed? UNPRI is also seeking to move beyond addressing C emissions in investment (climate change mitigation) to linking the issues of water, deforestation, biodiversity, etc. with a view to addressing climate change adaptation in investment.

Barriers/limitations/challenges

- **Challenge:** demonstrating materiality of biodiversity and natural capital in investment.

- **Challenge:** lack of suitable data at the right levels of granularity.

- **Challenge:** addressing environmental issues holistically in investment (climate, water, land use, biodiversity)

VIVID ECONOMICS

Current activity/direction of travel

Investment requires revenue sources, and Government can help to create these, by framing new markets for environmental public goods. Research and innovation can play a key role in this — as has been done for climate and air quality — by providing independent data on state and trends and on impacts on people (e.g. on health and wellbeing), helping to focus government attention, drive action and guide policy.

For example, the Great Barrier Reef is subject to massive impacts from agricultural run-off. Research can help understand and model these impacts. With vehicle emissions, academia helped to establish what is technically possible and what might be the cost. Independent academic research and data is essential to bring balance to the often-polarized positions of industry and NGOs. Research can also play a greater role in demonstrating the effectiveness of interventions, e.g. it has only recently been shown that natural flood management interventions are effective.

Good quality training is also important so that PhD students develop hard numerical and technical skills. There are however some areas where academia has less to offer. Academia is not great at thinking about business models or what firms should be investing in, so leave that to the experts. There will be disruptive change in a number of sectors, but academics don't typically have enough commercial experience to help much here either.

Drivers

- Government policy to create new markets for environmental public goods.

- Independent knowledge and data on state, trends, impacts.

Barriers/limitations/challenges

- **Limitation:** limited training in hard, technical and numerical skills in doctoral training programmes.

SURREY WILDLIFE TRUST (SWT)

Current activity/direction of travel

SWT with the Surrey Nature Partnership has developed a 25-year **Natural Capital Investment Plan for Surrey** detailing investments that can be made to deliver optimal land-use for natural capital. The Partnership is now developing a pipeline of investable projects using the **CPIC** blueprint. They are also working across Surrey, Sussex and Kent with Local Enterprise Partnerships (LEPs) to integrate natural capital investments in local Industrial Strategies.

Numerous interfaces, skills and knowledge requirements across the project pipeline (from initial concept to bankable project) are not currently met and further work is needed to address these. Scale is important for investors, but this has to be developed from the local context. Within the financial sector there is a skills shortage in knowing what investment can deliver in terms of practical interventions.

Drivers

- Local Nature Partnerships, Local Enterprise Partnerships.

Barriers/limitations/challenges

- **Challenges:** development of skills, knowledge and interfaces across the project pipeline from proponents to investors.

- **Challenge:** data issues including data quality, allocation of responsibilities for monitoring, data interpretation.

Reports/tools used

- Natural Capital Investment Plan for Surrey.

3. Knowledge gaps/R&I needs

The Round Table addressed the questions:

- *What knowledge/tools/data do you already have, what are the gaps, how might these be filled?*

- *What should R&I investment focus on, to be of most use to the sector?*

- *How might R&I investment most usefully be structured for business, policy-makers and civil society to engage?*

Discussion centred on the following issues. In the following, the term 'natural assets' incorporates the notions of natural capital stocks, the ecosystem services that flow from these stocks, and biodiversity (which, as an element of natural capital, underpins ecosystem function and the flow of ecosystem services).

New knowledge

- **Conduct foresight work on natural assets and materiality.** Fund managers and banks want to know about emerging trends and issues – where are the emerging risks, what will be the next 'tripwire' (equivalent to 'dieselgate') in terms of natural assets? UK pension funds are required to consider what is 'financially material'. Academia can play a role in identifying where the biggest risks may be, and helping to assess to what extent these may be financially material.

- **Better link risk assessment with impact assessment.** The insurance industry is experienced in considering hazard, exposure and vulnerability in assessing the likely frequency and severity of financial loss for underwriting purposes. How can this knowledge and expertise be translated to assessment of impacts relating to the investment side of the industry – for example, taking in to account impacts on coral reef diversity and dynamics when considering investment in fisheries?

- **Explore the intersection between physical risk and transition risk.** Insurers and investors face increasing risk from degradation of natural assets, yet transition to more sustainable finance carries its own risks for insurers and investors. How do these two areas of risk intersect and how can transition risk be mitigated to accelerate the transition and thereby reduce physical risk?

- **Identify stranded assets related to natural capital.** Building on UKPRI work, are there stranded assets related to natural capital and if so where and what are these stranded assets?

- **Develop a more conducive regulatory framework.** What regulatory and policy change is needed to create and scale markets that internalise public goods deriving from natural assets, generate return on investment in natural assets, and thereby drive due consideration of natural assets in insurance and investment decisions? This includes consideration of regulatory requirements for corporate reporting on natural assets (equivalent to the work of the TCFD).

Data

- **Assess what data on natural assets is ideally required to underpin insurance and investment decisions that protect and restore natural assets, to what extent this can be met by existing monitoring and datasets and to what extent new monitoring and datasets are required.** What data are the new generation of impact investors looking for in terms of impact assessment? How much uncertainty can insurers and investors work with in relation to natural assets (given that it is unrealistic to expect ideal, fully standardised datasets)? Note that investors don't always know what they want in terms of data, so this is likely to be an iterative process.

- **Develop data across spatial scales, from local to regional to national to global.** National datasets are often not of good enough quality and data is required at other scales (field parcel scale, asset level, corporate level, investment portfolio level, global level). What granularity of data is required at each scale, and how can data be aggregated at larger spatial scales?

- **Enhance transparency on data quality.** Good quality data is vital for assessments, accounting and modelling in support of financial decision-making. Investors don't want to take the blame for poor data. This requires assessment of the quality of key datasets – what level of confidence can be attached to each dataset? Academia can play a key role in validating data. This includes datasets used by the intermediaries that work with investors – how reliable are these datasets to underpin investment decisions?

- **Enhance investment in long-term monitoring of natural assets to provide datasets to inform insurance/investment.** Long-term datasets are of high value for the insurance/financial services sector. Most long-term monitoring in the UK is compliance driven but this may not deliver the right kinds of data or in the right form. There is a need to assess what long-term monitoring is required and in what form the data is required, from the point of view of insuring and investing in natural assets, rather than the compliance point of view.

- **Assess the role that can be played by earth observation in supplying relevant data and data products.** Latest satellite imagery technology is delivering high-resolution images across a range of spectra at frequent intervals across the UK and worldwide. This imagery can be interpreted to deliver a wide range of products relating to the extent and condition of natural assets. This involves development of algorithms that can deliver relevant near-real-time data on natural assets at relevant spatial scales.

- **Develop a global map of the geo-location of the real economy – of financial assets and companies** – allowing analysis of supply chains and the natural assets they rely on.

- **Re-purpose relevant data to inform financial decision-making** – e.g. data gathered for scientific research, or for compliance purposes such as reporting to the Water Framework Directive, can be re-interpreted and re-purposed to inform financial decisions. Academics tend to be cautious, stressing what their data does not include/support rather than what it might be useful for – they should be encouraged to focus on the potential applications of their data (bearing in mind that insurers/investors are used to working with uncertainty).

- **Bring to bear quality data from NGOs and volunteer networks.** There are many NGOs (e.g. Wildlife Trusts), local Biological Record Centres, and volunteer networks (e.g. doing bird, butterfly surveys) that collect high quality data. National recognition of these skills and knowledge is lacking. How can we link these better into academic institutions and make use of this data for the sector?

- **Clarify the roles of the various players in gathering, interpretation and use of data on natural assets.** There are many bodies gathering and interpreting data of relevance (Office for National Statistics, JNCC, CEH, etc.) – what roles should be played by the statutory bodies, by academia, by intermediaries, and by the financial institutions themselves in gathering, interpreting and applying datasets that are of use for insurers and investors? The sector generally requires highly interpreted data that is developed well beyond that arising from academic research – intermediaries (e.g. Trucost) play a key role in this respect.

- **Enhance data** accessibility, e.g. along the lines of the **Integrated Biodiversity Assessment (IBAT) tool**, allowing insurers/financial services sector and their intermediaries to look up relevant data, in relevant formats, quickly and easily.

Models, frameworks, tools, metrics

- **Provide steer through the plethora of tools and metric emerging in relation to natural capital assessment and accounting.** A plurality of tools and metrics can be both good and bad. There is a need to work through this and help investors select the right tools and metrics for each purpose. Although it is probably unrealistic to expect convergence towards a single all-purpose tool and single all-purpose metric, we should identify the features that good tools and metrics should have and have a toolbox of validated tools and metrics from which to select. Guidance is needed on how to account for context when applying metrics.

- **Develop new tools, including algorithms and statistical techniques to interpret key datasets in support of financial decisions.** Large financial players are happy to design their own tools but smaller players do not have the capacity to do this.

New technologies

- **Satellite imagery.** What further technological development in satellite imagery may be required to improve data on natural assets for insurance and investment purposes?

- **Low-cost sensors** for monitoring of natural assets.

Enhancing collaboration, knowledge exchange, training

- **Develop a road map for research and innovation in support of accelerating uptake by the insurance/financial services sector** – including consideration of the key players (academia, private sector, public sector, third sector) and their respective roles. Who should UKRI/NERC work with to effect change?

- **Increase UKRI investment in co-creation of R&I on natural assets, involving collaboration between academia and the insurance/financial services sector** – to enhance the impact of this R&I investment.

- **Facilitate knowledge exchange across the insurance/financial services sector** and with academia on how they are addressing natural assets – possibly involving periodic round-tables.

- **Require all relevant research projects to produce a one page bullet summary of each relevant research report,** reviewed by a financial person to ensure this is accessible to the insurance/financial services sector.

- **Broker interaction across academia, project proponents and investors.** With a view to delivering the required knowledge, data, models and tools, accelerating uptake of natural capital thinking by the insurance/financial services sector and strengthening the pipeline of investable projects and innovations.

- **Develop a lexicon for communicating on natural assets** that is meaningful for the insurance/financial services sector and can be embedded in existing decision-making processes.

- **Develop PhD programmes** that provide the relevant skills for academics to engage effectively with the insurance/financial services sector on natural assets.

4. Next steps

This Round Table has revealed the range of activity going on across the insurance/financial services sector of relevance to the measurement and valuation of natural assets, and identified a wide range of research and innovation needs in this regard.

This was the third in a series of Round Tables: RT1 (June 2018) addressed the infrastructure sector and RT2 (Nov 2018) addressed the land management sector. We anticipate that there will be a good deal of common ground in terms of research and innovation needs across these three sectors.

The findings from all three Round Tables will be analysed with a view to identifying this common ground (as well as differences), and where there may be greatest opportunity for academia to contribute to business (and policy) in the realm of measuring and valuing nature. This analysis will be shared in due course with participants of all three Round Tables to obtain feedback and will subsequently be published in an options and analysis paper in 2019.

A longer-term view is towards the co-creation, with business and policy-makers, of a future research and innovation agenda related to measuring and valuing natural assets.
This would involve further activity, such as a possible cross sector workshop bringing together the sectors involved in Round Tables 1, 2 and 3.

Annex 1 — List of participants

Surname	Name	Position	Organisation
Bullock	Steven	Global Head of Research	S&P Trucost
Chimbwandira	Sarah Jane	Director	Surrey Nature Partnership
Gascoigne	Jon	Senior Risk Adviser Capital, Science & Policy Practice	Willis Towers Watson
House	Katie	Senior Analyst	Climate Bonds Initiative
Howard	Simon	Chief Executive	UK Sustainable Investment & Finance Association
James	Gemma	Senior Manager Environmental Issues	UN Principles for Responsible Investment
Maier	Stephanie	Director Responsible Investment	HSBC Global Asset Management
Mayerhofer	Eva	Lead Environmental & Biodiversity Specialist	European Investment Bank
McEntyre	Oliver	National Agricultural Specialist	Barclays
Ruggles-Brise	Archie	Partner	Spains Hall Estate
Seega	Nina	Research Director for Sustainable Finance	Cambridge Institute for Sustainability Leadership
Seimen	Michaela	Executive Director — Sustainable Debt Strategist	UBS
Smale	Robin	Director	VIVID Economics
White	Alex	Policy Manager (Finance)	Aldersgate Group
UKRI & VNP team			
Duke	Guy	Business Champion, VN Programme Coordination Team	VN Programme Coordination Team
Gillies	Rob	Head of Futures	NERC
Hughes	Ruth	Senior Programme Manager, Innovation Team	NERC
Mitchell	Jodie	Senior Programme Manager, Innovation Team	NERC
Stratford	Charlie	Business Development Manager	Centre for Ecology & Hydrology
Young	Peter	Chair	VN Business Interest Group

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