



UK Research  
and Innovation

RT3 01

## UK Research and Innovation – High-level Sector Round Tables

### ROUND TABLE 3

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

Thursday 17 January 2019, 11:00-15:00  
(refreshments available from 10:30)

[Prince Philip House](#), 3 Carlton House Terrace, St. James's, London SW1Y 5DG

## BACKGROUND PAPER

This paper outlines the objectives, the expected output and longer-term outcomes of the Round Table.

It then provides brief context for the Round Table, including relevance of measuring and valuing nature for the insurance / financial services sector, drivers for measuring and valuing nature in the sector, and some examples of current activity.

For a brief introduction from the Natural Environment Research Council (NERC) to existing research and innovation output relating to measuring and valuing nature, see separate paper RT3 02.

For examples of existing funding (mainly NERC) which supports business-academic collaboration, see separate paper RT3 03.

**Guy Duke**

Business Champion, Valuing Nature Programme Coordination Team

**Peter Young**

Chair, Valuing Nature Programme Business Interest Group

**GD NATCAP LTD**

## 1. OBJECTIVE & EXPECTED OUTCOMES

**The objective** of this Round Table is to identify the research and innovation (R&I) needs and priorities of business and policy organizations in the insurance / financial services sector, so that current and future research has enhanced utility for the sector.

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

The Round Table will consider:

- **current activity to measure and value nature in the sector** (e.g. how to apply natural capital assessments, natural capital accounting), 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 R&I** (e.g. data, tools, methods, models) and **how uptake of this output may be accelerated** (e.g. through collaborative working between the academic, business and policy 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 is the third in a series of Round Tables commissioned by the NERC Innovation Team.<sup>1</sup> A first Round Table (June 2018) focused on the infrastructure sector and a second Round Table focussed on the land management sector (November 2018). A further Round Table is planned later in 2019 to bring together all these sectors to consolidate common interests.

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

## 2. EXPECTED OUTPUT

The output will be a concise report containing:

- **An overview of current relevant activity in the insurance / financial services sector** on the integration and application of natural capital in business decision-making, of **the future ambition of business** and policy in this respect, of **what is driving business interest** and of **enablers/barriers**.
- **An overview of knowledge needs of the insurance / financial services sector** (focussing on but not limited to **environmental science**), and initial **analysis of the extent to which these needs may be met by existing output** from NERC and UKRI and of the **extent to which further R&I is required**.
- Consideration of **what role NERC Research and Innovation funding could have** in accelerating uptake of R&I output, what impact this might have on the insurance / financial services sector, and what forms of funding and structures enable this.

---

<sup>1</sup> Infrastructure, risk management, food systems, natural resources, environmental data... - <http://www.nerc.ac.uk/innovation/activities>

### 3. PARTICIPANTS

This Round Table brings together representatives from the insurance / financial services sector, including:

- Banks and institutional investors
- Insurers / insurance advisors
- Benchmarking / rating agencies
- Relevant trade bodies
- Advisors/influencers
- Innovators
- Asset owners

### 4. CONTEXT

#### 4.1 Relevance of measuring and valuing nature for the insurance / financial services sector

The insurance / financial services sector are critical players in maintaining and restoring natural assets (natural capital stocks) and the ecosystem services that flow from these.

The insurance / financial services sector insure and invest in business across multiple sectors having multiple dependencies on natural assets and multiple impacts on these natural assets. These dependencies and impacts give rise to wide-ranging risks and opportunities for the insurer, the investor and the client business itself. Addressing these issues should be integral to sound ESG management.

The [UK National Ecosystem Assessment](#) found that much of the UK's natural capital was degraded and many ecosystem services in decline.

Effective management of natural assets aims to sustain and grow natural capital stocks and optimise ecosystem service flows, reduce and manage risks, and seize opportunities. This requires good relevant knowledge, evidence, methods and tools to measure and value nature and integrate this information in business decision-making.

#### 4.2 Drivers for measuring and valuing natural assets in the sector

A number of drivers may be leading businesses in the insurance / financial services sector to do more to measure and value natural assets and integrate this knowledge in decision-making. These drivers may include regulatory / policy drivers for the sector, the need for longer-term sustainability of returns on investment (for example, in the face of deteriorating natural assets, or changing climate), shareholder pressures, asset management considerations, corporate responsibility considerations and external stakeholder pressures (e.g. civil society groups). These drivers may vary considerably in importance between different parts of the insurance / financial services sector – for example, between insurers, angel investors, venture capital, banks and non-bank financial intermediaries (NBFIs) and private equity. Furthermore exposures to risks and opportunities associated with natural capital vary widely according to the nature of the financial interest (e.g. debt or equity), the period of holding that interest, and the asset class of any security held.

Regulation and policy are likely to be a key driver. A number of key regulatory / policy developments are notable in this regard. These include: (a) internationally, the [Sustainable Development Goals](#), the [Paris Climate Agreement](#) and related [action to leverage private sector finance](#) and the [UN Principles for Responsible Investment](#); (b) at EU level, [European Commission's Action Plan on Sustainable Finance](#); (c) in the UK, the Government's [Industrial Strategy](#) and [Green Growth Strategy](#); (d) in England, the

[Natural Environment White Paper](#) and [25 Year Environment Plan](#); (e) in Wales, the [Wellbeing of Future Generations Act 2015](#) (notably the goal ‘A Resilient Wales’); and (f) in Scotland, the [Programme for Government 2018-19](#) (which includes several relevant provisions).

A number of other initiatives may be influencing the sector. These include: (a) the [Final Report of the Task Force on Climate-Related Financial Disclosures](#); (b) the work of the UK Natural Capital Committee including [an early paper on the case for investing in natural capital, progress made on integrating natural capital accounting \(NCA\) in the Treasury’s Green Book and on natural capital valuation](#) and the Office of National Statistics commitment to national [natural capital accounts](#); (c) the [Green Finance Initiative](#), which is providing leadership on green finance, advocating regulatory/policy development to support green finance, and promoting London as a global centre for green finance; (d) the development of natural capital assessment support frameworks such as the [Finance Sector Supplement](#) to the Natural Capital Protocol, produced by the Natural Capital Coalition; (d) the development of standards such as the International Finance Corporation’s [Performance Standard 6](#) that provides guidance for biodiversity conservation and sustainable management of living natural resources.

### **4.3 Examples of relevant activity in the sector**

While there is considerable activity across the insurance / financial services sector in relation to measuring and valuing natural assets / capital, there is a long way to go before consideration of natural assets / capital (and of the services that flow from this capital) is fully taken into account in business decision-making across the sector.

The Valuing Nature Programme’s series of Business Impact Schools 2017-18 have featured a number of speakers from the insurance / financial services sector presenting case studies on how they are taking natural capital in to account in their businesses. Two of these presentations, from Willis Towers Watson and from the Green Investment Group, are given in **Annex 1**, together with an outline of the European Investment Bank’s Natural Capital Finance Facility, to give a feel for relevant activity across the sector.

Also pertinent here is [recent Defra-funded work](#) to develop a Strategic Outline Case (SOC) and Outline Business Case (OBC) for a UK natural capital finance facility, a blended funded facility to catalyse investment in natural capital, in support of the 25 Year Environment Plan.

### **4.4 Direction of travel**

Where might the sector be heading in regard to measuring and valuing natural assets and integrating this knowledge into business decision-making? Recent discussion on this at the Valuing Nature [Business Interest Group](#) suggests that the key needs may be to bring activity to scale, and to integrate the business interests across the land management, infrastructure and finance sectors (including insurance). What would be the implications of this for research and innovation? The other round tables – addressing the infrastructure and land management sectors – consider this from the perspective of these other two sectors.

## CONVENORS

This Round Table is convened by the [Valuing Nature Programme](#) in association with the [Natural Environment Research Council](#) (NERC).

The five year, £6.5m Valuing Nature Programme, funded by NERC, ESRC, BBSRC, AHRC and Defra, aims to better understand and represent the complexities of the natural environment in valuation analyses and decision making. It considers the economic, societal and cultural value of ecosystem services. The Programme is funding research and supporting researchers in making links with policymakers, businesses and practitioners through the Valuing Nature Network. Current funded projects focus on health and wellbeing values of nature, and on tipping points in nature.

As part of UK Research & Innovation (UKRI), NERC has a role in supporting the use of research to create value for business and policy-makers. NERC works in partnership to understand where business and policy challenges can be addressed through collaboration with environment scientists or drawing from data and knowledge in the research base. It encourages and supports collaboration between academia, business and policy and funds projects that develop innovative products and services for the future.

**ANNEX 1**  
**EXAMPLES OF RELEVANT ACTIVITY IN THE INSURANCE / FINANCIAL**  
**SERVICES SECTOR**

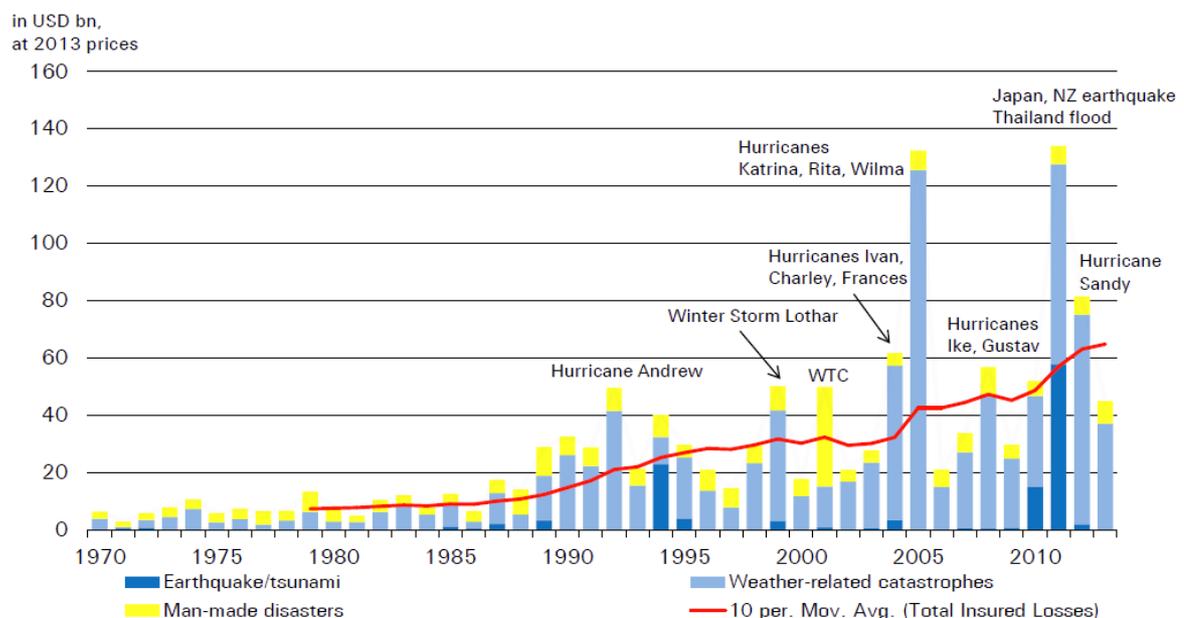
## EXAMPLE 1: WILLIS TOWERS WATSON

### Using Risk Management Approaches in Valuing Natural Capital

Olivia Darby, Chief Operating Officer, Capital, Science & Policy Practice  
Jon Gascoigne, Senior Risk Adviser of the Capital, Science & Policy Practice

In order to establish the true value of natural capital infrastructure, we must evaluate the benefits that an asset or ecosystem delivers, both to an individual organisation and to the local community and possibly society more broadly. One way of doing this is to establish the reduction in the financial risk exposure that an entity benefits from which creates a financial incentive to protect and cultivate the natural asset.

Understanding and managing climate risk exposure is crucial to increasing resilience globally. Organisations are increasingly realising the importance of managing their risk exposure and this will only increase, as economic losses from natural hazard related disasters are estimated to be between \$250bn and \$300bn annually<sup>2</sup> (an increase from \$140bn in 2013).<sup>3</sup> As climate risk exposure is exacerbated by the impacts of climate change, the upward trend – underpinned by demographic, economic and environmental factors – is likely to continue.



Source: *sigma* 1/2014

**Figure 1:** Rising annual weather-related insured losses (Source: Swiss Re)

Unsurprisingly, building resilience (i.e. the ability of systems to resist, respond or adapt to disruption) to disasters has become a key element of international and national agendas for both the business sector and global society. In order to manage risk exposure, we have to understand it, quantify it and be appropriately equipped to manage it. The risk management industry is focused on building these capabilities through more widespread use of modelling and analytics and through risk transfer

<sup>2</sup> The human cost of weather related disasters 1995 – 2015, UNISDR, [here](#)

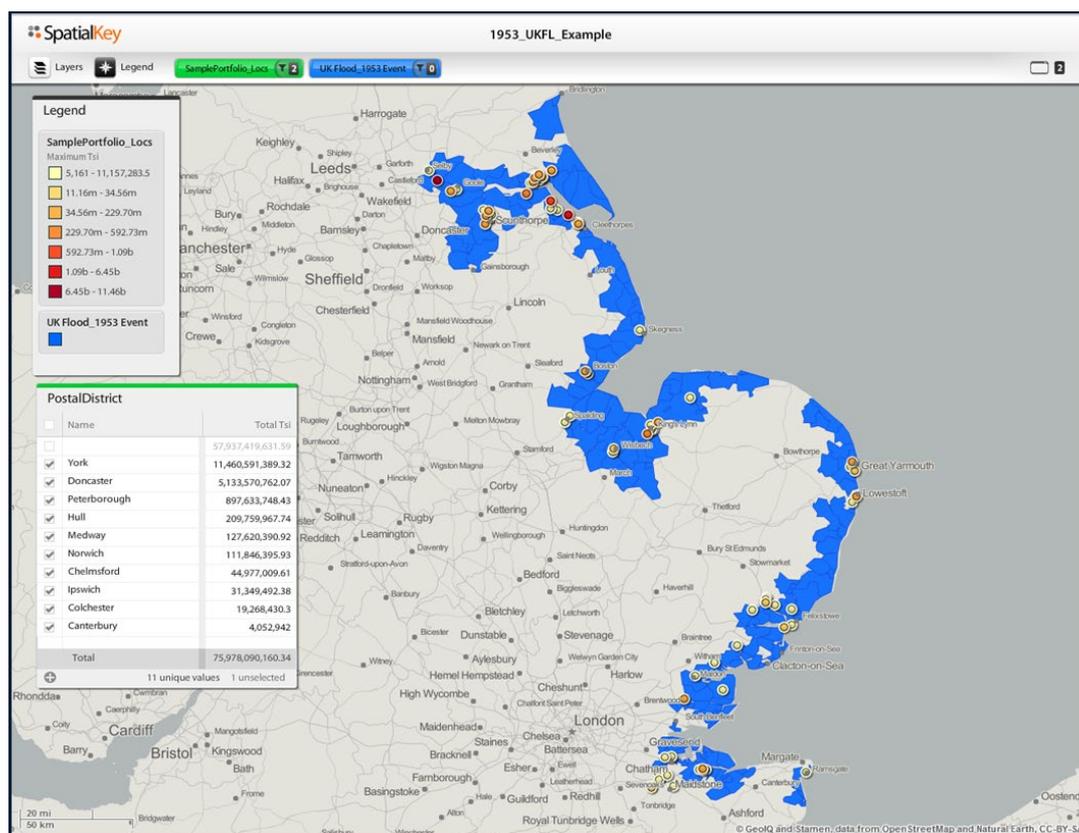
<sup>3</sup> Swiss Re

mechanisms (both traditional mechanisms such as insurance and non-traditional options such as catastrophe bonds and parametric-based structures).

Much of the work required in understanding the economic risks posed by natural hazards has already been done. The last 25 years of (re)insurance experience provides a method to achieve structural resilience to natural disaster risk in the decades ahead. This has been developed through:

- Data and analytics: sophisticated models based on engineering, science, and statistics to better understand risk and inform capital allocation and management decisions.
- Smarter capital: well-informed investors that understand risk are prepared to allocate insurance capital based on data and analytics.
- Regulation: required the adoption and disclosure of stress tests based on data and analytics for (re)insurers in balance sheets.

These approaches could be adopted more widely in society as a means of understanding and managing risk for a variety of different applications including natural capital. Modelling tools and capabilities can be used in a number of ways to understand what geographical areas are exposed and what the probabilistic financial losses will be. This facilitates a more sophisticated understanding of risk and can help to build resilience by demonstrating the value of appropriate risk management practices.

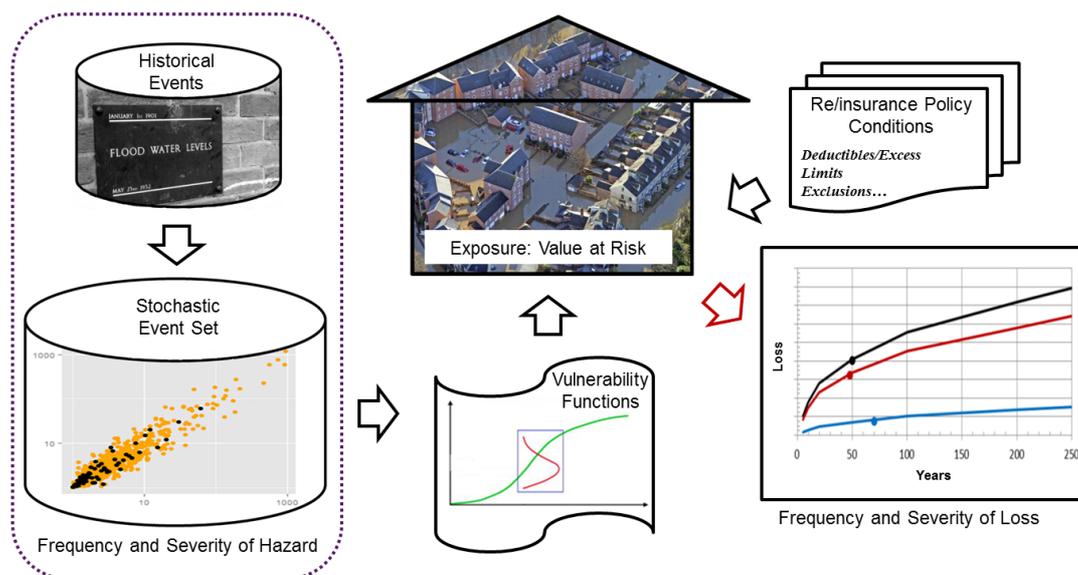


**Figure 2:** Historical event loss mapping: UK 1953 floods (Source: Willis Re)

By adopting these insurance-related tools, one of the ways business and organisations can capture their disaster resilience would be through implementing some of the principles and standard metrics developed in the (re)insurance industry. Central to this

is the understanding that exposure to risk will likely discount the value of assets and that action to limit exposure will be reflected in a business's overall value. Currently (re)insurance companies must evaluate, disclose and hold enough capital in reserve to manage a probable maximum loss at a 1 in 200 year tolerance to risk exposure.

If organisations within an industry or sector adopted this approach and used standardised metrics to quantify risk,<sup>4</sup> this would enable us to compare exposure, and therefore resilience to extreme events, and to engage with organisations as better informed stakeholders. The quantified risk exposure could then be encoded in accounting and regulatory norms, and physical and financial resilience (including insurance) would be recognised as a true business asset.



**Figure 3:** Probabilistic catastrophe modelling framework (Source: Willis Towers Watson)

This approach can help organisations to understand the role of natural capital in reducing risk exposure. It can provide a framework to educate organisations about the benefits they gain from building greater resilience to climate risk, whilst integrating financial, social and environmental impacts into one metric. It also makes disaster risk visible and tangible to stakeholders and so can help to demonstrate the reduction in financial risk exposure provided by natural capital infrastructure. Perhaps, most importantly, adopting these tools will create a financial incentive for organisations to protect and cultivate natural capital, promoting cleaner air, healthier populations, and likely opening economic growth opportunities for many industries, all whilst achieving a reduction in disaster risk exposure.

Adopting these risk management approaches will also create a stronger business case for the protection of natural assets resulting in a greater awareness of ecosystem services, quantifying the value of these services and encouraging organisations to protect natural infrastructure. Ecosystem services provided by natural resources are recognised as vital to support human wellbeing and, ultimately, a functioning planet. As a result, natural capital accounting is evolving as a means of valuing these services and measuring a business or organisation's impact. These benefits can be extended, as the approaches outlined above would benefit from the incorporation of natural capital infrastructure (or asset) evaluation. This evaluation would capture how ecosystem

<sup>4</sup> See Recommendation 5 ('1-in-100 initiative') of [Resilience to Extreme Weather, 2014](#)

services contribute to business or community resilience which may be related to, for example, the value of access to a reliable water source, or protection from a hazard (such as the role of mangroves in reducing the impact of storm surge).

For example, in the capital markets, resilience bonds have been proposed<sup>5</sup> as an evolution of catastrophe bonds, which were initially developed to provide insurance companies with an alternative to traditional reinsurance. Large asset holding entities have been attracted to cat bonds by their cost effectiveness and flexibility as a form of insurance option for financial protection natural disasters. The New York Metropolitan Transportation Authority's (MTA) 2013 cat bond was a response to the damage of the previous year's hurricane Sandy. The fundamental components of resilience bond sponsor, issuers, investors and collateral account are shared with conventional cat bonds. However, resilience bonds use catastrophe modelling risk quantification capabilities to explicitly evaluate the impact of a resilience project on the investor's expected loss. Effectively, two scenarios are priced: one based on the chance of a trigger event without a resilience project in place, the other based on the chance of a trigger event with the resilience project in place. The value that a resilience project provides by reducing risk and thus expected losses is converted into a rebate. This capturing of a portion of the insurance value in the form of a rebate is the distinguishing feature of a resilience bond.

Further innovation is needed across communities and industries to help: build more resilient supply chains; support the needs of urban dwellers and the businesses and municipal services on which they depend; ensure municipal finances are resilient to natural disasters; increase the resilience of transportation, energy and wider utilities; and, increase investment in these sectors through risk reduction. Risk management and its related capabilities has a key role to play in protecting natural capital and in helping us to understand its true value both as a financial asset and to society.

---

<sup>5</sup> [Swiss Re and partners to develop resilience bonds](#)

## EXAMPLE 2: GREEN INVESTMENT GROUP

### What Green Means to Us

Emma Knight-Strong, Manager Sustainable Finance

UK Green Investment Bank Limited (GIB) was set up by the UK Government to be a specialist investor in this sector. Conceived in a basement in Whitehall in 2011 and launched officially in Edinburgh in 2012, it was GIB's mission to accelerate the UK's transition to a green economy.

Acquired by a Macquarie-led consortium in 2017 and re-branded as the Green Investment Group (GIG), we have been adopted by Macquarie as its primary vehicle for principal investment in green projects in the UK and Europe.

Importantly, we were set up with a double bottom line; our investments had to be both green and profitable. The 'greenness' of our investments is governed by the five Green Purposes set out in our Articles of Association, which we refer to as 'Green Impact':

1. The reduction of greenhouse gas emissions
2. The advancement of efficiency in the use of natural resources
3. The protection or enhancement of the natural environment
4. The protection or enhancement of biodiversity
5. The promotion of environmental sustainability



Macquarie is fully committed to maintaining these Green Purposes – every investment GIG makes must contribute to at least one of these measures, and often contribute to more than one. Our investment decisions are underpinned by robust principles and policies designed to ensure that each investment's green impact is assessed, monitored and reported to the highest standard.

We are committed to ensuring that our approach is at the forefront of market practice. We want to help catalyse a sector-wide improvement in these areas. However, this is a relatively new area of banking. As such, we have adopted an approach based on 'learning through doing' and underpinned by a commitment to continuous improvement.

When we started work in 2012 there wasn't a way of measuring green impact that was meaningful to us. There was no methodology with sufficient academic and scientific rigour that could be applied pragmatically, day-in and day-out, through a commercial investment process.

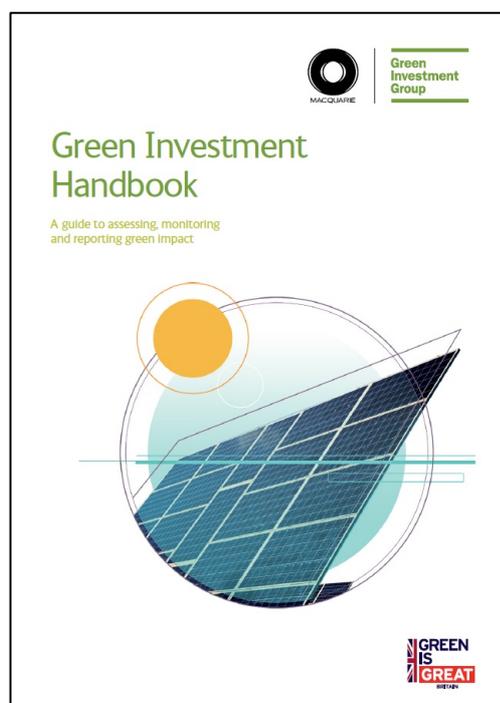
Green impact assessment, monitoring and reporting is a relatively young discipline within banking. Our commitment to ensuring that our approach is at the forefront of market practice is implemented through the adoption of existing relevant international good practice and active engagement on our own approach with a wide range of stakeholders.

We have evolved our methods over the past five years, and we know the evolution will continue. We believe that this subject is a vital tie to bind the work of infrastructure developers and investors to the climate goals agreed in Paris. Importantly, we have tried and tested these methods on over £12bn worth of low carbon infrastructure investments.

Every investment considered by us must pass through a robust green impact assessment process before it can be approved. Every approved investment is subject to robust, detailed and continuous green impact monitoring, spanning all aspects of its green performance. Every investment is subject to detailed green impact reporting, individually and collectively, in our Annual Report. The detail of these processes is set out in our Green Investment Principles, Green Investment Policy and Green Investment Handbook. You can view all of these documents online.

Our Green Investment Handbook was launched in the UK in 2015 and subsequently translated in to Mandarin in and Spanish in the same year. It was launched again alongside the UK Government at COP21 in Paris as part of the Great Britain campaign, and more recently we published it in India in April 2017 at the request of the Indian Government. It is in the process of being translated into French, Portuguese, and Arabic – allowing us to work internationally to demonstrate our assessment methodologies.

So how does this relate to natural capital? Well it comes back to the five Green Purposes – two of which focus on the natural environment and biodiversity. Our approach to assessing green impact is founded in the principle that all investments must be assessed with equal levels of rigor – so that they may be compared against one another if needed.



As investors we are often removed from the development process and unable to collect primary data to inform natural capital decisions. As such, we rely on information being available to us, either from the public domain or via technical consultants or planning and permitting documents.

We have developed a framework for assessing both positive and negative impacts on the natural environment and biodiversity, which is well suited to considering natural capital investments. Once a pipeline of natural capital investments materialises we will be able to consider this under our existing assess, monitor and report framework with very few further development requirements.

However, that assumes that there will be a natural capital pipeline. To understand what I mean by this it is important to understand a little about investment processes.

An investment process, any investment process, includes a broad range of specialist roles including, but not limited to, legal, technical, financial, risk, compliance and

communications. Investments must be cleared by a range of governance processes and a range of decision-makers in order to gain approval. All of these people need to understand the underlying investment to a significant level of detail so that they can understand the risks involved.

Which means there is a materiality threshold to consider: is it *worth* spending an enormous amount of time and effort up-skilling entire teams of people for just one (potentially small) project? Depending on the goals of the organisation the answer to this question is probably 'no'. Which is why the investment community spends a lot of time asking how these projects can be scaled up – if there is an entire portfolio of similar investments that can be considered then there is true value in undergoing that education exercise.

Even if individuals are not directly involved in discussions with financial institutions - having an understanding of the challenges faced in the investment process is always useful, whether it is in designing research projects for grant applications or in advising clients on project implementation or even designing and implementing natural capital projects.

## EXAMPLE 3: EUROPEAN INVESTMENT BANK

### Natural Capital Finance Facility

The Natural Capital Financing Facility (NCFF) offers funding to projects that promote the conservation, restoration, management and enhancement of natural capital for biodiversity and adaptation benefits, including ecosystem-based solutions to challenges related to land, soil, forestry, agriculture, water and waste inside the EU.

The NCFF consists of a combination of the following two components:

- The **finance facility** can provide financing of a minimum amount of EUR 2 million and a maximum amount of EUR 15 million
- The **technical assistance facility** can provide each project with a grant of up to a maximum of EUR 1 million for project preparation, implementation and the monitoring of the outcomes

The NCFF combines EIB debt financing and the Commission's grant funding under the [LIFE Programme](#), the EU's funding instrument for the environment and climate action. The facility is currently in a pilot phase and can sign projects until the end of 2019. The first loan was signed in April 2017.

Project examples supported by the Natural Capital Financing Facility (NCFF) include:

- **Green infrastructure** (e.g. green roofs, green walls, ecosystem-based rainwater collection/water reuse systems, flood protection and erosion control)
- **Payment for ecosystem services** (e.g. programmes to protect and enhance forestry, biodiversity, to reduce water or soil pollution)
- **Biodiversity** offsets / compensation beyond legal requirements (e.g. compensation pools for on-site and off-site compensation projects)
- **Pro-biodiversity and adaptation** businesses (e.g. sustainable forestry, agriculture, aquaculture, eco-tourism)
- **Nature-based solutions for adaptation to climate change**

### Project – Rewilding Europe

The first project supported by the NCFF, signed in April 2017, was a EUR 6 million loan to [Rewilding Europe Capital](#).

It will provide support for over 30 nature-focused businesses across Europe. The comeback of iconic and threatened European wildlife species such as the European bison, brown bear, black vultures as well as pelicans and white-tailed eagles of the Danube and Oder Delta, to name a few, could also benefit from the investments.



White pelicans, *Pelecanus onocrotalus*, Danube delta rewilding area, Romania  
Copyright: Staffan Widstrand / Rewilding Europe

### **Project – Irish Sustainable Forest Fund**

The SLM Silva Fund is a specialised fund focusing on sustainable forestry in Ireland. The strategy of the fund is to acquire semi-mature plantations and to transition these forests to ‘Continuous Cover Forestry’ or ‘Close to Nature’ management, an alternative to the widely used single-species clear fell-replant system. Continuous Cover Forestry maintains permanent forest cover and



promotes a mixed forest structure. It is a commercially viable management model which promotes biodiversity, soil health and landscape value. The fund has now reached its first close and is initiating its investment period.

### **Project – Natural Capital Investments for Croatia**

This operation consists of on-lending EUR 15m to the Croatian Bank for Reconstruction and Development (HBOR) through a so-called ‘multi beneficiary investment loan’. HBOR, with its special local expertise and understanding of the Croatian market, will provide smaller loans to projects investing into the area of conservation, restoration and nature-



-based adaptation, such as eco-tourism, sustainable agriculture and forestry or green infrastructure for cities. The operation is particularly important in Croatia given its rich biodiversity and significant contribution to the Natura 2000 network.