



What's next for Agriculture?

Business at OECD (BIAC) Food and Agriculture Committee suggestions for shared action agenda for agribusinesses and governments.

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Contents

Introduction	3
Stoctaking	3
Sustainable agriculture	4
Agriculture productivity and innovation in the food & beverage industry	5
Digital applications in agriculture	6
Food security, including food loss and waste	8
The contribution of international trade in agriculture and the food & beverage industry	9
Conclusion: towards a shared action agenda	11

Introduction

At the November 2022 OECD Meeting of Agriculture Ministers (AGMIN), held under the theme of Building Sustainable Agriculture and Food Systems in a Changing Environment: Shared Challenges, Transformative Solutions, *Business at OECD* (BIAC) had contributed by producing a synthesis report as part of its Peace for Food campaign, an initiative involving farm groups and agribusinesses that operate upstream and downstream in the food supply chain to identify actions that the private sector can take on its own, in partnership with governments and other stakeholders and in response to specific policy changes. Through participation in numerous public discussions and organization of stakeholder dialogues, *Business at OECD* has remained proactive in the field of food and agriculture.

This “What’s Next for Agriculture” insights report prepared by *Business at OECD* builds upon our previous contributions and explores further the practical actions that can be undertaken to enable more sustainable, productive and resilient food systems. Taking stock of the current situation in agriculture markets and the outcomes of the AGMIN, our report provides for a shared action agenda for agribusinesses and governments.

Stocktaking

In recent years, international markets for food and agriculture have been under pressure due to several unprecedented factors, such as COVID-19 and the subsequent supply chain disruptions caused by lockdowns, severe weather abnormalities and the Russian invasion of Ukraine and its side effects—such as price spikes for energy and fertilizers.

The need for a concerted effort toward public and private cooperation has never been greater in such a context. In fact, such cooperation has already been called for in the AGMIN Declaration. Collaboration between the state, private sector, and non-state actors such as NGOs should be ensured, and projects for sustainable agriculture cooperation should be developed in this regard with the recognition of agri-food as a sector of strategic importance.

In particular, more state support toward small and medium-sized enterprises (SMEs) would prove beneficial. Supporting local producers with purchase guarantees, developing programs to direct and attract young farmers to agriculture, informing them about agricultural technologies and promoting sustainable agriculture are possible modes of support.

Other measures and solutions the public sector can contribute to include continuous monitoring and analysis of risks and barriers that the agri-food sector is faced with, financial support toward innovation and digitalization studies to increase productivity and reduce food waste/loss, development of ‘crisis’ trigger mechanisms allowing for immediate flexibility in case of supply chain blockages and shortages, reduction of dependency on fossil fuels coupled with simultaneous fiscal stimuli toward the development of alternative solutions, and provision of storage, storing and packaging facilities.

At the international level, states must become more proactive and increase their leadership to create ideal market opportunities for agriculture. A key asset that could be better utilized is the Agricultural Market Information System (AMIS). The system would prove more reliable and robust if more countries opted into providing data. Additionally, its transparency can be improved—urging participant countries to provide complete information about their stock levels would be critical to a more successful analysis of world supply availabilities.

Securing global food security for future generations requires food systems to transform and unite the concepts of food security, productivity and sustainability. By prioritizing what's next for agriculture, we can progress together toward increased food security for all—in the present and the future.

Sustainable Agriculture

While strengthening the sustainability of agriculture is crucial to competitiveness and holds significant implications for economic and social development, doing so has become increasingly difficult due to the increasing impacts of climate change and because more effort is now needed to prevent damage to ecosystems and biodiversity. We need a swift transition towards more sustainable food systems, and we can do so only if engagement is initiated by all actors, public and private, throughout the food supply chain and beyond, through multidisciplinary partnerships at national, regional and global levels. A paradigm shift is needed, beyond “business as usual,” with sustainability at the forefront.

Migros, a food retail company with 77% of its turnover based on agriculture, identifies sustainable agriculture and food protection as some of its focus areas. In Türkiye, it has been partnering with the Ministry of Agriculture and Forestry to encourage producers and farmers to adopt Good Agricultural Practices (GAP) since 2010. Furthermore, it is expanding regenerative agriculture practices that contribute to reversing climate change by restoring the organic content of the soil and its biodiversity. For example, its M Life Raw Hazelnuts are the first Rainforest Alliance-certified private label product, adhering to the Alliance's regularly audited certification program that advocates for land management methods that fight deforestation and increase carbon storage. In addition, by developing a business model that prioritizes the sale of locally sourced products in the same region, Migros encourages that products are consumed in the location where they are produced and thus contribute to the local economy.

Pınar Dairy provides technical support to farmers for sustainable dairy practices under “The Future of our Milk is in Safe Hands Project,” which reached more than 8,000 dairy farmers in 14 provinces of Türkiye in 2021. The company's Pınar Institute, established in 2013 to raise public awareness of food, health and nutrition issues along with an understanding of social responsibility, has been carrying out the project since 2014. In 2021, the project cooperated with the Business Call to Action (BCtA) platform supported by the United Nations, aligning its activities and social impact research with the UN Sustainable Development Goals. Additionally, to support dairy farmers, increase their know-how, encourage correct animal husbandry practices and reach farmers in remote locations, Pınar Institute developed a mobile application called “Süt Uzmanı.” The “Süt Uzmanı” application aims to create a platform where all producers, including those not reached by the Institute's one-to-one trainings, can reinforce their knowledge and improve their practices.

The agri-food sector benefits immensely through cooperation with the public sector with regard to achieving sustainable agriculture. Without supportive market conditions, financial support and policy and regulatory frameworks in place, it will be unclear if farmers will remain sufficiently profitable and thus in production to deliver our overarching environmental goals. The United Kingdom's Agricultural Act of 2020 is a forerunner in this regard, as it outlines environmental measures for which the government may give support, such as managing land, water and livestock in a way that mitigates climate change or improves the environment. While the long-lasting effects of these measures are yet to be seen (which the OECD can play a role in through monitoring and evaluation), more states are encouraged to take proactive steps toward cooperation with the private sector in the context of sustainable agriculture.

BASF supports farmers around the world with its climate smart farming approach as part of its efforts to combat climate change. Digital solutions, carbon certification and Life Cycle Assessment competences, and products like seeds, crop protection and nitrogen management will help the farmers to reduce and sequester CO₂. Its Global Carbon Farming Program allows farmers to track and profit from such climate smart practices. In addition, BASF started a global research program on carbon sequestration under different practices with multi-year trials.

Agriculture productivity and innovation in the food & beverage industry

The agri-food sector is currently experiencing a lack of government support for advancement in scientific analysis and research. Public sector must work with the private sector to carry out detailed studies on both the physical production and the economic, social and environmental effects of the industry by building comprehensive models. Potential support could come in the forms of national/international cooperation developed through project calls by the public, research activities by multi-stakeholder institutions in collaboration with universities, working effectively in the fields of agricultural field practices, developing new types of seeds with high adaptability to the effects of climate change, conducting sustainable resource use projects, and providing information, informatics, communication and large-scale farmer education.

If the public sector takes proactive steps working in tandem with the private sector to invest and foster R&D, provide financial support and pioneer sustainable work and practices, we can create new technologies for farmers and manufacturers to enhance productivity and reduce environmental impact. As a case in point, when Pinar Dairy transformed its R&D Department into a government-approved R&D Center in January 2017 and expanded its investment in R&D, it was able to introduce several innovative products and packaging solutions to the industry. In 2021, it launched 19 new products and 34 new product packaging materials; in 2022, it launched nine new products and 22 new packaging materials. Such innovations have resulted in reduced packaging materials and CO₂ emissions for Pinar.

Several other methods can also be taken to improve productivity in the food and beverage industry, such as the digitalization of agricultural systems, maximization of traceability, use of efficient systems in agricultural irrigation and provision of energy from renewable sources.

Raising awareness and accessibility of such methods at a local level to small producers would also be critical to such innovative measures' long-term sustainability. Agritech is another promising area of research, as it can point to several enhanced abilities regarding productivity and sustainability, such as predicting pest infestation and thereby executing precise application of crop protection products, using biostimulants to minimize water consumption and inducing healthier crop, and building an integrated pest management program using pheromones.

In addition, as the effects of climate change become more visible in terms of increased unpredictability of weather patterns, extreme weather events, generally rising temperatures and water shortages, the development of resilient plants more capable of adaptation must be a priority. Rather than GMOs, which are long-winded to develop and lack social acceptability, a crucial development may be gene editing. Although it involves using novel techniques that are still being developed, gene editing carries substantial potential as the next step in biotechnological innovation. Issues that can potentially be addressed through this method include increasing drought tolerance, generating nitrogen as leguminous plants do (to reduce the need for external fertilizer applications), knocking out disease or pest vulnerabilities and improving food quality by suppressing particular genes. However, this work requires, again, public-private cooperation to develop the new varieties needed and the techniques for their cultivation.

Digital applications in agriculture

By promoting digital technologies in agriculture and agribusinesses, a more sustainable, resilient and productive food system can be built for subsequent generations. Digitalization is key to several aims shared by both the public and private sectors regarding agriculture—improving productivity, reducing food loss or waste, improving profitability on small and remote farms and reducing pesticide, fertilizer and/or water use.

Data collection can easily be helped by digital innovation. Using technologies such as the IoT, cyberphysics systems and sensors, we can expand our scientific database about the food systems we operate, extracting valuable lessons to be learned. In addition, we can valorize and make full use of such information we collect through innovative methods involving big data, digital twins and cloud systems. With data collection, appropriate measures of data standardization such as EPPO codes, BBCH, field ID and ISO food standardization initiatives must also be initiated between the public and private sector.

Agricultural processes improvement is another field with great potential when coupled with digital applications. For example, using drones and AI for precision farming can reduce the need for field-scale spraying of pesticides and general fertilizer applications, contributing toward regenerative agriculture. Moreover, robotics will be important in developing machinery to replace manual labor for labor-intensive areas, as many countries have aging agricultural workforces

Furthermore, a form of digital development proven useful in East African countries such as Kenya is the use of mobile phones and electronic payment systems to enable access to timely and accurate market prices. Kenyan fishermen can now use such technology to identify which port markets offer the best prices, thereby optimizing their fish sales. More widespread adoption of this technology will improve farmers' ability to market their produce efficiently and raise returns.

Migros has been supporting the digital transformation of its farmers' production processes with the Digital Agriculture Stations Project launched in cooperation with Vodafone. By calculating soil and air moisture through 12 weather forecasting stations, it can create both economic and environmental benefits while helping producers to save water and energy. Additionally, as part of its Fruit and Vegetable Transparency Project, the company launched its Migros Blockchain Platform, which ensures that the production process of the food products it sells can be traced by its customers by scanning a QR code. Moreover, Migros is leading the work on the Turkish side of the 'Digitalization and Standardization of Product Data' Project initiated by the Consumer Goods Forum (CGF) by joining forces with GS1 Turkey and defining seven basic evaluation parameters for its branded products to the GS1 system.

Pinar Dairy implemented important projects for its IT infrastructure in 2021. It has commissioned the automation of several production and warehouse facilities, including the Şanlıurfa, Izmir and Eskişehir Factories. Pinar Dairy continues to support R&D activities regarding robot automation equipment and technologies.

Global food corporation Cargill launched the 1,000 Farmers Endless Prosperity Program in 2019, together with specialized institutions and organizations, to support the social and digital transformations of agriculture and popularize sustainable agricultural practices. The program provided support to more than 5,000 farmers in accessing and adopting digital soil analyses, agricultural sensors, satellite health monitoring and sustainability training. Cargill also continuously provides information on effective water and fertilizer use, carbon footprint, and zero waste management. As a result of these efforts, farmers have achieved a yield increase of more than 20% every year since the launch of the project.

Examples on the farm level, FMC's Arc™ farm intelligence platform uses real-time data and machine learning, including Probabilistic and Degree Day modeling, to predict the scope and scale of pest pressure up to a week in advance. This information is extremely valuable to growers' productivity and sustainability as it helps identify emerging hotspots, enabling them to apply crop protection products only when and where needed.

Conesa Group, the number one tomato processing company in Europe and fifth in the world, has been using the Arc™ farm intelligence platform to help Conesa Group tomato growers protect their crops from damaging insects like cotton bollworms and tomato leafminers while meeting the company's standards for the sustainable use of crop protection products.

BASF offers xarvio FIELD MANAGER, an advanced crop optimization platform (available in a smartphone app and desktop) that provides clear and timely agronomic recommendations for individual fields to improve yield, aid a more efficient use of resources, and reduce environmental impacts. The tool is highly cost-effective and includes features such as variable rate application (VRA) maps for nutrition, seeding and crop protection tasks.

Further effort is needed to enhance soft skills programs that complement digitalization and innovation processes in order to cultivate a well-qualified generation of farmers and agribusiness workers. Effective use of novel technologies without adequate training cannot be guaranteed.

Food security, including food loss and waste

According to the FAO, “45 countries, including 33 in Africa, 9 in Asia, 2 in Latin America and the Caribbean, and 1 in Europe, are in need of external assistance for food” as of March 2023. Many lower-income countries cannot afford to purchase food on the international market without international assistance, but food security is not an issue that exclusively plagues lower-income countries; higher-income country governments may also suffer from donor apathy and other financial obligations.

Simultaneously, we are witnessing continued inflation of food, energy and fertilizer prices since COVID-19. The latest AMIS assessment states that “with no end in sight to the war in Ukraine and threats of further escalation, uncertainty continues to hang over agricultural markets. Supplies are tight. Reduced plantings in Ukraine mean that other countries will need to produce additional grains and oilseeds to help rebuild global stocks and moderate price levels” and that “after experiencing sharp increases in the early months of the conflict, grain and soybean prices have returned to pre-war levels by the end of 2022. However, prices remain elevated and within the upper range of historical levels.”

A reliable international trading system is a prerequisite to building food security, globally but also domestically. Governments can aid in providing such a system by establishing a stable regulatory system that reduces uncertainty, investing in infrastructure like roads, bridges and ports, supporting R&D, increasing transparency in market conditions and policies and providing ongoing technical assistance. In addition, their support toward a robust, rules-based multilateral trading system and willingness to negotiate trade policies that reflect business needs will help agribusinesses build confidence in international trade and investment.

In addition, to maximize efficiency and prevent food loss and waste, we must ensure that essential inputs, agricultural commodities and food move predictably from where they are produced to where they are consumed without interruption. All food production processes, from the soil to the customer, should be monitored within the scope of end-to-end traceability and based on the principle that “what cannot be measured cannot be managed.” Systems must be established to identify disruptions in this chain that lead to food loss/waste, with necessary improvements made at the points of disruption.

Another important issue in food trade is ensuring that the closest possible locations are chosen in food transportation, minimizing the risk of spoilage of food during transport and emissions from logistics. Sourcing products locally as much as possible has multifaceted benefits such as the development of the local area and local producers, reduction of the risks of food loss and contributions to environmental sustainability. As we cannot entirely eliminate cases where food needs to be sourced from remote locations, improvements in logistics should be achieved through initiatives such as shared procurement, shared shipping, transportation and route optimization, thus bolstering industrial symbiosis.

In this regard, companies within the sector have launched various initiatives in recent years, such as improving supply chain planning, evaluating and advising suppliers of raw materials, encouraging responsible purchasing and advising customers in the store for proper product rotation. Companies have also launched projects that align with their own corporate social responsibility plans, among which we can highlight the increase in food donations.

Difficulties in obtaining credit limits a farmer's access to the newest agricultural technology and can push them closer to poverty and subsistence farming. To help address this credit problem, FMC Ventures recently invested in Traive™, a startup company that partners with distributors to automate the assessment of a grower's credit risk with a data-first approach. Traive is an open financial platform that connects the agricultural chain to the capital market using data and an innovative financial solution. In addition to the investment through FMC Ventures, FMC is conducting a pilot with Traive to support credit proposals for individual farmers in Brazil.

The collaboration of the public and private sectors holds great potential with regard to food security within the food value chain. Possible projects include the establishment of product collection centers for fresh produce and large-scale cold storage and packaging facilities, enhancement of qualification processes for personnel, improvement of logistic infrastructures to increase the share of rail and sea transport for suitable products with low time sensitivity, adoption of reference process models, performance indicators and common terminology, and development of risk calculation systems in logistics processes. In addition, governments should assist the private sector in publicizing the issue of food loss and waste. For instance, to prevent food waste, Migros has been raising consumer awareness about food consumption through infographic and video content, workshops, support for consumer perceptions and research, and innovative mobile applications. BASF has taken approaches to develop products that meet demands of both the value chain (e.g., longer shelf lives) and consumers (e.g., smaller fruit sizes) that have much increased potential of reducing food waste.

The contribution of international trade in agriculture and the food & beverage industry

While international trade can contribute positively to the relationships of the different stakeholders of the agri-food value chain if trade policies and regulations are well organized and information is well shared, certain trade-restrictive measures undermine its potential.

Export restrictions are one such measure; the WTO lists 68 export restrictions such as export bans, quotas and licensing that are currently applicable. The Russian invasion of Ukraine and the subsequent dramatic rise in world commodity prices have affected the most recent surge in the use of such restrictions, as many countries grew concerned about supplies of particular food commodities and wanted to reduce exports to conserve domestic availability, although more recently, their purposes have broadened to controlling domestic inflation as well.

For a transparent trading system, and to ensure that developing countries—particularly least-developed and net food-importing developing countries—are not unfairly impacted, restrictive issues should be very well evaluated, and fair and open trade policies should be promoted.

As export subsidies are now completely banned by the WTO, the equivalent use of export restrictions should be, if not banned, at least much more heavily discouraged than is the case currently. The WTO should help to ensure that countries using export restrictions “shall give due consideration to the effects of such prohibition or restriction on importing Members’ food security” as mentioned in Article 12 of its Agreement on Agriculture.

Additionally, a proactive trade and international partnerships agenda in agri-food will further strengthen the quality, affordability and sustainability of food and drinks worldwide. The agri-food sector could be included in discussions to drive the sustainable food systems agenda at the multilateral level (COP27, WTO, FAO, etc.) and dialogues with producing countries. States could also speed up Bilateral Free Trade Agreements and provide promotion support.

Public sector’s support is needed in building an integrated approach to improve the valorization of the agri-food chain. It is particularly relevant for states to promptly share relevant information about policies that may affect trade and markets for food and agriculture. WTO members should comply with WTO notification commitments and actively participate in other pertinent mechanisms for information exchange.

Conclusion: towards a shared action agenda

Even in the presence of drawbacks, we can build more sustainable, innovative and productive global food systems if the public and private sectors support each other. The presence of barriers, in fact, poses a more urgent need for increased public-private collaboration. Some essential methods of such collaboration we have identified in this paper are:

- Engagement in a swift transition towards more sustainable food systems through supportive market conditions, financial support and policy and regulatory frameworks.
- Increased investment toward R&D to enhance agriculture productivity and innovation in the food and beverage industry.
- Encouragement in adopting more digitalized practices in the agri-food sector and developing training systems to accompany such practices.
- Commitment to food security and preventing food loss/waste through methods of efficiency such as establishing regulatory frameworks, investing in logistical infrastructure, and adopting models, indicators and technology.
- Assistance in building and sustaining a reliable international trading system through mitigated use of restrictive measures, promotion of open trade policies and promptness in sharing information that may affect the international food and agriculture market.

The *Business at OECD* Food and Agriculture Committee will continue its advocacy for such an agenda that brings all actors—governments, businesses as well as international organizations—together toward a common goal of building a sustainable future in agriculture. In May, we will be holding our next Peace for Food Roundtable organized jointly with the OECD Istanbul Centre, during which we will explore opportunities to promote more sustainable, productive and resilient food systems.

In the meantime, we hope this short paper provides a valuable opportunity to reflect on the November Ministerial as well as key insights on what must be done next in agriculture to build resilient and healthy food systems for the world.



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