Overview

Agri-food:

Priority actions towards a nature-positive future

September 2023

Introduction

The agri-food system encompasses all activities related to the inputs, production, processing, distribution, consumption and disposal of food globally. The system is crucial to feeding the world's population and to supporting the livelihoods of 2.5 billion people.[1] It cannot function or survive without biodiversity and healthy ecosystems - being reliant on freshwater, land and soil quality, pollination, disease and pest control and climate regulation. Yet, paradoxically, the system is recognized as posing a significant threat to nature. Food production is the largest driver of deforestation, water consumption, biodiversity loss and soil degradation – with agriculture alone being an identified threat to 86% of species at risk of extinction.[2]

There is, however, high potential for businesses in the agri-food system to contribute to a nature-positive economy. To guarantee global food security, address nutritional needs and sustain our ecosystems and human life, it is imperative to fundamentally and rapidly transform how we produce, source, transport and consume food. Through this transition, businesses can realize commercial and social opportunities, for example, there is an estimated USD $3.5 trillion business opportunity in food, land and ocean use change by 2030[3], with a possible 191 million full-time jobs in sustainable agriculture[4] and > 15% farmer return on investment achievable by transitioning to regenerative agriculture.[5]

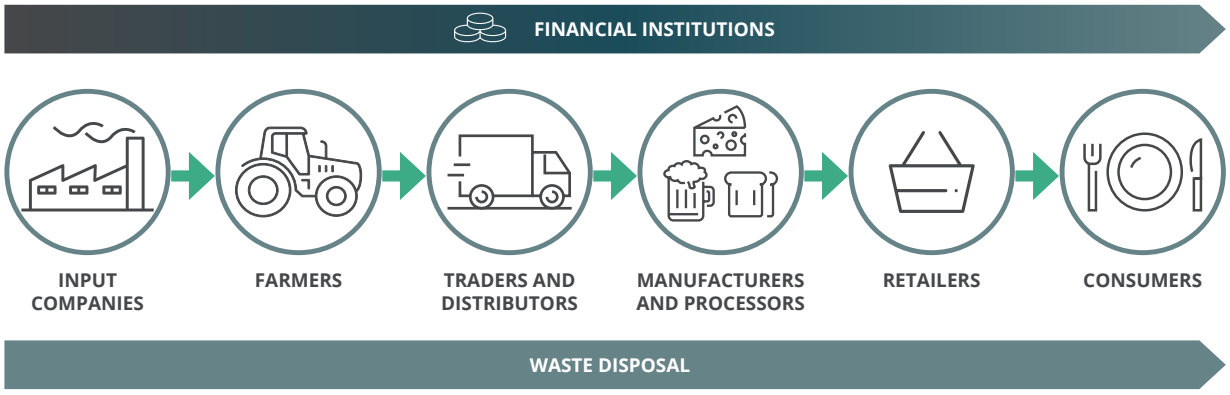
To complement ongoing sustainability initiatives, all businesses need to **A**ssess, **C**ommit, **T**ransform, and **D**isclose (ACT-D high-level business actions on nature). They should acknowledge the value of nature to their business; assess and measure their impacts and dependencies on nature; set transparent, time-bound, science-based targets; take actions to address their key impacts and dependencies; and publicly disclose performance and other relevant nature-related information.

This overview provides a system-level summary of potential key impacts and dependencies on nature[i]. Importantly, it also sets out the priority actions that all companies should take now to **transform** their business models and value chains and ensure the agri-food system plays its role in halting and reversing nature loss by 2030 - the mission at the heart of the Kunming-Montreal Global Biodiversity Framework.

Scope of this overview

This overview focuses on land-based agricultural industries within the global agri-food system (falls under SICS code FB.1). These industries are some of the most impactful and dependent on nature; therefore, they have been prioritized for initial research and associated reports (see Resources for further information). The impacts, dependencies and actions outlined in this overview are also highly relevant to processed foods, food retailers and distributors and restaurants due to their use of land-based agri-food products. This overview does not cover beverages, tobacco or aquaculture (which includes wild-catch fishing) . However, there may be some relevant information included due to the overlap in different value chain stages of these industries.

Figure 1: Food overview value chain diagram



**Note that this is a simplified agri-food value chain diagram (based upon TEEBAgrifood guidance) and in practise is not always linear as illustrated here.*

[i] *The impacts and dependencies analysis is aligned with IPBES Global Assessment Report on Biodiversity and Ecosystem Services, the ENCORE tool, SBTN's materiality screening tool, TNFD sector-specific guidance and the WWF Biodiversity Risk Filter. Sector-specific outputs of these resources have been validated and adjusted with extensive desk research. Furthermore, biodiversity – the variability among living organisms (which includes genetic, species and ecosystem diversity) – is a key feature of nature and cuts across all dimensions of dependencies (see page 3 of this overview) and is influenced by all impacts (see page 3 of this overview).*

[ii] *Ocean food production systems are critical to global future food and nutritional security (WRI, 2019). Aquaculture has been partially considered within WBCSD's 'Roadmaps to Nature Positive: Foundations for the Agri-food System (Row crop Commodities) which has informed this overview. Further industry-specific research is however needed to assess key impacts and dependencies, and identify priority actions. For guidance available now, businesses may utilize resources from the World Economic Forum's Blue Food Partnership (for example responsible production to mitigate climate change and boost biodiversity) and The Blue Food Assessment (a joint initiative of the Stockholm Resilience Centre, the Center for Ocean Solutions and Center on Food Security and the Environment at Stanford University and EAT).*

Nature-related impacts

To protect and enhance the ecosystems on which they depend, companies in the agri-food system should direct their efforts towards addressing the most significant impacts on nature in their operations and value chains, namely:

- **Freshwater use** – The vast withdrawal and consumption of groundwater and surface water for agricultural and livestock production puts pressure on finite freshwater resources. This results in water scarcity, ecological imbalances and competition for freshwater, while also contributing to environmental degradation, depletion of freshwater ecosystems and reduced soil water holding capacity.
- **Land and water use change and degradation** – Damage to terrestrial and freshwater ecosystems contributes to biodiversity loss and negatively affects stored carbon. Impacts arise from land conversion (for example, approximately 50% of the world's wetlands have been drained for agriculture[6]), deforestation (with agricultural expansion driving around 90% of global tropical deforestation[7]), intensification and soil degradation to grow agricultural products for human consumption and crops for animal feed and from the use of vast areas of land to feed, raise and produce animals.
- **Pollution** – The system contributes to widespread pollution including freshwater pollution, land and soil pollution and non-greenhouse gas (GHG) air pollution. Key causes are the overuse of agrichemicals (including mineral and organic fertilizers and pesticides), fuels and feed supplements (for example, antibiotics) used to grow crops and raise animals, the use of energy from fossil fuels (for example, in transport and refrigeration) and plastics and packaging.
- **Greenhouse gas (GHG) emissions** – Emissions are released at all stages of the value chain, significantly contributing to climate change. Key sources include agricultural and livestock production (carbon dioxide and methane); land conversion and deforestation for crops and livestock; ineffective manure management; emissions from fertilizer production (carbon dioxide from fossil fuels) and field application (nitrous oxide); and fossil fuels used in processing and transportation (carbon dioxide).

Nature-related dependencies

Like many systems, the agri-food system is dependent on balanced natural ecosystems – which provide flows of ecosystem services – to function and grow. In particular, agri-food companies rely heavily on:

- **Freshwater** – Businesses need sufficient quantity, quality and flow of freshwater (in the form of groundwater, surface water and seasonal precipitation) to produce crops and animal feed, provide water for raising animals and maintaining land, and for use in downstream washing and processing.
- **Land and soil quality** – High-quality land and soils help optimize crop growth, produce sustainable yields, provide natural protection against erosion, floods and storms and build resilience against environmental challenges.
- **Pollination** – Pollinators play a vital role in the reproductive process of flowering plants, including numerous crops that yield fruits, vegetables, nuts and seeds and for some crops used as animal feed.
- **Disease and pest control** – Nature's ability to regulate diseases and pest populations is essential for safeguarding crops, ensuring food security and maintaining the productivity and quality of agricultural systems, as well as ensuring the health of livestock for animal protein.
- **Climate regulation** – Climate regulation is provided by nature through the long-term storage of carbon dioxide in soils and vegetable biomass. It is critical to optimize plant growth, enhance crop yields, protect companies from disruption (for example extreme weather events) and ensure the long-term sustainability of the agri-food system.

These dependencies strengthen the business case to invest in the protection and restoration of nature.

Priority actions and opportunities

As a business in the agri-food system, you can reduce your company's negative impacts on nature, mitigate risks to your operations and unlock commercial opportunities by prioritizing five key actions:

1. **Reduce freshwater use** – Collaborate with farmers and other watershed stakeholders to implement sustainable water management systems that minimize freshwater use and maintain long-term water availability, particularly in water-stressed regions. Interventions vary depending on the industry, location and hydrological context, but may include implementing efficient irrigation techniques, growing and sourcing ingredients suited to a given geography or climatic region, adopting water-saving practices, reducing water waste during cleaning and sanitation processes and promoting soil conservation.

2. **Avoid, reduce and remove GHG emissions across the entire value chain** – Work with farmers to measure their farm's GHG footprint and implement sustainable, regenerative practices which help sequester carbon in soil or other carbon sinks (such as trees, by developing agroforestry) and reduce the need for mineral fertilizers. Other on-farm emissions reduction practices include efficient irrigation and livestock management through practices like improved feed efficiency, methane capture and manure management. Incentivize farmers to conserve and restore land of high climate mitigation value, implement techniques to capture and store carbon on farms, and support a switch to renewable energy (such as solar and wind). Across the value chain, reduce emissions through decarbonizing transport, eliminating food loss and waste and supporting shifts to more sustainable, nutritious consumer choices.

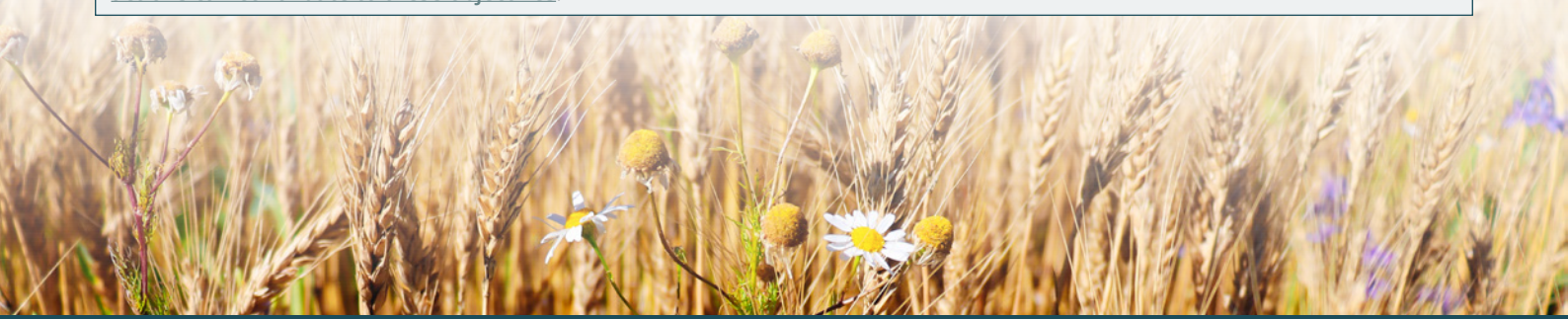
3. **Avoid the degradation - and accelerate the regeneration - of land and ecosystems** – Commit to and implement deforestation and conversion-free (DCF) production and/or sourcing in line with biome-specific guidelines and cut-off dates. Work with farmers to actively manage, protect, restore and steward land and soil microbiology – and generate measurable outcomes – through regenerative agricultural practices (for example, diverse crop rotations, cover crops, intercropping, no/low-till, natural barriers and rotational grazing) and by reducing pollution drivers (for example, reducing agrichemical pollution by improving fertilizer use efficiency and reducing risks from pesticides). Regenerative practices should complement land stewardship where landscapes, habitats and wildlife of high-conservation value are protected and restored. Agri-food businesses can also support farmers to access emerging opportunities in the voluntary carbon and Nature-based Solutions markets.

4. **Promote circularity and innovate products, practices and technologies** – A circular food value chain is one with closed-loop systems that supports the regeneration of ecosystems and supports sustainable resource use. Support the adoption of circular and reuse models across the value chain. For example, farmers may capture value from farm waste (such as manure) and food processors may capture value from the generation of food by-products. At all stages of the value chain, encourage changes that minimize emissions and waste – including switching to renewable energy and sustainable packaging, and reducing food loss and waste. New technological innovations and approaches can support the diversification of product portfolios towards more sustainable alternatives. This includes alternative meat and dairy products; circular, regenerative food; and sustainable intensification (for example, precision technologies and seed varieties to optimize on-farm fertilizer, pesticide and water use).

5. **Collaborate, educate, support and advocate across your supply chain** – Collaborate with stakeholders across the value chain to achieve system-wide action towards nature-positive (see for example, SBTN Land Targets v0.3 for information on landscape approaches) and to effectively measure, track and disclose progress against nature and climate targets. This requires alignment on definitions and indicators (for example, for DCF production and regenerative agriculture). Support farmers to deliver whole-farm solutions and work with financiers to help shift financial flows to activities that protect and restore nature at scale. Collaboration is also critical to ensure the traceability and transparency of products. Aim to procure products sustainably, demand traceability (for example, to ensure DCF) and increase data accessibility from suppliers (for example, by strengthening procurement criteria). Support the development of markets, products and campaigns featuring fully traceable, certified and sustainable ingredients and engage with consumers to accelerate the demand for more sustainable diets. Finally, advocate for policies which support the transition to a nature-positive future by ensuring successful delivery and scaling of the actions outlined above.

Importantly, efforts to deliver these priority actions and transform the system must be delivered in alignment with a just and equitable transition, including meaningful dialogue with affected groups, such as employees, local farming communities, Indigenous Peoples and marginalized communities.

Adopting the priority actions can help businesses contribute to societal and environmental objectives, including the Global Biodiversity Framework (GBF) and the Sustainable Development Goals (SDGs). Read the GBF-SDG mapping to see how the priority actions can contribute to these objectives.



Resources

This overview has been informed by two detailed reports:

- Roadmaps to Nature Positive: Foundations for the Agri-food System - Row crop Commodities, developed by the World Business Council for Sustainable Development.
- The Get Nature Positive Handbook, developed by Accenture, the Council for Sustainable Business and the UK Department for Environment, Food and Rural Affairs.

Plus, additional research and consultation on the Meat, Poultry and Dairy industry, conducted by the World Economic Forum.

In addition to the resources mentioned above, the following **sector-specific guidance and tools** are currently available to businesses in the agri-food sector:

- A guide to investing in landscape restoration to sustain agrifood supply chains (IUCN and FOLU, 2023)
- Accountability Framework (Accountability Framework Initiative, 2019)
- Agri-food sector guidance on applying the natural capital management accounting methodology (Transparent Project, 2023)
- Agriculture Sector Roadmap to 1.5°C (Tropical Forest Alliance, 2023)
- Factsheet - Agriculture and Agrifood 1.0 (CDC Biodiversité, 2021)
- Food & Agriculture Roadmap (WBCSD, 2020-2021)
- Food and Beverage sector guide (Natural Capital Protocol, 2016)
- Food Land and Agriculture (FLAG) guidance (SBTi, 2023)
- Framework for Regenerative Agriculture (OP2B, 2021)
- Growing Better: Ten Critical Transitions to Transform Food and Land Use (The Food and Land Use Coalition, 2019), and forthcoming reports (expected October 2023)
- Land and Freshwater targets and technical guidance (SBTN, 2023)
- Land Sector and Removals guidance (Greenhouse Gas Protocol, 2023)
- TEEB for Agriculture and Food: Operational guidelines for business (Capitals Coalition, 2020)
- The Big Food Redesign: Regenerating nature with the circular economy (Ellen Macarthur Foundation, 2021)
- The TNFD's resources (v1.0 available from September 2023) including, for example, LEAP – Evaluate Priority Dependencies and Impacts; Nature-related Risk and Opportunity Management and Disclosure Framework - Additional Guidance for Food and Agriculture; and Disclosure Metrics for the Agriculture and Food Sector.

The following **organizations and coalitions**[iii] also provide useful information for the sector:

- Agribusiness Task Force (Sustainable Markets Initiative)
- CEO Water Mandate (UN Global Compact)
- Just Rural Transition
- One Planet Business for Biodiversity (OP2B)
- Nutrient Upcycling Alliance (PACE)
- TEEBAgriFood

For additional sector-agnostic resources, please refer to Business for Nature's High-level Business Actions on Nature.

[iii] *These are additional to the organizations and coalitions who are authors of the above sector-specific guidance and tools. Also, this is not an exhaustive list: many organizations and coalitions exist at local, regional and national levels to support agri-food businesses in a given geography.*

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References

[1] 2.6 billion people draw their livelihoods mostly from agriculture (Convention on Biological Diversity, 2018)

[2] Our global food system is the primary driver of biodiversity loss (UN Environment Programme, 2021)

[3] The future of nature and business (WEF, 2020)

[4] Ibid.

[5] Cultivating farmer prosperity: Investing in Regenerative Agriculture (WBCSD, 2023)

[6] Ecosystems and human well-being: synthesis (Millenium Ecosystem Assessment, 2005)

[7] Disentangling the numbers behind agriculture-driven tropical deforestation (Pendrill F et al., 2022)