

# Food and Agriculture Roadmap

Chapter on Transformative Agriculture



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# ① Executive summary



# ① Executive summary

## BACKGROUND

Food and agricultural products play vital health, economic and cultural roles in every society. However, today's food and agricultural systems are outstripping the planet's resources, while evolving diets are resulting in global health crises of both over- and undernutrition. The COVID-19 pandemic has exacerbated the situation and underscored the need to urgently build better, more equitable and more resilient food systems capable of reducing and absorbing major food value chain disruptions. The pandemic has compelled all food value chain stakeholders to act urgently in a transformative and coordinated way to deliver healthy diets for all, produced sustainably within planetary boundaries.

## PURPOSE

The Food and Agriculture Roadmap serves as the implementation plan for WBCSD's [CEO Guide to Food System Transformation](#).

It builds on the body of work developed by WBCSD's [Food Reform for Sustainability and Health \(FRSH\)](#), [Scaling Positive Agriculture \(SPA\)](#) and [Global Agribusiness Action on Equitable Livelihoods \(GAA-EL\)](#) projects.

The Roadmap sets out the transformational targets, key action areas and solutions urgently required to transform food systems to achieve environmental sustainability, equitable livelihoods, and healthy and sustainable diets for all.

Grounded in scientific and economic analysis, the Roadmap helps companies prioritize and develop business-led solutions while advancing supportive policy, regulatory and financial frameworks.

Developed primarily for use by executive management and sustainability, agriculture and human rights experts in companies throughout the food and agricultural system, the Roadmap is also relevant for other stakeholders whose actions and collaboration with

the private sector play a critical role in transforming food and agriculture systems – such as governments, investors, civil society and the research community.

## FOOD AND AGRICULTURE ROADMAP: CHAPTERS

The Food and Agriculture Roadmap comprises the following chapters, each providing implementation guidance to businesses for the transformation pathways outlined in WBCSD's [CEO Guide to Food System Transformation](#):

- [Healthy and Sustainable Diets](#)
- Transformative Agriculture
- Equitable Livelihoods
- [Policy Recommendations](#)

The chapters on Healthy and Sustainable Diets and Equitable Livelihoods cover food waste and food loss respectively.

## FOOD AND AGRICULTURE ROADMAP CHAPTERS



**Healthy and Sustainable Diets**  
(including food waste)



**Transformative Agriculture**



**Equitable Livelihoods**  
(including food loss)



**Policy**

It is important to note that it is necessary to scale the action areas and solutions proposed in the various Roadmap chapters together as they all depend upon and reinforce each other. All of them require action from the business community – from fork to farm – as well as from national governments, the financial sector, civil society – including academia – and the international community.

### FOOD AND AGRICULTURE ROADMAP CHAPTER: TRANSFORMATIVE AGRICULTURE

The Transformative Agriculture Chapter of the Roadmap primarily targets companies that operate in the production part of the value chain; but is also relevant to downstream actors, such as manufacturers and retailers, as well as investors and technology providers. It provides guidance on the actions required to leverage the positive potential of agriculture as a transformational solution in a way that is positive for farmers, climate and nature.

### TRANSFORMATIONAL TARGETS

This chapter sets out five overarching high-level transformational targets. These are sector-level targets designed to achieve an agricultural system transformation. For each transformational target, accompanying sub-targets provide the detail required to meet the transformational target.

**Transformational target 1:** Reduce greenhouse gas (GHG) emissions from agriculture and enhance carbon sequestration to reach net zero by 2050

**Transformational target 2:** Close nitrogen cycles, with significant reduction of losses on agricultural land, from livestock production and aquaculture, and food consumption and waste

**Transformational target 3:** Keep phosphorus releases from agriculture within environmental limits

**Transformational target 4:** Achieve zero net loss of nature from 2020, net positive for nature by 2030 and full recovery by 2050

**Transformational target 5:** Reduce by half the global level of water stress from agriculture by 2030

### COLLECTIVE AND INDIVIDUAL ACTIONS

Achieving systemic transformation, collaboration, coalition building, and collective action across and beyond the sector will be critical. We have broken down the collaborative actions that SPA can take to support the shift to food and agricultural system transformation into “direct” and “enable”:

#### Direct

- **Farmers and producers:** Collaborating directly with farmers and producers to strengthen a sustainable, productive, resilient agricultural system
- **Landscapes:** Implementing collective landscape approaches to deliver sustainable land-use commitments in key regions

### Enablers

- **Finance and incentives:** Scaling up finance for key food and agriculture practices and addressing the incentives required across the value chain
- **Metrics:** Improving the ability of businesses to trace, measure and monitor impacts and progress on food and agricultural system transformation

To implement the Roadmap, SPA and its members will continue to work with key partners and stakeholders to:

- **Strengthen performance:** Helping companies resolve risky, material priorities to improve their individual sustainability performance and advance business-led solutions identified within the Roadmap, as well as deliver on our member requirements for climate and nature;
- **Scale collective action:** Catalyze collaboration partnerships and innovation across the agriculture value chain and beyond to scale the impact of collective “game changing” solutions identified in the Roadmap; and
- **Transform food systems:** Drive solutions that can achieve transformational change across the food and agriculture system, focusing on the key enablers of policy, finance, technology and innovation.



## ② Context



## ② Context

### THE NEED FOR FOOD SYSTEM TRANSFORMATION

The food system includes everything involved in feeding people and animals, from growing and harvesting to processing, trading, marketing, distribution, consumption and disposal.<sup>1</sup> Current food systems are fragmented and unsustainable. Major scientific and economic reports (e.g., Intergovernmental Panel on Climate Change (IPCC), Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services (IPBES), Food and Land Use Coalition (FOLU), State of Food Security and Nutrition in the World (SOFI), EAT-Lancet) are all sounding a clear alarm on the urgent need to act today (summaries of these reports for business are available in WBCSD's [Business Summary Library](#)). Moreover, public opinion and consumer demand are both increasing pressure and creating business opportunity.

The global food system has expanded significantly, growing to meet the needs of an increasing global population, which estimates suggest will exceed 9 billion by 2050.<sup>2</sup> However, some old challenges remain and new ones have appeared. Humans are outstripping the planet's natural resources at an unprecedented rate, leading to the loss of natural ecosystems, soil erosion and freshwater scarcity.<sup>3</sup> IPCC estimates show that emissions from the global food and agriculture system will be up to 37% of total net anthropogenic emissions by 2050.<sup>4</sup> Agricultural systems are already feeling the impacts of climate change as increases in average temperature and extreme weather events cause disruption and losses.<sup>5</sup>

Food loss and waste across the whole value chain is significant. Approximately one-third of all food is lost or wasted between the farm and the fork, generating 8% of global GHG emissions and resulting in USD \$940 million in economic losses globally each year.<sup>6</sup> Current diets are resulting in global health crises of both over- and undernutrition. Globally, 1 in 9 people are hungry or undernourished; the number of people affected by hunger will surpass 840 million by 2030.<sup>7</sup> In addition, 1 in 3 people are overweight or obese.<sup>8</sup>

However, the food and agricultural production system can become part of the solution, providing the necessary actions to create a more resilient system. Business actions to implement regenerative agricultural practices, transformative inputs and precision agriculture can help shift agriculture into a net carbon sink through the mitigation of existing production systems and the sequestration of emissions. In addition, agriculture can contribute to the restoration of nature, improving biodiversity and soil health, both on working farmlands and through off-farm landscape restoration. However, it is critical that actions to achieve a more resilient and sustainable food and agricultural production system maintain connectivity to smallholder farmers and producers. Farmer-positive solutions must be at the center of system transformation to strengthen agriculture's role in supporting resilient, productive and prosperous farming communities and to deliver equitable livelihoods (covered in Chapter 3 Equitable Livelihoods).





## COVID-19 PANDEMIC

The COVID-19 pandemic has exacerbated existing global food and agriculture system weaknesses, exposing the fragility of food security, nutrition and access for so many. It has highlighted a wide range of systemic issues, ranging from unequal access to food and nutrition to poor working conditions, food loss and waste, as well as the destruction of nature by non-sustainable agricultural practices and increases in zoonotic diseases.<sup>9</sup><sup>10 11</sup> As a result of the pandemic, the challenges that food systems are already experiencing are growing deeper, making the need for food system transformation

even more urgent. A dramatic illustration of this is the fact that experts expect the addition of 83 to 132 million people to the total of those undernourished worldwide in 2020 compared to 2019.

## ROLE OF THE PRIVATE SECTOR

Businesses have a central role to play in improving food production and consumption patterns worldwide. Some recent signals of change are offering food value chain companies a unique opportunity for action to transform the food system and bring about multiple co-benefits for climate, biodiversity and health. As hunger increases

and governments deploy stimulus packages around the world to mitigate the economic consequences stemming from the COVID-19 pandemic, society is looking to the private sector to redesign and accelerate action to deliver a more resilient system that provides healthy and sustainable diets for all. Businesses have the unique ability to develop and provide the technology, innovation and financing solutions needed to deliver a more resilient agricultural production system. By developing partnerships with actors across the value chain, companies can develop more inclusive value chains that improve food production and consumption outcomes for all.





# 3 Introduction



# ③ Introduction

## PURPOSE OF THE ROADMAP: FROM TRANSFORMATION PATHWAYS TO ACTION AREAS AND SOLUTIONS

The Food and Agriculture Roadmap serves as the implementation plan for WBCSD's [CEO Guide to Food System Transformation](#) by setting out the overarching sector-level transformational targets, key company-level action areas and business-led solutions required to achieve food system change to achieve environmental sustainability, equitable livelihoods, and healthy and sustainable diets for all. It builds on the body of work developed by our [Food Reform for Sustainability and Health \(FReSH\)](#), [Scaling Positive Agriculture \(SPA\)](#) and [Global Agribusiness Action on Equitable Livelihoods \(GAA-EL\)](#) projects.

The Roadmap calls on companies to work actively to address the issues of healthy and environmentally sustainable production and consumption by delivering integrated solutions to transform food systems. Achieving food system transformation will also require the development of enabling conditions, including supportive financial frameworks and policies, as well as the necessary infrastructure, technology and access to services (see section below on the importance of collective action).

## FOOD AND AGRICULTURE ROADMAP: CHAPTERS

WBCSD's Food and Agriculture Roadmap builds upon the *CEO Guide*'s pathways in a series of chapters, each corresponding to one of the direct pathways identified in the guide.

- Healthy and Sustainable Diets
- Transformative Agriculture
- Equitable Livelihoods
- Policy Recommendations

The chapters on Healthy and Sustainable Diets and Equitable Livelihoods cover food waste and food loss respectively.

It is necessary to scale the action areas and solutions put forward in the various chapters together because each depends upon and reinforces the others. All of them require action from national governments, business, the financial sector, civil society – including academia – and the international community.

## ROADMAP CHAPTER ON TRANSFORMATIVE AGRICULTURE

The Transformative Agriculture chapter of the Roadmap is for companies involved in production activities. The chapter provides guidance on the actions required to achieve transformative, regenerative agriculture.

It puts forward five overarching sector-level and (where possible) timebound transformational targets, outlining the specific actions for companies to take to achieve the transformation required.

## APPROACH

We have developed the Food and Agriculture Roadmap through a rigorous and iterative research and consultative process including the following key steps:

**Literature review** – A desk review of existing research and analysis to develop the action areas and transformational targets, including publications by EAT-Lancet, the Food and Land Use (FOLU) Coalition, the World Health Organization (WHO), the Food and Agriculture Organization of the United Nations (FAO), LandScale, the Science Based Targets Network, the United Nations Sustainable Development Goals (UN SDGs), U.S. Farmers & Ranchers Alliance, and the World Resources Institute (WRI).

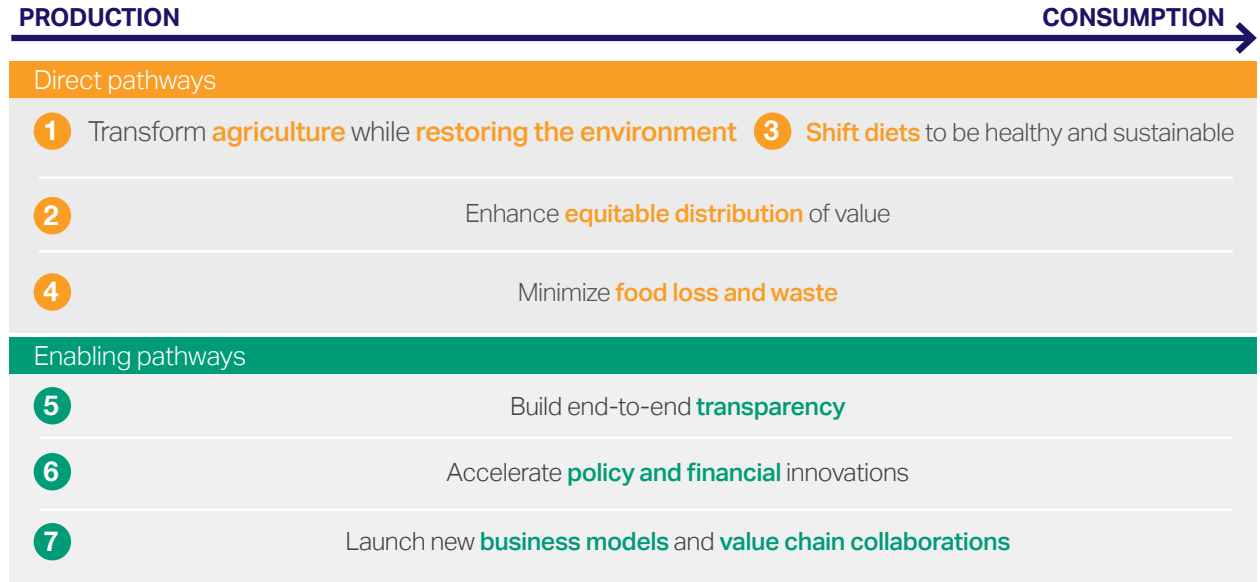
**Company engagement** – A survey, in-depth webinars and individual exchanges with WBCSD members spanning the supply chain to agree on the transformational targets, action areas and sub-action areas, and to prioritize solutions.

**Key expert and stakeholder consultation** – With scientists, non-governmental organization (NGOs), researchers and other stakeholders spanning the value-chain to advise on appropriate literature and data to develop the Roadmap.

**Advisor review** – Webinar consultation and individual follow-up with members and high-level strategic advisors from key international organizations.

Figure 1: CEO Guide to Food System Transformation – Pathways

## SEVEN PATHWAYS WHERE BUSINESS CAN LEAD TO ACCELERATE TRANSFORMATION





## ④ Transformational targets





## ④ Transformational targets

Food system transformation requires a deep and fundamental shift, informed by a collective understanding of the current challenges, science-based targets and collective solution spaces for business action. Before considering the specific actions that food and agriculture players must take, we identified sector-level targets to achieve food system transformation.

Transformational targets are sector-level, timebound impact goals designed to achieve food and agriculture production responsibly and within planetary boundaries. The transformational targets developed for each Roadmap chapter build on the WBCSD Food & Nature Program's Healthy People, Healthy Planet vision. We have structured them around actions to address climate resilience and greenhouse gas (GHG) mitigation, nature and biodiversity, nutrition and health, and livelihoods and human rights.

Note that we have developed the targets for nutrition and health as part of the Healthy and Sustainable Diets chapter of the Roadmap, while we developed the majority of the livelihoods and human rights targets, as well as the climate resilience targets, for the Equitable Livelihoods chapter. The transformational targets associated with this chapter focus on climate change mitigation and nature and biodiversity. For each transformational target, there are accompanying sector-level sub-targets that provide the more detailed targets required to meet the transformational target.

We have consulted a range of publications as detailed in the References section of this Roadmap, including those from the Intergovernmental Panel on Climate Change (IPCC), Sustainable Development Goals (SDGs), Science Based Targets Network (SBTN) Interim Guidance, WBCSD (Protein Transformative Pathways), and EAT-Lancet, as part of the process to identify transformational targets. Each publication identifies the current unsustainable agricultural practices and the need to transition to food systems that use resources sustainably, while supporting the regeneration of nature and biodiversity.

These targets primarily focus on companies that operate in the production part of the value chain; however, they are also relevant to downstream actors, such as manufacturers and retailers, who can also support these efforts. Companies should consider all targets and prioritize the ones that are applicable and material to the scope of their product portfolios, offerings and operations throughout the entire value chain.

It is important to recognize that achieving food and agricultural system transformation and successfully delivering on the targets will require wider changes across markets and business models. Although we have developed these targets at the sector-level, wider changes will need to occur to enable the required transformation.



## CLIMATE CHANGE MITIGATION

### GHG emissions from agriculture

#### Transformational target 1:

Reduce GHG emissions from agriculture and enhance carbon sequestration to reach net zero by 2050

- **Sub-target 1.1:** Halve GHG scope 1, 2 and 3 emissions by 2030 (reduce emissions from 8.8 to 4.4 GtCO<sub>2</sub>e by 2030), to reach net zero by 2050 or earlier, and to become net positive beyond 2050 (indicative +5 GtCO<sub>2</sub>e by 2075)<sup>12, 13</sup>

## NATURE AND BIODIVERSITY

### Nitrogen release from agriculture

#### Transformational target 2:

Close nitrogen cycles, with significant reduction of losses on agricultural land, from livestock production and aquaculture, and food consumption and waste

- **Sub-target 1.1:** Reduce total N use<sup>14</sup> from industrial and agricultural biological fixation and reduce N losses from agricultural land<sup>15</sup> by 2050<sup>16</sup>

### Phosphorus release from agriculture

#### Transformational target 3:

Keep phosphorus releases from agriculture within environmental limits

- **Sub-target 1.1:** Reduce total P use<sup>17</sup> from fertilizers to erodible soils and reduce P losses<sup>18</sup> from agricultural soils and human excretion from freshwater systems into the ocean by 2050<sup>19</sup>

### Shifting agriculture from the main driver of nature loss to a regenerator of nature

#### Transformational target 4:

Achieve zero net loss of nature from 2020, net positive for nature by 2030, and full recovery by 2050

- **Sub-target 4.1:** Achieve zero deforestation and no net loss of non-forest natural habitats<sup>20</sup> from 2020<sup>21</sup>
- **Sub-target 4.2:** Achieve zero conversion of natural habitats in the value chain by 2030<sup>22</sup>
- **Sub-target 4.3:** Increase soil carbon stock through restoration and regeneration on agricultural lands by 4% per year<sup>23 24 25</sup>

- **Sub-target 4.4:** Regenerate ecological integrity in supply chain by ensuring 10% ecological focus areas<sup>26</sup> per km<sup>2</sup> for all sourced agricultural inputs
- **Sub-target 4.5:** Maintain genetic diversity of seeds, plants and farmed animals<sup>27</sup>
- **Sub-target 4.6:** Eliminate sourcing from areas of high species extinction risk<sup>28</sup>

### Water use in agriculture

#### Transformational target 5:

Reduce by half the global level of water stress by 2030<sup>29</sup>

- **Sub-target 5.1:** Keep total yearly blue water use<sup>30</sup> for irrigation within 2,453 km<sup>3</sup><sup>31</sup>
- **Sub-target 5.2:** Freshwater: By 2030, reduce water use across all high water impact parts of the value chain<sup>32</sup>
- **Sub-target 5.3:** Wastewater: By 2030, ensure that 100% of wastewater reused for agricultural purposes is safe<sup>33 34</sup>





# 5 Achieving food system transformation



# ⑤ Achieving food system transformation

## THE IMPORTANCE OF COLLECTIVE ACTION

To achieve systemic transformation, it will be critical to collaborate and build coalitions across and outside of the sector. Agricultural production needs to transition to have climate-positive and nature-positive impacts, while enhancing resilience to climate change and improving food security and livelihoods (farmer-positive). Companies need to consider how to best work with and complement the actions of other companies and organizations beyond their value chains, to enhance innovation and build on and share best practices within the sector. Further, companies should take a collaborative and cooperative approach to working with smallholder farmers and producers to ensure sure that they are able to participate in shared decision-making activities focusing on the development of new solutions and on future land-use and transition outcomes.<sup>35</sup>

During 2020, our Scaling Positive Agriculture project identified four main areas of collective action for members as captured by Figure 2.

Looking at 2021 and beyond, we will use the framework of these action areas to drive collaborative action on the key solution areas and actions identified in Table 1.

Policy support to enable these changes will also be critical, for example through incentives for innovation, support to farmers making the transition to more sustainable agriculture, the development of carbon pricing and other mechanisms to integrate externalities. We will develop a comprehensive list of policy recommendations to support agricultural transformation in 2021 to complement this chapter.

## KEY ACTION AREAS

Table 1 identifies four action areas within the production part of the food value chain, alongside several specific action areas, to achieve the necessary transformation of the food system. The Roadmap attempts to be as comprehensive as possible in the actions included, while also aiming to avoid repetition. While we present a range of suggested actions that businesses can take to tackle the key issues of the sector, readers should view this document as a whole, considering actions as complementary rather than in isolation.

We have identified these actions as those required to achieve the transformational targets. We have rated actions as high (H), medium (M) and low (L) priority based on the current level of coverage across our Scaling Positive Agriculture project; this will inform how we will use the Roadmap in future SPA workplans. Naturally, while companies should consider the relevance of all action areas, certain organizations may choose to prioritize specific actions based on those most material to their business.

Figure 2: The four collaborative SPA action areas

COLLECTIVE ACTION AREAS (WBCSD)			
DIRECT		ENABLERS	
Farmers & Producers	Landscapes	Finance & Incentives	Metrics
Collaborate directly with farmers and producers to strengthen a sustainable, productive, resilient farming system	Implement collective landscape approaches to deliver sustainable land use commitments at scale in key regions	Scale up finance for key food and agriculture practices and address the incentives required across the value chain	Improve businesses' ability to trace, measure and monitor impacts and progress towards food and agriculture system transformation



**Table 1:** Action areas to achieve transformation

ACTION AREA		SUB-ACTION AREA	LEVEL OF CURRENT COVERAGE THROUGH WBCSD SPA
1	Improve the sustainability of arable farming practices	Adopt transformative inputs for nature and climate	M
		Strengthen water stewardship	M
		Use regenerative agricultural practices	H
2	Improve the sustainability of livestock farming practices	Implement responsible animal feed practices and support animal health	L
		Use regenerative livestock practices	L
3	Avoid damage to and promote the restoration of natural ecosystems	Monitor, protect and restore nature across the value chain	H
4	Leverage technological innovation to support changing farming practices	Enable greater access to digital advisory services for farmers	H

The transformational targets outlined in section II of the Roadmap should guide the actions taken along these key areas; organizations should also set key performance indicators for new policies or organizational approaches to monitor and ensure compliance and success.





## ⑥ Actions to achieve transformative agriculture



# ⑥ Actions to achieve transformative agriculture

Agricultural companies have a critical role to play in providing more sustainable agricultural systems that can deliver food for a growing population while restoring the environment and improving biodiversity. However, agriculture is currently putting great strain on planetary systems. The food system accounts for an estimated 21-37% of total GHG emissions.<sup>36</sup> Agricultural production has been responsible for unprecedented levels of freshwater withdrawals, declining soil health and the loss of biodiversity globally. System transformation is necessary to ensure the food system can sustainably feed a growing population, within planetary boundaries.

This chapter focuses on the role companies can play in helping to achieve transformative agriculture, including how companies can leverage technological innovation, use inputs more efficiently and restore nature across value chains. Companies should determine where they are able to have the greatest impact against the sector-level transformative targets by prioritizing and delivering the solutions within the action areas that are most relevant to their business.

Building on the work developed by the SPA and GAA-EL projects, we map the action areas and actions needed to achieve transformative agriculture below, covering direct pathway 1 *Transform agriculture while restoring the environment* from the *CEO Guide to Food System Transformation*. Please note that solutions relating to climate resilience for farmers and producers are in Chapter 3: Equitable Livelihoods.

## ACTION AREAS

### 1: Improve the sustainability of arable farming practices

Currently arable farming practices are not fit for purpose; they are responsible for the inefficient use of resources, while also degrading soils and resulting in the loss of nature at unsustainable rates. As part of the shift to a more sustainable food system, there are several actions that businesses can take to more effectively transition. Companies should invest in new ways to use existing inputs and resources more efficiently, transitioning to regenerative<sup>37</sup> and circular<sup>38</sup> production models to improve the sustainability of crop production. Regenerative agriculture practices and greater crop diversification can improve crop yields, supporting agrobiodiversity<sup>39</sup> and increasing soil carbon content. Companies should ensure water use is sustainable, considering both the watershed or basin context as well as the needs of local stakeholders.





## SUB-ACTION AREA: Adopt transformative inputs for nature and climate



### Level of current coverage through WBCSD SPA (medium)<sup>40</sup>

Currently covered under:

- The Sustainable Rice Landscapes Initiative
- Soils Investment Hub
- Nature-Positive Production Systems
- Partnership with the U.S. Farmers & Ranchers Alliance (USFRA) on the Roadmap for Transformative Investment in Climate Smart Agriculture

### Recommended individual company actions

- Develop circular production systems that minimize nutrient leakages and reduce the need for chemical fertilizers and pesticides (e.g., by scaling practices such as nutrient upcycling and circular nutrient management on farms).<sup>41 42</sup>
- Use crop breeding techniques to produce more productive seeds and crop varieties that increase yield and nutritive quality, can withstand extreme weather and require fewer inputs (e.g., by breeding biological nitrogen inhibition traits into crops).<sup>43</sup>
- Use innovative cropping practices to reduce the need for inputs and maintain or increase levels of organic soil carbon (e.g., through intercropping or double cropping).<sup>44</sup>
- Use new and innovative technologies that can improve the efficiency and productivity of crops while using fewer resources (e.g., using gene editing techniques to improve the nitrogen fixation of root structures and reducing the need to use nitrogen fertilizer or to develop high-yield stress-resistant crops that increase resilience to climate-related events and require fewer inputs).<sup>45 46 47</sup>





## SUB-ACTION AREA: Strengthen water stewardship



### Level of current coverage through WBCSD SPA (medium)

Currently covered under:

- GAA-EL Water Stewardship Workstream
- The Sustainable Rice Landscapes Initiative

### Recommended individual company actions

- Conduct a comprehensive water assessment to identify the parts of operations and supply chains that are water stressed (e.g., by using WRI Aqueduct).
- Develop science-based water targets for the parts of operations and supply chains that are water stressed.<sup>48</sup>
- Invest in and introduce new technology and efficient approaches, such as behavior changes, to improve water efficiency and quality to ensure sustainable water use.<sup>49 50</sup>
- Encourage suppliers to improve water stewardship practices (e.g., by increasing the capacity of suppliers to analyze and respond to watershed risk or by sharing water sustainability practices that others can adopt).<sup>51</sup>
- Evaluate and report on environmental, social and economic water-related impacts throughout the value chain and encourage suppliers to do the same.<sup>52</sup>
- Develop a water stewardship plan to address risks (including indirect water use impacts) and shared catchment water challenges and opportunities that are reflective of the needs of all actors in the water catchment, including targets and actions to achieve.<sup>53</sup>
- Develop the capacity of smallholder farmers and other agricultural workers and equip them with the appropriate tools to use improved soil and water management practices to increase yields and conserve water, particularly on drylands.<sup>54</sup>
- Ensure that all wastewater used for agricultural purposes is safe, according to jurisdictional standards and/or international guidance (e.g., WHO guidance).<sup>55</sup>
- Adopt and promote commodity-based and water stewardship standards across the value chain and establish mechanisms to validate their effectiveness.<sup>56</sup>
- Engage in water governance processes and work with national, regional and local governments and public authorities and other relevant institutions to address water sustainability issues (e.g., by using multi-stakeholder platforms to understand relevant policies and regulations and contribute to their further development).<sup>57</sup>

## SUB-ACTION AREA:

### Use regenerative agricultural practices



#### Level of current coverage through WBCSD SPA (high)

Currently covered under:

- GAA-EL's Sustainable Landscapes workstream
- Soils Investment Hub
- Nature-Positive Production Systems
- The Sustainable Rice Landscapes Initiative
- Partnership with the U.S. Farmers & Ranchers Alliance (USFRA) on the Roadmap for Transformative Investment in Climate Smart Agriculture

#### Recommended individual company actions

- Scale up alternative farming practices that increase soil carbon and increase the capacity of soil to hold water (e.g., practices such as no-till farming or by upscaling agroforestry within farms).<sup>58</sup>
- Increase crop diversification to improve soil health and fertility using appropriate crops and considering the local conditions.<sup>59</sup>
- Implement approaches to farming that improve biodiversity and create nature-based solutions (e.g., setting aside natural habitat areas on farmland or managing hedges and habitat corridors to benefit pollinators).<sup>60 61</sup>
- Support and incentivize suppliers to deliver regenerative agricultural practices (e.g., by investing in agricultural extension services such as farming training to increase the uptake of regenerative practices).<sup>62</sup>
- Increase the number of different ingredients sourced and expand the genetic variety of crops grown to reduce reliance on a limited number of crops (e.g., by assessing and disclosing the portfolio richness<sup>63</sup> and diversity<sup>64</sup> of key commodities and the relative proportion of different genetic varieties or species).<sup>65</sup>
- Engage smallholder farmers and local communities to develop integrated approaches to resource use and land management to improve soil health (e.g., through approaches such as watershed management and sustainable land management).<sup>66</sup>
- Increase crop production by planting existing croplands more frequently or producing more than one crop harvest per year. Where conditions are most suitable, leave cropland fallow less often.<sup>67</sup>

## 2: Improve the sustainability of livestock farming practices

Current livestock practices are responsible for large amounts of GHG emissions and often result in soil degradation and land conversion. However, livestock systems can be part of a sustainable food system, and companies can improve the sustainability of livestock

farming practices through the development and scaling of new practices. This should include more responsible feed sourcing, using by-products as feed, or investing in innovation in more sustainable feedstocks. Companies should take actions to improve the health and welfare of livestock animals and should seek regenerative practices to increase

carbon sequestration alongside other methods to reduce ruminant enteric fermentation. However, it is important to balance these concerns against the importance of livestock to livelihoods in certain communities and regions – particularly areas where undernutrition is highest – that often have the lowest capacity to adapt.<sup>68</sup>

### SUB-ACTION AREA:

#### Implement responsible animal feed practices and support animal health



#### Level of current coverage through WBCSD SPA (low)

Covered indirectly under partnership projects with FRESH's Sustainable Proteins workstream, but not directly addressed by WBCSD SPA workstreams

#### Recommended individual company actions

- Source feed responsibly across the value chain (e.g., using zero deforestation or land conversion commitments or policies and by sourcing local feed crops where possible).<sup>69 70</sup>
- Use circular methods to encourage downcycling in animal feeds (e.g., use of waste and co/by-products that are no longer fit for human consumption).<sup>71</sup>
- Invest in innovation to develop new feedstocks that reduce the release of methane from ruminants (e.g., algae, single cell proteins and seaweed or the use of feed additives to improve feed conversion).<sup>72 73</sup>
- Improve the health of animals to achieve higher feed conversion (e.g., by developing vaccines to improve the microbiomes of animals' guts or by improving the alignment between animal genetics, animal nutrition and farming practices).<sup>74</sup>
- Improve animal health by maintaining animal hygiene, using phase feeding and meeting nutritional needs with essential amino acid and vitamin supplements.<sup>75</sup>
- Avoid the overuse of antibiotics in animals, particularly within healthy animals, to avoid animals developing antibiotic resistance.<sup>76</sup>
- Take action to improve animal welfare (e.g., through the elimination of close confinement, the avoidance of long-distance transport, or by making commitments to avoid routine mutilations and growth-promoting substances).<sup>77</sup>



## SUB-ACTION AREA: Use regenerative livestock practices



### Level of current coverage through WBCSD SPA (Low)

Covered indirectly under partnership projects with FRESH's Sustainable Proteins workstream, but not directly addressed by WBCSD SPA workstreams

### Recommended individual company actions

- Manage livestock on pasture lands using management techniques that increase organic soil carbon content (e.g., grass-fed cattle, better paddock management or use of silvopasture<sup>78</sup>).<sup>79</sup>
- Use land that is less suited for growing food directly for human consumption to manage livestock.<sup>80</sup>
- Increase ecosystem, species and genetic diversity through livestock diversification.<sup>81</sup>
- Use improved manure management techniques and organic fertilizers to reduce emissions from livestock (e.g., by providing digesters to convert manure into methane for energy use or use manure as a fertilizer).<sup>82 83</sup>
- Develop nitrification inhibitors that farmers can either spread on pastures or feed to animals to reduce emissions from manure left on pastureland.<sup>84</sup>
- Use integrated crop-livestock systems to improve production efficiency and nutrient cycling and minimize the negative impacts of intensive farming.



### 3: Avoid damage to and promote the restoration of natural ecosystems

Current food and agricultural systems are a significant driver of nature loss as a result of land conversion and reduced biodiversity associated with

intensively managed systems. Companies should consider how they can work across their value chains to ensure that they are protecting nature and promoting sustainable intensification and sustainable expansion, thereby avoiding further conversion of natural ecosystems. Companies

should reduce biodiversity and nature loss, setting transparent and conversion-free supply chains and working with suppliers to ensure they source key commodities sustainably, seeking to enhance climate resilience across production systems.

#### SUB-ACTION AREA:

Monitor, protect and restore nature across the value chain



#### Level of current coverage through WBCSD SPA (high)

Currently covered under:

- Soft Commodities Forum
- Nature Action Project
- Soils Investment Hub
- Nature-Positive Production Systems
- GAA-EL's Sustainable Landscapes workstream
- The Sustainable Rice Landscapes Initiative

#### Recommended individual company actions

- Set transparent and conversion-free supply chain commitments to ensure sustainable sourcing and use data and technology to enable greater visibility and traceability to assure these commitments.<sup>85</sup>
- Avoid investing in and expanding production into natural habitats and areas that have a high potential for biodiversity, carbon sequestration or other ecosystem services (e.g., peatlands). Undertake high carbon stock (HCS) and high conservation value (HCV) assessments before clearing land for production.<sup>86</sup>
- Commit to a net-positive impact on biodiversity and nature in new projects.<sup>87</sup>
- Use integrated, multi-sectoral landscape approaches to understand and prioritize the multiple objectives of different stakeholders for new developments and avoid unwanted trade-offs.<sup>88</sup>
- Engage with producers to invest in and accelerate the uptake of sustainable production practices for critical commodities in high-risk areas (areas with high value conservation habitats; e.g., by increasing yields on existing lands or developing financial and non-financial incentives to avoid the conversion of high-value habitats).
- Adopt nature-based solutions (NbS) at the farm and landscape scales to enhance the capacity of smallholder farmers to manage climate risks<sup>89</sup> and build resilience to environmental and weather-related stresses (e.g., through agroforestry, integrated water management, and forest management).<sup>90</sup> It is necessary to empower smallholder farmers and local communities and ensure they contribute to decision-making and can share the benefits associated with such schemes.<sup>91</sup>



#### 4: Leverage technological innovation to support changing farming practices

Technology and innovation, including anything from digital advisory services to better varieties and farm mechanization, has a critical role to play in helping to improve farming practices and the efficiency of input and resource-

use processes. Companies should support the enabling environment to enhance the provision of digital advisory services for smallholder farmers, for example by improving access to agronomic and market information to support better decision-making at the individual farm level. Leveraging different types of technology is important to improving farm productivity

and promoting more efficient use of resources and inputs, helping smallholder farmers improve incomes and reduce emissions. Actions to support the enabling environment include engaging in advocacy activities and developing new partnerships that work to connect smallholder farmers to new technological resources and innovations.

#### SUB-ACTION AREA:

Enable greater access to digital advisory services for farmers



#### Level of current coverage through WBCSD SPA (high)

Currently covered under:

- Transformation Enablers
- Just Rural Transition Investor Partnership Network

#### Recommended individual company actions

- Engage in advocacy work to encourage investments from the public sector (e.g., using public-private partnerships to develop the enabling environment that is necessary for the delivery of new technology and innovations).<sup>92</sup>
- Develop new partnerships with actors across the public and private sectors to support the deployment of technological solutions and innovations for smallholder farmers. This could include supporting start-ups, developing public-private partnerships (PPPs) or working across sectors to facilitate the delivery of and access to solutions.
- Improve access for smallholder farmers to precision agricultural solutions that provide real-time data to help them to make more informed decisions based on inter- and intra-field variability or on the health and welfare of livestock, to optimize the use of inputs (e.g., drip irrigation or using in-field sensors and monitoring devices to make more efficient decisions on when to apply inputs).<sup>93</sup>
- Improve smallholder farmer access to agricultural extension services that provide tailored information on best management practices to help them maximize their output, improve quality, and increase revenues (e.g., agronomic or livestock management techniques).<sup>94, 95</sup>
- Improve smallholder farmer access to better data infrastructure and farm management systems (e.g., improving access to rural broadband to improve their ability to access useful information on pricing or providing mobile applications with real-time weather or pest and disease monitoring assessments).<sup>96</sup>
- Invest in and support the development of digitally enabled solutions to improve data availability on the origin and traceability of products and their social and environmental impact across supply chains (e.g., partnering with suppliers to develop the necessary digital infrastructure to provide information on the origin of products).<sup>97, 98</sup>
- Invest in improving access to technologies that help smallholder farmers reduce energy use or labor costs. This could include providing sources of renewable energy production on farms (including solar photovoltaic (PV) panels and wind turbines) or automation tools such as robotic harvesting.<sup>99</sup>
- Support smallholder farmers in the use of digital platforms to facilitate better information sharing between farmers (e.g., through participatory peer-to-peer information sharing platforms).<sup>100</sup>
- Support smallholder farmers with upfront investments across digital services given the high upfront costs and potential longer term payback.
- Take a co-creation and farmer-centric approach to developing new technology and innovation to ensure it is user friendly, accessible and meets the requirements of smallholder farmers.<sup>101</sup>

# 7 Scaling collaborative action towards 2030 and 2050





# ⑦ Scaling collaborative action towards 2030 and 2050

This Roadmap presents a range of transformational targets, action areas and business-led solutions to scale individual and collective action to deliver a transformative agriculture system by 2030 and 2050. We have focused action areas on where the sector, together with partners and other agriculture players, can maximize positive impacts while minimizing negative effects by sharing best practices and accelerating process, technology and partnership innovation. With the understanding that concerted action is indispensable for success, we identify the impact opportunities for food and agriculture companies to prioritize action along the value chain.

It is a call to action to food and agriculture value chain companies to work with producers and wider stakeholder groups (such as NGOs, industry associations and governments) to come together to accelerate food system transformation – which is critical to realizing the sector’s contributions to the SDGs and achieving the Paris Agreement.

## A CATALYST FOR IMPLEMENTATION

The Transformative Agriculture chapter of the Food and Agriculture Roadmap provides further prioritization for the development of solutions led by food and agriculture companies, individually and collectively.

In the coming months, our Scaling Positive Agriculture project and its members will integrate the outcomes of this Roadmap and adapt their workplan as follows:

- Identify gaps in the current coverage of the SPA workplan against this Roadmap and explore opportunities to further collaborate in these areas;
- Leverage existing workstreams within SPA, GAA-EL and Nature Action to advance collaborative work on the action areas included in this Roadmap; and
- Enhance dialogue and encourage stakeholder groups, including investors and policy-makers, to develop supportive actions and frameworks.

Ultimately, we expect that this will enable Scaling Positive Agriculture to:

- Help companies strengthen performance to resolve risky, material priorities to improve their individual sustainability performance and advance business-led solutions identified within the Roadmap, as well as deliver on WBCSD member requirements for climate and nature;
- Catalyze collaboration partnerships and innovation across the agriculture value chain and beyond to scale the impact of the collective “game changing” solutions identified in the Roadmap; and
- Drive solutions that can achieve transformational change across the food and agriculture system, focusing on key policy, finance, technology and innovation enablers, and advance individual solutions identified within the Roadmap.

The impact opportunities identified in the Transformative Agriculture Chapter of the Food and Agriculture Roadmap reinforce the need to accelerate SPA’s work program, which focuses on shifting agriculture to be a net GHG emissions sink and a regenerator of nature, and ensuring the resilience of producers. Furthermore, SPA leverages and actively collaborates with our other programs and projects underway (e.g., Natural Climate Solutions, Nature Action, Redefining Value and Advocacy and Policy) and with leading external partners where we are driving elements of this Roadmap forward. WBCSD projects align well with each other, including those that address similar themes and levers for transformation. For example, SPA (as delineated in Chapter 2 of this Roadmap) addresses technology and innovation within the context of climate advisory services, precision agriculture, and other productivity-enhancing aspects, which complements GAA-EL’s efforts to ensure that the development and uptake of technology and innovation enhances equity and improves livelihoods.

We articulate the collective actions in five key areas generating value for member companies:

**Figure 3:** WBCSD Value Impact Framework



### ENCOURAGING PROGRESS

SPA will continue to work with member companies on direct collective actions – such as collaborating directly with farmers and producers to strengthen resilience in the agriculture system and implementing collective landscape approaches to deliver sustainable land-use commitments – in alignment with the priority action areas to support and demonstrate inclusive stakeholder leadership to achieve the food system transformations required. We will also continue to support the enabling of collective actions that scale positive agriculture investments and the standardization of metrics that further support the priority action areas.

We will ground these in the work that each individual member company is already conducting by publicly reporting on its sustainability commitments and performance in accordance with internationally recognized reporting practices and standards.

### STAKEHOLDER DIALOGUE AND ADVOCACY

We and our members will leverage the Roadmap across various engagement platforms to enhance dialogue, identify new partnerships that can help drive implementation, and promote the adoption of supportive financial and policy mechanisms.

We will strategically employ elements of the Roadmap at key milestone events during 2021 to highlight the importance of a progressive private sector in delivering food system transformation and help influence the policy process to create the enabling environment for positive change. These events include:

- Pre-event in preparation for the United Nations Food Systems Summit (FSS)
- IUCN World Conservation Congress
- Convention on Biological Diversity
- UN Food Systems Summit

- 26<sup>th</sup> Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP26)
- 15<sup>th</sup> Conference of the Parties to the United Nations Framework Convention to Combat Desertification (UNCCD COP15)
- Race to Resilience Dialogues
- Race to Zero Dialogues

The Roadmap will serve as a foundational element for our leadership and engagement in each of these events. We also hope that it will focus and inspire the broader private sector to take action where it counts the most.

### CONTACT

You can find more information, contact details, the latest updates on progress on the Roadmap’s level of implementation and further details on the business examples outlined in this Roadmap at [barbe@wbcsd.org](mailto:barbe@wbcsd.org).



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This report has been developed in the name of WBCSD. Like other WBCSD publications, it is the result of a collaborative effort by members of the secretariat and senior executives from member companies. A wide range of members reviewed drafts, thereby ensuring that the document broadly represents the perspective of the WBCSD membership. Input and feedback from stakeholders listed above was incorporated in a balanced way. This does not mean, however, that every member company or stakeholder agrees with every word.

## ABOUT SPA

Our ambitious Scaling Positive Agriculture project (SPA) aims to transform global food systems by maximizing the potential of agriculture as a solution for climate, nature and farmers. The project focuses on three priority pathways where business can provide real solutions: 1) climate positive – shifting agriculture from a net source to a net sink of GHG emissions; 2) nature positive – shifting agriculture from being the main driver of nature loss to a regenerator of nature; and 3) farmer positive – strengthening agriculture's role in supporting resilient, productive farming and food-producing communities.

## ABOUT GAA-EL

The Global Agribusiness Action on Equitable Livelihoods project (GAA-EL) supports the implementation of the CEO Guide to Food System Transformation by strengthening the contribution of agribusiness to building resilient livelihoods and strong rural communities at the heart of a sustainable food and agriculture system. GAA-EL works with companies across the value chain on production-level challenges to: 1) improve access to markets; 2) respect and promote human rights; and 3) promote inclusive innovation and technology. GAA-EL builds on achievements made by the Global Agribusiness Alliance from 2016-2020.

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WBCSD is a global, CEO-led organization of over 200 leading businesses working together to accelerate the transition to a sustainable world. We help make our member companies more successful and sustainable by focusing on the maximum positive impact for shareholders, the environment and societies. Our member companies come from all business sectors and all major economies, representing a combined revenue of more than USD \$8.5 trillion and 19 million employees. Our Global Network of almost 70 national business councils gives our members unparalleled reach across the globe. WBCSD is uniquely positioned to work with member companies along and across value chains to deliver impactful business solutions to the most challenging sustainability issues. Together, we are the leading voice of business for sustainability: united by our vision of a world where more than nine billion people are all living well and within the boundaries of our planet, by 2050.

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