

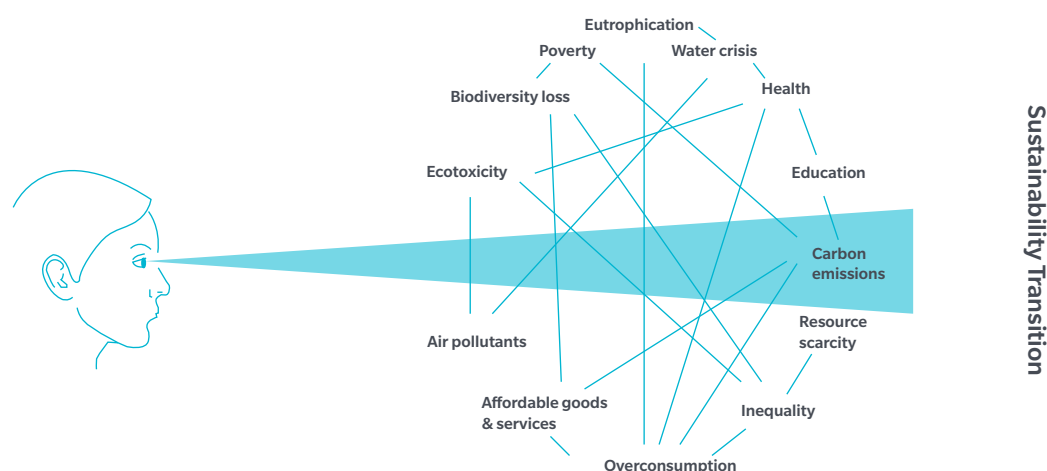
ESG in Depth

Second Quarter 2022

A Framework for Assessing Natural Capital Risks and Opportunities in the Food Sector

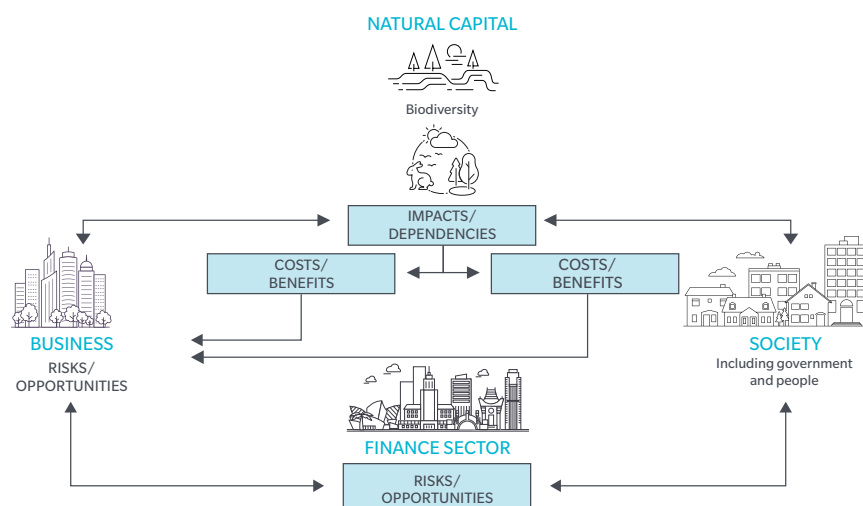


Climate change and carbon emissions in particular have recently received a lot of attention from governments, non-governmental organizations (NGOs), businesses and the general public, and rightly so. But we must be wary of carbon emissions tunnel vision and instead take a more holistic view of planetary challenges that will affect the stability of our economy, society and earth's systems more generally. We believe natural capital will be the next major point of focus. Natural capital is the world's stock of natural assets, including soil, air, water, grasslands, forests, wetlands, rocks, minerals and all living things. Collectively, these provide ecosystem services such as water for agriculture, natural filtration for clean drinking water, crop pollination and carbon sequestration for predictable and stable weather patterns, as well as flood and storm surge protection. In monetary terms, these services are valued at US\$44 trillion a year and form the basis of half the world's GDP.¹

Exhibit 1: Carbon Emissions Tunnel Vision


Source: Cognizant.

The appreciation of natural capital could have a significant impact on the economics of many companies around the world. As investors, it is our job to price future risks and opportunities and translate those into an investment thesis today. We have therefore begun creating a framework for assessing natural capital. Whilst the field is still nascent, we think that we can start implementing such considerations before the broader market has priced them in. In this paper we illustrate some of our thinking around the topic and, by providing examples, show how we are beginning to integrate natural capital into our fundamental analysis.

Exhibit 2: Natural Capital and It's Impacts on Society, Business, and Finance


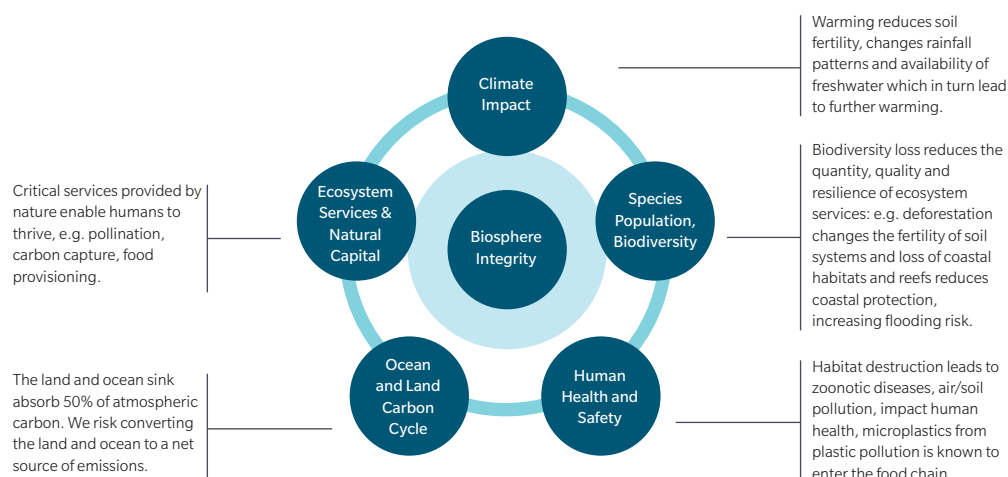
Source: Capitals Coalition and Cambridge Conservation Initiative. 2020. "Integrating biodiversity into natural capital assessments".
(Online) Available at: www.capitalscoalition.org

Why Focus on Natural Capital Now?

Natural capital is well worth considering in its own right, but its link to climate change makes it all the more important right now. In our view, we cannot realise the goals of the Paris Agreement without halting and indeed reversing nature loss. Land use and forestry changes (mainly agriculture and deforestation) amount to just under a quarter of human-caused greenhouse gas emissions.² Forests and oceans currently absorb vast amounts of carbon dioxide. Oceans alone can absorb around 25% to 30% of anthropogenic atmospheric carbon,³ but this is diminishing due to acidification, biodiversity loss, and plastic pollution.

Our increasing understanding of the value derived from nature alongside the impact we're having on it is another major driver. As we approach various tipping points, such as those relating to greenhouse gas emissions, biodiversity loss, novel entities, and pollution, the impact of the impairment of natural capital becomes more important.

Exhibit 3: Natural Capital and It's Impacts on Biosphere Integrity



Source: Integrated Ocean Carbon Research available at <https://unesdoc.unesco.org/ark:/48223/pf0000376708>.

Why Start with the Food Industry?

The food industry was an obvious place to start given that it is more dependent on natural capital than other industries.⁴ It also has the largest impact on natural resources, driven primarily by intensive and industrialised processes. Such food production has been nothing short of a miracle for many around the world, eliminating famine and hunger for millions and supplying cheap, plentiful, and varied foods for others. But the way industrialised farming is currently practiced is unsustainable. For example, an excessive reliance on pesticides reduces biodiversity.⁵ Modern farms often grow just one type of crop over a huge swathe of land (a monoculture). They also tend to till deeply. Both of these practices deplete soil fertility, with 16% of global soils potentially facing depletion in less than 100 years.⁶ Deforestation and the clearing of land for new farmland destroys habitats and carbon sinks. The Amazon basin is currently the largest land-based carbon sink but is on the verge of becoming a carbon source,⁷ further exacerbating climate change and diminishing the benefits nature provides.

ESG in Depth

Second Quarter 2022

Moreover, moves to more sustainable forms of food production that begin to integrate previously ignored externalities are likely to impact profit margins. If no such transition is made, the food sector's reliance on natural capital and ecosystem services makes it particularly vulnerable to deteriorating value derived from nature. This has implications for food sector companies and investors alike.

The Framework

Step 1 - Identify high risk commodities in supply chains and understand their impacts on nature

The impact of a commodity on nature depends on how much of the commodity is produced and demanded as well as the range and extent of negative outcomes that it creates.

We began by mapping the material natural capital impacts by food group:

Exhibit 4: Natural Capital Impacts of Key Commodities

	Soil degradation	Pollution	Water scarcity/ salinization	Biodiversity loss	Emissions from land use
Beef	High	High	High	High	High
Rice	High	High	High	High	High
Corn	High	High	High	Medium	Low
Sugarcane	High	High	High	Medium	High
Palm oil	High	Medium	Low	High	High
Coffee	High	Low	High	Medium	Low
Cocoa	Medium	High	Low	Medium	Low
Pork	Low	High	Low	Low	High

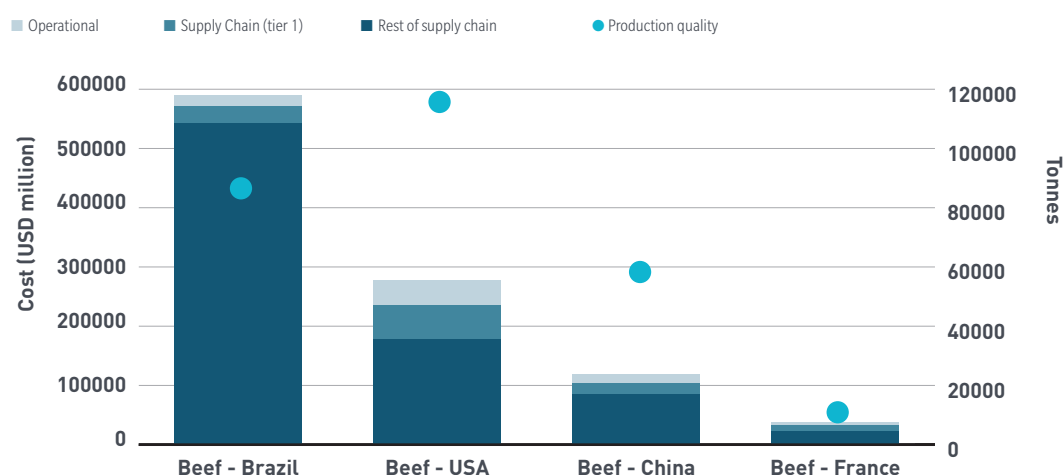
Source: Steps-Toward-Green-Book-File-Final-for-Upload.pdf (ecoagriculture.org) pg 14.

Of all the commodities we assessed, beef has the single largest negative impact on natural capital. This is mainly due to the land use required (and associated deforestation), methane production, and water usage.⁸ We then identified companies we invest in with significant beef exposure directly, such as beef producers and those whose supply chain it appears in - fast food restaurants, for example.

Step 2 - Map the supply chain, local consumption, and local resource stress

Natural capital impacts are often highly localized and driven by a variety of geographic factors including scarcity of resources, biodiversity, government policies and farming practices. This makes it hard to assess the impacts of global supply chains. Beef from Brazil, for example, has a much higher natural capital cost than beef from France, largely due to the deforestation of crucially important rainforests and significant related greenhouse gas emissions.

Exhibit 5: Natural Capital Impacts of Beef by Country



Source: UN FAO, June 2015, Natural capital impacts in Agriculture.

In addition to location, how much of a commodity is locally consumed and how resource intensive it is to produce also impacts its natural capital cost. For example, although it takes much more water to produce meat than to grow wheat, the water stress of wheat in India is much higher than in the US because wheat is an important part of the Indian diet and because of the severe water stress in the regions where Indian wheat is grown. Global supply chains therefore require us to map resource use, local scarcity, and contribution to local diet.

Next, we mapped company-specific exposure.

Mapping Companies' Exposure

We have developed an internal scorecard which can be used for companies with high exposure to deforestation-linked commodities. The framework is not equally material for all companies but serves as a useful starting point.

In using the scorecard, we aggregate a series of data sources such as CDP forestry score and water score as well as Forest500 and others. They score our investees on a range of relevant metrics that can serve as a useful input in our research and stewardship efforts. Importantly, these data are interpreted within a materiality framework and mapped onto the supply chain geography as per Step 2 above.

General Mills (GIS) Case Study

General Mills (GIS) is an American multinational operating in the food sector selling a wide range of products sourced from a global supply chain.

Step 1 - Identify high risk commodities in supply chains and understand their impacts on nature

General Mills has exposure to a number of commodities that impact natural capital and ecosystem services to varying degrees, as illustrated below.

ESG in Depth

Second Quarter 2022

Exhibit 6: Natural Capital Impacts of Important Commodities to General Mills

	Climate Risk	Deforestation/Land Use	Soil Health/Biodiversity	Water Use/Pollution
Soybeans	Medium	High	High	Medium
Corn	Low	Low	Medium	High
Dairy	High	Low	Medium	High
Wheat	Low	Low	Medium	High

Source: Engage the Chain, 2020-2021.

Water use is highly material and takes place upstream in the supply chain. GIS states that 85% of its water impact is in agriculture and 15% is in packaging.

Step 2 - Map the supply chain, local consumption and local resource stress

Although GIS maps out and reports its water sources, without knowing the supply concentration in each of these high-risk watersheds, we cannot assess supply chain risk.

GIS does not disclose the amount of revenue dependent on high water-risk commodities, or the amount sourced from water-stressed areas.

Exhibit 7: General Mills Priority Watersheds

Four-phase approach to sustainable supply chain water use

Phase 1

Assessment

A study of key operation and growing region watersheds, using external standards and building on work completed with The Nature Conservancy (TNC)

Phase 2

Analysis and action planning

Deep-dive analysis of at-risk growing areas, in conjunction with external experts

Phase 3

Collaboration

Establish multi-stakeholder water stewardship plan to implement identified improvements

Phase 4

Transformation

Implement water stewardship program with public education and advocacy, funding and monitoring and reporting

SNAKE

IDAHO, US

Growing region (wheat, potatoes)

RISK LEVEL: EXTREMELY HIGH

PHASE 4

San Joaquin

CALIFORNIA, US

Growing region (dairy, nuts, fruits and vegetables), facility

RISK LEVEL: EXTREMELY HIGH

PHASE 3

Rio Grande/Rio Bravo

NEW MEXICO, US

Facility

RISK LEVEL: EXTREMELY HIGH

PHASE 4

South Florida Basins

FLORIDA, US

Growing region (sugarcane)

RISK LEVEL: HIGH

PHASE 4

Yongding He

HEBEI/SANHE (BEIJING), CHINA

Growing region (dairy), facility

RISK LEVEL: EXTREMELY HIGH

PHASE 3

Huang He (Yellow)

SHANGDONG, CHINA

Growing region (dairy)

RISK LEVEL: EXTREMELY HIGH

PHASE 2

Yangtze (Chang Jiang)

SHANGHAI, CHINA

Facilities

RISK LEVEL: HIGH

PHASE 3

Ganges

MADHYA PRADESH, INDIA

Growing region (wheat)

RISK LEVEL: EXTREMELY HIGH

PHASE 3

Source: General Mills, 2021.

ESG in Depth

Second Quarter 2022

The table below shows that rice is a reasonably large input mostly sourced from water-stressed areas. Although the proportion of sugar coming from water-stressed areas is fairly modest, the proportion of revenue dependent on sugar is notable. A disruption in the sugar supply chain could cause significant difficulties for GIS.

Exhibit 8: General Mills Proportion of Commodities Sourced from Resource Stressed and Resource Dependent Areas

Commodity	% sourced from water stressed areas	% revenue dependent on commodity
Dairy and cattle	11 - 25%	10-20%
Corn	0%	10%
Palm oil	0%	10-20%
Rice	76 - 99%	10-20%
Sugar	11 - 25%	41-60%

Source: GIS CDP water report, 2020.

Step 3 - Assess areas to focus our stewardship efforts (high risk and high impact commodities)

The framework can guide us on where to focus our further analysis and engagement efforts. The higher water score from CDP below is more meaningful than the lower forestry score because water stress is more material risk than deforestation for GIS. This analysis may prompt us to ask companies questions such as the following:

- How do you evaluate and measure the natural capital risks in your supply chain, in particular relating to rice and sugar?
- Are the products or services you offer profitable if natural capital risks are priced in?
- Do you financially incentivise suppliers to change their natural capital and biodiversity practices? Do you financially incentivise your own management to do so?

Exhibit 9: General Mills CDP and Forest 500 Ratings

Company	CDP Forestry Score	CDP Water Score	Forest 500 Total Score 2020	Forest 500 Total Score 2021
General Mills	B	A	50.11	47.39

Source: CDP and Forest500, 2020.

Other ESG factors outside the scope of this framework will also influence our engagement efforts too. We track the progress made by companies and our ongoing engagements in a dedicated engagement tool.

INVESTORS SHOULD CONSIDER INCORPORATING NATURAL CAPITAL INTO FUTURE ANALYSES

Natural capital, along with the ecosystem services it provides, pose a material systemic risk and at the same time presents opportunities in several key sectors. Assessing these risks is harder than assessing those associated with climate change. Factors such as supply chain location, local consumption, and local resource stress all might be considered. While the data are still largely unavailable or remain poor-quality, organisations such as the Science Based Targets for Nature (SBTN) and the Taskforce on Nature-related Financial Disclosures (TNFD) are beginning to gather momentum, providing more structured frameworks for assessing natural capital. Yet there is still a long way to go.

Investors who can thoughtfully engage with these issues now potentially stand to benefit by more accurately pricing relevant opportunities and risks before the wider market is able to do so. Our framework for assessing the food industry is a first step in that direction.

Endnotes

¹ WEF New Nature Economy Report, 2020.

² UNFCCC Introduction to Land Use.

³ The Oceanic Sink for Anthropogenic CO₂ from 1994 to 2007.

⁴ UNEP Food Systems and Natural Resources. A Report of the Working Group on Food Systems of the International Resource Panel, 2016.

⁵ Pesticides and the Loss of Biodiversity, 2010.

⁶ Our World in Data - Soil Spans, 2021.

⁷ Global Maps of Twenty-First Century Forest Carbon Fluxes, 2021.

⁸ Steps Toward Green, 2015.

Please keep in mind that assessing natural capital implications does not guarantee positive results and all investments, including those that integrate ESG considerations into the investment process, carry a certain amount of risk including the possible loss of the principal amount invested.

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