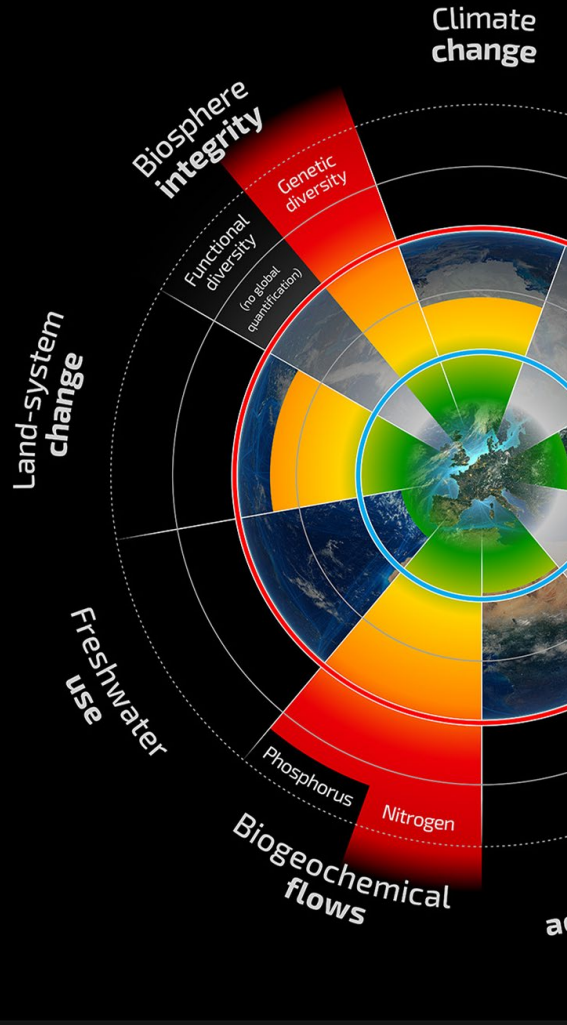


Living Planet Symposium

Loss of Biodiversity as a Financial Risk

Vian Sharif,
Naturealpha plc

Stephen Briggs
Visiting Professor, Dept of Meteorology, Reading University &
Centre for AI and Environmental Risk, Cambridge University



Risking economic resilience

Today, **nature degradation** and exceeding planetary boundaries in relation to natural capital is a **systemic risk** to economic stability & resilience.

- An estimated **\$44 trillion of economic value threatened by biodiversity declines and ecosystem collapse** – equal to over half of the world’s total GDP. – *World Economic Forum, 2021*
- **Decline of biodiversity and the natural environment** is a ‘major structural risk to international stability and security.’– *U.S. Intelligence Community’s official Global Trends 2040 report*
- **Steep acceleration in degradation** is already occurring: **c. 1 million species** currently at risk of extinction due to human activity, with declines in biodiversity **threatening over 80% of SDG targets** – *IPBES, UN, 2019*
- **Planetary boundaries exceeded:** highlights importance of human activity on change in biosphere integrity. – *Steffen et al, 2015 after Rockstrom et al. 2009*

As a result, regulatory disclosures increasing

- Next 12 months critical for international environmental policy as governments and businesses orient their activities to achieve global commitments.
- A critical issue facing global leaders of the private and public sector alike is engineering the systemic change required towards a more sustainable relationship between humanity and our planet; one key lever is changing business decision-making - and hence an increase in regulatory requirements.
- Commitments, including the Glasgow Financial Alliance for Net Zero (GFANZ), which saw over \$130 trillion of private capital committed to transforming the economy towards net-zero, underscore the increasing relevance of private sector investment alongside public policy in achieving positive change (Gfanzero.com, 2021).
- E.g. EU Sustainable finance regulation states that asset-management companies should provide statutory information about their impact on society and environment.
- This reporting will require objective data, information and assessment of the impacts of investee company operations in all their aspects.



Unearthing
Investor action
on biodiversity

Framework case study | Taskforce for climate-related financial disclosures



- The **Task Force on Climate-Related Financial Disclosures (TCFD)**
- Created in 2015 by the Financial Stability Board (FSB)
- Developed consistent climate-related financial risk disclosures for use by companies, banks, and investors in providing information to stakeholders.

Core Elements of Recommended Climate-Related Financial Disclosures



Governance

The organization's governance around climate-related risks and opportunities

Strategy

The actual and potential impacts of climate-related risks and opportunities on the organization's businesses, strategy, and financial planning

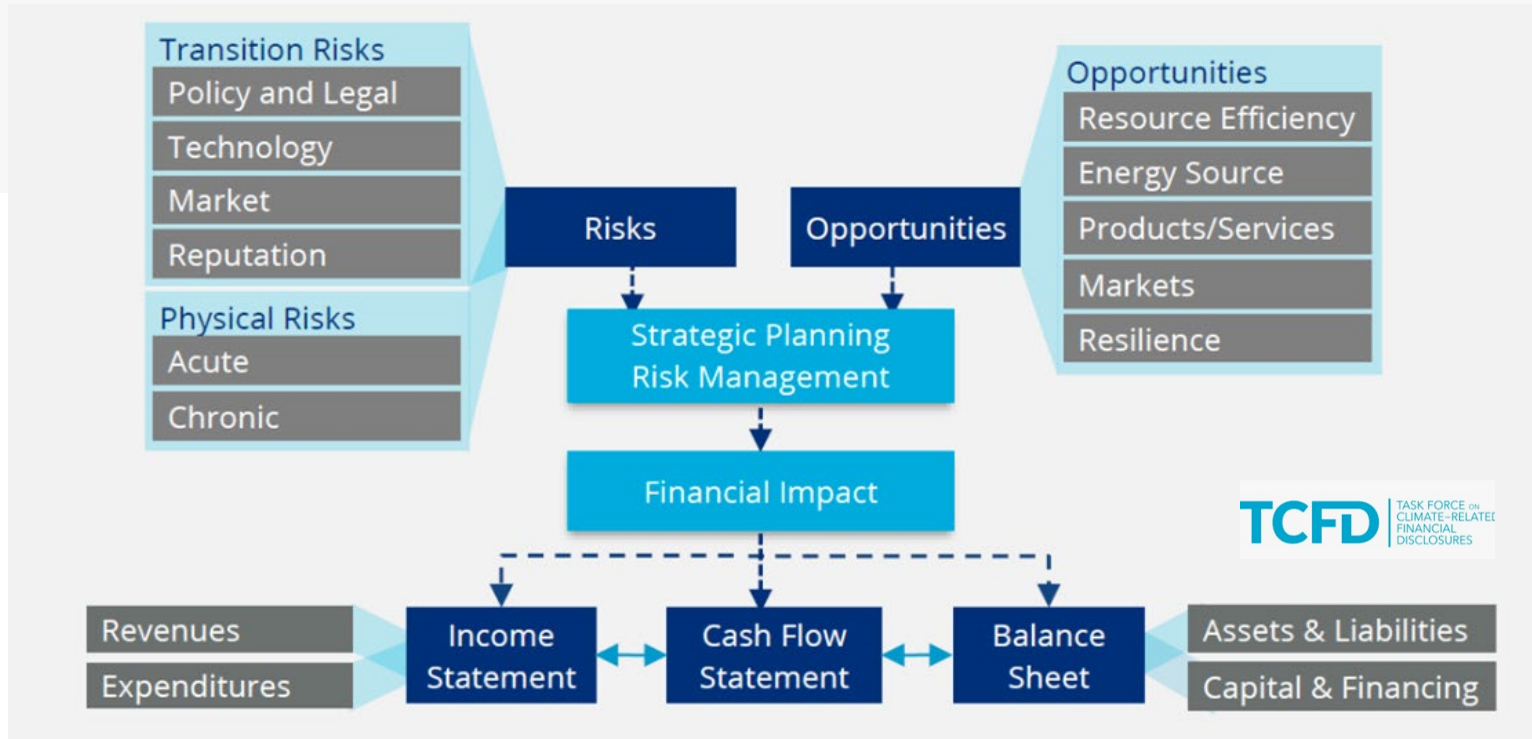
Risk Management

The processes used by the organization to identify, assess, and manage climate-related risks

Metrics and Targets

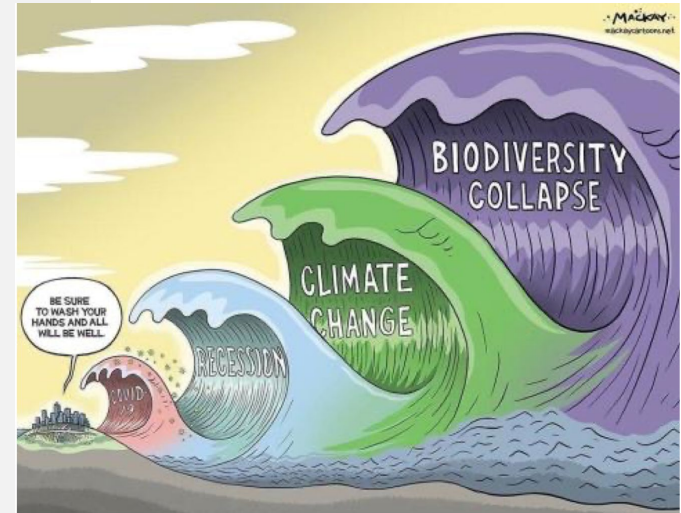
The metrics and targets used to assess and manage relevant climate-related risks and opportunities

TCFD | Climate-related risks, opportunities & financial impacts



Nature as the next wave | Really too big to fail...

- Although **climate is starting to feature** in business strategies, disclosures and investment decisions, **biodiversity is still largely absent**.
- The situation is changing as governments and businesses begin to recognise the importance of the issue. For example, the **2020 World Economic Forum Global Risks Report ranks biodiversity loss and ecosystem collapse as one of the top five threats** humanity will face in the next decade, based on its potential impact on supply chains, food and health.
- There is both regulatory and internal pressure on companies to report and reduce their impacts on nature (e.g. through the **Taskforce on Nature-related Financial Disclosures**, and outputs resulting from the **Dasgupta Review (2021)**).
- Biodiversity **impact measurement lags far behind other areas**, including climate change, with limited data to support investment decisions available, and no trusted standard for biodiversity performance measurement that spans the universe of holdings considered by investors in global capital markets.

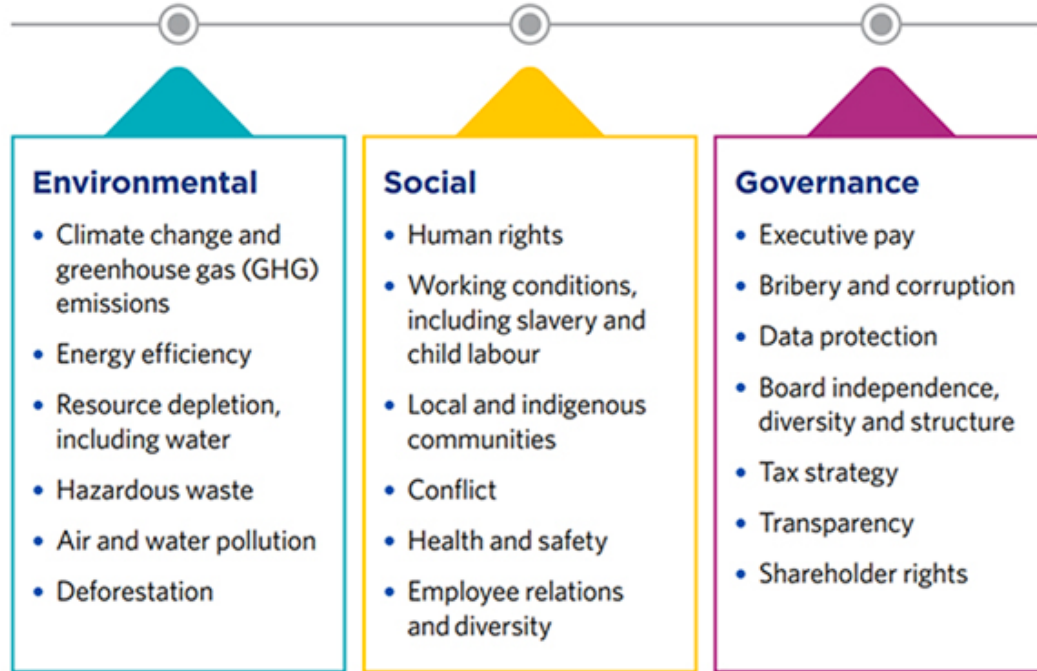


The Economics of Biodiversity: The Dasgupta Review



Environmental, social, governance

Interlinked 'non-financial' risks



Why should business care?

True risks arising from nature loss and climate change often are not accounted for or understood, including by investors.

- According to the World Economic Forum's 2022 Global Risks Report, top three risks to our economies are environmental – including climate change and biodiversity loss.
- The economic cost of land degradation amounts to more than 10% of annual gross world product, and human-caused declines in ocean health are projected to cost the global economy \$428 billion per year by 2050.
- Shifting toward a nature-positive economy could generate \$10 trillion of business opportunities and create nearly 400 million jobs.



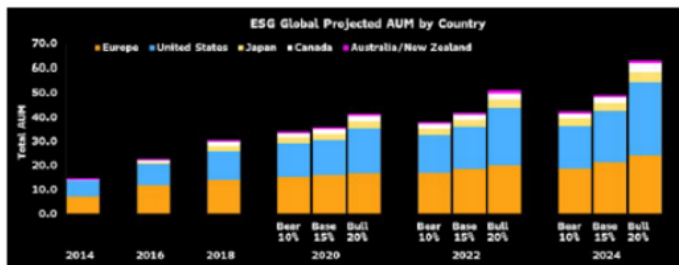
“Companies that have embraced the transition to green models can prosper, and even gain competitive advantage while showing vision and leadership. The time is now to act. We need to find common solutions to our problems by reimagining business models, redesigning value chains, addressing current flows and reaching the right level of ambition to reverse natural loss.”

**Elizabeth Mrema,
Executive Secretary,
CBD**

ESG investments are growing

Projected ESG Global AuM by Region¹

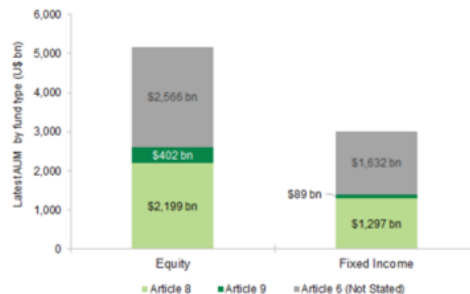
- Strong growth in assets run with ESG insights since 2014 (c\$15tr to \$52tr)
- European AuM over-index on ESG



EU Article 8 & 9 AuM and growth²

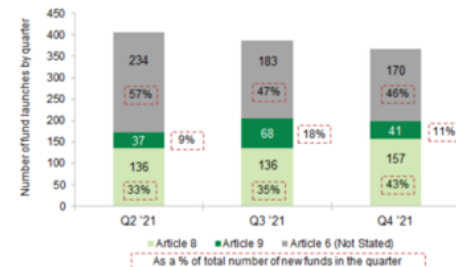
- Within the European funds market, there is an even greater shift into sustainable investing strategies classified as Article 8 & 9 under sustainable investment regulation SFDR
- Funds run with ESG insights now make up 54% of new EU fund launches

Exhibit 3 : Article 8 & 9 funds account for ~\$4tn USD...
Breakdown of AuM in the EU, Jan 2022



Source: Morningstar, Goldman Sachs Global Investment Research

Exhibit 4 : ... and are taking up a growing portion of new fund launches
Breakdown of new fund launches in the EU, Q2 '21 - Q4 '21

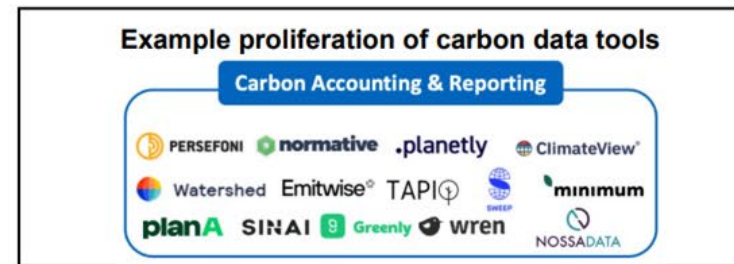


Source: Morningstar, Goldman Sachs Global Investment Research

1. Bloomberg Intelligence February 23, 2021
 2. SFDR, one year on, GS.com (accessed March 21, 2022). Article 8 and 9 funds are funds that incorporate ESG in their investment process, with Article 9 funds subject to stronger criteria (additionally investing in 'sustainable investments', i.e. those investments whose underlying activities target a specific social or environmental outcome, do no significant harm to other outcomes, and uphold good governance standards).

Drivers of demand for ESG considerations

- **Increasing global imperative – keep climate warming < 1.5 degrees**
 - While ensuring capital is fairly distributed, and we protect and steward natural & human capital along the way
- **New generation of wealth-holders putting ‘values’ on par with ‘value’**
 - Driving need for new, values-based ways of engaging with money and investing in new ways
- **Data scramble and proliferation – rapid changes in the market and competitor moves**
 - Financial market participants are all building out their ESG data stacks – with new data providers rapidly entering the space
- **Why invest now? New regulatory drivers coming into play**
 - EU Regulation (SFDR) driving rapid shift of European capital into more rigorous sustainable investing strategies, which will require quantitative data to invest and report
 - Proposed UK regulation requiring advisers to (i) understand individuals’ sustainability preferences (ii) tailor advice on that basis³



1. Climate Change and Global Warning, WWF.org (accessed March 21, 2022).
2. U.S. Individual Investors Maintain Strong Interest in Sustainable Investing, morganstanley.com (accessed March 21, 2022).
3. FCA and Treasury exploring new sustainability rules for advisers, Citywire.co.uk (accessed March 21, 2022).

How do we fill the gap for data?

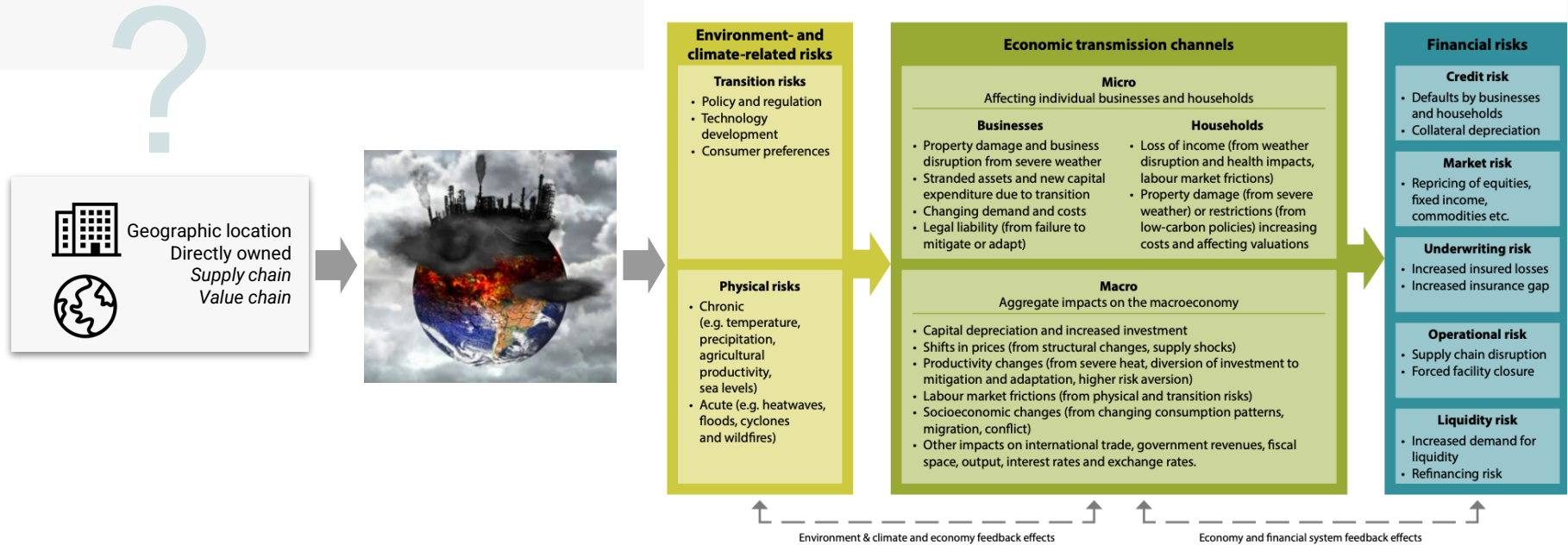
*‘Policymakers and financial regulators will increasingly demand that financial institutions systematically assess both nature-related financial risks and their own impacts on nature. **What is needed is...credible, decision-grade data.**’*

HM Treasury-commissioned Dasgupta Review (2021)

Financial institutions globally require biodiversity data to support their analysis of environmental risk and opportunity in order to meet fiduciary requirements.

But whilst international regulators and financial institutions are demanding investor reporting on nature impact, **there is a lack of transparent, scalable, credible data.**

How can we begin to measure?



What are the quantifiable risks?

- Physical
- Transition
- Legal / Compliance / Regulatory Risks:
 - SFDR
- Securities Fraud
 - AML sanctions / violations related to environmental crime
- ESG / Sustainability Risks
- Reputational Risks



- Unmitigated / Hidden Risks
- Stranded Assets
- Market Risks from Legal/Regulatory Sanctions
- Material Dependencies
- Limits geographies of allowable growth
- Limits types of allowable growth (reduces market flexibility)
- Limits scale of growth
- Limits profitability of growth (regulatory, legal, reputational risk discounts)
- Limits customer base for growth (demand side)
- Limits supply chains for growth (supply side)

The challenge

A lack of **credible, scalable decision-grade insights** at the asset level

How to achieve distribution of insights at scale (\$53trn / \$120trn)

Achieving real change on the ground



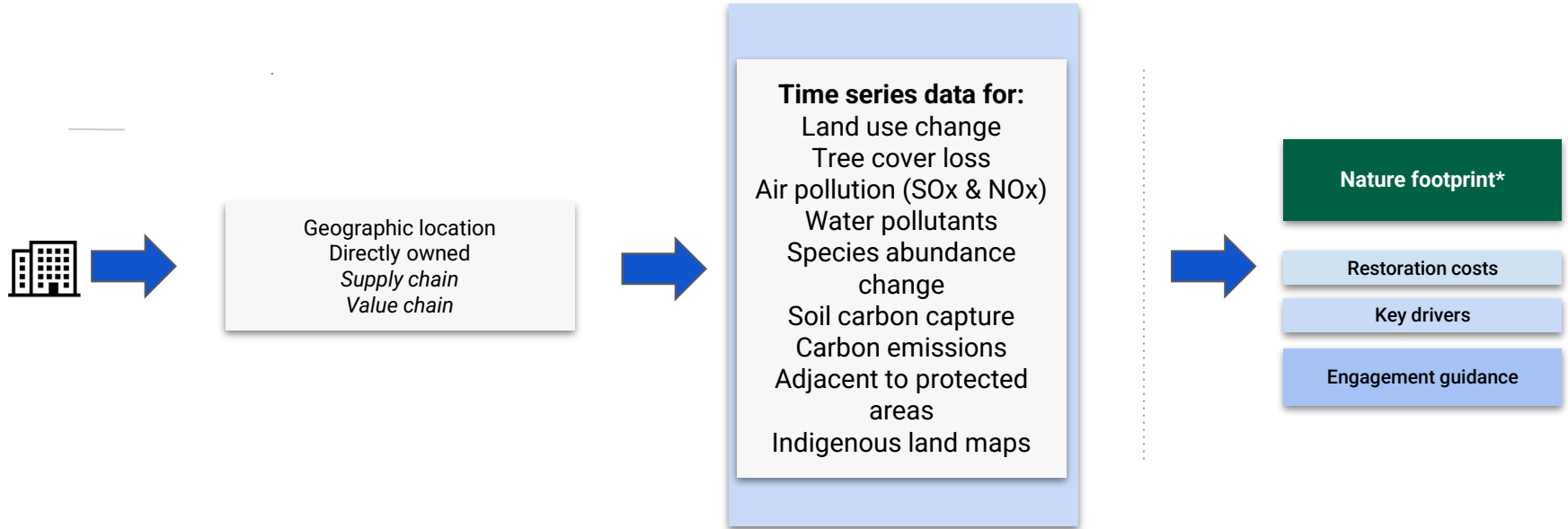
What data is available?

- **Convergence** of sustainability and digital imperatives is beginning to gain traction in the private and public sectors (George et al. 2019)
- **Geospatial insights:** KBAs, IBAT, satellite data
- **Company location data**
- **Reputational signals** via news & intelligence gathering
- **Biodiversity** and beyond, covering natural capital
- **How are companies managing risk and maximising opportunity:** which companies are positioning themselves for the future?

The role of satellite data | Radical transparency?

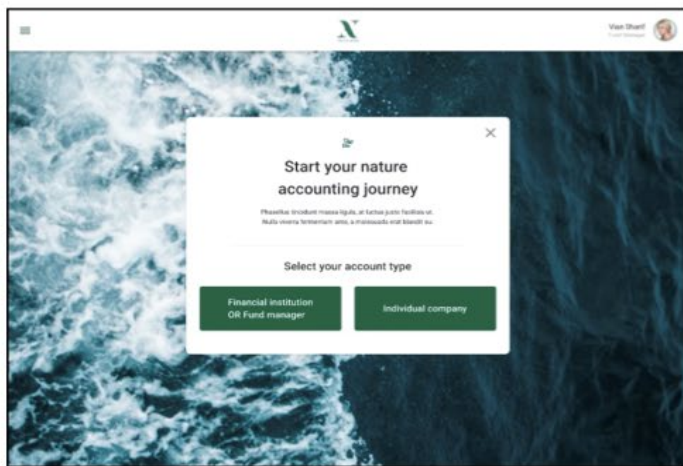
- With the arrival of **GPS, satellite remote sensing**, and desktop access, the last three decades have witnessed rapid advances in the field of **spatially-explicit ecological modelling**. (Roberts et al. 2010).
- The increasing availability of digital images and other **satellite based data**, coupled with sophisticated artificial intelligence **(AI) techniques**, presents an exciting opportunity for biodiversity researchers to create new datasets of species observations (August et al. 2020; Garske et al. 2021).
- Understanding the complex relationships and processes that regulate the world's balance of biodiversity impacts and dependencies is critical to our understanding of how to mitigate the grand challenges of environmental sustainability. Studies have considered that **machine learning can help with this complex problem**. (Talbert et al. 2017)
- For example, developments in earth observation data (Talbert et al. 2017) coupled with location data for companies and their supply and value chains can be combined with both machine learning and biodiversity science, surfacing new **insights into the impacts and dependencies of companies on nature**.

Geospatial and reported data reveals a new picture of company activity



*Trademark pending

...enabling any financial institution to make the evolution from climate to nature accounting



What will the market **need**?



Analytics & exposures

Enabling users to drill down on risk, material impacts, comparisons against industry/sector benchmarks.



Nature footprint

Geospatial data provides asset-level insights on companies' nature footprint.



Compliance

Latest nature-related disclosure standards and intelligence alerts on risks and opportunities for biodiversity-aware investing.

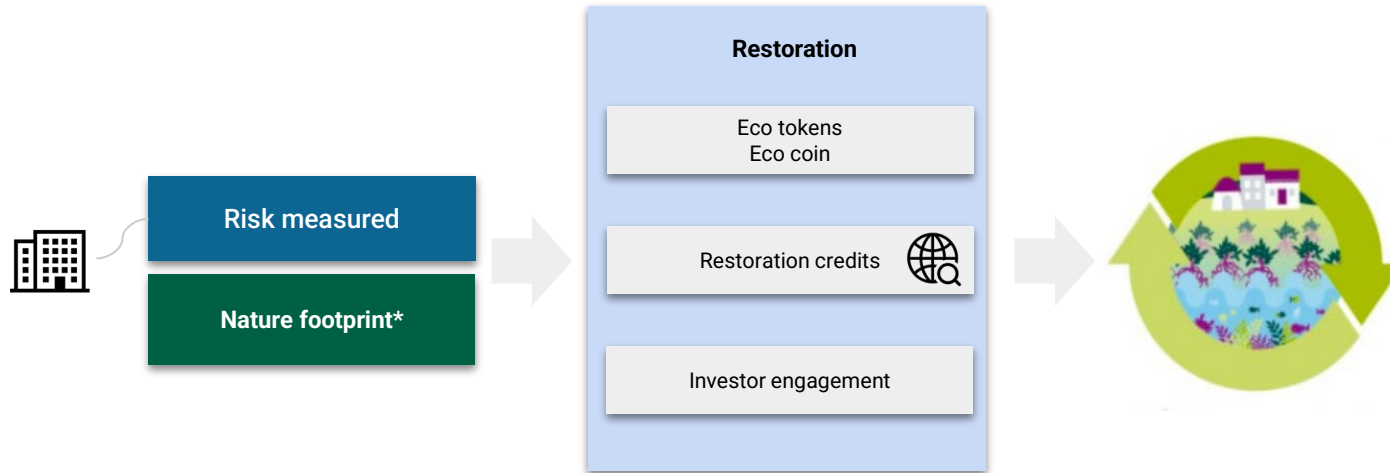


Engagement & restoration

Quantitative insights to drive the design of biodiversity aware and tilt strategies.

Risk measurement to restoration

Nature remains our best technology for achieving net-zero.



Thank you