Supporting companies to make Planetary Boundaries operational

Initial ideas for discussion

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EXECUTIVE SUMMARY

Despite growing uptake of SBTi, SBTN, TNFD and CSRD, company action towards staying within Planetary Boundaries must accelerate

- Physical risks from climate change and nature loss are becoming more material and starting to impact companies' bottom line
- Voluntary commitments and action are significant for climate (SBTi), though momentum is slowing. Limited traction on nature (SBTN)
- Voluntary/mandatory disclosure on nature-related impacts and dependencies is increasing but not yet driving large-scale company action (CSRD, TNFD)

As environmental risks become increasingly material for companies, companies lack easily accessible and transparent resources to develop integrated strategies across environmental objectives and risks

- Companies require integrated approaches to tackle trade-offs and synergies across environmental and business impacts
- Integration is also required to implement environmental objectives without creating too much internal complexity
- To date, lack of easy-to-use open-source tools that assess exposure to risks from climate change and nature loss, especially for agriculture/food

Working with the Planetary Guardians, Systemiq has developed the Risk, Opportunities, and Resilience approach to support companies towards building integrated business strategies based on most material risks and aligned with the Planetary Boundaries

- The pragmatic 4-step risk, opportunity and resilience approach helps business to build integrated environment strategies
- Approach leverages existing frameworks, notably TNFD (LEAP), SBTi, SBTN, as well as CSRD and other regulatory standards and can accelerate uptake of these
- Approach aims to leverage suite of open-source data, especially physical risk filter, transition risk filter and transition intervention filters

Next phase of work aims to building out the approach and suite of filters towards open-source as public good

- Systemiq is working together with the Planetary Guardians and Potsdam Institute for Climate Impact Research (PIK) to advance the approach
- Next phase of work aims to focus on building out the risk filter and testing with companies, towards establishing as open-access public good

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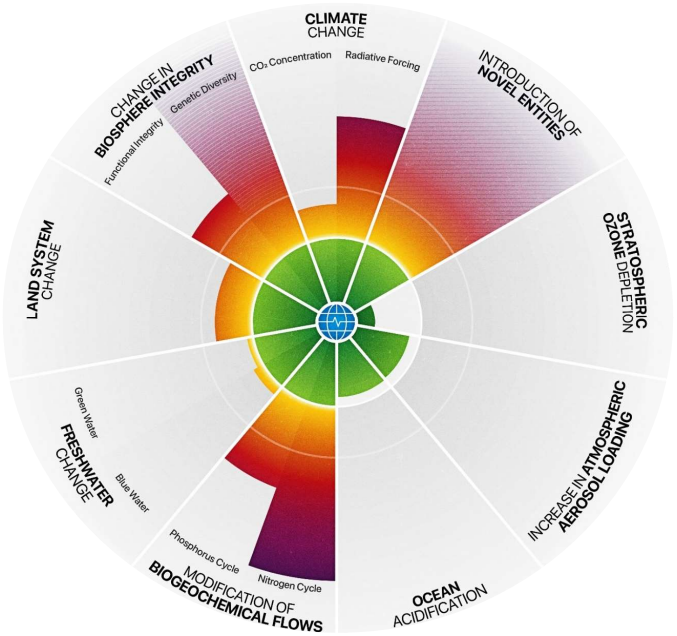
ACCELERATING ENVIRONMENTAL DEGRADATION IS IMPACTING COMPANIES

Examples – not exhaustive

Human impact now exceeds planetary boundaries…



Below boundary (safe) | In uncertainty zone (increasing risk) | Beyond uncertainty zone (high risk)

… creating business risks at large

Hurricane Milton could cause 'double-digit billion-dollar' losses in Florida, insurers warn

Perrier Well Contamination Sparks Scrutiny for Luxe Water Brand

As the French company faces challenges, the global water business is grappling with questions of sustainability.

Climate change, water scarcity jeopardizing French nuclear fleet

Nature's decline could bankrupt the global economy

Global crop yields threatened by insufficient pollinator visitation, according to new study

Global water crisis fuelling more conflicts, UN report warns

Water resources under stress as economies and populations grow with 2.2 billion people lacking clean drinking water.

Climate Change Could Cut World Economy by $23 Trillion in 2050,

Source: 2021 Revisiting the economic valuation of agricultural losses due to large-scale changes in pollinator populations, Ecological Economics; 2023 Joint Economic Committee Democrats; International Livestock Research Institute

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DESPITE MASSIVE PROGRESS, COMMITMENTS AND DISCLOSURES ARE NOT YET DRIVING LARGE-SCALE COMPANY ACTION TOWARDS A SAFE OPERATING SPACE

	Target setting (voluntary)		Disclosures (mandatory & voluntary)	
	SCIENCE BASED TARGETS DRIVING AMBITIOUS CORPORATE CLIMATE ACTION	SCIENCE BASED TARGETS NETWORK GLOBAL COMMONS ALLIANCE	Corporate Sustainability Reporting Directive	TNFD
What is it?	• Climate targets	• Land-use and freshwater targets	• Disclosure of impacts/ dependencies and risks/strategies	• Disclosure of nature related dependencies/ impacts, risks/ opportunities
Status	• >4,000 companies have set targets	• First pilot completed with 17 companies	• ~12,000 companies to report over 2024, growing to 50,000	• 320 companies have started
Gaps	• Climate only, voluntary, stalling momentum	• Pilot stage, land-use and freshwater only, voluntary, limited take-up	• Companies struggle with integrated strategy development	• No integration with climate, voluntary

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COMPANIES REQUIRE INTEGRATED APPROACHES TO TACKLE TRADE-OFFS AND SYNERGIES ACROSS ENVIRONMENTAL AND BUSINESS IMPACTS

Example: Dairy-based ice cream company

↑ Improvement vs. today ↓ Deterioration vs. today ↓? Risk of deterioration vs. today

				Possible transition levers – new opportunities		
	Outcomes	**Today: dairy-based ice cream**	**Drivers for change**	**Shift to almond-based ice cream**	**OR**	**Shift to oat-based ice cream**
Environmental impacts/risks	GHG emissions impact	**High**	SBTi, regulation	↑		↑
	Exposure to nature-related transition risks	**High**	TNFD, Regulation	↓		↑
	Exposure to physical risks	**High**	Direct impact, TNFD, regulation	↓		↑
Business impacts/risks	Organizational complexity	**Medium-Low**		↑		↓
	Cost/investments	**Medium-Low**		↓?		↓?
	Consumer preference/ market share	**High**		↓?		↓?

Source: Systemiq analysis

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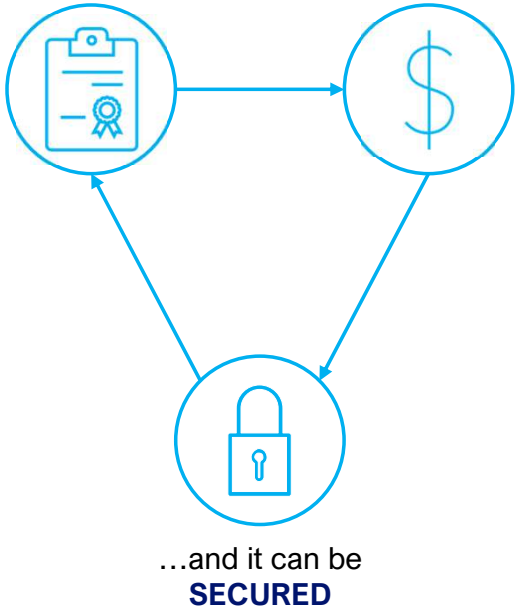
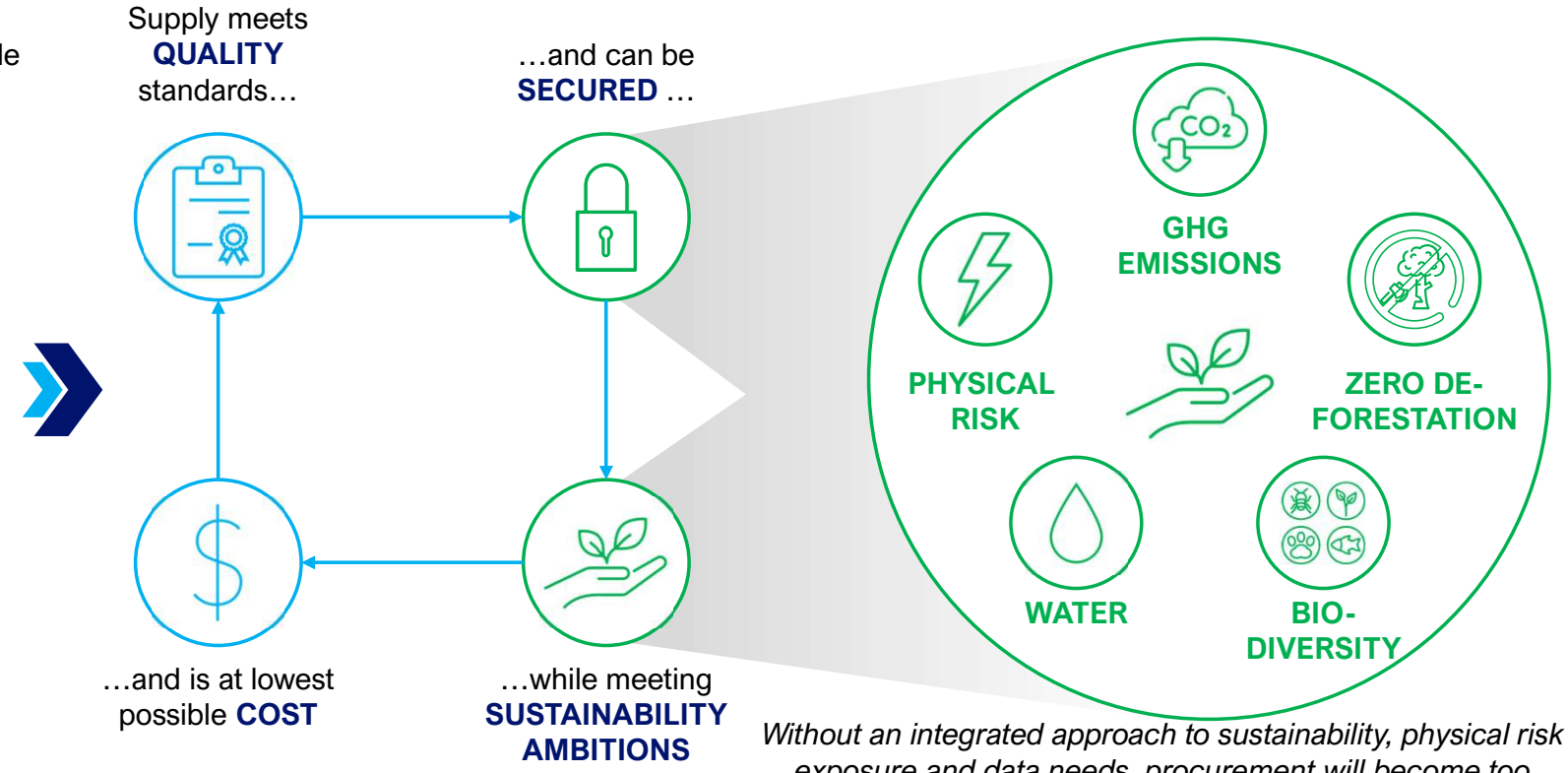
INTEGRATION IS ALSO REQUIRED TO IMPLEMENT ENVIRONMENTAL OBJECTIVES WITHOUT CREATING TOO MUCH INTERNAL COMPLEXITY

Example: Procurement

Today



Future state - integrated approach to supply security and sustainability



Without an integrated approach to sustainability, physical risk exposure and data needs, procurement will become too complex

 Source: Systemiq analysis

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LACK OF EASY-TO-USE OPEN-SOURCE TOOLS THAT ASSESS EXPOSURE TO RISKS FROM CLIMATE CHANGE AND NATURE LOSS, ESPECIALLY FOR AGRICULTURE/FOOD

Current status of data and tools

	Open source?	Easy to use?	Climate and nature	2030 forecasting
Climate models (e.g., average temperatures and rainfall patterns in 2050)	Yes	No	No	Yes
Nature data (e.g., what is status of land degradation)	Yes	Yes	No	No
Tools to assess impact climate change on industrial assets (e.g., how will flooding impact my CAPEX)	No	Yes	No	Yes
Consultancy services to assess impact climate change on yields (e.g., how will temperature rise impact yield of corn**)**	No	Yes	No	Yes
Yield data under climate scenarios	Yes	No	No	No

What is missing

Open-source data on business **impact of physical risks** that is

- **Easy to use**
- **Integrates nature & climate** data, including compounding of risks (e.g., yield impact of droughts on degraded soils is 4x as severe as it is on healthy soils)
- Includes **near term (2030) forecasting** including acute risks (droughts, floods, wildfires)

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THE STEP-WISE ENVIRONMENTAL RISK, OPPORTUNITY AND RESILIENCE APPROACH HELPS COMPANIES SET INTEGRATED BUSINESS STRATEGY

What is the Environmental Risk, Opportunity and Resilience Approach?

- Supports companies to prioritize issues with greatest business materiality and moving towards ambitious environmental objectives
- Focusses on developing integrated strategies across sustainability objectives and managing trade-offs
- Builds on open-source data and frameworks

Questions it helps business leaders answer

- *How to turn my CSRD/SBTi/TNFD assessment into an integrated business strategy that creates bottom-line value?*
- *How is my business impacted by climate change, nature loss and response from regulators/investors/consumers?*
- *What practical steps can I take to refine my net-zero/sustainability strategy so that it lowers exposure to risks, effectively manages trade-offs, and optimizes financial and organizational impacts?*

Source: Systemiq analysis

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4-STEP RISK, OPPORTUNITY, AND RESILIENCE APPROACH TO DEVELOP INTEGRATED STRATEGIES ACROSS ALL MATERIAL THEMES

Module 1: Stock-taking and preparation

a) Identify most relevant set of regulatory/voluntary standards (CSRD, SBTi, TNFD, SBTN, …)

b) Synthesize impact and depen-dencies, risks and opportunities from SBTi, TNFD LEAP, CSRD double materiality matrix etc. (if applicable)

c) Identify gaps in impact & dependency assessments

d) Prioritize business units and locations in focus

e) Analyse competitors in terms of commitments and strategies

Module 2: Integrated risk assessment and materiality

a) Assess footprint of each planetary boundary (PB)

b) Assess physical risks across all PB dimensions[1]

c) Assess transition risks across all PB dimensions – regulatory, off-taker demand, investors, technology

d) Prioritize most material planetary boundaries and risks

Module 3: Levers to reduce material risks company-wide

a) Evaluate impact of existing change levers against standards (CSRD, SBTi, SBTN) and prioritized footprint and risks and identify gaps

b) Identify trade-offs across change levers on company footprint and risks

c) Identify additional change levers from costed sectorial PB abatement curves and evaluate their impact

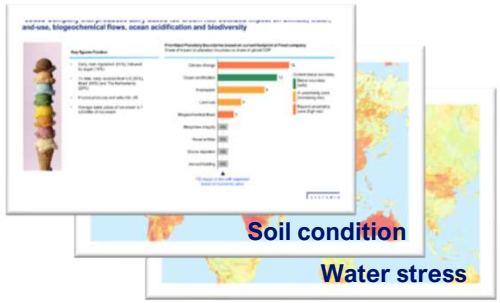
Module 4: Integrated strategy for risks, opportunities, resilience

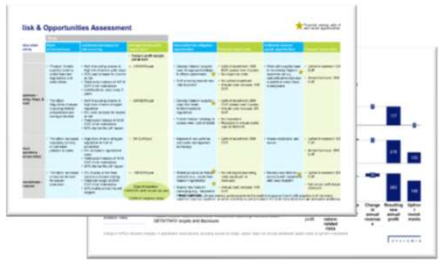
a) Assess (additional) investment needs towards integrated risks and resilience strategy

b) Create integrated roadmap for managing risks, opportunities, resilience, including refinement of CSRD / net-zero strategies

c) Determine how to manage organizational implications across key business units

Illustrative outputs





1) In line with Capitals Coalition protocol where relevant

Source: Systemiq analysis

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APPROACH LEVERAGES EXISTING TARGETS AND DISCLOSURES (SBTI, SBTN, TNFD, CSRD) TO DEVELOP INTEGRATED NATURE-CLIMATE STRATEGIES

Module 1: Stock-taking and preparation

Module 2: Integrated risk assessment and materiality

Module 3: Levers to reduce material risks company-wide

Module 4: Integrated strategy for risks, opportunities, resilience

Inputs to the approach (in case available)

SCIENCE BASED TARGETS
DRIVING AMBITIOUS CORPORATE CLIMATE ACTION

- GHG footprint
- Targets
- Levers for net-zero strategy

Corporate Sustainability Reporting Directive

- Outcome Double Materiality Assessment
- Identification of risks, opportunities, strategies

TNFD

- Outcome LEAP assessment in terms of locations, impacts/dependencies and risks/opportunities

SCIENCE BASED TARGETS NETWORK
GLOBAL COMMONS ALLIANCE

- Nature footprint
- Targets
- Existing nature initiatives

Outcomes

- Holistic strategies across climate and nature
- Aligned and supporting leading standards and frameworks:
  - Addressing CSRD requirements and SBTi targets
  - Can help to refine TNFD reporting
  - Can be a bridge towards setting SBTN targets in case company has none

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THE APPROACH ASSESSES COMPANY IMPACTS AND LEVERAGES RISK FILTERS TO ASSESS EXPOSURE TO PHYSICAL AND TRANSITION RISKS

More detailed case-study can be found in back-up

Module 1: Stock-taking and preparation

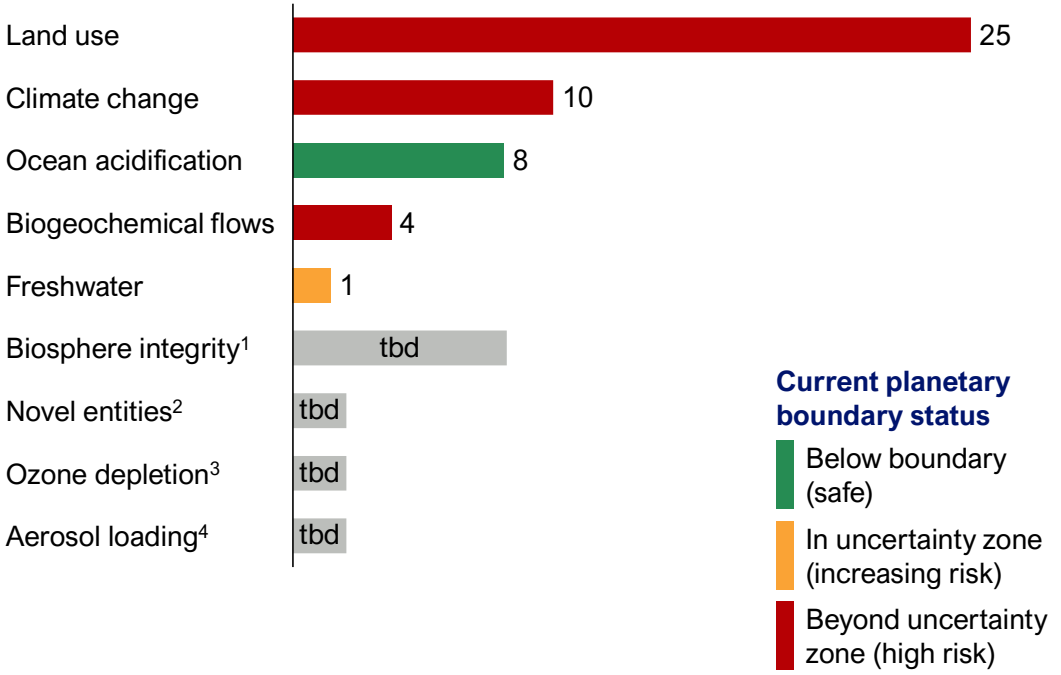
Module 2: Integrated risk assessment and materiality

Module 3: Levers to reduce material risks company-wide

Module 4: Integrated strategy for risks, opportunities, resilience

Food company impacts

Ratio of planetary boundary impact and economic contribution



Risks exposure Food company

High
Medium
Low

	DAIRY - USA	DAIRY - NLD	DAIRY - AUS	SUGAR - USA	VEGETABLE OILS- USA
Physical risks	• Land degradation • Droughts • Animal heat stress • Animal disease	• Soil acidification • Animal heat stress	• Land degradation • Droughts • Animal heat stress • Ticks/ parasites	• Land degradation	• Loss of pollination
Transition risks	• Limited	• Herd size reductions • Increased feed costs from EUDR	• Moderate		

1. Not yet part of approach – given high impact on esp. land-use, expected impact on biodiversity is high. 2. Not yet part of approach – current definition of novel entities in the Planetary Boundary Framework is hard to translate to individual company actions. Impact of this company on novel entities most likely in pesticide use for production of feedstock and other ingredients, as well as in plastic packaging. 3. Not yet part of approach, most likely limited impact of company on ozone depletion. 4. Not yet part of approach, soil dust from soil management will contribute to aerosol loading, impact unknown. Impact of levers scaled vs company's relative contribution to current state PBs, 2050 perspective – similar to 'equal contraction of impacts' approach

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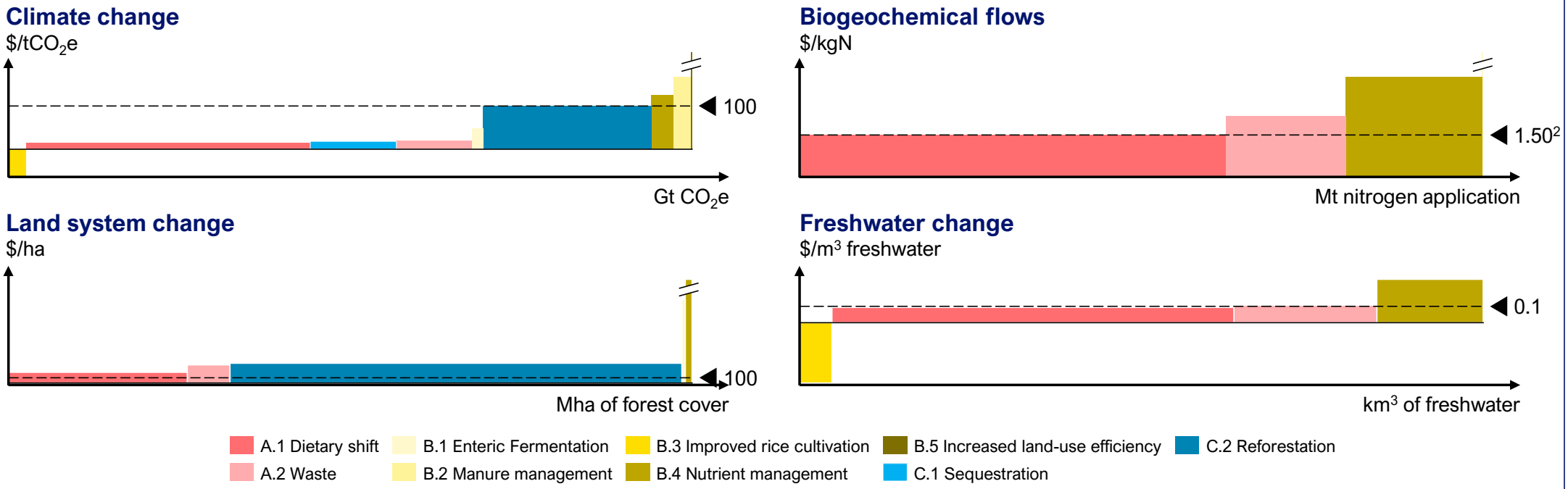
THE APPROACH SUPPORTS ABATEMENT CURVES TO PRIORITIZE LEVERS ACROSS PLANETARY BOUNDARIES

Module 1: Stock-taking and preparation | Module 2: Integrated risk assessment and materiality | **Module 3: Levers to reduce material risks company-wide** | Module 4: Integrated strategy for risks, opportunities, resilience

Food company cost curves on Planetary Boundaries[1]



1. Ocean acidification excluded due to sharing similar findings as Climate change cost curve, though it should be noted that not all levers apply to Ocean acidification as CO2 drives carbon absorption and acidification of the ocean; 2. Translating a price of 100 USD/ton CO2e in kg N applied leads to a costs of 0.47 USD/kg N reduced. The carbon price is not focusing on reduc leakage. This analysis shows that the carbon price in itself will also not be enough to reduce N application

Sources: Systemiq analysis; Richardson et al. (2023); GCS / Ishii et al. (2024)

PHYSICAL RISK FILTER, TRANSITION RISK FILTER AND SECTORIAL ABATEMENT CURVES UNDERPIN THE APPROACH

	Physical risk filter	Transition risk filter	Sectorial abatement curves
What	• Data set that provides location specific exposure to physical risks from climate change and nature loss	• Data set that provides region specific exposure to transition risks from regulation, investors and consumers and new technology	• Data set that provides overview of sector-specific costed abatement levers including impact on climate and nature footprint
How	• Leverage existing climate risk models and risk filters, such as WWF biodiversity risk filter and water filter	• Leverage expert inputs	• Leverage climate costs curves and expand to full PB perspective

First focus: Specific agricultural commodities (e.g., tropical commodities, vegetables, dairy)
Second focus: All industrial segments

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WE NEED TO DEVELOP OPEN-SOURCE DATA AND TOOLS TO SUPPORT COMPANY TRANSITIONS

Why public good?

- Creates **transparency**, allowing for **scrutiny and enhanced trust** with companies and their stakeholders
- **Facilitates uptake** by companies, including smaller companies and companies that do not see themselves as climate/nature leaders
- **Accelerates company action to** integrate holistic analyses of climate and nature-related risks in business strategies
- Supports **integration and collaboration** with existing tools, standards and frameworks

 Source: Systemiq analysis

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COLLABORATION BETWEEN PLANETARY GUARDIANS, POTSDAM INSTITUTE FOR CLIMATE RESEARCH AND SYSTEMIQ TO FURTHER ADVANCE THE APPROACH

Who are the Planetary Guardians?

- An **independent collective** seeking to elevate the science to **make Planetary Boundaries the measurement framework** for the world
- **Members of the collective** include scientists, economists, activists, environmentalists, diplomats, business leaders, and creatives
- **Partners and sponsors** include the Potsdam Institute, FAIRR, the Global Commons Alliance, BCG, Virgin Unite (amongst many others)

What are they trying to achieve with the Planetary Risk and Opportunity approach?

- **Improve the quality of corporate decision-making** by creating shared understanding of the cost and risks of different actions
- **Drive alignment of standards** for science-based decision making in corporates including disclosure (TNFD, ISSB), target setting (SBTi, SBTN) and value chain or landscape action
- Ultimately, hasten the transition to an economy that operates within **Planetary Boundaries at the least possible cost**/ least disruption to economic and social activity

Source: Planetary Guardians website

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AMBITION TO BUILD APPROACH INTO PUBLIC GOOD; NEXT PHASE TO FOCUS ON INCLUSION OF PHYSICAL RISKS AND TESTING WITH COMPANIES

Proof of concept

Phase 1 (Apr-May): Proof of concept

- Approach developed and tested for 3 illustrative companies
- Generic MACC for food industry
- Alignment with business initiatives and standards

Detailed design

Next phase Q4 2024, Q1 2025

- Scope out inclusion of physical risk filter
- Expand MACC to cover multiple sub-sectors
- Work with companies to test and refine use cases
- Engage with large group of stakeholders at WEF Davos

Build into public good

2025, 2026

- Establish consortium of business partners, philanthropist, scientists and experts
- Build open-source approach and underlying data as public good, starting with risk filter and marginal abatement costs curves

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