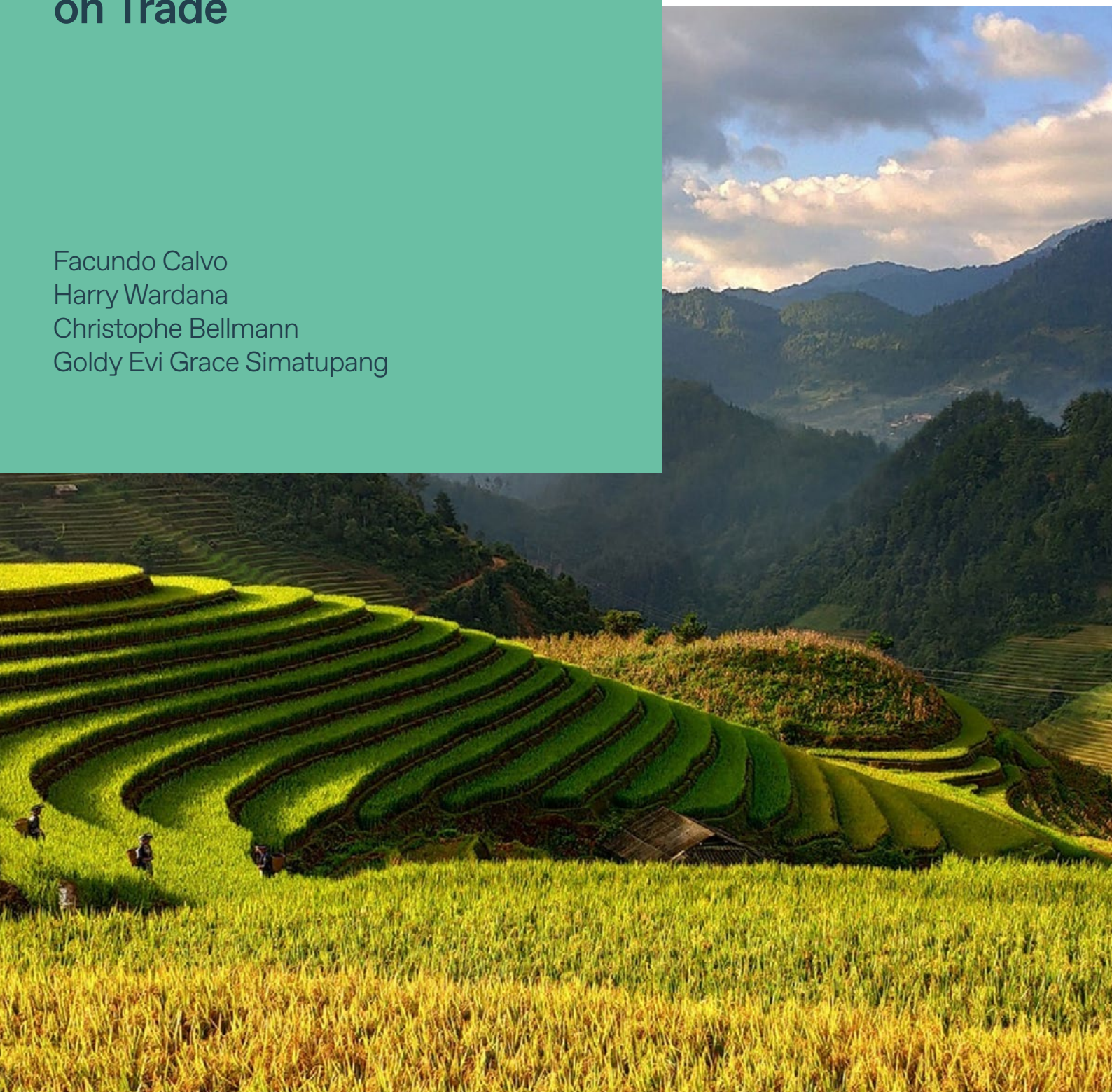
Policy Brief October 2026

TESS Forum on Trade, Environment, & the SDGs

Adelaide University
Institute for International Trade

Fostering Sustainable Agriculture Through Inclusive Cooperation on Trade

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Goldy Evi Grace Simatupang



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Acknowledgements

This policy brief is an updated and thoroughly revised version of a TESS paper authored by Christophe Bellmann and published by TESS in 2022 titled *Trade and sustainability in the agriculture sector: Options for multilateral trade cooperation*.

TESS gratefully acknowledges the financial support for our work from a range of donors, which have included the Children's Investment Fund Foundation (CIFF), ClimateWorks Foundation, European Climate Foundation, Quadrature Climate Foundation, Open Society Foundations, The Pew Charitable Trusts, United Nations Environment Programme, and the governments of Australia and France.

The Jean Monnet Centre of Excellence in Trade and Environment at the Institute for International Trade, Adelaide University, is co-funded by the European Union under the Erasmus+ Programme.

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Recommended citation: Calvo, F., Wardana, H., Bellmann, C., & Simatupang, G. (2026). *Fostering sustainable agriculture through inclusive cooperation on trade*. Forum on Trade, Environment, & the SDGs (TESS) and Institute for International Trade at Adelaide University.

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Abbreviations

ACCTS	Agreement on Climate Change, Trade, and Sustainability
AI	Artificial Intelligence
AoA	Agreement on Agriculture
ASEAN	Association of Southeast Asian Nations
CEPA	Comprehensive Economic Partnership Agreement
CoA-SS	Committee on Agriculture in Special Session
COP	United Nations Climate Change Conference
CPTPP	Comprehensive and Progressive Agreement for Trans-Pacific Partnership
EFTA	European Free Trade Association
EU	European Union
FACT	Forest, Agriculture and Commodity Trade
FAO	Food and Agriculture Organization of the United Nations
FTA	Free Trade Agreement
GHG	Greenhouse Gas
IPCC	International Plant Protection Convention
MC	WTO Ministerial Conference
OECD	Organisation for Economic Co-operation and Development
RTA	Regional Trade Agreement
SCM	Subsidies and Countervailing Measures
SPS	Sanitary and Phytosanitary
TBT	Technical Barriers to Trade
TESSD	Trade and Environmental Sustainability Structured Discussions
TRIPS	Trade-Related Aspects of Intellectual Property Rights
UNCTAD	United Nations Trade and Development
UNEP	United Nations Environment Programme
USMCA	United States-Mexico-Canada Agreement
VSS	Voluntary Sustainability Standards
WTO	World Trade Organization

Executive Summary

An estimated 608–696 million people worldwide faced hunger in 2025. At the same time, agriculture continues to drive major environmental challenges, such as deforestation, biodiversity loss, and unsustainable water use. Between 2000–2018, agricultural expansion accounted for 88% of global deforestation, while agriculture, forestry, and other land-use activities are responsible for nearly 22% of global greenhouse gas emissions. By 2050, 70 million more people could be at risk of hunger because of climate change.

Trade policies play a critical role in shaping incentives for more sustainable agricultural production and consumption. Ensuring that trade policies support the transition to more sustainable agriculture will be essential to addressing the "triple challenge" of providing food security and nutrition for a growing population, securing livelihoods for hundreds of millions of people along the agri-food supply chain, and contributing to environmental sustainability.

This policy brief examines how trade policies can support sustainable agriculture amid three structural shifts in global agricultural trade. First, the geography of supply and demand has more recently rebalanced towards emerging and developing economies. Second, the period of gradually declining real commodity prices that characterized much of the past several decades has given way to an environment characterized by supply chain disruptions, price volatility, and climate-driven shocks. Third, digital technologies are beginning to reshape how agri-food supply chains transmit information, risk, and value.

Governments are responding to these challenges through a growing range of trade-related measures intended to encourage sustainable agricultural production, consumption, and trade. These include price- and market-based measures, support measures and other economic incentives, and regulatory measures. Alongside government measures, voluntary sustainability standards have also proliferated and are increasingly integrated into government policy instruments.

The policy brief identifies four areas where enhanced international cooperation is critical to advancing sustainable agriculture: (i) removing environmentally harmful subsidies and other economic incentives; (ii) fostering interoperability and equivalences of regulatory measures; (iii) facilitating the development, diffusion, access to, and uptake of goods, services, and technologies that support sustainable agricultural production; and (iv) providing trade incentives for sustainably produced agricultural products or healthy and nutritious foods.

It then considers possible venues and modes of cooperation at the international level. These include formal multilateral, regional, and bilateral processes, as well as more flexible, non-binding cooperative arrangements. The policy brief concludes by providing a framework for institutional choice for each of the four priority areas where international cooperation will be critical to advancing sustainable agriculture.

1. Introduction

1.1 The Imperative of a Shift Towards More Sustainable Agriculture

Agriculture lies at the heart of the most pressing food security, development, and sustainability challenges of our time. While it remains central to rural livelihoods and development prospects—particularly in many developing countries, where a large share of the population depends on farming and related activities—the sector fails to deliver food and nutrition security for all. Between 608 million and 696 million people, nearly 8% of the global population, faced hunger in 2025 (Food and Agriculture Organization of the United Nations [FAO] et al., 2026). Repeated external shocks over the last 20 years, such as the COVID-19 pandemic, conflicts, and geopolitical tensions, have pushed food insecurity above pre-2015 levels, disproportionately affecting women and youth among low-income groups. Furthermore, by 2050, 70 million more people could be at risk of hunger because of climate change (International Food Policy Research Institute, 2022).

Agriculture also continues to drive major environmental challenges, such as deforestation, soil degradation, and biodiversity loss. Between 2000 and 2018, agricultural expansion accounted for 88% of global deforestation, with cropland expansion and livestock grazing respectively responsible for 52% and 37% of deforestation (FAO, 2022b). Nearly 22% of global greenhouse gas (GHG) emissions originate from agriculture, forestry, and other land-use activities, placing the sector as both a contributor to global warming and a critical sector for climate adaptation and resilience (Intergovernmental Panel on Climate Change, 2023).

A core challenge facing the agricultural sector in the coming years is to feed and provide adequate, healthy, and nutritious food to nine billion people by 2050 while responding to the rapidly changing diet of a growing middle class in urban areas. Meeting this target will require improving access, availability, and stability of food supply while reducing food waste, and doing so in ways that protect fragile ecosystems and restore biodiversity, maintain soil productivity, rationalize the use of water, and reduce GHG emissions.

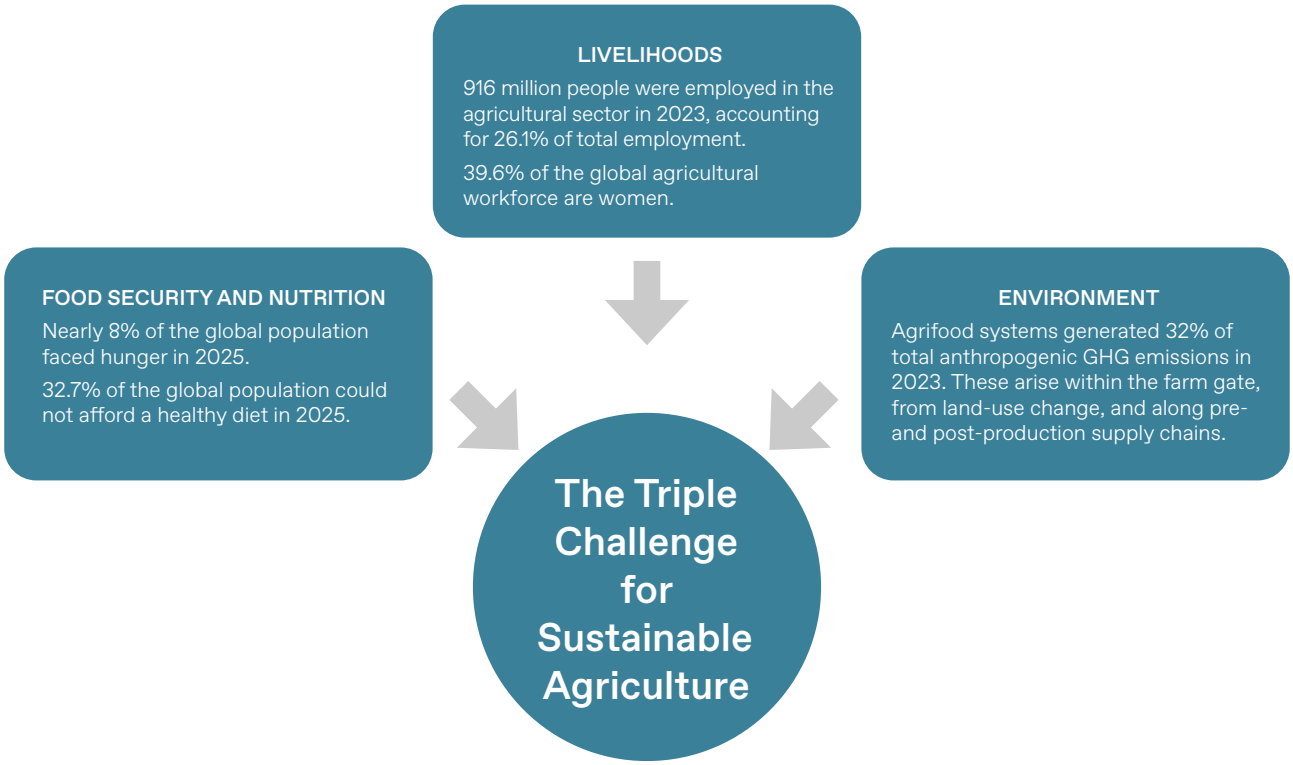
Trade policies play a critical role in shaping incentives for agricultural production, consumption, and trade, and therefore are essential to addressing the "triple challenge" of providing food security and nutrition to a growing population, securing livelihoods for hundreds of millions involved in farming and along the agricultural supply chain, and contributing to environmental sustainability (Organisation for Economic Co-operation and Development [OECD], 2021).

On the one hand, trade helps move food from surplus to deficit regions, including those affected by climate shocks, creates income and employment opportunities, and can facilitate the diffusion of climate technologies. As population growth, urbanization, and dietary shifts continue, regions facing land and water scarcity will increasingly rely on trade to strengthen food security (FAO, 2022a). On the other hand, in the absence of effective regulatory and policy frameworks, trade can exacerbate environmental pressures associated with agricultural production, including deforestation, land degradation, GHG emissions, and biodiversity loss (Bellmann, 2023). Whether trade supports or undermines sustainability objectives therefore depends critically on the broader regulatory and policy environment in which it operates.

This policy brief examines the relationship between trade policies and sustainability in the agricultural sector. It presents an overview of how various governments are implementing these policies to encourage sustainable agricultural production, consumption, and trade. It then highlights the evolving nature of trade measures that identify sustainable agriculture as an explicit objective amid a rapidly changing geopolitical landscape marked by rising trade tensions,

strategic competition, and economic security considerations. It concludes by discussing options for enhanced cooperation on trade and sustainable agriculture, including: removing environmentally harmful subsidies and other economic incentives; fostering interoperability and equivalences of regulatory measures; facilitating the development, diffusion, accessibility, and uptake of goods, services, and technologies that support sustainable agricultural production; and providing enhanced access to sustainably produced agricultural products or healthy and nutritious foods.

Figure 1. The Triple Challenge for Sustainable Agriculture in Numbers



Source: FAO (2022b, 2025a, 2025b); FAO et al. (2026).

1.2 Trade and Sustainable Development: A Multi-Dimensional Relationship

This section explores the multi-dimensional relationship between trade and sustainable agriculture, with a particular focus on food security and nutrition, livelihood, and environmental sustainability considerations.

1.2.1 Food Security and Nutrition

Trade contributes to food security by moving food from surplus to deficit regions, stabilizing prices, and improving access to a diverse and nutritious food supply, especially during shortages or crises (FAO, 2022a). In the coming years, agri-food trade will remain a cornerstone of global food systems, with 22% of the calories consumed worldwide being traded across borders by 2034. Given that agricultural production is often geographically separated from the regions where food demand is projected to grow the most, a well-functioning multilateral trading system will remain essential (OECD & FAO, 2025).

Climate change, which affects food security through rising temperatures, changing rainfall patterns, and increasingly frequent extreme weather events, further highlights the importance of global trade for food security. Climate variation accounts for around one-third of global yield variability (Ray et al., 2015). Lower yield variability is important for food security because it supports more stable farmer incomes, a more reliable food supply, and more predictable prices for consumers. International trade can help buffer inter-annual yield variability by enabling adjustment across regions (Reimer & Li, 2009).

The increasing frequency and intensity of shocks highlight the need for agri-food markets that can absorb disruptions and rapidly restore equilibrium, ensuring the continued flow of food across regions (FAO, 2026). When one area experiences a crop failure, due, for example, to a drought or flooding, trade allows supplies to be redirected from regions with surpluses, thereby helping to limit food-price fluctuations. Simulations under future climate scenarios indicate that greater trade integration can reduce increased undernourishment by allowing food to flow from surplus to deficit regions, mitigating the most severe impacts of climate-induced production declines. The benefits are particularly pronounced in import-dependent and climate-vulnerable regions, including parts of Sub-Saharan Africa, where trade integration helps offset domestic production shortfalls and reduces projected increases in food insecurity under climate stress conditions (Janssens et al., 2020).

At the same time, recent crises have highlighted the vulnerabilities that arise from relying on international markets for staple commodities whose trade is highly concentrated among a small number of major exporters, as illustrated by the food and energy price shocks associated with the conflict in Ukraine. Similarly, during the 2007–2008 and 2011–2013 food price spikes, several countries imposed export restrictions on food and agricultural products to secure domestic supplies. These measures intensified global supply shortages and added upward pressure on international grain prices, especially rice. Indeed, export restrictions are estimated to have accounted for up to 30% of the increase in food prices observed in the first half of 2008 (Torero, 2016).

Recent conflicts in the Gulf region have underscored the vulnerability of fertilizer markets, where production and exports are highly concentrated in a limited number of countries. According to the International Fertilizer Association, countries located upstream of the Strait of Hormuz account for around 34% of global urea trade, 23% of global ammonia trade, and 49% of global sulphur trade (IFASTAT, 2026).

The relationship between trade and nutrition is similarly complex. Trade can influence nutrition through multiple pathways, including by increasing the availability, diversity, and year-round stability of food supplies, while lowering prices and improving access to food. Trade also spurs economic growth and can accelerate the nutrition transition. While trade openness can help reduce the prevalence of stunting among children, its relationship with obesity is more ambiguous. Although economic growth tends to reduce stunting, it may also contribute to rising obesity rates by increasing the affordability and consumption of ultra-processed foods that are high in salt, fat, and sugar and low in micronutrients (FAO, 2025d).

1.2.2 Rural Development and Livelihoods

Agriculture remains a central pillar of rural economies and livelihoods. In 2023, around 900 million people were employed in the agricultural sector, accounting for about one-quarter of total global employment, with women making up roughly 40% of the global agricultural workforce. These figures vary significantly across regions. In Africa, for instance, nearly 46% of the population works in agriculture (FAO, 2025a).

Countries that participate more in global value chains tend to experience stronger sectoral growth and more robust employment gains. This is largely because they can access higher-quality and more efficient inputs and services, as well as new technologies and innovations that raise productivity. In the agri-food sector, global value-chain participation also generates wider spillovers, including higher productivity, increased production, and improved livelihoods (OECD, 2020).

While trade can generate major benefits for rural economies, it can also create challenges. Greater import competition and exposure to international markets may lower internal prices and put pressure on local farmers, potentially constraining domestic food production. Greater dependence on food imports can expose countries to external shocks or trade policy changes and discourage the development of domestic value chains. In addition, low-income countries often need substantial investments in infrastructure and training to meet international standards and fully benefit from trade, as compliance requirements can otherwise become trade barriers (International Fund for Agricultural Development, 2021). As a result, trade integration strategies tend to benefit the best performers and risk marginalizing less-efficient producers.

1.2.3 Environmental Sustainability

Trade can have both positive and negative environmental impacts. On the one hand, it can contribute to environmental sustainability by directing the production of food and agricultural products to countries that use land, water, and other natural resources more efficiently. By shifting production to regions with more favourable agroecological conditions and higher resource productivity, trade can reduce the overall environmental footprint of agriculture and help meet growing food demand without requiring inefficient expansion of production in resource-constrained areas. On the other hand, expanding production for export markets may heighten pressure on natural resources and contribute to deforestation, biodiversity loss, and unsustainable water use. Moreover, by shaping economic incentives across countries, trade may encourage environmentally harmful practices where environmental regulations are weak or poorly enforced (FAO, 2022a).

The link between trade and environmental degradation is particularly visible in the case of deforestation. Rising international demand for agricultural commodities can create incentives to expand production into forests and other natural ecosystems. Estimates suggest that a significant share of the environmental impacts associated with land-use change is linked to consumption in importing countries rather than domestic demand in producing countries (Pendrill et al., 2019).

2. Recent Trends and Prospects in Agricultural Trade

International agricultural trade enters the second half of the 2020s in a markedly different setting from the one in which the World Trade Organization's (WTO) agricultural rulebook was negotiated. Three structural shifts now shape the policy agenda: (i) the geography of supply and demand has continued to rebalance towards emerging and developing economies; (ii) the long post-1980s pattern of gradually declining real commodity prices has given way to a regime characterized by supply chain disruption, excessive price volatility, and recurrent climate-driven shocks; and (iii) digital technologies are beginning to reshape how agri-food supply chains transmit information, risk, and value. Together, these shifts amplify both the stabilizing role that open agri-food trade can play and the political and ecological pressures that make such openness harder to sustain.

2.1 An Evolving Geography of Trade Reflecting Changes in Supply and Demand

Agri-food trade has continued to deepen even as overall global trade growth has slowed. The share of production that is traded for the commodities covered by the OECD-FAO Agricultural Outlook 2025–2034 rose from 16% in 2000 to 23% in the 2022–2024 base period, and is projected to stabilize at around 22% over the next decade. On a consumption basis, roughly 22% of all calories consumed worldwide are projected to cross at least one international border by 2034, up from 17% 20 years earlier.[1] These aggregate figures conceal a sharper regional polarization. Latin America, North America, Europe, and Central Asia are projected to expand their net export surpluses, while import dependence is rising fastest in Sub-Saharan Africa, whose net imports of basic food commodities are expected to grow by 55% by 2034, and in the Near East and North Africa, by 34%, driven primarily by population growth and natural-resource constraints. Africa's cereal imports are projected to account for more than one-third of total domestic cereal use by 2034 (OECD & FAO, 2025). Table 1 summarizes the regional reconfiguration over three decades.

Table 1. Net Agricultural Trade by Region (2002–2034)

Region	2002–2004	2012–2014	2022–2024	2034 (projected)
Latin America and the Caribbean	Net exporter (rising)	Net exporter (rising)	Largest net surplus	Continued expansion
North America	Net exporter	Net exporter	Net exporter	Net exporter
Europe and Central Asia	Net importer	Net exporter (from 2014)	Net exporter	Net exporter
Oceania	Net exporter	Net exporter	Net exporter	Net exporter
Sub-Saharan Africa	Net importer	Net importer	Net importer	+55% net imports vs. base
Near East and North Africa	Net importer	Net importer	Net importer	+34% net imports vs. base
South and Southeast Asia	Net exporter	Net exporter	Net importer (from base)	Net importer

Note: The table illustrates net agricultural trade by direction and magnitude, on a constant-value basis.

Source: Adapted from OECD & FAO (2025).

Demand-side drivers reinforce this geography. World population is projected to reach 8.8 billion by 2034, with Sub-Saharan Africa growing at 2.3% per year and per-capita income rising fastest in emerging Asia. India and Southeast Asia, taken together, are projected to account for 39% of global agricultural consumption growth to 2034 (up from 32%), even as China's share falls from 32% to 13%.[2]

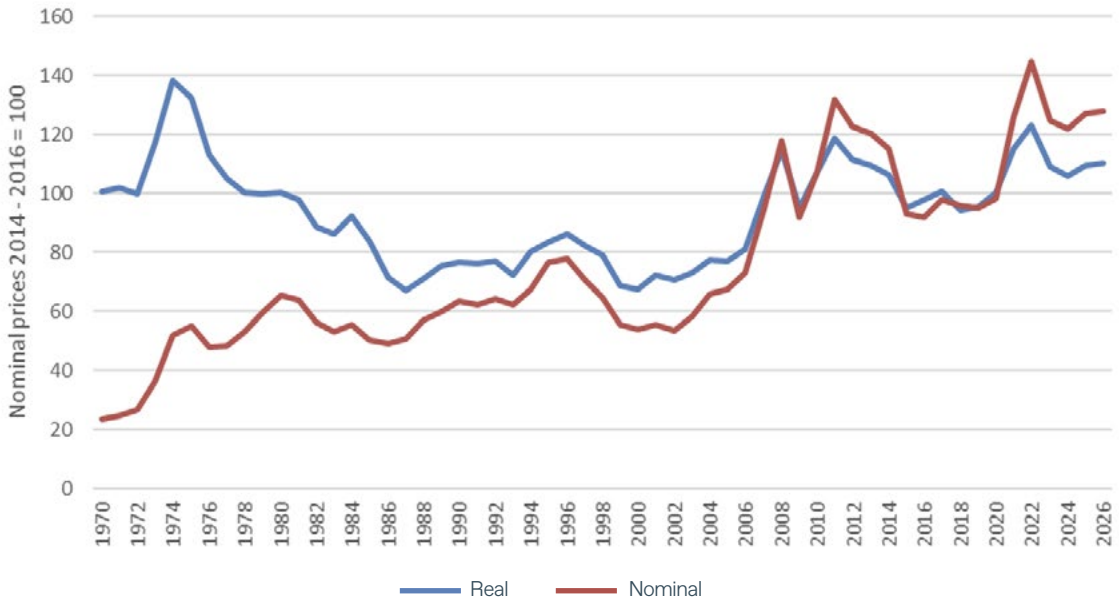
2.2 From Low and Long-Term Declining Prices Towards Excessive Volatility, External Shocks, and Supply Chain Disruptions

Real international agricultural prices declined gently over much of the 1970s, 1980s, and 1990s, driven by sustained productivity gains. This trend was exacerbated by domestic support and export subsidies, which helped push international prices even lower. International trade disciplines applying to agriculture, such as those enshrined in the WTO Agreement on Agriculture (AoA), largely reflect the challenges faced during this period. Since the early 2000s and particularly the food price spikes of 2007–2008, however, the main challenge facing agricultural trade has been

1 The value of global food and agricultural trade reached $1.9 trillion in 2023, and consumers today access an average of 225 distinct food items, far above the 120 typically produced domestically (OECD & FAO, 2025).
2 Per-capita intake of animal-source foods is set to rise 6% globally and by 25% in lower-middle-income countries but stagnates at 143 kcal per day in low-income countries, well below the FAO Healthy Diet Basket reference of around 300 kcal (OECD & FAO, 2025).

relatively higher and more volatile prices (Figure 2), as a result of changes in global demand combined with supply chain disruptions and external shocks such as conflicts, the COVID-19 pandemic, oil price fluctuations, and the physical impact of climate change.

Figure 2. FAO Food Price Index in Real and Nominal Terms (1970–2026)



Source: FAO (n.d.).

2.2.1 Climate Change

The clearest evidence of this regime shift comes from the agricultural-loss accounts in FAO's 2025 flagship report on disasters and food security. Between 1991 and 2023, agriculture sustained an estimated $3.26 trillion loss in production, averaging roughly $99 billion per year, with losses accelerating sharply from 2010 onward.[3] Nearly $2.9 trillion (close to 89%) is attributable to climate-related hazards, with floods alone accounting for more than $1.5 trillion (FAO, 2025c).

Table 2. Estimated Global Agricultural Production Losses by Hazard Type (1991–2023)

Hazard	Losses ($ billion)
Floods	≈ 1,500
Storms	720
Earthquakes	336
Droughts	278
Extreme temperatures	187
Wildfires	165
Volcanic activity	24
Total (incl. other)	≈ 3,260

Source: FAO (2025c).

3 Annual losses moved through three phases: $64 billion per year in the 1990s, $67 billion in the 2000s, and $144 billion per year from 2010 onward, with recent peaks of $192 billion in 2021 and $215 billion in 2022, across 191 commodities and 205 countries (FAO, 2025c).

These losses fall hardest on the regions whose import dependency is rising fastest: Africa lost an estimated 7.4% of its agricultural gross domestic product to disasters over the period, and lower-middle-income countries collectively shouldered $1.27 trillion in absolute losses, the highest of any income group. Slow-onset stressors such as land degradation now affect roughly 1.7 billion people (FAO, 2025c, 2025e).[4]

International trade is the principal mechanism by which such shocks are absorbed: by moving food from surplus to deficit regions, it buffers local production shocks and supports stability of both supply and prices (OECD & FAO, 2025). But this same interconnection means that climate-driven shocks in major exporting regions are transmitted rapidly into global prices and into the food-import bills of vulnerable countries—a dynamic examined in greater detail in the next subsection.

2.2.2 The Challenge of Thin Markets and Vulnerability to Supply Chain Disruption

Agricultural trade is highly vulnerable to shocks because exports of staple commodities are heavily concentrated in a small number of producers. By 2034, the top five rice exporters (India, Viet Nam, Thailand, Pakistan, and the United States) are projected to supply 81% of global rice trade, up from 77% today; the top four maize exporters (the United States, Brazil, Argentina, and Ukraine) account for 91% of the projected expansion of global maize trade; and the Russian Federation alone is projected to supply 25% of the world's wheat exports (OECD & FAO, 2025). The consequences of this concentration are concrete: a single 2012 drought in the United States pushed maize prices 53% above an already historically high five-year average, with severe consequences for low-income, net food-importing countries (FAO, 2025c).

The cascading effect of recent crises has compounded these vulnerabilities. The COVID-19 pandemic, the war in Ukraine, and successive episodes of fertilizer-market volatility coincided with extreme weather to test the resilience of agri-food supply chains; FAO simulations suggest that a two-year fertilizer-supply shock alone could push the FAO food-price index up by 13% through 2025–2028 (OECD & FAO, 2025). The Strait of Hormuz crisis that began in late February 2026 has added a maritime-chokepoint dimension: daily vessel transits through the strait fell from around 130 a day to single digits within weeks, a decline of more than 95% (WTO, n.d.-c). Because around one-third of global seaborne fertilizer trade, and a comparable share of the natural-gas feedstock used in nitrogen fertilizer production, normally passes through Hormuz, the crisis put fertilizer prices under considerable pressure during the 2026 spring planting season (United Nations Trade and Development [UNCTAD], 2026).

A central trade policy concern is the feedback loop between exporter responses and importer exposure. Export restrictions imposed by producing countries to stabilize domestic prices reliably worsen access for import-dependent partners, and climate change is making those incentives more frequent (Glauber, Laborde, & Mamun, 2022).

2.3 The Role of Agri-Food Supply Chains and Digitalization in Agricultural Trade

A third structural shift is transforming how agricultural trade is organized, monitored, and priced. Around a third of export value in agriculture and in food and beverages is traded through global value chains (Nenci et al., 2022), while corporate concentration in inputs and in the bulk-commodity trading sector remains high. What is new is the pace at which digital technologies are being embedded across these chains, with consequences for trade volumes, transparency, and the inclusiveness of market access.

4 Cereal output is especially volatile, with single-year drops of 314.7 million tonnes in 2012 and 227.5 million tonnes in 2013; the 2020–2023 "triple La Nina" reduced rapeseed, soybean, and palm oil production by 30%–40%; and marine heatwaves, whose annual frequency has risen by more than 80% over three decades, have cost fisheries $6.6 billion since 1985 (FAO, 2025c).

On the production and risk-management side, satellite Earth observation, artificial intelligence (AI) based weather forecasting and parametric crop-insurance platforms have moved from pilot to scale, with measurable effects on resilience. FAO estimates that every $1 invested in digital anticipatory action generates up to $7 in avoided agricultural losses. [5] Global market-information platforms such as FAO's Global Information and Early Warning System (GIEWS), the Food Price Monitoring and Analysis (FPMA) Tool, the Agricultural Stress Index, the Agricultural Market Information System (AMIS), and the International Food Policy Research Institute's Export Restriction Tracker now provide near-real-time visibility on supply, prices, and trade-policy responses across more than 120 countries—a degree of visibility that was simply unavailable when the WTO AoA was drafted. Smart-market and digital-traceability tools are also being deployed to bridge information gaps between value-chain actors and to support compliance with environmental, sanitary, and sustainability requirements, and at the smallholder end of the chain, agromet advisories and decision-support apps have demonstrated material productivity and income effects.[6]

A main caution qualifies this picture: the gains from digitalization accrue unevenly, with 2.6 billion people remaining offline globally and a further 38% of the world's population living within mobile-broadband coverage but not using it (FAO, 2025c). Without deliberate policy attention, digital transformation risks reinforcing the very asymmetries between major exporters and structurally deficit importers that this section has documented.

3. The Use of Trade Measures to Foster Sustainable Agriculture

3.1 A Typology of Trade and Trade-Related Measures Aimed at Fostering Sustainable Agriculture

Confronted with the challenges described above, governments attempting to promote sustainable agriculture have a range of trade and trade-related measures at their disposal. These can take several forms, including (i) price- and market-based measures, (ii) support measures and other economic incentives, and (iii) regulatory measures. Price- and market-based measures include border instruments such as import or export quotas, tariffs, and trade remedies against imports—such as safeguard measures or anti-dumping duties—as well as internal taxes applied to both imported and domestically produced goods. Support measures and other economic incentives include different types of agricultural subsidies but also government procurement or intellectual property and investment measures. Finally, regulatory requirements include bans and prohibitions, import or export licences, technical regulations, and conformity assessment procedures.

Building on the typology of trade-related environmental measures developed in the WTO Environmental Database, Table 3 presents an overview of ways that governments can use these types of trade and trade-related measures to promote sustainable agriculture. These can be broadly organized under two categories: (i) measures providing incentives to encourage sustainable production, consumption, and trade, and (ii) measures designed to discourage unsustainable practices. For each type of trade measure, Table 4 provides an example of how such instruments have been used in practice based on measures notified by WTO members.

5 Examples include AI weather models (Google's GraphCast and NVIDIA's FourCastNet) that produce week-long forecasts in under two seconds; Pula's parametric platform, which reaches 9.1 million farmers across more than 20 countries; AI flood modelling that enabled the evacuation of 90% of at-risk populations in Somalia in 2023; and the World Food Programme's PRISM and SKAI tools, which assess building damage 13 times faster and at 77% lower cost than conventional methods (FAO, 2025c).

6 The SEED Hub pilot in Sri Lanka raised participating farmers' rice productivity by 26% and rice sales by 48%, while West African agromet advisory services delivered $40 to $116 per hectare in income gains (FAO, 2025c).

Table 3. Trade and Trade-Related Policy Tools for Sustainable Agriculture

Type of Trade Measure		Encouraging/Incentivizing Sustainable Agricultural Production, Consumption, and Trade	Discouraging/Disincentivizing Unsustainable Agricultural Production, Consumption, and Trade
Price- and market-based measures	▪ Import/export quotas, duties, and tariffs ▪ Internal taxes ▪ Other price- and market-based measures	▪ Import tariff quota partly reserved for environmentally preferable or sustainably produced goods ▪ Removing tariff and non-tariff measures on environmentally preferable products and services	▪ Conditioning market access concessions to compliance with specific sustainability requirements (e.g. through tariff rate quotas or trade preferences) ▪ Import and export quotas/internal taxes on harmful pesticides and hazardous chemicals
Support measures and other economic incentives	▪ Subsidies	▪ Payments for environmental purposes (e.g. conditioning the provision of subsidies to environmental performances, cross-compliance schemes). ▪ Subsidizing the consumption and distribution of healthy food	▪ Removing environmentally harmful subsidies (e.g. subsidies for fossil fuels, fertilizers, pesticides) ▪ Removing domestic support encouraging the production of goods with high environmental footprint
	▪ Government procurement	▪ Sustainability requirements integrated in government procurement schemes	▪ Restricted procurement of agricultural inputs to exclude prohibited fertilizers and pesticides
	▪ Intellectual property rights	▪ Fast-track patent examination for green technologies	▪ Refusal of patents on environmental grounds
	▪ Investment measures	▪ Investment promotion for sustainable agricultural production	▪ Investment incentives aimed at curbing the unsustainable use of inputs (e.g. water)
Regulatory requirements	▪ Bans/prohibitions ▪ Import/export licences ▪ Technical regulations ▪ Standards ▪ Conformity assessment procedures	▪ Mandatory labelling schemes indicating the nutritious content of food (e.g. traffic light approaches for processed food) ▪ Voluntary standards and environmental labelling ▪ Private standards (e.g. carbon footprint)	▪ Import and export bans of harmful pesticides and hazardous chemicals ▪ Food safety regulations (e.g. maximum pesticide residue limits, nutrition requirements for processed foods) ▪ Mandatory environmental requirements (e.g. requirements concerning airborne pollutants, wildlife, or habitat protection) ▪ Mandatory due diligence requirements (e.g. on deforestation-free supply chains)

Source: Authors' elaboration.

Table 4. Trade and Trade-Related Policy Tools for Sustainable Agriculture: Examples From WTO Notifications

Type of Trade Measure			Example	Country	WTO Agreement	Source
Price- and market-based measures	Import/export quotas, duties, and tariffs		▪ Import tariff quota partly reserved for organic sugar and other specialty sugars	United States	Agriculture	G/AG/N/USA/114
	Internal taxes		▪ Differentiated pesticide levies based on the toxicity of substances to human health and ecosystems	Denmark	SCM	G/SCM/N/253/EU/Add.6
	Other price- and market-based measures		▪ State trading enterprise for wheat fostering environmental and social sustainability	Chile	State Trading	G/STR/N/19/CHL
Support measures and other economic incentives	Subsidies	Grants and direct payments	▪ Organic farming payments	Switzerland	Agriculture	G/AG/N/CHE/128
		Income or price support	▪ Programme of acquisition of agricultural products from family farming promoting biodiversity and organic/agroecological production	Brazil	Agriculture	G/AG/N/BRA/68
		Loans and financing support	▪ Subsidies for climate insurance and technical assistance to foster climate risk management	Uruguay	Agriculture	G/AG/N/URY/84
		Tax concessions	▪ Preferential tax treatment on environmental protection in agricultural production	China	Agriculture	G/SCM/N/401/CHN
		Non-monetary support	▪ Extension and advisory services to promote organic agriculture	Dominican Rep.	Agriculture	G/AG/N/DOM/55
		Other support measures	▪ Non-product-specific support for rainwater harvesting	Mauritius	Agriculture	G/AG/N/MUS/19
	Government procurement		▪ Procurement of agricultural inputs for sustainable management of natural resources	Paraguay	Agriculture	G/AG/N/PRY/21
	Intellectual property rights		▪ Refusal of patents on environmental grounds	Sri Lanka	TRIPS	IP/N/1/LKA/C/2 IP/N/1/LKA/I/2
	Investment measures		▪ Investment promotion in solar greenhouse dryer in agricultural products	Thailand	SCM	G/SCM/N/315/TH
Regulatory requirements	Bans/prohibitions		▪ Import prohibition of certain pesticides under the Stockholm and Rotterdam Conventions	Nicaragua	Quantitative Restrictions	G/MA/QR/N/NIC/6
	Import/export licences		▪ Import permits for plants and some plant products, to protect against the introduction of pests and diseases	United States	Import Licensing	G/LIC/N/3/USA/20
	Technical regulations		▪ Regulation of production and certification of organic agricultural products	Mozambique	TBT	G/TBT/N/MOZ/23
	Conformity assessment procedures		▪ Electronic certificate of inspection for imported organic products	European Union	TBT	G/TBT/N/EU/386

Note: SCM = Subsidies and Countervailing Measures; TRIPS = Trade-Related Aspects of Intellectual Property Rights; TBT = Technical Barriers to Trade.

Source: Authors' elaboration based on WTO notifications in the WTO Environmental Database (WTO, n.d.-a).

3.1.1 Price- and Market-Based Instruments

Price- and market-based instruments involve a range of instruments that can be applied to promote more sustainable agricultural practices. These may include preferential tariff treatment and tariff-rate quotas reserved for sustainably produced goods. For example, the United States maintains tariff-rate quotas partly reserved for organic sugar and specialty sugars, thereby improving the competitiveness of organic products (G/AG/N/USA/114). Fiscal incentives can similarly support sustainable production by lowering taxes for products meeting environmental criteria, such as differentiated pesticide levies imposed by Denmark based on the toxicity of substances to human health and ecosystems (G/SCM/N/253/EU/Add.6). The gradual removal of tax advantages and exemptions for chemical fertilizers and pesticides, as envisaged under recent European Union (EU) reforms, similarly seeks to better reflect the environmental costs associated with hazardous agricultural inputs (Council Directive (EU) 2022/45). In some cases, state trading enterprises also integrate environmental and social sustainability objectives into their operations, as illustrated by Chile's wheat state trading enterprise supporting plans and programmes that promote sustainability (G/STR/N/19/CHL).

3.1.2 Support Measures and Other Economic Incentives

Besides market-based instruments, governments can also use a wide range of support measures and economic incentives to facilitate the transition towards more sustainable food systems. These include different forms of domestic support such as direct payments for organic farming applied in Switzerland to compensate farmers for the additional costs associated with meeting stricter ecological requirements (G/AG/N/CHE/128). Similarly, in the EU, income support payments are tied to compliance with environmental requirements relating to wetlands, peatlands, and landscape protection through environmental cross-compliance (G/AG/N/EU/89). Price-support measures include initiatives such as Brazil's programme of acquisition of agricultural products from family farming promoting biodiversity and organic/agroecological production. Governments also use loans and financing support, as illustrated by Uruguay's programme supporting climate insurance and technical assistance to help family farms adopt good agricultural practices (G/AG/N/URY/84). In a similar vein, Brazil conditions access to rural credit in the Amazon biome on proof of compliance with environmental legislation and the absence of illegal deforestation (Brazil's Resolution 3545), while Chinese Taipei offers concessional green loans for pollution prevention and water and soil conservation investments (G/AG/N/TPKM/236). Non-monetary support includes extension and advisory services to promote organic agriculture (Dominican Republic - G/AG/N/DOM/55) or to discourage excessive fertilizer and pesticide use, as illustrated by Japan's MIDORI Strategy for Sustainable Food Systems (G/AG/N/JPN/304). Other measures support environmentally sustainable investments through preferential tax treatment (China - G/SCM/N/401/CHN) or grants for rainwater harvesting infrastructure (Mauritius - G/AG/N/MUS/19).

Besides subsidies, members can also use government procurement schemes to promote sustainable agriculture. For example, Paraguay prioritizes inputs supporting soil conservation, water efficiency, biodiversity protection, and sustainable land use through its procurement programme of agricultural inputs (G/AG/N/PRY/21). In a similar vein, India includes procurement restrictions excluding certain prohibited pesticides and fertilizers (G/AG/N/IND/40). Intellectual property measures are used both to fast-track patent examination procedures for environmentally beneficial technologies (United Kingdom - WT/TPR/S/476/Rev.1) and to refuse patents on environmental grounds (Sri Lanka - IP/IN/1/LKA/C/2 IP/N/1/LKA/I/2). Finally, a range of governments adopt investment measures to curb agricultural water overuse (India - G/AG/N/IND/19) or to provide incentives for renewable-energy-based agricultural technologies, such as Thailand's solar greenhouse dryers (G/SCM/N/315/THA).

3.1.3 Regulatory Requirements

Regulatory requirements play a key role in fostering a transition to more sustainable food systems. These include import prohibitions on hazardous pesticides and chemicals under international environmental agreements such as the Stockholm and Rotterdam Conventions (Nicaragua - G/MA/QR/N/NIC/6), import authorization systems aimed at preventing the introduction of pests and diseases (United States - G/LIC/N/3/USA/20), and technical regulations establishing maximum residue limits for pesticides in food and feed (European Union - G/SPS/N/EU/943). Such measures are complemented by conformity assessment procedures requiring mandatory testing and certification to verify compliance with environmental and food safety requirements before products can enter domestic markets (Burundi, Kenya, Rwanda, Tanzania, and Uganda - G/TBT/N/BDI/466, G/TBT/N/KEN/1612, G/TBT/N/RWA/1013, and G/TBT/N/TZA/1120 G/TBT/N/UGA/1924). Together, these instruments seek to reduce environmental and health risks associated with agricultural production while strengthening incentives for more sustainable farming practices and safer supply chains.

Governments also rely extensively on regulatory measures to promote sustainable agriculture. Organic farming regulations provide one important example. The EU's positive-list approach strictly limits permitted substances in organic farming (G/TBT/N/EU/1108), while Mozambique has established regulations governing the production, certification, labelling, and control of organic products (G/TBT/N/MOZ/23). Import authorization procedures and electronic certification systems are increasingly used to verify that imported organic products comply with domestic standards before entering the market, as illustrated by Switzerland's electronic certification requirements (G/TBT/N/CHE/243) and the EU's digital certificates of inspection for imported organic products (G/TBT/N/EU/386).

3.2 A Review of WTO Notifications of Trade and Trade-Related Measures Aimed at Fostering Sustainable Agriculture

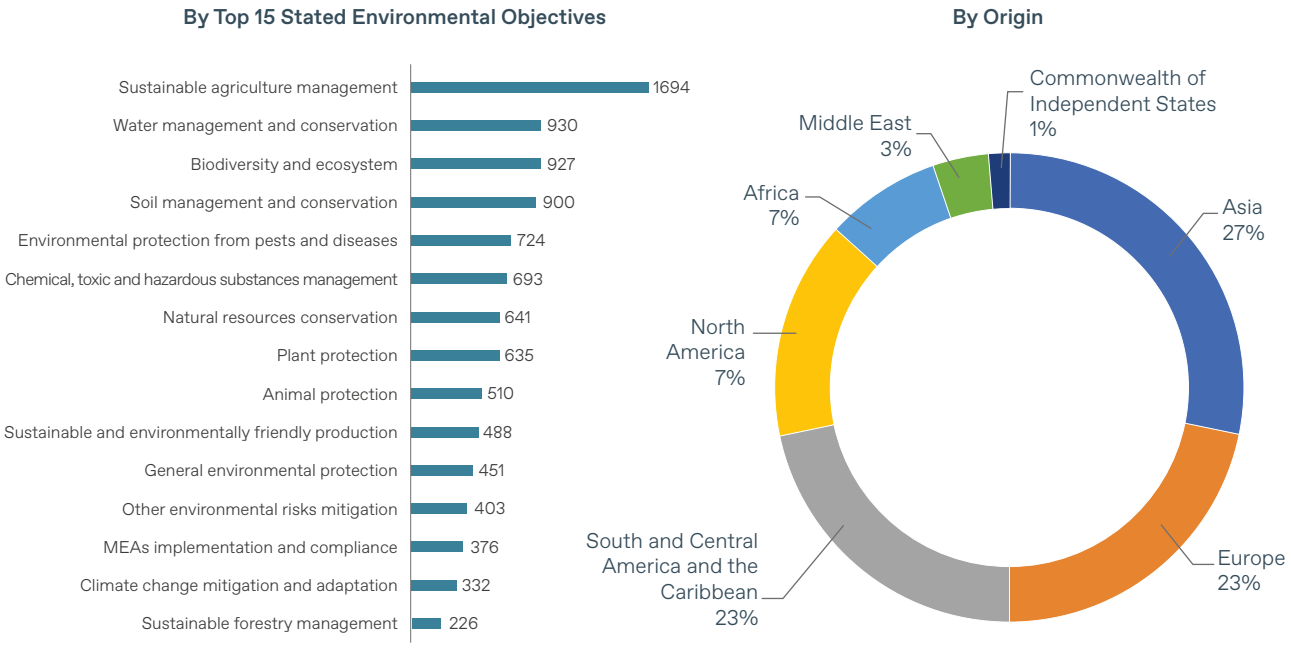
WTO notifications offer a useful indication of the growing use of trade and trade-related measures designed to foster sustainable agriculture over time. According to data compiled in the WTO Environmental Database (WTO, n.d.-a), members notified 6,034 agriculture-related measures with environmental objectives between 2009 and 2024.[7] While these notifications do not provide a comprehensive inventory of all measures, they nonetheless offer valuable insights into the increasing reliance on trade and trade-related tools to pursue sustainability goals in agriculture.

As shown in Figure 3, the notified measures pursued a broad range of environmental objectives. Most related to sustainable agricultural management, water and soil conservation, and biodiversity and ecosystem protection. Others focused on animal and plant health, climate change mitigation and adaptation, or the management of hazardous substances and chemicals. The geographical distribution of notifications also suggests that the use of trade and trade-related measures is not confined to developed economies. Between 2009 and 2024, Asian countries accounted for the largest share of notifications, with 1,638 measures, including 674 notified by Australia, followed by European countries with 1,390 notifications, largely originating from the European Union, and Latin American and Caribbean countries with 1,371 notifications.

Figure 4 further illustrates the evolution of notified measures by broad policy categories over the period. Although annual notification patterns fluctuate, subsidies and regulatory measures consistently represented the most frequently used instruments to address environmental objectives in agriculture, with their use showing a gradual increase over time relative to price- and market-based measures.

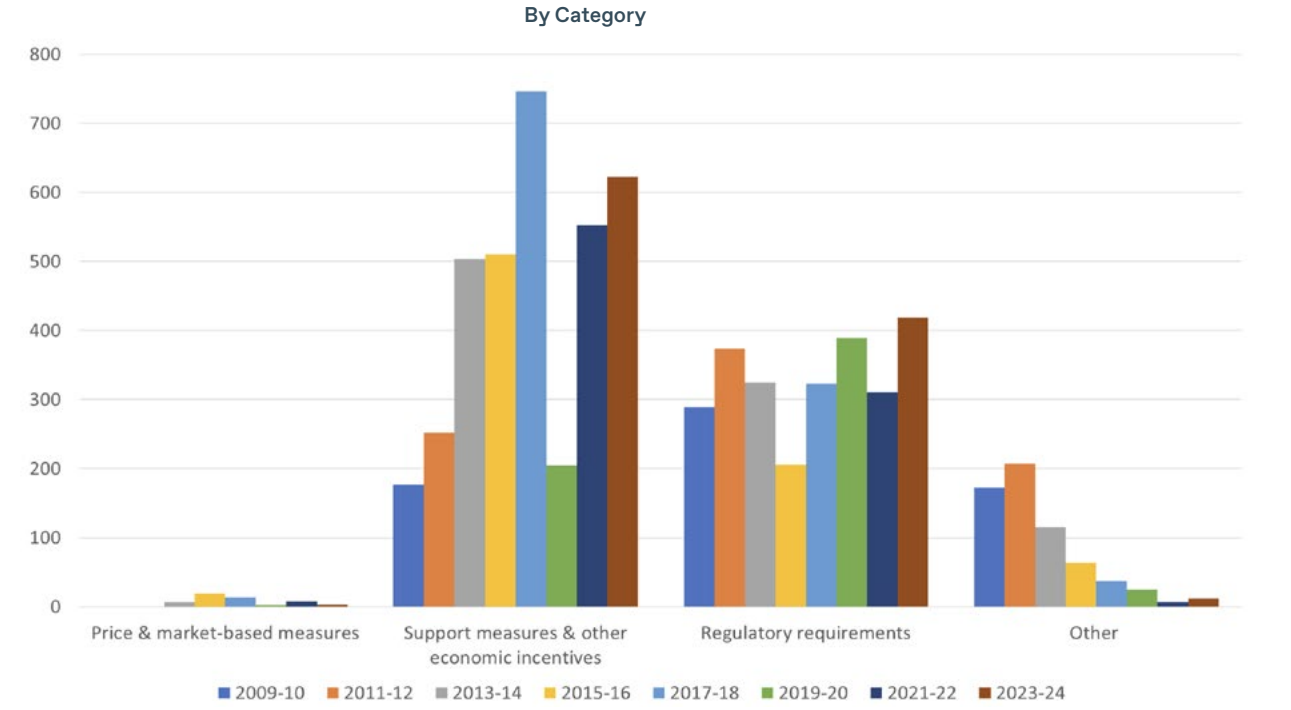
7 It should be noted, however, that some measures may be notified several times, under different agreements or as modifications are introduced to a particular measure.

Figure 3. Trade-Related Environmental Measures in Agriculture Notified to the WTO (2009–2024)



Source: Authors' elaboration based on the WTO Environmental Database (WTO, n.d.-a).

Figure 4. Number of Trade-Related Environmental Measures in Agriculture Notified to the WTO (2009–2024)



Source: Authors' elaboration based on the WTO Environmental Database (WTO, n.d.-a).

3.3 The Evolving Nature of Trade and Trade-Related Measures With Sustainable Agriculture as a Stated Objective

Along with the number of notifications, the nature of trade and trade-related measures aimed at promoting sustainable agriculture has evolved considerably in recent years. This is particularly the case of regulatory requirements used to address sustainability concerns, including product-related requirements such as food safety standards and production-related requirements such as rules on nutrient use and airborne pollutants, wildlife and habitat protection, and animal welfare prescriptions. Increasingly, governments integrate due diligence obligations and traceability requirements to ensure that products comply with sustainability criteria. The European Union Deforestation Regulation, for example, requires operators and traders placing certain commodities on the EU market to demonstrate that products are deforestation-free and produced in compliance with relevant legislation in the country of production.

Another important development is the growing use of carbon accounting mechanisms to assess the environmental footprint associated with agricultural production and trade. Increasingly, trade and trade-related measures use carbon accounting to quantify embedded emissions, land-use change, deforestation risks, and other environmental impacts across supply chains. These approaches typically require detailed monitoring, reporting, and verification (MRV) systems, often supported by digital traceability tools, to demonstrate compliance. As a result, the ability to measure and verify environmental performance is becoming a key factor shaping market access conditions and participation in certain agricultural value chains. This trend is likely to have growing implications for internationally traded agricultural products, particularly in sectors associated with high emissions or land-use impacts such as livestock, fertilizers, palm oil, soy, and forestry-linked commodities.

Importantly, comparing carbon-intensity metrics across products, sectors, and countries is a complex task. Differences in data collection methodologies, the scope of emissions covered, and the level of data granularity required create challenges in achieving comparable metrics (OECD, 2024). Divergent methodologies and reporting obligations can lead to regulatory fragmentation and significant compliance costs, especially for producers and exporters operating across multiple markets. Concerns have also emerged about the capacity of developing countries to comply with increasingly data-intensive requirements.

As many of these initiatives require compliance with specific environmental requirements, they are sometimes perceived as protectionist, extra-territorial, discriminatory, or unfairly putting the burden of adjustment on producers in developing countries. Concerns are especially high in economies that struggle to meet new environment-related requirements or lack affordable access to relevant technologies. In other cases, there are concerns that methodologies and approaches adopted in developing countries are not recognized as equivalent in more advanced economies. In this context, the Organisation for Economic Co-Operation and Development has highlighted the importance of interoperable carbon-intensity metrics based and monitoring, reporting, and verification frameworks allowing data collected for one purpose to be reused for others, thereby improving consistency across carbon accounting systems (OECD, 2025c).

3.4 The Proliferation of Voluntary Sustainability Standards

Alongside government measures, voluntary sustainability standards (VSS) have proliferated in recent decades. These standards establish economic, social, and/or environmental requirements that producers and firms may voluntarily follow to make their products more sustainable (UNCTAD, 2022). They include a range of measures,

such as sustainability production requirements through standards or codes of conduct, mechanisms to ensure compliance, or capacity building and supporting services to producers including training or impact monitoring.

Beyond their voluntary adoption, VSS are increasingly integrated into government policy instruments, including due diligence regulations, trade agreements, public procurement policies, and export promotion strategies, as a way to demonstrate compliance with government requirements (Sarmiento et al., 2025). Consumer demand and preferences, as well as the recognition of certain voluntary standards as valid for legislative frameworks, may lead these standards to become de facto requirements for accessing markets, particularly when adopted by countries that account for a large share of global imports (UNEP & International Trade Centre, 2023).

While VSS can help producers obtain higher prices, the administrative costs associated with certification, compliance, and conformity assessment procedures can exclude many producers in developing countries, especially smallholders. In this context, several initiatives seek to reduce fragmentation among private standards, ensure they are science-based, and promote non-discrimination and interoperability. For example, the International Organization for Standardization (ISO) has developed "meta-standards" in areas such as transparency and accountability. Similarly, the International Social and Environmental Accreditation and Labelling Alliance (ISEAL) has established guidelines for the design and implementation of social and environmental standards, providing a globally recognized framework of best practices.

4. International Cooperative Approaches on Sustainable Agriculture and Trade

The measures surveyed in Section 3 are, for the most part, adopted unilaterally. Yet as agricultural production and consumption become more interconnected, the limitations of acting alone quickly become clear. Agri-food trade is increasingly organized through global value chains, with production distributed across multiple countries and dependent on inputs sourced worldwide (OECD, 2025a). As a result, the environmental impacts of agricultural production and consumption are not contained within national jurisdictions but instead extend across borders. The transboundary nature of the sustainability challenges also implies that autonomous approaches are inherently limited and risk creating fragmentation, regulatory divergence, and trade tensions. This is evident in the case of climate change.

Stronger international cooperation can help ensure that trade policies are transparent, science-based, and non-discriminatory, while also helping developing countries mobilize the finance, technologies, and technical assistance needed to enable their producers to comply with evolving standards and participate more effectively in agri-food value chains. It also improves efficiency by reducing duplication of compliance systems, lowering transaction costs, and promoting interoperability across different regulatory frameworks, including in issues such as carbon accounting, due diligence, and traceability requirements. Finally, inclusive cooperation strengthens equity by helping developing countries participate in agricultural trade without facing disproportionate compliance burdens, especially through capacity building, technical assistance, and support for regulatory compliance. The following sections highlight key areas where enhanced cooperation is critical to advance sustainable production and trade in agricultural products.

4.1 Removing Environmentally Harmful Agricultural Subsidies and Other Economic Incentives

Of the $624 billion in support provided to agricultural producers between 2022 and 2024, roughly two-thirds is considered production- and trade-distorting and potentially harmful to the environment (OECD, 2025a). Such support also remains highly concentrated among a handful of large producing countries and mostly benefit temperate products. Gautam et al. (2022) estimate that repurposing a portion of government subsidies towards investment in developing and disseminating green innovations and technologies for crops and livestock that are both productivity-enhancing and emissions-efficient could reduce agricultural emissions by more than 40%. At the same time, millions of hectares of land could be restored to natural habitats. [8]

Several international organizations advocate phasing out, redirecting, or repurposing environmentally harmful subsidies. The Kunming-Montreal Global Biodiversity Framework, adopted at the 2022 United Nations Biodiversity Conference, called for reducing subsidies harmful to biodiversity by at least $500 billion a year by 2030, starting with the most harmful incentives.

Discussions on environmentally harmful agricultural subsidies have mostly focused on autonomous domestic reforms aimed at repurposing support towards the provision of public goods, sustainable practices, or research and development. While domestic action is ultimately key, such autonomous efforts would benefit from some form of cooperation at the international level. In the absence of coordinated action, autonomous reform in one country can lead to leakage or enhanced environmental degradation in third countries as production increases to compensate for declining outputs in the reforming country. More broadly, international discussions, including peer pressure, play a vital role in strengthening the case for subsidy reforms. Finally, cooperative approaches can avoid the free rider problem and alleviate concerns of loss of competitiveness as a result of domestic subsidy reform.

A key prerequisite for such collective action, however, is the need to establish a shared understanding of what constitutes environmentally harmful agricultural subsidies. Existing literature mostly points to market price support, payments based on output, and input subsidies as potentially more harmful than other types of support measures (Henderson & Lankowski, 2019). However, it recognizes that the environmental impact of a particular subsidy scheme is highly context-specific and depends on a wide range of factors related to subsidy design and different agroecological conditions. To further complicate the equation, individual programmes often involve trade-offs between different environmental objectives or broader public policy goals such as rural development, food, or livelihood security.

In this context, greater transparency and standardized reporting of the environmental impacts of agricultural support could help establish a shared understanding of what constitutes environmentally harmful agricultural subsidies. Going one step further, a possible approach would be to focus on commodities or subsectors associated with particularly significant environmental footprints, such as GHG emissions, biodiversity loss, or water scarcity. A limitation of this approach, however, is that it does not account for the wide variation in environmental impacts across regions and over time, reflecting differences in natural resource endowments, technologies, farming practices, and policy settings. Treating commodities as a homogeneous sector would fail to capture these critical nuances.

Another option is to consider the types of farming practices or production methods incentivized by support measures. This could be done by singling out farming practices associated with positive environmental impacts

8 This section builds extensively on the report of an International Expert Group on Environmentally Harmful Agricultural Subsidies (2025) convened by the Forum on Trade, Environment, & the SDGs.

or by listing those linked to environmental degradation. One challenge would be the need to establish a shared understanding of what could be considered as environmentally beneficial or harmful farming practices, inputs, or technologies with the risk of ending with the lowest common denominator.

A practical approach to deal with these limitations could be to define a core set of subsidies that would be deemed environmentally harmful unless the subsidizing member can demonstrate that the scheme in question does not result in environmental damage through regular monitoring over time or that effective flanking measures are implemented. This approach would essentially reverse the burden of the proof by ensuring that the responsibility of showing the absence of harmful effect falls on the country granting the subsidy. The main advantage of this approach is that it would take into account particular design elements, or cross-compliance requirements, which could attenuate the environmental impact, but cannot always be reflected in an *ex-ante* typology. This approach would be similar to the one under negotiations in the second phase of the WTO fisheries subsidies talks, where members are defining a set of prohibited subsidies deemed to contribute to overcapacity and overfishing unless the subsidizing member demonstrates that measures are being implemented to maintain the targeted fish stocks at biologically sustainable levels.

Finally, striking the right balance among sometimes conflicting national objectives, including rural livelihood and food security, may require targeted exemptions. These could range from longer transition periods to exemptions for countries that contribute only a negligible share to global environmental pressures, for small-scale, low-income, or resource-poor producers, or for countries at low levels of economic development, such as least developed countries.

From a practical perspective, cooperation in this area can be advanced through forums or processes such as the Kunming-Montreal Global Biodiversity Framework, the WTO, the OECD, the G20, the FAO, the World Bank, or regional initiatives. Such cooperation can also take a wide range of forms, depending on what is realistically achievable in different contexts. Besides new disciplines, the international arena can provide space to facilitate exchange of good practices and lessons learned from autonomous reforms. Enhanced transparency on the sustainability dimensions of domestic support schemes based on standardized reporting requirements and a regular peer-review process can lay the groundwork for concerted action. Finally, more advanced forms of cooperation could involve developing collective soft-law approaches, such as non-binding guidance for the design of subsidy schemes or voluntary pledges to help members transition towards more sustainable agricultural practices.

4.2 Fostering Interoperability and Equivalences of Regulatory Measures

As noted in Section 3, governments are increasingly relying on trade and trade-related measures to pursue sustainability objectives in the agricultural sector. These measures are often designed and implemented at the domestic level, with limited coordination across jurisdictions. As a result, differences in regulatory approaches and methodologies can contribute to an increasingly fragmented landscape of national, bilateral, and regional efforts as well as supply chain or sector-specific initiatives and public-private partnerships. Concerns have subsequently emerged that such a growing patchwork of measures may generate competitiveness tensions among trading partners, increase compliance costs for businesses, create unnecessary barriers to trade, and affect developing countries with limited financial, technical, and institutional capacities to comply with evolving requirements (Bellmann et al., 2025).

For example, while many trade and trade-related measures pursue broadly similar objectives, they often differ significantly in terms of the specific requirements (e.g. deforestation-free vs illegal deforestation-free or different eligibility criteria for biofuels) and conformity assessment procedures to demonstrate compliance. Such differences

can generate substantial information costs for producers and exporters, increase specification costs where different production processes are required across markets, and raise conformity assessment costs linked to multiple certification and verification systems (Frezal & Deuss, 2025).

In this context, a key challenge is how to ensure that regulatory measures effectively contribute to sustainability in the agricultural sector while remaining transparent, predictable, and responsive to different circumstances and levels of development. While the harmonization of regulatory measures across countries appears unlikely given differences in national circumstances, policy preferences, and institutional capacities, there is mounting recognition that international cooperation in this area is needed to enhance coherence, foster transparency, reflect development considerations, and support interoperability and equivalences of existing and future measures.

The multilateral trading system already provides a forum for transparency and policy dialogue where members notify their environmental measures with potential trade effects. It also provides a multilateral space to raise specific trade concerns and share experiences and good practices regarding such measures, for example in the Technical Barriers to Trade and Sanitary and Phytosanitary (SPS) committees. Beyond transparency and policy dialogue, cooperation to reduce regulatory fragmentation can take multiple forms at the unilateral, bilateral, regional, and multilateral levels. At the domestic level, governments can improve transparency and regulatory coherence by using good regulatory practices such as ex-ante and ex-post regulatory impact assessments or holding consultations with stakeholders and trading partners. These approaches can help lower information and compliance costs while building confidence in the quality and predictability of regulatory systems. Additionally, greater use of international standards in national frameworks can promote regulatory convergence globally, helping to reduce specification costs throughout value chains. Cross-border recognition frameworks that streamline administrative processes for market access (including through equivalence and mutual recognition agreements) can lower conformity assessment costs.

Going forward, one possible avenue would be to develop a shared understanding, potentially taking the form of non-binding guidance, on the design and implementation of trade-related environmental measures in agriculture. Such guidance could reflect good practices among governments and pursue three complementary objectives: reducing fragmentation and increasing coherence; fostering transparency around the implementation of measures affecting agricultural trade; and incorporating development considerations, particularly to ensure that new requirements do not exclude producers in developing countries from international markets.

This cooperation could be pursued at different levels, including identifying relevant principles of international law, improving processes and practices for developing and implementing measures, and addressing technical aspects of these measures (Bellmann et al., 2025). A potential approach could be to develop guidance on cross-cutting issues common to various trade and trade-related measures, such as measuring embedded emissions in agricultural products.

4.3 Facilitating the Development, Diffusion, Access to, and Uptake of Goods, Services, and Technologies That Support Sustainable Agricultural Production

Trade can play an important role in facilitating the diffusion, access to, and uptake of goods, services, and technologies that support sustainable agricultural production. These may include climate-resilient crop varieties with greater tolerance to heat and salinity, precision agricultural machinery that maximizes input efficiency, efficient irrigation systems such as drip- or solar-powered networks, water conservation and storage infrastructure, and early warning systems. Beyond goods, trade in services plays an increasingly vital role in supporting sustainable agricultural

production. These include agricultural extension and advisory services, remote sensing and satellite-based monitoring, climate- and weather-forecasting services, and digital platforms that connect farmers to markets. Services play a key role in supporting both the development and adoption of greener production methods, while also enabling the production and deployment of environmental goods (OECD, 2025b).

A first step in this discussion should be defining the environmental challenge to be addressed (e.g. climate change mitigation, climate adaptation, biodiversity loss, water scarcity, soil degradation, or desertification) and working backwards to understand how international trade and trade policies can address the issue at hand and the kinds of goods, services, or technologies that may help. It will be important not to frame this conversation as a mere market-access negotiation aimed at liberalizing a set of goods and services but rather as an effort to understand what prevents access to goods, services, and technologies critical to meet environmental and climate goals and commitments. Depending on the sector, this may be higher tariffs, but it can also be a lack of finance-supporting investment, differences in standards or regulations, or intellectual property and licensing costs. In such cases, the answer may be regulatory cooperation, investment facilitation, innovative licensing agreements, government procurement, or trade financing as opposed to endless discussions on lists of Harmonized System codes of products to be liberalized.

In this context, intergovernmental initiatives provide a useful platform to explore how trade rules could facilitate the development, diffusion, accessibility, and uptake of environmental goods, services, and technologies. For example, governments participating in the WTO Trade and Environmental Sustainability Structured Discussions (TESSD) have identified a series of cooperation opportunities relevant to renewables, which may also be relevant to sustainable agricultural production. For services, these include improving regulatory transparency and applying good regulatory practices to licensing and authorization procedures. For goods, they include trade facilitation measures to streamline and expedite their movement across borders, cooperation on technical regulations, labelling, certification and conformity assessment procedures, as well as supply chain traceability and certification, and mutual recognition of standards (WTO, 2024b).

Intellectual property frameworks also play a key role in supporting the development of technologies needed for sustainable agricultural production. By providing incentives for research and innovation, they help mobilize resources for the development of climate-resilient crops, improved seed varieties, digital agricultural technologies, and environmentally friendly inputs. At the same time, the design and implementation of intellectual property regimes have important implications for access to such technologies, particularly for smallholders and producers in developing countries. For example, at the multilateral level, governments could explore ways to enhance the effectiveness of existing WTO provisions related to technology transfer, including by assessing whether incentives provided to companies and institutions in developed countries effectively help meet the technology needs of least-developed countries (Calvo, 2025).

4.4 Providing Trade Incentives for Sustainably Produced Agricultural Products or Healthy and Nutritious Foods

Trade policies can be leveraged to reward agricultural production that delivers environmental or health benefits. One promising approach is to provide positive trade incentives for goods that meet sustainability criteria (Bellmann, 2023) or offer nutrition-related benefits. This approach relies on trade policy tools, such as tariff preferences, regulatory facilitation, and procurement advantages, to make these products more competitive, encouraging producers to adopt more environmentally sustainable practices or expand the production of healthy and nutritious foods. These incentives could be used to reward producers who help reduce deforestation, implement biodiversity and water conservation practices, or produce nutrient-rich foods such as fruits, vegetables, legumes, and pulses.

For healthy and nutritious foods, one possible approach would be to develop a framework aimed at improving access to healthy diets. Such a framework could identify a list of agricultural products considered relevant to healthy diets, such as fruits, nuts, and leafy vegetables, for which tariff preferences, regulatory facilitation, or procurement advantages could be considered, accompanied by a brief justification for their inclusion in the list.

Enhanced market access for sustainably produced agricultural products or healthy and nutritious foods can take several forms. The most direct is granting preferential treatment, such as reduced tariffs for products certified as meeting environmental sustainability or nutrition standards. Governments may also allocate additional tariff-rate quotas to qualifying agricultural products, offer expedited SPS or customs procedures, or provide preferential treatment in public procurement programmes.

More generally, classic market access disciplines such as tariff reductions could be presented alongside other trade policy tools to facilitate access to nutritious foods, including cooperation on SPS measures and government procurement. These measures would not restrict trade in other products; rather, they would create positive incentives to improve the competitiveness of products benefiting the environment or human health.

Because these policies expand market access rather than restrict trade, they are often less contentious than many regulatory measures. Even so, they should be designed in a manner consistent with core WTO principles such as non-discrimination and national treatment. For example, policy instruments including excise taxes on sugar-sweetened beverages, which apply equally to imported and domestically produced foods and beverages, can be effective in supporting nutrition objectives (FAO, 2025d).

Regional trade agreements (RTAs) could also be leveraged to provide positive incentives to promote sustainably produced agricultural products or healthy and nutritious foods. The relatively recent inclusion of sustainable food systems chapters in trade agreements, even where provisions are only partially binding, could provide a pathway for better aligning trade with health and nutrition objectives (Thow & Patay, 2025). Some RTAs also encourage the adoption of voluntary sustainability certification schemes, such as those related to organic farming, fair trade, or sustainable forestry.[9] In a similar vein, the new Agreement on Climate Change, Trade, and Sustainability (ACCTS) signed by Costa Rica, Iceland, New Zealand, and Switzerland in November 2024 establishes a set of guidelines to inform the development and implementation of voluntary ecolabelling programmes, including those focused on sustainable agriculture and sets out non-binding guidelines to inform the use of eco-labels. Key among these guidelines is a proposal to ensure that the voluntary eco-labels are aligned with international standards or guidelines, support the harmonization of best practices, and avoid duplication with international standards and instruments. By doing so, they help reduce fragmentation and lower the costs associated with complying with numerous overlapping schemes.

Another example is the Swiss-Indonesian Comprehensive Economic Partnership Agreement, in force since 2021, which reduces tariffs on sustainably produced Indonesian palm oil by 40% within a fixed quota. When implementing the provision, the Swiss government undertook a benchmarking exercise based on the sustainability criteria listed in the agreement and identified four sustainability standards to certify compliance. Given the relatively high level of tariff protection that still prevails for agricultural products in most countries, an approach that combines market-access preferences with compliance requirements linked to sustainability standards would benefit from wider implementation across a broader range of products and countries. The reference to standards—including well-established VSS reflecting local conditions—could also serve as a mechanism for recognizing equivalence or strengthening the mutual recognition of different schemes used to comply with import requirements. However, the experience so far suggests that the implementation of such schemes faces several challenges.[10]

9 See, for example, Annex 8-G of the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP) on organic products.
10 Since the entry into force of the Swiss-Indonesian Comprehensive Economic Partnership Agreement, only one container of sustainably produced palm oil has been exported to Switzerland. This is partly because Indonesia was not exporting palm oil to Switzerland in the first place, but also because palm oil is often not exported as a stand-alone product, but is embedded in other industrial products.

Voluntary sustainability standards are increasingly integrated into government policy instruments, including due diligence regulations, free trade agreements (FTAs), public procurement policies, or export promotion strategies, to demonstrate compliance with governments requirements. For example, Mexico and Ecuador recognize VSS within their national public procurement strategies to verify the sustainability of forest products (Sarmiento et al., 2025).

The extent to which producers can benefit from enhanced market access for sustainably produced agricultural products or healthy and nutritious foods depends not only on the ability of governments to integrate positive incentives into trade policies, but also on the capacity of producers to comply with evolving sustainability standards and requirements. Many producers in developing countries face significant constraints due to a lack of infrastructure, insufficient digital connectivity and technical expertise, and limited access to finance. Without adequate support, sustainability standards and requirements risk excluding these producers rather than creating new market opportunities for them.

5. Possible Venues for Enhanced Cooperation on Trade and Sustainable Agriculture

There is no single forum to discuss cooperation on trade and sustainable agriculture. Since the Uruguay Round of multilateral trade negotiations and the conclusion of its Agreement on Agriculture, the WTO has naturally become a centrepiece of multilateral trade and agriculture governance. Yet, in the absence of a single arrangement governing all facets of the relationship between trade and sustainable agriculture, governments have also been pursuing cooperation through other instruments and governance mechanisms at the multilateral, plurilateral, and regional levels. Figure 5 provides a broad overview of international processes relevant to such nexus.

At the higher political level, a range of high-level political declarations and commitments, including the Sustainable Development Goals, and international processes like the United Nations Food Systems Summit inform cooperation on trade and sustainable agriculture. Other international political processes, such as deliberations under the different structures of the G20, as well as bilateral and regional arrangements, also provide broad political guidance on agricultural trade.

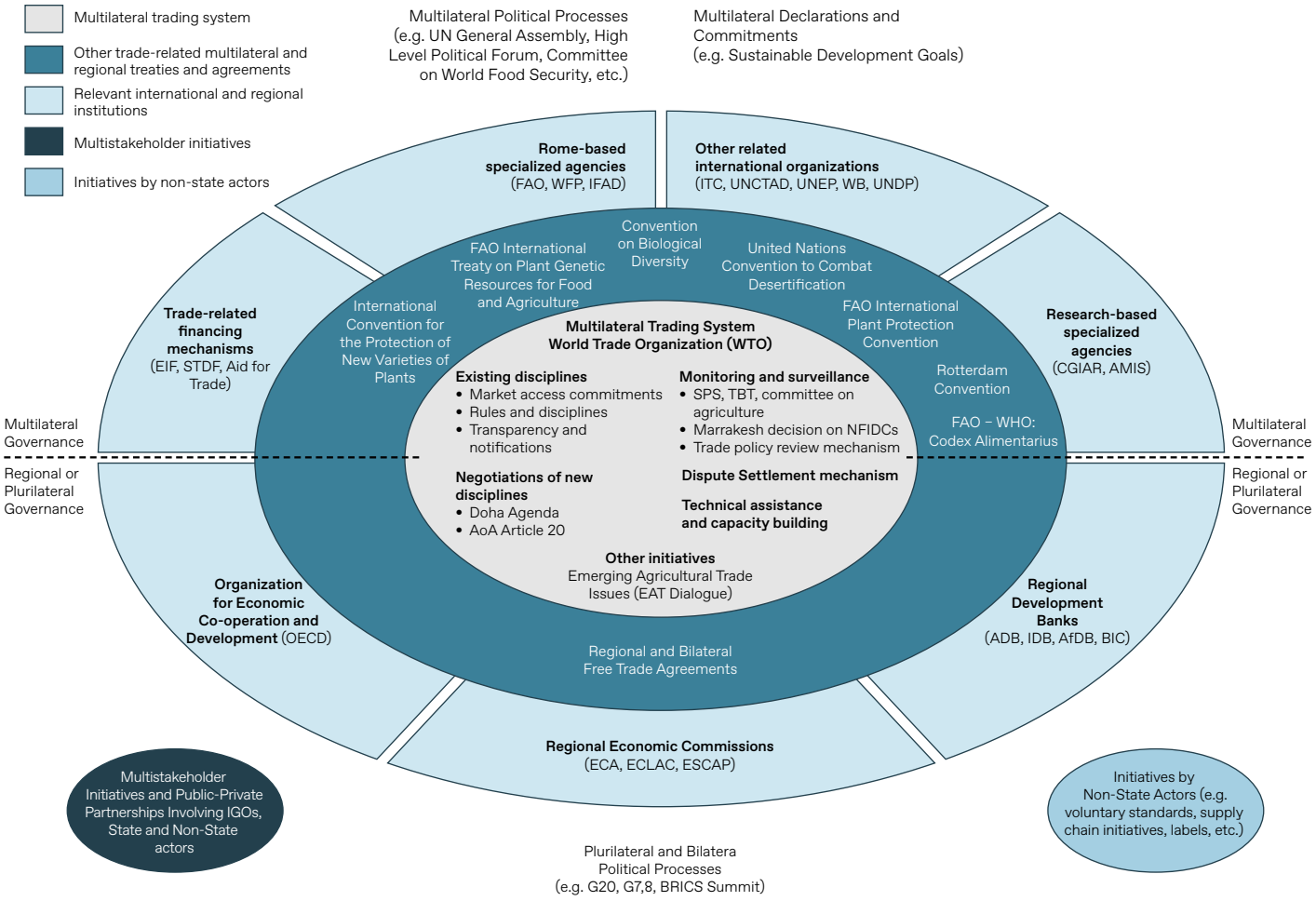
High-level commitments and declarations are then advanced and operationalized through various international treaties and agreements, as well as through international and regional institutions with influence over trade, such as regional development banks, economic commissions, specialized United Nations agencies and bodies such as the International Trade Centre, UNCTAD, and the World Bank, research-based institutions including the Consultative Group for International Agricultural Research (CGIAR), and dedicated financing mechanisms like the Aid for Trade Initiative and the Enhanced Integrated Framework. Finally, many multi-stakeholder processes and initiatives by government and non-state actors focus on international cooperation and provide a space of dialogue and exchange of experiences. The following section highlights possible avenues for enhanced cooperation on trade and sustainable agriculture.

5.1 Negotiations in the CoA-SS and Deliberations in the WTO

The WTO Agreement on Agriculture, in force since 1995, established the first comprehensive disciplines for agricultural trade, covering market access, domestic support, and export competition. In all these

areas, members undertook specific liberalization commitments enshrined in their individual schedules of concessions. The agreement also considers non-trade concerns, including food security and the need to protect the environment, and provides special and differential treatment for developing countries. A decision on Measures Concerning the Possible Negative Effects of the Reform Programme on Least-developed and Net Food-importing Developing Countries also formed part of the overall outcome.

Figure 5. Mapping of International Processes Relevant to Trade and Sustainable Agriculture



Note: This mapping is intended to be illustrative, not comprehensive, and does not aim to depict the relative relevance or influence of the various processes and institutions.

Source: Authors' elaboration.

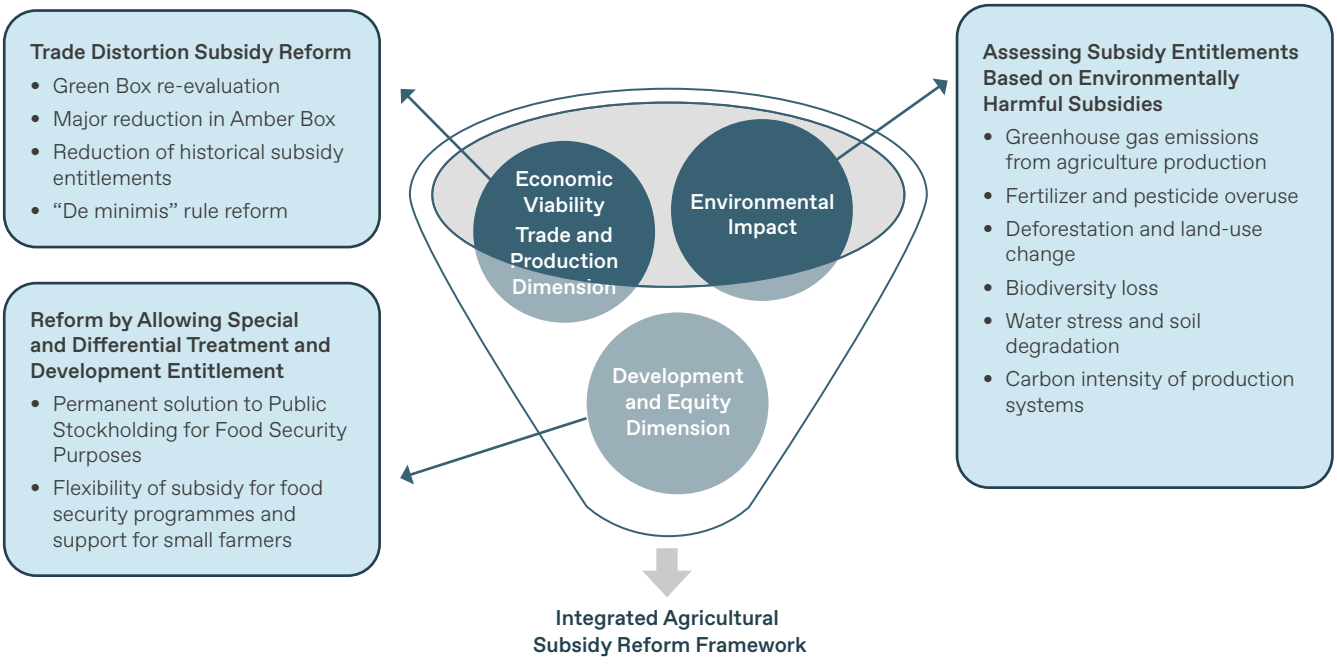
Article 20 of the agreement mandates an ongoing process of reform to reduce agricultural support and protection, taking into account non-trade concerns including the environment but also special and differential treatment for developing countries with a view to establishing a "fair and market-oriented agricultural trading system." Agricultural negotiations under the newly formed WTO began in 1999 and were incorporated two years later in the Doha Development Agenda, with dedicated negotiations running in the Committee on Agriculture in Special Session (CoA-SS). In more than two decades, however, they

have produced only incremental results. The most significant was the 2015 Nairobi decision to eliminate agricultural export subsidies. Another important milestone was a 2013 peace clause to protect developing countries from legal challenges under the AoA if the subsidies they provide to purchase food at administered prices under their public stockholding programmes breach agreed subsidy limits (typically 10% of the value of production).

Finally, at the Twelfth WTO Ministerial Conference (MC12) in 2022, members adopted a landmark decision not to impose export prohibitions or restrictions on foodstuffs purchased by the World Food Programme for non-commercial humanitarian purposes. They also issued a Ministerial Declaration on the Emergency Response to Food Insecurity establishing a work programme in the regular Committee on Agriculture to consider the needs of least developed countries and net food-importing developing countries to increase their resilience in the face of trade disruptions, record prices, and excessive volatility resulting, among others from the COVID-19 pandemic and the conflict in Ukraine. Beyond these achievements, however, ministerial conferences since 2015, including MC13 in Abu Dhabi in 2024 and MC14 in Yaoundé in 2026, ended without guidance on how to advance the broader reform process.

Agricultural discussions have nonetheless continued, with a focus on eight key areas: (i) domestic support; (ii) market access including tariff protection; (iii) export competition including export subsidies and measures having comparable effects; (iv) export prohibitions and restrictions; (v) cotton subsidies and market access; (vi) public stockholding for food-security purposes, including how farm subsidy rules should apply when developing countries buy food at government-set prices; (vii) a special safeguard mechanism to allow developing countries to raise tariffs temporarily in the event of a sudden surge in import volumes or price depression; and (viii) transparency and notifications.

Figure 6. Linking Existing Agricultural Subsidy Reform Agendas with Emerging Sustainable Agriculture Dimensions in the CoA-SS



Source: Authors' elaboration.

Negotiations to date have essentially focused on the trade- and production-distorting aspects of border measures and subsidies and, to some extent, on the development and food-security dimension. Environmental sustainability issues have also been raised in discussions, for example in the context of domestic support negotiations (see Figure 6). The Cairns Group of food-exporting countries, for instance, has asked not only whether agricultural support distorts trade but whether it rewards excessive input use, deforestation, and emission-intensive production. It was also raised in the context of the growing shift of trade-distorting support towards the green box of non- or minimally trade-distorting support including environmental payments, a category exempt from reduction commitments. Of roughly $610 billion in total notified domestic support in 2019, the Green Box represented around 75.6%, close to three times all other categories combined and more than double its level in 2000 (WTO, 2023).

Some members, however, have been reluctant to bring the environmental dimension into those discussions, holding that the WTO is not an environmental organization and therefore lacks the mandate and institutional capacity to address these issues. Others are concerned that long-standing development priorities in agriculture—including public stockholding for food security, a special safeguard mechanism for developing countries, and cotton—remain unresolved and caution that opening new sustainability discussions would divert attention from core development priorities and weaken trust in the negotiating process (WTO, 2025a).

A second obstacle is the absence of a shared understanding of what sustainable agriculture means in a trade context. Members approach the concept differently according to their level of development, agricultural structure and national priorities. For many developing countries it cannot be reduced to environmental or climate aspects alone, but must also encompass food security, rural livelihoods, structural transformation and poverty reduction.

With limited progress taking place in WTO bodies, a subset of members has begun to create space for structured discussion without prejudging these questions. Following MC13, Brazil proposed a dedicated, General Council-led Dialogue on Sustainable Agriculture in the Multilateral Trading System (WTO, 2024a). A WTO retreat on the subject in May 2025 drew some 130 delegations (WTO, 2025a), and the Committee on Trade and Environment devoted its sixth thematic session, in November 2025, to sustainable agriculture (WTO, 2025b). At the last WTO Ministerial Conference in Yaoundé in 2026, 12 members also agreed to advance open-ended deliberations through a Dialogue on Emerging Agricultural Trade issues to be reported to the General Council and ministers at MC15.

5.2 Bilateral and Regional Cooperation on Trade

Where multilateral progress has stalled, much of the practical action has shifted to bilateral and regional trade agreements, which increasingly integrate sustainability considerations including environmental aspects.

Four broad models can be distinguished. The first relies mainly on dialogue, technical assistance, and capacity building, keeping disciplines non-binding. It is common in Asian and Association of Southeast Asian Nations (ASEAN) agreements and reflects a clear preference for flexibility and policy space. The second, characteristic of EU agreements, embeds dedicated Trade and Sustainable Development chapters covering climate, biodiversity, and resource management, backed by consultation and panel-based review. Enforceability varies within this model. For example, the EU-Mercosur agreement excludes its sustainability chapter from the agreement's general dispute settlement (European Commission, n.d.). A third and more

recent model integrates agri-food sustainability directly: for example, the EU-New Zealand FTA, in force since 2024, contains the first dedicated Sustainable Food Systems chapter, addressing food-systems transformation, animal welfare, sustainable inputs, and antimicrobial resistance. Finally, a fourth variant ties market access itself to sustainability conditions, as in the European Free Trade Association (EFTA)-Indonesia Comprehensive Economic Partnership Agreement (CEPA), the first to link tariff preferences for palm oil to recognized sustainability criteria (Frezal & Deuss, 2025). Table 5 illustrates this spectrum.

Table 5. Selected Regional Trade Agreements and Sustainable Agriculture Provisions

Agreement (entry into force)	Model	Selected Sustainable Agriculture Features
EFTA-Indonesia CEPA (2021)	Conditional preferences	First FTA to tie tariff preferences (palm oil) to sustainability criteria and recognised certification.
EU-New Zealand FTA (2024)	Dedicated Sustainable Food Systems chapter	First Sustainable Food Systems chapter: food-systems transformation, animal welfare, sustainable inputs, antimicrobial resistance.
EU agreements (general)	Trade and Sustainable Development chapters	Climate change, biodiversity, and resource management; consultation and panel-based review.
CPTPP (2018)	Environment chapter (formally enforceable)	Formally enforceable but weakly invoked in practice; disciplines relevant to subsidies and resource sustainability.
ASEAN-centred RTAs – e.g. Regional Comprehensive Economic Partnership (RCEP) (2022)	Environmental cooperation model	Cooperation, technical assistance, and capacity building; right to regulate preserved; largely non-binding.

Source: Authors' elaboration based on OECD (2023), Monteiro (2016), Frezal & Deuss (2025), and the texts of the agreements cited.

Regional cooperation also extends beyond the text of trade agreements. ASEAN, for example, adopted Regional Guidelines for Sustainable Agriculture in 2022 and an accompanying Action Plan in 2024, setting out a coordinated and development-sensitive approach to issues such as the overuse of chemical fertilizers and pesticides, land degradation, and food loss—all of which bear directly on the sustainability and competitiveness of the region's agricultural exports (ASEAN, 2022; ASEAN, 2024).

While these agreements cannot substitute for multilateral solutions, they are becoming significant in their own right, advancing sustainability disciplines, building cooperation, and shaping emerging norms. There is also growing evidence that the provisions are not merely symbolic: environmental provisions in regional trade agreements can deliver measurable improvements in environmental outcomes, particularly where they are specific and supported by enforcement or cooperation mechanisms rather than left as preambular language (Abman et al., 2024). The experience accumulated in these agreements can, in turn, inform what eventually proves feasible at the multilateral level.

5.3 New Forms of Cooperative Approaches

A third channel has grown alongside formal negotiations, which tend to be slow, politically sensitive, and resource intensive. Sustainable agriculture is increasingly advanced through non-binding and non-negotiating arrangements: initiatives, dialogues, declarations, guidelines, and cooperative frameworks that shape behaviour without creating enforceable legal obligations. Though non-binding, these instruments can respond faster than treaty-making, encourage policy convergence and regulatory cooperation, and influence production methods, traceability systems, and the conditions of market access (Deere Birkbeck, 2021).

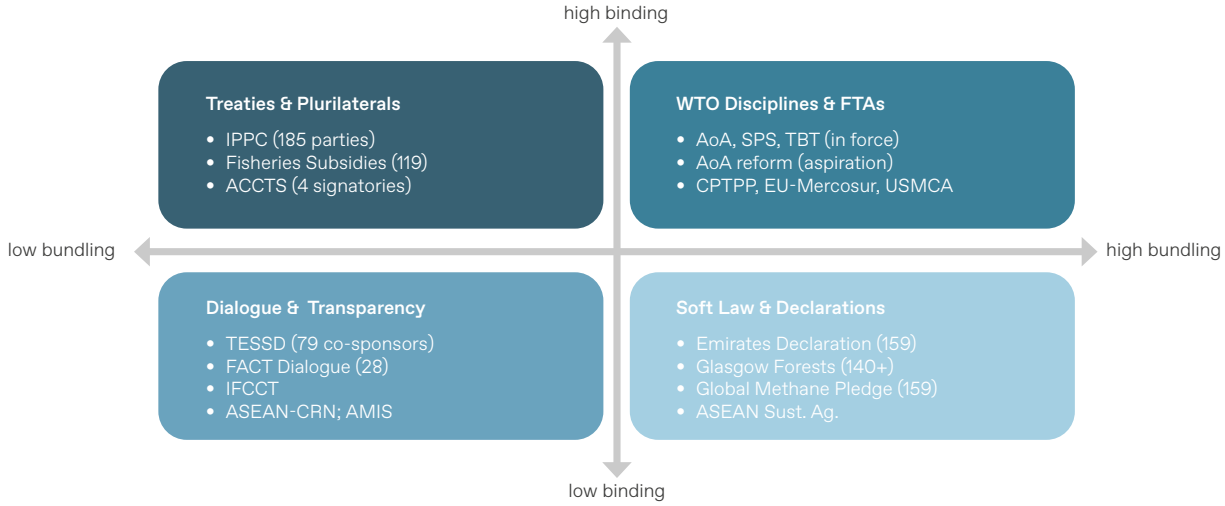
In the agricultural domain, the Forest, Agriculture and Commodity Trade (FACT) Dialogue convenes major producers and consumers of forest-risk commodities around shared definitions and data to reduce commodity-driven deforestation (FACT Dialogue, 2021). Other initiatives include the FAO-facilitated South-South and triangular cooperation framework and initiatives or the Glasgow Leaders' Declaration on Forests and Land Use, signed by more than 140 countries representing around 90% of the world's forests. Taken together, these soft-law approaches increasingly function as a de facto layer of governance for sustainable agriculture, operating across intergovernmental dialogue, supply-chain certification, corporate sourcing commitments, and financial-disclosure regimes.

6. Towards New Outcomes

6.1 A Framework for Institutional Choice

The different instruments for cooperation highlighted above differ along two distinct dimensions, namely their level of binding obligations and their level of bundling. Binding can be defined as the depth of mutual stakes resulting from legal enforceability, reciprocal market access, or reputational and monitoring feedback. The second dimension, bundling, is the breadth packaged into a single instrument, combining three sub-components: issue scope (how many topics it covers), forum coupling (whether it is embedded in a larger regime such as the UNFCCC conference cycle or the WTO ministerial process), and linkage (whether a concession in one area is made contingent on a commitment in another). An instrument can score high on one sub-component and low on another: the Emirates Declaration, for example, is thematically narrow but ranks high on bundling through its coupling to the climate regime. Figure 7 provides a visual representation of different initiatives organized around those two axes.

Figure 7. A Binding-and-Bundling Illustrative Typology of Cooperative Instruments



Note: Membership figures appear in parentheses.

Source: Authors' elaboration.

6.2 The Four Cells

Single-issue treaties and plurilaterals (high binding, low bundling). This cell holds instruments that are legally binding but narrow. The International Plant Protection Convention (IPCC), a 1951 treaty with 185 contracting parties deposited with the FAO Director-General and recognized under the SPS Agreement, is the archetype: deep, enforceable obligations confined to a single issue (IPCC Secretariat, n.d.). Its modern plurilateral analogue is the ACCTS, signed in November 2024 and carrying a binding arbitration chapter, though narrow by design and not yet in force (New Zealand Ministry of Foreign Affairs and Trade, 2024). This cell also includes the WTO Agreement on Fisheries Subsidies, which entered into force on 15 September 2025 and which the WTO describes as its first multilateral agreement with environmental sustainability at its core (WTO, 2025c). It is the single most concrete precedent for the environmental-subsidy disciplines.

WTO disciplines and regional free trade agreements (high binding, high bundling). Here sit the existing multilateral disciplines, namely the AoA, the SPS Agreement, and the TBT Agreement, alongside comprehensive regional agreements such as the CPTPP, EU-Mercosur, and the United States-Mexico-Canada Agreement (USMCA). The cell also contains the field's principal aspiration: reform of the AoA. On the regional front, the market-access cores of the CPTPP and EU-Mercosur are binding, but their sustainability commitments are not equivalently so, and the high placement on the binding axis reflects the trade core while the sustainability commitment sits lower. Even within a single negotiating tradition, enforceability varies: the European Union adopted a sanctions-based model in its agreement with New Zealand (the EU-New Zealand FTA), in contrast to the non-sanctionable Mercosur model.

Dialogue and transparency platforms (low binding, low bundling). These instruments bind little but also ask little, and they are narrow in scope. The Trade and Environmental Sustainability Structured Discussions, with 79 co-sponsors and coordinated by Canada and Costa Rica (WTO, 2024b), the Forest, Agriculture and Commodity Trade Dialogue, with 28 countries representing roughly three-quarters of trade in the relevant commodities and co-chaired by the United Kingdom and Indonesia (FACT Dialogue, 2021), the ASEAN Climate Resilience Network, established in 2014 as a climate-smart agriculture knowledge platform (Mekong Institute, 2025), and the Agricultural Market Information System, launched by the Group of 20 in 2011 and hosted by the FAO (AMIS, n.d.), all generate transparency, trust, and shared analysis rather than obligation. The newly launched Integrated Forum on Climate Change and Trade (IFCCT) belongs in this cell as well: launched by the COP30 Presidency in Belém in November 2025, it is designed to run for an initial three-year phase from 2026 to 2028, with its modalities being finalized ahead of an inaugural senior-officials meeting in mid-2026.

Ambitious soft law and declarations (low binding, high bundling). Large-membership political declarations occupy this cell. The Emirates Declaration on Sustainable Agriculture, Resilient Food Systems and Climate Action, endorsed by 159 national leaders (COP28 Presidency, 2023), the Glasgow Leaders' Declaration on Forests and Land Use, signed by more than 140 countries representing around 90% of the world's forests (Glasgow Leaders' Declaration, 2021), the Global Methane Pledge, with 159 participating countries and the European Commission (UNEP & CCAC, 2025), and the ASEAN Regional Guidelines on Sustainable Agriculture adopted in 2022 (ASEAN, 2022), all carry broad endorsement and high political visibility but create little in the way of enforceable obligation. The cell as a whole exemplifies the proposition that breadth of forum and breadth of membership are bought at the price of depth of commitment.

6.3 Inclusiveness and the Feasibility Frontier

The populated cells reveal a possible trade-off between inclusiveness and the type of outcomes. The soft instruments such as the Emirates Declaration and the Global Methane Pledge, the Glasgow Declaration or the IPCC carry very large memberships. In contrast, the binding, bundled instruments tend to be smaller clubs of like-minded countries as illustrated by the ACCTS or the CPTPP. Meanwhile, processes aimed at legally binding outcomes and involving a wider membership have seen limited progress, as illustrated by deadlocks in the reform of the AoA. The high-binding, high-bundled cell is precisely where negotiations are particularly difficult. Similarly, instruments promising the most inclusive cooperation are, with few exceptions, those that bind the least. Table 6 illustrates that observation.

Table 6. Binding, Bundling, and Membership for Selected Instruments

Instrument	Binding	Bundling	Membership
IPCC	High	Low	185 parties
WTO Fisheries Subsidies Agreement	High	Low	119 acceptances (May 2026)
ACCTS (plurilateral)	High	Low to medium	4 signatories
AoA reform	High	High	166 members (no outcome)
CPTPP (sustainability chapter)	Medium	High	11 parties
TESSD	Low	Low to medium	79 co-sponsors
FACT Dialogue	Low	Medium	28 countries
Emirates Declaration	Low	High	159 leaders
Glasgow Forests Declaration	Low	High	140+ countries
Global Methane Pledge	Low	High	159 + European Commission

Note: Binding scores refer to the sustainability commitment, not the market-access core; membership figures are drawn from the sources cited in Section 6.2.

Source: Authors' elaboration.

6.4 From Substance to Modality: A Cross-Walk

Building on those considerations, this section highlights possible cooperative modalities under the different areas identified in Section 4. The first option, removing environmentally harmful agricultural subsidies (Section 4.1), can in principle be pursued as a binding multilateral discipline in the top-right cell, modelled on the Fisheries Subsidies Agreement; as an ACCTS-style plurilateral in the top-left cell; but also as a transparency and notification exercise in the bottom-left cell; or as a political declaration in the bottom-right cell. The choice is consequential. A binding discipline offers the deepest commitment but, on the evidence of the agriculture negotiations, is the least feasible at multilateral scale, and as no plurilateral joint initiative exists for agriculture, the plurilateral route would require building a coalition from scratch rather than activating an existing one (WTO, n.d.-b). The realistic near-term path may therefore be a transparency-and-notification foundation in the bottom-left cell that is designed from the outset to support a later, narrower binding discipline.

The second option, fostering interoperability and equivalence of regulatory measures (Section 4.2), maps onto the SPS and TBT frameworks and the IPCC standards in the top cells for its hard core, supported by the convergence-building work of the type undertaken in initiatives such as the FACT Dialogue or TESSD in the bottom-left cell. The continuing recalibration of the EU Deforestation Regulation, whose principal obligations have been postponed to December 2026 for large and medium-sized operators, illustrates both the demand for such interoperability and the friction that unilateral measures generate in its absence (Council of the European Union, 2025).

The third option, facilitating the development, diffusion, accessibility, and uptake of goods, services, and technologies for sustainable agriculture (Section 4.3), is well served by the model applied to environmental-goods and services liberalization in the ACCTS in the top-left cell, complemented by the capacity-building and transparency platforms in the bottom-left cell. The fourth option, providing enhanced market access for sustainably produced or healthy and nutritious foods (Section 4.4), maps onto free trade agreements with conditional preferences in the top-right cell, for which the EFTA-Indonesia Comprehensive Economic Partnership Agreement of 2021 is the established precedent, supported by declarations in the bottom-right cell that build the political demand on which market-access bargains depend (Frezal & Deuss, 2025).

The general lesson of the cross-walk is that no single modality dominates. Options that require deep behavioural change in third countries, such as subsidy removal, sit uneasily in the soft cells but are difficult to land in the hard ones; options that primarily require coordination and information, such as regulatory interoperability, are well matched to the bottom-left cell; and options that turn on reciprocal exchange, such as conditional market access, belong in the top-right cell where a side-payment is available to make the sustainability commitment stick.

As we move forward, the high-binding, high-bundled cell is congested with aspiration and thin on achievement, so new effort poured directly into comprehensive multilateral reform is likely to meet the same resistance that has stalled reform of the AoA. Second, the low-binding, high-bundled cell is rich in membership and thin on obligation, so the broad political consensus it embodies is an asset that remains largely unconverted into commitment. The most promising new outcomes may therefore lie not in any single cell but in movement between them, specifically in the diagonal move that converts broad, soft consensus into narrow, binding approaches. The Fisheries Subsidies Agreement is the proof of concept: a single environmental problem, long the subject of broad declaratory consensus, was carved out and turned into enforceable multilateral law. Whether the same move can be made for environmentally harmful agricultural subsidies, or for conditional market access for sustainably produced food, is the open question that Section 4's substantive agenda and this section's institutional analysis jointly pose.

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CH-1202 Genève
Switzerland

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