Sustainability in agribusiness : What is still in the works

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Annosi, Maria Carmela; Appio, Francesco Paolo; Brunetta, Federica

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Maria Carmela Annosi, Francesco Paolo Appio, and Federica Brunetta

Concluding remarks and what is still in the works

Sustainability is a key element in the agribusiness sector. The most relevant arguments for implementing sustainable management practices affect multiple levels of analysis; ecosystems (macro-level), organizations (meso-level), and individuals (micro-level) have all to make sure that their practices converge toward a more sustainable approach to agribusiness. Of particular importance is understanding how and to what extent changes and innovations in agribusiness can contribute to solve urgent societal challenges, accomplish the largest number of sustainable development goals, and leverage upon the most recent technological advancements.

Back in the 1950s, the term "agribusiness" was coined to identify and describe how the international and national pressures for internal development were driving transformations at the socio-economic and technological level (Ioris, 2018). It turned out that agribusiness gradually favored a short-term logic centered on legitimizing intensive agri-food systems and increasing financial gains over a long-term vision centered on nutrition and health (Ioris, 2018). With this Handbook, we hope to shed some light on this conundrum.

The relevance of agribusiness is evident in terms of values for international trade, output, and employment. The production of sufficient quantity and quality food to keep the population healthy is the main scope of the agribusiness sector. Companies operating in the agribusiness are extremely active in producing and commercializing food, with an increasing internationalization rate mainly targeting China, the United States, and Germany as top three markets by revenues. While this is a sign of a healthy and constantly revitalized operational and commercial apparatus, it is disconcerting that other fundamental properties of the agribusiness system, namely, nutrition, farmers' well-being, the preservation of traditional practices, and the biological equilibrium of the ecosystem, lose ground in favor of profit, lower costs, and consumer satisfaction imperatives (Ioris, 2018). It suffices to think about the quantity of food sold in plastic boxes, its low quality, the difficulties in tracking the activities and contributions of all the actors in the value chain, and an increasing level of pollution (e.g., Bajan and Mrówczyńska-Kamińska, 2020). Concerning the latter, the

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Institute for Agriculture and Trade Policy (IATP[1]) recently released a report on the environmental impact of the agri-food industry, concluding that "the top-10 emitters in the dairy and meat industries produce more greenhouse gases than many major OECD countries including Germany, Canada or France." The study compares the combined annual emissions of the five major meat and dairy emitters to the emissions of three major oil companies such as BP, Shell, and Exxon Mobil. Combined, the selected food companies (i.e., Cargill, Dairy Farmers of America, Fonterra, JBS-Friboi, and Tyson Foods) emit 573 million tons of greenhouse gases, which is more than any of the three oil companies. Accordingly, companies in the agri-food sector must work hard to decrease their emissions and support the effort against global warming.

It is not a coincidence that the EIT Food[2], a Europe's leading food innovation initiative having a challenging mission of building a future-fit food system that produces healthy and sustainable food for all, briefly identified and described these challenges as among the top five European food trends in 2022: (1) food systems will be a pivotal discussion and decision-making climate-change-related issue, especially in the run-up to COP27; (2) regenerative farming practices will be increasingly adopted by large-scale farms and corporations; (3) a growth is expected in the European alternative proteins market; (4) members of younger generations will increasingly be covering the roles of food activists and act as change agents; and (5) front-pack environmental labeling will be adopted by more brands in 2022. They all point in the direction of coming up with a more sustainable approach to agribusiness (e.g., Ioris, 2018; Pani et al., 2020; Spann, 2017; Joshi et al., 2020; Nasution et al., 2020; Dentoni et al., 2020). However, it is increasingly clear that accomplishing sustainability in the agribusiness sector is a challenge that both developing and developed countries are facing (Bajan and Mrówczyńska-Kamińska, 2020; Joshi et al., 2020). A closer look at the sectors shows that it is becoming increasingly complex, multifaceted, and has broad implications when it comes to achieve more sustainable outcomes. The main challenge resides in understanding to what extent this is happening, the multiple ways it can help addressing the sustainable development goals[3] (e.g., SDG 2 = zero hunger, SDG 5 = gender equality, SDG 8 = decent work, SDG 12 = responsible consumption and production, SDG 13 = climate action).

Nonetheless, notwithstanding the aspirations of policymakers, institutions, and consumers for environmentally friendly and socially viable methods of production, the question remains is agribusiness getting serious about sustainability. Although the quantity and quality of sustainable-oriented agribusiness are increasing, and preliminary results appear promising, sustainability for agribusiness remains a challenge (Malorgio and Marangon, 2021). In fact, a number of critical factors, such as technical inefficiencies, seem to constrain agribusiness to perform below the most sustainable options. Food preferences and habits of the end consumers (Linnemann et al., 2006) impact food waste and at the same time, suppliers and retailers are moving toward a long-term perspective, recognizing

that the longevity of their businesses is dependent on natural resource capital. As a consequence, it is clear that *all* agribusiness sector participants must "find new ways to reduce inputs, minimise waste, improve management of resource stocks, change consumption patterns, optimise production processes, management and business methods, and improve logistics" (Europe, 2020)[4]. Lack of transparency is another issue that plagues sustainable efforts, despite the effort in recognizing it as a pivotal element fostering conversation between suppliers and consumers. Thus, companies are making efforts to enhance transparency, for example, through corporate sustainability reporting, and joining programs such as the "Carbon Disclosure Project"[5] or the "Center for Food Integrity,"[6] whose mission revolves around improving the diffusion of information and consumer trust. Partnerships between science and industry are also drivers of accountability, transparency, and accuracy. According to a recently published BCG report[7], agribusiness can certainly lead the shift toward sustainability conditional to raise awareness and embracing new regulations to make the industry greener (e.g., European Green Deal, in particular, the F2F policy) and targeting the entire agriculture value chain; shift value pools in the industry exploiting opportunities provided by seed innovation, novel biological products, new formulations of conventional products; but also adopting a range of new digital services and tools helping farmers generate better results while reducing the amount of chemicals used, and rethinking business models by adjusting the portfolios of initiatives accordingly and placing a higher value on value rather than volume, which means that agribusiness success should no longer be conceived as stemming from the use of inputs such as fertilizer and the productivity of a given field through a nearly linear relationship. Farmers, indeed, have become more conscious of the environmental impact of chemicals, and they must maximize output per hectare while using lower chemical volumes. Aspects related to production optimization, waste minimization, and nutrition promotion, deployment of production systems capable of taking responsible care of natural resources, value creation and value sharing along the value chain, respecting workers', producers', and consumers' rights, acting in accordance with the law (national and international regulations and standards), investing in the development of small producers' capacities, and in the implementation of good practices for sustainable production at all level, are all aspects that still deserves urgent attention.

This Handbook helps explain how to reconcile multiple dimensions of contemporary agribusiness. Improving the sustainability of agribusiness endeavors means dealing with environmental and socio-economic issues. Furthermore, business model innovations are recognized as key drivers of sustainability. Also, the assessment of sustainable accomplishments in the agribusiness sector has oftentimes been carried out from a qualitative perspective, neglecting the important contribution quantitative indicators can provide. Then, interpreting the evolution of the agribusiness sector in embracing the sustainable paradigm requires the adoption of different lenses such as the societal challenges, technological advancements, and development goals.

Overall, we specifically tackled five research questions: How can we conceptualize the link between agribusiness and sustainability? What are the drivers and barriers for the agribusiness sector to become sustainable? Which business models can favor the implementation of sustainable goals? How can we measure the extent to which the agribusiness sector is becoming more sustainable? How can the agribusiness sector leverage recent technological advancement and pave the way to achieving the sustainable development goals? Each chapter provides a comprehensive answer to these research questions, opening novel research avenues and emphasizing (nonetheless) the importance of conducting more in-depth studies on the role of the sustainability pillars.

In this vein, we do hope inspiring academics engaged in innovation management, who are interested in the applications of these theories for the understanding of innovation and other performance outcomes; also, academics engaged in sustainability research, who are interested in understanding and deepening knowledge on solving important societal challenges through specific actions in the agribusiness sector; practitioners and managers in the agribusiness sector, coping with digitalization strategies and implementation. This will inevitably lead to an interdisciplinary academic effort, as well as an open debate between scholars around the world.

Notes

1 www.iatp.org/
2 www.eitfood.eu/
3 https://sdgs.un.org/goals
4 www.eea.europa.eu/policy-documents/a-resource-efficient-europe#:~:text=A%20resource%2Defficient%20Europe%20%E2%80%93%20Flagship,economy%20to%20achieve%20sustainable%20growth
5 www.cdp.net/en
6 https://foodintegrity.org/
7 www.bcg.com/publications/2022/agribusiness-and-the-shift-to-sustainable-farming

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