

# FOOD & AGRICULTURE

Food and agricultural systems are clearly failing. Creating structural change within them will contribute to solving several of the world's most pressing issues, from climate change to human health.

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## A BROKEN SYSTEM

Food systems are at the heart of the environmental and social sustainability challenges that the world faces. The World Bank believe “healthy, sustainable and inclusive food systems are critical to achieving the world’s development goals”, pinpointing agricultural development as a “powerful tool” to end extreme poverty, boost prosperity and feed our growing population.<sup>[1]</sup>

The earth’s resources are finite, and the demand

for food is ever increasing as populations grow. Unless there are dramatic changes, our food systems will further increase greenhouse gas emissions (already accounting for a third globally) and put increasing strain on biodiversity. At the same time, 33% of food is wasted globally and over 2 billion people are overweight, yet 1 in 5 deaths are due to poor nutrition. <sup>[2]</sup>

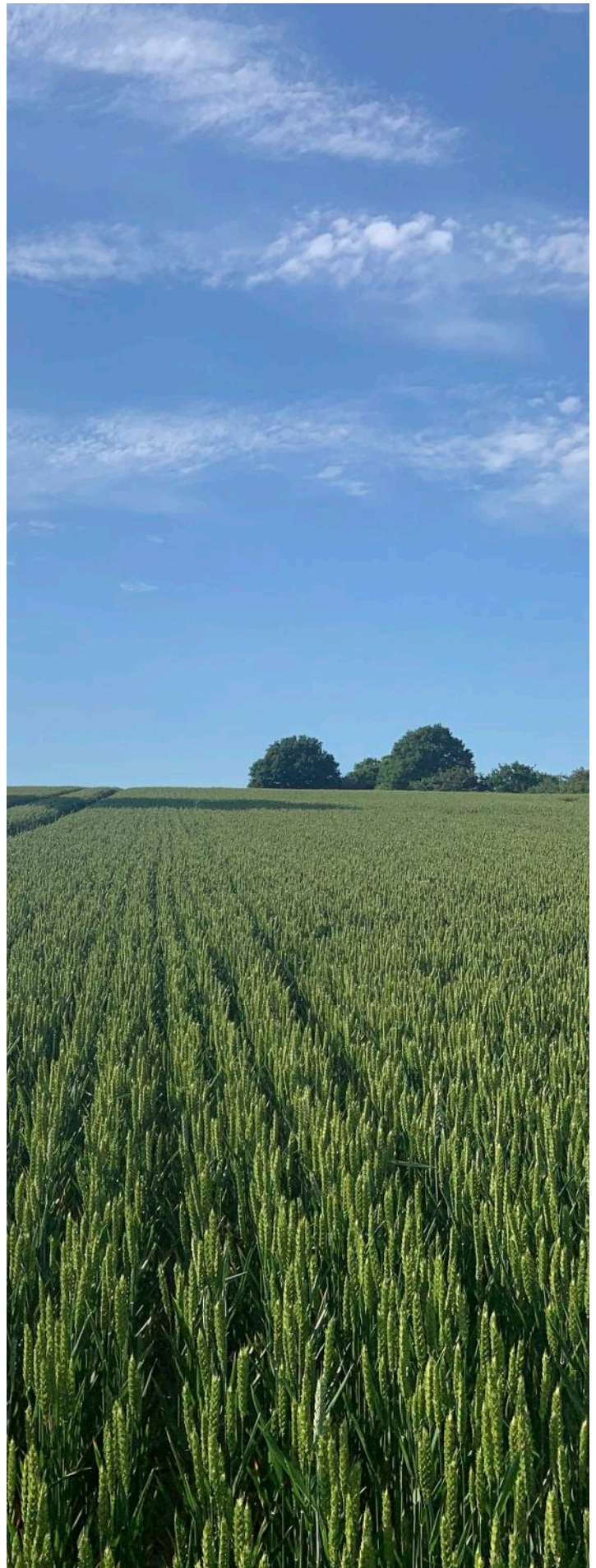
The Russian invasion of Ukraine put food

systems back into the headlines and further highlighted some of these structural issues. Known as one of the world's breadbaskets, the conflict has severely exacerbated pressure on food supplies and prices. Pre-war, Ukraine represented about 15% of global corn exports and 10% of wheat exports, post-invasion exports fell by 90%.<sup>[3]</sup>

In 2022, the United Nations (UN) Food Price Index averaged 14.3% higher than it did in 2021.<sup>[4]</sup> Yet, the challenges posed by the current supply constraints may prove to just be a small taste of what is to come.

Long-term structural changes are required to feed a growing global population whilst adapting to a changing climate. Put simply, we need to produce more food using less resources whilst making access to nutrition more equitable, as addressed by UN Sustainable Development Goal 2 (Zero Hunger).<sup>[5]</sup>

The Eat-Lancet Commission saw 37 leading scientists from around the globe come together to answer the question whether we can feed a future population of 10 billion within our planetary boundaries. The answer was yes, but not without transforming eating habits towards a more plant-based diet, improving food production and reducing food waste.<sup>[6]</sup>





# CHANGING CONSUMPTION

There needs to be a global shift to diets that are increasingly plant-based to limit the reliance upon animal-sourced foods. This is a particular issue for wealthier countries where there is excessive consumption. But this must also come with understanding that in other contexts populations remain reliant on agropastoral livelihoods and animal protein. On the production side, agricultural priorities should be reorientated from producing the highest quantities of food to producing a diversity of foods which will be better for both human health and biodiversity. Quantity can then be increased by improving crop yields and being more resource efficient whilst reducing waste along the supply chain.

The themes highlighted above are ones that portfolios currently have relatively less exposure to versus other themes such as clean energy. However, it is one where we are seeing exciting investable opportunities to create positive social and environmental outcomes as new practices and technologies are developed. Alongside this, there is favourable regulation, a greater awareness of health post-Covid 19, and a greater appreciation for food security. The consumer is also increasingly aware of what they eat and where it comes from. This trend is driven by younger generations and will only accelerate as they rise in influence.

Livestock farming forms the largest component of GhG emissions that come from the food system. Aquaculture is a source of protein that has a much smaller carbon footprint and is healthier for humans. One way



of determining this is the feed conversion ratio, how much soy/corn is required to yield 1kg of meat. For beef or lamb, this could be up to 7-8 times, but for salmon it can be as low as 1.2 times.<sup>[7]</sup> Our portfolios do have small exposure to this more sustainable but traditional source of protein.

Alternative meat and dairy producers have struggled in the last couple of years from an investment standpoint (noting Beyond Meat and Oatly's 60-70% share price decline over the last twelve months). Inflation has squeezed company margins at a time where the barriers to entry for competitors are very low. Market penetration has also been slow, and in a time where people are struggling with the cost of living, they may be less inclined to try a more expensive plant-based alternative. Other forms of alternative protein, such as lab-grown meat, are still in their early phases and are not yet investable in the public markets. However, in the longer term, it is anticipated that alternative proteins will have an important part to play in the transition to healthier and more sustainable food systems. It is worth noting the potential ethical concerns some clients may have to areas such as lab-grown meat, which will need to be considered





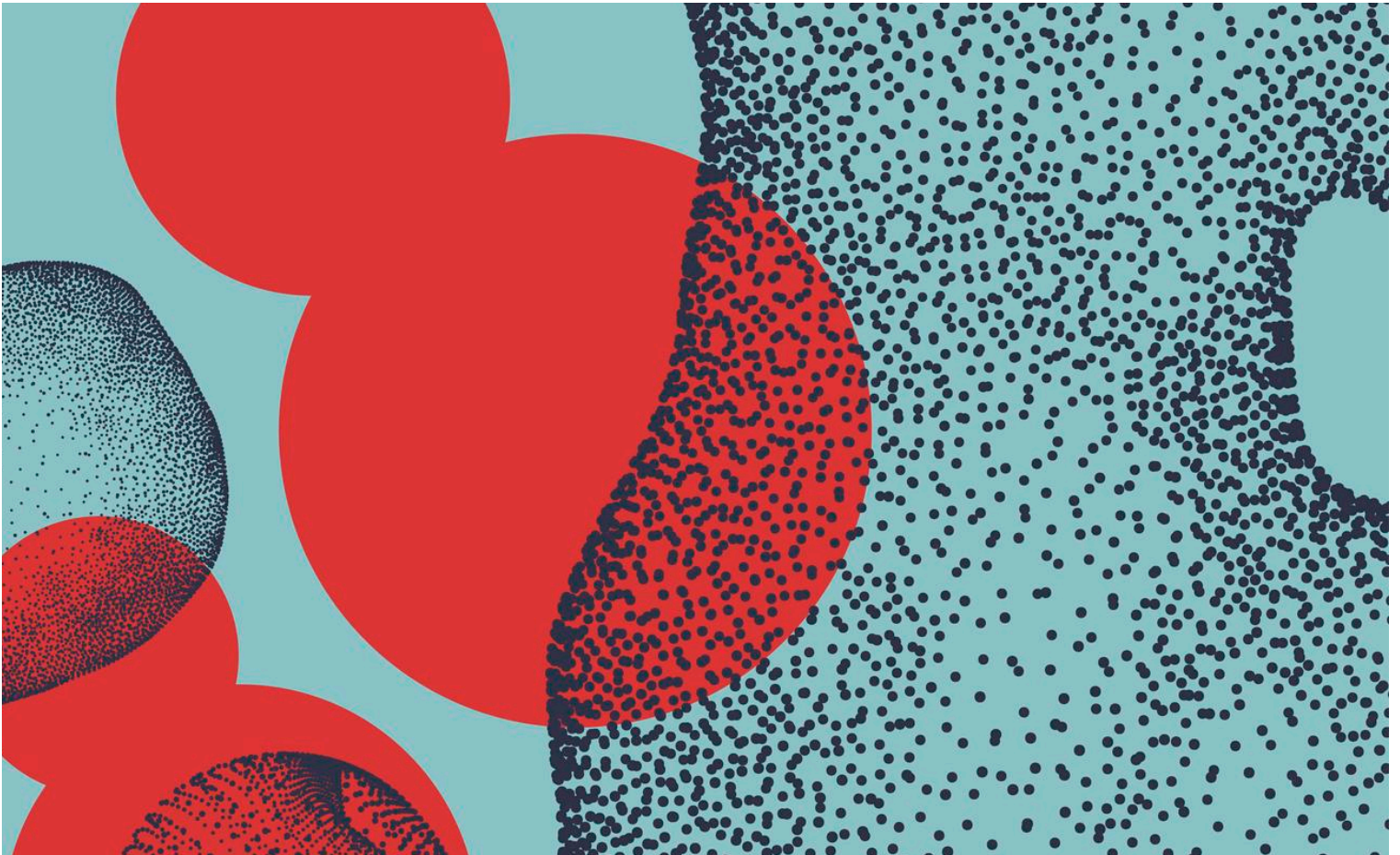
# THE FUTURE OF FARMING

Agriculture is undergoing its greatest transformation since the Green Revolution of the 1970s as farmers embrace digitisation and smart farm equipment. Precision farming technology can enable lower greenhouse gas emissions, lower water intensity, better land use and more effective chemical application. For example, companies have been exploring the use of machine learning and AI. By combining aerial imagery, remote monitoring and diagnostics, farmers can improve the speed, accuracy and efficiency of crop management. This would reduce resource intensity on natural capital such as freshwater, which the agricultural sector currently accounts for around 70% of withdrawals globally.<sup>[8]</sup> The adoption of technology can make the agricultural sector more efficient and productive, enabling more to be produced from less.

Vertical Farming is a new way of farming that incorporates technology to potentially revolutionise the sector further. Crops are grown in vertically stacked layers, within controlled environments, with the potential to grow the same amount in 4 acres than it currently takes within 1000 acres.<sup>[9]</sup> They would also require 98% less water, be renewable energy powered and extend produce shelf lives compared to conventional farming methods. Conceptually, these methods would also enable the growing of produce in regions where it is difficult to do so through conventional methods, such as countries like Singapore. This would bring food supply closer to consumption and enable more equitable distribution.

Digitalisation is not just taking place in agricultural production but in the processing and delivery of food. This trend had been established before the pandemic but accelerated through it given the changes people were forced to make to their everyday lives. Software and automated warehouse solutions have the potential to enable online delivery without stores. Using AI, robotics and automation in processes, labour costs would be reduced and efficiency would be enhanced. This would reduce the cost of food for the end consumer whilst reducing the amount that is wasted. However, as automation continues to drive progress, labour rights of workers should remain of utmost concern. In this context, certain tech names at the fore of automation, are often in the headlines for poor treatment of workers, including Amazon who were recently fined for failure to keep workers safe in three US warehouses.<sup>[10]</sup>





## BIO-SCIENCE AND AGRICULTURE

Biosciences are another essential to improving human health and reducing the impact of food production. Client's portfolios have exposure to companies who produce human nutrition products such as the ingredients for alternative proteins and supplements to reduce fat and sugar contents of food & drink. They also offer animal nutrition products that improve the health of livestock and the efficiency of their farming. These include specialty feed and chemicals to reduce antibiotic use and methane emissions. Furthermore, farmers currently depend upon synthetic fertilisers to deliver high crop yields, production of which relies upon natural gas or coal and exposure to volatile commodity prices. The vulnerability of this was further highlighted after the invasion of Ukraine and has added further incentive to find alternatives.

Heavyweights in the agricultural sector, alongside start-ups, are developing solutions that include microbes and recycled organic waste to boost crop yields and reduce dependence on synthetic fertilisers.

Food and agricultural systems are clearly failing. Creating structural change within them will contribute to solving several of the world's most pressing issues, from climate change to human health. Some progress is being made in both final consumption and production of food, the two areas that most impact human health and environmental sustainability. As progress continues to be made, we anticipate more investable opportunities in the public markets that will enable portfolios to further drive positive outcomes for our future.



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## References

- [1]<https://www.worldbank.org/en/topic/agriculture/overview>
- [2]Fact sheets - Malnutrition (who.int)
- [3]Ukraine war is leading to a global food and energy crisis | World Economic Forum (weforum.org)
- [4]FAO Food Price Index | World Food Situation | Food and Agriculture Organization of the United Nations
- [5]<https://sdgs.un.org/goals/goal2>
- [6]EAT-Lancet\_Commission\_Summary\_Report.pdf (eatforum.org)
- [7]How much feed is needed to grow a farmed fish? - Skretting
- [8]Water in Agriculture (worldbank.org)
- [9]Fischer Farms – The Future of Farming
- [10]Exclusive: 'I Feel Like I'm Drowning.' Survey Reveals the Toll of Working For Amazon (msn.com)