Preventable Surprises

Building an Investor Agenda on Biodiversity

February 22, 2021 - February 26, 2021

298 posts | 86 participants

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Background

Preventable Surprises hosted a week-long virtual dialogue with participants from finance, science, policy, and civil society with the goal of building an investor agenda on biodiversity loss, commensurate with the scale of the crisis. Guided by daily provocations from experts on critical scientific, business and policy issues, the dialogue sought to identify gaps in practice and ambition and propose actionable solutions with immediate impact. This deck is a synthesis of the dialogue. "Winning without win-win?" - Preventable Surprises' own takeaways and recommendations stemming from the dialogue, is published separately.

Objectives

In building an investor agenda on biodiversity, we considered:

- *What are the gaps in action at sector, regional or policy level?*
- *What can investors do immediately with the tools and data available to address the urgency?*
- *What tools, data and investment processes need to be developed for larger scale and long term action?*
- *What can we learn from the climate playbook?*
- *What catalysts to galvanize momentum and agency?*
- *What are broad systemic dynamics affecting biodiversity loss, and what to do about them?*

DAY 1:
Science & Policy

DAY 2:
Shareholder Activism & Finance

DAY 3:
Agriculture / Land Use & Pesticides

DAY 4:
Extractives / Energy & Civil Society Activism

DAY 5:
Synthesis & Next Steps

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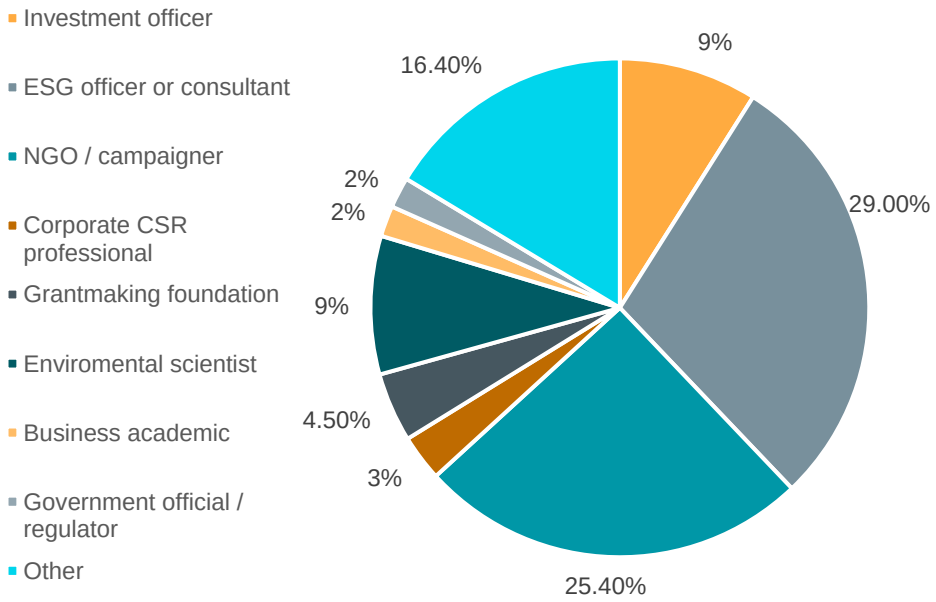
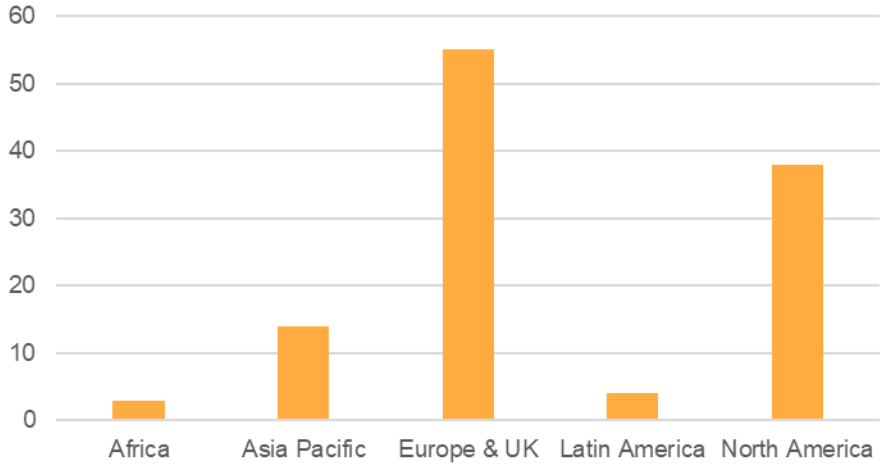
At the table: Professional diversity



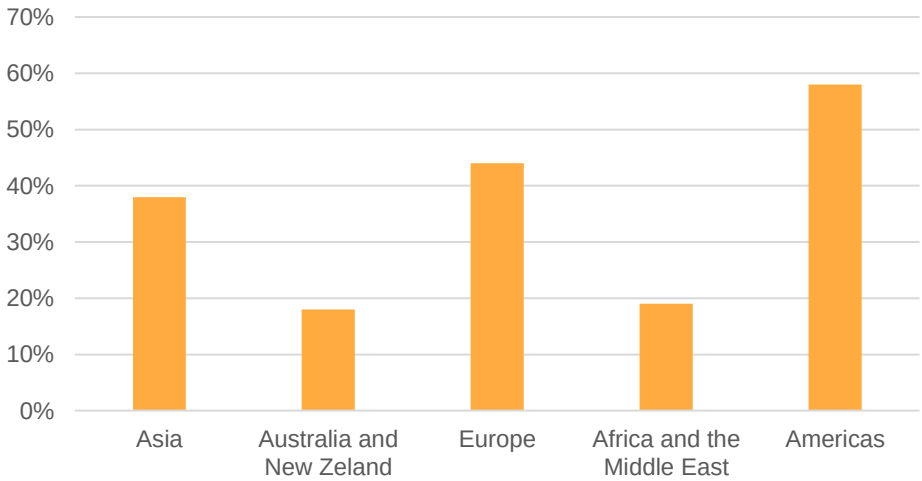
- ESG and investment finance professionals came from institutions with ca. US$ 3.3 trillion assets under management (although many spoke in a personal capacity)

At the table: Professional diversity and geographic diversity

Participants by origin

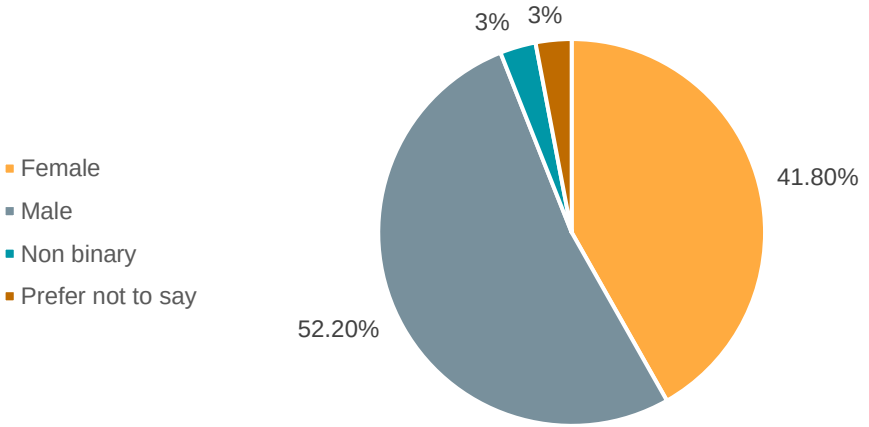


Participants by regions of influence (%)

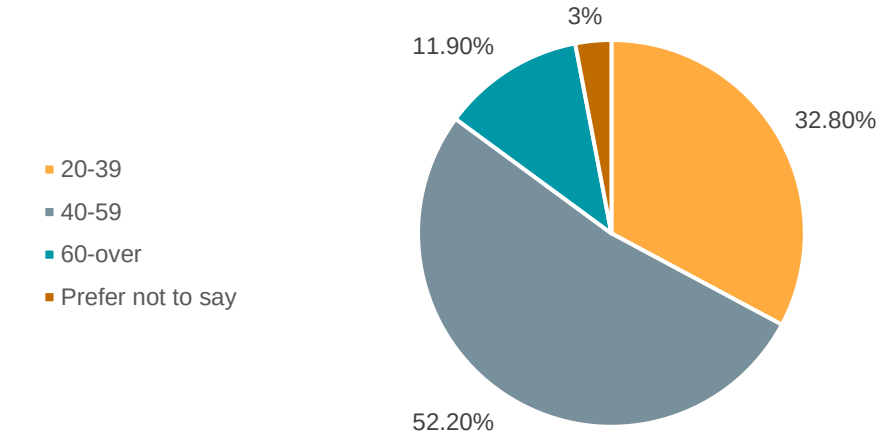


At the table (cont'd): Gender and age diversity

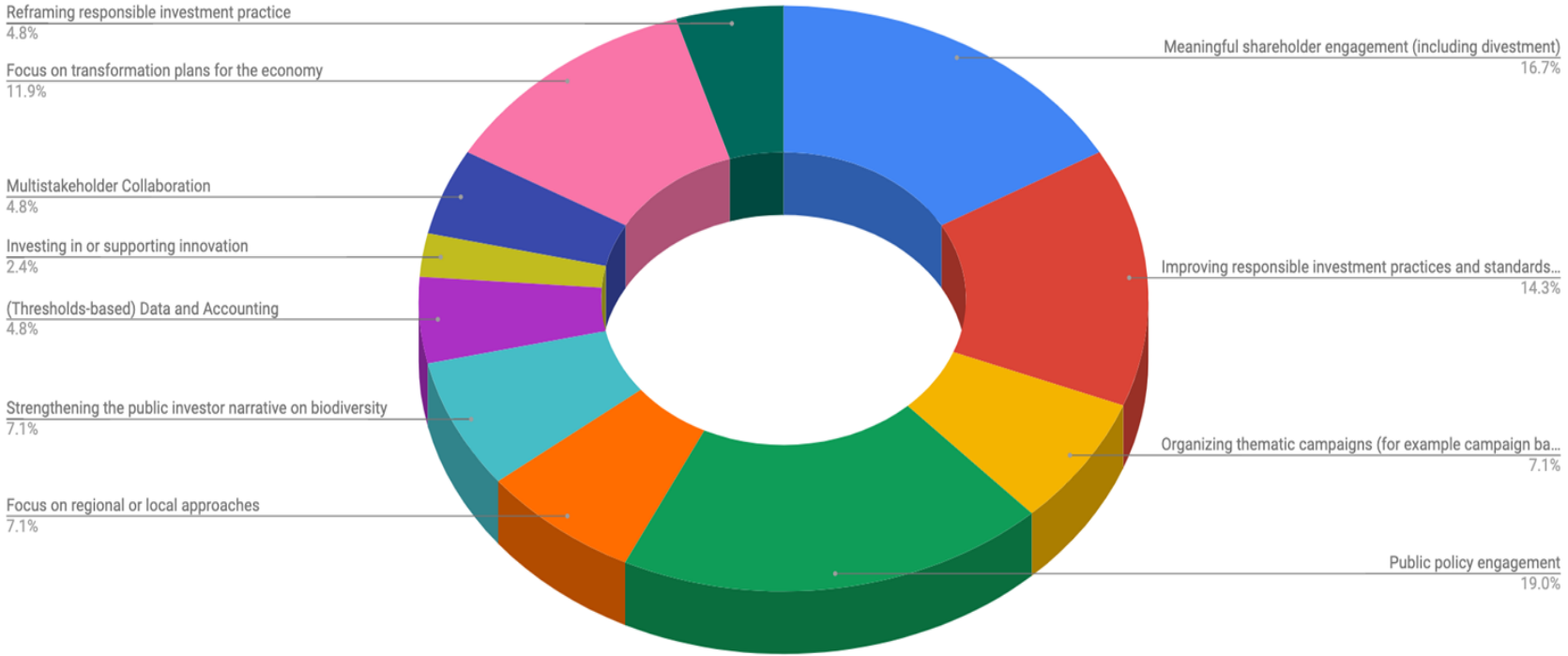
Gender



Age groups



Participant views: strongest levers of action for investors on biodiversity



Changing minds: shifts in perceptions before and after the event

"Are Institutional Investors equipped to act on biodiversity?"

Prior to the event, 77% of surveyed participants either disagreed or strongly disagreed that investors had the appropriate tools with which to tackle threats of biodiversity loss. However, after the event, 67% strongly agreed that investors could act now to tackle biodiversity loss. These results correlate to the evolution of the discussions in the dialogue, which flagged the shortcomings of current measurement tools, whilst urging a plethora of ways in which to press on in tackling the risks presented.

"Will institutions act on addressing systemic biodiversity risks?"

77% of surveyed participants noted that their institution was either a little (16.4%), a moderate amount (41.8%), a lot (14.9%) or a great deal (19.4%) ready to implement measures to address systemic biodiversity risks. But after the event, barriers to meaningful action around public policy were cited as: buy-in from senior management (37.5%), political sensitivities (20.8%), resources (20.8%), and a series of issues ranging from legislative barriers, career risk, and an inability to grapple with the complexities of the challenges.

"Are institutional investors and regulatory bodies aware of the risks and impacts of biodiversity loss and sufficiently working to address them?"

Both before and after the event, an overwhelming majority of participants disagreed or strongly disagreed with this statement. The sentiments of this statement were echoed by various participants throughout the dialogue, reflecting the perceived lack of institutional investor action and regulatory attendance to the issues of biodiversity risk.

"Biodiversity loss threatens a greater impact on economies and institutional portfolios than climate change."

Investors remained agnostic on this statement, with majority consistently voting 'neither agree nor disagree'. This sentiment was also reflected in the ongoing conversations during the dialogue regarding the interlinked nature of climate change and biodiversity risks, suggesting greater research and knowledge-sharing is required on how to tackle the twin challenges of climate change and biodiversity.

ACTIONABLE IDEAS

A summary of action items proposed by participants in the course of the dialogue.

1) **Forceful stewardship**
   a) Focus on transformation plans. Ask companies with high biodiversity footprints to propose transformation plans. Levers include:
      i) Set additional obligations on companies in certain sectors in terms of biodiversity preservation, landscape restoration, etc. as a minimum initial measure.
      ii) Establish proxy voting guidelines on biodiversity loss.
      iii) Engage in partnerships with NGOs and public sector
   a) File resolutions
      i) Take a sector wide approach (e.g., pesticides, food & agriculture) to resolutions.
      ii) Create “Guardrails” that universal investors could use to vote against directors of companies crossing the guardrails.
   a) Director voting
      i) Vote against directors or financial statements when companies are not serious about transformation.
      ii) Vote against directors / boards when there is no biodiversity competence.
   a) Divestment
      i) Divestment from sectors/companies that threaten biodiversity loss as a possible outcome of the engagement process.

2) **Improving responsible investment practices and standards**
   a) Ask investors to integrate biodiversity into their net zero commitments.
   b) Campaign to increase resources for ESG teams to take on biodiversity.
   c) Call out the focus on ESG data/disclosure when it is not supported by a robust theory of change.
   d) Ask investors to engage with NGOs and public sector more meaningfully and formally.
   e) Create partnerships between investors, importers, producers and labelling agencies (NGOs and for profit) to address transition issues.
   f) Develop RI products with specific objectives related to biodiversity.

3) Thematic campaigns

a) Engage with the oil & gas industry to deter a petrochemical dependent food system.
b) Campaign for banks to stop financing deforestation, land conversion, etc.
c) Engage large food/beverage firms to improve supply chain practices.
d) Campaign the Responsible Investment movement to self-police better to weed out bad actors.
e) Campaign for more efficient use of land and existing assets
f) Campaign US and China against single use plastics
g) Organize engagement with the cattle sector, which is most responsible for deforestation. Work with supply-chain to engage meatpackers.
h) Foundations and UHNWIs collaborate to launch a RAPID RESPONSE-ABLE FUND ("RRAF") of $10 bn, with plans to scale quickly to $100 bn. The fund takes stakes in the worst actors in the Amazon and demands prompt change.
i) Ask chemical companies to communicate a goal that includes a reformatting of business model, selling pest control services not chemicals.
j) Collaborative engagement solutions that include sticks alongside carrots and focus on the impact of companies on the environment, not the other way around.

4) Public Policy engagement

a) Put a price on the components of biodiversity loss (nitrogen, phosphorus).
b) Investors should support deforestation protocols everywhere, in every country. This is only an awareness building step. They could then require all their investment companies to adhere to deforestation protocols.
c) Support governments taking a harder line, address lobbying, ask governments to review their subsidy models.
d) Engage governments and companies to shift away from single use products/plastics.
e) Ask global financial institutions to provide debt relief for countries with important land to protect.
f) Bondholder engagement with sovereigns on biodiversity loss.
g) Engage the public, politicians and legislators on reigning in corporate influence in agriculture.
h) Work with governments to remove perverse policy incentives that promote over exploitation of natural resources.
i) Support the integration of biodiversity issues in global trade agreements.
j) Encourage the legal recognition of traditional land ownership.
k) Encourage a global level playing field on conservation policies.
l) Investors should start banning the most toxic pesticides from their holdings. and cooperate with certificiation systems to support a framework and verification system.

4) Public Policy engagement (continued).

m) Engage companies to support increased productivity and consider restoring degraded lands for biodiversity and carbon sequestration. Supply chains need to use traceability but also regional risk analysis (including land use change monitoring.

n) Support a ~5-year protocol to ban World Health Organization (WHO) type 1A and 1B and pesticides banned under the Stockholm Convention on Persistent Organic Pollutants (2001). One first step is to push farm cert programs to ban these from certifying operations and retailer supply chains.

o) EU investors lead a global campaign with regulators to ban neonicotinoids/glyphosates.

p) Encourage an intergovernmental process to classify biodiversity hotspots

5) Focus on local / regional approaches.

a) Adopt a landscape (as opposed to sector) approach to finance.

b) Leverage Biodiversity COP to engage with China's leadership on global supply chains/trade (Brazil, Africa, etc.) and on the impacts of the Belt & Road Initiative.

c) Act local: pick a few strategic geographies/landscapes for campaigns (China, Brazil, Indonesia)..

d) Focus investment portfolios close to home, in ecosystems they understand., etc.

e) Take a local and multistakeholder approach to developing a food system transition.

6) Strengthening the public narrative

a) Designating Protective Assets for Biodiversity like Stranded Assets for Climate.

b) Develop and socialize an Inevitable Policy Response narrative for biodiversity.

c) Develop and socialize an Inevitable Social Collapse narrative for biodiversity.

d) To respond to urgency, reverse our traditional analytical lens to prioritize regeneration over avoiding harm.

7) Investing in and supporting Innovations

a) Support synthetic meats and proteins.

b) Invest in companies that work in precision ag. Consider start up investments in companies with micro (small operation) precision ag. especially in pest control to make precision ag affordable for small operators.

c) Support organizations that look at seaweed as solutions (e.g., Systemiq in EU, ProForest in Chile).

8) Data, Accounting, Goals & Targets

a) To galvanize action, support setting a clear and ambitious target at the COP, such as 30% for nature in 2030, 50% in 2050.
b) Push for the adoption of sustainability accounting frameworks that integrate context and planetary boundaries.
c) Use soil degradation data as a visible indicator (parallel to PPM in climate).
d) Increase demand for spatial analysis.
e) Ask chemicals companies to communicate a general pesticide reduction goal and a time goal for discontinuing use of the World Health Organization (WHO) type 1A and 1B pesticides and pesticides banned under the Stockholm Convention on Persistent Organic Pollutants (2001).
f) Set targets to re-invest fund proceeds in nature-based solutions.

9) Galvanizing Leadership

a) Get Larry Fink to acknowledge biodiversity loss as a fundamental reshaping of markets.
b) Train Directors on biodiversity loss, alongside climate change.
c) Campaign financial regulators to recognize that biodiversity loss is a systemic risk.

10) Multi-stakeholder Collaboration

a) Engaged Investors should collaborate more proactively with NGOs and independent media.
b) Bring investors together to problem solve in more depth, e.g., how to address the neonic crisis.
c) Provide guidance to companies and data platforms to start a conversation around deforestation.
d) Support resource sharing by smallholder farmers.

Preventable Surprises

DAY 01

Science & Policy

Building an Investor Agenda on Biodiversity

Day 01

Science & Policy

Main Summary

Day 1 of the Dialogue kicked off with a bang, as participants contributed 60+ posts in the 3 threads: two focused on Science (with Provocations by David Obura on the Earth Commission & Erin Billman on the Science Based Targets Network) and one focused on Policy (with a Provocation by Josef Settele).

The key issues that emerged generally exhibited dynamic tension between poles of opposition (eg @Jillian's rabbit hole of mathematical quantification at end, and @Mark's accountability of accounting for tipping point thresholds at the other; or @Tom's globalized regulation on one extreme and @Moira's localized regulation on the other).

As discussion progressed, however, clarity emerged that these were not necessarily mutually exclusive poles; for example, critical mass of opinion seemed to emerge that integrating tipping point thresholds into accounting systems is necessary, even in the face of skepticism over existing accounting frameworks and recognition that tipping point thresholds are by definition uncertain and challenging to pin down.

Other key issues exhibited similar polarities and potential third-way solutions. Below are the key categories the Preventable Surprises Facilitation Team discerned, populated by Key Takeaways in your voices

Provocation 1

What does Science say about what Investors need to do to avoid tipping points for biodiversity and our planet's life support systems?

State of nature. A high level set of biodiversity goals have been compiled recently, summarized in the box at right. The question is, how can investors act on such goals to meet standards for minimizing impact to nature?

Ecosystems
- No additional loss of critical ecosystems.
- Natural ecosystems: no net loss in area and integrity (2030), increase by 20% (2050).
- "Managed" ecosystems: no net loss of integrity (2030), increase by 2050.

Species
- Reduce extinction rate and extinction risk.
- Across the whole Tree of Life.
- Local abundance and distribution of key functional and threatened species stabilized (20300, recovered (2050).

Genes:
- genetic erosion of wild and domesticated species halted (2030)
- genetic diversity of populations restored and adaptive capacity safeguarded (2050).

Benefits to people:
... are enhanced and secured:
- growing and distributing nutritious food.
- freshwater distribution and quality.
- climate change mitigation.
- coastal protection and flood mitigation.
- urban green space.

There are two 'knowns', with certainty: a) people, our societies, our cultures, are dependent on nature (i.e. biodiversity) in myriad ways – try and enumerate the essential things we use or enjoy that do NOT come from nature originally; and b) the state or condition of almost all aspects of nature is declining.

From a global or birds-eye view, we can synthesize two principles, across the four parts of nature:

- Minimize and halt degradation of all aspects of nature – the sooner the better;
- Restore aspects of nature to increase their function – both to maintain nature's innate regenerative capacities, and for our benefits.

David Obura
Director, CORDIO East Africa

Provocation 1

What does Science say about what Investors need to do to avoid tipping points for biodiversity and our planet's life support systems?

We can measure many aspects of nature – such as in relation to species numbers, ecosystem extent and integrity and benefits derived from nature (e.g. quantity of fish). Models of species and ecosystem growth and change, and provisioning of resources, are well developed. The Earth Commission is working to identify global 'guardrails' for biodiversity metrics for a 'safe and just' future, working in tandem with the Science Based Targets Network, which is translating these to local scales for application by companies and cities. We hope that these become used as primary measures alongside economic indicators, as measures of societal success and wellbeing.

Tipping points. What happens when nature declines? For species we know they can become extinct (locally, and globally). For ecosystems, they may collapse. These are critical 'tipping points', or forks in the road from which it may be very hard, or impossible, to return. The guardrails mentioned above are intended to protect us from stepping too close to these tipping points. Systems and resilience science explore how to recognize tipping points, predict where they may be (at what levels of key variables), and the consequences of traversing them. There are many unknowns about these questions, particularly as a system becomes increasingly complex, as natural and nature-human systems are. These sciences explore risk – much as investment analytics do.

Provocation 1

What does Science say about what Investors need to do to avoid tipping points for biodiversity and our planet's life support systems?

One characteristic of nature is the scaling or aggregation from individual locations and contexts, to the global – such as the full distribution of a species, or extent of an ecosystem. There are also many local/geographic 'replicates' of human-nature systems (such as fishing communities in a coral reef seascape, or businesses in a city), but aggregated all together, we only have one planet or biosphere. So just as with the decline of nature, reversing decline and avoid tipping points builds up from each individual entity that takes positive action.

I present four provocations, in relation to investor actions in relation to biodiversity tipping points:

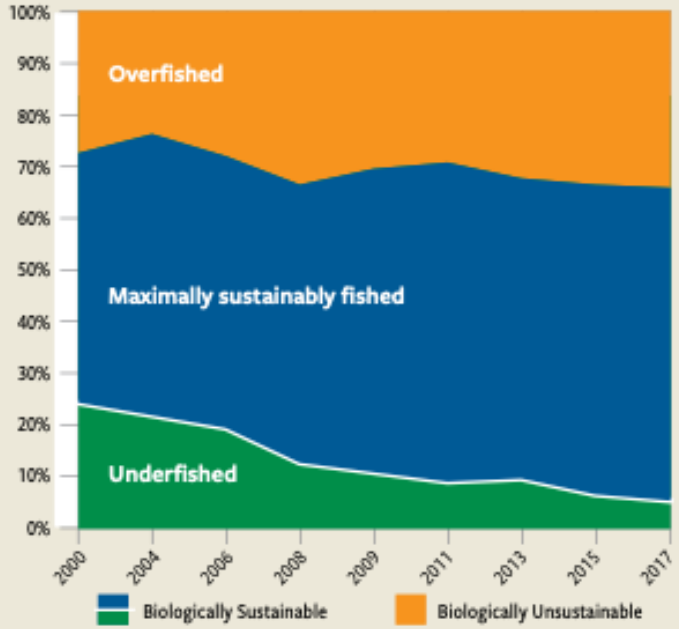
1) Integrated accounting and similar processes that incorporate complex and diverse data have matured considerably. For example, countries are building national accounts incorporating natural assets, and ocean accounts incorporating ocean assets. These processes need to be mainstreamed to better account for nature's health, and given our emerging awareness of extreme risks posed by climate change and by human action on some systems, they should be mainstreamed VERY quickly, perhaps within a timescale of 2-5 years.

> **Question:** ***But, do/can they incorporate the issue of tipping points/thresholds, and the need to remain a safe distance away from those thresholds?***

Provocation 1

What does Science say about what Investors need to do to avoid tipping points for biodiversity and our planet's life support systems?

2) Mainstream production sectors – fisheries, forestry and agriculture – already conduct in-depth analyses, though to date to maximize output rather than secure long term balance. For example, the FAO puts out annual reports on the State of World Fisheries (and Aquaculture), and the most recent one for 2020 shows that only 5% of global fisheries are not fully utilized or over-utilized, and this proportion has been steadily declining since the beginning of these computations. The capacity exists to measure and take decisions, but the incentives do not favour sustainability and securing biodiversity, even in 2020. Re-analysis of historical trends using an integrated accounting perspective following will likely show the perverse actions and incentives that have been operating till now.



Question: ***Could this help change incentives to favour sustainable behaviour across sectors, and of actors within sectors?***

Provocation 1

What does Science say about what Investors need to do to avoid tipping points for biodiversity and our planet's life support systems?

3) Another approach may be to **develop an SDG narrative** for each product/actor/ sector, to explore interactions and their effect on tipping points. In this approach economic activity is be accounted for under SDG8 but alongside this, other indicators such as ecosystem health under SDG14/15 will be included, and the AGGREGATE picture beyond profit and GDP will show net positive or negative trends.

Question: ***Can this focus attention to where interventions can produce net positive outcomes, and in particular to avoid tipping points related to interactions across the goals and single-factor thresholds (e.g. economic growth (goal 8) vs. environmental sustainability (goals 14/15)?***

4) The Impact Inequality relation of the Dasgupta Review looks at population, economic activity or wealth per capita and a technology or efficiency term. By applying this relation we might identify what a sustainable wealth or income level is, given today's/future population and current/future technology. A back-of-the-envelope calculation indicates that in the long term (in 50 years), countries with Very High and High scores of the Human Development Index would have to reduce their total impact 30% by 2030 and 70% by 2100 for global sustainability.

Question: ***Can actors/investors use the impact inequality relation to identify the scope of work they need to do to reduce their contribution to a tipping point, to avoid transgressing it? And perhaps more importantly, identify what changes in income/affluence or technology can protect from approaching a tipping point?***

Provocation 2

What investors can most productively do to support the development and adoption of nature science-based targets (SBTs) for their investees?

The Science Based Targets Network (SBTN) is currently developing the methodologies for companies and cities to set science-based targets - measurable, actionable, and time-bound objectives, based on the best available science, that allow actors to align with Earth's limits and societal sustainability goals. SBTs differ from traditional ESG approaches, in that they explicitly integrate global 'guardrails' for biodiversity metrics for a 'safe and just' future identified by the Earth Commission, which David Obura mentions in his Provocation. By contrast, traditional ESG measures focus on incremental improvement.

The methodologies under development and targeted for release in 2022 will cover nature broadly and the drivers of nature loss, across land, freshwater, ocean realms and including both biodiversity and nature's contributions to people. As a first step, SBTN released initial corporate guidance. Companies and investors are encouraged to read this guidance, take steps to prepare by assessing their value chain-wide impacts and dependencies on nature, join the SBTN corporate engagement program if they are motivated to be involved in co-creation, and take no-regrets actions for nature in the meantime.

Erin Billman
Executive Director at
Science Based Targets
Network

Provocation 2

What investors can most productively do to support the development and adoption of nature science-based targets (SBTs) for their investees?

How companies can assess, prioritize, measure, address and track their impacts and dependencies on nature in line with science: Specifically, actions should follow the modified conservation hierarchy:
Investors have a vested interest (and stewardship impact on) corporates and city municipalities, and therefore must support the development and adoption of nature SBTs. They can play several essential roles right now: 1) build support, momentum and expectation for SBTs for nature with both companies and municipalities in their portfolios and with other investors, 2) start integrated messaging with climate expectations, as climate change is one of the key drivers of nature loss, and we can't solve climate change without nature, and 3) advocating for the actions companies and cities can take now to benefit nature and people.

Questions:

- ***What tactics can investors deploy to play these three roles effectively?***
- ***How can existing tactics such as a) bilateral engagement, b) joint platforms (e.g., on deforestation-free portfolios), and c) existing tools (e.g., ENCORE to prioritize sectors and better understand portfolio impacts and dependencies), be leveraged?***
- ***Given SBTs offer a form of mindset or paradigm change from standard incrementalist ESG approaches, how in particular can ideas in the 'transform' category, referenced above, create breakthroughs?***

Provocation 3

Necessary Transformations: How are global policy efforts responding to the challenge of biodiversity loss? What is the role of investors?

Especially in the times of Covid19, it becomes obvious that global policy efforts responding to the challenge of biodiversity loss are not getting to the point. Policies are far too much oriented at curing symptoms while largely ignoring the direct and indirect causes. As already stated in April 2020, we must ensure the strengthening and enforcement of environmental regulations – and only deploy stimulus packages that offer incentives for more sustainable and nature-positive activities. It may be politically expedient at this time to relax environmental standards and to prop up industries such as intensive agriculture, long-distance transportation such as the airlines, and fossil-fuel-dependent energy sectors, but doing so without requiring urgent and fundamental change, essentially subsidizes the emergence of future pandemics.

We indeed should adopt a 'One Health' approach at all levels of decision-making – from the global to the most local – recognizing the complex interconnections among the health of people, animals, plants and our shared environment. Forestry departments, for example, usually set policy related to deforestation, and profits accrue largely to the private sector – but it is public health systems and local communities that often pay the price of resulting disease outbreaks. A One Health approach would ensure that better decisions are made that take into account long-term costs and consequences of development actions – for people and nature.

Josef Settele
Prof. Dr. bei Helmholtz Centre for Environmental Research - UFZ

Provocation 3

Necessary Transformations: How are global policy efforts responding to the challenge of biodiversity loss? What is the role of investors?

Perhaps most importantly, we need transformative change – the kind highlighted in the IPBES Global Assessment Report (the one that found a million species of plants and animals are at risk of extinction in coming decades) in 2019: fundamental, system-wide reorganization across technological, economic and social factors, including paradigms, goals and values, promoting social and environmental responsibilities across all sectors. As daunting and costly as this may sound – it pales in comparison to the price we are already paying to cure the symptoms of the pandemic.

Responding to the COVID-19 crisis calls for us all to confront the vested interests that oppose transformative change, and to end 'business as usual'. We can build back better and emerge from the current crisis stronger and more resilient than ever – but to do so means choosing policies and actions that protect nature – so that nature can help to protect us.

There is a single species that is responsible for the COVID-19 pandemic - us. As with the climate and biodiversity crises, recent pandemics are a direct consequence of human activity – particularly our global financial and economic systems, based on a limited paradigm that prizes economic growth at any cost. We have a small window of opportunity, in overcoming the challenges of the current crisis, to avoid sowing the seeds of future ones.

Provocation 3

Necessary Transformations: How are global policy efforts responding to the challenge of biodiversity loss? What is the role of investors?

A core element for changes towards sustainable production and consumption includes introducing regulations aimed at internalizing the external costs of production, extraction and consumption (such as pricing wasteful or polluting practices, including through penalties); promoting resource efficiency and circular and other economic models; voluntary environmental and social certification of market chains; and incentives that promote sustainable practices and innovation.

Questions:

- ***How can we incentive firms and investors to support policy that moves in the direction of transformative change?***
- ***What are options for and attitudes of firms to internalize the external costs of production, extraction and consumption? Is it even feasible to expect the private sector to question the business model from which it seems to have profited so much?***
- ***How can investors contribute to protecting land, for example setting aside 30% for nature?***
- ***What geographic hotspots should investor efforts focus on?***
- ***How can investors support the Global Convention on Biodiversity? What message should they bring to the October 2021 UN Biodiversity Conference?***
- ***How can investors build productive relationships with governments to support (and not lobby against) constructive policies?***

DAY 01

Science & Policy

Accounting for Tipping Point Thresholds: Necessary Accountability

"Threshold are messy but also can provide guidance. They can be statistical but not necessarily ecological."

Andrew Whitman
Director, Applied Sciences

"If/when we advocate for assessing human impacts on biodiversity, that a is a form of accounting that has nothing to do with putting a price on things... I assume no one would disagree with the need for humans to be accountable for their actions, yes? ... We need to hold organizations accountable in these ways on the theory that the preservation (or restoration) of ecosystems and biodiversity depends on it."

Mark W. McElroy
Founder, Center for Sustainable Organizations

" ...you pointed out the "mathematical rabbit hole" that incorporating thresholds entails and its failure to be effective to date, and I'm certainly with you on that. But I think that's more due to applying a model that is too superficial and 'non -contextualized'..."

David Obura
Director

"The investor community should be insistent that a set of [thresholds-based] principles be adopted by ESG-type standards-making groups. Otherwise, most of what passes for mainstream practice in ESG accounting runs the risk of being arbitrary and meaningless.

Mark W. McElroy
Founder, Center for Sustainable Organizations

DAY 01

Science & Policy

Accounting: A Rabbit Hole?

"If we are to be successful as a species, we need to be symbiotic and regenerative. We need to biomimic rather than force nature into our accounting frameworks"

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

"Instead of ever more precise accounting that doesn't lead to actual 'valuing' (through pricing or regulation), we need a very rough sense of where problems are greatest and then very quick, real 'valuing' of the problem by decreeing areas or practices off-limits or subject to regulations."

Duncan Austin
Sustainability Research

"Thinking we can truly model systemic risk and tipping points, no. We must accept that the mathematical rabbit hole will take too long or will give us a partial answer."

Jillian Reid
Principal - Mercer Responsible Investment

"As for explicitly putting in place tipping points [in accounting/reporting]...if we do, and we are wrong, then it significantly sinks the credibility of the movement that we are seeking to spark. We can miss to either direction: a) our targets are set and the reality we anticipate fails to pass, thus making us look shrill; or b) our targets are too low and the disaster ensues."

Jason Voss
CEO at Active Investment Management (AIM) Consulting, LLC

DAY 01

Science & Policy

Policy Pitfalls: Perverse Incentives; Limits to Regulation

"Regulation may be difficult, but we can't leave action only to capital markets, where the primary aim is profit-making. After all, leaving governance to "the market" is a large reason why we're in this crisis in the first place."

Moira Birss
Climate and Finance Director

"Change is needed - policies need to be more measurable, more aggressive, and backed up with sucient enforcement. Governments can address perverse incentives that promote over-exploitation of natural resources, and can redirect these funds into eg regenerative agriculture and ecologically sound practices instead. Investors can play a role in this by working with governments and encouraging policies with new objectives. Policy efforts to address biodiversity loss have been insufficient and disappointing to say the least."

Clinton Adas
Investment Stewardship and Sustainability

"The CBD's 5th Global Biodiversity Outlook reported that "little progress" had been made in eliminating perverse incentives over the past decade. There is still therefore an urgent need to disincentivize firms and investors from financing biodiversity-harming activities, and this should be the starting point."

Oliver Munnion
Plantations and Bioenergy Campaigner, Publications Coordinator

"I am a skeptic of regulation, especially durable global regulation after living through the Trump era. But I wonder if there is a way to incorporate it into international trade deals, along the lines suggested for carbon and carbon taxes on products."

Andrew Whitman
Director, Applied Sciences

DAY 01

Science & Policy

Scaling Transformation: Global / Local / Glocal?

"I very much agree with [...] "start local" - the challenge now, as in the past, being to aggregate from local to larger scales with significant global impact. 'Think global, act local' has been a slogan for a long time, but it hasn't created the system change/movement that is needed, so how can this be done now?"

David Obura
Director

"I worry about the push for global regulation, since it would be such a difficult thing to achieve. Given the urgent need for action now, I would argue that it would be most effective to push for regulation in some key countries, including but not limited to the US and the EU."

Moira Birss
Climate and Finance Director

"Small holder farmers are important to any discussion of biodiversity because they are massive (eg 50% of palm oil supply) ... but there are also very important difference by geography and commodity meaning simply aggregating is limited. Greater sharing and pooling of resources could make a big difference here."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

DAY 01

Science & Policy

Systemic Perspectives: Opportunities and Risks

*"We need to underscore the importance of understanding and addressing how biodiversity loss contributes to *systemic risk* -- the risk of a rolling, cascading collapse of the ecosystems in which the global economy is embedded."*

*"Systemic risk from biodiversity loss, like planetary warming, builds gradually but materializes abruptly. This is why it so important for asset managers and all stewards to keep in mind that the *cumulative impacts* of individual agents, corporations, governments, farmers, etc., lead to the systemic risk of reaching tipping points where there is no possibility of reversing damages to nature because cumulative impacts have moved the system into a different phase space."*

Thomas O. Murtha
Senior Advisor,
Preventable Surprises

The nature of our system problems means that lots of 'good examples' may not be enough to prevent irreversible tipping points being breached; it is vital also to stop those who might not be willing to play along from undermining the system, which requires binding constraints at the system level."

*"Advancing solutions is *not* synonymous with eradicating problems, even though that has been the working assumption of the ESG movement. Ninety percent of actors might be doing the right thing voluntarily, but it is the ten percent who are not that can define the ecosystem outcomes. Protecting systems from *all* actors requires policy at the appropriate level, matching the ecosystem in question."*

Duncan Austin
Sustainability Research

Preventable Surprises

DAY 02

Shareholder Activism & Finance

Building an Investor Agenda on Biodiversity

Day 02

Building an Investor Agenda on Biodiversity

Main Summary

Day Two, focused on Shareholder Activism (with a Provocation by Wolfgang Kuhn of ShareAction) and Finance (with a Provocation by Corey Klemmer) launched into similar veins of generative tensions as Day One, bridging momentum seamlessly. Specifically, Duncan Austin suggested that investors should humbly acknowledge that investors "care, but we cannot solve" biodiversity loss. Wolfgang countered immediately, positing the opposite: that investors have a fiduciary responsibility to resolve the predicament they play a large part in creating.

This generative tension spurred a kind "rise-to-the-challenge" for those who embrace the notion that investors "can and should" (as Jerome Tagger proposed) play a critical role in addressing the biodiversity predicament -- and enumerated the responses outlined in the Key Takeaways below (and that this dialogue seeks to identify, clarify, and cultivate into an action agenda). That said, Jerome also asked participants to list what investors "can't" do, which resulted in clarifying lists (that helped validate Duncan's opening salvo.)

The day closed out with a post by Pablo Berruti that stressed the role of "frame-shifting" -- referring specifically to the brilliance of Carbon Tracker for the frame-shifting memes of the carbon bubble and stranded assets -- and noting the need for the biodiversity movement to "leapfrog" (hat-tip to Jillian Reid) the climate movement by learning from its shortcomings through further frame-shifting. We can add this to our list of to-do's for this dialogue.

Provocation 1

Investors must deal with biodiversity loss - right now

Investors are woefully unprepared to deal with biodiversity loss. According to ShareAction's latest asset manager survey, none of 75 of the world's largest asset managers has a dedicated policy on biodiversity. Only 11% of asset managers have policies requiring portfolio companies to mitigate harmful impacts on biodiversity. In a recent scoping study, ShareAction described that the "majority of interviewed investors said they planned to focus on biodiversity as an 'engagement topic' but do not have plans to develop an overarching biodiversity policy or commitment on biodiversity." Five thoughts on the topic:

1. The dance around data

Without complete data, financial markets are not able to do anything about biodiversity, it sometimes seems. Which is odd, given that financial markets participants normally (I.e. when it isn't about sustainability) know very well how to navigate their way in the face of uncertainty and incomplete data. What is also odd is that when it comes to divestment, investors ensure us that it is much more productive to engage with companies, and that great engagement streams are in place.

Question: ***If that is so, and if data is so important, why haven't investors told companies to provide the data?***

Wolfgang Kuhn
Director of Financial Sector Strategies at ShareAction

Provocation 1

Investors must deal with biodiversity loss - right now

2. SFDR lobbying

We are saddened to see that the proposed EU Sustainable Finance Disclosure Regulation technical standards have been decimated ("not enough data"…). One of the metrics that have bitten the dust fell under "Deforestation": The Share of investments or investee companies without a deforestation policy". Might not be easy to come by that information.

Question: ***But if investors are not even prepared to obtain information of such basic nature, what chance is there that investors will do anything more demanding?***

3. Natural capital

The *Dasgupta Review* has kicked natural capital accounting into the limelight. Biodiversity loss is a market failure, market participants say. If only governments put the right price on stuff, markets would work perfectly and serve people and planet. Pricing has the potential to drive investment decisions and capital flows in important ways but can we safely 'price' nature without implying that for $X, you have the right to destroy nature? While theoretically, that may just work for a price of carbon (which is most likely going to be too low for political reasons -- though looking at the history of carbon pricing may also be instructive), how is that going to work for the Amazon. For bees? For less appealing insects?

Question: ***Is it going to be possible at some point to arbitrage prices of insects? Hedge with derivatives?***

Provocation 1

Investors must deal with biodiversity loss - right now

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Provocation 1

Investors must deal with biodiversity loss - right now

4. Environmental materiality

Why is a double materiality angle important? Because investors have enough information to know what needs doing. However, they don't have enough information to prove to themselves that the changes that are (obviously) needed will get them exactly the same returns as not making those changes. For that, the world is too complex, and causality chains are too long. You will never be able to calculate what the amazon burning means for your 2021 portfolio return. But this is not about financial materiality. It is about responsibility. Investors are responsible for biodiversity destruction caused by the economic activity they finance, whether it is through equity or debt. At some point, society will put a price on that responsibility.

Question: ***How do we get beyond that focus on financial materiality, which essentially says that I care about biodiversity only to the extent that caring doesn't affect my investment returns?***

5. What to do beyond fretting about data and disclosures?

"A number of data sources exist that can be used to construct sector-specific campaigns to transform the biodiversity performance of individual companies and industries. For instance, analysis by ENCORE and others have identified priority industries which have the most significant impacts and dependencies on biodiversity, and datasets such as SPOTT and TRASE which provide detailed information at the sector level. Since financial actors have a limited understanding of the relevance of biodiversity to sectors beyond agriculture, it will be important to elevate how other industries such as chemicals, apparel, mining and construction also impact and are impacted by biodiversity."

Question: ***Can we expect asset managers to invest in the additional resources needed when they are mainly focussed on climate change? Will they be ready to change their investment processes?***

Provocation 2

From climate change to biodiversity: levers and lessons for investors

The sophistication and scale of investor action on climate change has grown exponentially, yet the trendlines on GHG emissions remain remarkably unchanged. At the same time, the financial community is grappling with an exponentially greater and more complex risk: biodiversity loss.

The data challenge is frustrating but real. **In the overwhelming majority of cases, the rich biodiversity data available (e.g. ENCORE, IBAT) is 'site specific' and thus not investment-decision useful because it cannot be directly linked to an investment.** Notable exceptions would be project finance tied to a specific site and sovereign debt. Sector level data can inform corporate engagement more than investment decisions. Without clear mapping of corporate value chains (including financial flows), it is incredibly difficult to connect on-the-ground biodiversity data to a specific company and even harder still to aggregate it in a way that might provide portfolio level insights.

The traditional tools of financial analysis (and accounting) are insufficient to address tipping points or this level of complexity, but the financial community has yet to meaningfully innovate on the Modern Portfolio Theory in a way that might address this.

Corey Klemmer
Director of Corporate Engagement at Domini Impact Investments LLC

Provocation 2

From climate change to biodiversity: levers and lessons for investors

Level setting on expectations of investors:

- Investors are usually fiduciaries and will not/can not agree to accept a below-market rate of return
- Accordingly, investors will not ask companies in their portfolio to do less business, make less money, or put themselves out of business
- Traditional financial analysis is concerned with company level risks and performance; systemic risk is generally considered to be outside the scope of investor influence. Thus the universal owner theory struggles in its application.

Those are broad generalizations but an important baseline. In some areas these notions can or must be challenged (consider shifting expectations and proxy voting at O&G majors).

- **What do we (investors) want companies to do?** How do we go beyond disclosure? What are nature-positive actions we can promote? We can ask for increased board competence, recognition in financial statements, disclose full traceability of supply chain, policy support for a strong CBD COP and make high level commitments. We can back that up with our proxy voting and shareholder proposals. But the question of how to drive specific and measurable action remains.

Provocation 2

From climate change to biodiversity: levers and lessons for investors

- **How can investors better use available data?** Investors look for consistent, comparable data points across securities (companies), ideally quantifiable data that can be translated to financial risk or opportunity. Right now there are company 'watch lists' (e.g. the Forest500) and geographic data sets (e.g. ENCORE). Some data providers are starting to go further by aggregating or digging into supply chain information (e.g. Trase Finance and Forests and Finance).
- **How can we leverage Net Zero commitments to address nature loss?** Companies, asset managers and asset owners are all making commitments to reach 'net zero' by 2050. If the associated action plans don't address nature loss, they are not fit for purpose (e.g. emissions will continue to climb if we reach tipping points in the Arctic or forests). How can we build in expectations about nature loss? Adjust carbon budgets to expect that we trigger at least one tipping point? Expand "scope 3" before the protocol catches up (e.g. build in land use change now)?
- **Can we stay within our ecological boundaries without significantly constraining market growth?** The largest asset owners often have 'benchmark rates of return' sometimes set by regulation. These often hover around 7%. Can we address over-consumption and still meet these expectations?
- **How do we leapfrog?** @Jillian What lessons can we take from TCFD, CA100+, and regulatory (in)action on climate change to drive a much more urgent response to nature loss?

DAY 02

Shareholder Activism & Finance

Investors: We cannot solve biodiversity / We have a fiduciary responsibility to help solve biodiversity

"I strongly think the best thing that investors who care about biodiversity can do is admit publicly: 'we care, but we cannot solve'. That might trigger a bigger public debate about how markets need non-market constraints if we are to protect our ecosystems."

Duncan Austin
Sustainability Research

"We must not absolve investment from the responsibility for the adverse impacts caused, even if it is incredibly complex a topic."

"The definition of fiduciary duty needs to include the notion that it can't be in a beneficiary's best interest to generate returns by contributing to the degrading of what these returns are supposed to buy at a later stage. I appreciate that there are legal interpretations that cannot changed overnight, but there can't be any doubt that they WILL change over time."

Wolfgang Kuhn
Director of Financial Sector Strategies at ShareAction

"The starting place for systemic change is with public sector pension funds. The have a responsibility to pensioners. Their shareholder pursued a career path which valued income stability (low risk) over maximum income (high risk). This may carry over in their expectations for their pension investments (stability/sustainability over net income)."

Andrew Whitman
Director, Applied Sciences

DAY 02

Shareholder Activism & Finance

The Climate / Biodiversity Pivot: Frame-shifting to Leapfrog

"Building on existing climate change commitments will give us the push off - the leaping leverage. Connecting the net zero commitments to address nature loss (as you've suggested) is very important, as it makes the most of commitments that have already been made (those approvals are not easy!) and reinforces that addressing biodiversity issues is shouldn't be a completely separate project"

Jillian Reid
Principal - Mercer
Responsible Investment

"CarbonTracker - has there been a more impactful intervention than the coining of the carbon bubble and stranded assets? We need simple but well evidenced frame-shifters. This is probably even more important for biodiversity than climate because it is more dispersed and complicated."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

"As equivalent to the fossil fuels' "stranded assets" - I'd say the potential stranded asset is the Earth itself. It will be uninhabitable if we destroy biodiversity."

Merel van der Mark
Coordinator of the Forests and Finance Coalition

"I find that the risk of "tipping points" if warming gets above 2C to be the most compelling reason for asset owners to set a net zero goal (versus trying to quantify the potential losses of 3+C of warming). The advantage that the climate change agenda has is a very recognizable 'target' (2C, and aiming for 1.5C)."

Karen Lockridge
Director, ESG Investing

DAY 02

Shareholder Activism & Finance

What can -- and can't -- finance do to help tackle biodiversity loss

"If we were to do this as bullet point lists, what would fall under the two headings? Finance can and should: Finance can't:"

Jerome Tagger
CEO

"Finance can't and shouldn't - imply that it is someone else's problem - joining initiatives is 'action' - point to benchmark indices - insist that they have no freedom of choice."

Wolfgang Kuhn
Director of Financial Sector Strategies at ShareAction

*"Financiers can and should - Stop financing activities that are by definition detrimental to biodiversity, such as * Land conversion (including deforestation) * Industrial livestock * Industrial fishing * Most pesticides * Fossil fuels"*

Merel van der Mark
Coordinator of the Forests and Finance Coalition

"Investors can also look to support more shareholder resolutions that are relevant to biodiversity, even though many/most of them are not explicitly linked to biodiversity but are known contributors to the problem."

Clinton Adas
Investment Stewardship and Sustainability

DAY 02

Shareholder Activism & Finance

What else can investors do to help resolve the biodiversity conundrum?

"one of our stated ambitions going in is to figure out what investors can do in the next couple of years, absent new data or new information. In other words, what do we do with what we have?"

Jerome Tagger
CEO
Preventable Surprises

"I suspect a smaller edgier group pushing for the expulsion of climate denying directors and the nomination of new directors would have been more effective. I struggle with the all care, no responsibility (to vote or exit) governance structure."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

"Vote against financial statements? Depending on risks overlooked."

Corey Klemmer
Director of Corporate Engagement at Domini Impact Investments LLC

"To summarise a complex case study in one line: the fund management tail wags the dog and this includes intellectual capture. Independent NGOs, positive maverick insiders and independent media need to work together better."

Dr Raj Thamotheram
Founder & Chair, Preventable Surprises

DAY 02

Shareholder Activism & Finance

The TCFD / CA100+ Pivot: Transcending the Climate Precedent

"One lesson to take from TCFD is that its success depends on whether it has helped lay the groundwork for effective regulation that meets science-based targets. Same for CA100+."

David Wood

"For TCFD it is a framework which focuses and therefor prioritises the impact of climate on the company rather than the other way around."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

"As is now, CA100+ gives the appearance of being all carrot, no stick. A Nature Action 100+ can do better than that."

Thomas O. Murtha
Senior Advisor, Preventable Surprises

"I'm sure some learnings from TCFD will carry over to the benefit of TNFD but also unlikely to be the catalyst for more urgent action. I'd say the concern from the investor perspective is there, along with a rudimentary understanding of the issue."

Kyle Cahill
Director, Sustainability

Preventable Surprises

DAY 03

Agriculture / Land Use & Pesticides

Building an Investor Agenda on Biodiversity

Day 03

Agriculture / Land Use & Pesticides

Main Summary

The day started with Laura Ortiz Montemayor's eloquent framing: "We can only thrive if interdependent biodiversity wins over the finance system. Finance must fall in love with life today. Real value must win over price. Biodiversity is everyone's only life insurance." This sentiment opened up robust conversations on Agriculture & Land Use (based on the Provocation by Nathalie Walker) and Chemicals -- Pesticides & Fertilizers (with a Provocation by Gabriel Thoumi).

Interestingly, some similar thematic trends arose, such that we integrate Key Takeaways from the two threads in some of the Key Point categories below -- such as with Sector Solutions and Goals & Targets. In other instances, there were clear and distinct topical themes, such as Place-Based / Landscape Scales, Cattle / Meat: Unsustainable? or Regenerative?, and Phasing Out / Banning Chemicals.

Provocation 1

Agriculture can make much better use of land: investors must support this without delay

- Commodity agriculture is the largest driver of deforestation and biodiversity loss and unchecked poses a multitude of risks, including contributing to climate change and the spread of zoonotic diseases. Cattle, oil palm, soy, cocoa, coffee, wood fiber, and rubber, are responsible for over half of all deforestation linked to agriculture. Some commodities, especially palm oil, soy and wood products in particular, have received a lot of attention which has resulted in well-developed initiatives to support 'deforestation-free' supply chains (such as the Forest Stewardship Council (FSC), the Roundtable on Sustainable Palm Oil (RSPO) and the Amazon Soy Moratorium). However, cattle contributes two-thirds of all agriculture-driven deforestation, yet efforts towards large-scale 'sustainable' beef and leather supply chains are lacking in market uptake and effectiveness.

- Few examples of supply chain interventions have evidence of the ability to have a conservation impact, because rules are weak, market share of participating supply chain actors too low, or because of leakage via indirect suppliers or other efforts to override or evade monitoring. Shortcomings can be overcome when transparency allows for the identification of weaknesses, continuous improvement of rules and standards, and by ensuring robust auditing systems are in place.

Nathalie Walker
Director, Tropical Forest and Agriculture at National Wildlife Federation

Provocation 1

Agriculture can make much better use of land: investors must support this without delay

- While many consumer-facing companies have deforestation commitments and actively participate in multi-stakeholder initiatives such as commodity roundtables, coordinated efforts by investors have been lacking and action or implementation patchy. In recent years, efforts to support collective action have increased, with divestments, new policies and shareholder resolutions but overall, they have been slow to capitalize on their potential influence.

- **In almost all major deforestation and biodiversity-loss hotspots, there is sufficient already-cleared land suitable for diverting expansion**. In addition, low tech methods such as manual weeding, rotational grazing and crop rotation can increase productivity. Deforestation threatens agricultural productivity by reducing rainfall and increasing soil temperatures. However, uptake of improved practices is slow due to lack of upfront finance (an issue that is directly relevant to investment), skilled labor and the availability of inputs in remote areas, where ample land availability often results in expanding spatially, a simpler and in the short term cheaper option .

Provocation 1

Agriculture can make much better use of land: investors must support this without delay

Questions

1. How can the full costs of deforestation be brought to bear in decision-making of farmers, supply chain actors and investors?

2. How could agriculture transform to meet biodiversity loss challenges? How can production meet demand without encroaching upon native habitat, by increasing productivity or making use of already-cleared degraded lands? How can supply chain actors support these efforts, through traceability and monitoring of land-use change or by other means? What are the steps needed, and what are the barriers?

3. What is the role for investors in driving this change? Which actions could be most effective? How can investors both support improved production while discouraging destructive industries? Do direct land investors hold specific power in this regard?

4. If the cattle sector is most responsible for deforestation, why has it received the least attention? How can international supply chain actors and investors influence meatpackers, when major markets have not shown sufficient environmental concern (most beef is destined for domestic markets in South America, or destinations where few consumer-facing companies have deforestation commitments, such as the Middle and Far East.)

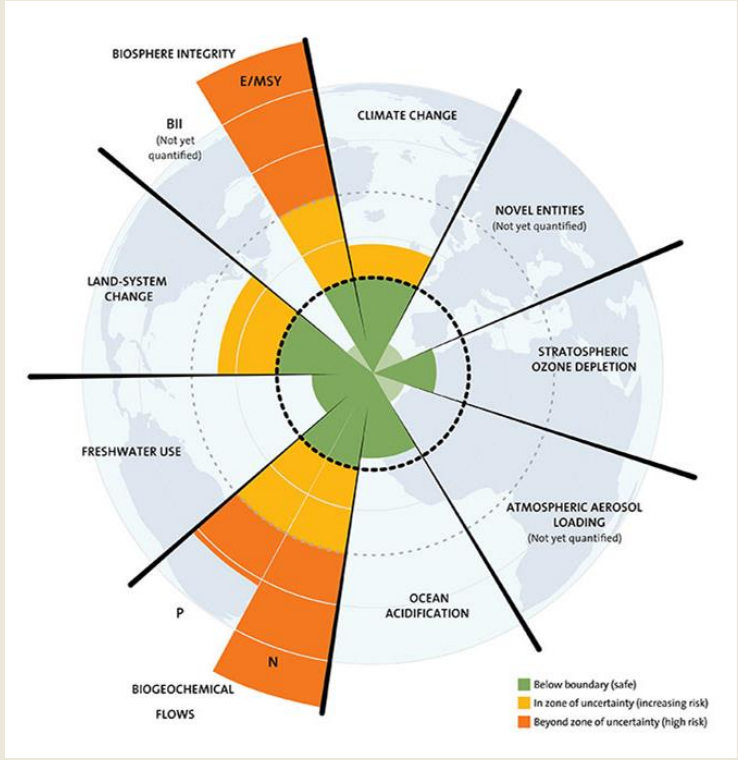
5. Which actions could provide the most gains in the shortest time and therefore should be prioritized?

Provocation 2

Fertilizers and Pesticides feed us and destroy us. What's the exit strategy?

Society depends on natural capital but society as a whole is increasing the destruction of nature. We can see this in the rapid decline of biodiversity we face. We can measure declines in the health of nature at the global scale where we see both **biosphere integrity** and **biogeochemical flows** overreaching (in orange below) their respective planetary boundaries.

The biogeochemical flows of nitrogen and phosphorus for example have significant impacts on climate and biodiversity. But they have been radically changed by humans as a result of many industrial and agricultural processes, causing for instance dead zones in the ocean.



Gabriel Thoumi
Director of Plastics Programme and Financial Markets, Planet Tracker

Provocation 2

Fertilizers and Pesticides feed us and destroy us. What's the exit strategy?

Nitrogen and phosphorus that stray from their intended use as essential elements in fertilization for plant growth can wreak havoc in the terrestrial and aquatic systems where it ends up. For example, a significant fraction of the applied nitrogen and phosphorus makes its way to the sea, and can push marine and aquatic systems across ecological thresholds of their own. One regional-scale example of this effect is the decline in the shrimp catch in the Gulf of Mexico's 'dead zone' caused by fertilizer transported in rivers from the US Midwest.

So now society faces a pincer: It is destroying biodiversity and biogeochemical cycles whilst increasing demand for the fertilizers and pesticides that drive these collapses. Society is adding kerosene to the fire consuming its home.

Let's look at chemicals and pesticides.

Provocation 2

Fertilizers and Pesticides feed us and destroy us. What's the exit strategy?

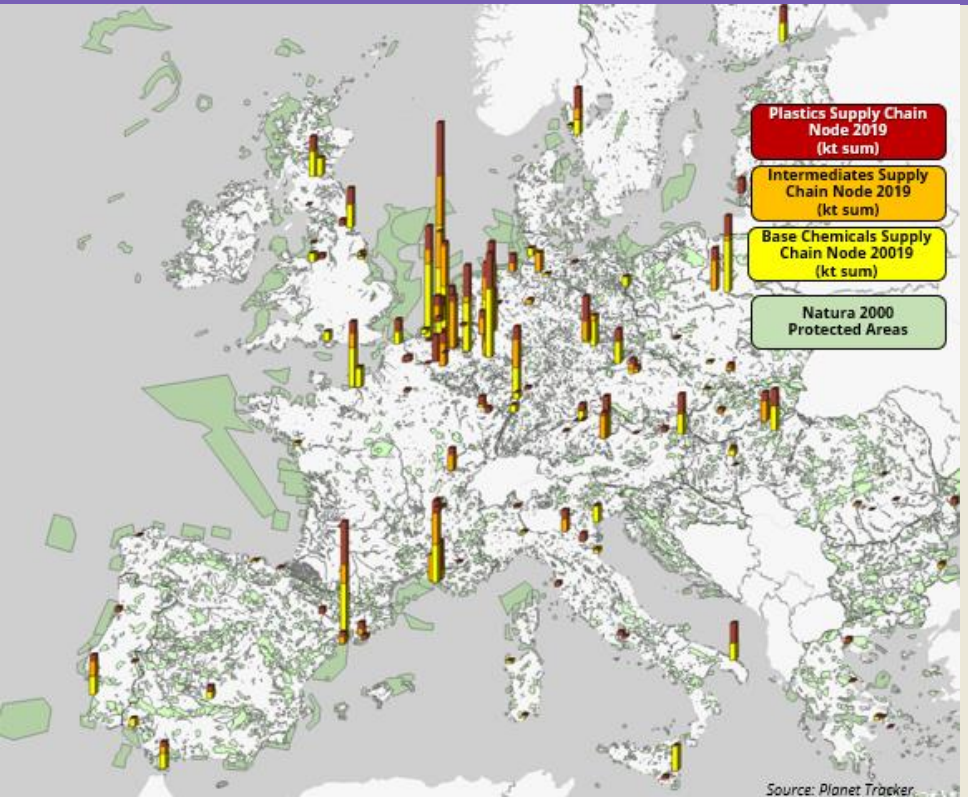
Chemicals

Potash, nitrogen, and phosphate. Most of us have never held them in our hands, so we wouldn't know them if we saw them. Yet these chemicals form the basis on our industrial agriculture economy: from nitrogen, we get ammonia, ammonium nitrate, UAN and urea; from phosphate, we get diammonium phosphate (DAP), NPK, phosphoric acid, single superphosphate (SSP), and triple super phosphate (TSP); from potash, we get PN, polyhalite, potassium sulfate (SOP), muria of sulfate, and other fertilizers.

But reserves for these three base chemicals – phosphate, nitrogen, and potash – are growing – 13%, 25% and 60% respectively 2011-2030 (Bloomberg, Green Markets). The growth in these physical supplies ultimately increases pressure on **biogeochemical flows of nitrogen and phosphorus planetary boundaries.**

Provocation 2

Mapping Risks: Overall



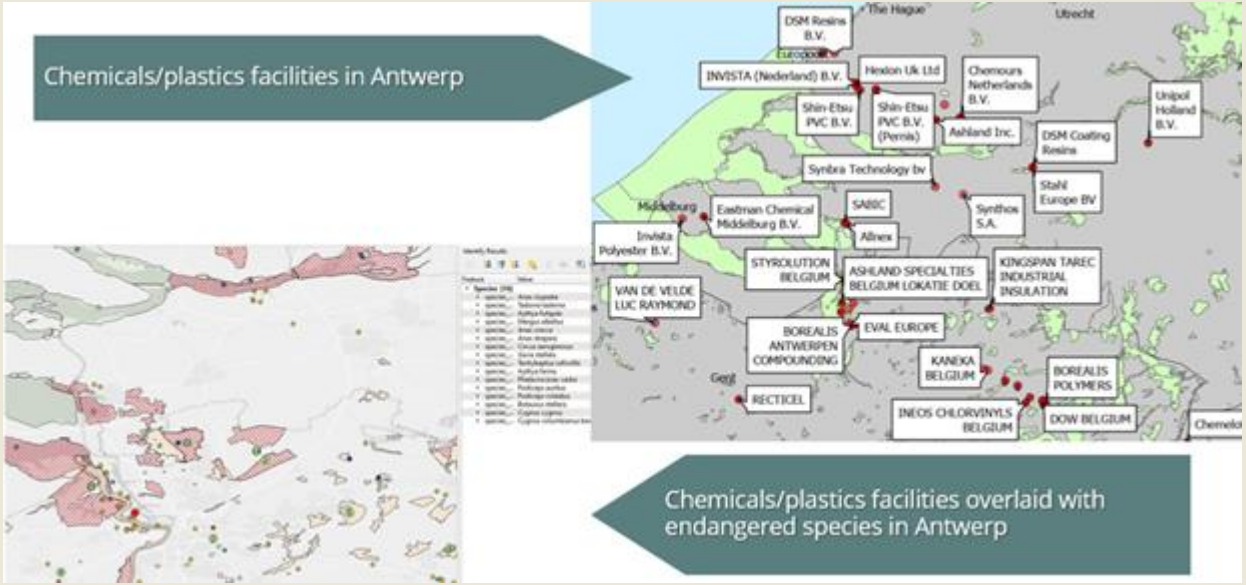
So we can map pollution risk to chemical production (for example, plastics facilities on the left) as shown with EU Basic Chemicals / Intermediate Chemicals / Plastics Resins by facility / capacity / kilotons overlayed with pollution risk.

Here we have the Natura 2000 protected areas mapped (green) alongside both basic organics chemicals 2019 capacity (yellow), intermediate chemicals 2019 capacity (orange) and 2019 plastic resins capacity (red) linked to Natura 2000 protected sites with a mean distance between facilities and protected areas of 1.5 miles.

Provocation 2

Mapping Risks: Deep dive

So we can map pollution risk to production facilities as shown with EU Base Chems by facility / capacity / kilotons overlayed with pollution risk.



Jumping sectors, now specifically Antwerp, here we have the Natura 2000 protected areas mapped (green) alongside examples of facilities from the chemical sector (right).

On the left, we have a deep dive of Antwerp alongside protected areas (green and red) and endangered species.

- Nature 2000 site, Schorren en Polders van de Beneden-Schelde
- 16 endangered species.

Provocation 2

Fertilizers and Pesticides feed us and destroy us. What's the exit strategy?

Pesticides

According to the NGO As You Sow, "Over one billion pounds of conventional pesticides are used in the United States each year. In the most recent year of data, Americans spent $9 billion on pesticides for use in agriculture. The Centers for Disease Control and Prevention's biomonitoring has found pesticide residues in the bodies of 90% of Americans studied."

According to the organization's analysis, the companies it analyzed in general are not taking pesticide risks seriously.

Let's look at just two families of chemicals.

- **Glyphosate**: The chemical that is in the pesticide Roundup is now linked to shorter-term pregnancies in women. Thousands of people have filed lawsuits against Monsanto / Bayer over cancers linked to glyphosate. Recently Bayer AG reached a $2 billion settlement to resolve future claims that its pesticide glyphosate's links to cancer.
- **Neonicotinoids**: Neonicotinoids (the insecticides clothianidin, imidacloprid, and thiamethoxam) are plant protection products linked to nicotine often used to control harmful insects in the agriculture sector. The European Food Safety Authority (EFSA) concluded in early 2018 that neonicotinoids are a threat to most bee species in most intended uses. The EU subsequently banned neonicotinoids in April 2018, with exceptions made for emergencies. There have been "67" EU approved emergencies to use neonicotinoids since.

So in the first case, a pesticide caused cancer and in the second case a family of insecticides are pushing bees towards local extinction. We may understand cancer, but do we understand agriculture without bees? Without bees as pollinators our global agriculture production would drop 35% hurting production for 87 of the world's leading food crops.

Provocation 2

Fertilizers and Pesticides feed us and destroy us. What's the exit strategy?

Back to the Beginning

Our collective actions are pushing the planet – our home – over the cliff as we enter the 6th great extinction directly impacted by our over reliance on chemicals and pesticides use in our agriculture production.

At the same time, as investors, you face tough choices. The Agricultural Chemicals Sector of the economy is very large:

- 378 publicly traded companies in the sector
- $851 billion market capitalization
- $239 billion in annual industry-related revenue

The top 20 companies in the agricultural chemicals sector by industry revenue are on the right.

Company	Market Capitalization (USD millions)	Industry Specific Revenue ((USD millions)	Ticker
Bayer AG	$63,196	$22,201	BAYN GR Equity
Nutrien	$31,783	$20,023	NTR CN Equity
Corteva	$33,441	$13,846	CTVA US Equity
Yara International	$13,002	$12,846	YAR NO Equity
BASF SE	$74,326	$8,747	BAS GR Equity
Israel Corp.	$1,772	$5,271	ILCO IT Equity
UPL	$5,691	$4,815	UPLL IN Equity
FMC Corp,	$13,852	$4,610	FMC US Equity
CF Industries Holdings	$9,639	$4,590	CF US Equity
K+S AG	$1,926	$4,554	SDF GR Equity
Mosaic Co.	$11,536	$4,498	MOS US Equity
PhosAgro	$6,540	$3,695	PHOR RM Equity
ADAMA	$2,970	$3,604	200553 CH Equity
Yunnan Yuntianhua Co.	$2,295	$3,555	600096 CH Equity
Sinofert Holdings	$1,042	$3,322	297 HK Equity
ICL Group	$7,441	$3,265	ICL IT Equity
Sumitomo Chemical Co.	$8,052	$3,161	4005 JP Equity
OCI	$4,582	$3,032	OCI NA Equity
Incitec Pivot	$3,904	$2,670	IPL AU Equity
Uralkali	$2,039	$2,593	URKA RM Equity

Provocation 2

Fertilizers and Pesticides feed us and destroy us. What's the exit strategy?

Questions

1. ***What should investors do if these companies are in their portfolios?***

2. ***Should use of these chemicals come to an end? If so, how quickly? and how can they be substituted?***

3. ***Should precautionary principles apply? Is it strategic framing?***

4. ***Can agro chemicals be adequately regulated? Which countries or regulators have the most influence? How could you as investors engage with them and counter the political influence of the chemicals industry?***

DAY 03

Agriculture / Land Use & Pesticides

Place-Based / Landscape Scales

"Investors should consider increasingly building their portfolios based opportunities closer to home, in systems they understand and directly underwrite the sustainability of the systems where they live."

Andrew Whitman
Director, Applied Sciences

"I think sectorized finance is dangerous because it commoditizes the landscape and in consequence degrades it by design. If we shift to place-based finance and start diversifying products and services per landscape we could be at a better vantage point for Biodiversity restoration as well as a diversified revenue stream for communities which would set them up for environmental and economic resilience during crisis."

Laura Ortiz M
Impact Investing Advisor, Chief Purpose Officer, Systems Mompreneur

"Companies now recognise that deforestation / biodiversity needs to be tackled at a landscape level in collaboration with stakeholders, the approach and focus on certification had not been sufficiently collaborative and too intermediated - the issues are also different by commodity and by country."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

"Economics and finance seeks and encourages 'returns to scale', whereas healthy nature heads towards 'diversity' where a balanced system prevents anything from getting to the 'scale' it might like."

Duncan Austin
Sustainability Research

DAY 03

Agriculture / Land Use & Pesticides

Scale: Small-holders

"Scaling small holder strategies is the big challenge, control needs to be spread, operating like an ecosystem not a top-down scheme that becomes more disconnected, less flexible and less creative the larger it gets."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

"more mixed agriculture and smaller scale farm holdings etc, are 'better' for the environment and species because they steer towards 'diversity', but the 'economic' mindset to find 'returns from scale' is the fundamental driver towards less diversity, more monocultures, and more 'industrial' farming."

Duncan Austin
Sustainability Research

DAY 03

Agriculture / Land Use & Pesticides

Land Use

"Shall we talk about biodiversity conservation on private lands - perhaps acquired by/for investors?"

John Waugh
Strategic planning, program development and integration

"In order to transform agriculture to meet biodiversity loss challenges, we will need to increase productivity and consider restoring degraded lands for biodiversity and carbon sequestration. Supply chains need to use traceability but also regional risk analysis (including land use change monitoring)."

Andrew Whitman
Director, Applied Sciences

"I fully agree with the problem of taking a nature-only, vs. a rights-based approach to conservation. The belief that nature is "pristine", "untouched", etc. is a colonialist belief because it ignores the Indigenous peoples who have coexisted with other species way for millenia" - Moira Birss

Moira Birss
Climate and Finance Director

"I also just wanted to highlight the statement that "In almost all major deforestation and biodiversity-loss hotspots, there is sufficient already-cleared land suitable for diverting expansion." Every hectare of cattle pasture, soy monoculture or tree plantation is a hectare that can't be restored, and in general cleared areas still have a high potential for secondary regeneration within meaningful timescales and without significant intervention (not being converted to another land use being the key one). Which comes back to the point already made in other places by Merel van der Mark and others that reducing production has a co-benefit of freeing up land for biodiversity conservation purposes."

Oliver Munnion
Plantations and Bioenergy Campaigner, Publications Coordinator

DAY 03

Agriculture / Land Use & Pesticides

Sector Solutions

"I wonder what might be possible if we picked just one biodiversity challenge which we all really care about and tried - as a group - to change how the global investment industry deals with it. No doubt we'd be addressing systemic issues but we'd wouldn't be starting off with abstract frameworks and processes. Imagine we said we want to help reduce the death of pollinators by pesticides. What would we DO?"

Dr Raj Thamotheram
Founder & Chair, Preventable Surprises

"What should investors do if these companies are in their portfolios? 3. Invest in companies that work in precision ag. 4. Consider start up investments in companies with micro (small operation) precision ag. especially in pest control to make precision ag affordable for small operators."

Andrew Whitman
Director, Applied Sciences

"One solution that has yet to have sufficient investment to take to scale, is the use of marine algae as a feedstock."

Nathalie Walker
Director, Tropical Forest and Agriculture at National Wildlife Federation

"Brambles have a target of planting two trees for every (plantation) tree it cuts down, one for nature one for future demand. This needs to be a standard commitment from all companies. Maybe a worthwhile shareholder proposal."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

DAY 03

Agriculture / Land Use & Pesticides

Cattle / Meat: Unsustainable? or Regenerative?

"it is VERY important to CALL OUT THE NUANCES of cattle's impact and decouple CAFO industrial beef and dairy production from holistic management and other much more sustainable and restorative practices"

Laura Ortiz M
Impact Investing Advisor,
Chief Purpose Officer,
Systems Mompreneur

"Of all agricultural commodities, cattle has the widest diversity of production methods, and ranchers committed to protecting native habitats and regenerative practices can be part of the solution to better land management."

Nathalie Walker
Director, Tropical Forest and Agriculture at National Wildlife Federation

"Just because beef can be farmed sustainably, it doesn't mean that it can be at the scale needed if diets in high meat eating countries continue to spread. I hope plant and lab based meat continue their development at pace."

Pablo Berrutti
Senior Investment Specialist, Sustainable Funds Group

Preventable Surprises

DAY 04

Extractives / Energy & Civil Society Activism

Building an Investor Agenda on Biodiversity

Day 04

Extractives / Energy & Civil Society Activism

Main Summary

"Now is a good time for investors to listen and learn," said Clinton Adas. We couldn't agree more. Today's threads, seeded by Provocations from John Waugh on Extractives & Energy and Moira Birss of Amazon Watch on Civil Society Activism, provide ample opportunities for investor leaning.

The top tier of Key Takeaways clustered around Systems Change and Policy Capture & Governance Dysfunction. Another cluster focused on the dynamic tension between economic sustainability and broad sustainability (economic and ecological and social sustainability), which also led into a discussion on degrowth.

There were also productive conversations around the definition of biodiversity and the role of offsets and net zero, and other issues, such as incremental change versus agile change, innovative business and investment models, and collaboration. As you can see, there were rich conversations!

Provocation 1

Resources are finite (or, Eating our seed corn)

As a thought experiment, let us accept, for the sake of argument, that all the value that exists in the world is now present in the world, as defined by planetary boundaries. Humanity are the collective asset owners of a steady state world. In our world, what we mean when we talk about “creating value” is actually the manipulation (reassigning, relabeling, etc.) of value. We can either conserve or consume value, but when it is gone, it is gone. Yet, incentives for asset preservation are under-developed. Take the case of extractive industries (including not only hydrocarbon and minerals, but forestry, fisheries and agriculture under industrial conditions). They are incentivized to exploit some assets, but to discard others. For example, industrial logging doesn’t only remove trees; it removes forest ecosystems. Mining degrades watersheds. Industrial demersal fisheries scour the benthos and discard bycatch. Everywhere, extraction incurs debt to future generations by eroding the quality and quantity of benefits that can be derived from such assets. Such industries can be said to be “doubly extractive” in their positive pursuit of some tradeable assets.

In Ovid’s tale, Hermes rewards the hospitality of two peasants, Philemon and Baucis, with a self-filling wine jug. We treat our planetary system like it too were self-filling. A more apt model might be Aesop’s goose, because passing a tipping point in a complex system will produce an irreversible, catastrophic outcome. The effort to wring more and more gold from our planetary goose is short-sighted and asset-destroying.

John Waugh
Senior Consultant in Social and Ecological Resilience

Provocation 1

Resources are finite (or, Eating our seed corn)

We must transition to a different economic model that respects planetary boundaries. We cannot continue to demolish the pathways by which biological systems transform imposed energy gradients (e.g., solar energy) into growth and productivity, manifested as biodiversity. The Anthropocene Mass Extinction is a product of our degradation of this capacity. To prosper, we must become better asset managers. Ultimately, we must rethink how value is signaled, which means rethinking money.

Simplification of the system through excessive resource extraction reduces the system's self-organizing capacity. As Ozymandias lamented:

> Look on my Works, ye Mighty, and despair!
> Nothing beside remains. Round the decay
> Of that colossal Wreck, boundless and bare
> The lone and level sands stretch far away." (Shelley)

Provocation 1

Resources are finite (or, Eating our seed corn)

Discussion questions:

- ***What would a business proposition for resource extraction look like in a steady-state world? How can we incentivize stewardship? What incentives are intergenerational?***
- ***Given that ESG is inherently incrementalist (i.e., ESG pushes "less bad" impacts that can still ultimately be unsustainable), can ESG alone drive the transition to an economy based upon the premise of finite resources? Why/why not?***
- ***What are the different mental models for thinking about value? When an economy is reframed to consider limits, what will change?***
- ***What are leverage points for investors to drive or support this sort of transformation?***

Provocation 2

Solving the biodiversity crisis starts with addressing human rights

Humans are part of, and depend upon, nature. Without a healthy planet we can't grow food, breathe clean air, drink clean water, or live healthy lives. The demise of a single species can lead to the collapse of an entire ecosystem, affecting local communities and ultimately destabilizing economies and governments. And as the world struggles to address new global challenges like climate change and zoonotic diseases, protecting biodiversity and critical ecosystems becomes even more urgent.

But unsustainable activities are driving massive biodiversity losses and eroding cultures around the world at a rate higher than ever before in history. Around 1 million species face extinction in the next few decades and 10% of the earth's wilderness has been lost in the past two decades, including about 30% of the Amazon. In 2020 alone, an estimated 2 million hectares (5 million acres) of primary forest were lost across the nine countries of the Amazon.

The business sectors of infrastructure development, urbanization, energy, agricultural production, and mining are key drivers of environmental degradation and biodiversity loss. For example, in the Brazilian Amazon, cattle ranching is the biggest driver of deforestation, closely followed by mining.

Moira Birss
Climate and Finance
Director at Amazon Watch

Provocation 2

Solving the biodiversity crisis starts with addressing human rights

Most of the world's domestic and wild biodiversity resides in areas traditionally managed, owned, or occupied by Indigenous peoples and local communities, and it is well established that biodiversity and sustainable land management is more robust in areas with traditional and Indigenous communities. That's in part because they understand that humans are part of nature and cannot exist without it, and can co-exist harmoniously. Yet these communities face serious threats to their lives and livelihoods from the very same unsustainable, extractive activities that are driving biodiversity loss, which investors continue to finance despite the threats, risks, and impacts.

Urgent action to comprehensively safeguard biodiversity and wilderness areas, and uphold Indigenous and traditional land rights, is urgently needed. We know there are biodiversity hotspots around the world, many of which are internationally designated, and many of which -- particularly those in formally or traditionally conserved areas -- are in Indigenous territories. Let's protect these areas. Let's commit to ending the financing of any kind of industrial activity -- including mining, drilling, agribusiness, large dams -- in those hotspots.

Provocation 2

Solving the biodiversity crisis starts with addressing human rights

Questions:

- ***What is preventing financial institutions from making such commitments, and establishing clear expectations, timelines and consequences for company inaction on biodiversity loss?***
- ***What would it look like for financial firms to commit to not finance industrial projects, or companies that carry out projects, in biodiversity hotspots?***
- ***What would it take for firms to hold companies to account for the full respect of Indigenous rights, including but not limited to their right to reject industrial projects on their ancestral and traditional territories (Free, Prior and Informed Consent)?***
- ***How can investors and companies successfully work hand in hand with indigeneous communities to preserve biodiversity hotspots? What is the role of local governments?***
- ***Could investors support better land ownership rights for smallholder farmers and Indigeneous populations?***

DAY 04

Extractives / Energy & Civil Society Activism

Systems Change

"In order to succeed, we need to transform the system, not the individual components of the system. The rest is damage control."

John Waugh
Strategic planning, program development and integration

"System inertia including system hostage holding by special interest groups will have to be overcome as does an overwhelming amount of short-term thinking which leads individuals to focus on career risk over systemic risk."

Andrew Whitman
Director, Applied Sciences

"I think investors have been and continue to chase the 'easy' leverage points - dialogue with companies, shareholder resolutions, divestments etc, but these are all engagement 'within finance' in one way or another. The looming issue is how investors might change the larger context of finance and the economy, which will require engaging with policymakers."

Duncan Austin
Sustainability Research

*"I think there is a *small* chance that large asset owners and index fund managers *could* be persuaded that they are universal investors and that they should appoint someone in the C suite to take account of systemic risk"*

Dr Raj Thamotheram
Founder & Chair, Preventable Surprises

DAY 04

Extractives / Energy & Civil Society Activism

Policy Capture / Broken Governance

"investors must cooperate with policy makers, and accept the scientific basis of policy designed to prevent the climate crisis and mass species extinction. This means putting a stop to lobbying to weaken the ambition of these critical policies."

Lucy Owens
Analyst at InfluenceMap

"the extent to which policy-making spaces have been captured by corporations nationally and internationally is the main barrier to effective and enforced regulation....the financial clout of the business world dictates policy decisions, ensures strong subsidies and other fiscal incentives, and prevents positive reform."

Oliver Munnion
Plantations and Bioenergy Campaigner, Publications Coordinator

"In FPIC the letter F stands for free, if you have the government interfering and pushing its agenda it is no longer a Free PIC."

Boris Spassky

"Because the tail wags the dog, the investment industry as a whole lobbies for policies that favour volatile, high over dull, low returns. Hence the opposition eg to the financial transaction tax. This needs to be addressed."

Dr Raj Thamotheram
Founder & Chair, Preventable Surprises

DAY 04

Extractives / Energy & Civil Society Activism

Dynamic Tension: Economic Sustainability v Broad Sustainability

"In order to comply with the Voluntary Guidelines on Good Tenure (VGGT), any reputable agribusiness must now present a feasibility study aimed at setting-up an "outgrower scheme", which consists of sharing good practices, plantlets with the neighbouring communities. The reality is that such studies come at a cost that few companies are willing to bear on their balance sheet. Blending public and private funding can certainly help in these cases."

Boris Spassky

"Boris Spassky, I'm glad that you raised land tenure and property rights. You have hit on a hugely important point, which is that due diligence may tip the scales towards unsustainability from a business perspective. This seems like a very practical problem that is broader than just tenure."

John Waugh
Strategic planning, program development and integration

*"Boris & John, you hit on a key tension here (which generalizes much more broadly as John notes): between financial viability and real-world sustainability. Our mainstream "invisible hand" and niche ESG / Shared Value / Stakeholder Capitalism constructs assume that financial profitability is a law of nature, and thus can *always* be achieved in ways that square with nature."*

Bill Baue
Systems Change Catalyst

"Right now these approaches are conventionally divided...by the kinds of investors one expects to participate: institutionals engage on the bad stuff because of their scale and because engagement doesn't affect asset allocation decisions; mission-driven investors model the non-extractive because of their flexibility on investment form and return, and willingness to enter into complex relationships (often figured as hippy dippy process oriented foundationy or what have you even by the mission-driven investors themselves)...But that division just replicates the system"

David Wood

DAY 04

Extractives / Energy & Civil Society Activism

Degrowth

"Are we capable of considering steady state -- or financial contraction -- in our economy? In other words, is there a role for the degrowth thesis in our deliberations?"

"The degrowth thesis calls for degrowth of the parts of the economy that created the problems -- namely, the developed world -- in order to create space for growth of the developing world."

Bill Baue
Systems Change Catalyst

"Bill, we have to ask: who's degrowth? The bottom 90-95% have not experienced wealth growth anything like the top 1%. We are really talking about degrowth for the top 5%, including most of those investors (including pension holders)."

Andrew Whitman
Director, Applied Sciences

"If the Global South (which accounts for about 3/4 of global population) inhabits roughly half of the carbon budget, then it stands to reason that the Global North (about 1/4 of the population) could squeeze itself into the remaining half of the carbon budget (if it -- or we, pertaining to most of us in this thread -- went on a "diet")."

Bill Baue
Systems Change Catalyst

DAY 04

Extractives / Energy & Civil Society Activism

Biodiversity Definition

"What IS "biodiversity"? Do we have universal definition for "biodiversity" that we all agree on? What is your definition of biodiversity?"

Gabriel Thoumi
Director of Plastics Programme and Financial Markets, Planet Tracker

"The Dasgputa Review (DR) defines it: "Biodiversity is an aspect of nature and a measure of the health of particular ecosystems, and for ecosystems in aggregate, the biosphere.""

"Biodiversity in general, especially response diversity, provides an ecosystem with spare capacity and resilience in response to disturbances. In fact, the Dasgupta Review shows that biodiversity plays the same role in natural capital as diversification plays in financial portfolios: it reduces variability (uncertainty) in yield."

Thomas O. Murtha
Senior Advisor, Preventable Surprises

DAY 04

Extractives / Energy & Civil Society Activism

Offsets

""The increasing global demand for “nature” to offset increasing emissions poses huge potential conflicts, negative impacts and implications for land and land tenure, and the violations of the rights, lives and livelihoods of those who live on and depend on those lands."
https://www.foei.org/resources/publications/chasing-carbon-unicorns-carbon-markets-net-zero-report"
"Offsets are problematic both in efforts to mitigate climate change (they only allow companies to keep spewing greenhouse gas emissions into the atmosphere but do not reduce overall atmospheric concentrations of CO2), but also because they have resulted in scandals involving land-grabbing from Indigenous peoples and traditional communities, whom, as I referenced in my original provocation, are regularly shown to be the best stewards of biodiverse ecosystems"

"'Real zero' strategies require emitters to reduce their emissions to zero as soon as possible."

Moira Birss
Climate and Finance Director

"Whilst there are definitely some very worthy initiatives being discussed/pitched as NBS, there's also a lot of old ideas being repackaged using this more innocent sounding terminology (such as offsetting, emissions trading and afforestation), and a lot of greenwashing going on too."

Oliver Munnion
Plantations and Bioenergy Campaigner, Publications Coordinator

Preventable Surprises

DAY 05

Synthesis & Next Steps

Building an Investor Agenda on Biodiversity

Day 05

Synthesis & Next Steps

Main Summary

1) Bring environmental efforts together *by recognising climate and biodiversity risks within the broader umbrella of biosphere emergency. It makes sense scientifically, because it responds to shared questions such as: Are we in a safe operating bandwidth? Will the system hold? Doing so also makes sense in terms of leveraging the resources that investors have already deployed for climate. But before we rush to rename our organizational charts, we must acknowledge that this will require significant additional resources, and additional skills including, for example, scientific ones.*

2) Recognize that many solutions to the biosphere challenges aren't portfolio solutions*, but about global and local public policy. Policy is not a perfect or sufficient instrument for sure, but the playing field is dramatically tilted in the wrong direction and calls for remediation and shared visions. Investors need to be proactive on policy issues.*

3) Think transformatively. *Whether it's taking a regional or landscape approach, promoting innovation, collaborating with other investors, or working with portfolio companies to change their products or business models. As my kids learn in school, how can we start with the end in mind?*

Main Summary

4) Think collaboratively, a*gain both global and local. Sure, we can't control other stakeholders' interests and intentions, but we have also identified that putting natural assets under pure private sector governance does not work, because environmental challenges are always also social challenges.*

5) Acknowledge the limits of ESG. *Let's be willing to say that finance won't solve environmental crises alone. Let's be willing to call out our limitations and our laggards. Let's be willing to admit that the win-win narratives do not reflect reality. We can't trade our way out of our environmental crises. Neither can we insulate ourselves – or our beneficiaries and clients – from it. I personally can't wait to hear from investors about how they will "denatured" their portfolios, just like they are decarbonizing them.*

If we can accept that the financial system needs to change, we can make space for that change. Even though we cannot always be the drivers of systemic shift, we can each play our part in shifting mindsets. Isn't that what we signed up for when we chose these careers? What we have, as individuals, is agency. In the roles that we each occupy, this agency comes with a responsibility. But it also comes with risk. We may not always please our clients, our bosses, our friends, when we take this risk. But doing so provides us with the immense satisfaction of knowing we are doing the right thing.

Provocation 1

"Finance must fall in love with life"

First let me applaud Preventable Surprises for curating this rich and vital discussion! A critical building block of the foundation necessary to catalyze genuine systemic change.

Second, scanning the conversation, it is easy to feel overwhelmed and despondent. More so the more one understands how the financial system actually works as we do. So allow me to riff off our dear Raj's poignant reference to miracles as a place to begin. I think we can all agree that the science of process ecology [1] built on the ideas of Bateson, Prigogine, Kauffman, Popper, Ulanowicz, Kauffman, Capra, and many others, has a place for "miracles" in it, or said more scientifically, "complex chance." Complex chance - what Nobel Laureate Prigogine called "radical uncertainty"- is not to be confused with random chance. I begin with this because it is comforting and hopeful. Systems evolve because of disturbances introduced (thus diversity is essential) and the presence of complex chance. That's the science as best I understand it. Well, we certainly have our "disturbances" aplenty, and can inject more through our actions. And thank goodness for complex chance! In other words, emergence happens. And we have agency in the outcome.

So here we go, and forgive me in advance for I'm sure I will jump around a bit:

John Fullerton
Founder, Capital Institute
and Impact Investor

Provocation 1

"Finance must fall in love with life"

"Finance must fall in love with life today -- we can only thrive if interdependent biodiversity wins over the finance system."

The end. Beautiful. Thank you Laura. But how? Is it even possible? Do we have a map for the journey?

What comes up for me as I contemplate Laura's beautiful vision and wisdom is the paradox of entropy and syntropy. That life exists in the face of entropy, means that finance can fall in love with life. Maybe not today, but tomorrow.

Apart from the arrogance, ignorance, greed, and recklessness, finance at its core is ideology and tools grounded in a Newtonian, reductionist understanding of the Modern Age and then upgraded into a proper science grounded in mathematics using (irresponsibly it must be said) probability theory to deal with uncertainty. Problem. Probability theory presumes random chance, not the complex chance that overwhelmingly describes the real world. Thus, we seek to explain the "tail risk" in finance and the "externalities" of economics. In truth, these two concepts alone render our entire theoretical foundation of economics and finance insolvent (assets less than liabilities) but not yet bankrupt because we are addicted and ignorant. Instead, the mainstream is busy sorting out how to fit the systemic failures back into the flawed worldview just as the ancient astronomers tried for centuries to explain the planetary wobbles of the Ptolemaic system before Copernicus offered a new way of seeing the world.

Provocation 1

"Finance must fall in love with life"

There is no way out of this trap but to transcend it with a holistic understanding of how the world actually works, inclusive of the usefulness and limitations of the reductionist method of analysis. Yet we have this understanding now, it just has not penetrated economics and finance or most other fields for that matter. Let us be aware that the very premise of this exercise to "build an investor agenda on biodiversity" is reductionist "problem-solving" since biodiversity loss, like climate change and grotesque inequality are all symptoms of the system perfectly designed (through ignorance for the most part) to deliver these outcomes. Of course, we know this, but are forced into a reductionist frame simply to enter the conversation. But we must not lose sight of this reality as we set our strategy as change agents.

So full support to Duncan Austin's declaration that the underlying problem at the root of the biodiversity crisis is the existing economic – and finance – systems, which are predicated on an incomplete understanding of physics, but also the limitation of physics. And yes, we need to challenge unquestioned assumptions like Corey Klemmer's question: makes us think a 7% return — across the entire system — is a reasonable requirement for pension financial returns? Does it matter how fast a tree grows? And how might that relate to a concept of net zero for biodiversity? I'd add, what does it say about the limits to investment? Makes the brain hurt.

Provocation 1

"Finance must fall in love with life"

Of course these lines of inquiry feel like they put us outside “the conversation” and can be immobilizing. So let’s transcend the reasonable debate exemplified by Duncan Austin and Wolfgang Kuhn about whether investors alone can solve this problem. We need investor agitation in all its forms (lots of great discussion on this I won't try to summarize here) despite the reality that they alone cannot solve the problem. Remember how living systems change, as I described up front. There is a need for disturbance and complex chance. We simply cannot know in advance what will work. (No one had Greta in their strategy for change, but brilliant “disturbance”).

Speaking of disturbance and our limited time frame, I would like to put in a plug for strategic, power – full (in the literal sense) rifle shots to complement (not replace) the relative drudgery of declarations, goals, and disclosure. Today we see a couple activist hedge funds seeking to upend Danone's commitment to regenerative transformation while holding collectively less than ten percent of the shares. Same playbook as the attack on Unilever a few years back. Look at the damage they can do with trivial capital (in the scheme of things) in the name of short-term extraction. The opposite must be true if we could summon the activist capital approach that Raj discussed and I fully endorse. (Needs a full time champion if anyone is interested).

Provocation 1

"Finance must fall in love with life"

Maybe I'm being too polite. I do worry that the drudgery of declarations, goals, pledges, disclosures, common vocabularies, etc could collectively hurt our cause. It all takes energy and time, both scarce commodities. We don't need Exxon's plan to get to net zero. We need them to stop drilling! Likewise, imagine the brain damage in dealing with Monsanto via disclosures and goals. We need to outlaw the entire industrial agriculture paradigm. So let's use the asset management industry's limited energy and attention to join with civil society and demand such change. Certainly, the entire asset management industry can collectively beat Monsanto if a bunch of day traders in their basements can squeeze GameStop and force capitulation on a multi-billion-dollar hedge fund! I'm serious. Who among us knows someone under 30 who can tell us how to do this?

At the beginning I asked if it's even possible for a paradigm shift so great that we could imagine "finance falling in love with the world." I truly believe the answer is yes, based on my understanding of how systems change. My confidence, however, is not all a rosy picture. Part of what will force the change is the rising pressure. like turning up the heat on the stove forces the water in a pot into a phase shift transition (boil). The worse things get, the more pressure and the more likely we will see that change. But that change will most certainly come from a more dire context than we see already today. So, there is an urgent need for smart disturbance fast! That's where we all come in. Disturbance means action on our parts.

Provocation 1

"Finance must fall in love with life"

I also asked if we have a dependable compass for the journey ahead toward a genuinely regenerative [2] economy, and a financial system in service to its emergence. Fortunately, we do have a compass. It's comprised of the patterns, processes, and principles of how living systems work in the real world (unless someone makes the case that the human economy is either not a living system, or, it is the only living system that doesn't need to behave like all other living systems that sustain themselves over time). The map is a map of an ecological way of seeing, an ecological mind. It so happens to be beautifully aligned with indigenous wisdom, the human cultures that have also stood the test of time. Hmm… Let us learn to see through the lens of ecology reimagine finance and economics (rightly understood as a branch of ecology). Note how different this is than putting a price on ecosystem services (even if we accept this as an interim step)! What's the price to destroy life as we know it?

Ecology is not simply about "the natural world" as if it were apart from humanity. Humanity is a part of ecology, a holon more accurately. Ecology is a way of seeing holistically through a systems lens, applied to literally everything, inclusive of economics and finance. Who better than us to hold this new vision as we go out and do our "disturbing" until we find John's 100th monkey… by complex chance!

"Let us define ecology as the study of the Universe."
— G. Evelyn Hutchinson, father of ecology

Provocation 1

"Finance must fall in love with life"

Questions

- **Do you believe that our biodiversity crisis can be resolved within our existing economic and finance systems?**
- **If so, how, or to what extent?**
- **If you agree that economic and finance system transformation is necessary, what do you think are the most important levers of change?**
- **And more importantly, what specifically can you do in your sphere of influence to support momentum toward such an economic and finance systems change?**
- **Of course, it's of primary interest what you can do that specifically targets biodiversity health.**
- **Shifting attention more broadly, what specific tools and actions can others employ to help support economic and finance system transformation for the benefit of biodiversity?**

[1] Process and relationships trump (sorry) parts
[2] Regeneration is the process that living systems exhibit to sustain themselves. The process is what enables the outcome we all desire, call it well-being, thriving, SDGs, inside the doughnut, whatever.

Provocation 2

Triggering Social Tipping Points to Avert Biodiversity Loss Tipping Points

David Obura's opening Provocation sets the essential context: biodiversity loss is a tipping point threshold predicament, and the science says humanity is already overshooting this Planetary Boundary, so we are literally teetering on the edge of existential risk. Therefore, all responses to the biodiversity emergency must, but definition, integrate thresholds-based consciousness and approaches, in order to steer us back into a "safe and just operating space".

The complex, dynamic, and uncertain nature of tipping point thresholds, as Jillian Reid notes, make them challenging to integrate, particularly into data and accounting. But given the central role data and accounting play in our global economy and capital markets, it seems necessary, not optional, to rise to these challenges. And the work Erin Billman and Mark McElroy presented demonstrates the feasibility.

The bigger issue is to "reformat" business models (as Andy Whitman suggests) to integrate thresholds – at the company and sector levels (as many have noted), but also at the portfolio level of the entire investment enterprise, as well as the systems level of the global economy writ large – which arguably is predicated on a thresholds-free business model (hence our predicament).

Provocation 2

Triggering Social Tipping Points to Avert Biodiversity Loss Tipping Points

Likewise for all of the 60+ interventions and actions identified in this dialogue (on policy, activism, leadership, narrative framing, goal-setting, etc…) – they must all integrate thresholds mindsets and paradigms. Actions devoid of thresholds are non-starters; they're part of the problem, as the continual critiques of ESG incrementalism show.

The context of the Anthropocene means that humanity is a geological-scale force, which is now hurtling itself across no-return biodiversity (and other Planetary Boundary) tipping points. But the emerging science of social tipping points suggests we can tip into positive actions, mindsets and paradigms, and thus steer our collective force toward living in a "safe and just operating space."

As the *Executive Briefing* for this dialogue suggests, universal investors have the opportunity of becoming "norm entrepreneurs" for this navigation; and as it notes, normative ecological, social, and economic tipping point thresholds are a necessary complement to this normative entrepreneurship – a marriage of enterprise and science.

Sarah Cornell
Global change researcher, Docent in Sustainability Science

Provocation 2

Triggering Social Tipping Points to Avert Biodiversity Loss Tipping Points

Questions:

• Tipping point thresholds are by definition complex, dynamic, and uncertain. Does this preclude the investment community from integrating thresholds into its decision-making framework?

- ***o If not, how can investors work with these challenging factors?***
- ***o If so, what can investors do to confront biodiversity challenges without attending to these tipping points?***

• Thresholds mindsets and paradigms are imperative. What are the biggest barriers to thresholds mindsets and paradigms? What can we do to promote the rapid emergence of these mindsets and paradigms for integrating thresholds into investment decision-making and actions?

• Pick the intervention that you most favor, and write a short comment demonstrating how it integrates biodiversity thresholds (and thus is commensurate with the predicament).

DAY 05

Synthesis & Next Steps

Synthesis and Next Steps

"We need to focus our energy here - on the first adopters that will push the agenda we need pushed. And we need to figure out what are the things we can push with corporates to keep them accountable to actions, not just more reports. We need to figure out what actions, broadly speaking, create the outcomes we want to see."

"This is to say that putting all our energy into creating the data, etc. to work within the system is too long a project given the urgency of the issue."

Jessye Waxman
Shareholder Advocate, Forest Protection

" Places to Intervene in a System (in increasing order of effectiveness) by Donella Meadows (Source: www.donellameadows.org)
12. Constants, parameters, numbers (such as subsidies, taxes, standards).
11. The sizes of buffers and other stabilizing stocks, relative to their ows.
10. The structure of material stocks and ows (such as transport networks, population age structures).
9. The lengths of delays, relative to the rate of system change.
8. The strength of negative feedback loops, relative to the impacts they are trying to correct against.
7. The gain around driving positive feedback loops.
6. The structure of information ows (who does and does not have access to information).
5. The rules of the system (such as incentives, punishments, constraints).
4. The power to add, change, evolve, or self-organize system structure.
3. The goals of the system.
2. The mindset or paradigm out of which the system — its goals, structure, rules, delays, parameters - arises.
I. The power to transcend paradigms. "

John Waugh
Strategic planning, program development and integration

DAY 05

Synthesis & Next Steps

Synthesis and Next Steps

"IUCN also has a red list and ranking of threatened ecosystems. Start protecting what's most important and threatened. How about something on the order of a big, audacious, campaign for investors and companies to act through an organization that adopts Ostrom and Brown's core design principles for governance that create and enable an institution/organization for collective action to address the highest priority threats to the integrity of nature."

Thomas O. Murtha
Senior Advisor,
Preventable Surprises

" Tipping point thresholds are by definition complex, dynamic, and uncertain. Does this preclude the investment community from integrating thresholds into its decision- making framework? No: The investment community have integrated complex tipping point thresholds in to their work for centuries. They have used them to manage financial risk, real or imagined, to enter markets or leave markets. Granted ecological tipping points are more complex but like financial risk you rarely can have all of the data you want."

Andrew Whitman
Director, Applied
Sciences

" We must muster the will (somehow) to place some crude barriers in place, maybe even err on the side of caution??? rather than spend a decade or more that we simply don't have developing the sophisticated data driven, contextually relevant algorithms we should have. But of course it's both/and so if we don't destroy ourselves, we will have the tools we need to manage ourselves more intelligently when we get to the other side of the chasm "

John Fullerton
Founder, Capital Institute
and Impact Investor

Preventable Surprises

Building an Investor Agenda on Biodiversity

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