



Policy Brief

ENVIRONMENTAL SUSTAINABILITY OF FOOD SYSTEMS, GLOBAL FOOD SECURITY AND TRADE

Task Force 4

Food Security and Sustainable Agriculture

Pablo Elverdin (GPS)

Maranatha Bernard Ferryal (Indonesia Fertilizer Research Institute)

Joseph Glauber (IFPRI)

Nelson Illescas (INAI)

Sumardjo Gatot Irianto (Indonesia Fertilizer Research Institute)

David Laborde (IFPRI)

Valeria Piñeiro (IFPRI)

Martin Piñeiro (CARI)

Maria Rini Setia (Indonesia Fertilizer Research Institute)

Sitta Izza Rosdaniah (Ministry of State-Owned Enterprises of Republic of Indonesia)

Agustin Tejeda Rodriguez (Bolsa de Cereales Buenos Aires)

Abstract

The challenges faced by the global agri-food system are very complex. It must not only provide a sufficient nutritious food supply to meet growing demand, but it also requires managing environmental issues such as the impact of climate change, the pressure on natural resources, and the ecological sustainability of agricultural practices.

Climatic conditions and the endowment of natural resources required for the sustainable production of food and other agricultural products are not the same all over the planet. Some regions have clear agroecological advantages that allow the generation of more environmentally sustainable food production systems. For example, Latin America and sub-Saharan Africa represent 50 percent of the land suitable for crop production globally (FAO, 2011).

As a necessary condition, it is important to adopt sustainable production practices and new technologies in all producing regions. Several publications argued that improved farming practices could positively affect the mentioned challenges, optimizing crop productivity, reducing GHGs emissions, and improving soil health. Normally, certification schemes are presented as an opportunity to promote sustainable practices; however, such standards must integrate local knowledge, culture, and innovative technology. Many of these schemes are designed in the importing countries (whether public or private) and do not take into account the differentials in the environmental impacts of these practices and technologies.

But given the unequal distribution of global resources capable of increasing the production of food in a sustainable way, trade must play a fundamental role in maximizing the efficient use of natural resources and reducing the environmental impact of the global agri-food system while increasing the availability of safety and nutritious food. However, the proliferation of schemes confuses producers and consumers, and due to their cost, they make compliance by small producers unfeasible, which reduces the incentives for the incorporation of better agricultural practices.

In the context of shortages in the fertilizer markets, agri-food trade can also reduce the pressure on agricultural soils. Thanks to their quality and the technologies applied, some regions will be able to respond in a better way and partially reduce the impacts of fertilizer markets on agricultural production.

At the same time, world trade of agricultural products continues to be seriously limited by trade policies which could be worsened by new measures implemented by some countries. The disparity and lack of scientific evidence for the imposition of border measures undermine the search for a global and efficient solution to this problem. In this context, trade policy and regulatory uncertainties reduce the incentives for producers to innovate and adopt new technologies. The conflict in Ukraine, its direct impact on the global supply of food and fertilizers, and the self-imposed export restrictions on agricultural products by some exporting countries add new concerns to achieving global food security. In this context of great uncertainty and pressure over global food security, existing import restrictions based on measures with a limited

scientific basis will continue for the foreseeable future, at the same time trade and trade policy could not ignore the need to promote sustainable practices.

Therefore, the G20 could promote policies and measures to facilitate wider and easier access to validated information, promote sustainable food trade, demand scientific evidence in the application of measures, promote the harmonization of environmental sustainability standards in the agri-food systems, promote environmentally friendly technologies, and foster better farming practices in developing countries.

Challenges

In a scenario of population growth, the global food system has been able to increase production and outpace population growth, to meet a growing demand for food also associated with an increase in average per capita income, especially in developing countries (Illescas, Regunaga, & Tejeda Rodriguez, 2021).

Today, more than 811 million people are food insecure globally (FAO, 2021), and it is expected that the global population reaches 8,500 million people by 2030 (UN, 2021) with more than 650 million people still undernourished (FAO, 2021). These trends will challenge the response capacity of agri-food systems and show that there is an urgent need for action if the global community wants to achieve SDG2. At the same time, there are new challenges related to improving diets and nutritional quality of food, environmental sustainability and biodiversity, quality of life of farmers, and rural development. Food systems and public policies will have to evolve to meet these new multiple and interrelated objectives.

Uncertainty about food supply and prices in countries with huge populations, such as China, India, and Indonesia, will disrupt the stability of world food reserves and prices. At the same time, extreme weather events (droughts and floods) in some of the large net exporters, such as Argentina, Australia, Brazil, Malaysia, Thailand, and the United States, also generate uncertainty and instability. So, the global food crisis will increase in magnitude (intensity, frequency, and duration) if mitigation measures fail.

Therefore, the challenge to produce more food using available natural resources efficiently and sustainably requires a careful and integrated approach. In addition, to promote more environmentally friendly farming practices worldwide, this approach should have a smooth world food trading system aimed at facilitating food security as a major objective, while moving to more sustainable food production systems.

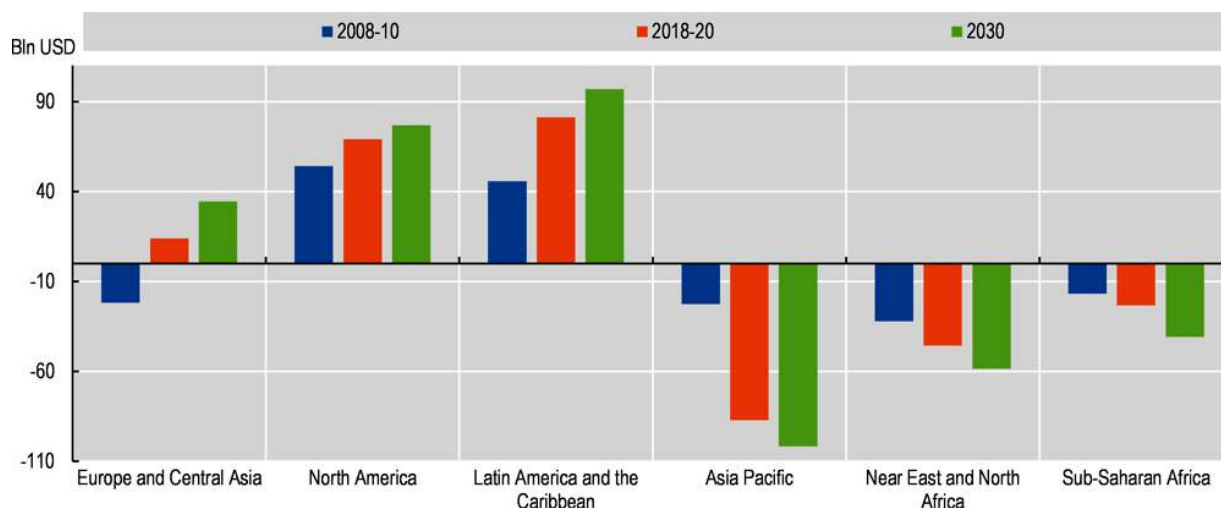
Importance of trade

According to OECD (2021), given growing regional imbalances, the use of trade-restrictive policies can have detrimental effects on global food security. Trade restrictions, either applied by importers or exporters, have negative effects in the short term but also in the longer term by undermining supply capacity. It is also mentioned that trade is particularly important for resource-constrained countries, which are highly dependent on the import of basic and high-value food commodities. An enabling trade environment thus increases food availability in these countries and can moderate pressures on consumer prices. Trade can also help smooth food supply and buffer domestic production shocks and reduce the pressure of local food systems on the natural resources of those countries. In a country experiencing declines in production due

to a weather-induced shortfall, for instance, trade can contribute to food security. Similarly, trade can help reduce the overexploitation of resources such as soil or water observed in certain regions of the planet.

This is especially relevant in a context where some regions are becoming more dependent on international trade to fulfill its needs, as the next graph shows. The ongoing trend of climate change will make even more important the role of trade to balance global supply and demand (Gouel and Laborde, 2021).

Net trade by region, in constant value

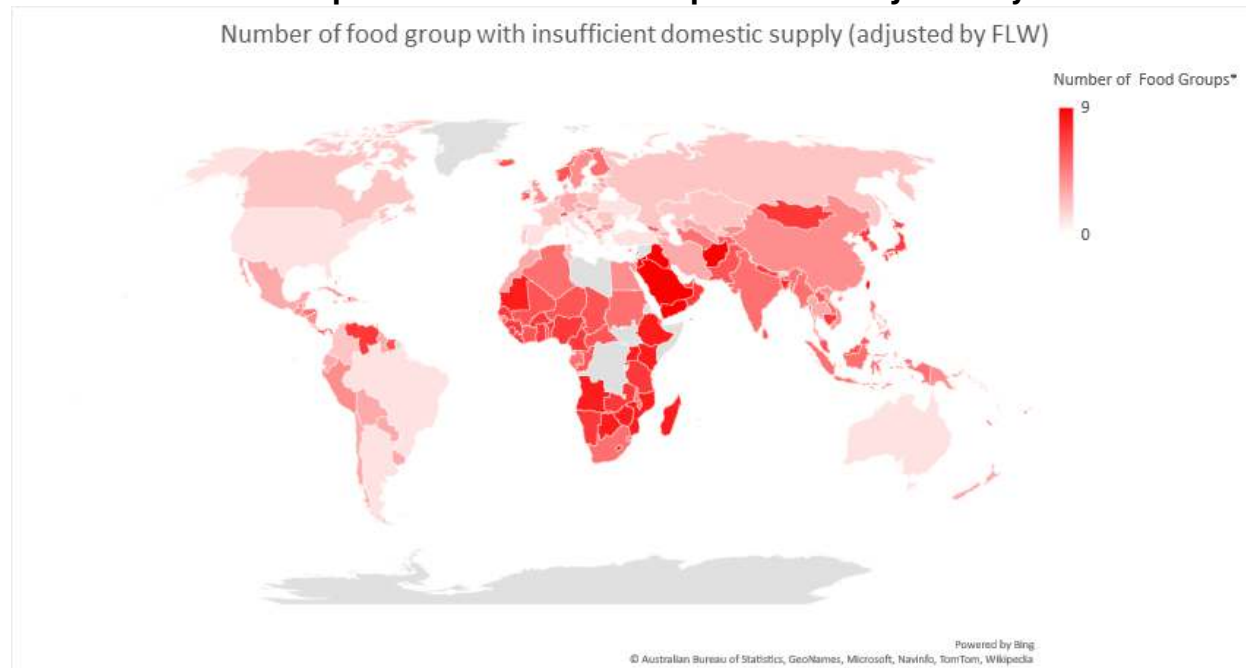


Note: Net trade (exports minus imports) of commodities covered in the Agricultural Outlook, measured in constant 2014-16 USD.

Source: OECD/FAO (2021), “OECD-FAO Agricultural Outlook”, OECD Agriculture statistics (database), <http://dx.doi.org/10.1787/agr-outl-data-en>.

On the other hand, several countries are increasing their demand for more diversified diets. Some agricultural products cannot be produced domestically or not in sufficient quantities without affecting the environment. So, trade is also central to ensuring nutrition security and supporting diet diversification (FAO, 2018).

Number of Food Group with insufficient local production adjusted by Food Loss and Waste



Source: Laborde et al. Forthcoming. Routledge handbook of sustainable diets.

As is mentioned in Illescas, Regunaga, & Tejeda Rodriguez (2021) “Trade should contribute to food security and allow the world food system to achieve the necessary regional balances between a net exporter and net importer regions, thus enabling the system to produce the necessary amount, variety and nutritional quality of food to meet world demand at reasonable and stable prices over time”.

However, contrary to expectations, the food trade has been facing restrictions, often non-science based, which were exacerbated by responses to crisis, like the COVID-19 pandemic, or the invasion of Ukraine. These policies have led to an over-representation of agricultural trade in international trade disputes at the WTO (Glauber and Xing, 2020). Undoubtedly, the situation in Ukraine generates greater pressure on food markets and some exporting countries have begun to apply export restrictions (See Laborde and Mamun, 2022 and [IFPRI’s live tracker](#)), which could imply further price increases and an exacerbation of food insecurity in the world. This situation was already alerted at the extraordinary meeting of the G-7 agriculture ministers, on March 11, where all countries were urged to refrain from any restrictive measures on exports and to keep agricultural markets open.

Sustainability agenda

Despite its increasing importance, the environmental issues, the promotion of sustainable food systems, and global food security have not been considered seriously enough in international trade negotiations within WTO. Some effort in this regard was made during the UN Food

Systems Summit 2021, but it was insufficient and not sufficiently inclusive of all participants in the food systems value chain.

Faced with the existing risks, world leaders should consider to what extent existing trade barriers that are not based on science are affecting food security and global environmental sustainability. The imposition of unilateral environmental standards at the border, with limited visions of sustainability, is putting pressure on national agri-food systems and jeopardizing global food security.

The relevance of border restrictions to achieving global food security and GHGs mitigation is even more important if projections of food production to 2030 are taken into account. The ability of some regions to increase food production with less emission per unit of a product becomes evident. Therefore, restricting trade from these regions threatens global food security and the challenge of climate change.

It is expected that environmental policies will increase in the coming years. Border carbon pricing, traceability, and certification policies, among others, will surely affect agricultural trade and undermine global food security. It is the responsibility of governments to design these policies carefully, based on science, and try to balance the objectives of GHG mitigation, global food security, and farmers' livelihoods (OECD, 2021). However, there is no forum with the express purpose of discussing agricultural and food production sustainability with a holistic view of its impact on the environment, ecosystems, and natural resource use (Lamy et al, 2022). The G20 must promote, within the scope of the WTO, the establishment of transparent mechanisms for the follow-up of these measures

Certification

Certification schemes are a valid mechanism to value more sustainable agri-food systems, allowing those productions with less environmental impact to be revalued. However, there are a multiplicity of schemes that respond to different initiatives (mostly from private marketing chains and unrelated to other similar initiatives), have different calculation bases (many of them respond to particular marketing actions and/or directly as a barrier to market access, without a solid scientific basis) and are too costly for small producers in developing countries to comply with (who must also choose which certification to comply in a certain market, and even within the same market, which certification required by each internal marketer).

At the same time, in order to provide adequate information to consumers about the way in which sustainable production is carried out, the implementation of certification adapted to the agri-food production systems of each specific region should be promoted. In view of the proliferation of schemes and the growing importance of the private sector as a developer of this type of standards, a public-private partnership is essential to allow greater coordination, even at the international level (Illescas, Regunaga, & Tejeda Rodriguez, 2021).

Certification and fairer trade are important for encouraging sustainable agriculture practice. These two factors provide certainty for farmers to apply sustainable practices. Smallholder farmers may change their farming behavior to a more sustainable way. Agriculture predominantly emits Nitrate Oxide (from inappropriate fertilizer application) and Methane (from inappropriate irrigation systems) (FAO, 2021). These two practices may be addressed in the certification scheme. It is important in all certification schemes to apply the requirements based on scientific evidence and guarantee that all producers could have fair access to the certification process.

Research from Nie et al (2017) found heterogeneous effects of certification in reducing agrochemicals consumption among Chinese farmers, depending on the certification type. The research also emphasized the importance of price premium, knowledge on certification, and regulation enforcement to encourage sustainable agricultural practice. They also suggested that certification must define fixed requirements for best management practices in agriculture.

This is in line with the findings made by Piñeiro et al (2020), where, in a scoping review of over 18,000 papers on incentives for the adoption of sustainable agricultural practices, they found that, although the adoption of good agricultural practices depends on numerous factors, “direct economic benefits, increased productivity or profitability seem to be the essential condition for the adoption of sustainable practices in the short term. Regardless of the incentive type, adoption rates are higher when programs offer short-term economic benefits than those solely aimed at providing a positive ecological outcome.” Conversely, complexity, inflexibility, and complicated procedures are obstacles to participation.

Therefore, the evidence indicates that certification schemes can make a great contribution to the sustainability of agri-food systems. However, a certification scheme based on transparency, coherence and effectiveness should be promoted. Avoiding the proliferation of standards and seeking rapid harmonization of existing ones is necessary in order to promote sustainable agricultural practices and incorporate small producers into international trade.

In the face of this evidence, it is important to make sure the food security foundation is in a stable state with enough supply (from agriculture production), accessible price, and a stable logistic chain. It is difficult to focus primarily on the sustainable aspect whilst the resiliency of the food system is in a vulnerable situation.

In the current context, the G20 could play an important role to promote global food security and environmental sustainability based on a more open and sustainable trading system.

Proposals for G20

Trade, environmental standards, and better practices and technology can contribute to achieving productivity increases and total food availability while considering the impact of the agri-food systems on climate change and natural resources,

1. Adopt a position paper on private standards in the upcoming WTO Ministerial Conference, encouraging its members to include this topic in the WTO agenda. Carry out a transparency exercise to monitor the adoption of private standards between the WTO and the ITC. Create a working group between WTO, UNCTAD, and ICC, in order to work on the harmonization of environmental standards, and the promotion that they are science-based. This may create fairer trade among member countries.
2. The existence of a multiplicity of standards that certify carbon footprint creates difficulties for agricultural exporters who sell to different markets. It is necessary to advance in developing homogeneous methodologies, in order to avoid the extra cost of opting for several certifications.

A possibility is to promote Digital Platforms that Facilitates Certification and Mobility of Sustainable Produces. The platform can help monitor sustainable farming practice at the land level, accuracy of incentives distribution, traceability of products in the market, and create certainty for all value chain actors.

3. The development of R&D and the implementation of good agricultural practices must consider the agro-ecological characteristics of the food systems of each country in order to determine the best production technology to mitigate the environmental impact. G20 can carry out pilot projects and upscale them gradually. Members can share data and receive comprehensive information from multi-locations and time to get the best data for making decisions.
4. Implement the development and implementation of sustainable farming practices and new technologies that promote environmental sustainability through the support of the CGIAR, such as greener technologies. For greater success in the adoption of incentives, technology transfer should be adapted to different models of production, local practices, and actual farmers' access to financial, human, and knowledge capital. Transfer of green technology in agri-inputs production should be encouraged to ensure a lower carbon agri-food chain.
5. Reduce the global uncertainty of the agri-food system. The conflict in Ukraine has aggravated the uncertainty about the prices and availability of fertilizers, which will bring about important consequences in the agricultural basket (due to the rotation to crops less intensive in these inputs) and the productivity of the soil.

In this context, the G20 needs to mitigate price uncertainty, the risk of food shortages and promote the achievement of soil sustainability goals. Due to the relevance of some countries in the global supply and demand of fertilizers, their internal policy definitions strongly affect the stock/consumption ratio, generating additional price shocks. Incorporating fertilizers into the Agricultural Market Information System (AMIS) will give greater transparency to a substantial part of the agricultural input market and allow for better policy responses.

Therefore, monitoring what happens in the fertilizer market is increasingly relevant to guarantee the fight against food insecurity, but it will also have implications for the sustainability of food systems, in particular, regarding soil health. The national coordinators of several countries have already expressed their interest in following up on the stock/consumption ratio at the 20th meeting of the AMIS Information Group (FAO, 2022). The G20 could validate these declamations.

RELEVANCE to G20

The evident deterioration of the climate and natural resources requires immediate attention. The same is true of addressing growing hunger worldwide. These concerns have permeated society demanding immediate responses to these problems.

Faced with them, the G20 countries must act responsibly and decisively to try to respond to these immediate challenges. The leadership of these countries will be of vital importance to find global and balanced responses.

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