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T20 Policy Brief

Task Force 04

TRADE AND INVESTMENT FOR SUSTAINABLE AND INCLUSIVE GROWTH

Climate Change and Agrifood Production: A Problem to Be Tackled by Developed and Developing Countries

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Abstract

The emission of Greenhouse Gases has increased substantially in recent decades, causing global warming and climate change. Governments have responded with various policies, including new environmental trade regulations, to ensure sustainable supply chains. The benefits and burdens of these measures are not shared evenly among countries. Developing countries are more affected since these new regulations disproportionately affect the primary and agribusiness sectors. Large producers and exporters of agrifood products can often comply with most barriers, but for small and medium producers, compliance costs represent a more significant financial and technical burden. Consequently, they may not only be cut off from global markets but also risk harming the environment and impairing productivity and income. Many examples of these environmental risks can be provided, such as excessive use of chemicals, using fire to clear fields, and tolerance limits for residues in food.

Addressing these problems is critical from a global point of view. First, it can help mitigate and adapt to climate change, thereby increasing the sustainability of agrifood production. Second, it can help reduce rural poverty and improve food security in developing countries.

This policy brief addresses these challenges and outlines immediate actions that the G20 should undertake for South American countries. Promoting financing through international organizations to fund investments in research and extension institutions to develop and disseminate sustainable agricultural practices, primarily benefiting small producers, is proposed. We also advocate creating regional programs to encourage forest conservation and low-carbon agricultural practices. The objective is to facilitate the dissemination of technologies for low-carbon agriculture, with financing and funds sourced from the wealthiest countries, which are the ones imposing the most stringent environmental measures on international agricultural trade.

Keywords: non-tariff measures, climate change, agricultural trade, developing countries



Diagnosis of the Issue

Amid mounting concerns regarding the escalating emissions of greenhouse gases, governments have been adopting a series of measures, prominently including environmental trade regulations, to promote sustainable supply chains. According to data from the World Trade Organization's Environmental Database (WTO, 2024), between 2009 and 2023, the European Union and the United States respectively implemented 15.6% and 14.9% of global environmental measures. These data demonstrate that a significant portion of such measures are adopted by high-income countries. A substantial portion of the 18,197 registered measures focused on agriculture (32.3%). The year 2021 stood out with the highest number of environmental measures, totaling 2,250.

These measures not only carry substantial environmental implications, but also have significant economic impacts. From an environmental standpoint, they are useful to combat environmentally detrimental practices such as deforestation and excessive utilization of agrochemicals, both of which contribute to soil and biodiversity degradation. The measures also have economic ramifications as they tend to affect production costs and international trade dynamics. Producers face challenges in adhering to environmental regulations, which may result in shifts in agricultural product prices and market competitiveness (Balogh and Jám bor, 2020). Importantly, environmental measures also ensure the safety and quality of agricultural products through stringent production standards, certifications, and food traceability, thus providing consumers with access to safe and sustainable products.

Despite the positive aspects associated with these measures, which may be crucial for mitigating GHG emissions, disparities persist in the distribution of benefits and burdens of these policies among countries: while developed countries are the main adopters of

these regulations, developing countries are disproportionately affected, due to the importance of the agricultural sector in their productive structures and also to the compliance costs associated with the measures. This is especially significant for smaller agricultural producers in developing countries: while the cost of compliance may be less significant for larger operations, small and medium-scale producers may face insurmountable barriers. This gives rise to two interconnected issues: the inability of these producers to adhere to best environmental practices and their inadvertent contribution to excessive greenhouse gas emissions. In essence, they are unable, for multiple reasons, to embrace new and more sustainable technologies – for instance, agricultural technologies aligned with circular economy principles, where a substantial portion of production process waste can be converted into energy or animal feed. Additionally, small-scale producers often cannot afford compliance with voluntary sustainability standards, further hindering access to international agricultural markets.

South America is renowned for its vast expanses of tropical forests, including the Amazon, which is pivotal in regulating the global climate. According to the FAO Global Forest Resources 2020 report (FAO, 2020), over 45% of land in Latin America and the Caribbean is covered by forests, with this region experiencing the most significant proportional reduction in forest cover between 2000 and 2020. Moreover, while agriculture is a crucial economic sector in many countries in the region, it is also often one of the most environmentally detrimental. The agricultural sectors in the region – especially the intensely exported commodities such as soybeans, rice, and beef from cattle farming – face multiple environmental challenges stemming from practices such as deforestation for expanding cultivable areas, soil degradation, intensive agrochemical usage, depletion of water resources, and soil erosion. These activities generate various

adverse impacts, including biodiversity loss, degradation of natural ecosystems, watercourse pollution, and substantial GHG emissions.

This scenario underscores the imperative for a global, collaborative approach to tackling the challenges associated with these issues. This document outlines action proposals to enable countries to effectively navigate these dilemmas, specifically focusing on South America. The significance of this issue on the G20 agenda is indisputable, given its global ramifications: climate change resulting from the surge in greenhouse gas emissions.



Recommendations

The G20's privileged position in the global governance structure allows it to play a pivotal role in addressing the challenges described in the previous section and helping smaller agricultural producers in South America recognize the value of environmental practices and bioeconomics and have the means to adopt them.

First, G20 countries should give special focus to small producers in South American countries. Market access for these producers requires access to technologies, inputs, and services that lower transaction costs and facilitate the adoption and/or expansion of areas with sustainable production systems. This enables increased productivity, product quality, and income, coupled with more effective soil and water conservation, reducing future impacts of adverse climate change and ultimately allowing them to be recognized and rewarded for their environmental services (Embrapa, 2018).

Moreover, low educational levels in rural areas highlight the importance of technical assistance and rural extension for small producers, which can facilitate technology transfer, effectively promoting sustainable development and resilience in rural communities.

Second, the G20 should focus on promoting international coordination to improve the agricultural sectors of developing countries, emphasizing the importance of integrating bioeconomics principles into agricultural practices. Sustainable agriculture depends on reducing emissions per unit of agricultural output and increasing greenhouse gas capture by biomass and soil (Embrapa, 2018). This can be achieved through the transfer or development of appropriate technologies to facilitate integrated pest management, efficient use of agricultural inputs, cultivation techniques that promote carbon sequestration in soil, preservation of natural resources and water sources, and genetic



engineering to cultivate varieties better suited to climate change. These practices are known as technologies for Climate-Smart Agriculture (CSA). CSA practices consider enhancing productivity, mitigating climate change, and adapting to its impact sustainably (Zheng, Ma, and He, 2024). The ultimate goal is to ensure long-term productivity growth together with reduced environmental impacts.

Capacity building is also crucial for bolstering research and rural extension institutions across South American nations, which offer distinct advantages due to their specialized expertise in crafting technologies tailored to local conditions. For instance, a collaborative effort between *Centro Internacional de la Papa* (CIP), from Peru, and *Empresa Agropecuária Brasileira* (Embrapa), from Brazil, yielded potato germplasm more resistant to heat and drought. The project delved into molecular and physiological underpinnings of stress tolerance, driving progress in potato genetic enhancement for resilient tropical cultivars amidst the challenges of global warming and water scarcity (Embrapa, 2009).

Another example is the pilot project in agricultural supply chains initiated by the International Center for Tropical Agriculture (CIAT), initially focusing on rice and now expanding to coffee. It aims to positively impact food security and facilitate production adaptation to the effects of climate change by innovating agricultural cultivation practices. The integration of artificial intelligence is highlighted as a pivotal tool for understanding agroclimatic forecasts and implementing preventive measures to mitigate risks associated with food cultivation in diverse soil types. Furthermore, the project seeks to reduce carbon emissions in production processes by adopting technological solutions in crop management, thus contributing to inclusive business models and the modernization of supply chains. Scheduled for implementation in January 2024, the pilot project will commence in three countries: Brazil, Colombia, and Costa Rica, with



technical collaboration provided by the Development Bank of Latin America and the Caribbean (CAF, 2023).

Third, the G20 should sponsor the creation of a Regional Program for Forest Conservation and Low Carbon Agricultural Practices (FOREST-CAP), allowing low-carbon agricultural technology developed by research institutes to spill over to other countries through collaboration with other institutes and rural extension services in neighboring countries. This program would foster cooperation among institutes, mirroring the successful example of collaboration between CIP and Embrapa to generate agricultural solutions tailored to the region. Given that South America encompasses biomes with similar climates, phytogeography, soil, and altitude across countries, technological production on a climatic scale would naturally occur. For instance, the Humid Chaco region in Paraguay and Bolivia shares similarities with Brazil's Pantanal, and the Semi-arid Chaco region in Paraguay and Argentina with the Brazilian Semi-arid. Research institutes from these countries could jointly develop region-specific technologies.

Furthermore, the G20 can coordinate with worldwide initiatives, like REDD+, which aims to reduce emissions caused by deforestation and forest degradation. These initiatives collaborate with government organizations, and their funding comes from global climate and environmental funds such as the Green Climate Fund, Climate Investment Funds (CIF), Adaptation Fund, and Global Environmental Facility. These funds are mechanisms that direct resources and contribute to designing environmental projects.

The program could then be funded by these funds and would include several measures, such as:

- Economic incentives for farmers to adopt sustainable practices like agroforestry, crop rotation, and agroecological systems.

- Investments in environmental monitoring and enforcement to combat illegal deforestation.
- Establishment of payment mechanisms for environmental services, where importing countries compensate exporting countries for forest conservation. This would incentivize exporting countries to preserve their forests rather than clearing them for agricultural expansion.
- Partnerships with the private sector to promote sustainable and certified supply chains.

These policies would assist exporting countries to avoid deforestation and meet the requirements of importing countries, all while promoting sustainable development and environmental protection. Such an initiative is crucial for South American countries to maintain their trade flows. Hence, support for agricultural research is imperative as its costs are substantial and maintenance is challenging, especially if it is to benefit small-scale producers.

Finally, the G20 should promote coordination to ensure the funding needed to implement these initiatives. It could leverage resources from international financial institutions such as the World Bank, regional development banks, and country funds (such as the Amazon Fund) towards projects aimed at promoting sustainable agricultural practices and forest conservation. Exporting countries could access these funds with two primary objectives: developing more sustainable technologies and disseminating new and existing knowledge to small-scale producers and countries in the region with limited technological capacity.

Scenario of outcomes

Several scenarios can be envisaged taking into account the recommendations previously provided and the potential obstacles that their implementation may face. It is necessary to highlight the importance of democratizing technological access in developing countries. FOREST-CAP would facilitate the expansion of low-carbon agricultural technologies by promoting cooperation between research institutes and rural extension services. This would facilitate the development of technological solutions, optimizing the use of financial resources associated with the costs of purchasing equipment and digital devices, as well as the expenses incurred in adapting to the needs of rural producers.

Increasing investments to facilitate access to information expands the benefits of technology in agriculture by broadening the adoption of digital agriculture among small and medium-sized producers. Precision agriculture can improve productivity and product quality, and reduce costs, contributing to food security and a reduction in environmental impacts. However, if small and medium-sized producers continue to be excluded from these technologies, they may be marginalized from national and international markets. Therefore, it is necessary to invest in policies and initiatives that make these technologies more accessible to all producers in South America.

This is possible through technical assistance and rural extension, which are important in technology transfer for the sustainable development and resilience of rural communities, and to overcome low educational levels in rural areas. However, problems facing rural extension in South America include low levels of funding and resources, which limit the ability to provide essential services. Insufficient infrastructure and technology impede the implementation of advanced agricultural practices, with many

rural areas lacking access to high-speed internet and other essential technological tools. Furthermore, the lack of continuous training of extension agents compromises the quality of the technical support offered.

The G20 policies could contribute to solving these problems in several ways, directing financial and technological resources that lower transaction costs and facilitate the spread of rural extension. This would include investments in digital and technological infrastructure in rural areas, improved internet access and technological tools for modern, low-carbon agricultural practices. Incorporating small farmers in the use of Information Technology can bring many benefits to these producers. Among them, increasing interest in new technologies, facilitating access to technical and relevant knowledge, improving information on property management, and reducing communication barriers between producers and extension agents. They can also facilitate the creation of collaborative networks between farmers, cooperatives, research institutions and government agencies, thereby promoting mutual support in solving problems and strengthening rural communities.

Furthermore, the G20 should promote ongoing training programs for extension workers, ensuring that these professionals are up to date with the latest agricultural technologies and practices. This would increase the quality of technical support offered to farmers. Technical assistance and rural extension can be strengthened through technology transfer and local capacity development, promoting better understanding and adoption of sustainable practices among farmers.

The promotion of international cooperation by the G20 would help to align public policies in South American countries, making them more robust and aimed at sustainable support for rural extension. With Forest-CAP, it would facilitate the dissemination of low-carbon technologies and cooperation between research institutes and rural extension

services, adapting technological solutions to the region's diverse climatic conditions and biomes.

Finally, by securing ongoing sources of financing through international financial institutions and climate funds, the G20 would help ensure the financial sustainability of rural extension programs. This would allow the maintenance and expansion of services offered to small farmers, reducing inequality in access and promoting more equitable and sustainable agricultural development.



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