How Can World Trade Organization Rules and Flexibilities Promote Food Security in Least Developed Countries?

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Least developed countries need more investment in agriculture to increase their agricultural productivity and promote their food security.

The Food and Agriculture Organization of the United Nations (FAO) reports that between 713 million and 757 million people, roughly 9% of the global population, faced hunger in 2023. Hunger is still on the rise in Africa, where one out of every five people still goes hungry. The problem is particularly acute in low-income countries, where more than seven out of every 10 people cannot afford a healthy diet, over half of the income of their population is spent on food, and governments have limited capacity to address the major drivers of food insecurity (FAO, 2024c).

Increasing agricultural productivity is key to promoting food security in least developed countries (LDCs).[1] A modelling exercise on how to alleviate food insecurity in Africa underscored that more agricultural productivity results in a higher supply of food and lower food prices, as well as increased incomes and improved access to food, reducing the share of people at risk of hunger (Mason-D'Croz et al., 2019). Agricultural productivity is also linked to economic growth, particularly in developing countries, where agriculture is a key economic sector and source of employment (Gollin, 2010).

[1] In this brief, the terms "low-income countries" and "least developed countries" are used interchangeably to describe a group of 45 countries classified by the United Nations on criteria that consider income, health, and education indicators, as well as other economic and environmental benchmarks. The list can be accessed here: https://unctad.org/topic/least-developed-countries/list. In the FAO reports referenced, the term of choice is "low-income countries," while in the UN Trade and Development (UNCTAD) reports referenced, as well as in the context of the World Trade Organization (WTO), the term of choice is "least developed countries (LDCs)."

The agricultural productivity gap between low-income countries and other countries is huge: the richest countries produce 70 times more agricultural value added per worker than the poorest ones (FAO, 2022). Low agricultural productivity in low-income countries has multiple causes, including the lack of access to modern technologies and innovations. Farmers with limited access to markets and credit face challenges in adopting new technologies and inputs that would increase agricultural productivity. Low-income countries also face high transport costs due to poor roads and ports (FAO, 2022). In 2015, high-income countries spent significantly more on research and development (on average 2.4 % of their GDP) than low-income countries, which barely invested 0.25 % of their GDP on research and development (Ericsson & Mealy, 2019).

A lack of investment in agriculture—both public and private—is one important cause of low agricultural productivity in LDCs. Researchers involved in the Ceres 2030 project found that more private investment by donors would be needed to end hunger by 2030, including for agricultural extension services, the adoption of climate-resilient crops, agricultural research, and better infrastructure such as roads and storage facilities, all of which would increase agricultural productivity (Laborde et al., 2020).

Unfortunately, governments in low-income countries have limited fiscal resources to invest in agriculture. Factors that contribute to the lack of investment in agriculture in LDCs include a high level of indebtedness, which hinders their ability to increase productive capacities, and insufficient domestic resource mobilization—that is to say, the inability of LDCs to generate their own resources due to weak tax systems, high levels of tax evasion, and large informal sectors (UNCTAD, 2023). But these are not the only factors affecting the ability of LDCs to invest in agriculture. External financial flows, including official development assistance (ODA) to agriculture, have fallen short when compared to the commitments made by developed countries: despite playing a key role in food security, ODA to agriculture has declined 12% in the period 2016–2021 (UNCTAD, 2023).

Since their agricultural productivity is low, LDCs tend to be—with some exceptions—net food importers, relying on international markets to buy food, as well as other agricultural products and inputs, including fertilizers. This reliance on international markets leaves LDCs vulnerable to price spikes and other trade distortions, including those caused by trade policies enacted by large producing and exporting countries.

In June 2022, concerned that trade disruptions, record prices, and excessive volatility in the prices of food and agricultural products could undermine food security, particularly in LDCs and net food-importing developing countries, WTO members adopted a Ministerial Declaration on Food Insecurity (WTO, 2022). This declaration committed WTO members to take concrete steps to facilitate trade and improve the functioning and long-term resilience of global food and agriculture markets. One of these steps resulted in the creation of the WTO Food Security Working Group (WTO, 2024c). This group was established to consider, among many other issues, how WTO rules and flexibilities on agricultural domestic support could help LDCs and net food-importing developing countries increase their agricultural productivity.

Against this background, this policy brief analyzes how WTO rules and flexibilities can encourage investment in agriculture in LDCs to increase their agricultural productivity and promote their food security. Section 1 looks at WTO rules and flexibilities on agricultural domestic support to understand whether (or not) they constrain public investment in agriculture by LDC governments. Section 2 looks at how WTO rules and flexibilities on agricultural domestic support can help attract more private investment in agriculture in LDCs by making agriculture in LDCs more profitable and attractive to potential investors. Section 3 suggests options for improving LDCs' access to the international agri-food market to boost their exports and livelihoods. Section 4 concludes.

WTO rules on agricultural domestic support allow LDC governments to invest in their agricultural productivity.

Agricultural domestic support (the term used in the WTO to cover public expenditure in the agriculture sector) can help LDCs increase their agricultural productivity to promote their food security. In fact, input subsidies have been widely used to reduce the cost that farmers pay for inputs such as fertilizers, pesticides, and seeds. While input subsidies are often questioned for promoting the inefficient use of public resources and contributing to environmental degradation, they are also linked to increased agricultural output growth and labour productivity (Mamun, 2024).

However, input subsidies are not the only form of agricultural domestic support that LDCs can use to increase their agricultural productivity and promote their food security. Agricultural extension services, for instance, can also contribute to improving agricultural productivity (Kalogiannidis & Syndoukas, 2024). In Tanzania, both input subsidies and agricultural extension services have been effective in raising land and labour productivity (Malimi, 2023). Similarly, agricultural extension services played a significant role in increasing farm productivity in Ethiopia by disseminating knowledge of agronomic practices and facilitating the adoption of seed varieties among farmers and new technologies for soil and water conservation (Argaw et al., 2023).

From a trade policy perspective, an important question is whether the rules and flexibilities on agricultural domestic support in the Agreement on Agriculture help or hinder LDC governments' ability to make public investments to boost agricultural productivity. While the Agreement on Agriculture limits the use of agricultural domestic support considered to distort production and trade, it also provides some flexibility for other forms of agricultural domestic support (WTO, 1994). Two of the most important examples of flexibility for the kinds of investments LDCs should make to boost their agricultural productivity come under Article 6.2 of the Agreement on Agriculture (the Development Box) and the "Green Box" in Annex 2 of the agreement. Box 1 explains what each box allows.

Box 1. Article 6.2 (the Development Box) and the Green Box

Article 6.2 of the Agreement on Agriculture (WTO, 1994) allows developing countries to provide input subsidies to their low-income or resource-poor farmers. The Green Box in Annex 2 of the Agreement on Agriculture allows WTO members to grant agricultural domestic support for general services such as agricultural extension services and training, agricultural research, and infrastructure. The 2013 Bali Ministerial Decision on General Services (WTO, 2013) provides a non-exhaustive list of general services programs related to land reform and livelihood security, some of which could be particularly useful for LDCs. The non-exhaustive list covers general services such as (i) land rehabilitation, (ii) soil conservation and resource management, (iii) drought management and flood control, (iv) rural employment programs, (v) issuance of property titles, and (vi) farmer settlement programs to promote rural development and poverty alleviation. At present, neither the Green Box nor Article 6.2 of the Agreement on Agriculture (the Development Box) imposes any quantitative limit on the amount of agricultural domestic support that LDCs (or any other developing country) can provide in the form of either input subsidies or payments toward general services.

To get a sense of whether LDCs use this policy space, we looked at LDC domestic support notifications since the establishment of the WTO. Only 21 of the 37 WTO members classed as LDCs have ever submitted a domestic support notification. Of these, four LDCs (Benin, Burkina Faso, Haiti, and Uganda) reported not having provided any form of domestic support, while 15 only provided Article 6.2 (Development Box) and/or Green Box domestic support.[2] While their notification record is patchy, it seems that LDCs are using the policy space under the Development and Green Boxes. They have considerable flexibility to increase investments in agricultural productivity, as long as they are provided to low-income and resource-poor farmers (under the Development Box) or as long as they are no more than minimally trade distorting (under the Green Box).

However, WTO notifications may be misleading—especially considering that most of them are quite dated. For those LDCs that reported not providing any form of domestic support, the latest WTO notification periods covered correspond to 1997 (Benin), 2022 (Burkina Faso), 1999 (Haiti), and 2004 (Uganda). From other sources, we know that some of these LDCs have provided various forms of agricultural domestic support. For example, the FAO's Monitoring and Analysing Food and Agricultural Policies (MAFAP) program notes that Burkina Faso provides domestic support, 70% of which has targeted general services and almost a quarter of which has targeted producers, mainly in the form of input subsidies. Uganda also provides domestic support, 90% of which has been directed toward general services and only a small share to farmers in the form of input subsidies (FAO, 2024b). Other LDCs whose expenditures in agriculture are being tracked by MAFAP follow a similar pattern: in Mozambique, more than half of its agriculture expenditure was spent on general services (55%), a third on consumer subsidies (33%), and the rest on input subsidies (12%).

[2] The other two LDCs that submitted a domestic support notification to the WTO, Bangladesh and Lao People's Democratic Republic (PDR), are the only ones that notified Amber Box trade-distorting domestic support (see Box 2).

In Rwanda, almost all agriculture expenditure went to general services (84%), followed by a smaller share to input subsidies (15%). Ethiopia, in the process of accession to the WTO, also directed the bulk of its agriculture expenditure to general services (87%) and the reminder to input subsidies (13%) (FAO, 2024b).

What is clear, though, is that any of these countries could have notified the agricultural domestic support they provide under the unlimited policy space provided by the Green Box for payments toward general services and consumer subsidies and Article 6.2 (Development Box) for input subsidies.

While LDCs have considerable flexibility to provide support under the Development and Green Boxes for many kinds of investments in agricultural sectors to increase their agricultural productivity and promote their food security, the amount of Amber Box trade-distorting domestic support that LDCs can provide to their farmers is, in fact, subject to limits. Box 2 explains the Amber Box and what can be provided within its limits.

Box 2. Amber Box Trade-Distorting Domestic Support

Under the Agreement on Agriculture, nearly all agricultural domestic support considered to distort production and trade falls into the Amber Box, which includes price support measures and subsidies directly related to production quantities. Unlike the Green Box and Article 6.2 (the Development Box), the Amber Box is subject to limits. For most developing countries and LDCs, the limit of Amber Box trade-distorting domestic support they can provide is 10% of the value of agricultural production for specific agricultural products (product-specific support) and for the agricultural sector as a whole (non-product-specific support).

Source: WTO, 1994.

Two LDCs have notified Amber Box trade-distorting domestic support—Bangladesh and Lao PDR—which, in fact, came close to exceeding or did exceed their allowed limits. Bangladesh was close to breaching its Amber Box trade-distorting domestic limit for wheat during the fiscal year 2014/2015. Its latest notification for 2020/2021 showcases that it still has a good amount of policy space to provide trade-distorting domestic support to wheat. Lao PDR seems to have exceeded its Amber Box trade-distorting limit for rice in 2016, the latest year for which we have information available for this LDC WTO member. In conclusion, the two LDCs that have notified Amber Box trade-distorting domestic support were, in a way, constrained by existing WTO rules on agricultural domestic support at very specific points in time.

Beyond these two cases involving Amber Box trade-distorting domestic support, LDC governments have ample space to increase public investments in agricultural productivity under the Development and Green Boxes. The fundamental problem seems not to be space within the WTO rules but fiscal space—in other words, the lack of domestic funds to make these investments.

In that regard, it is worth noting that financing for food security is a multidimensional concept that goes well beyond agricultural domestic support. It includes public and private financial resources, both domestic and foreign, that are directed toward eradicating hunger, food insecurity, and all forms of malnutrition (FAO, 2024c). Finding ways to leverage other financial resources, including ODA to agriculture, private financing from philanthropy, cross-border remittances from migrants invested in agri-food systems, and foreign direct investment, is key to boosting agricultural productivity in LDCs, thereby enhancing their food security.

In a trade policy context, the most immediate question would be whether WTO rules and flexibilities could be used to encourage greater private investment in agricultural productivity in LDCs.

New WTO rules and flexibilities on agricultural domestic support can help LDCs attract more private investment in agriculture to increase their agricultural productivity and promote their food security.

Going forward, new WTO rules and flexibilities could help LDCs attract more private investment by making agriculture in LDCs more profitable and attractive to potential investors. This could be done, for instance, by tackling the substantial Amber Box trade-distorting domestic support provided by developed and large developing countries to products in which LDCs are—or could become—competitive. As a first step, new WTO rules should reduce Amber Box trade-distorting domestic support to food and agricultural products of interest to LDCs, either because they are exported (Table 1) or produced (Table 2) by LDCs.

Trade-distorting domestic support creates an uneven playing field that hinders the opportunities of those producers in developing countries who have to compete with subsidized products (World Bank, 2023). Trade-distorting domestic support in some food and agricultural products not only affects the ability of farmers in LDCs to compete in international markets on a level playing field but it can also stunt the development of local industries in LDCs before they are competitive enough to export. Enabling agricultural businesses to export and grow is particularly crucial for economic growth in LDCs. According to the World Bank, almost 60% of the population of low-income countries worked in agriculture in 2022 (World Bank, 2024). As so many people rely on agriculture to make a living and ensure their livelihoods in LDCs, protecting their agricultural sectors from trade-distorting domestic support elsewhere should be a priority when negotiating new WTO rules and flexibilities.

To have a clear picture of which food and agricultural products of interest to LDCs receive high amounts of trade-distorting domestic support, we looked at the most recent domestic support notifications by the largest subsidizers of agriculture: China, the European Union, India, Japan, and the United States (in alphabetical order). We then looked at the amounts of Amber Box trade-distorting domestic support that these WTO members granted to a selected group of food and agricultural products of interest to LDCs, including rice, cotton, maize, and dairy.

Table 1. Top food and agricultural exports by LDCs in 2022

Rank	Product	Value exported (USD million)	Amber Box trade-distorting domestic support (USD million)	Blue Box production-limiting subsidies (USD million)
1	Coffee	3,150	0.3	0
2	Oil seeds and oleaginous fruits[3]	2,425	218[4,5]	1
3	Leguminous vegetables[6]	2,373	1,296[7]	0[8]
4	Rice	1,426	10,399	2,723
5	Cotton	1,339	1,566	4,439

Source: Author's elaboration based on WTO, 2023, Annex Table 4 and WTO, 2024b for the figures on domestic support.

As shown in Table 1, cotton is a commodity that LDCs manage to export successfully despite high levels of Amber Box trade-distorting domestic support elsewhere. It should be noted, though, that cotton is also supported through a wide range of subsidies that are not subject to any limits under the Agreement on Agriculture, including input subsidies in India (Article 6.2/Development Box), production-limiting subsidies in China and the European Union (Article 6.5/Blue Box), and structural adjustment assistance in the European Union (Annex 2/Green Box).

[3] Oil seeds and oleaginous fruits (HS code 1207) includes products such as mustard seeds, safflower seeds, and sesame seeds.

[4] While rapeseed belongs to a different HS code (i.e., 1205), Amber Box trade-distorting domestic support for rapeseed (HS code 1205) and mustard seeds (HS code 1207) are counted under one single figure in India (i.e., USD 183.63 million for the marketing year 2022/2023). This is the figure that has been considered to draft this table.

[5] The European Union notifies its Amber Box trade-distorting domestic support and Blue Box – production-limiting subsidies for all oilseeds under one single figure (i.e., EUR 22.5 million and EUR 1 million, respectively, for the marketing year 2020/2021). This is the figure that has been considered to draft this table.

[6] Leguminous vegetables (HS code 0713) include products such as peas, chickpeas (garbanzo beans), beans, and lentils.

[7] This figure does not include Amber Box trade-distorting domestic support for "fruits and vegetables" in the European Union or "vegetables" in Japan, which may include leguminous vegetables.

[8] This figure does not include Blue Box – production-limiting subsidies for "fruits and vegetables" in the European Union, which may include leguminous vegetables.

Table 2. Top food and agricultural products produced in LDCs in 2022

Rank	Product	Value produced (USD million)	Amber Box trade-distorting domestic support (USD million)	Blue Box production-limiting subsidies (USD million)
1	Rice	31,977	10,399	2,723
2	Cassava	20,175	0	0
3	Maize	12,160	4,101	2,723
4	Raw milk of cattle	9,013	3,697[9]	1,003[10]
5	Potatoes	7,418	58[11]	19[12]

Source: Author's elaboration based on FAOSTAT (FAO, 2024a) for the list of food and agricultural products produced in LDCs in 2022 and WTO, 2024b for the figures on domestic support.

In the specific case of cotton, Strutt et al. (2022) underscore that, if current trade-distorting subsidies in developed and large developing countries were removed, cotton output in sub-Saharan Africa and the Middle East and North Africa countries would increase by 12.1%, with the value of cotton exports increasing USD 622 million per year (net). The authors also highlight that cotton farm incomes would increase by almost 20% in those African countries as well.

However, cotton is not the only product of interest to LDCs. Rice is another commodity that LDCs can produce and export effectively (Tables 1 and 2); however, trade-distorting domestic support remains high. As with cotton, rice is also supported through subsidies that are not subject to any limits under the Agreement on Agriculture, including input subsidies in India (Article 6.2/Development Box), production-limiting subsidies in China and the European Union (Article 6.5/Blue Box), and environmental programs in Japan (Annex 2/Green Box).

Beyond cotton and rice, commodities that LDCs produce in big volumes, such as maize and dairy (Table 2), receive significant amounts of trade-distorting domestic support globally.

While not all commodities that receive trade-distorting domestic support elsewhere are imported into LDCs' domestic markets, potentially competing with their farmers, some are (Table 3), emphasizing the importance of better WTO rules and disciplines on agricultural domestic support for LDCs.

[9] This figure includes Amber Box trade-distorting domestic support for "dairy" in the United States, "skimmed milk powder" and "milk" in the European Union, and "milk" in Japan.

[10] This figure includes Blue Box – production-limiting subsidies for "dairy and milk products" in the European Union.

[11] This figure does not include Amber Box trade-distorting domestic support for "vegetables" in Japan, which may include potatoes.

[12] This figure includes Blue Box – production-limiting subsidies for "starch potato" in the European Union.

Having said that, it is worth noting that some of the most imported foods in LDCs (e.g., wheat and rice) are heavily subsidized by producing countries. By making food cheaper, these subsidies can benefit poor consumers in LDCs in the short term. However, by harming farmers in LDCs and hence undermining their agricultural production, agricultural subsidies can exacerbate LDCs' structural and long-term food insecurity (Hermann, 2007).

Table 3. Top food and agricultural products imported by LDCs in 2022

<table>
<tr><th>Rank</th><th>Product</th><th>Value imported (USD million)</th><th>Amber Box trade-distorting domestic support (USD million)</th><th>Blue Box production-limiting subsidies (USD million)</th></tr>
<tr><td>1</td><td>Palm oil</td><td>7,559</td><td>0</td><td>0</td></tr>
<tr><td>2</td><td>Wheat</td><td>7,461</td><td>5,883</td><td>0</td></tr>
<tr><td>3</td><td>Rice paddy (rice milled equivalent)</td><td>7,099</td><td rowspan="2">10,399</td><td rowspan="2">2, 723</td></tr>
<tr><td>4</td><td>Rice, milled</td><td>5,502</td></tr>
<tr><td>5</td><td>Refined sugar</td><td>3,939</td><td>1,930[13]</td><td>193[14]</td></tr>
</table>

Source: Author's elaboration based on FAOSTAT (FAO, 2024a) for the list of food and agricultural products imported by LDCs in 2022 and WTO, 2024b for the figures on domestic support.

Improving LDCs' access to international agri-food markets can boost exports and incomes in LDCs.

Non-tariff measures such as sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT) also affect trade in food and agriculture. Quite often, non-tariff measures in export markets reduce income opportunities, thereby affecting the ability of people in developing countries and LDCs to buy food (UNCTAD, 2022).

Non-tariff measures seek to advance legitimate concerns, such as the health of humans, plants, and animals. However, while not all non-tariff measures have a negative effect on trade, the impact of SPS and TBT measures on trade in food and agriculture is not negligible. In fact, the average ad-valorem equivalent of non-tariff measures in agriculture, which refers to how restrictive these non-tariff measures in agriculture are if they were adopted in the form of import tariffs, can be as high as 21% (UNCTAD & World Bank, 2018).

Since border measures such as import tariffs have fallen significantly over the last few decades, non-tariff measures such as SPS and TBT measures are increasingly determining market

13 This figure includes Amber Box trade-distorting domestic support for "sugar" in the United States, the European Union, and Japan.

14 This figure includes Blue Box – production-limiting subsidies for "sugar beet" in the European Union.

access for foods and agricultural products from LDCs (UNCTAD, 2015). What would make a difference for LDCs here is the ability to understand the often rapid changes in SPS and TBT measures affecting their exports and the ability to defend their exporters' interests in the WTO committees where these measures are discussed.

First, WTO members applying SPS and TBT measures should make it easier for other WTO members, including LDCs, to follow regulatory changes by (i) notifying their SPS and TBT measures as early as possible and (ii) offering as much and as clear information as possible on the nature, content, and design of these measures.

Second, and in line with the WTO Declaration on the Precise, Effective, and Operational Implementation of Special and Differential Treatment Provisions of the SPS and TBT Agreements adopted at the WTO's Thirteenth Ministerial Conference in Abu Dhabi (WTO, 2024a), the WTO Secretariat should continue improving its training and technical assistance to developing countries and LDCs to overcome the challenges these countries usually face in implementing SPS and TBT measures. When it comes to SPS measures, one way of supporting developing countries and LDCs would be through more voluntary financial contributions to the Standards and Trade Development Facility, which helps developing countries and LDCs comply with the standards for food safety and animal and plant health that their exporters must meet to be granted market access.

Third, both developed and developing country WTO members should strive to provide full—or almost full—duty-free market access to LDCs. According to the WTO Secretariat, many developed countries and a few developing countries are, in fact, already doing so by offering full—or almost full—duty-free market access to LDCs. Australia, New Zealand, Norway, and Switzerland currently offer full duty-free market access to LDCs comprising 100% of their tariff lines. Chile, the European Union, and the United Kingdom offer almost full duty-free market access to LDCs for over 99% or more of their tariff lines. Other WTO members, including Canada (98.5%), Japan (97.8%), Iceland (96.6%), and China (96.1%), were also offering almost full duty-free market access to LDCs. Additionally, India, Korea, and Montenegro grant duty-free access to around 90% or more of their tariff lines to LDCs (WTO, 2023).

Finally, WTO members should ensure that preferential market access schemes for LDCs do not exclude food and agricultural products that these LDCs produce. At present, some of the existing preferential market access schemes to LDCs are subject to major exclusions, including for key agricultural commodities such as coffee, oil seeds, and vegetables (WTO, 2023), all of which are food and agricultural products of interest to LDCs.

Conclusions

LDCs need more investment in agriculture to increase their agricultural productivity and promote their food security. Existing WTO rules and flexibilities on agricultural domestic support provide policy space for LDCs to increase public investment in agriculture under the Agreement on Agriculture's Article 6.2 (Development Box), the Green Box, and, subject to limits, the Amber Box.

Given the importance and widespread use of Article 6.2 (the Development Box) among LDCs to provide input subsidies to their low-income or resource-poor farmers, increase their agriculture productivity, and promote their food security, it is essential that WTO agriculture negotiations preserve this flexibility for LDCs. But preserving current WTO rules and flexibilities on agricultural domestic support would not be enough to increase agricultural productivity and promote food security in LDCs—especially since these are poor countries that lack the fiscal resources to meet their investment needs in agriculture.

In that regard, new WTO rules and flexibilities on agricultural domestic support should help LDCs attract more private investment in agriculture by making agriculture in LDCs more profitable and attractive to potential investors. These can include commitments by developed and large developing country WTO members to reduce Amber Box trade-distorting domestic support to food and agricultural products of interest to LDCs, either because they are exported or produced by them. Additionally, improving LDCs' access to international agri-food markets can boost exports and incomes in these countries. This is something that WTO members can do by (i) notifying SPS and TBT measures as early as possible and offering as much and as clear information as possible on the nature, content, and design of these measures; (ii) requesting that the WTO Secretariat ramp up training and technical assistance to developing countries and LDCs and increase their voluntary financial contributions to training and technical assistance mechanisms such as the Standards and Trade Development Facility; and (iii) providing full—or almost full—duty-free market access to LDCs, especially for food and agricultural products of export interest to LDCs, such as coffee, oil seeds, and vegetables.

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