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IATRC
INTERNATIONAL AGRICULTURAL TRADE RESEARCH CONSORTIUM

Commissioned Paper

Geostrategic aspects of policies on food security in the light of recent global tensions – Insights from seven countries –

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April 2024
IATRC Commissioned Paper CP-32

International Agricultural Trade Research Consortium

Commissioned Paper No. CP-32

Geostrategic aspects of policies on food security in the light of recent global tensions – Insights from seven countries

This Commissioned Paper was co-authored by a working group which responded to a call for Commissioned Papers from the Executive Committee of the IATRC. The members of the group were:

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The International Agricultural Trade Research Consortium (IATRC) is an organization of approximately 220 economists from 28 different countries, interested in research, policy analysis, and current developments in international agricultural trade. It is supported by the United States Department of Agriculture (ERS, FAS, and OCE), Agriculture and Agri-Food Canada, and the participating organizations. Funding for this commissioned paper comes from USDA Foreign Agricultural Service.

Geostrategic aspects of policies on food security in the light of recent global tensions – insights from seven countries
Blacksburg, VA: Virginia Polytechnic Institute and State University, Department of Agricultural and Applied Economics, International Agricultural Trade Research Consortium

Copies of this paper and other IATRC Publications are available on the website
www.iatrcweb.org

This volume contains information which was presented at an
International Agricultural Trade Research Consortium Annual Meeting,
which was held December 10-12, 2023 in Clearwater, FL.

Geostrategic aspects of policies on food security in the light of recent global tensions
- Insights from seven countries -

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Acknowledgements
We would like to express our sincere gratitude to the International Agricultural Trade Research Consortium (IATRC) for the financial support of this study project. The authors responded to the Call for Commissioned Papers by IATRC in 2022, which provided the initial impetus for this study. Contributing to several IATRC conferences to present draft results helped very much to sharpen our approach.
We are also extremely grateful to David Blandford, Alan Matthews and Friedrich Wacker for many helpful comments to different versions of the report and to all the participants who took part in our expert exchanges, both virtually and in Brussels in autumn 2023, who contributed valuable insights and perspectives to our work.

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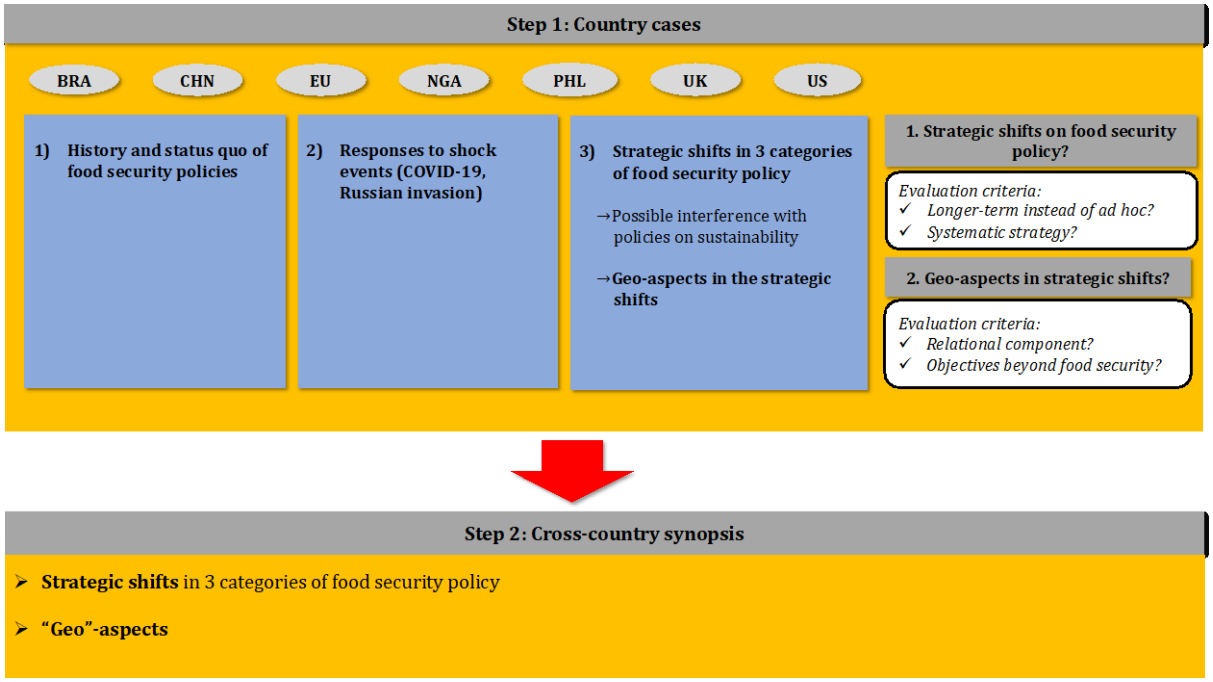
Executive Summary

This study contributes to the recent literature on geostrategic aspects of economic policy and the objective of economic security by addressing food security as a subcategory within economic security. Against the backdrop of the COVID-19 crisis and the Russian invasion of Ukraine, this study analyses whether and how the relevance of food security as a national policy goal has changed. It focuses on the questions of whether countries' policy choices towards this objective have initiated longer-term strategic shifts, rather than just acute reactions, and analyses the extent to which these adjustments are influenced by underlying geopolitical considerations. To answer these questions, developments in food security policies are identified, focusing primarily on the perspective of security of supply. This perspective fits with the recent political focus and current initiatives by many countries aiming at national economic and supply security in general.

The approach of this paper is to observe the evolution of policy arrangements over time in seven selected national country cases, one of which is the supranational entity, the European Union (EU). This paper does not seek to identify the effectiveness of different approaches concerning food security. Instead, it focuses on describing changes within three categories of food security policy approaches: domestic food policy (including both agricultural support measures to producers and domestic food aid programs for consumers); trade which can include market liberalization measures (e.g. reduction of tariffs) and measures that lean toward national autonomy and sovereignty (e.g. by setting standards); and crisis and emergency approaches (e.g. monitoring and alert systems). The selected country cases – Brazil, China, the EU, Nigeria, the Philippines, the United Kingdom (UK), and the United States (US) – present a diverse set of conditions in terms of their status of domestic food security and agricultural production, economic strength, and food trade balance. Figure 1 provides an overview of the study framework.

Study framework



Source: Own design

In *step 1* (see Figure 1), to provide a baseline against which to compare policy developments, each country case first describes the historical pattern of food security policies, and second summarizes the ad hoc responses to the two recent shocks. Third, it is explored whether, in addition to ad hoc responses, longer-term policy developments are taking place in the three different policy categories. These developments may also interfere with decisions on sustainability, particularly related to climate change, but also biodiversity. The country cases analyze if the observed policy decisions reflect strategic changes and whether these obtain geo-strategic aspects according to our applied definition. In *step 2*, individual country findings are merged to identify cross-country patterns in strategic policy shifts and "geo"-aspects.

The key findings of this paper address two major questions derived from the country cases:

- The first question is whether the responses to food security challenges represent a "strategic shift" towards more systematic and long-term approaches instead of being ad hoc reactions.
- The second question is whether these policy choices involve "geo-components". In this concept, the term "geo" is recognized as a nuanced and multifactorial concept. Its complexity results in it being both underdefined and variably defined in different theoretical frameworks. This ambiguity limits its application and requires further interdisciplinary research. Within our analysis it is understood as relational behavior

between countries, which can be influenced by different geographical or other conditions influencing international relations. Another often cited characteristic of "geo" is the instrumentalization of policy fields to achieve objectives beyond that field. In our case this may refer to the use of measures for food security aiming at overall economic or national and political security beyond food security.

Our findings are based on qualitative assessments using a comparative research design. It recognizes the varying emphasis placed on policy measures across the country cases. Our analysis while not exhaustive allows us to identify, by way of illustration, both common patterns and continuing disparities among the country cases:

- While the acute responses to recent food security challenges were relatively similar across the countries, our analysis reveals a spectrum of diverse long-term approaches. Some of these are formulated in response to global changes such as the general weakening of multilateral institutions (e.g. WTO), while others, based on our definition of "geostrategic", are developed as counteraction to the policy decisions of other countries or as pursuit of goals beyond food security.
- In terms of applied individual policy measures, there is a general ambiguous tendency towards both supporting domestic food production and opening trade allowing for more imports at the same time. This parallel approach is consistent with the FAO's definition of food security primarily along its pillar on achieving availability through different sources. The other FAO pillars, addressing affordability, utilization, and stabilization, have also been pursued by country's policies, but there is more variation. In several cases, the perception and handling of trade-offs between sustainability and food security goals seems to have changed in recent years. Some countries have increasingly prioritized an increase in production to achieve availability e.g. by postponing the adoption of ecological targets, thereby altering the prioritization of sustainability objectives.

The overall observation is that food security has generally become more prominent, either through respective policies or used as a narrative for defining policy strategies, even in countries without observable large recent food security problems. In addition, some "geo"-aspects can be identified in the countries' policy shifts, either in terms of a relational perspective and/or in terms of using measures for food security to address objectives that go beyond food security. For example, for several countries, a response to recent economic tensions, particularly between the US and China, has played a role in addressing economic security more generally, of which food security is a part.

As our cross-country synopsis shows both, similarities, and differences in response patterns, a relevant policy recommendation is to provide dialogue fora to support further the mutual understanding of different national pathways to food security. This may also include the exchange of experiences with and benefits and costs of different approaches like targeting self-sufficiency, pursuing trade diversification, or establishing food reserves. In addition, research needs are identified in the academic literature on the concepts - and their possible operationalization - of geostrategy, geoeconomics and geopolitics. This requires an interdisciplinary approach, as recent literature roots overwhelmingly in geography and political science, an adaptation to the specifics of the food security debates and policies is necessary. Agricultural economics can contribute to this interdisciplinary research through its tradition of analyzing spatial economic issues and effects of natural resource endowments.

Geostrategic aspects of policies on food security in the light of recent global tensions - Insights from seven countries –

1. Introduction and framework for the analysis

In the context of the COVID-19 crisis and the Russian invasion of Ukraine, this paper examines recent developments in selected national food security policies. The case of food security as a policy objective can contribute to the growing literature on overall economic security. This study focuses on the question of whether countries' policy choices have not only changed acutely in response to these shocks, but whether they have led to either strategic or geostrategic shifts that will prevail over a longer period of time (as strategic aspects) and that are influenced by the behavior of other countries, while possibly also address other policy objectives beyond food security (as "geo"-aspects).

1.1. The general global economic and political context

Countries' policy choices are influenced by current global developments and the economic and political environment. For food, the value of trade has increased significantly in recent decades (Anderson, 2010; González-Moralejo & Miquel, 2019). However, overall, since the financial crisis of 2007/08, the previous increase in trade has slowed down, while at the same time the trade structure has changed towards shorter international value chains, often discussed as "near-shoring" (Lund et al., 2020; Ridder et al., 2013).

This structure and pattern of trade has been influenced by broader policy developments. A period of trade liberalization began after the Second World War, supported by the establishment of the GATT, and gained new momentum with the establishment of the World Trade Organization (WTO) in 1995. The increased stability of trade during this period was expressed in concrete liberalization measures. In agriculture, the WTO's Agreement on Agriculture (AoA), provides for a reduction in tariffs and export subsidies, and includes rules on the design and limits on domestic support. The successful development of WTO rules in the past has been based on a widely accepted perception that open trade is a mutually beneficial venture. A change in the attitude of countries towards global trade arising can be assumed in part caused by a change in pattern of global economic power, particularly the rise of emerging and developing countries with different interest in trade, and in part by retreat from a liberalization agenda among developed countries. This change in attitude is a key influencing factor in a new international policy arena.

Evolution of the global economic policy arena

The current economic and political climate is often portrayed as a transition from multilateralism to policies centered on blocs, with the risk of fragmented policies and trade. Protectionist activity has increased in recent years. In 2022, 9.3% of global trade was affected by newly applied import restriction measures, compared to only 0.6 % in 2009 (WTO, 2022, p.25). In addition, bloc building is often explained by a shift in power patterns (Roberts, 2019). The emergence of new actors leads to a shift from a previous hegemonic system, primarily led by the US and the EU, to a more polycentric structure. In this structure, the BRICS countries (Brazil, Russia, India, China, South Africa) play a key role as a counterpart to the economically strong Western countries of the G7 (US, Canada, UK, Japan, France, Italy, Germany, and the EU as a supranational organization). Recently, even an expansion of the traditional BRICS to BRICS+ (including UAE, Ethiopia, Iran, Egypt, and Saudi Arabia) was decided, leading to an increase in diversity (García, 2024). Overall, fragmentation is linked to welfare losses (Aiyar & Ilyina, 2023). This bloc-building is in part related to the emerging phase of "de-multilateralism" at the political level and has led to increasing trade conflicts (Antràs, 2020). This was especially initiated in 2017 with the onset of trade tensions between two major global powers, the US and China, which has triggered a chain of retaliatory measures with global implications. Respective measures include US initiated and Chinese retaliatory tariffs on large parts of their bilateral trade, as well as US tariffs on steel and aluminum imports. Other countries such as Canada, the EU, India, Mexico, and Türkiye have responded with respective similar measures (Morgan et al., 2022). In addition, these escalating bilateral tensions have prompted many countries to take measures to protect their domestic economies.

In contrast and on a smaller spatial scale, the decision of the UK to leave the EU is also a prominent recent example of a change in the priority of cooperative and regionalized trade. Here national sovereignty is being valued over regional integration – at least when it is linked to deep political integration and the need to accept rules (Antràs, 2020).

Since the founding of the WTO in 1995, the economic environment has become increasingly tense over time, despite the growth of international trade volume (WTO, 2023c). More than 600 disputes on trade measures have been initiated since 1995, with peaks in 1997 and 2018 (Enderwick, 2011; WTO, 2023b). On the import side, 2019 saw the highest number of newly imposed import-restrictive measures in a single year (WTO, 2022a, p. 25).

Over the past 20 years, the initially widely perceived positive narrative of multilateral trade rules has gradually come to a halt. The WTO Doha Round has effectively ended its spirit of negotiating new trade liberalization rules – despite some limited agreements and the WTO's

continuing role as a forum for dialog and transparency and as a reference for bilateral agreements. This is caused by general political and economic and partially agricultural policy reasons. Large agricultural countries such as Brazil, India, and China have gained more market and bargaining power compared to the beginning of the GATT rules with traditionally dominant agricultural actors such as the US and the EU. The emergence of these new players and their interests has significantly reshaped the overall political landscape, leading to a greater diversity of (agricultural) interests and further reducing the relevance of the WTO as a rule-setter. Notable exceptions to the failure to conclude multilateral negotiations includes the Agreement on Trade Facilitation (Grainger, 2011) and a partial Agreement on Fisheries (Lee, Hyuntaik, 2023).

In agriculture, only few new agreements have been reached since the 1995 AoA. The last major agreement on agriculture was reached at the MC10 in 2015 with the elimination of export subsidies for agricultural products. In the long-standing conflict over public stockholding of food and its underlying market price support, which was mainly driven by India only an interim solution could have been reached so far (Rudloff, 2015). In the ongoing WTO negotiations the handling of this interim approach, and food security in general, became a crucial conflict (Brink and Orden, 2023). At the 13th Ministerial Conference in February 2024, no final decision could be reached on the issue of stockholding or on a work plan on the issues of domestic agricultural support or market access. Previously, as part of the "Geneva Package" from the 2022 12th Ministerial Conference at least some food security-related issues were highlighted. In the "Ministerial Decision on World Food Program Food Purchases Exemptions from Export Prohibitions or Restrictions" members agreed not to impose export prohibitions or restrictions on food purchased by the World Food Programme for humanitarian purposes. The broader "Ministerial Declaration on the Emergency Response to Food Insecurity" acknowledges the range of different means to achieve food security, including trade, and reaffirms the importance of not imposing export prohibitions or restrictions in a manner that is inconsistent with WTO provisions. In addition to the generally divergent interests on specific aspects affecting the negotiations of new agreements, the WTO has been fundamentally weakened by the dysfunction of the Appellate Body, largely due to the US's refusal to approve new judges since 2017 (Jean et al., 2018). Although like-minded countries, including the EU and China, have been able to establish a plurilateral dispute settlement system, the overall credibility and rule enforcement power of the WTO has yet to be restored.

Increasing sustainability challenges: climate change and loss of biodiversity

In addition to the overall economic and political context, other major global challenges have emerged over time and are influencing policymaking related to agriculture and food security. First and foremost are changes in climate and biodiversity, both of which are directly linked to agricultural production. Several global policy milestones for these challenges include large numbers of countries that are committed to them, thus influencing national policy agendas. One example is the United Nations Sustainable Development Goals (SDGs) with SDG 2 operationalizable goals such as zero hunger and sustainable consumption. In addition, the Paris Agreement has led to Nationally Determined Contributions (NDCs) to reduce emissions, which influence national policymaking through defined sub-targets for reductions at the country level. Another example is the development of the Global Biodiversity Framework agreed upon in 2022, which influences countries to potentially adjust their trade practices to protect biodiversity.

Specifically related to the biodiversity challenge, and also linked to another area of global policy objective – public health – is the issue of zoonotic diseases. This includes agricultural aspects such as livestock intensity and consumption patterns, e.g. wild meat. In the recent past, there has been a growing awareness of this issue especially due to COVID-19. There is also a growing recognition of the linkages with agriculture, as exemplified by the "One Health approach" concurrently addressing human, animal, and environmental health (CGIAR, 2022).

1.2. Recent shocks and implications for food security as policy objective

Against this backdrop of mounting recent global challenges and tensions that create economic and political uncertainties, the world plunged into the COVID-19 crisis in 2020, followed by the Russian invasion of Ukraine just two years later. These sudden events affected global markets, value chains, and the global situation of food security and led to responses in food security policy in many countries (Béné et al., 2021; Darvas & Martins, 2023). The exacerbated food security impacts of these events, known as part of "the three Cs" – COVID-19, conflict, and climate change – must be seen as compounding an already challenging food supply situation in many countries that was previously destabilized by the food price crises of 2008 and 2011 (Hendriks et al., 2022).

The impact of *COVID-19* on agricultural production was primarily due to pandemic containment measures. Lockdowns restricted the mobility of goods and labor, affecting both supply chains and labor availability especially relevant in agriculture often depending on foreign seasonal workers (Arita et al., 2022; Wieck et al., 2021).

In addition, a notable indirect consequence was the reduction in demand as consumer incomes declined. Food away from home was particularly affected. This was caused primarily by restrictions in tourism and hospitality sectors, but also by consumers' own health concerns, resulting in fewer leisure activities linked to specific food consumption such as of French fries at sports' events. Governments also used diverse trade policy tools with the objective of restricting exports to protect domestic supplies or, alternatively, of increasing trade facilitation to mitigate disruptions. In particular, the negative impact of COVID-19 was significantly less severe on food trade compared to non-food trade, assessed as up to three times smaller (Arita et al., 2022; Evenett et al., 2022).

In response to the *Russian invasion,* analyzes have shown a direct correlation between the initial halt in exports from Russia and Ukraine, both major global agricultural exporters (especially for grains and oilseeds), and a spike in food prices. This escalation disproportionately affected food import-dependent countries, whose vulnerability was determined not only by their direct dependence on agricultural imports from Russia and Ukraine, but also by the degree of importance of these imports in their domestic consumption, their capacity to substitute among food products, and their ability to diversify import sources (Abay et al., 2023). However, after the initial price shocks, food prices started to stabilize in the mid-term, due to a combination of global production and policy responses and stable global harvests. Important was the success of international diplomacy, which resulted in the so-called Grain Deal of July 2022 between Ukraine, Russia, Türkiye, and the UN ensuring the shipment of Ukrainian exports to world markets (Berndt et al., 2022). However, the agreement was unstable from the start, with Russia repeatedly threatening to withdraw before finally suspending the agreement in 2023, a year after it began. Russia's suspension of the agreement was attributed to claims of non-compliance of the Western partners with an integrated arrangement to also support also Russian agricultural exports.

The long-term impact of the war on global supply chains, food prices, and potentially global food security depends on several factors. Key among these are the harvest situations in countries that could offset price fluctuations, and the impact of the ongoing conflict on production and transportation infrastructure, which adds to economic uncertainty.

A critical consideration is the viability of using the Black Sea route – or the efficiency and cost of alternative routes – for transportation. Another important factor is Ukraine's ability to maintain its agricultural production capacity in the midst of the conflict; disruptions to export could lead to significant financial losses for farmers' income and potentially limit their future production capacity.

Ultimately, the impact on food security will depend on these factors, as well as on international responses through adjustments in production or trade policies that facilitate or impede trade and the provision of food aid. By the end of 2023, as the Ukraine managed to keep the Russian warships away from its ports, its maritime exports (now shipped closer to the coast) almost returned to pre-war levels (Trompiz et al., 2024).

In terms of policy decisions, some general aspects can be identified that have become increasingly relevant in the course of the Russian invasion. First, public awareness was raised of the direct link of foreign policy to global and national food supply (Fernández et al., 2023). Various strategic maneuvers – Russia's threatening behavior around the Grain Deal and the decision of Western countries to exclude food products from sanctions – highlight the interface between foreign policy and food security policy. Second, an agricultural trade measure often used in periods perceived as crises, i.e. export restrictions, became increasingly relevant again. The International Food Policy Research Institute (IFPRI) has recorded export restrictions, which are often used in times of (perceived) shortages: since the beginning of the war, it has identified 50 export restrictions by 30 states (Laborde et al., 2020[1]). However, at the same time, trade facilitation measures, such as tariff reductions, were also observed, and the WTO identified even more of them compared to restrictive measures in 2022 and 2023. Food security was also identified as the main reason for applying trade policy response to the Russian invasion (WTO, 2022b).

Both COVID-19 and the Russian invasion of Ukraine have sparked a broad debate in many countries about the overall direction of national economic policy. This debate often takes place in the context of so-called "economic security", which includes re-evaluating trade practices in terms of near-, friend-shoring and de-risking (Ioannides, 2022). Defining applicable economic security strategies for decision makers revolves around the question of how best to combine different approaches and to what extent. Should supply security be ensured by supporting domestic production or by diversifying trade? And what are the appropriate instruments to support agricultural domestic production, such as subsidies, tax incentives or investments, or to restrain or open trade? In this context, food security can be understood as a specific sectoral dimension of economic security. This specific dimension is different from many other economic sectors as it touches directly on basic and immediate human needs and relates to the human right to food and is therefore often defined as vital to a country's social and political

[1] The date of publication refers to the start of IFPRI's monitoring of trade restriction in 2020 , i.e. since the COVID-19 policies.

situation. Food security policy is also often based on national individual political and cultural traditions on how to understand the concept of food security and how best to address it.

1.3. Concepts and definitions of geostrategy and food security

The existing literature on geopolitics and geostrategy draws primarily from theories of geography, foreign policy, and international relations. It encompasses a wide range of different aspects and shows a significant evolution in conceptual understanding over time. Despite several periods marked by intensive use of these terms - in the last 10 years propelled by global economic tensions and further catalyzed by the Russian invasion (Mallin & Sideway, 2024) – a definitive unambiguous concept cannot be found. This is even more evident when considering geostrategy in relation to food policy, although older literature often refers to food and related resources For the benefit of our approach, we filter out the most suitable aspects, while embedding this focus within a brief overview of existing theoretical approaches. In this area we see the most relevant need for further research, calling for including different academic disciplines.

1.3.1 The geostrategic perspective in economics

The economic discussion towards the use of terms such as “strategic” and “geopolitical" is not a recent development, but has been a topic of discussion in both academic circles and policy-making arenas for a long time (Bossman et al., 2023; Ridder et al., 2013; Zhou et al., 2020). The concept of geopolitics, which integrates geographic and territorial considerations into politics, has a long history in academia. Ever since it was first mentioned, it has oscillated between an economic and a political perspective. Several authors point to the German national economist Arthur Dixon (Mallin & Sideaway, 2024) as the first to use the term after World War I. Others see the work of the Swedish political scientist Rudolf Kjellén in 1899 as the origin even earlier (Tunander, 2001). A more recent increase in the use of such terminology in both academic and policy dialogues can be observed since the 1990s (Mallin & Sidaway, 2024), and it often occurs without a clear definition or consistent theoretical foundation. Currently, a development of defining quantitative indicators can be observed: e.g. the International Country Risk Guide establishes a geopolitical risk indicator composed of a set of political (e.g. existence of war and terrorism), social (e.g. religious tensions) and economic (e.g. debt) data, indicating an underlying complex understanding of geopolicy (PRS Group, 2024).

The *general geo-dimension* addressed by the prefix “geo” indicates the influence of territorial or geographically defined locational factors for a countries’ political and economic situation. In the context of agricultural economics, considerations such as resource capacity on land or

water have always played a crucial role in determining the allocation of international production. From a state-centric perspective, the territorial dimension is often translated into the positioning of a country in relation to others (Flint, 2021).

Geopolicy typically refers to the outcomes of certain policies such as trade, which can be shaped by different territorial geo-parameters, such as the direction of trade flows based on existing production capacities. In foreign policy literature, it is often associated with an increase in (military) power through the use of geo-parameters. One example is limiting access to certain resources potentially also relevant for food production (Luttwak, 1990).

Geoeconomics can be understood as a subdimension of geopolitics with research assessing the importance of economic tools in political struggles or as means to achieve political goals (Blackwill & Harris, 2016; Drezner, 2003). The overall economic dimension of geo-behavior has been addressed as "the use of economic instruments to promote and defend national interests and to produce beneficial geopolitical results (Blackwill & Harris, 2016). Farrell and Newman (2019) highlight how economic interdependencies function as strategic leverage for states. Babic et al. (2022) further explore different policy areas and their changes in a new policy setting, considered as geoeconomic. A related definition of geoeconomics can be summarized as instrumentalizing economic policy measures to pursue policy goals beyond explicit economic goals, such as foreign policy goals including military or hegemonial power (Weinhardt et al., 2022).

G*eostrategy* as a concept used for our analysis is the combination of geographical and political considerations and refers to a "strategy" as a systematic and long-term approach to deal with geopolitical and geoeconomic problems (Brzezinski, 1986; Schuman, 1942). Geostrategy is often seen as a geographic direction of a state's foreign policy and describes where a state concentrates its efforts by projecting military power and directing diplomatic activity (Csurgai, 2020; Huilu et al., 2015). Often, the focus for "geo" lies on relational dynamics between actors such as countries (Handa, 2014). Here, it specifically addresses how governments formulate strategic responses to the strategic decisions of others, such as trade actions or stockpiles, which in turn may affect additionally other countries. This interplay, in which a nation's geopolitical objectives are influenced by the economic actions of others, is a key component of geoeconomic strategies (Blackwill & Harris, 2016).

This paper attempts to identify whether a strategic shift can be observed on policies for food security that goes beyond acute or ad hoc responses to the recent shocks and integrates them in a broader and longer-term policy framework.

A shift would also be a change from a continuation of previous policies. Table 1 provides an overview of the differences between a strategic shift and an acute policy response within the area of food security.

Table 1 Distinction of acute food security policy responses and strategic shifts

<table>
<tr><th>Acute policy response</th><th>Strategic shift</th></tr>
<tr><td rowspan="6">• quick and reactive policy adjustment on shocks
• more short-term</td><td>Shift</td></tr>
<tr><td>change in policy instead of continuation</td></tr>
<tr><td>Strategic aspect</td></tr>
<tr><td>• deliberate and planned change in policy direction
• addressing long-term contextual challenges beyond acute food security</td></tr>
<tr><td>“Geo”-aspect</td></tr>
<tr><td>• relational aspect of reacting to other countries
• instrumentalization of food security for aims beyond food security like economic or national security</td></tr>
</table>

Source: Own compilation

1.3.2 The geostrategic perspective of food security: concepts and policy tools

Food security can be understood as a specific case of economic security and respective policies. These policies refer also to general trade paradigms. Trade theory advocates the principle of open markets, including those for food, to maximize welfare through cooperative policies and trade liberalization. However, in addition to this overarching endorsement of open trade, trade theory has also long-recognized scenarios in which deviations from full openness can increase welfare, at least for individual countries. For example, the concept of the “optimal tariff” suggests that a large country can improve its welfare by adjusting trade terms in its favor (Bickerdike, 1906).

In addition, temporary protectionist measures, such as “educational” tariffs to protect infant industries until they become competitive, has also long been seen as potentially welfare-enhancing (List, 1841). Market failures, including externalities and information asymmetries,

provide another justification for trade restrictions. For example, imposing import restrictions on environmentally harmful products can serve as at least a second-best means of internalizing negative externalities, thus increasing overall welfare. In particular, one policy objective that has long been critically debated as a justification for restrictive trade measures is national security. Already Adam Smith's argument that defense can sometimes take precedence over economic openness can be cited, with Smith asserting that in some cases "defense, however, is of much more importance than opulence" (Smith, 1776).

Specifically, on food security as one specific example for economic security, the literature analyzed the relevance and interlinkages of trade in policy decisions in terms of relational, i.e. geostrategic, positioning of countries. With respect to agricultural economics, Thünen's approach in particular may contribute to a general understanding of the spatial dimensions of production that also define underlying trade patterns (Kurz, 1999). Scholarly fields such as history, philosophy, and international relations have long recognized food security as an integral part of larger political decisions, relating to the definition of "geostrategy" cover various aspects of food security, from their role in national security to their importance in military strategy (Zhou, 2022, p. 35). Morgenthau (1960) contends that food self-sufficiency is a national advantage or can serve as a parameter for being a political power. In the context of resource scarcity, some neo-Malthusians approaches assert the potential of food as an instrument of political power (R. L. Paarlberg, 1978; Rothschild, 1976). More recently, Woertz (2013) described the geopolitical bargaining with food and oil in the Middle East.

These observations provide a deeper understanding of how agricultural trade and food security policies can be understood as tools to achieve specific geopolitical objectives. This can range from the strategic distribution of humanitarian food aid to countries that are relevant to overall security objectives of the donner, to the use of food scarcity as political leverage, also referred to as "hunger as a weapon" (Applebaum, 2018; Essex, 2012; Wallensteen, 1976). There are many examples throughout history where food security has been deliberately used as a tactic of war. These historical examples range from the American Civil War and the destruction of crop harvests and animal livestock to weaken the Confederate Army, to the German siege of Leningrad, that cut food supplies during the Second World War, to Stalin's forced production and export of crops from the Ukrainian region in 1932-33 ("Holodomor" which translates to "killing by hunger") (Applebaum, 2018; Goldman & Filtzer, 2015; Nisar, 2023). The latter has gained attention in the wake of Russia's invasion of Ukraine and has been the subject of debate

regarding its classification as a genocide, which has recently been adopted by some countries, such as Germany (Brehm, 2022).

From a more operational perspective, there has been a recent trend to integrate food and resources into foreign and security policy. Several countries have incorporated the concept of "extended security" in the guiding principles of their security policies (Hirsch Ballin et al., 2020; Klohs & Niemann, 2014). For instance, the US has long incorporated this approach, and the EU has recognized it since 2003, albeit with limited reference to food security (Council of the European Union & General Secretariat of the Council, 2009; White House, 2022). More recently, Germany's first national strategy devoted a large section to food security – both domestic and foreign – illustrating the growing international importance of this issue (Deutsche Bundesregierung, 2023).

Existing political principles for food security

An international baseline for many international and national applied rules is provided by the definition of food security as a human right, expressed as "right to food" (based on Article 25 of the Universal Declaration of Human Rights and Article 11 of the International Covenant on Economic, Social and Cultural Rights). It is often referred to in national constitutions or similar treaties, such as the Treaty on the Functioning of the EU. At the multilateral level, SDG 2 underlines the global collective responsibility to achieve food security. It aims to "end hunger, achieve food security and improved nutrition and sustainable agricultural practices" highlighting the interdependence of food security, agricultural practices, and human well-being. For the goal of food security as a genuine objective as such, two specific and operationalized interpretations of policy goals are often referred to in policy decisions, i.e. food self-sufficiency and food sovereignty:

Food self-sufficiency embodies an economic state of autarky in which domestic production meets domestic consumption (Clapp, 2017). It is opposing to the paradigm of open trade, which promotes food security by allocating international production and imports to meet domestic shortfalls. The choice of self-sufficiency carries political and social costs and deviates from the pursuit of maximum welfare, potentially resulting in economic losses. However, in regions such as North Africa, the politically perceived costs of dependence on foreign exports from former colonial powers have traditionally been substantial.

For these and other former colonial states, a high degree of self-sufficiency is equated with greater political autonomy, albeit potentially at the expense of welfare gains from trade or environmental costs if e.g. domestic production is more water-intensive than imports. Whether, as some have asserted (Reuters, 2022), the economic and political trade-offs of self-sufficiency have received renewed attention in the light of the Russian invasion of Ukraine is an issue addressed in this paper. This concept traditionally was characterized as a political strength of independency (Morgenthau, 1960). But to achieve it politically, significant government intervention is often required, including subsidies to stimulate domestic production and trade measures to protect against the import of cheaper foreign goods (O'Hagan, 1976).

Import-substitution is another framing of the concept of food sufficiency and can often be found in development policy approaches on food security. Here, the explicit goal is trade independency, i.e. to replace food imports with domestic production, which is often linked to political independency (Hippert, 2018).

Food sovereignty is another often cited concept, originally used in Latin America, in the 1980s, particularly in Mexico. This concept was later adopted and adapted by the NGO La Via Campesina and contributed significantly to the political debate around the Rio Summit in 1996 (Merino, 2022). Compared to self-sufficiency, it is more linked to the political process and sovereignty in decision-making. The influence of food sovereignty on food security policy frameworks remains particularly pronounced in Latin American countries, such as Bolivia and Ecuador, where it is even enshrined in the constitution. The main difference between the principles of food security and food sovereignty lies in their perspectives on trade and the role of the government as a key actor. The principle of food security emphasizes a top-down, country-level approach, with the government as the primary actor. In this context trade is seen as a tool to ensure a secure food supply. Food sovereignty, on the other hand, focuses on the resilience of supply at the local level and thus addresses a more bottom-up approach by private actors, particularly small-scale farmers. This concept is more critical of trade, which is perceived as a negative external influence compared to local production. The principle of food sovereignty assumes that trade, especially with a strong link to global markets, undermines food security since it hampers local inclusion and flexibility and thus resilience (Burnett & Murphy, 2014).

This links to a newer connotation, i.e. *food systems' resilience* refers to reactivity to crises. A general definition of resilience by the UN already reveals the relevance of tradeoffs within emergency phases, by assuming not to forego long-term targets when responding acutely.

According to this definition, resilience is the ability of individuals, households, communities, cities, institutions, systems and societies to prevent, resist, absorb, adapt, respond and recover positively, efficiently and effectively when faced with a wide range of risks, while maintaining an acceptable level of functioning without compromising long-term prospects for sustainable development, peace and security, human rights and well-being for all (Tendall et al., 2015, p. 18 ; UN 2020, p. 30).

All policy decisions on food security objectives and related policies are made within the international legal framework established by the WTO, which derives rules already established in the GATT and specified in the AoA. The general starting point of the GATT and the WTO is to keep trade open.

The rules for open trade include the general prohibition of quantitative restrictions, the setting of rules to discipline and limit tariffs, export subsidies and domestic support. Specifically for agriculture, these rules are defined by the 1994 AoA. However, there are some exceptions to the general paradigm of open trade, some of which relate specifically to food security:

- GATT Article XXI (national security) allows exceptions for measures in times of war and other international relations emergencies without defining such emergencies. While for a long time, countries hardly referred to this article, in 2019, for the first time, a WTO panel ruled on a case - Ukraine challenged Russia's ban on transit traffic through Ukraine. It emphasized the need for a clear and plausible security justification, which in this case justified the ban (WTO, 2019). However, in the subsequent cases where the EU and others have challenged US tariffs on steel based on this article, the rulings in 2022 concluded that the US was in breach due to the lack of a direct link to security grounds (Palmer, 2022).
- GATT Article XX outlines general exceptions to open trade that allow for trade restrictions, among which are the protection of public morals (a), conservation of exhaustible natural resources (g) and specifically ensuring security of supply in response to local shortages during or after war (j).
- Furthermore, GATT Article XI prohibits quantitative restrictions but permits as an exception temporary export restrictions in cases of food shortages and other "essential goods", if there is a critical shortage of products essential to the exporter. It also justifies temporary import restrictions in cases of surpluses. The AoA further refines these rules by requiring notification of export restrictions and emphasizing the need to consider repercussions for importing countries (Art. 12).

In sum, food security can be pursued through a variety of implementation strategies, policy approaches and instruments that may even have geostrategic objectives beyond the scope of agricultural and trade policy. For example food supply systems are often defined by countries as “critical infrastructure”, meaning that they are considered to be essential elements of economies and societies that are covered by specific policy frameworks that provide specific protection. Social policy systems also affect vulnerability to food risks, as existing transfer schemes may compensate for higher prices.

Food security definitions

In this paper, we draw on the FAO’s definition of food security that is directly linked to a wide range of possible food policy instruments in agricultural production, food aid, trade, and emergency preparedness. The FAO defines food security as “(…) all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2008). This multidimensional concept is based on four pillars, all with links to different food security related instruments.

FAO's Pillars of Food Security

- The **first pillar on availability** emphasizes the importance of a reliable food supply. Trade instruments in this context can include the removal of tariffs or import restrictions, diversification of imports, and improved transport logistics to increase imports and thus further strengthen the food supply. On the production side, subsidies can also be implemented, stocks can be released, or food aid delivered.
- The **second pillar on access or affordability** focuses on the importance of affordability and the means to procure food. A relevant indicator to assess affordability is the food price inflation which can be influenced e.g. by energy prices or monetary or fiscal policies. Trade facilitation measures can also have an influence in improving access through the functioning of the trade infrastructure. Furthermore, on trade reducing tariffs may lower the price of imported food, making it more affordable for consumers and thus promoting access to food. Besides explicit food policies also general social policies and consumer support can contribute to affordability.
- The **third pillar on utilization** concerns the appropriate use of food, considering dietary requirements and preferences. It also refers to the existence of other critical infrastructures relevant to the production and preparation of food, such as water and energy. It is an integrated approach that considers the respective infrastructure for other key resources.
- The **fourth pillar on stabilization** relates to the continuous supply of food over time. Trade can contribute to this, as open markets tend to be more stable than closed ones. Alert and emergency systems support awareness of potential shortages and can reduce the risk of premature export restrictions to ensure domestic supply security and thus, contribute to stability.

Whereas the FAO concept of pillars for food security can be directly linked to political actions in different categories of food security policy, other concepts focus on defining the status of food insecurity and its changes:

- The FAO's "prevalence of undernourishment" has been used for decades to estimate the extent of hunger by share in population. It is also being used to measure progress

toward SDG 2. The indicator uses country data on food availability, food consumption, and energy requirements.

- The FAO also developed the "Integrated Food Security Phase Classification (IPC)" to define different levels of food insecurity which includes five phases culminating in the most extreme and severe stage - famine (USAID, 2023). This most severe stage is defined as at least 20% of households in an area experiencing hunger, acute malnutrition levels exceeding 30%, and more than 2 per 1,000 people dying each day. All three levels of severity require humanitarian assistance.
- The World Bank's "prevalence of moderate or severe food insecurity" differs according to the degree of severity. It estimates food security at the household level, classifying a household as moderately or severely food insecure if one adult has reported being exposed to poor quality diets and may have been forced to reduce the amount of food consumed due to lack of resources during the year.
- The USDA concept of "food gaps" refers directly to humanitarian responses and defines a gap at the country level based on the availability of the number of calories per day assumed essential for living.
- And the "World Hunger Index" developed by IFPRI and the Welthungerhilfe regularly ranks countries based on the combination of four indicators: undernourishment, child stunting, child wasting, and child mortality.

The range of concepts shows that defining food security is not trivial or unambiguous and is related to different underlying understandings and related indicators. This limits the ease with which the concept can be used to guide policy decisions in pursuit of food security. In addition, the possible range of policy tools to be used is wide and the choice of different tools depends on a number of economic, natural, and political characteristics of countries. Their net trade position determines whether and which trade rules may be relevant, and their natural conditions influence relevant approaches to increase in domestic production. Finally, the approach to food security is profoundly sharpened by political traditions and internal political-economic dynamics, which vary in relevance in different political environments. These elements can have a significant influence on the strategy choices countries make regarding food security.

1.4 Research Design

We hypothesize that recent events have led to a geostrategic shift in the national food security approaches of selected countries. This hypothesis leads to two main research questions:

- First, are there longer-term and systematic shifts (defined as strategic) in relation to food security policy can be observed in response to the two shocks (COVID-19 and the Russian invasion of Ukraine), rather than solely ad hoc responses with no long-term effects?
- Second, do these shifts reveal geostrategic aspects according to our main definition of "geostrategic"?

In a first step, we identify how different categories of food security policy have developed in different time frames in each country case. The policy areas covered address domestic food policy (including agricultural policy measures like subsidies to producers and domestic food aid programs for consumers); trade which includes measures for market liberalization (e.g. reduction of tariffs) and those that express autonomy and sovereignty (e.g. setting standards); and crisis and emergency measures, which include monitoring and alert systems. We also look at the interference on decisions along the line of these policy categories with decisions on sustainability.

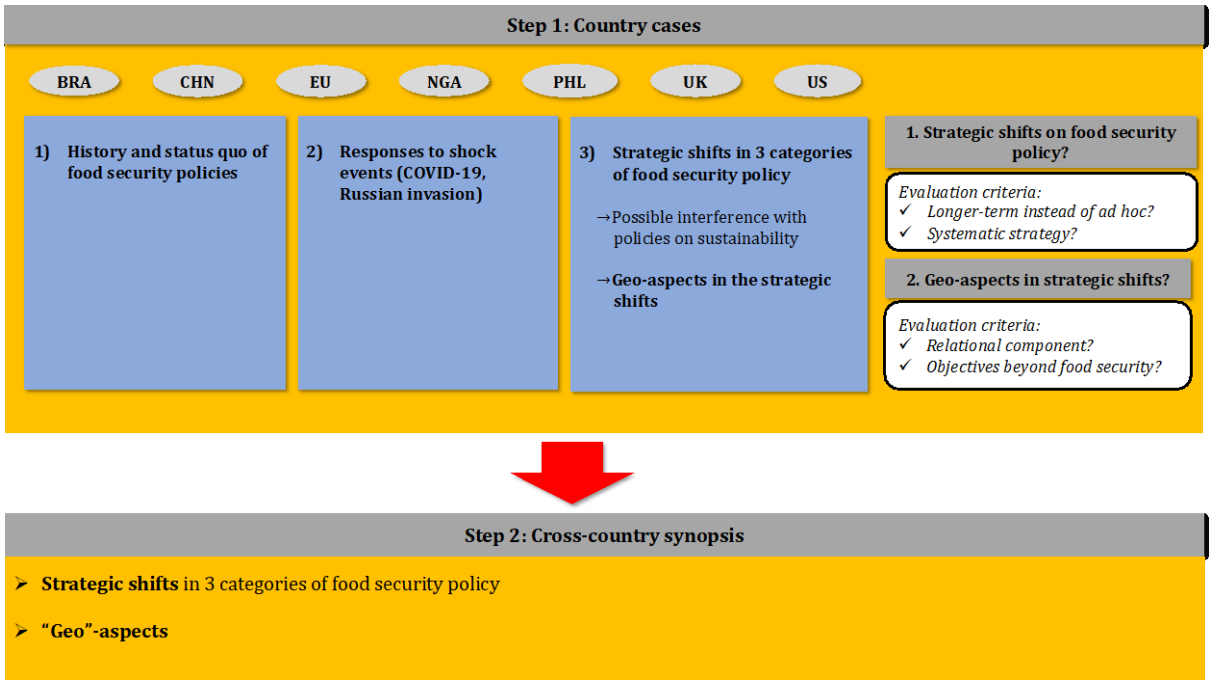
The structure of each country case is as follows:

1) What is the historical/archetypal pattern of food security policy?
2) What are ad hoc responses to the two recent shocks of COVID-19 and the Russian invasion of Ukraine regarding food security policy?
3) Longer-term, i.e. strategic, approaches to food security are summarized in relation to the policy categories and the interference with sustainability. Potential "geo"-aspects are identified according to our definition, which includes the relational perspective of responding to other countries' behavior and the pursuit of goals beyond food security.

In a second step, we synthesize the findings from the country cases to derive a cross-country pattern by comparing the results of strategic shifts in the individual countries within the three categories of policies and the interface with sustainability, primarily climate (and biodiversity). In the concluding part of our paper, we aim to determine whether, for those countries where strategic shifts are identified, there are "geo"-aspects in these shifts according to our definition. All observations are based on the subjective prioritization of the authors in preparing short synopses of key developments in the country case they address. Therefore, different policy areas may have been chosen for which potential shifts are explored. The analysis is therefore not exhaustive across the seven countries. However, the country cases can highlight, by well-informed analytical observers, where "geo"-aspects of policy design are identified.

As a methodology to address our research questions, and as indicated in the structure above, we employ a comparative research design, examining developments in seven countries related to food security policies. Our approach involves a qualitative policy analysis that draws on a variety of sources: legal and policy documents, media reports, academic articles, and quantifiable data from each country. This comprehensive review was conducted through desk research, supplemented by interviews with academic and political actors deeply involved in international and national politics, virtually in April 2023 and in Brussels in October 2023. The study covers a period from the pre-COVID-19 era to the end of the year 2023, and in some cases beyond, if relevant policies still occur. Figure 1 provides and overview of the study framework.

Figure 1 Study framework



Source: own design

1.5 Selection of country cases

The countries (or actors in the case of the EU) covered in this paper are Brazil, China, the EU, Nigeria, the Philippines, the UK, and the US. These countries provide a diverse representation of different positions in agricultural trade, different levels of economic development and different levels of food security. They are potentially addressing food security and trade issues in different international political fora. All are members of the WTO and thus, subject to the organization's rules including the AoA disciplines. However, in ongoing WTO meetings and negotiations, these countries often take different positions and are sometimes organized in different coalition groups. In addition to their WTO membership, these countries are members

of various fora that often deal with food security and trade issues. Even if their activities are less enforceable than at the WTO level, they can support trade and food security, for example through cooperative monitoring or funding. More generally, membership in certain international fora can be interpreted as "like-mindedness" among members on certain issues. In this sense, the G7, historically composed of the economically strong countries, the G20, also addressing the Global South, and the expanded BRICS+ are often perceived as a new political leadership bloc (Jokela & Saul, 2023).

Given their different circumstances and affiliations, a clear and consistent categorization of the countries is difficult. For example, the US, Brazil, and the EU are large agri-food exporters, but they are differently affected by food security and belong to different policy groups. In addition, their agricultural policies have traditionally differed in many aspects. Both Nigeria and China are large food importers on average, but they face different levels of food security, and use different food security policies, and again belonging to different international groups. Consequently, in presenting the case studies this paper uses a simple alphabetical order instead of structuring them along certain parameters. Table 2 provides some general information on the selected countries, with particular emphasis on their food security and trade status. Income levels and major memberships outside the WTO are summarized. Their policies in terms of supporting agriculture and tariff levels in terms of Most-Favoured-Nation (MFN)-tariffs is covered. For instance, the OECD Producer Support Estimate[2] (PSE), expressed as the percentage of total farm income, provides an indicator to compare different policy measures. It expresses the share of income that comes from subsidies and market price support given to agricultural producers. Trade positions are shown as the agricultural shares of the country's total merchandise trade. Food security status is covered through the World Bank's prevalence measure and the hunger World Hunger Index described above. Food price inflation refers to the rate at which the cost of food items increase over a specific period (monthly in Table 2). This indicator was used in this study since it directly reflects changes in food affordability and accessibility, which are central food security concerns (see FAO definition). In addition, cross-country comparison is not possible due to different approaches to measure inflation.

Based on this information, the countries in the short portfolios can be described as follows:

- **Brazil** is one of the world's leading agricultural producers and exporters, with a significant impact on global food security and a relevant global actor for climate goals linked to deforestation. Hereby, Brazil can leverage its climate commitments as a

[2] Not available for all selected countries in this paper.

bargaining chip in trade negotiations and agreements. In addition, it plays an increasingly dominant role in political forums in addition to the WTO such as BRICS+ and the G20. Domestic food security has become relevant as a political and societal objective in the last 20 years, mainly in terms of affordability and related to poverty. This is expressed through large parts of the national agricultural budget to food assistance programs.

- **China** was until recently the world's most populous country and is a dominant global agricultural producer, though not an exporter. It has a strong presence on the world food market due to its large import demand and assumed large domestic stocks, as well as its domestic and border policy measures supporting grain self-sufficiency. This is also reflected in the rather large degree of PSE and high tariffs. It is also a large exporter of fertilizer. Food insecurity is low as expressed by the World Hunger Index and the FAO's undernourishment indicator. Food prices were stable in 2023 which is in line with the country's general price levels and reflects an overall demand and supply balance, but prices of some key products, such as pork, were depressed. The available indicator of food price inflation for 2023 was even negative. This may indicate in principle strong affordability.
- The **EU** is net exporter of food, however, also a leading food importer. Food security is currently not at risk in terms of availability on average, although food price inflation became unusually high in 2023. Traditionally, the EU pursued in the past a comparatively protectionist agricultural and trade approach expressed through still comparatively high tariffs and PSE. However, a shift over time took place for a type of farm income support that is an increase in decoupled production. As a member of the G7 (besides the individual Member States France, Germany, and Italy), the EU stands as traditional counterpart to the forums led by the Global South, such as BRICS+.
- **Nigeria** is Africa's most populous and largest economy. It is one of the world's largest producers of products such as cocoa, cashew, rubber, groundnuts, cassava, palm oil, and sorghum. However, in total food trade, it remains a net food importer and its nutritional status is weak, with a prevalence of undernourishment of 21% in 2021 and serious levels of hunger in 2023. It protects its market with comparatively high tariffs, but within the regional ECOWAS trade regime has reduced them. No aggregated information on domestic support, e.g. PSE, is available.
- The **Philippines** used to be a highly trade protectionist country for rice, the country´s main staple food. Traditionally, imports were restricted by quotas, which were only

recently converted either to tariff rate quotas (TRQs) or tariffs in the wake of high food inflation. The country was the largest rice importers worldwide in 2019, even exceeding China that year. Domestic support expressed by the PSE nonetheless remains high. On food security, the World Hunger Index ranks severity as moderate. Food price inflation is in line with the EU.

- Until Brexit, the **UK** had shared a common basis for policy decisions with the EU, although it has always strongly advocated for a more open trade system than most EU members. Since Brexit, the UK is redefining its global trade position. Agricultural tariffs are relatively low, while the PSE is at a high level in comparison. It is a net food importer noticeable for fruits. Food security, in terms of affordability, has become a domestically relevant issue with rising prices associated with COVID-19 and the Russian invasion of Ukraine and a more general crisis of living costs. Also a member of the G7, the UK has long supported trade liberalization in agriculture.
- The **US** is a leading global agricultural producer and exporter, often competing with the EU as food regulatory standard setter. Any conflict with this trade actor has an actual and political symbolic character for other countries. The US has traditionally pursued mostly open trade and moderate support levels, reflected in comparatively low tariffs and PSEs, but with support higher in certain periods including in response to COVID-19. The US is food secure, with substantial expenditures on domestic nutrition assistance programs. In the multilateral arena, it has historically often been the EU's partner in the G-7 and elsewhere.

In sum, the setting across the seven countries shows a wide range of food security and trade status, traditional food policy settings and international alliances and political contexts. By looking at their policy responses to the COVID-19 pandemic and the Russian invasion of Ukraine we provide a better understanding of the interplay between food security and geostrategic factors for policy choices. Through the analysis of these countries, we shed light on the diverse use of different food security policies that can be observed within the spectrum of possible measures.

The remainder of the paper is organized as follows. The country case studies are presented in Chapter 2. Chapter 3 provides cross-country synthesis of the findings by the country case study authors and identifies similarities and differences. Chapter 4 provides a conclusion and makes some observations on possible policy implications of the findings. Chapter 5 identifies further research needs.

Table 2 Characteristics of the selected case countries

	Development status by income			Selected political memberships	Agricultural and trade Policy		Agricultural trade status		Status of food security			
					Farm support	Tariffs	Export	Import				
	Lower-middle	Upper-middle	High		PSE %, 2022	Average applied agricultural tariffs, MFN, 2022, %	% of all merchandise exports, in value in 2022	% of all merchandise imports in value in 2022	% prevalence of severe food insecurity in share of population, 2020	Severity	Food price inflation rate* (as % change compared to previous month), 2023	
											January	December
Brazil				G20, BRICS+	3.4	8.0	40	5	7.3	low	11	1.02
China				G20, BRICS+	16.2	13.9	2	9	n.a.	low	4.7	-2.0
EU				G7, G20	17.6	11.4	9	9	n.a.	n.a	14.1	6.1
Nigeria				ECOWAS	n.a.	15.9	3	14	21	serious	21.8	28.9
Philippines				ASEAN	28.9	9.8	9	14	4.8	moderate	10.7	5.4
UK				G7, G20	23.4	9.4	6	9	1.1	n.a	16.7	8.0
US				G7, G20	10.6	5.1	10	7	0.7	n.a	10.1	2.7

Source: Own compilation based on different data sources from OECD (2023a), WTO (2022); World Bank (2022); World Bank (2020); von Grebmer et al., 2023;
Note: * The individual methodology for the food inflation rate differs. For details see: Brazil, China, EU, Nigeria, Philippines, UK, US,

2. Country cases: history, response to recent shocks, strategic shifts, and "geo"-aspects

2.1. Brazil

Niels Søndergaard

In recent decades, Brazil's food and agricultural policies have been strongly focused on increasing production and exports. Domestic food security played a relevant role. However, since 2020, global risks such as pandemics, geopolitical rivalries, and climate change has presented a new array of challenges. As a country that is both a major exporter of agricultural goods and other key commodities, as well as a significant player in the global fight against climate change due to its responsibility in protecting the Amazon rainforest and other important biomes, Brazil can play a crucial geostrategic role in terms of addressing these contemporary global risks of climate change, biodiversity loss, and health-linked issues.

2.1.1. The evolution of Brazilian Agricultural Policies

Substantial changes occurred within Brazilian agriculture from the late 20th century. Political and economic shocks impacting global food supply were important triggers for the restructuring of the sector, leading to some "geo"-political changes in terms of positioning and cooperation with other countries concerns: The global food crisis in the early 1970s, and especially the short-lived, albeit substantial effects of the US soybean export embargo of 1973 thereby spurred Japan to initiate a joint cooperation program with Brazil to cultivate the inland Cerrado Savannah-like region. An important result of the Japanese-Brazilian Cooperation Program for the Agricultural Development of the Cerrados was the adaptation of soybeans for the acidy soil of the Cerrado. Public support was a key ingredient in the expansion of Brazilian agriculture, not least through the efforts of the Brazilian Agricultural Research Corporation to adapt temperate crops to the tropical climate of central Brazil (Hosono & Hongo, 2016). The combination of cultivating vast land resources and improvements in tropical agricultural technology led to significant growth in outputs from the 1980-1990s (Chaddad, 2016, p. 116). Total annual factor productivity in the Cerrado from 1985-2005 thereby increased by 4,3 % amongst the most efficient producers (Rada, 2013, p.153). The large-scale agriculture that spread across Brazil in the late 20th century spurred a burgeoning production of crops such as soybeans, corn, cotton, and sugarcane. Efficient animal protein cold chains were also developed, leading to a substantial rise in production of beef, pork, and chicken meat. With the

surge in production, Brazil both became self-sufficient with a wide array of foodstuffs and also reached a position as an increasingly important agricultural exporter.

Public support was a key ingredient in fostering the Brazilian agricultural expansion. The National Integration Plan advanced by the military dictatorship in the 1970s provided infrastructure which supported land investment in previously isolated regions. Moreover, the rural credit system also expanded significantly from the early 1970s, to reach levels above US$ 20 billion in the latter part of the decade. This system effectively subsidized agricultural production, as interests hovered below the rate of inflation (Mueller & Mueller, 2014). By the early 1982, as the developing country debt crisis compromised public finances in Brazil subsidized financing was gradually phased out and eventually replaced by a price band offering minimum guarantee prices to products.

While agricultural reforms in the 1980s were undertaken in a reactive manner upon external shocks and as for all WTO members, in response to the AoA, agricultural policies in the 1990s pro-actively guided a market-oriented development, as the sector became increasingly competitive. Export controls for soy, corn, rice, and cotton were lifted, and quantitative restrictions on imports of agricultural inputs, such as fertilizers, were likewise dismantled. In 1996, significant tax exemptions were made on soy products, which further stimulated exports. The monetary stabilization with the *Plano Real* from 1994 also sparked an inflow of private capital directed at large-scale agribusiness operations. Policies throughout the 1990s thereby converged around the goal of increasing the sector's competitiveness and ability to rely on market forces. Although policies aimed at stimulating agrarian development have been pursued by different governments since the turn of the millennium, the basic features of the Brazilian agricultural development model, relying on export-oriented agribusiness were defined in this period. Overall, the level of agricultural subsidies notified to the WTO remains low in 2020, producer support estimates PSE being only 3,1% (OECD, 2023b). Of the WTO compatible support (green box), Brazil allocates the bulk to national food aid programs (Hagemejer et al. 2021). Tariffs also remain lower than those of the EU but higher in comparison to the US (Table 2).

The Brazilian agribusiness sector that emerged from the turn of the millennium was marked by strong international links. Agricultural grain traders were firmly present within the Brazilian market, as were input providers and producers of agricultural machinery. Technological and organizational changes within Brazilian agribusiness were also central for the export boom from the 2000s. Thus, from 2000-2022, Brazilian agricultural exports increased from US$ 20 to 160

billion, resulting in a positive sectorial trade balance of around US$ 100 billion (Jank et al., 2023).

Politically, Brazilian agribusiness' dynamic economic performance led to a position of special importance within domestic politics and in a foreign policy perspective: Domestically, agribusiness is strongly represented within the Brazilian Congress as one of the largest caucuses. The sector is also widely present in both the executive and legislative spheres at the federal, state, and municipal levels. Agribusiness has thereby gained extraordinary structural power and influence within Brazilian politics and society (Castilho, 2012; Pompeia, 2021). This means that the agricultural policy regime has been locked into a "production and export" path dependency which is unlikely to undergo significant shifts beyond specific calibrations to changing domestic and external circumstances.

Internationally, Brazilian agricultural exports have reached a level at which sectorial interests have been profoundly embraced by Brazilian economic diplomacy (Søndergaard, 2020). The privileged position of agribusiness within Brazilian politics is thereby also reflected in the country's foreign policy. Since the 2000s, Brazil has been a staunch defender of agricultural trade liberalization and market opening at the multilateral level and within other spheres of global governance (Søndergaard & Silva, 2019). Consequently, Brazilian agribusiness interests have guided the country's actions within a wide range of related foreign policy arenas and issues areas. One example is Brazil's impactful engagement in the Doha Round from 2001-2008 as a leading force within the G-20 group of developing agricultural exporters. These efforts were strongly underwritten by the country's agribusiness sector and relied on technical capacity and key studies and projections provided by this sector.

The rapid expansion of agricultural production nonetheless also came at a substantial environmental cost. The surge in deforestation in recent decades has led to a 20 % loss of native vegetation in the Brazilian Amazon, which has made this biome approach a critical threshold of accelerated dieback (Lovejoy & Nobre, 2019). Moreover, the 2 million km2 Brazilian Cerrado has also lost nearly half of its native vegetation with the massive inwards expansion of Brazilian agricultural and livestock production (Strassburg et al., 2017). In a socio-environmental perspective, this process has often threatened the livelihoods of indigenous populations and smallholders, especially in frontier regions (Russo Lopes et al., 2021). Growing international attention to such sustainability issues has meant that they have become highly salient and strongly intertwined with Brazilian foreign interaction throughout recent decades.

Currently, climate change constitutes the greatest structural challenge to Brazilian agriculture. In 2021, direct emissions from the sector, as well as the indirect emissions though land-use

change (mainly through illegal deforestation) constituted approximately 75 % of total Brazilian GHG emissions. This issue has thereby become a crucial factor in determining the strategic outlook of Brazilian agriculture, which apart from its elevated GHG contributions also has become vulnerable to climate-induced shocks, and to international pressures for environmental compliance which could threaten its future global market position.

2.1.2. Brazilian agricultural policy amid the crises of the 2020s

As the *COVID-19 Pandemic* spread across the globe in early 2020, fears arose that food systems would be disrupted. Brazilian COVID-19 restrictions on mobility and transit were implemented relatively early in March 2020, before the pandemic had spread widely in the country. However, because of the denialist and anti-science position of the Bolsonaro administration, social distancing measures were adopted mainly by local authorities, with federal action being largely paralyzed by inertia. Consequently, Brazil saw some of the largest numbers of COVID-19 deaths worldwide.

Brazilian agricultural production was not seriously affected by COVID-19 measures. In the early stages of the outbreak, restrictions on mobility and circulation impacted some smallholder farmers and local food markets (Schneider et al., 2020). Small-scale producers were also affected by changes in consumption patterns due to closures in the restaurant sector and had to find alternative channels to market their products. The quick assistance from sectorial and labor associations, public institutions and agricultural research organizations was important in mitigating impacts on this group. The continued public food purchasing programs during the initial context of lockdown was also key to maintaining incomes and avoiding food waste (Nogueira & Marcelino, 2021). Another stabilizing factor was the highly mechanized and land-intensive character of Brazilian agribusiness, hindering large disruption which otherwise could have been caused by social distancing measures. Some problems arose in relation to virus dissemination to workers within cattle and poultry processing facilities, but this did not reach a large extent (Vilarino, 2020). Early in the Pandemic, an interministerial commission for crisis management within agriculture was established with the purpose of maintaining the flows of food products, comprising the Ministries of Health, Economy, and Agriculture. Food production and exports received high political priority, and no measures that could obstruct the supply were contemplated. As an important global supplier of agricultural commodities, Brazil also stood in a key position to proactively attenuate the negative impacts of global food trade, which in early 2020 were caused by logistics problems or trade restrictions (Søndergaard et al., 2020).

At the household level, however, many Brazilians were negatively impacted by the socio-economic impacts of the pandemic. As around half of the Brazilian workforce is occupied in the informal sector, in which face-to-face human contacts are frequent, these groups experienced substantial income losses. Food security was thereby mainly compromised by a drop in the purchasing power of low-income population segments.

As a policy response to increased food insecurity, the so-called "emergency aid" was passed at the federal level, upon pressure from the Brazilian Congress directed at President Bolsonaro. This measure consisted of the payment of R$ 600 (approximately US$ 120) to all eligible adults (those without income). In the course of 2020, the amounts disbursed for the emergency aid reached approximately US$ 65 billion. This measure attenuated food insecurity, which dropped from 30 % of the population experiencing food insecurity in 2019 to 28 % in 2020, - the year of the pandemic outbreak. However, as resources were scaled down in 2021, food insecurity returned, increasing to 36 % of the population- in a situation in which lockdowns were still necessary, and economic activity was hampered by the spread of the virus (Monteiro, 2022). Food insecurity increased significantly in households in which one of the inhabitants had lost employment or become indebted because of the pandemic. Brazilians in the poor Northern- and Northeastern regions of the country were particularly vulnerable to the loss of income due to the pandemic, and therefore also strongly dependent on the emergency aid (VIGISAN, 2021).

Regarding overall welfare, the economy recovered partially in 2021 with GDP growth of 4,6 % after a limited drop beforehand. However, this economic rebound did not benefit lower-income households which remained vulnerable, and often unable to purchase adequate amounts of foodstuffs. Moreover, other public actions that accentuated the situation of food insecurity were the cutbacks on the National School Food Program and dismantling of the Public Food Procurement Program, as well as the exclusion of millions of people from support, as the *Bolsa Familia* social assistance was converted into *Auxilio Brasil,* (VIGISAN, 2022). Thus, while COVID-19 itself did not lead to substantial impacts on Brazilian agricultural production, public mismanagement of the health-related and socio-economic consequences of the pandemic had serious social consequences. This situation culminated with the return of Brazil to FAO's Hunger Map in 2022, after having left it in 2014.

The *Russian invasion* of Ukraine has highlighted Brazilian agriculture's vulnerability to the interruption of trade flows of farming inputs. With its extensive and highly industrialized farming system, Brazil is the largest global importer of fertilizers, accounting for US$ 24,7 billion in 2022 (Statista, 2023). However, the country is also extremely sensitive to disruptions in the global fertilizer trade, as it depends on imports to cover 85% of domestic demand.

Fertilizers are critical to the production of key Brazilian staple crops, such as corn and soy, respectively accounting for 30 % and 37 % of production costs of these agricultural commodities (Seixas, 2022). The Russian invasion impacted fertilizer exports from both Russia and Belarus: Russia is the largest global exporter of nitrogen (N) fertilizer, second largest in potash (K) fertilizers, and third largest in phosphate (P) fertilizers (FAO, 2022). Brazil depends on Russia and Belarus for 28% of its imports, with 20% in the case of nitrogen-based fertilizers and as much as 43 % for its potash-based fertilizers. Of the total Brazilian imports from Russia, potassium, nitrogen, and composite fertilizers respectively, represent 22,9 %, 17 %, and 16,5 %. Potash fertilizer imports from Belarus account for approximately 12 % of total potash imports (Ferreira et al., 2023).

The increasing tensions around Ukraine in early 2022 sparked Brazilian fears concerning how the interruption of fertilizer supplies could impact its agricultural production. As a full-scale conflict drew closer, the initial political response came in the form of diplomatic efforts to mitigate the geopolitical risk by reaching a mutual understanding with Russia about the need to continue fertilizer exports. The two countries are partners within the BRICS group and have maintained cordial diplomatic relations for many years. On February 16th Brazilian President Jair Bolsonaro conducted a visit to President Vladimir Putin, during which he made the controversial public statement that "Brazil was solidaric with Russia" (Prazeres, 2022). The clear aim with the visit was to guarantee the flow of fertilizers from Russia to Brazil in the case of a crisis. The situation faced by Brazilian agriculture in early 2022 was potentially serious, as domestic fertilizer stocks only were estimated to last until May. Like many other countries in the global South, Brazil refrained from directly supporting international sanctions against Russia. As observed by representatives from the fertilizer sector, the accommodative Brazilian position in relation to Russia could have paid off, as shipments to Brazil appear to have been prioritized in the months following the invasion (Agusto, 2022). Compared to 2021, the first four months of 2022 saw a relatively modest 9% drop in the volumes of fertilizer imports from Russia. Brazilian agriculture was nonetheless exposed to a sharp rise in international prices, which from the onset of the conflict in February towards September affected fertilizers. In total, this led to increased expenses of approximately US$ 10 billion for Brazilian agriculture (Zampieri, 2023). The moderate reduction in fertilizer use throughout 2022, however, does not appear to have impacted soy production, as productivity per hectare increased from 3.02 t/ha during the harvest season 2021/22 to what was projected to 3,55 t/ha by 2022/23 (Brazil, 2022; Embrapa, 2023).

Recently, other policy responses have sought to address the long-term implications of Brazilian dependence on fertilizer imports. Already in early March 2011, the National Fertilizer Program was defined by a presidential decree (nº 10.991/22) with the objective decreasing fertilizer imports from 85% to 45% of domestic consumption by 2050. The Lula administration, inaugurated in 2023, has also signaled its intent to "reindustrialize" Brazil, by supporting the development of the secondary sector. Increasing fertilizer production is a central part of these plans. Private actors have thus far been supportive of these policies, and the fertilizer industry plans to invest R$ 21 billion (approximately US$ 4 billion) towards 2028 (Forbes Agro, 2023). Moreover, the dissemination of precision farming and the development of biofertilizers also holds a potential to reduce dependency in the intermediate and long term.

The invasion has led to some moderate benefits for Brazilian agribusiness due to price surges. Brazilian exports of soy, – the country's most important export commodity – thereby grew by around 20 %, while the value of corn exports nearly tripled in 2022 (Forbes Agro, 2023). The high wheat prices also stimulated the already growing Brazilian domestic production of wheat adapted for tropical growing conditions, which in the course of four harvests doubled from 5,2 to 10,6 million tons from 2018/19 to 2022/23 (Zampieri, 2023). In a situation in which rising food prices may lead to export restrictions, Brazilian agriculture appears to have demonstrated a capacity to respond to price signals and increase global supply without the domestic necessity to limit exports.

The elevated food prices in relation to the invasion have nonetheless also been felt in Brazil. The country currently has one of the largest numbers of undernourished people in Latin America, at a total of 8,6 million, albeit proportionately this constitutes 4,1 % of the total population, - which is low by regional standards. Even before the Ukraine invasion, food insecurity was already on an upwards trajectory in the country. The invasion of Ukraine led to a spike of 13 % in the Brazilian consumer price index (Ferreira et al., 2023). With food inflation reaching 11,64% in 2022 (Côrtes, 2024). By some measures, in 2022 only 41,3 % of the Brazilian population experienced food secure conditions, while 28 % of the population faced mild food insecurity, and respectively, 15,2 % and 15,5 % confronted a situation of moderate or severe food insecurity (VIGISAN, 2022). Thus, despite surging agricultural outputs that have made Brazil one of the largest agricultural exporters worldwide, basic food needs are still not met. As highlighted by FAO ex-president, José Graziano, Brazil's problem is therefore not one of food availability, but rather one of food affordability by destitute population segments (Kuck, 2022). This problem is further accentuated in situations of global food crisis, as rising international prices compromise food access for large parts of the population.

2.1.3. Geostrategic aspects and the impact of climate change and biodiversity

The core of the Brazilian agricultural policy framework is grounded in the deep-rooted economic significance of agriculture, as well as the structural power of agribusiness. This makes it very resistant to change. External shocks, such as the COVID-19 Pandemic or the War against Ukraine have not led to any substantial shifts in this regard. However, the developments from 2020-2023 may have presented a new global backdrop in relation to which some adaptive measures and strategic recalibrations have been conducted.

The COVID-19 pandemic did not lead to any substantial disruptions in Brazilian agricultural production but did result in some specific impact on smallholders. However, it substantially impacted income in poor population segments, and thereby also food access. The emergency measures implemented in 2020 proved to have a somewhat "sticky" nature, not least because of their large popularity. In a context of high food inflation and a polarized and competitive political scenario, it proved politically untenable for President Bolsonaro to remove this support program before the elections of October 2022. During the campaign, Lula da Silva committed to making the emergency support permanent – a promise which he thus far has been capable of honoring. The continuation of this vital income-support program thereby appears to be an indirect consequence of the COVID-19 Pandemic with strong implications for food security in Brazil. Moreover, as the pandemic highlighted the vulnerability of smallholders, as well as the importance of supporting these groups, the Lula government has sought to prioritize these producers. It is still early to assess the policy shifts within this field, and increased support for smallholder agriculture is also driven by the political ideology of the Lula government and its historical connections to these groups.

The Russian invasion of Ukraine, and the rising global tensions in recent years have presented geopolitical challenges and opportunities for Brazil. On agriculture Brazil will have to navigate to pursue its core interests of growing agricultural exports. Faced with the threats of trade disruptions caused either by direct conflict, but also by political measures to decouple or de-risk supply chains, Brazil has assumed a staunch position in defense of an open world economy, stressing the importance that political tensions do not spill over into the commercial realm. This was recently reiterated by Lula da Silva at the G7 summit in Japan in May 2023, in a somewhat remarkable turn of events in which a leftist Latin American President highlighted the importance of free and unhindered trade to his peers in the developed world. With China being the most important Brazilian export destination, in general, and within agriculture, Brazil will prioritize constructive trade and investment relations with this country. Although Brazil initially

was skeptical of the enlargement of the BRICS in 2023, this development did outline an emergent geopolitical scenario in which the country invariably will need to cultivate increasingly dense relations with peers within this grouping. Brazil will thus most likely aim to avoid picking sides in the current geopolitical rivalries to ensure constructive working relations with all of its main international partners. This orientation is grounded in the perception that the potential downsides to geopolitical fallout are much more significant than the potential gains, - although the US-China trade war from 2017-2020 did yield some export gains for Brazilian soy producers. On the domestic side, the threats posed to Brazilian agriculture by disruption of supply chains have led to some incipient efforts of reshoring of fertilizer production. Such measures do not change any of the fundamentals of the Brazilian agri-export-oriented economic model, but rather seek to complement it with some domestic manufacturing capacities, especially when this supports supply security of important inputs.

A key political strategic objective for Brazilian agricultural diplomacy has been to ensure access to global markets. Brazil has thereby played an important role within multilateral trade negotiations during the Doha Round, and also successfully targeted US and EU subsidies in different high-profile cases within the WTO dispute settlement mechanism from 2002-2005. The country has therefore regretted the decline of multilateral trade institutions in recent years, but also engaged within other governance arenas for opening global markets. The growing importance of environmental regulations constitutes both an opportunity for Brazil to profit from product differentiation and nature-based solutions, but also a substantial risk factor due to the current environmental performance of parts of the sector. In this regard, unilateral measures to ensure improved environmental compliance, such as the European Union Deforestation Regulation (EUDR) have been met with strong Brazilian opposition, as they are viewed as a potential threat to large swaths of domestic rural producers. Moreover, the extraterritorial effects of the EUDR have also led Brazil to criticize this measure as an infringement of national sovereignty. Additionally, these unilaterally imposed measures prompted Brazil to escalate its demands particularly for access to the EU markets for agriculture in the EU-Mercosur Agreement. Although the agreement was politically finalized, its future remains uncertain due to these developments.

In sum, the global shocks of the early 2020s are unlikely to change current Brazilian agricultural policies, that follow a path-dependent trajectory on agri-food exports, which has been internalized by the country's political and economic elites as an essential national interest. However, frictions to supply chains could lead to some changes in agricultural policies as adjustments to global shocks are made. Together with climate change, global hazards such as

pandemics and geopolitical tensions combine to form a risk nexus encompassing a range of overlapping and mutually enforcing dynamics. Adapting to such circumstances will likely require strategic recalibrations within Brazilian agriculture, which both needs to comprehensively address its own contributions to this risk nexus, while simultaneously enhancing its resilience. The sector nonetheless stands in a unique position to address great collective global challenges, such as food security and climate mitigation. Here Brazil may play an important role.

2.2. China

Wusheng Yu

Securing abundant food supply and ensuring access to meet the demand of its vast population has long been recognized as the core mandate of the Chinese government. In a recent speech, Chinese President Xi Jinping stressed that "*no matter how modern the society is, the stable supply of grains and (other) important agricultural products has always been the top priority*" (Xi, 2023). This remark is consistent with long-standing prioritization of food security by the Chinese government. However, a number of new elements have also emerged in times of recent uncertainties at many levels, possibly signaling more intensified recent drive to achieve food security through domestic supplies.

2.2.1. Historical development of China's food security and trade policy: "rice bowl in Chinese hands"

The political sensitivity of food security in China has been enshrined in various so-called "No.1 Documents" as key policy strategies focusing on the so-called three-Nong issues (i.e. farmers, agriculture, and rural areas), jointly released by the Central Committee of the Communist Party of China (CCCPC) and the State Council of China. Each of these documents was announced as the first major policy document of the year that set out policy priorities of China's central leadership regarding agricultural and rural development. The initial five No.1 documents were released during 1982-1986 and provided the basic policy framework for the household responsibility system that greatly promoted agricultural productivity and improved grain security at national scale. The resumption of the annual No. 1 document in 2004, with 20 such documents released during 2004-2023, has addressed various agricultural and rural development challenges and established a series of policy initiatives. Among these are measures to support farm incentives and income, to build a modern agricultural sector, to provide rural services and public goods, and more recently on rural vitalization through thriving businesses (see summary provided by Kimura et al., 2021). Although the themes of these document have been evolving along with changing policy context, food security has always been considered a top priority and has been embedded in the goals and mechanisms of all the agricultural and rural initiatives.

China's food security goals have been generally framed as "the rice bowl to be held in our own hands" indicating a focus on self-sufficiency The product-focus has generally been placed on grains (particularly rice, wheat, and maize) and oilseeds (particularly soybean and rapeseeds). In a white paper published in 1996, the targeted grain self-sufficiency rate is listed as 95%. In

a new white paper published in 2019, a document to communicate China's food security to the world, the goal is phrased as "to guarantee the basic self-sufficiency of grains and absolute security of food grains" (State Council of China, 2019). In the latest No.1 Document of 2023, a quantitative target of 650 million tons of total annual grain output is mentioned, together with the action plan to further increase total grain production by another 50 million tons. Other important agricultural products include pork, the dominant animal food product consumed by the vast majority of the Chinese population. For pork, China declared a self-sufficiency goal of 95% in 2020, as compared to the targets of 85% and 70% for beef & mutton, and milk, respectively.

Food Security Policy framework

To ensure food security, the majority of the policy attention has been placed on incentivizing agricultural production through a wide selection of policy tools, ranging from direct subsidies to agricultural production, market price support programs, public stockholding, to border measures in the form of import tariffs and tariff rate quotas (TRQs). Beyond these measures, efforts have been made continuously to protect and enhance the resource base for agriculture, including very stringent protections of arable land, support for enhancing land productivities, water infrastructure, as well as capacities to prevent and mitigate natural disasters.

At the core of China's current agricultural policy is the market prices support program (Minimum Purchase Price, MPP), particularly for wheat and rice, the two most important food grains in China. These prices are set and announced by the National Development and Reform Commission (NDRC). When market prices fall below these MPPs, government intervention purchases and stockholding is triggered. At the border, China's domestic rice and wheat production is protected through the tariff rate quota systems that were set up as part of China's WTO accession agreement. These TRQs guarantee minimum tariff rates at 1% for imports within the quotas but raise the import tariff rates to 65% for imports exceeding the quotas, thus providing effective protections against large import surges. Together, the MPPs and TRQs for rice and wheat help to maintain substantial gaps between farm gate prices in China and international market prices. According to the Producer Support Estimates (PSE) compiled by the OECD (2022), the bulk of China's producer support is due to these market price support programs. Market price support (MPS) was also granted to a number of other important agricultural products, including maize, soybean, rapeseed under the so-called temporary purchase and storage prices (TPSP), started in 2008. This program (Kimura et al., 2019) required the government to procure the products at the intervention prices, resulting in record quantities, especially that of maize, being procured and stored in the public storage system. The

TPSP program for soybean was eventually replaced by a target price system under which producers receive compensatory payments if market price falls below the declared target price. For maize, the TPSP system was replaced by market-based purchases, but producers received compensatory payments per unit of planted area.

The actual public procurement and stockholding under the various intervention programs varied from year to year, depending on the actual supply situation, domestic market price movement, and international price dynamics. As such, the fiscal spending on these programs also fluctuated. As shown by the OECD (2022), China's MPS was on average US$7.3 billion per year during 2000-02 but rose to US$178.6 billion per year during 2019-2021. As the main driver of China's total PSE, the rising MPS support has pushed China's percentage PSE (i.e. total PSE as a percent of agricultural production value at farm gate prices) to be nearly 15%, approaching the average support levels in the OECD countries.

Other elements of China's agricultural support policy include various domestic support instruments. Prior to the agricultural taxation reforms during 2003-2006, China had a system of agricultural taxation on the one hand and a set of input-based subsidies (particularly on fertilizer and other purchased inputs). Since then, agricultural taxation has been abolished and various direct payments are given to encourage particularly grain production (direct payments to grain producers) and to lower costs of agricultural inputs (comprehensive subsidies for purchased inputs, and subsidies for improved seed varieties), and subsidies for the purchases of agricultural machineries. The first three subsidy programs were formally merged into a single payment program based on land areas under the name of "agricultural support and protection subsidy" in 2016 nationwide (Kimura et al., 2019). On the consumption side, income support programs have been established in both rural and urban areas, such as the minimum income support program known as "Dibao" (Yu et al., 2015).

As a WTO member, China's agricultural policy and its food security considerations have to be compatible with both its WTO accession commitments and the general trade rules under the WTO. In the former case, China has agreed to establish various TRQ systems to guarantee minimum market access to a number of important agricultural products such as cereal grains and to bind and lower the MFN bound tariffs (e.g. soybean import tariff is set at 3%, without any import quota). Both these efforts have led to improved access to the Chinese market, as testified by China's growing agricultural and food imports. Commitments and rules in agricultural domestic support have also constrained China's ability to expand its overall and product-specific domestic support. The notification requirement to submit periodic reports of its domestic support policy also seems to improve transparency of policy making in China. At

times, China has to take into considerations of these commitments/constraints into account when (re)designing/reforming its agricultural support policy. One such example is the market price support reform conducted during the 2014-2016 period, where the TPSP programs for maize and soybean were eventually converted into direct payments, and the MPPs for rice and wheat reversed their respective rising trend. While swelling domestic supply and storage at high costs played a major role in these reforms, external pressure originated from the WTO dispute settlement mechanism (including two cases on agriculture filed by the US: see Brink et al. (2019) likely also influenced these decisions. This experience suggests that multilateral trading rules under the WTO will continue to have the potential to shape the policy choices made by the Chinese government in its drive to safeguard its food security goals, provided that the trading system continues to be supported by all major trading nations.

Food Security outcomes

China's efforts to secure grain security have largely been very successful. The White Paper on Grain Security released in 2019 (State Council of China, 2019) pronounced the realization of most of the declared food/grain security goals. China's total grain production reached the level of a quarter of world output, for a population that is about one-fifth of world population. In quantitative terms, per capita grain production reached 470kg. In particular, self-sufficiency rate for cereal grains exceeds the 95% goal, with rice and wheat supply exceeding domestic demand. These outcomes are mostly achieved through rising average grain yields at 5.6 ton/hectare. In particular, China's rice and wheat yields are more than 50% higher than the corresponding average world yield levels. Although there are no publicly available official data on China's grain storage, the grain security white paper points out that the capacity of the grain storage system can handle storages that exceed China's annual grain production. It is also mentioned that both the quantity and quality of the grains stored in the national storage system is sufficient. In addition, a system for emergent supply has been built in all large and medium sized cities, with access points in all localities.

However, when other food products – such as oilseeds and meat products – are included, a different picture emerges. In fact, China has already become an overall net food importer shortly after its accession to the WTO. This is mainly due to its growing demand for imported oilseeds, particularly soybeans, for satisfying vegetable oil demand and feed demand amid a rapid dietary transition. The ratio of imported grains (inclusive of soybeans) over total domestic supply increased from 3.8% in 2001 to 17.6% in 2021. More recently, rising demand for imported animal food products such as pork and beef have also played a prominent role in solidifying China's position as the world's largest agricultural and food importer. In 2021, agricultural and

food imports into China reached US$ 220 billion, which is more than 10 percent of the world total. In 2020, China's share of total world agricultural imports is most notable in sorghum (71%), soybean (60%), mutton (31%), pork (28%), barley (24%), beef (22%), and milk (12%). In summary, in more narrowly defined category of cereal grains, China has achieved its self-sufficiency goal of 95%; however, when oilseeds and animal food products are included, China is increasingly relying on the world markets for sizable imports to supplement domestic production. In terms of overall food security situation, according to FAO statistics, prevalence of undernourishment in China has been very low in recent years. Rising per capita income and the ensued dietary transition has made China the world's most important source of import demand for a number of products.

2.2.2. Recent food security policy development due to COVID-19, the Russian invasion, and geopolitical competitions

Responses to the COVID-19 pandemic

Although *COVID*-19 resulted in lockdowns in a few major urban centers and greatly restricted movements and travels in different locations from early 2020 until the end of 2022, according to official statistics, production and supply of most agricultural and food products have not been impacted by the pandemic, with overall grain production still rising. As noted by the USDA-FAS, even during the most difficult time of the pandemic, a pragmatic approach was applied allowing farmers to be exempted from movement controls (USDA-FAS, 2023). The lone exception is pork, whose supply was significantly damaged by the African Swine Fever (ASF) outbreaks started in 2018. However, the ASF shock to pork supply did not last the whole duration of the pandemic, as decreased demand including meals away from home and increased imports helped to moderate the shock before the supply capacity was restored.

As compared to maintaining agricultural production, guaranteeing access to basic good items, particularly for residents under strict COVID lockdowns, has been a more challenging task. Here, it appears that despite some glitches, efforts organized by central, provincial, local governments, and various private actors in coordinating the mechanisms to ensuring basic food deliveries and distribution channels through e-commerce have largely worked to avoid any large-scale issues. For example, as noted in Fan et al. (2021), already in the beginning of the pandemic (i.e. late January 2020), several ministries including Agriculture and Rural Affairs, Transportation, and Public Security started the coordination on ensuring logistics for agricultural products, shortly followed by direct coordination of the State Council. This resulted in "green lanes" for transport of fresh products. Other measures have also been taken to combat issues related to labor and feed shortages in certain sectors such as the poultry industry. For

China's pig sector, the major ASF outbreaks started in 2018 have severely damaged China's pig sector. The supporting measures taken by the government continued in the early period of the pandemic, which enabled the pork price to recede and total supply (including recovering domestic production, release of government storage, and rising imports) to expand in early 2021 (Han et al., 2022). Overall, China's annualized consumer price index for Food (and tobacco) rose by 4.7% in January 2023 but reduced by 2% in December 2023, as compared to the much stable overall consumer price index.

In addition to the resiliency derived from government initiatives and coordination, the widespread adoption of information and communication technology and e-commerce in China's food supply chain also play a major role in ensuring food access. Using high-frequency data, Wang et al. (2022) demonstrate the positive contribution of online food delivery services to the resilience of urban food systems, both during and after lockdowns.

Overall, China's food system has been quite resilient during the COVID-19 pandemic. The unwavering attention in ensuring adequate domestic production of staple foods and having a large public storage system ultimately served China well during the pandemic, even though it is debatable whether the strategy has always worked in a cost-efficient manner.

Responses in the context of the Russian invasion

China has been a major importer of grains and seed oils from Ukraine, with US$1.87 billion maize exports and US$941 million seed oils leading the way in 2021. As one of the world's largest maize exporters (after the US, Argentina, and Brazil), Ukraine's maize exports to China reached the level of 7.7 and 7.9 million tons in 2020 and 2021, respectively, making it the most important maize exporter (together with the US) to China in those two years. Because of these substantial trade flows, China does have a strong interest in maintaining the flows of Ukrainian grain and seed oil exports, for example through the Black Sea Grain Initiative. In fact, China stresses the importance of continued Ukraine grain exports in its 12-point peace plan. Since the start of the Black Sea Grain Initiative in July 2022, China imported nearly one-quarter of Ukraine's grain exports under the initiative, as pointed out in Lu (2023). This not only points to the continued importance of Ukraine in ensuring the stability of the global agricultural markets, but also in enhancing China's food security in specific commodities.

Placing Ukraine's maize and seed oil exports to China in the latter's total agricultural import basket, however, reveals that these exports are nevertheless a small share of China's total agricultural and food imports. In volume terms, they are also much smaller than China's massive imports of soybean, which are mainly sourced from Brazil and the US. Because of this, the temporary breakdown of Ukraine exports did not cause major issues in the Chinese domestic

market. In fact, general inflation that are partially triggered by rising grain prices elsewhere have not been observed in China since the start of the Russian invasion.

Responses to geopolitical competitions

Before the trade war between the US and China in 2018, the two sides were already at odds about certain elements of China's agricultural domestic support policy, with the US accusing China of providing larger market price support exceeding its WTO entitlements (Brink et. al., 2019). Intensified geopolitical competitions have further destabilized agri-food trade in the full-blown trade war in 2018 (see chapter 2.8 US). The US has been a major agricultural and food exporter to the Chinese market; however, a number of US agricultural products were subject to China's retaliatory tariffs, in responding to the tariffs levied on Chinese exports initiated by the Trump administration. This led to temporary breakdowns of US agricultural exports to the Chinese market, ranging from soybeans, maize, to pork. For instance, China's soybean imports decreased from 32.8 million tons in 2017 to 16.6 and 17 million tons in 2018 and 2019, before recovering to the level of 25.9 million tons in 2020. Although the ASF outbreak decreased China's feed demand in 2018 and 2019, still it had to import much more from Brazil to make up for the shortfalls (from 50.9 million tons in 2017 to 66.1 million tons in 2018). Since then, the two sides reached a so-called first-stage trade deal, which among other provisions contains commitments from China to reach certain quantitative import targets in 2020 and 2021. While the Chinese purchase targets were not fully fulfilled, due to a variety of reasons including the weakened demand due to COVID-19, agricultural and food exports from the US have recovered from the tit-for-tac trade wars. These exports remain a relatively bright spot amid further deteriorating bilateral trade deficit on the US side, driven by rising demand for Chinese manufacturing exports during the pandemic.

The overall geopolitical competition between the two countries has only intensified when Biden became the US president. The Biden administration not only maintains the Trump era tariffs and sanctions, but it has also rolled out new export control measures and domestic content requirements in imports to target individual firms and even entire industries in China. In response, China also initiated limited bans on certain US high tech exports and restrictions on its own exports of some mineral products. While there is no indication that agricultural trade would be involved in this increasingly fraught geopolitical competition, it is unsurprising that China's leadership is stressing more about food security through the lens of the current geopolitical landscape. One often-mentioned strategy is to seek greater diversification in import sources so as to reduce the risk associated with individual exporters. One such initiative is the launch of the new "Land Grain Corridor" between China and Russia in 2023 in connection with

the grain supply contract signed between the two countries in October 2023 (Sina, 2023). The contact aims at supplying a total of 70 million tons of grains and oilseeds from Russia to China during a 12-year period. Russia's grain exports to China reached 3.5 million tons during January-September 2023, already exceeding the total exports during the full year of 2022. The new Land Grain Corridor started operation in June 2023 and features the Zabaikalsk grain terminal and a terminal near the Nizhneleninskoye-Tongjiang bridge crossing at the Russian-Chinese border (China Daily, 2023).

2.2.3. Overall strategic direction on food security and trade policy: resilient domestic supply and diversification of import sourcing

For the time being, China's overall policy framework in securing absolute security of food grains remain intact, through strong protection of the agricultural resource base (particularly the "red line" of 120 million hectare arable land), maintaining producers' incentives through market price support and direct payments, and securing a more diversified sourcing structure of important agricultural and food products. Fine-tuning specific instruments within this framework has already been observed. As summarized in OECD (2022), after several years of reducing MPPs for rice and wheat, the NDRC decided to marginally raise these prices in 2021 and again in 2022. In June 2021, agricultural direct payments were raised by US$ 3.2 billion in both 2021 and 2022 to offset rising input costs. At the same time, the ASF shocks to China's pig sector also prompted the formal declaration of self-sufficiency goals in the animal food sectors. Applied import tariffs for pork was also raised in 2022. Some regulatory changes have also been introduced, e. g. regarding fertilizer exports and the registration of all foreign exporters of agri-food products to China.

Take the latest No. 1 Document dated January 2, 2023, and released publicly on February 13, 2023, as an example (CCCPC and State Council, 2023). While the new catching phrase is now "rural vitalization" (CPC Central Committee and State Council of China, 2023), the first priority remains the stable production and supply of grains and (other) important agricultural products, including an overall quantitative grain production target and specific policy measures, as well as sectoral measures targeting perceived "weak links" such as soybean and other oilseeds. Much of these discussions have been reiterated by President Xi's speech in December 2022. The reconfirmation of the quantitative grain production target of 650 million tons are mentioned, together with the action plan to increase grain production by another 50 million ton. Specific sectoral initiatives are also mentioned. For wheat, the government commits to "further increase" the minimum purchase price, while for rice, the MPP will be determined "rationally". For maize, the focus is on raising yields. The crop insurance coverage for wheat, rice, and maize

will be expanded. On soybean, there appears to be another round of efforts to boost domestic soybean production through mixed production system of soybean and maize in the Northeast and the Northern China Plain. Aside from these four main grains, the new No. 1 Document also emphasizes the stability of pork, cotton, fertilizer, and sugar markets. This is also the section in the document where the role of agricultural international trade is mentioned, in connection with the strategy to diversify import sources. However, it is notable that the catching phrase of "utilizing domestic and international markets", which was mentioned in the no. 1 document in 2014 and appeared again as recently as in the 2019 No. 1 document, is now absent from the current document, possibly signaling a more inward-looking approach to food security.

The centrality of grain security in China's overall food security strategy has been enshrined in the most important policy documents and have been regularly repeated/reminded by the top leadership. A series of policy instruments has been applied to guarantee its success. According to the OECD's PSE estimates, China has now provided producer support at a level on par with the average level in the OECD countries. These policy instruments have evidently helped China to realize its main food security goals, namely the near perfect self-sufficiency for rice and wheat, and a high level of self-sufficiency in other important products such as pork. However, resource constraints, a large population, and dietary transitions towards more animal food products all point to weak links in China's food security drive, namely the inability to produce enough feed grains and oilseeds. In this respect, China's pork consumption that is more than half of world production and its soybean imports that is about 60% of total world exports, are particular areas of concern for Chinese policy makers.

Recent major events, such as the COVID-19 pandemic, the breakdown and temporary arrangement of Ukraine grain exports, and in particular the heightened geopolitical competitions between China and the US, have likely reinforced the validity of current approach to food security to the Chinese leadership, despite the major costs associated with many of the policy instruments. At the same time, these events also point to the risks perceived by Chinese policy makers in connection with the highly concentrated import sourcing structure in areas where China has not found good domestic alternatives. Recent policy adjustment will likely result in more domestic efforts to strengthen domestic production, also for the "weak links". In a world where many leading countries are obsessed with the security and strategic implications of trade and global supply chains, China's approach to managing food security risks is hardly unique. Against the backdrop of the broader "de-risking" drive of the EU and US, there is a possibility that China may focus even more on food self-sufficiency and further import diversification. In that case, the hard-fought gains to some major food exporting countries from

a more open Chinese agri-food market built through the WTO trading system – as indicated by the country's annual agri-food imports of US$ 220 billion – can be seriously eroded.

2.3. The European Union

Bettina Rudloff

Since the founding of the European Economic Community (EEC) in the 1950s, common EU-wide approaches to agriculture and trade have evolved from an initial strong focus on domestic supply security to an increasing fostering of open markets and consideration of sustainability objectives. Some shifts in the approaches on food security and food trade can be observed recently in line with a newly pursuit overall policy on economic security.

2.3.1. The past: food security as initial guiding target with losing relevance over time

Policy approaches on agriculture and trade are characterized by a major development over time and should also be understood against the background of the developing supply and trade situation of the EU and its predecessors.

Agriculture and trade, including food security, as cornerstones for European integration

The *objectives of the Common Agricultural Policy (CAP)* were shaped by the direct experiences of the second world war on European food security and the collapse of global trade at that time (Delayen, 2007; Pinilla, 2013). The objectives defined in the beginning of EEC remained unchanged till today as laid down in the Treaty of the functioning of the EU (TFEU) in Art. 39). They address securing food supply at reasonable prices for consumers while at the same time ensuring a fair livelihood for farmers, increasing productivity, and stabilizing markets (European Parliament, 2023b). Besides these agricultural objectives the joint CAP has always contributed as well to the overall political project of European integration (Mensah & Rudloff, 2023).

The factual status of food security and the respective policy applied developed over time:

- *Food security* in terms of quantitative availability has increased in Europe: while self-sufficiency was still low in the 1960s with, for instance, degrees at 77% for wheat and 97% for beef, it has increased to over 100% by 2022 for wheat and many animal products (Matthews, 2023). This development reflects a shift to net exports over time.
- *Agricultural policy* included a changing set of various tools: At the beginning politically fixed minimum prices per product as an incentive to increase supply and public intervention through government purchases to stabilize prices were at the center. Continuous CAP reforms have changed this set of tools up to the current "decoupled" direct payments per hectare in place, not directly related to current production and specific products. Not only the design has been changed, but also the level of farmers' support, which continuously has been reduced. This can be expressed by the producer support estimate (PSE in %),

indicating the share of public transfers in total farm receipts. It has halved in the EU since the mid-1980s to a level of 18% in 2022, which however is still higher than the OECD average of 12.9%: It is also higher than in the US and Brazil but lower than e.g. in the Philippines with 24% (OECD, 2023) (Table 2). The main motivation for past CAP-reforms came from increasing internal budgetary pressures, with agriculture accounting for 75% of the EU budget in the 1970s. Additionally, several accession rounds, partly facing some new member states with large agricultural sectors, required adjustments in order to limit overall agricultural expenditure (Schrader, 2000). An external push for reforms was the WTO AoA finally adopted during the Uruguay Round in 1994, which defined rules for the design of subsidies, their reduction, and set reduction steps for tariffs and export subsidies (Cardwell & Rodgers, 2006; Matthews et al., 2017).

A common European trade policy is even older than CAP, initially targeting politically strategic sectors of that time, such as steel. This sectoral approach was later extended by the EEC to establish not only a free trade area but also a customs union. This included a common market and thereby addresses also non-tariff measures (NTMs) to be harmonized across EU members as part of the overall integration process. The trade objectives covered by the treaty today are linked to the general principles of external action (Art. 21-46 TFEU), which include common European values and the overall objectives of peace and foreign security. The factual situation on trade and trade policy developed over time:

- As regards the *trade position,* the EU has become a global dominant net exporter of most agricultural products, with a declining share of 17% in total global trade in agriculture in 2000 in USD to only 13% in 2022 (UNCTAD, 2023). The dominant member states for agricultural exports are the Netherlands, Germany, France, and Spain. The recent major trade partners for agricultural imports into the EU are Brazil, the UK, Ukraine, the US, and China. As a destination for food exports, the main partners are again the UK, US, China, Switzerland, and Japan (EU Commission, 2024a).
- Referring to *agricultural trade measures,* the AoA initiated a reduction of tariffs, export subsidies, and domestic subsidies: The EU applied average tariff (MFN) for agricultural goods fell between 1996 and 2022. The degree differs according to the database used and is indicated e.g. by World Bank as a decline from 17% to only 6 % (World Bank, 2023).

The trade effects of the CAP attracted increasing criticism over time: the growing EU's exports were accompanied in the past by rising export subsidies to compensate for the difference between the politically set high EU prices and the low world market prices at that time. Thereby

economic incentives to sell surpluses on the export markets were set, which was strongly condemned by trade partners as unfair support to competition, especially by developing countries (Messerlin & Hoekman 2006).

Agriculture as relevant economic and political aspect of EU relations with third countries

Neighboring countries and accession candidates have always been approached through a combination of enlargement policy in the form of political cooperation and trade liberalization as by the continuously deepened Association Agreements (AAs). An example for the Eastern partners is the one signed with Ukraine in 2014. These AAs and other cooperation instruments can serve as a basis for a possible future accession by starting to prepare for the acquis communautaire (i.e. the complex set of EU laws, policies, and objectives) (Rudloff & Simons, 2004). As agriculture often is a large sector of many candidate countries (Daugbjerg & Swinbank, 2004), they potentially benefit to a large extent from the CAP budget once they become a full member. This is directly linked to a large general budget reflux as CAP always covered a large part of the total EU budget, although declining over time. As the agricultural acquis in particular comprises numerous regulatory, administrative, and trade rules, being ready to apply them remains one of the most challenging and long-lasting issues in the accession process. On the EU side, the strong budgetary linkage between enlargement and the CAP may support opposition to enlargement as old member states (and their farmers) fear losing out to new member states joining the EU (Grethe, 2005). This strong budgetary link always served as pressure to reform the CAP and limit farm payments in order to be prepared for new members to become beneficiary (Jensen et al., 2009).

With regard to other countries beyond direct neighbors, agriculture is currently addressed by 41 EU trade agreements with more than 70 countries in place. These trade agreements differ substantially from one another, especially between ones with developing countries and other trade partners:

Developing countries have historically been the focus for trade arrangements with the EU and are partially found in trade rules of member states like France and the UK vis a vis their historical colonial states. In addition to unilateral duty-free preferences several bilateral and regional agreements exist with different developing countries Some address former colonial countries of European Member States, like the Economic Partnership Agreements (EPAs) with African, Pacific, and Caribbean countries. For these countries, the agricultural sector is often very relevant for employment and GDP, hence not only EU market access is important. They also seek to protect their own market as mean to ensure food security by maintaining

agricultural tariffs on sensitive products. The latter often causes problems for negotiating agreements, as the reciprocal approach of the EPAs also envisages market opening on the developing countries' side. Due to this and other conflicts only one third of the EPA countries has finally implemented their respective finalized agreements by 2023 (EU Commission, 2023a)

Other trade agreements with economically stronger partners became increasingly relevant in parallel to the decline in WTO influence. This trend includes successful negotiations with partners such as Japan, Canada, and Korea (Borchert et al., 2021). Standards became increasingly relevant compared to tariffs and often caused difficulties in concluding agreements. Especially if they are linked to agriculture and sustainability they touch on frequently divergent positions of civil society, farmers, and governments between the partners: negotiations on a trade agreement with the US failed finally in 2019, partially due to agree on rules on food standards like applying the precautionary principle. The underlying conflict and criticism by EU actors were expressed by the iconic symbol of "chlorinated chicken". A new dynamic for future FTAs for the EU arrived from the Brexit, insofar as the UK pursues own trade negotiations with the same countries e. g. India. Thus, British negotiation offers can influence the positioning of the EU as part of a competition race (EU, 2023b).

Continuous path towards more sustainability in agricultural policy

Sustainability became a relevant dimension for both, agricultural and trade policy over time, driven not only by ecological and social targets as such, but also by a general political pressure to reform the original structure of CAP payments over time. This was mainly motivated by the ongoing accession rounds and the AoA's rules. As a result, subsidies for agri-environmental activities to farmers accompany as a "second pillar" the traditional income support since the founding of CAP in the "first pillar". This second pillar has been continuously expanded but has remained smaller in budgetary terms. However, as a result farm support is increasingly bound to ecological criteria. Although often criticized as an actually limited principle, the narrative pursued was "public money for public services" (Bureau & Mahé, 2009)

Another push for sustainability comes from international commitments and their increasing integration in EU's policies, such as the SDGs and the Paris Agreement, into its policies. This is evident in its comprehensive strategy for an ecological transformation, the "Green Deal". Within this strategy, the "Farm to Fork" and "Biodiversity Strategy" represent the agricultural parts including e.g. limitations on pesticides' use. In trade policy, sustainability has become an increasingly relevant and conflicting issue. It is linked to the question of comparative competitiveness between countries with different rules: as of 2011 each FTA of the EU

compromises a chapter on sustainability (trade and sustainable development chapters, TSD) referring to an increasing number of requirements and international conventions on human rights and the environment. However, these chapters are excluded from the usual dispute mechanism in the EU's FTAs. Therefore, violations of these TSD-rules may not be responded by sanctions in terms of increasing tariffs. This lack of sanctionability is increasingly criticized by different European civil actors and governments and led to opposition against concluding new FTAs.

2.3.2. Responses to COVID-19 and the Russian invasion

In the context of *COVID-19*, several measures addressed the goal of domestic food security by focusing on stabilizing the internal market and on support to farmers (EU Commission, 2020a). Global food security was more indirectly supported through contributing to international campaigns to refrain from export restrictions in order to ensure open markets and by food aid. The EU's internal market was first affected by lockdowns and associated border controls until summer 2020. This was a historically unprecedented situation and a strong contradiction to the principle of free movement of persons and goods of the EU as common market. For food products, so-called "green lanes" were introduced to open transport and limit border time (EU Commission, 2020c) and the mobility of seasonal workers was supported. On preparedness a new approach has been launched to be better prepared for any type of future crisis and to limit the risk of disruptions to the internal food market: the new "Contingency Plan for Food" was started as a part of the "European Food Security Crisis preparedness and response mechanism (EFSCM)". This EFSCM envisages assessing upcoming risks and serves as a communication tool to coordinate public and private activities across the EU. Additional support has also been paid to farmers through a wide range of measures encompassing direct emergency support, specific support for most affected sectors, aid for private storage, and indirectly through simplification of the administration of CAP payments (EU Commission, 2020b; WTO, 2023a, p. 138).

The Russian invasion initiated a broader set of measures compared to the Covid-19 shock. This set pursues also political objectives beyond food security: e.g. foreign policy objectives in the context of reacting to political conflicts and aggression can be directly linked to food-security aspects as far as the design of sanctions is concerned. In terms of trade-related policies on food security, the EU continued to support WTO initiatives stressing the importance of refraining from export restrictions. Hungary, however, introduced export restrictions on some food products in early 2023 (WTO, 2023a, p. 148). The G7 and other EU members decided in 2022 to increase their support for the Agricultural Market Information System (AMIS). This was

established by the G20 during the global food price crisis in 2011. It provides crucial data on market shortage, thus potentially discouraging the use of export restrictions based on sound information. Furthermore, in 2022 G7 decided to provide more detailed information on fertilizer in the system due to increased awareness of respective risks (G7 Germany, 2022).

Reactive trade measures became part of the broader context of foreign policy: the EU's package of sanctions against Russia adheres to the international consensus not to be directly applied to humanitarian goods such as food until the end of 2023 (European Council, 2023; European Union External Action, 2022). However, possible indirect and unintended effects on global food security became increasingly relevant for the EU's strategic foreign policy positioning. Such indirect food security risks may arise from general economic insecurity caused by sanctions (on top of the war-induced insecurity) that can reduce trade across the Black Sea. Also, overcompliance by trading companies may appear for different reasons like fearing transport uncertainty or reputational risks. Therefore, they may stop food trade with Russia even though this explicitly is not sanctioned (Eriksson, 2016; UN, 2022). These indirect effects fed the Russian narrative that the West and its sanctions were responsible for the rise in global hunger. This narrative also threatened the functioning of the UN-backed "Black Sea" deal to ensure open trade for Ukrainian exports. Russia had conditioned this to also ensure free trade for Russian agricultural products, which Russia complaints to be hindered by sanctions' effects. As a political signal to respond to Russian complaints and to the skepticism of some EU members, the EU permitted member states to lift those individual sanctions on certain oligarchs with links to food and fertilizer actors and to allow the refreezing of blocked assets (Savage et al., 2022). As very recent new development, in the beginning of 2024, a debate began, initiated by Lithuania and the EU Commission, to ban agricultural imports from Russia (Francis, 2024).

From the beginning, trade measures to facilitate exports from Ukraine were accompanied by logistical transport measures. The so-called "solidarity lanes" provided an alternative route to the blocked and consistently threatened Black Sea passage lanes via Eastern EU member states. As direct infrastructure measure aid for decentralized storages near the border was paid to decongest the overloaded border crossings (EU Commission, 2022a). Additionally, remaining bilateral trade barriers within the EU-Ukrainian Deep and Comprehensive Free Trade Agreement (DCFTA), such as quotas, were lifted as "autonomous trade measure" (ATM). The resulting – and intended - influx of Ukrainian imports led to complaints from the Eastern EU member states directly neighboring Ukraine stressing resulting price pressure for own farmers. They implemented national import bans in conflict with European competence since trade being to be decided at EU-level. The EU-Commission compensated Eastern members through the so-

called - and anyhow existing - “Agricultural crisis reserve for unforeseen challenges” (Gerardo, 2023a, 2023b). Furthermore, the EU replaced the national bans with an EU-wide prohibition of selling certain products to these neighboring markets and allowing only transit through these countries to avoid market pressure. This was enforced by sealing containers (Kijewski & Brzezinski, 2023). The extensions of the ATM for the third time now until 2025 raises continuously strong opposition and is responded by different safeguard options (FT, 2023). These include a continuous monitoring of market effects and possible increases in tariffs.

Additionally, international food aid was supported and the G7 launched a new system to monitor global food security risks and identify gaps in food aid to vulnerable countries (GAFS, 2023). Especially the aim of supporting international food security was used as narrative to keep EU production (and farm income) high. This argument justified postponing some new mandatory ecological criteria for receiving CAP subsidies already defined such as the doubling of the environmental set-aside to 4% (Zachmann et al., 2022). This postponement has been continuously extended. On domestic food security, although not at actual risk despite phases of price inflation, members states could decide individually to reduce VAT for food to support consumers.

A more general political reaction, with an impact on the EU’s agricultural sector, relates to the accession of the Ukraine. The accession process is very much pushed by the Russian invasion as a general political offer to and support of the Ukraine: the Ukraine became already a formal candidate country in June 2022 and the accession process was formally approved at the end of 2023. As this path is directly linked to budgetary flows to the Ukraine, the largest agricultural actor ever intending to accede the EU, opposition can be expected as the critical positions of the Eastern member states on the solidarity lanes suggests (Elsuwege, 2023). Only more recently did a more optimistic or “geostrategic” discussion emerge about Ukraine's potential role in transforming the EU into an agricultural powerhouse. This development could have significant geostrategic implications of the future impact of the EU on global food markets and the contribution of the EU to global food security (Struna 2024, Abis, 2023; Rudloff, 2022a,).

2.3.3. Strategic shifts on food security and geostrategic aspects

The recent shocks highlighted an ongoing trend toward more “geopolitics”, as announced already explicitly as general political goal by the EU-Commission starting work in 2019 (EU Commission, 2019). Regarding food security policy some aspects can be identified in line with this overall explicitly stressed geostrategic ambition.

Food security as renewed narrative and political justification

Although domestic food security risks have been comparatively low in the recent past– despite high food price inflation for certain products in some phases (Table 2) - food security has regained relevance as a policy narrative (Wieck et al., 2021). For instance, specific measures such as the derogation from ecological requirements to ensure large production after the Russian invasion were explicitly justified by a "food first"-approach to contribute to global food security. Other documents emphasized food security more generally as a policy goal, such as the EU's Communication on "Safeguarding food security and reinforcing the resilience of food systems"(EU Commission, 2022b). The report of the European Parliament on "Ensuring food security and long-term resilience of the EU agriculture" even envisaged self-sufficiency on food as goal (European Parliament, 2023a, pp. 26, 32).

A further push in crises alert and preparedness systems

General warning systems have been used for a long time. For instance, the EU-Commission's regular and thematically broad "Strategic Foresight Report" aims at establishing dashboards for regularly monitoring possible shortages of all supplies, including food (EU Commission, 2023b). Particularly in food markets, there have been longstanding experiences with monitoring tools on different indicators, which are being further developed to better integrate them as a market intelligence tool (EU Commission, 2022b).

Systematic *crisis management* tools were pushed by the COVID-19 experiences, such as the "Single Market Emergency Mechanisms", recently adopted provisionally as interinstitutional agreement in February 2024 (European Parliament 2024). It aims to define different degrees of crises of any kind and to identify emergency policy responses (Bardt et al. 2023). These include coordinated monitoring and communication and the stressed relevance to avoid interruptions in the internal market as happening during the COVID-19-pandemic. This strengthening of the internal market once again was emphasized also in the recent high-level report, mandated by the EU Council and the EU Commission (Letta 2024). It covers additionally interventionist approaches such as legal obligations to market and deliver certain defined crisis-related products and establishing new strategical reserves and release them during crises. The food specific tool of the EFSCM appears to be less interventionist as it is focusing more on risk assessment and coordination of respective actors across the EU. Another type of emergency management tool is the newly reformed EU approach to critical infrastructures considered as vital for the economy and society, which require specific protection requirements mainly defined to be fulfilled by private actors. Food has been newly defined as an EU-wide critical entity among other sectors, such as energy, transport, and health (EU Commission, 2022).

Strengthening economic security beyond food security but comparatively less interventionist

For several years already, the EU has been implementing a number of approaches to increase autonomy and economic security (Verellen, 2021; Leichthammer 2024).They were initially justified as a relational need to respond to the behavior of other countries, such as to US protectionist tariffs and Chinese dumping, leading to new anti-dumping rules already in 2018 (WBBMEL, p. 37ff). An anti-coercion instrument followed in 2022 that allows to respond to so-called coercive trade behavior of trade partners and thereby can be understood explicitly as relational "geo"- tool (Couvreur et al., 2022). Several other, more sector-specific measures have been in place for a longer time to address supply security beyond agriculture, including initiatives such as listing raw materials according to their criticality already since 2011. These various existing sectoral policies have recently been consolidated into a comprehensive - and at EU-level new - explicit "Industrial policy" (Aiginger & Rodrik, 2020). All of these approaches contribute to the overarching, also new in terms of explicitness, "EU Strategy for economic security" from 2023 (EU Commission, 2024b).This is accompanied by specific tools and by broader goals, such as a continuous assessment of economic security risks. Among the threats and risks mentioned here are broad and explicit geopolitical ones like the "weaponization of economic dependencies". The sector-specific "EU's Critical Raw Materials Act" of 2023 sets quantitative targets for degrees of self-sufficiency in different processed raw materials accompanied by numerical aims on import diversification (EU Commission, 2023a). In some of these new or older sectoral approaches food security as goal and agricultural products are covered, e.g. some fertilizer components are defined as critical raw material. Specific food policy-approaches related to food security seem meanwhile more market-oriented compared to the newly emerging approaches in other sectors. This comparatively less interventionist approach may be explained by a long-standing policy like CAP that, compared to other sectors, defines since long clear rules and limits for political interventions. Another factor may be the lower import dependency – as developed over time- of food recently compared to other sectors.

Increasingly perceived tradeoffs on trade, sustainability, and food security

The EU's 2021 trade strategy already introduced "open strategic autonomy" as new guiding principle, pointing to a potential conflict between different goals in general, such as ensuring domestic supply ("autonomy") and seeking new trade partners ("open"). The Russian invasion has greatly accelerated the perceived need for the latter. This new search for partners is not limited to the diversification of supplies from certain countries like Russia for products like gas.

Furthermore, it is not limited to economic issues in general but extends more broadly to the search for political allies in general. This search can potentially clash with the goal of sovereignty. This is pursued by the growing number of EU's "unilateral" or "autonomous" initiatives. Some of these measures respond to the global economic tensions (like the anti-coercion tool to react on other countries' coercion) and some aim to ensure sustainability. The latter growingly is pursued by the EU's new due diligence approaches. These oblige European business operators to fulfill a duty of care on defined human rights and environmental goals of mainly international conventions along the (international) value chain. One type of these approaches is specifically important for agriculture: the regulation on deforestation-free value chains (EUDR) defines the target of zero-deforestation after the cutoff date 31.12.2020 for certain mainly agricultural products considered to be sold on the EU market. These rules create a dilemma between internal and external acceptance of new trade agreements. As sustainability in most FTAs is not sanctionable, i.e. cannot be enforced through a final suspension of tariffs is leading to eroding support of new FTAs at the side of different actors in the EU (WBBBEML 2023, p. 17). Therefore, new unilateral rules like the EUDR can support acceptance of new FTAs as they provide an alternative to enforce international sustainability. However, externally they can reduce acceptance of new FTAs, as they are criticized for potentially undermining the benefits of trade agreements by requiring new standards without trade partners being involved in defining them - different from negotiating FTAs. They are also often criticized as dominating the partner's political sovereignty or being even neo-colonial. This criticism was particularly expressed by the Mercosur partners countries during the final stages of signing the already finally negotiated respective FTA (Rudloff, 2022b). But also in other negotiations sustainability may become an area of conflict and especially if linked to agriculture - like with India, Indonesia, and Thailand (Hilpert & Rudloff, 2024). Becoming aware of these tradeoffs, the EU has embarked on new strategies for partnerships for both, the new unilateral due diligence approaches, and new trade agreements (EU Commission, 2022c; Rudloff & Stoll, 2023). Whether this will be successful in a situation in which the EU loses global shares in trade and raising importance of other trade actors remains to be seen.

Other tradeoffs regained increasingly perception, like those between production, food security and ecology: The nexus of food-fuel-feed-biodiversity has been at the center of balancing respective goals throughout the history of CAP e.g. regarding policies on supporting agri-fuels. The recent shock events have reinforced critical positions on the "Green Deal" and related stricter sustainability rules. They are criticized for limiting production and thus the EU's contribution to (global) food security. This link between limiting production and feared related

income losses resulted in several political concessions to farmers, such as the postponing of ecological set aside and the safeguards on the ATM to facilitate Ukrainian exports. The recent and partially violent demonstrations by farmers across Europe since the beginning of 2024 led to additional concessions in terms of both support but as well on relaxing some ecologically motivated new rules (Matthews, 2024). This is recently often justified by the narrative of reducing bureaucratic burden of farmers related to applying ecological rules.

2.4. Nigeria

Olayinka Kareem

The Nigerian agri-food and trade policies have historically emphasized national food security, export orientation and diversification from oil exports. This focus was rooted in the precolonial history and aspirations of the country for economic development, but recent shocks have further reinforced it. The policies are bolstered by the goals of self-sufficiency and food security as national security.

2.4.1. The traditional path among production increase, export orientation and crude oil exploration

There had been dynamics in the trade and food security patterns in Nigeria. Nigeria's pre-colonial food trade cut across different communities and nationalities in the present West Africa, Saharan region, and Atlantic Oceans with heavy dependence on cash crop exports such as cocoa, groundnut, cotton, and rubber. This trade direction changed during the colonial era (from pre-1914 to 1960) towards Britain. Many of the cash crops were exported to the UK to serve their manufacturing and processing sectors. Food products such as beverages, dairy products, other processed foods, and agricultural inputs were imported to Nigeria mostly from the UK and other European countries. Nigeria's economy witnessed a food surplus as economic activities in the agricultural sector boomed during this period, however occasionally burdened by natural shocks such as droughts and plagues that caused famine.

Furthermore, there was a reduction in staple food production in the 1920s because of the aggressive and dictatorial colonial government's export-oriented agricultural policy. This policy enunciated an increase in the cultivation of cash crops for export instead of food crops. Incentives were higher cash crop prices to discourage and make unattractive food crop production. However, the policy was detrimental to domestic food production, which led to relative shortages in food supply. For instance, groundnut and cotton exports increased (Osoba, 1969), while domestic staple food prices drastically increased (Akubor, 2021). The trade policies continued in the early post-independence era as a large chunk of the cash crop exports were directed towards the UK and other European countries to the detriment of Nigeria's nascent manufacturing sector. Despite these developments, domestic food supply increased with the growth of food varieties such as yam, cassava sorghum, maize, and millet (Sano, 1983) as a result of agricultural policy reform in this phase.

Tariffs were the main trade policy tools during the colonial period. Olofin (1997) finds that tariffs were mainly imposed before 1953 to generate income for the colonial government and to impact the balance of payment adjustments between 1953 and 1967. Lastly, after

1967,multiple tariffs were imposed as instruments of industrial policy to shape economic targets. Correspondingly, the country's agricultural exports rose from 1.2 million tons in 1960 to 1.5 million tons in 1965; generating $351 million and $405 million in revenues, respectively; while total food imports from 1960 to 1964 were $63 million[3] (Olabomi et al., 2021; Sano, 1983).

The evolution of *food security concerns* in Nigeria started immediately after the advent of commercial crude oil in the late 1960s and early 1970s. The agricultural sector was largely neglected such that food production and export drastically decreased and agriculture in GDP plummeted from 67% in 1960 to 23% in 1974 (Odetola & Etumnu, 2013). The import substitution trade policy in the 1970s included tariff escalation: This composed of higher tariffs on finished products, especially food products for which domestic production should be encouraged and of low tariffs on inputs to support domestic production. This approach was insufficient to revamp the agricultural sector, and thereby food insecurity started to evolve. The food insecurity situation in the second republic (the early 1980s) became moderate or severe according to the FAO's IPC-definition, particularly during the global economic crisis. This is because the country witnessed an economic recession and implemented austerity measures – contractionary monetary and fiscal policies – in combination with restrictive trade policies such as higher import tariffs and stricter import control to cushion the recession's impact. To resuscitate the agricultural system for better performance in food production and export, policies such as Operation Feed the Nation, and Green Revolution were implemented but only with little effect owing to policy inconsistency (Akubor, 2021; Moser et al., 1997).

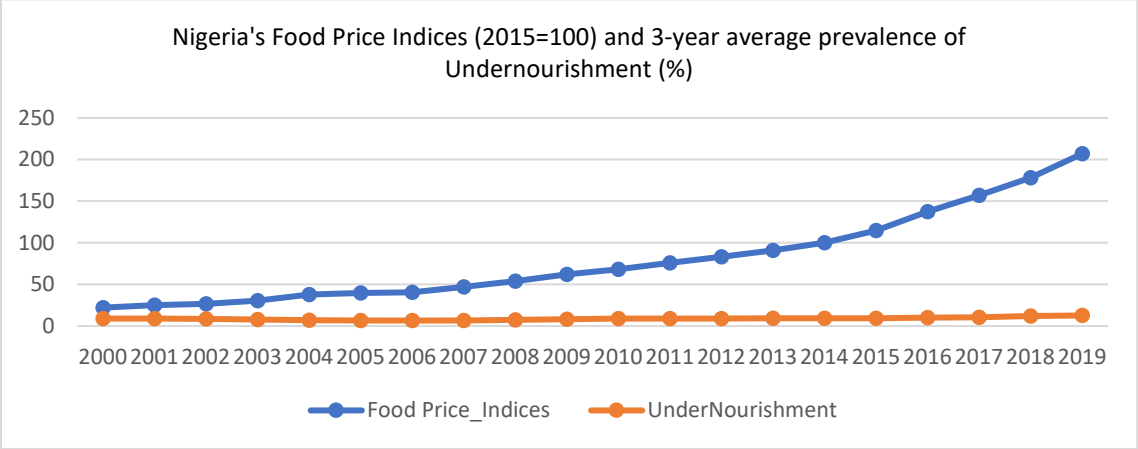
The Structural Adjustment Program introduced in 1986 followed a trade liberalization path, which was unable to provide succor to the food system, as food insecurity was exacerbated by the food deficit experienced (Aigbokhan, 2001; Kareem, 2009). The policy impacts adversely on domestic food producers because of their inability to favorably compete with imported food and thereby deepening food insecurity. Furthermore, to enhance efficiency and competitiveness, a new tariff regime was introduced in 1995 to cover the period 1995 to 2001, which led to a tariff reduction by half, from 0-300% to 0-150% (WTO, 1998).

At the advent of the Fourth Republic in 1999 several strategic programs were implemented to revitalize and stimulate activities in the agricultural sector to deliver a reduction in food insecurity and poverty as well as agri-food export expansion and contribution to the GDP. Moreover, the Nigerian trade policy regime became more protective such that the applied MFN

[3] Excluding vegetable oil and animal fats.

on agri-food products doubled the non-agri-food products (WTO, 2005). Although activities, particularly production, in the agricultural sector relatively improved, food insecurity concerns were still prominent because there were challenges such as land tenure, ethnic militias, communal conflicts and the global economic crisis in 2007/2008 which increased food prices (see the Figure 3). Besides, since 2008, different National Food Security Programs have been implemented to reduce food insecurity and ensure a rise in agri-food exports through its non-oil export promotion policy. An inclusive and more general approach was set in the strategy "Nigeria Vision 20:2020" of 2009 to diversify the economy and set long-term goals for the agricultural sector to deliver inclusive and shared development.

Figure 2 Reflection of food and nutrition insecurity in Nigeria



Source: Computed from the FAOSTAT

Within the framework of this strategic vision , the Agricultural Transformation Agenda (ATA) was initiated and implemented in 2011 to promote sustainable agriculture and export market access. Tariffs were liberalized since the country aligned in 2009 its tariffs with the Common External Tariffs (CET) of the Economic Community of West States (ECOWAS). The average applied MFN tariffs were reduced from 29% in 2003 to 12% in 2009 (WTO, 2011). Still, both the export and import prohibition lists – were maintained for some agri-food commodities such as rice and wheat to reduce competition, propel production, and thereby ensure food security. Moreover, a comprehensive strategic policy on climate change called "Nigeria Climate Change Policy Response and Strategy (NCCPRS) was introduced in 2012 to develop a climate-resilient country, encourage low-carbon and accelerate economic development (Federal Ministry of Environment, 2021) (See Table 3). Agricultural productivity picked up during the period as the agri-food export and export base relatively expanded. However, market access for agri-food such as beans, and sesame to the EU and the US markets was restricted in 2015 owing to quality issues. More so, food insecurity became intense due to natural disasters, insecurity (particularly from Boko Haram) and conflicts. In response, some agricultural and trade policies, and

programs, including an import ban on some agri-foods such as rice, poultry, and vegetable oil, were introduced to support the agri-food value chain, which has a marginal effect on food security. The rice value chain evolved drastically, which was facilitated by the inclusive "Anchor Borrowers Program" to boost production. Also the agri-food exports and export earnings improved.

However, all measures of this phase did not translate to the declared goal of self-sufficiency in food and severe food insecurity remained prevalent. Apart from the challenges in policy implementation, the national food self-insufficiency was enmeshed with obstacles such as rising conflicts between farmers and herders, insecurity orchestrated by armed militia, banditry and environmental challenges like flooding and general environmental degradation severely impacting food supply, particularly in the Northern states. The assessment of food security in Nigeria indicates that the share of food insecure people in the population was 40% measured by the cost of consuming 2251 calories per day (Thomas and Turk, 2023) and 23% (Mekonnen et al., 2021) between 2018 and 2019. The food insecurity situation intensified during the extant National Development Plan (2021-2025), a framework within the Nigeria Agenda 2050, owing to a 23.3% rise in food prices in September 2022 (Thomas and Turks, 2023). This led to the introduction of the National Agricultural Technology Innovation Policy (NATIP) (2022-2027) in 2022 to increase farmers' resilience, promote value addition, and reduce food imports such as wheat, dairy, fish, and rice through digital and climate-smart-agriculture. The increase in inflation to 22.8% in June 2023 (National Bureau of Statistics, 2023) because of the removal of oil subsidies aggravated food insecurity and led to a declaration of a national state of emergency on food security in July 2023. This would enable the government to take extraordinary steps to improve the food supply and enhance food accessibility.

Table 3 Milestones in Nigerian History of Policies on food security and trade

Year	Program	Main focus
1976	Operation Feed the Nation	Promotion of and increment of individual-oriented agricultural production activities
1979	ECOWAS Trade Liberalization Scheme	Liberalization of trade within the members state.
1980	Green Revolution	Attainment of food security and self-sufficiency
1986	Structural Adjustment Program	Trade liberalization, backward integration development and domestic competitiveness
1994	WTO membership	Trade policies liberalization and facilitation of trade
1999	National Economic Empowerment and Development Strategy	Agricultural sector expansion, wealth, and job creation
2002	National Special Program on Food Security	Expansion of agri-food production and elimination of rural poverty
2003	Roots and Tubers Expansion Program	The development and commercialization of root and tuber promotion

2008	National Food Security Program	Promoting national food security, food quality and export
2009	National Food Crisis Response Program	Management of food insecurity crisis and promote food accessibility
2009	Nigerian Vision 20	Diversification of the economy and setting long-term goals for the agricultural sector
2011	Agricultural Transformation Agenda	Promotion of sustainable agriculture and agriculture as a business for export expansion
2012	Nigeria Climate Change Policy Response and Strategy	The development of a climate-resilient country, encouragement of low-carbon and acceleration of economic development
2016	Presidential Fertilizer Initiative"	Supporting the blending of NPK fertilizer
2017	the Economic Recovery and Growth Plan 2017-2020	Tackle the domestic food shortage and the intensity of food imports
2015	Anchor Borrowers Program	Creation of economic linkages between smallholder farmers renowned firms agri-food value chains
2022	National Agricultural Technology Innovation Policy	Increasing farmers' resilience, value addition and climate-smart-agriculture
2023	Nigeria Agenda 2050	Development of a technologically enabled agricultural sector that explores national agricultural resources

Source: Own compilation

2.4.2. Reactions to recent COVID-19 pandemic shocks and the Russian invasion of Ukraine

The intensity of the food insecurity situation during the peak of COVID-19 was aggravated as food prices increased, and the inflation rate reached 15.8% at the end of 2020. However, the severity of the situation cannot be largely attributed to the COVID-19 pandemic. Food insecurity had been a longstanding challenge, even before the pandemic, people's resilience to food insecurity induced by climate change and conflict, had significantly diminished. Evidence has shown that 34% of Nigerians are estimated to have minimal adequate food consumption in 2022 (Thomas and Turks, 2023). Hence, to alleviate the untold hardship and cushion the adverse impact of the COVID-19 pandemic, the Nigerian government has been implementing some initiatives, programs and/or policies.

Actions towards ameliorating COVID-19 impacts

Reactions towards mitigating the impact of the COVID-19 shock in Nigeria are multifaceted and coordinated by the federal government. The interventions at the peak of COVID-19 in March-August 2020 to temporarily reduce the adverse effects on all the economic agents were called "Palliative Measures". To avoid food supply disruption because of the COVID-19 containment measures, farm-to-market operators were allowed to operate as essential services to prevent food shortages and food insecurity. The "Palliative Measures" provide succor to vulnerable households across Nigeria, which were implemented through the distribution of staple foods such as rice, sorghum, gari, millet, and maize from the national strategic reserve to 9.1 million households (Federal Ministry of Humanitarian Affairs, 2023).

Furthermore, to boost agri-food production, the government at the early stage of the COVID-19 pandemic revitalized and operationalized the Presidential Fertilizer Initiative (PFI). This initiative promotes the use of local inputs in the production of NPK-fertilizer (nitrogen, phosphorus, and potassium) and resuscitates the moribund fertilizer plants in the country to serve as resilience to the pandemic and future shocks that can impede food security. Besides, to ensure a reduction in national food insecurity, attainment of self-sufficiency and job opportunities, farmers were supported with access to credit, farming inputs and equipment prices were discounted by 50% in 2020. More so, ease of movement of livestock, foodstuff and agricultural inputs was permitted despite general lockdowns to ensure an undisrupted food supply and avoid scarcity of food and/or food crisis across Nigerian states (FMARD, 2023). This was operationalized by a newly established joint Technical Task Force on Emergency Response to COVID-19 at the level of the Ministry of Agricultural and Rural Development.

Beyond this, the Food Safety Management System (FSMS) was activated to ensure quality and protect food from contamination during the pandemic and also to provide a safety net intervention that complemented the government's food distributions in vulnerable areas. Further, three months into the peak of the COVID-19 pandemic in 2020, the federal government flagged off the free distribution of agricultural inputs such as fertilizers and quality seeds to farmers as part of the measures to cushion the impact of the pandemic. Different types of inputs such as seeds of foundation yam, kenaf, cocoa, organic insecticide to combat armyworm infestation in maize, etc., were distributed freely. Other inputs were distributed at 75% subsidy of purchase price as an intervention to avert food scarcity in 2021 and for the resilience of farmers and the national food system. The Gender-perspective was considered in the distribution of the inputs as 35% of subsidized inputs went to women farmers in line with the National Gender Plan and Policies.

Furthermore, the federal government assured farmers of zero-interest loans from the Central Bank of Nigeria and other financial institutions to overcome the effect of COVID-19 and the flood disaster in the Northern part of the country on livelihood and food and nutrition security. Besides, the government has developed a structure within the framework of the "Agriculture for Food and Job Program" (AFJP) in 2020 to overcome the infrastructural deficiency, extension service inadequacy, technology gap and insecurity problem orchestrated by COVID-19 and floods.

Responding to the Russian Invasion

There is no specific Russian-invasion-oriented policy targeted at mitigating the food insecurity impact on Nigerians, but an existing policy has been rejigged in August 2022 to reduce the potential multiplier consequences of the war, namely the National Wheat Strategic Policy. Nigeria's domestic self-sufficiency degree in wheat is less than 10%, thereby necessitating importation. The total wheat import in Nigeria in 2022 w $3 billion, out of which 2% was imported from Russia and about 90% were imported from Lithuania, Latvia, United States, Argentina, Poland, Canada, and Germany (OECD, 2024). However, as a general strategy, Nigeria aims to become a net exporter of food, including wheat and fertilizers[4]. The African Development Bank has supported its domestic wheat and fertilizer production initiative with the cultivation of 250,000 hectares of wheat in 2022 (FMARD, 2023). The National Wheat Strategy Policy Document was validated to revamp the policy for an increase in production and productivity in the wheat value chain. This validation of the wheat subsector would curtail the multiplier effects of COVID-19 and the Russian invasion that disrupted and plummeted the global wheat supply. Th policy approach includes a functional irrigation system in the time of dry season to enhance wheat production, create jobs and tackle food insecurity.

Table 4 Milestones in Nigerian policy on food security and trade since COVID-19

Year	Program	Main focus
2020	Palliative Measures	Temporarily reduce the adverse effects of the pandemic
2020	Food Safety Management System	Improvement of food quality and provision of safety net intervention
2021	National Climate Change Policy	The provision of holistic climate change responses and attainment of net zero greenhouse gas emission
2021	Climate Change Act	Transiting to a low-carbon economy and improving adaptation and resilience to climate change
2022	"Agriculture for Food and Job Program"	Tackling infrastructural deficiency, technology gap and insecurity orchestrated by the pandemic
2022	National Wheat Strategy	Improving productivity in the wheat value chain
2022	National Agricultural Seed Policy	Improving access to quality seed, ensuring food and nutrition security
2022	A Memorandum of Understanding was signed with the International Crop Research Institute for Semi-arid Tropics	Propelling productivity in the sorghum value chain and expanding its industrial utilization and processing
2023	Declaration of a state of emergency on food security	Attained self-sufficiency in food production, and food security and expand food export base and earnings

Source: Own compilation

[4] A fertilizer plant has commenced operation in 2022 with the capacity to produce 3 million metric tonnes of fertilisers per annum, part of which will be exported.

2.4.3. Overall strategic aspects of shifts in food security policy

The recent global market tensions linked to energy market developments, extant the COVID-19 pandemic and the Russian invasion have made many developing countries, including Nigeria, re-strategize, reform and/or repurpose their policy towards building critical infrastructure and resilience food security. Nigeria being the largest democracy and economy in Africa acts also within different political and economic fora like the ECOWAS, African Union, and the AfCFTA and sees the G20 as a bloc that could support and facilitate its development aspirations through technical and economic alliances.

Refocus on inputs and staple foods independence

Recently, the Nigerian agricultural policy was repurposed towards self-sufficiency and targeting net exports in fertilizer, wheat, rice, and other major food imports. The production of NPK fertilizers has been initiated that would depend on local raw materials and envisages to build resilience to any future shocks to the global supply of fertilizer and can contribute to global fertilizer supply. Also, the National Wheat Strategy policy document has been strengthened in 2022 to enhance wheat production, domestic competitiveness, and income earnings, especially for smallholder farmers. Moreover, FMARD has revised the National Agricultural Seed Policy 2022 to increase access to improved quality seed, ensure food and nutrition security and enhance women and youth's engagement in the seed value chain in Nigeria. Efforts to promote food self-sufficiency through the provision of quality inputs, infrastructure and finance can be evaluated as successful, which led to self-sufficiency in the rice value chain.

Regional cooperation: Economic integration in ECOWAS, AFCFTA and international fora

Nigeria has been participating actively in regional and international cooperation and has demonstrated its impetus to strengthen regional integration, particularly in the ECOWAS with the adoption of CET, which has been complemented by the application of some national measures. In addition to the ECOWAS tariff structure, some taxes were implemented. In addition to the value-added tax, which excludes some basic food and agricultural equipment supporting consumption, an import adjustment tax (IAT) and the supplementary protection tax (SPT) were implemented in addition to value-added tax (VAT) that exempted basic food items produced in the country and agricultural equipment. The protective tariff policies are to enhance the competitiveness of domestic producers, particularly in the agri-food sector to enhance food supply and food security.

Therefore, agri-food commodities such as cane or beet sugar, rice, and poultry are import prohibited to reduce competition and encourage domestic production. the export prohibited food commodities are to ensure food security. In addition, Nigeria has shown even more commitment to regional integration beyond ECOWAS by operationalizing the African Continental Free Trade Area (AfCFTA) Agreement in 2021 to deepen intra-Africa trade. This may be assumed as cross-country "insurance" to reduce food insecurity as threats affecting only some countries may be compensated by food exports from others. Although the agreement provides the opportunity for increased trade liberalization in agri-food and resilience to food insecurity in Africa, the adherence to the tenets of this agreement by member states has been Nigeria's cardinal concern and the avenue to benefiting.

Another forum relevant for Nigeria is the G20 as intensive and extensive interactions with the G20 could expand its trade and economic ties with leading world economies. This implies that this interaction would promote investments and mobilize global development financing for infrastructure as well as stimulate economic cooperation in mitigating climate change. Given that Nigeria is in a quest for regional and international clout, the G20 provides such an opportunity. Hence, Nigeria's current consideration in applying as a member of the G20 to expand its economic cooperation; provides a platform to influence global economic policies and enhance its credibility as a reliable and stable economy and political partner.

Nigeria emphasizes the need for a new model of international collaboration that provides inclusive opportunities for trade, prosperity and shared progress for all partners without race, geographical and legitimate sovereign affiliations margination. This aligns with the explicit and implicit aims and vision of BRICS+. Nigeria's geostrategy stance on BRICS+ is obscure, though it opines that the relationship would be mutually advantageous, as it still wants to be seen as a partner to traditional economic partners. Further, it sees BRICS+ as prosperous and performing developing countries that could be emulated by other developing countries to attain advances in their quest for economic development. Moreover, it opines that the ambition of establishing payment of trade with local currencies could stem the tide of its rising foreign exchange challenges.

Nigeria's geostrategy in relation to China is to expand future engagement and collaboration with the Chinese government to achieve mutual benefits. The country has shown interest in the new China's initiatives to support and modernize Africa's agriculture and agribusiness, expedite Africa's regional integration and expand the continent's industrialization and infrastructure. Specifically, it is interested in partnering with China, especially in the newly identified areas of agriculture, industrialization, and human capacity development, which are in

tandem with the new policy of "Renewed Hope" of the current government, African Union's Agenda 2023, and UN SDGs 2030. Partnership in these areas is relevant to the attainment of the country's development aspirations and mutual pursuit of economic prosperity.

Renewed push on import-substitution and export facilitation: expansion of domestic food self-sufficient supports

To ensure domestic producers' competitiveness, increase productivity and outputs, expand the export base, and ensure national food security; the government indirectly reintroduced the agricultural food import substitution policy by aggressively promoting domestic production and self-sufficiency in staple foods. such as rice, wheat, cassava, poultry, etc. This is implemented by banning some of these commodities, e.g., rice poultry, etc., and enlisting some imported staple foods among products that were prohibited or restricted. Simultaneously, a financial pact for the development of self-sufficiency in some of the staple foods is initiated. For instance, the "Anchor Borrowers"-program was introduced to increase the domestic production of imported foods, particularly rice, wheat, and fish to promote food security. Furthermore, there is renewed policy direction towards agri-food export facilitation as a means of promoting the non-oil export sector, diversification of the economy and expanding foreign exchange earnings.

On climate change and biodiversity the Paris Agreement in 2015 was ratified by Nigeria in 2017 and Nationally Determined Contribution (NDC). This has led to s a shift and repurposing of Nigeria's climate change policy (the NCCPRS). New initiatives, such as the National Climate Change Policy (2021-2030), and National Climate Action Plans (five-year cycle), were introduced within the framework of the Climate Change Act of 2021 to transform the country into a low-carbon economy, reduce climate effect and enhance resilience and adaption to the challenges (Climate Action Tracker, 2023; Federal Ministry of Environment, 2021). The new initiatives are to holistically guide the country's responses to the climate change challenges and set a target to attain a net zero greenhouse gas emission between 2050 and 2070. Besides, given the increasing climatic threat and complexity of the climate change challenges, Nigeria is improving national institutional, technological, financial, and human capacities to absolve and adapt to the climate change challenges in the agri-food system. Moreover, a climate change-resilient agri-food system that would safeguard smallholder farmers' livelihood, particularly for the vulnerable such as women, has become essential for the country. This would not only improve national food security, but also improve soil, and water quality, propel conservation and biodiversity and carbon sequestration.

On biodiversity, some international developments affect Nigeria like the EU's increasing unliteral approach to sustainability (the Regulation on zero-deforestation, EUDR). Nigeria has

jointly with other commodities-affected 16 developing countries[5] expressed its dissatisfaction with the proposed regulation that is in their view discriminatory, punitive, trade distortive and at variance with WTO obligations. Furthermore, trade practitioners in Nigeria and other affected African countries argued that although the EUDR is an essential regulation for the EU green transition, the unilateral legislation instead of a global engagement to deal with this shared objective will put more than 250 million smallholder farmers in Africa at risk (Africa Europe Foundation, 2023). Hence, more dialogue is necessary.

[5] See directdoc.aspx (wto.org)

2.5. The Philippines

Jose Ma Luis Montesclaros

Despite the Philippines' striving to achieve self-sufficiency on rice as major staple in the country over the past decades, it has failed to do so. Historically, the country contributed to disruptions in world rice trade most notably in the 2007-08 food price crisis, and subsequently, a domestic policy change in its rice sector in 2019 made it the largest importer of rice globally that year, even exceeding China. These puzzling outcomes make the Philippines an interesting case study for focusing on the domestic political economy surrounding rice trade policy. This has been a key matter of debate in the state's fine balancing act between the interests of consumers and farmers, in ensuring low food prices while also ensuring farmers' incomes, respectively. Inward-looking policies aimed at ensuring domestic food security (including availability), and its "rice saga" of easing rice trade protectionist policies, can best describe the baseline situation of the country before the disruptions of the 2020s. This section will show how the momentum for path-breaking trade liberalization in the agricultural sector, which started with the rice policy in 2019, was further deepened and expanded to further commodities with lower tariff rates, as a result of the COVID-19 pandemic and the Russian invasion of Ukraine.

2.5.1. Historical pattern of food security and trade

Agricultural competitiveness harmed by currency overvaluation due to industrial import-substitution

The Philippines' general food security and trade pattern over the previous decades can be better understood against the background of its key aim of achieving national economic development in general, while also maintaining domestic food security and protecting the interests of domestic farmers. The common interpretation of the goal of national economic development was as a goal of "structural transformation." i.e., to develop the country's industrial and modern services sectors, as these sectors which paid higher wages. Therefore, the state sought to increase the contributions of these non-agricultural sectors to national GDP, which necessarily meant a smaller share of agriculture. In keeping with the country's push for structural transformation, which began in the 1950s-80s, its strategy was to substitute imported industrial products with domestically produced or manufactured industrial products (import-substitution industrialization, or ISI). The ISI approach was widely adopted by other Asian countries like Japan, South Korea, Taiwan, Hong Kong, and Singapore, which were taken as reference for this policy in the Philippines. Within these countries, the successful implementation of the ISI led eventually to a more outward-looking export-oriented industrialization (EOI), i.e., the

development of the export-oriented manufacturing sectors, which was also the Philippines' objective. However, this transition from ISI to EOI did not occur in the Philippines.

One of the effects of ISI was an overvaluation of the Philippine's currency. Numerous publications have supported that the Philippine peso has been overvalued, relative to its equilibrium exchange rate peso, which was appropriate for the country, and relative to its peers in Southeast Asia, from the 1950s through to today (Bautista and Power, 1979; Intal and Power, 1990; Brillo, 2015). Even if the Philippines has maintained de jure floating exchange rates, Bautista (2003) argued that the manner of implementation of the ISI led to artificially overvaluing the exchange rate of the Philippine peso (Php) relative to the US dollar, owing mainly to trade protectionist measures applied to the manufacturing sector.

The overvaluation of the Php, Montesclaros (2023) argued, has been to the detriment of domestic farmers. Within domestic markets, Schuh (1974) previously argued that an overvalued currency makes domestic products more expensive relative to imports, and this applies to the agricultural sector. This applies also in the case of the Philippines and Montesclaros (2023) has argued that this led to reducing the price competitiveness of domestic producers relative to overseas producers, leading to a reduction in the incentives for farmers to adopt agricultural productivity-enhancing technologies over the past decades. Effectively, by overvaluing the Philippine currency, agriculture was thus side-lined to make way for greater industrialization. However, rather than seeking to remove the problematic currency overvaluation of the Php, the state instead took the approach of protecting the domestic farmers' market share and incomes. This led to trade protectionist measures that shielded domestic farmers from overseas competition, which were applied to most imported food products with international competition.

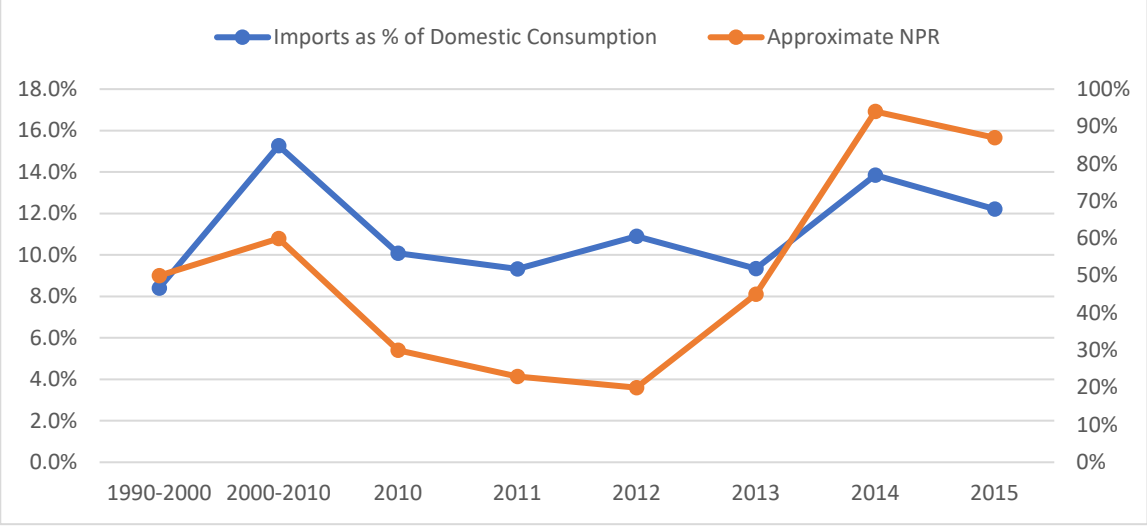
Trade Protectionism in the Rice Sector and the "Rice Saga"

The ISI policy of the Philippines envisioned that the country would eventually be able to participate in export markets as part of EOI. To facilitate access to export opportunities for the Philippine manufacturing sector, the country entered the WTO in 1995. For the agricultural sector, entry into the WTO required a process of tariffication, i.e. converting import quantitative restrictions or maximum quantities of agricultural products that could be imported, into tariffs instead. The Philippines underwent a partial process by implementing tariff rate quotas (TRQs). Unlike quantitative restrictions which set absolute thresholds to total imports, TRQs apply different tariff-levels (a lower tariff rate up to often duty-free within the quota, and a higher rate beyond the quota), without setting absolute quantitative restrictions. This change was applied for most agricultural commodities in the Philippines as stated in the Agricultural Tariffication

Act of 1996. Beyond this, the country has also implemented a two-tiered TRQ, whereby countries within the Association of Southeast Asian Nations (ASEAN) have a lower tariff rate relative to countries outside ASEAN.

One exception approved by the WTO was on rice, for which the old quota was kept to ensure national food security by protecting domestic production. The Philippines received permission from the WTO to maintain its quantitative restrictions on rice as a sensitive product from 1995 to 2005, given rice's special role as staple food that contributes to 58% of the country's domestic per capita consumption (Montesclaros, 2023: 18). The country obtained further permission to extend its rice import quotas in 2004 (a year before the permission was set to expire in 2005); and subsequently in 2012, 2014 and 2017 (Briones et al., 2017). Since quantitative restrictions pose a market barrier, this led to significantly higher domestic prices over international prices. The high scale of protectionism in the rice sector can be observed from the high nominal protection rate (NPR)[6] (see Figure 4) of the rice sector of 85%-95% NPR for Philippine rice in 2014 and 2015, after increasing from 50% NPR in the earlier years (2000-2010) (Briones et al., 2017: 2).

Figure 3 Imports as % of Domestic Consumption and Approximate NPRs in Philippines



Source: Imports as % of Domestic Consumption based on USDA data; NPRs in the rice sector from Briones (2017)

The country was facing a major challenge of rising prices of food and especially of rice as a major staple in the decade of 2010-2020. During the preceding Aquino Administration (2010-2016), the food price index for the Philippines rose consecutively by 3.7% per annum, for a

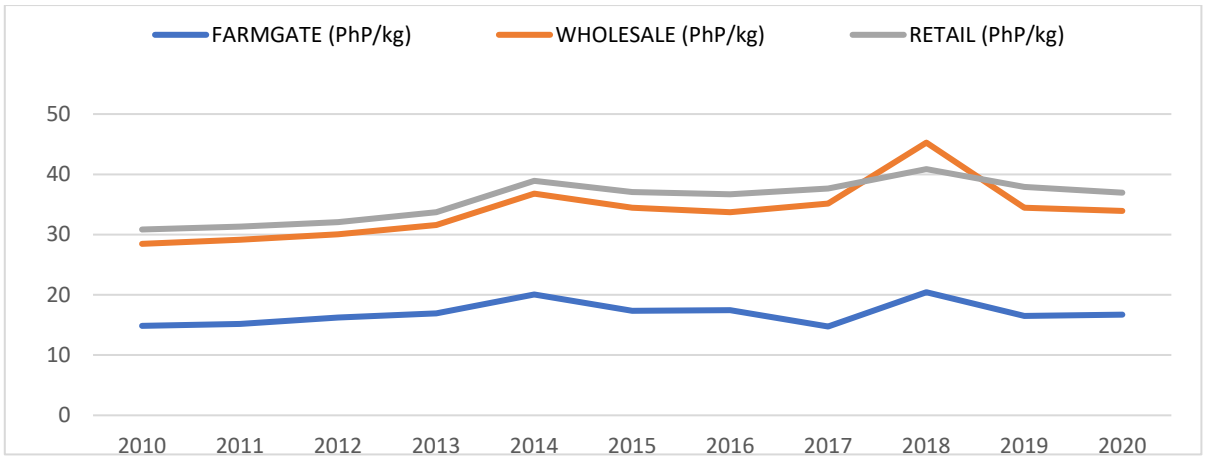
[6] The NPR is defined as the "gap between domestic price and corresponding border price, expressed as a percent of border price" (Briones, 2020: 6). Figure 1 shows that the domestic rice of rice in the Philippines had been higher than the world price for rice, based on benchmark trade item, "Thai rice 25 percent broken."

total of 21.7% increase on average of all food items. Regular milled rice prices increased from Php 30.8 per kilogram in 2010 to Php 38.9 in 2014 and staying at a range of Php 36-39 in 2015-16. Well-milled rice prices also rose from Php 34 in 2010 to Php 50.8 in 2015 (Philrice, 2023). Subsequently in the first year of the succeeding Duterte administration (2016-2022) from July 2016 to July 2017, food prices increased by only 2.7% per annum and rice prices fell from Php 50.7 in early-2016 to Php 41 by end-2016.[7] However, food prices increased significantly by 6.8% from July 2017 to July 2018, and caused alarm when they increased further by 3.5% from July 2018 to October 2018 (Montesclaros, 2023: 121). During this period, rice prices also increased from Php 41 in end-2016 to Php 54.23 by end-2018 (Philrice, 2023).

These challenges for food affordability in the previous decade led to the passing of the landmark "Rice Tariffication Law" (RTL) in February 2019, as an important turning point in the policy on rice: the "rice saga" applied the process of partial tariffication to rice by converting the remaining rigid quota into more flexible TRQs. The two-tiered TRQ system (for ASEAN and non-ASEAN partners) had a special application in the case of rice, since rice imports from ASEAN countries (especially Thailand and Vietnam as large global rice exporters) do not have any quota element anymore thus making it practically a pure tariff for rice imports from ASEAN countries. The quota element of the TRQ remains for rice imports from non-ASEAN countries, and as a general rule for all other commodities regardless of the partner.

The abolition of quantitative restrictions led to greater availability of rice at more affordable prices (see Figure 5), as exemplified by a 16% decline in the Philippines' import price for rice from Vietnam as its largest source for rice imports (Montesclaros, 2023).

Figure 4 Rice Prices in the Philippines before and after Feb 2019 RTL



[7] The reasoning behind the citing of price figures for July, owes to electoral cycle of the Philippines which concludes with election of officials by June. The President is elected every six years.

Source: Philrice, 2023

Climate threats to food security productivity and food security

Apart from the historically problematic rice trade policy prior to the RTL, and even before COVID-19 and the Russian invasion of Ukraine, climate change has been a further disruptor to Philippine food security. The impacts of climate change could be seen in both sudden-onset disruptions to world trade caused by natural events like droughts, floodings as well as food price speculation, and in slow-onset disruptions to farming productivity within the country.

The former type of sudden-onset disruptions to world trade are exemplified by the 2007-08 food price crisis, as narrated by Dawe and Slayton (2012). A drought in India led to a depletion of its wheat supplies, necessitating that India bans its rice exports lest it fall below its minimum grain stock targets (as rice and wheat together form part of the grain targets).[8] Following India's move, Vietnam encouraged its traders to hold on to their rice stocks, given speculation that their traders could receive greater profits if they waited for prices to rise. The Philippines contributed to these disruptions by further adding to the upward pressure on prices: Motivated by the pattern of rising prices, it placed a bid to buy rice from Vietnam at double the normal prices, owing to fears that prices would further increase. This series of events contributed to an upward spiral of rice prices, that culminated in the said crisis. Thus, starting with the climate-induced disruption in India, the Philippines, and other importing countries ended up facing international rice prices which were up to three times their pre-2007 levels owing to price speculation among traders.

Equally important to the Philippines were the slow onset impacts of climate change on Southeast Asia, in the form of reduced productivity of regional rice production. Thailand and Vietnam were two Southeast Asian countries which were among the three largest rice exporters globally. Southeast Asia's rice productivity growth has slowed down in the past three decades to the point that the growth in productivity of 1.16% per annum from 1991-2021 (FAOSTAT, 2023b) has been slower than the growth in population or food demand of 1.36% per annum (FAOSTAT, 2023a) over the same period. The declining productivity contributed to greater scarcity of rice and fed into the annual increase in rice prices. As a result, Southeast Asia saw a reversal in progress in addressing undernourishment in 2014. Whereas undernourishment was halved from 18.1 % of regional population (101.7 million undernourished people) in 2005 to 9.7 % (101.7 million undernourished people) in 2014, it suddenly increased by another 3 million from 2014-2016 (Montesclaros, 2020, p. 67). These owed in part to the increase in the

[8] The drought impacted India's wheat sector. However, wheat and rice both feed into stockpiles of the country's grain sector. A such, lower wheat stocks led India to stockpile on rice amid its wheat shortage, to meet grain stockpile targets.

frequencies of natural disasters as well as worsening environmental conditions, which have altogether led to slowing growth in agricultural productivity (Montesclaros, 2021).

The slow onset impacts of climate change were also relevant to domestic rice availability within the Philippines. The country has experienced slowing productivity growth in rice production, from 2.95 % growth per annum in the previous three decades (1961-1991), to 1.11% in the recent three decades (1991-2021). Yet, rice demand in the Philippines has not slowed down by as much, growing by 1.97% per annum in 1991-2021. Such changes led to an increase in shares in undernourishment in Philippine population from 13 % in 2010 to 13.7 % in 2017.

In addressing the climate threats to rice farming productivity, the Philippines' Department of Agriculture has generally provided agricultural extension services. Importantly, the country has hosted the International Rice Research Institute since the early 1960s which possesses a rice gene bank as well as a database for identifying potential varieties and climate-adaptive farming practices (including practices for reducing greenhouse gas emissions from rice) that can be adopted for increased crop resilience to droughts and floods (IRRI, 2019). However, the adoption of climate-adaptive technologies has been curtailed by legacies the presence of an uncompetitive market for rice in the Philippines, in particular, trade protectionism and currency overvaluation as Montesclaros (2023) argued.

This provides a preface to the types of challenges faced by the Philippines even before the COVID-19 pandemic and the Russian war started. Moreover, while the rice sector was unique in that there were no more quantitative elements of TRQs for imports from ASEAN countries, the said quantitative TRQ elements remained for rice imports from non-ASEAN countries, and for imports of other commodities regardless of trading partner (OECD, 2023c). Discrepancies in tariff rates remain, as in significantly high rates of TRQs of 30 % for within-quota swine meat products (40 % beyond quota) and of 35 % for within-quota corn products (50 % beyond quota).

2.5.2. Recent events: Policies amidst COVID-19 and Russian war

Amid COVID-19, the key policy enacted by the Philippines regarding trade was its reduction of tariff rates within the TRQs for rice and other food items to ease imports. Subsequently, amid Russia's war in Ukraine, the Philippines continued with such easing and expanded it to further commodities, as will be expounded below. These policies therefore reflected an expansion of the country's path-breaking policy of agricultural trade liberalization that started in 2019. This subsection describes the policy environment that precipitated this further push for further agricultural liberalization.

COVID-19: lockdowns ("community quarantines"), movement control policies and import easing

When COVID-19 erupted in the Philippines in March 2020, the ongoing concern from the viewpoint of the food sector continued to be the plight of farmers resulting from increased competition due to the RTL. Nonetheless, a momentary pause from such agricultural concerns could be observed given the significant general disruption on the country and economy as a whole resulting from COVID-19. Metro Manila (comprised of 16 cities) was placed on a "Community Quarantine" in March 2020, which restricted the movements of goods and individuals to stem the rise in infections.[9]

In the coming months, the quarantine policy was since made stricter through the "Enhanced Community Quarantine" policy. This required people to stay indoors and also cordoned them off within their own "barangays," which are the lowest local governance unit in the Philippines (similar to villages in other countries), in place from late March 2020 until end-May 2020, preventing movement across barangays.[10] These policies were expanded beyond Metro Manila to the entire country, the "General Community Quarantine" policy, which eased the barangay-level cordoning and allowed more flexible movements.

The government sought to ensure sufficient supplies of basic food commodities by easing food transport within the country, through national "food lanes" which allowed "unhampered trade and delivery of agro-fishery produce" as well as "agri-fishery inputs". Within this policy, industries providing basic food deliveries could obtain accreditation and in turn, free movement across subnational borders. This likewise included free deliveries of rice by the National Food Authority.[11] Food commodities of key importance, which were identified in the food lane policies, included rice, vegetables, fruits, poultry, livestock, fish, and related products, while inputs included fertilizers, animal feeds and feed ingredients, among others. Farm workers were likewise considered among the essential workers amid the pandemic, and so were given less stringent movement restrictions.

Additionally, the government partnered with multilateral bodies such as the Asian Development

[9] The metro area has a very high population density of more than 21,000 people per square kilometer, magnitudes above the national average of 374 people per square kilometer, thus making it a potential epicenter for COVID-19 infections. (Philippine Statistics Authority, 2020).

[10] With this policy, individuals could not cross over from one city to another, and physical barriers as well as border patrol security personnel were likewise deployed.

[11] Truck/delivery drivers were required to pass body temperature protocol, and could drop off their packages at designated drop-off points set by the DA.

Bank in providing food aid to households.[12] Farmers were seen to have benefitted from the government policy which promoted shorter (or locally sourced) food supply chains. Local government units were encouraged to procure food from local farmers for the purpose of COVID-19 relief aid. Government likewise promoted urban farming and provide extension services in the form of livelihood enterprise modules for livestock farmers to expand livestock production.

However, one effect of sourcing locally is that the buyers are limited to fewer sellers compared to prior international competition, leading to monopolistic situations. A report by the Philippine Rappler noted that meat prices increased by 16%, and pork prices (amidst the African Swine Fever in external sources) rose by 70%, even matching beef prices (Rivas, 2020). To stabilize prices and prevent opportunistic price gouging among local producers, the government imposed a price freeze in terms of capping prices at a maximum level for basic goods. It also formed local price coordinating councils to monitor and report compliance or non-compliance with the recommended prices for basic and prime agricultural products at the local and national levels.

To oversee these processes, the government reorganized itself, and instituted a "COVID-19 Food Resiliency Taskforce" within the Department of Agriculture to comply with President Rodrigo Duterte's directive, to aid in the quarantine orders and also streamline bureaucracy with a "skeletal workforce to continue each agency's mandate due to the COVID-19 pandemic" while minimizing the movement of people (SO 335,2020:1).[13]

A key event which threatened food price stability in the Philippines was Vietnam's announcement in mid-March 2020 of an export restriction on rice. Such a move was justified given Vietnam's own food security concerns amid the pandemic. Yet, Vietnam was the Philippines' largest source of imported rice at the most affordable prices, making up 73% of total imports in 2019. To address this large loss in imports a technical working group was instituted in April 2020 focusing on rice. It was tasked with developing the terms of reference for the import of 300,000 metric tons of rice "through a government-to-government arrangement" (SO 386, 2020: 1) sourcing from alternative countries. This refers to a bilateral arrangement with a partner country to be found, rather than a purely market transaction. Such

[12] For example, in collaboration with the Asian Development Bank (ADB), the "Rapid Food Assistance for the Poor in the Philippines" was launched, which brought critical food supplies to households' doorsteps amidst the lockdowns, reaching approximately 810,000 poor individuals, providing rice packs; cans sardines, tuna and corned beef; and sachets of coffee and milk (Asian Development Bank (ADB), 2020).

[13] The DA-based task force's mission was "to ensure the availability, affordability, accessibility and Safety of food supply in the National Capital Region and the other parts of the country" (SO335, 2020: 1). It also setup a "Service Continuity Planning and Management Team" and a technical working group to assist in this regard (SO 346, 2020: 3).

arrangement also envisages reductions in Most Favored Nation (MFN) TRQs in May 2021 for rice, down to 35 % (within/beyond quota), from the previous level of 40% within-quota and 50 % beyond quota. When Vietnam's export restrictions were dropped, the Philippines eventually cancelled the planned arrangement and reverted to importing from Vietnam. The working group further recommended reductions in tariff rate quotas for swine meat, down to 10 % within quota and 20 % beyond quota (from previous rates of 30 % within quota and 40 % beyond quota).[14]

Beyond these policies, the key driving factor behind domestic food security amidst COVID-19 was the continued "rice saga" of political discussions on a further partial tariffication by converting remaining rice quota to TRQs (and practically into pure tariffs for ASEAN rice exporters). Within the RTL policy which converted the rice import quotas into tariffs, the government was set to allocate a supplementary budget to support the rice sector, known as the "Rice Competitiveness Enhancement Fund".[15] It amounted to Php 10 billion (approximately USD 193 million based on 2019 exchange rates of Php 51.796 per USD), drawn from rice tariffs owing to the RTL, to provide farmers support for 1) rice farm machinery and equipment (50 %); 2) rice seed development, propagation and promotion (30 %); 3) expanded rice credit assistance (10 %); and 4) rice extension service (10 %) according to the RTL. As a result of these, farmers saw higher technology adoption and productivity even amid COVID-19, owing to increases in the application of chemical inputs like fertilizers and pesticides.

Responses related to the Russian invasion: Facilitating imports through reduced TRQs

Amidst Russia's war on Ukraine, the Philippines was embattled with soaring food prices, beyond rice as an essential staple. The food price inflation rate soared from approximately 2 % in the first quarter of 2022, to 6 % by June 2022. For instance, prices for onions as relevant elements of Philippine cuisine had so risen to "eye-watering" levels that they became more expensive even relative to meats like chicken and pork (Magramo, 2023). President Rodrigo Duterte (2016-2022) reduced the MFN tariff rates on key food products such as rice, swine meat, and on fertilizers, citing the war as a key reason for the price disruptions within the preamble statements of the policy.[16] Such tariff cuts were applied "to mitigate and stabilize the

[14] As the Philippines has not been a net food exporter, the country did not place any export restrictions unlike other countries in Asia such as Vietnam which restricted rice exports for instance.

[15] The RCEF was to be funded from the inflow in tariff revenues from imported rice.

[16] One of the preamble statements behind this policy was how the "conflict between Russia and Ukraine presents economic and trade implications to the country and the Filipino people, as Russia, together with Ukraine, accounts for 30% of global exports of wheat, 20% of corn, mineral fertilizers and natural gas, and 11% for oil;" how "the crisis between Russia and Ukraine has pushed worldwide prices of these commodities to multi-year highs;" and how "the increase in oil products, corn and fertilizers generated a corresponding sharp increase in domestic prices of basic commodities and energy, thereby resulting in upward pressures on inflation" (EO 171, p.1).

impact of inflationary measures brought about by the Ukraine-Russia crisis" (EO No. 171, 2022, p. 1).

To address the problems of rising food prices, the Duterte administration proposed a continuation of the reduced MFN tariff rates started in 2021, except that these included further commodities (i.e., corn and coal) whose prices were rising. Corn quotas were reduced from 35 % to 5 % (within-quota), and from 50 % to 15 % (beyond quota) and quotas on coal were cut entirely, from approximately 7% previously. The succeeding Marcos administration in December 2022 extended the reductions in rates for MFN tariff rate quotas from Duterte's administration. President Ferdinand "Bongbong" Marcos Jr., who succeeded Duterte in mid-2022, took an "activist" role in addressing food price inflation, to the point that he took on the dual role of President of the country, and at the same time, Secretary (Minister) of the Department of Agriculture (APNews, 2022).[17]

Beyond trade measures, other targeted conditional transfer programs were implemented by the Department of Social Welfare and Development under the Duterte administration, amidst the increase in the cost of living that resulted from rising oil and energy prices. This was intended to support lower-income families that make up the "bottom 50%" of the country's poor, amounting to Php500 per month for a 6-month period in August 2022 -January 2023. This was further extended under the Marcos administration. The political importance of food price inflation cannot be understated, with news articles attributing this to the "first 100 days" of the Marcos Administration which started in end-June 2022 (Adrian, 2022), yet, monthly food price inflation continued to soar, at 10.7 % by January 2023.

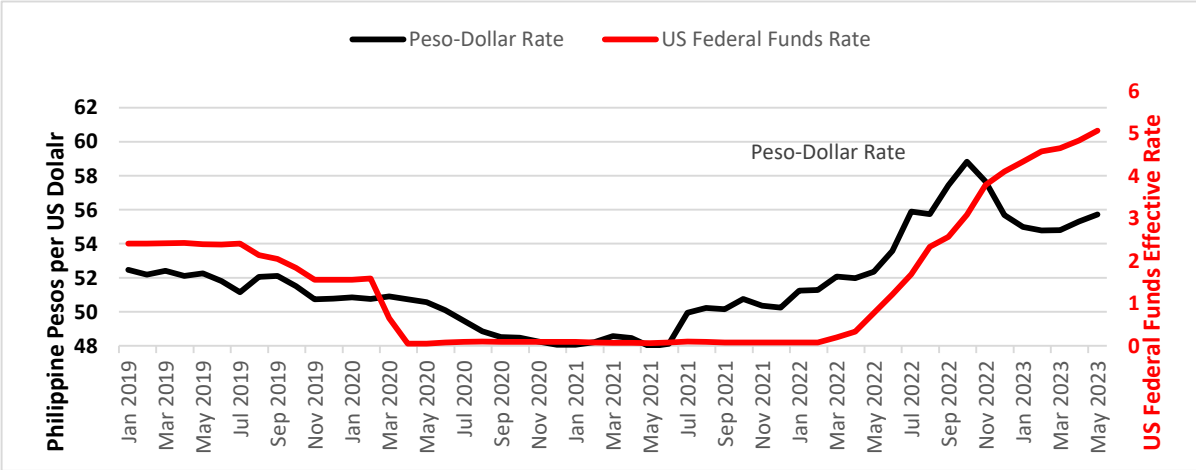
2.5.3. Geostrategic aspects

Economic Vulnerability to US interest rate hikes

The challenge of rising food prices in the Philippines emerged partly as a result of interest rate hikes implemented by the US, which caused the demand for the Php to fall relative to the USD. In turn, this led to a devaluation of the Php, thus causing an increase in the cost of imported products. Both US interest rate policy, as well as announcements of the interest rate hikes in 2022, which were announced as early as 2021, contributed to the early decline of the Php even before the policy took effect. As such, the country's food prices became more vulnerable to the volatile international exchange rate and was very much influenced by the US Federal Reserve's policies (see Figure 5).

[17] For publicity, the President made visits to the storehouses for rice (GMA Integrated News, 2022).

Figure 5 Comparison of Peso-Dollar Exchange Rate and US Federal Funds Rate



Sources: Bangko Sentral ng Pilipinas (Philippine Central Bank), 2023; United States Board of the Governors of the Federal Reserve System (US), 2023

Rising Import Dependence for Food

Another factor which contributed to the increase in food was the Philippines' rising import-dependence for food, as well as rising fertilizer costs. The costs of fertilizers such as nitrogen, phosphate, and potassium, at least doubled from 2020 to 2022 (International Trade Centre, 2023), as a result of the war Ukraine and the rising oil prices from the rebound in global demand for energy.

This led to higher feed prices, which the producers of feeds sought to pass on to livestock producers and led further to a gradual reduction in maize production. In the case of swine meat, Philippine consumers could not tolerate too high an increase in swine meat prices. Livestock producers reduced their swine production within the Philippines from ~1.6 million tons in 2019 to ~900 thousand tons by 2022 (since swine producers would have suffered losses in profits per kilogram of swine meat produced if they could not charge higher prices amid domestic price controls).

Inward-looking policies towards greater food resilience, and importance of domestic politics

The change in the Philippines approaches to food as evidenced by adoption of the RTL, as well as the reductions in MFN tariff rates, are less a reflection of the desire to leverage strategic partnerships with other countries. Rather, these owe to the high domestic political importance of food prices, and the desire to address domestic food security challenges, with a view to national food resilience.

The key driver for government administrations' strategic trade policies has been domestic politics. Firstly, both administrations likewise faced an opposition which attributed food price

increases to the ruling presidential administration. Duterte's response to his political opposition was to liberalize the rice sector. When his administration pushed for the RTL, the country was deeply politically divided. President Duterte's administration was "facing accusations against its war on drugs, which critics locally and at the International Criminal Court labelled as acts against human rights" (Montesclaros, 2023d, p. 121). The rising food prices in 2017-18 added to the already fragile political atmosphere, and potentially to sustain majority support and high political ratings, then-President Rodrigo Duterte (2016-2022) decided to address rice trade protectionism.

The adoption of the RTL was thus path breaking as it eased the way towards further reforms introduced within the successive presidential EOs that reduced the MFN tariff rates. This can be assumed as "less difficult" compared to the major reform of the RTL enacted in the symbolic and political and economic relevant rice sector. In fact, the President Duterte even called for a dismantling of the import monopolies by the National Food Authority, which was eventually enacted, and which led to the changing of the role of the National Food Authority to a custodian of the country's stockpiles with no more monopoly powers in importation.

The succeeding Bongbong Marcos administration's (2022-present) response was to take on the role of Secretary (Minister) of Agriculture in his first year of office (APNews, 2022). Marcos continued the Duterte Administration's MFN tariff rate cuts. This can be interpreted as a continuity of policy stances from one administration to another, including the political will to cut away at well-embedded highly protectionist regime in the agricultural sector over the previous decades.

A potential reason for the continuity in policy stances owes to the fact that both administrations were beset with fragile international environments, amid the COVID-19 pandemic and the continuing war in Ukraine. Both have likewise taken stronger moves against the highly protectionist regimes that were in place prior to COVID-19 and the Russian war in Ukraine. The continuity in policy stances of seeking to address food price crises thus has partly to do with the shared domestic and international challenges they face. Beyond these, the commonality in their approaches of breaking up trade protectionism, plausibly, may have to do with the political linkages between both administrations. It is a fact, for instance, that the outgoing President Duterte's daughter, Sara Duterte, ran and won in the 2022 vice presidential race as running mates with Bongbong Marcos who eventually won the seat for President.

The potential and conditions for international engagement

In the very long-term, the Philippines may yet re-examine the potential to join future trade

agreements, should the challenges continue to mount. For instance, in May 2020, Singapore, Brunei Darussalam, Laos and Myanmar were among the Southeast Asian countries which agreed to a Joint Ministerial Statement on "Supply Chain Connectivity to "facilitate the flow of goods especially essential supplies" (Ministry of Trade and Industry, Singapore, 2020). Unlike these Southeast Asian countries, the Philippines was not party to such an agreement.

The potential gains from such future agreements, can be seen in the Philippines' recent bilateral deal with India limited to rice. This deal allowed the Philippines to import rice, and to receive the highest rice export quantity sold from India since India's rice export ban in July 2023 (Cordero, 2023). Should the Philippines desire to expand from such bilateral and product-limited arrangements towards broader international agreements such as the aforementioned Joint Statement on Supply Chain Connectivity, though, a key pre-requisite to consider would be the reciprocal nature of such trading agreements. Thereby the Philippines would also need to offer market access, for example, by reducing or even removing tariffs. This is no small task, as it will mean removing the barriers to a competitive agricultural market as well as hacking away at the likely cartels that have benefitted from the highly protectionist regimes in the previous decades. Nonetheless, this will be a necessity for the current Marcos administration and succeeding administrations as well if the Philippines is to restore and maintain food price affordability in the long-term.

2.6. The United Kingdom

Kristina Mensah

The UK presents a unique case in terms of its approach to food security policy, as it recently has had to develop and implement its own policies since leaving the EU. The development of the UK's policy had been marked significantly by its relation and membership to the EU. This country case focuses on the periods before its membership to the EU in 1973 and after its departure in 2016. Subsequently, the food security and trade policies during its membership will be covered in the case of the EU (see Chapter 2.3).

2.6.1. Historical pattern of food security and trade

Pre-accession to the EEC and the approach to trade and food security

The UK's approach to agricultural policy in the 19th century diverged from that of other European nations. While countries like Germany adopted protectionist measures, including high tariffs, to protect their agricultural sectors, the UK prioritized efficiency. It streamlined its agricultural production and fostered a trade system conducive to importing agricultural products from overseas (Seidel, 2020). The concept of "cheap bread" became a central principle of British agricultural policy, emphasizing affordability and access to food. After World War II, the UK shifted its policy to protect domestic agricultural production. Through the Agriculture Act of 1947, it introduced a deficiency payment scheme to compensate farmers for the difference between lower market prices and a predetermined guaranteed price, while the UK also maintained its commitment to a free-trade agenda (Agriculture Act 1947, 1948).

Accession to the EEC

Before joining the European Economic Community (EEC), UK agri-food imports were mainly from overseas origin, owning to lower prices (see also Chapter 2.5 Nigeria) (Seidel, 2020). In the 1970s, parallel to the negotiation of entering the EEC a global food crisis occurred mainly caused by the oil crisis. The UK government responded to the latter with a white paper titled "Food from our own resources", marking a significant shift in the country's agricultural policy by prioritizing food self-sufficiency for the first time. In 1973, when the UK joined the EEC, the Common Agricultural Policy (CAP) was already a core EU policy, accounting for 90 % of the EU budget at the time (Fallows & Wheelock, 1982). Due to its comparatively small farm sector, the UK became a net contributor to the CAP after the transition period in 1979, sparking tensions owing to its lesser benefit from the CAP compared to other member states (Fallows & Wheelock, 1982). This has contributed to the critical public view in the UK towards the CAP and to the calls for preferential conditions for UK farmers. Consequently, this led to the so-

called UK-rebate in 1984, which decreased the UK's overall financial contribution to the EU budget (European Parliamentary Research Service, 2016).

On the trade side, the UK was required to phase out numerous of its own preferential trade agreements with countries with whom the EEC had no preferential agreements at the time. This was particularly the case for the Commonwealth countries under the "Imperial Preference System". This change led to a steady decline in UK imports from these countries due to higher EEC tariff rates and as a result, commodity prices increased, resulting in higher prices for consumers in the UK (Burkitt & Baimbridge, 1990). Most Commonwealth countries were integrated into the existing EEC preferential trade system for former colonies.

Before joining the EEC, the UK had steadily increased its self-sufficiency from 42% in 1938 to 72% by 1972. However, this trend was slightly reversed due to higher imports from the EEC with the adoption of the EEC Common External Tariff, leading to a reduction in national self-sufficiency to 66 % by 1977 (Burkitt & Baimbridge, 1990). Notably, the UK's self-sufficiency rate was particularly low for fruits, a trend attributed to preference of UK governments for free trade over domestic production support (Fallows & Wheelock, 1982). However, especially fruit production also depends on production conditions like climate and, therefore, a low self-sufficiency degree may also simply reflect these conditions. While in the last decades, the UK maintained a 75 % self-sufficiency rate for domestically cultivable crops, achieving full self-sufficiency in cereals for most of the last 30 years, fruit self-sufficiency still stands at 16 % (Department for Environment, Food and Rural Affairs, 2021). Overall, the UK was a net food importer in 2020, with 39 % of its food and feed coming from the EU.

Leaving the EU: Brexit

The 2016 decision to leave the EU marked a major historical shift extending well beyond agricultural policy. In December 2020, a consensus was reached to establish a free trade area through the EU-UK Trade and Cooperation Agreement (TCA), applicable only for products originating from either the EU or UK (i.e. products being produced in either of the EU or UK) (EU, 2020). This consensus allows for tariff- and quota-free trade of agricultural products between the two partners. However, controls to determine regulatory compliance became necessary. There are provisions on sanitary and phytosanitary measures in the TCA, it does not provide for a mutual recognition of equivalence in sanitary and phytosanitary measures. This significantly affects agricultural trade due to required controls at the EU side beginning of 2021 leading to delays (Pawlak et al., 2022). The UK will start imposing full border controls for food imports only in April 2024 having previously postponed the implantation also due to possible disruptions in trade flows. Media speculations are rising that this may cause at least in the short-

term a food shortage in supermarkets due to the longer transit (Rayner, 2024). The question of Northern Ireland had been highly sensitive during the negotiations between the EU and the UK, and although checks on goods coming from Ireland will be applied, the Windsor Framework, agreed upon by the EU and the UK, will ensure the free movement of goods to and from Northern Ireland. Sovereign trade policy was a key argument during the Brexit campaign (Henig, 2023). Post-Brexit, the UK began to reorient its trade focus towards other partners, including the Pacific region.

Looking at the impact of Brexit on the UK's agricultural production, it is clear that the sector, especially in England, has long relied on seasonal workers from the EU. The end of the EU's free movement of people policy triggered concerns about labor shortages, prompting the UK government to introduce the Seasonal Workers Scheme in 2019 (McKinney et al., 2022).

On sustainability standards, the TCA's provisions recognize the autonomy of both the UK and the EU to set their own levels of protection without the need to harmonize regulations. The inclusion of a non-regression clause aims to prevent any reduction in the levels of protection below those established at the end of the transition period (end of 2020). The dispute settlement section of the TCA introduces a novel rebalancing mechanism. This mechanism will be activated if either the UK or the EU makes significant changes to its policies on subsidies, labor and social standards, or environmental and climate protection that have a significant impact on trade or investment between the two parties. In such circumstances, either side is entitled to take corrective measures unilaterally that could range from the temporary suspension of certain provisions of the agreement to the imposition of tariffs, although the specifics of these measures are not defined in detail (Ares et al., 2021).

Prior to the pandemic, 8 to 10% of all UK households were food insecure, meaning that there were financial limitations to provide a healthy and diverse diet all year around (Rivington, King et al., 2021). This is one factor that contributed to the debate on the food system and the need for a food strategy. An initial response to the possible changes in agricultural policy post-Brexit has been to focus more on the principle of "public money for public goods". This approach supports a shift from the traditional EU Basic Payment Scheme and aims to realign subsidies even stronger to the benefit of public interests, such as environmental conservation and sustainable farming practices (Bateman & Balmford, 2018). The 2020 Agricultural Act, the UK's CAP replacement, defines the future direction of UK agriculture, accommodating different regional policy approaches for England, Northern Ireland, Scotland, and Wales. Agricultural policies are evolving and differ in England, Northern Ireland, Scotland, and Wales. England is currently in a transition period phasing out the CAP to an own system of

"Environmental Land Management" by 2027. England has shown in its presented strategy the strongest divergence from the CAP, with the focus shifting from direct payments based on land area to a system of rewards for environmental stewardship and sustainable farming practices (Agriculture Act 2020, 2020). The "Food Strategy for England" sets out the first UK's food strategy in 75 years, highlighting the links between domestic and international policies, and considering how the government should prepare for Brexit and respond to the disruption caused by the COVID-19 pandemic. It was supported by an independent review of the UK's food system. Later than expected due to the Russian invasion, it was amended to place greater emphasis on food security (Coe et al., 2022). Furthermore, it includes ambitious targets regarding climate change and biodiversity that partially mirror the EU's Green Deal without including its fixed targets, e.g., to reduce the use of specific input factors (Jelliffe et al., 2023). In comparison, the Welsh government had presented, in its sustainable farming scheme (implementation starts in 2025), targets to manage 10 % of farmland as habitat for biodiversity and have 10 % trees on farmland. Welsh farmers have criticized these targets as costly and are demanding a change in the policy design (Morris & Horton, 2024).

2.6.2. Responses of food security and trade policies to recent events (2020-2023)

Both COVID-19 and the Russian invasion had forced the UK government to introduce strategies and policies. However, these events coincide with Brexit; a major policy shift in itself.

COVID-19 Pandemic

Already before COVID-19, in 2011, the UK Department of Health presented its "UK Influenza Preparedness Strategy", aiming to prepare for an influenza pandemic with a UK-wide strategy. This strategy recognized the potential negative effects of border closures, particularly for food supply (UK Department of Health, 2011). It outlined arrangements for the food sector, such as continuation of production, to ensure food supply.

At no time was the UK, as a country, food insecure during the COVID-19 pandemic. Food availability was not significantly affected by COVID-19; however, food affordability was critical for those who lost their source of income due to the measures imposed to deal with the pandemic, such as lockdowns. In addition, an estimated shortage of 500,000 workers, to a large extent non-domestic seasonal workers, in the agri-food sector could be related to COVID-19 (Rivington, King, et al., 2021). Supply chain disruptions were a major issue at the beginning of the pandemic (Rivington, Duckett, et al., 2021). COVID-19 has exacerbated existing weaknesses in supply chains. In the past decades, retailers in the UK had reduced their overall supplier base while also following just-in-time processes. Therefore, supermarkets observed

some shortages in food, e. g. flour, at the beginning of the pandemic but this was attributed to individual stockpiling at household-level. Rivington et al. (2021) also found that it was related to the manufactures not being able to easily repackage products destined for the hospitality sector in smaller quantities for retailers at the consumer level. The UK government had imposed several measures to deal with the pandemic that had a direct and/or indirect link to the agri-food sector. The UK government introduced various trade and transport measures, including a continuous dialogue between the UK, Ireland, and France to keep the freight routes open (GOV.UK, 2020). According to Parsons and Barling (2022), the overall policy response of the UK government to disruptions of the agri-food sector has been perceived as reactive, lacking preparation and timeliness.

Russian Invasion to Ukraine

The Russian invasion did not have a significant impact on the UK's food supply; however, price increases, trade disruptions, and fertilizer shortages did have an effect (Coe et al., 2022). There are some agricultural relationships, with Ukraine being the largest single country supplier with 12.4 % in 2021. Still, UK demand could be met by local production and the government had emphasized its strong reliance on trade relations with other partners. The UK had reduced its tariffs on all imports from Ukraine to zero, in line with the EU's approach to suspend trade barriers as part of the solidarity lanes (GOV.UK, 2022d). In addition, it had also implemented trade sanctions on several products including an increase of 35 % points of the tariff for fertilizer, cereals, and oil seeds (GOV.UK, 2022c). These sanctions should be designed in a manner that prevents a direct impact on developing countries. This underscored the G7 statement to support a withdrawal of Russia's MFN status and thus provide the option to increase tariffs on products. However, in contrast, the EU had so far restraint of increasing tariffs for Russian goods other than luxury products due to the sensible narrative by Russia claiming that the West is causing global hunger. Following several allegations, the UK, together with the EU and the US, has strongly emphasized in a joint statement the need to minimize even unintended effects of sanctions by ensuring that food exports from Russia to third countries continue where possible (GOV.UK, 2022e). On an international level, the UK has underlined its support for Ukraine and the newly initiated Global Food Security Group under the G7 to coordinate efforts to reduce the impact on developing countries that are most affected by food shortages (GOV.UK, 2022b).

Food security as a policy narrative

The UK's definition of food security, as set out in the Agriculture Act 2020, integrates five dimensions. First, it considers global food availability, focusing on supply and demand on a

global scale, including trends and risks that could affect the UK's food supply. Second, it examines the UK's food supply by looking at the main sources of food, both domestic and international. Third, it explores the concept of supply chain resilience, which looks at the infrastructure that supports the food supply chain and identifies potential vulnerabilities within it. Fourth, food security is addressed at the household level, including issues related to the affordability and accessibility of food. Finally, food safety is considered, highlighting the importance of fraud prevention. Food security at the household level, in terms of food affordability, has become more of a problem since COVID-19 and a cost-of-living crisis in the UK, exacerbated by the high food inflation, which had reached its latest high of 19.2 % in March 2023 and fall to 7 % by January 2024. Insufficient income is the main driver of food insecurity in terms of affordability of a healthy diet in the UK. In 2022, estimations concluded that 14 % of all adults have experienced food insecurity, meaning that at one point they were unable to afford food (Trussel Trust, 2023). The number increased in January 2023 to 17.7 % (GOV.UK, 2023). In the UK, the tendency to highlight food security has become more apparent (Greer and Grant, 2023). This was further underscored by the announcement by the UK government to introduce an annual food security index for the UK (GOV.UK, 2024). This can be considered a response to growing tensions surrounding the criticism by UK farmers in light of the post-Brexit trade deals and the new agricultural policy schemes that put a higher emphasize on ecology than production.

2.6.3. Strategic food policy shifts and geostrategic aspects

Some innovation compared to EU in farm support

Although an independent and innovative UK agricultural policy was a strong argument during Brexit, the final innovative policy change still needs to be seen. There are some new instruments, but a complete abandonment of the European idea surrounding the CAP can so far not be observed (Grant & Greer, 2023). Similarities between the EU and the UK persist, with climate change remaining a key factor for policy decisions. Grant and Geer (2023) argue that "de-Europeanisation" of the UK agricultural sector is not feasible anyway due to the competition between UK and EU farmers, the importance of the EU as a market, and the overall costs and challenges associated with developing an entirely new agricultural policy framework.

Divergence from the EU's path in environmental policies

In 2023, the UK government outlined the UK's strategy to achieve net-zero emissions from agriculture as part of the broader "Powering Up Britain: Net Zero Growth Plan." It will include transitioning to sustainable farming practices, using technology and innovation to reduce

emissions, supporting the adoption of green energy sources, and encouraging carbon sequestration methods such as tree planting and soil management (GOV.UK, 2023). Despite this ambitious plan, actual emission reductions have so far not met the expectations. According to the Climate Change Committee, there has been no significant reduction in emissions from agriculture in the past 8 years (Climate Change Committee, 2023). Looking at the impact of Brexit on the UK's legislation, it is notable that the divergence in environmental law and policy between the EU and the UK has become more pronounced, affecting both the common legal foundations that have existed for decades and the internal dynamics within the UK. A prominent example with potential trade implications is the contrast between the UK Forest Risk Commodity Regulation and the European Deforestation Regulation, where the UK legislation might be more flexible and therefore more attractive to trading partners. This perception may result in the UK facing fewer challenges in reaching new trade agreements than the EU. Besides these examples, divergence can be seen at two points: first, the increased scope for policy divergence between the EU and the UK; and second, a widening of existing differences within the UK itself, as the administrations of Northern Ireland, Scotland, and Wales exercise their increased powers in the absence of EU law constraints (Baldock & Nicholson, 2022).

Aiming to become a leading trade actor

The UK government has not yet published a trade strategy, but the overall direction of trade policy is clear. The UK government unveiled its first idea for a "Global Britain" in 2017, emphasizing the UK's international heritage while seeking new partnerships and maintaining a strong position on a rules-based trade system (GOV.UK, 2017). In 2021, the UK government presented its formal strategy for a "Global Britain", which does not focus on agriculture, but states the UK's ambition to become a leading actor in free and fair trade (GOV.UK, 2021). The UK government has been adamant in its commitment to forge a progressive trade policy that differs from the traditional European model. This effort aims to introduce greater flexibility and adaptability into the UK's trade agreements, allowing for a more tailored approach. By moving away from the more rigid frameworks e.g. on regulatory aspects often associated with the EU, the UK seeks to capitalize on new opportunities for trade partnerships (Grant and Geer, 2023). The move is indicative of the UK's wider ambition to redefine its economic relationships globally, using its newfound autonomy post-Brexit to negotiate trade deals that reflect its unique priorities and challenges. Since Brexit, the UK has signed trade agreements with Australia, New Zealand, Ukraine, Singapore, and the EU-UK agreement. In total, the UK currently has 70 trade agreements in place, comparable to the EU. As a result, many of these agreements copy existing agreements between the respective partners and the EU. Furthermore, the UK had joined the

Comprehensive and Progressive Agreement for the Trans-Pacific Partnership (CPTPP) in July 2023. The trade agreements that the UK has forged with Australia and New Zealand mark a significant departure from previous arrangements, primarily because there were no pre-existing agreements between the EU and these countries. Notably, this move comes at a time when negotiations for a new EU-Australia agreement have recently failed. Other new trade agreements are negotiated with the US, India, the Gulf Cooperation Council Canada, Mexico, Israel, and Switzerland. For the last four countries, the UK is renegotiating existing agreements that replicate existing EU agreements with these countries (Webb, 2023). The UK had been trading with Canada on terms that largely duplicated the arrangements in place when the UK was in the EU. However, in early 2024, negotiations with Canada were suspended due to disagreement about the UK's access to the Canadian cheese market (Grierson, 2024).

Recommendations for the UK's future agricultural trade strategy focus on the following issues: It stresses open agricultural trade that values standards without relying on protectionist or trade distortion measures (Trade and Agriculture Commission, 2021). In addition, it pursues climate and environmental policies that are coherent with trade and agricultural policies. Where standards of a trade partner are deemed equivalent to UK standards, trade negotiations should work towards a duty-free regime. Although these recommendations still need to be operationalized, they describe the general narrative that the UK is setting for agricultural trade post-Brexit. Regarding development and international food security, the UK government presented its new Development strategy in 2022: it includes the objective to challenge the drivers of food insecurity such as poverty (International Development Committee, 2022). By investing in initiatives such as the Global Agriculture and Food Security Program and the African Food Trade and Resilience Program, the UK is supporting governments, regional trade organizations and private sector companies to promote more transparent and stable food trade, sustainable agricultural practices, and robust supply chains. Approximately 25% of the UK's annual humanitarian aid is spent on food and nutrition assistance, with a commitment of £1.5 billion to meet nutrition goals by 2030.

Global Britain

Overall, the UK explicitly stresses an open trade system compared to the EU. However, similar to the EU, it also seeks not to neglect environmental issues and to be supported by strong multilateral institutions (Henig, 2023).

Brexit and COVID-19 have shown that there is an increased risk particularly in the UK due to single points of entry such as the port of Dover (Rivington, Duckett, et al., 2021). This makes e. g. fruit and vegetable supply chains vulnerable. The UK food supply chain is one of 13 sectors

in the UK identified as critical infrastructure. This emphasizes the general importance that the UK has placed on the food sector (UK National Protective Security Authority, 2023). In terms of a real policy shift, Brexit had a large impact on policy designs. Grant and Geer (2023) argue that Brexit has contributed to a further decline in the notion of "agricultural exceptionalism", the idea that the agricultural sector needs unique and preferential consideration. This can also be seen in the trade agreement with Australia, where protection for most agri-food products will be reduced to zero after 10 years, this will also include products such as beef (Smith, 2023). The latest estimates from the Office for Budget Responsibility foresee an overall decrease in the UK's trade by 15% compared to the UK remaining in the EU (Office for Budget Responsibility, 2023). It is also estimated that Brexit is the cause of a 60 % decrease in the value of agricultural trade in the UK (Choi et al., 2021). Efforts by the UK government to refocus on trader partnerships with partners apart from the EU have so far not been able to close the gap induced by Brexit (Lawrence, 2022).

In 2021, the UK's global tariff-scheme was introduced which saw a significant reduction, simplification, or abolishment of many tariffs compared to the EU (Swinbank, 2022). Most food products enter the UK duty-free, and the global tariff scheme has resulted in a significant further reductions and simplifications across numerous tariff lines. However, despite these adjustments, the UK has maintained certain tariffs that are comparable in both level and design to those of the EU, such as the tariff for fresh beef. The UK has responded with several other policies and strategies emphasizing the importance of trade cooperation with so-called like-minded partners. The UK government's vision of a global Britain and the linked policy shifts also depend on the policy priorities of the four British nations (Attorp & Hubbard, 2023). However, the UK government has yet to produce an agricultural trade strategy. In her 2023 paper, Smith analyzes the lack of a coherent post-Brexit UK agricultural trade strategy, attributing this void to recent global crises such as the COVID-19 pandemic and the Russian invasion, as well as instability in UK domestic governance. As a result, she outlines a tentative policy direction that the UK appears to be pursuing, based on three factors: geographical considerations (expanding trade partnerships), domestic concerns (emphasizing food security and environmental protection), and governance issues (observed shift in power towards executive). The UK has been keen to seek non-EU partners, particularly in the Indo-Pacific region, especially after the failure of a UK-US agreement to date. However, the UK has adopted a new strategy on its approach to the US, having signed a Memorandum of Understanding (MoU) between the UK and three US states (Indiana, North Carolina, and South Carolina). These MoUs demonstrate a commitment to increasing collaboration between the respective US

state and the UK in areas such as agriculture and biosciences (as seen in Indiana) and climate change mitigation efforts, particularly the reduction of greenhouse gas emissions (as seen in North Carolina). While this is not comparable to a free trade agreement with the US and in that matter not legally binding, it still is a signal from the UK for more interstate cooperation.

When the UK was an EU member, the UK agri-food sector also benefited from the EU's strict food quality and safety standards, which provide both a layer of protection and a guarantee of harmonization in the EU (Brussels effect). However, the accession to the CPTPP could become a significant decisive moment for the UK's trade policy since the CPTPP is not only globally the largest free trade agreement but follows a different approach in terms of risk communication and the use of scientific evidence in the context of food safety (Smith, 2023). According to Smith (2023), the UK had to assess whether their level of standards could still be sustained as member of the CPTPP, while the UK government had assured that no weakening of UK standards would be the result of joining the CPTPP, it is still likely that the UK will not find the legal grounds to justify them under the CPTPP. This would lead to a major adaptation of UK's value system. This is especially the case for the UK's stance on SPS matters since the CPTPP states that SPS measures have to be based on sound scientific evidence, meaning that measures are not allowed on a precautionary basis (Smith, 2023).

Strengthening trade relations with the Commonwealth countries had been a major argument during the Brexit campaign. However, the majority of Commonwealth countries already benefit from duty-free access in the EU's preferential system, therefore, at least on the basis of tariffs, no better access can be offered by the UK. Every trade relationship that is drawn up between the UK and a Commonwealth country is based on the existing relationship it has with the EU (Murray-Evans, 2016). On a geostrategic stance, the focus on non-EU partners, the willingness to open up the so far protected UK food market following the EU protection, and the use of other policy instruments to foster trade (see e.g. the MoU) highlights the UK's global ambitions.

2.7. The United States

David Orden

The United States (US) is a large agricultural producer. Its modern farm support policy originated in the Great Depression of the 1930s, with key legislation renewed about every five years and debate underway in 2024 to extend or update the Agricultural Improvement Act of 2018. While farm programs have evolved substantially over the recurring legislative cycles, support has remained counter-cyclical to movements in market prices or producer revenue and includes substantial crop insurance and environmental components. Support in the mid-2010s represented a policy equilibrium balancing the interests of farmers, environmentalists, and proponents of domestic food aid. Subsequently, trade conflict with China and the COVID-19 pandemic resulted in sharply increased support delivered supplemental to expenditures under the 2018 legislation.

2.7.1. Historical context

The US is both a major agricultural exporter, particularly of food grains, oilseeds and meats, and large importer of many high-value products. While generally a low-tariff country (see Table 2), high tariffs protect domestic production of sugar and some other agricultural goods like certain dairy products. Tariff policy was relatively stable from the founding of the WTO in 1995 through 2017, with the US continuously seeking to open foreign markets both through multilateral negotiations and by concluding a few regional trade agreements, for example bilaterally with Australia (2004) and South Korea (2007). During this period, the main action in US policy for agriculture came in the farm programs context. This even remained the case when the relative calm in US *non-agricultural* border policies was disrupted starting in 2018 by unilateral imposition of tariffs on steel and aluminum from several trade partners and on a wide array of products from China—the former rationalized on national security grounds (Section 32 of the US Trade Expansion Act of 1962) and the latter as a response to unfair trade practices (Section 301 of the US Trade Act of 1974). These tensions over trade and the broader geopolitical conflict with China have intensified in subsequent years, with a second US presidential administration retaining the higher tariffs after 2020 and new commercial and technological barriers against China enacted and under ongoing discussion. The precedent has been established for trade-related compensating support to farmers through domestic policies. The US has also led the western world (including the EU) in imposing trade and financial sanctions on Russia following its invasion of Ukraine.

2.7.2. Responses to COVID-19 and War against Ukraine in a context of trade conflicts

Agricultural support levels were sharply elevated prior to the COVID-19 pandemic and the war in Ukraine in order to compensate farmers for assessed revenue losses arising when agricultural exports plummeted as China and others retaliated against the new US trade restrictions. This additional support lapsed in context of the onset of the COVID-19 pandemic and enactment of more general emergency relief. China also exempted soybeans and other agricultural products from retaliatory tariffs, easing US losses and demonstrating China's dependence on substantial food imports, despite the geostrategic vulnerability this entails.

The US initiation of a set of tariff hikes on certain products and trade partners occurred under laws that had not been applied unilaterally for many years, as opposed to resolution of conflicts being sought through the WTO (Bown & Kolb, 2020; Orden, 2020). To provide support to agriculture, the administration subsequently launched two consecutive compensatory farm support programs, the Market Facilitation Program (MFP) of 2018 and 2019. The MFP brought domestic support into the trade conflict. The 2018 MFP focused on compensation for revenue lost primarily because of tariff retaliation by China on just a few products. The 2019 MFP evaluated such losses more broadly and put most compensation on a non-product-specific basis.

Responses to COVID-19

The COVID-19 pandemic drove increased US support from early 2020 onward. Although agricultural markets adjusted and rebounded with some resilience after initial pandemic shocks, they faced significant immediate and lingering displacements on both the supply and demand sides (inter alia, Orden, 2021; Weersink et al., 2021). The broad US economic relief enacted in response to the COVID-19 disruptions came primarily in the USD 2 trillion Coronavirus Aid, Relief and Economic Security (CARES) Act (signed into law March 27, 2020), the USD 900 billion Coronavirus Response and Relief Supplemental Appropriations Act (December 27, 2020) and the USD 1.9 trillion American Rescue Plan of 2021 (March 11, 2021). These laws included support for agriculture under two Coronavirus Food Assistance Programs (CFAP-1 and CFAP-2) and other measures. In the CFAP programs, payments were made for large numbers of products.

Measurement of support

The increase in agricultural support can be traced through Aggregate Measurements of Support (AMS support) notified to the WTO by the United States. The AMSs provide a basis for assessing whether the US has remained within its WTO domestic support commitment. An AMS that sums the support provided by all domestic programs that are applied is reported for

each product and for non-product-specific support to agricultural producers. These can be summed to measure the amount of support from all AMSs.

Further, under the WTO Agreement on Agriculture the AMSs that exceed a threshold of 5% of value of production (either for a specific product or total agricultural value of production for non-product-specific support) are included in the US Current Total AMS (CTAMS) which is bound under the US commitment not to exceed USD 19.1 billion. AMSs below 5% of value of production are considered *de minimis* and exempt from the CTAMS, providing additional room for support. A full description of the WTO domestic support measurements and comparison to the OECD's PSEs, which also offer internationally comparable assessments of support, is provided by Brink and Orden (2023). The WTO and OECD measurements differ particularly in how they account for and calculate market price support—the AMSs only includes market price support when there is a domestic program determining minimum prices (for the US only for sugar), while the PSEs include support provided by tariffs and other border policy measures.

Time-path of support related to trade-losses and COVID-19

Levels of US AMS support increased from marketing year 2017/18 to 2020/21 then declined in 2021/22, as summarized in Table 5. Support of around USD 16 billion during 2017/18 fit the stable general pattern of the mid-2010s. Because of widely available crop insurance subsidies as many as 86 products received support. Product-specific AMSs summed to USD 9.4 billion. Over half of this support was below the *de minimis* thresholds of 5% of product value and thus was exempt from the CTAMS. The non-product-specific AMS was USD 6.9 billion, corresponding to 1.9% of total agricultural value of production, well below the *de minimis* threshold, and thus also exempt from being counted against the US commitment. All AMS support summed to 4.4% of the agricultural value of production (various percentages are shown in the middle rows of Table 5).

Table 5 US Agricultural and Nutrition Support 2017/18 to 2021/22

	2017/18	2018/19	2019/20	2020/21	2021/22
	AMS support (USD million)				
All AMSs	16,352	26,068	34,497	37,291	21,490
Product-specific AMSs	9,450	17,350	21,273	21,047	11,727
of which, MFP	38	8,761	828	13	-
CFAP	-	-	11,352	11,273	423
Non-product-specific AMS	6,902	8,717	13,224	16,244	9,763
of which, MFP	-	5,191	8,399	27	-
CFAP	-	-	53	7,490	110
CTAMS	3,984	13,085	18,247	16,364	3,842
of which, MFP	6	8,091	363	<1	-
CFAP	-	-	10,126	9,262	29
De minimis AMSs (product-specific)	5,466	4,265	3,026	4,683	7,885
	AMS Support / US agricultural value of production				
All AMSs	4.4%	7.1%	9.7%	10.0%	4.7%
Product-specific AMSs	2.6%	4.7%	6.0%	5.6%	2.5%
Non-product-specific AMS	1.9%	2.4%	3.7%	4.3%	2.1%
	CTAMS and product-specific *de minimis* AMSs (indicative percentages)				
CTAMS / US commitment	20.9%	68.5%	95.5%	85.8%	20.1%
CTAMS / Value of production of included products	15.1%	20.8%	9.3%	8.9%	11.8%
De minimis / Value of production of included products	1.3%	1.1%	0.9%	1.4%	1.3%
	Green box support (USD million)				
All green box expenditures	116,253	112,511	139,220	189,345	216,215
Environmental programs	4,403	3,849	6,019	4,021	3,861
Domestic food aid (all nutrition programs)	97,952	94,618	120,315	169,949	193,778
of which, SNAP	68,493	63,466	85,642	134,526	148,515
Child nutrition programs	22,828	23,273	22,745	25,798	37,213

Data source: US domestic support notifications to the WTO. The US does not include in its notified support non-USDA assistance provided through loan forgiveness by the Small Business Administration's Payroll Protection Plan. This amounted to USD 5.8 billion in 2020 and USD 8.6 billion in 2021.

AMS support increased by USD 9.7 billion (59.4%) in 2018/19, by another USD 8.4 billion (32.3%) in 2019/20 and by a smaller USD 2.8 billion (8.1%) in 2020/21, then declined toward pre-crisis levels in 2021/22 as the pandemic disruption receded. Product-specific AMS support increased to USD 17.3 billion in 2018/19, then to just over USD 21 billion in 2019/20 and 2020/21, before dropping sharply to USD 11.7 billion in 2021/22. At its peak in 2020/21, all AMS support reached 10.0% of value of production.

In terms of the MFP and CFAP programs, product-specific support through the 2018 MFP was USD 8.8 billion in 2018/19 and went to only 13 products, primarily soybeans and cotton. The MFP programs added USD 5.2 billion of non-product-specific AMS support in 2018/19. For 2019/20, product-specific MFP support was less than USD 1 billion, while non-product specific MFP support increased to USD 8.4 billion. Reported over two marketing years, the non-product-specific AMS including MFP support remained below the *de minimis* threshold each year, so remained exempt from the US support limit.

The CFAP programs supplanted the farmer support in MFP starting in 2019/20. The CFAP added USD 11.4 billion to product-specific AMS support that year, spread over 76 products, and a similar USD 11.3 billion in 2020/21. Nearly 90% of the CFAP support entered CTAMS in 2019/20, which for 29 included products rose to 95.5% of the US commitment, remaining 85.8% in 2020/21, before dropping to just 20.1% of the commitment in 2021/22, a level similar to 2017/18. As CTAMS increased, the *de minimis* AMSs in 2019/20 summed to just USD 3.0 billion, rising to USD 4.7 billion in 2020/21 and USD 7.9 billion in 2021/22 as support for fewer products exceeded *de minimis* levels. Non-product-specific support in 2020/21 included USD 7.5 billion of CFAP expenditures and rose to USD 16.2 billion, which was 4.3% of the total agricultural value of production, then declined to USD 9.8 billion in 2021/22.

Beyond the agricultural producer support, the much larger broad relief provided by the CARES Act and other COVID-19 legislation dampened GDP contraction, raised disposable income, and played the main role in sustaining domestic food demand. It quickly became evident that low-income and minority communities were among the hardest hit by the pandemic. Attention thus turned to poor households and food insecurity, which was projected to affect 54 million Americans in 2020, a 46% increase compared to 2018 (Gundersen et al., 2021).

To address food insecurity directly, domestic food aid expenditures were increased, and eligibility rules adjusted to provide support specifically to those with low incomes. Nutrition program spending had not been affected by the trade conflict with China and had declined slightly in 2018/19 compared to the previous year. Nutrition assistance then increased by USD 25.7 billion (27.1%) from 2018/19 to 2019/20 and continued to increase through 2021/22 (see Green box support in Table 5). Some of the increased aid was provided through purchase and donation of domestically produced fresh fruits, meats and dairy products, measures more closely tied to producer support than the preponderance of aid through the Supplemental Nutrition Assistance Program (SNAP) that raised general retail food purchasing power regardless of the product source.

Measures since the Russian invasion

The Russian invasion initiated higher nominal global market prices for farm products and also for farm energy and fertilizer inputs. This added to prices already high for reasons ranging from tight global supply and disrupted supply-chain conditions to, for foreign buyers, depreciation of their currencies relative to the US dollar. At the consumer level, US food prices increased at an annual rate of 9.9% during 2022, an inflation rate more than double the rate of the previous two years and the highest in 40 years.

Higher farm product prices result in lower counter-cyclical US crop support payments but increase the cost of crop insurance subsidies. With higher input costs and output prices as Congress deliberated reauthorizing farm policy, farm groups in the US argued for raising the legislated prices that trigger support payments. Those arguments ran up against calls for fiscal constraint, in part to ease inflationary pressures. Farm support reverted back toward its pre-2018/19 levels in 2021/22, as summarized above. Although higher nutrition assistance expenditures persisted through 2021/22, expanded assistance for subsequent years expired in February 2023, with benefits falling more than 20% during July-September 2023 compared to the previous year, despite calls for extending this aid.

Prior to debate that intensified starting in 2023 on renewal or updating of the 2018 farm policy, the Inflation Reduction Act (August 16, 2022) added authority for an anticipated USD 44 billions of support for agricultural environmental, rural development and forestry programs over the fiscal years 2023-2031. Nearly half of this increased funding was directed to climate smart agriculture of farm conservation programs designated to "directly improve soil carbon, reduce nitrogen losses, or reduce, capture, avoid, or sequester carbon dioxide, methane, or nitrous oxide emissions, associated with agricultural production." This was a substantial increase in authorized conservation expenditures that had averaged USD 4.4 billion during the previous five years (see Table 5). Additional funding for rural development and forestry programs was also designed to advance efforts to mitigate climate change.

During recent years, other forms of support for agriculture also were enhanced. Expenditures would have fallen even further in 2021/22 had it not been for emergency assistance totaling more than $8.5 billion to offset weather-related losses. While a diverse set of circumstances drove these increased expenditures, collectively they represent a substantial expansion of farm support. Together with the large MFP and CFAP payments from 2018/19 through 2020/21, this has led some experienced policy observers to ask whether a stream of such legislated additions have become an additional pillar of the US farm support framework, along with commodity programs, crop insurance subsidies and environmental programs (Zulauf et al., 2023).

2.7.3. Geostrategic perspective

There are multiple dimensions to the question of whether the three recent shocks—in the US case, its aggressive trade restrictions initiated in 2018 and retaliation by trade partners as well as the global COVID-19 pandemic and the Russian invasion of Ukraine—have shifted US policies at a strategic level in addition to prompting significant temporal policy responses. While great uncertainty remains, a few conjectures are possible about long-term implications

for US trade policy, farm support and nutrition assistance policies, and agricultural climate change policies.

On trade, one aspect that ties these separate disruptions together is the stress they have placed on global economic integration which has a large impact on the US itself and on other countries. The US trade policy is bogged down since 2018 with unilateral tariffs and foreign retaliation that preceded the pandemic. A second presidential administration has continued the US interventions. War against Ukraine has exacerbated security concerns not just regarding Russia but also China, with restrictions on trade in technology products and services enacted and further restrictions under consideration and gaining momentum. In this tense context, it is going to prove hard to dampen or reverse the growing barriers to US-China trade and economic integration. The COVID-19 pandemic underscored the inherent fragility of an integrated world. War and security tensions with China exacerbate this fragility, adding impetus to a shift in trade policy.

While the anti-trade rhetoric subsided to an extent with a change in administration after the 2020 presidential election, shoring up international markets and trade has been undertaken in a diffuse context and without negotiations to expand market access through lowering of tariffs. The current administration's Indo-Pacific Economic Framework for Prosperity (IPEF) and related initiatives form the core of its trade agenda. Under IPEF, discussions among 14 countries address four pillars: *trade* (connected economy addressing fair and resilient trade), *supply chains* (resilient economy addressing reducing risks in supply chains), *clean economy* (addressing climate change), and *fair economy* (addressing taxes and corruption) (Cimino-Isaacs et al., 2023; USTR, 2023).

A broad range of topics are being addressed in the IPEF trade pillar along with agriculture, including labor, environment, digital economy, transparency and good regulatory practices, competition policy, trade facilitation, inclusivity, and technical assistance and cooperation (USTR, 2022). While these negotiations do not address tariff protection, regulatory hurdles and logistic challenges to agricultural and food trade have received attention, with the objective of reducing non-tariff barriers. Thus, relative to its predecessor the current administration acknowledges that shuttering and trade barriers are not the answer long term to international economic relations, but rather that strong international institutions and cooperation are needed. However, the breadth of the approach under IPEF with the lack of focus on tariff-reducing market access negotiations reflect a geostrategic shift in US trade policy compared to its leadership of the GATT and WTO from the 1940s into the 2000s. The strategic considerations driving this shift precede the recent crises, but the COVID-19 pandemic and Russian invasion

of Ukraine have certainly intensified the underlying forces, contributing significantly to the US taking a new geostrategic perspective on trade and international market opening and integration. Participating countries concluded negotiations on three of the four IPEF pillars by December 2023. The US held up negotiation on the trade pillar at the time when dissention arose within the administration over lack of enforceable labor standards, environmental considerations, and uncertainty on digital trade. This was despite asserted progress in other areas, including for agriculture related to biotechnology and sustainability. Moreover, even proponents of IPEF acknowledge that while addressing modern issues the agreed pillars on supply chains, clean economy and fair economy are mainly aspirational statements of collective attention and playbooks for how its signatories will collaborate—more process oriented than setting firm commitments. The supply chain pillar addresses resilience and reliability of international supply coordination and investment, including related to critical minerals, semiconductors, and pharmaceuticals. The clean economy pillar seeks to create a framework in which IPEF countries can identify new opportunities and advance existing efforts to lower costs and stimulate energy transition, and the fair economy pillar seeks to prevent corruption and crimes related to international finance and tax administration.

In terms of *farm support and nutrition assistance*, the historic COVID-19 shock will influence planning and social policy across the US economy for years to come. The agri-food sector was in the beginning deeply affected but also adjusted quickly. The COVID-19 shock is unlikely to shift the basic structure of US agricultural production and distribution. As specific approach, risk management will receive enhanced attention and improvements should be prompted throughout the system to add resilience and raise standards. Even so, market actors up and down the supply chain from farmers to retailers will not be inclined to give up efficiency and related practices that are profitable in normal years. One outcome that would be beneficial is if the pandemic boosts public and private investment in agri-food R&D. As Paarlberg (2021) argues modern science and technology are the path to addressing environmental and other challenges faced in agriculture and food production and distribution.

The COVID-19 farm support is consistent with the counter-cyclical character of US farm policy since the 1930s Great Depression. It accounts for only a small fraction of the national stimulus provided under the pandemic, so here too is consistent with US norms. Still, together with trade-related loss assistance, the COVID-19 programs raised US support to a level not seen since the farm financial crisis of the 1980s or collapse of world prices in the early 2000s. This points in several directions: Counter-cyclical farm policy is re-entrenched within the US political arena. The pandemic shock of 2020 will not be forgotten. Soon, the centennial of the original

Agricultural Adjustment Act of 1933 will be celebrated with great fanfare. As conclusion, there is not a new geostrategic direction for US farm support policy.

Within this context, several questions arise for a future policy design. Farm support returned in 2021/22 close to its pre-crisis levels under 2018 legislation but will the substantial MFP and CFAP support raise expectations for the future—that is, has it reset the bar on the amounts of support to be expected through counter-cyclical or circumstantially-driven policy additions? This applies to the traditional program crops, but also to other products, particularly livestock, that usually have received less support in the past. Will these new beneficiaries find ways to make future claims for higher support than received before the pandemic? Higher levels of support may prove hard to fully unwind.

The pandemic has exacerbated racial, income and other disparities in the United States. The political divisions have been terrible in the wake of the 2016 and 2020 elections. Pandemic after-effects and higher food prices will continue to exacerbate this situation, with worsened disparities and more discussion around them. This could divide the traditional logrolling coalition of farmers, environmental and nutrition interests. Yet, farm policy legislation offering something to each has traditionally been enacted in the end with wide bipartisan support. This likely will prove true for the next enactment. Again, there is not a new geostrategic direction in US domestic consumer food security policy.

Likewise, on international food security there has been no geostrategic shift in US policy. Recent US policy emphasizes global food security, with contributions sought both from stabilizing world markets as a reliable source of supply, for example by dampening use of export restrictions in times of high prices, and from enhanced and sustainable food production for domestic consumption internationally, but with few new resources to achieve the latter goal.

In terms of *climate change*, it is too soon to draw a conclusion regarding US policy. The current administration reversed its predecessor's withdrawal from the Paris climate agreement. It has orchestrated legislation making substantial new investments in programs to reduce carbon emissions and develop clean energy, some of which by subsidizing or favoring domestic industries are controversial in a trade context. The current administration seeks engagement with China on climate change mitigation. For agriculture, new investments are being made in climate smart agriculture. For a constant level of non-environmental support, this additional funding shifts the share of support directed toward environmental objectives in the repositioning direction that has been argued for in an international context (FAO et al., 2021). The increase can only indirectly be connected to the COVID-19 pandemic or tied to the war against Ukraine and the energy market disruptions it has caused. It marks an appearance of climate change as

an issue in farm policy after more than three decades during which farm support legislation lacked titles or programs directed specifically toward this risk to agricultural production and the environment (Coppess, 2022). Yet, bipartisan support is not established for a geostrategic repositioning to assertive US leadership on global climate change. Likewise, while engaged and accountable scientific, private sector and public health and national security governmental agencies seek to learn from the COVID-19 experience, there is lack of bipartisan agreement on such fundamental issues as pandemic preparation expenditures and monitoring, appropriate pandemic containment measures, and the legitimate authority and roles of the federal and state governments. The direction of US policy in the coming decade on these vital issues rests heavily on the outcome of national elections to be held in 2024.

3. Synopsis: Strategic shifts and their "geo"-aspects across countries

This study aims to contribute to the recently growing literature on geostrategic aspects of economic policy and the objective of economic security. The case of food security can contribute to this general theme by providing details on decisions about certain instruments and the underlying trade-offs. In this chapter we present a cross-country synopsis of the strategic shifts in the policy arenas of domestic food policy, trade policy, and approaches to emergency preparedness.

Each case highlights some "geo"-aspects of these shifts based on our definition of it as relational and extending beyond the primary goal of food security. Even though each case was based on a common approach, a subjective element and subjectively prioritized aspects still enters the evaluative process. We countered this as best possible e.g. by the referring to similar policy categories, while leaving room for tailored country case individuality, with triangulation of perspectives within the research team and intensive discussions with experts involved in national and international policy.

3.1 Cross-country synopsis of strategic shifts

The country cases reveal a wide range of ad hoc policy responses in food security policy to the shocks of COVID-19 and the Russian invasion, some of which are identified as setting more strategic shifts in terms of being longer-term approaches.

The starting point for understanding the overarching pattern is the general impact of the shocks on the countries' food security situation and the related policy choices made in response:

- As the actual impact of *COVID-19* on the food value chain is mainly short-term in all countries, related food security policies have been largely reactive and ad hoc. Nevertheless, the shock has raised general awareness in some countries of the vulnerability of their supply chains, leading, for example, to the adoption of more emergency-oriented policies which are kept long-term.
- The impact of the *Russian war against Ukraine* on the global food supply has varied considerably. It has severely affected import-dependent countries, as can be seen in the country case of China which illustrates the depth of the impact. The EU and the US, both dominant actors in agricultural markets such as wheat and corn, have benefited from their respective higher export prices and their capacity to substitute Ukrainian and Russian supplies on the global market. The EU, as a direct neighbor, faced significant political repercussions, both from competition with Ukrainian agricultural exports and from

heightened security concerns due to its proximity to the conflict. Meanwhile, for countries like the US and China, the political ramifications of the invasion are overshadowed by more pressing bilateral trade tensions, which itself has a geostrategic national security dimension.

The *longer-term measures*, which partially can be evaluated as strategic shifts, can be grouped along the lines of the three policy categories (Table 6). The first category of domestic food policy can encompass more efficiency-oriented versus producer-support objectives and may include politically fixed self-sufficiency degrees or support of fertilizer use as well as food assistance to consumers. This dimension is linked to the second category on trade and the approach of d import substitution as this is often pursued not only by direct trade measures, but also indirectly by subsidizing domestic production. The final category on emergency instruments addresses only those with specific relevance for food. They cover measures like monitoring and emergency reserves. In addition, for these longer-term shifts, possible "geo"-aspect are summarized across the countries (Table 7), being more highly abstracted compared to Table 6.

The synopsis on choices within the policy categories reveals differences across countries as well as across the selected policy categories:

Approaches on **domestic food policies** over time show e.g. in Nigeria that the overall goal of import substitution is also being pursued through a fertilizer strategy in addition to direct food approaches on wheat. China sets numerical targets to produce grains. For the US, no real shift can be observed, as the US remains market orientated, but with a substantial increase of producer and consumer support as crisis responses. The EU prioritizes production over ecology by postponing new agricultural extensification strategies using the argument of food security. This is an indication that the pathway towards achieving higher sustainability in the agri-food system was adjusted in the course of the shocks. The UK increased its recruitment efforts for international agricultural workers due to a shortage of workers to support domestic production. The Philippines renewed its interest in urban food production and encouraged local governments to source food locally for COVID-19 food aid purposes. In addition, it implemented different price stabilization measures.

The category of **trade policy** encompasses the objective of ensuring greater openness and, conversely, the objective of closing markets or ensuring political autonomy. Openness measures include tariff reductions to attract larger quantities of imports or the negotiation of trade agreements to diversify the origin of imports. This category may also include measures with relational aspects, such as responding to the behavior of other countries by taking countermeasures in response to trade actions taken by others. Interference with sustainability

may relate to the inclusion of sustainability standards as import requirements. The synopsis of trade policies from the country cases reveals a complex picture. One trend is toward greater openness to trade. The Philippines, for example, has begun to liberalize its highly distortionary rice import quotas. It is also lowering tariffs specifically on products defined as critical. China is increasingly diversifying its imports, and the EU and the UK are increasingly seeking new trade agreements. At the same time, the opposite trend of more inward-looking and market-closing policies can be observed in countries, either through specific instruments such as the continuation of quotas on strategic products, as in the case of China, or through more general strategies of autonomy, as in the case of the EU. The US has pursued less liberal non-agricultural trade policies, while maintaining emphasis as an exporter on the importance of trade to food security. Nigeria restricts imports of some strategic products to protect its own production. In some cases, these parallel and contradictory approaches are applied within a single country. China, for example, maintains its traditional TRQs in parallel with its newly emphasized diversification strategy. And the EU, even as it seeks new trade agreements, is applying some new sustainability measures unilaterally, i.e. without being negotiated with trading partners, alongside bilateral trade agreements. These may hinder agreements because they are perceived as abusive.

Crisis and emergency measures aim to help prevent and better prepare for future crises. They include monitoring and management tools such as the establishment of emergency reserves, the definition and protection of critical infrastructure, and the development of systems to determine and operationalize delivery of food aid in emergency situations. The synopsis highlights some newly emerging approaches in this category. For example, the EU launched an intra-European food contingency plan and newly identified food as critical infrastructure requiring special protection, as did the UK as part of its critical national infrastructure. China strengthened digital support for food delivery in general but can also be used in case of emergency that limits household access to food.

Relevant for the **interference with sustainability** is that all decisions on the policy categories can also be influenced by policy choices that address the sustainability challenges of climate change and biodiversity loss. These challenges have guided several long-term policy strategies on countries, such as the EU's Green Deal or recent US expansion of agricultural support related to climate change but have also recently been challenged by a rebalancing of objectives in several countries. For example, the EU has recently steadily reduced some environmental measures of the CAP in favor of production measures, supported by the argument of food security. The EU has also become more aware of the trade-offs between the pursuit of

sustainability along international value chains and the search for new trade alliances. In this context, Brazil considers the trade-offs between production costs due to required import standards and the benefits of international market access by applying them. The UK government amended its agricultural policy to relax sustainability requirements on the grounds of food security, following protests that were grounded in the Australia-UK trade agreement.

Besides these individual examples, no general explicit interference with decisions on sustainability could be identified for most countries.

In summary, the overall pattern shows that individual country characteristics on food security and their trade position only partially determine unified policy choices. For instance, not all importing countries pursue a policy of import facilitation: Nigeria, an import-depending country with high rates of food insecurity, envisages to reduce its import dependency by seeking to increase in domestic production. The Philippines on the other hand, also dependent on agricultural imports, relies more on facilitating imports. The EU, as a dominant exporter, faces the challenge of balancing its strict and partially unilateral import requirements with its export interest pursuit, facing conflicts on concluding new agreements.

Table 6 Country patterns of strategic shifts in food security policies

	Observed strategic shifts in three categories of food security policy			Interface with sustainability
	Domestic food policies	**Trade**	**Crisis/Emergency**	
Brazil	• Large food production seen as power • Ensure domestic production of critical agricultural inputs, notably fertilizers	• Pro open trade • Climate protection used as strategic bid in trade negotiations	*No specific agricultural measures covered by case*	• Major policy shift in ecological conservation policies • Consider tradeoff between production costs and international market access requirements
China	• Targets on production and self-sufficiency (e. g. grains, soy, and pork)	• Continued commitment to WTO with some criticism • Import diversification (e. g. soybean, maize, other oil seeds, and meats) while keeping TRQs on strategic products (e. g. rice, wheat, and maize)	• Maintain "sufficient" national storage • Targeting emergency supply in larger cities	• Reduction in chemical use in agriculture and pollutions • No specific agricultural GHG parameters but overall net-zero targets

EU	• Shift toward production support prioritized over ecology through "food first" narrative	• General WTO commitment while bilateral new partners search, growing unilateralism and "standard setting" ambition also on agriculture	• Several new monitoring and preparedness approaches
			• Food newly defined as "critical infrastructure" vital for the society with specific duties for companies and protection rules
				• New tradeoffs of "Green deal" as ecological strategy debated
				  ○ on production: in food-fuel-feed-ecology-nexus ecology weakened
				  ○ on trade: search for balance of stricter sustainability and attractiveness as a partner in trade agreements

Nigeria	• Self-sufficiency and import substitution (wheat strategy, fertilizer initiative)	• Focus on regional African trade initiatives • Limit market access for some products to protect domestic production • Export promotion	• Newly founded Federal Ministry of Humanitarian Affairs, Disaster	• Establishment of green initiatives

			Management and Social Development • National Strategic Food Reserve strengthened	
Philippines	• First disbursement of tariff revenues to farmers in five decades • Renewed attention to urban food production and local food sourcing • Price stabilization measures	• Liberalizing rice imports especially from ASEAN partners • Significant reduction of tariffs for more commodities beyond rice	• Explored ad hoc government-to-government procurement of rice • Partnership with multilateral bodies in providing food aid to households	• Strengthening of climate-smart-agriculture
UK	• Possible shift in prioritization domestic food supply security over ecology within evolving divergent approaches in four countries • Prevention of harvests loss: international recruitment campaign for seasonal workers	• New trade agreements reflecting flexibility, largely liberalizing, possible recalibration food safety requirements in exchange to conclude new trade agreements • Geographic shift to the Indo-Pacific region	• Food sector as critical infrastructure	• Countries have presented policies prioritizing sustainability. • In contrast new debate 2023/24: food security as narrative prioritizes production over sustainability
US	• Remains efficiency oriented	• Overall retreat from trade liberalization paradigm • Retains emphasis on importance of trade to food security • Concern about sources of strategic inputs and supplies (e. g. minerals, prescription drugs)	• Bipartisan consensus on providing farm and nutrition emergency support but less so on defining when crisis response should end	• Lack of consensus on appropriate measures over time and across administrations

Source: Own compilation

3.2 Synopsis on "geo"-aspects of strategic shifts

Beyond the specific policy decisions along the categories, the overarching research question is whether geostrategic aspects can be identified within the observed shifts in policy. This touches on the way food security is perceived and addressed, whether through concrete policies or as part of a politically used narrative. This serves as an indicator of a country's overarching mindset and the scenarios it anticipates related to "geo"-aspects that are linked to food security. While in some country cases "geo"-aspects can be observed based on our definition, in other cases the identified shifts represent more a continuous, long-term strengthening of food security as goal.

Brazil shows a continued focus on food security as a priority in the last decades, especially on affordability. This can be seen in the comparatively large budgetary spendings for food aid. Political sovereignty is a relevant influence on any "geo"-related approach by Brazil, including in relation to food security and trade. This generally dominant parameter is linked to emerging conflicts with trading partners such as the EU over its unilateral trade measures, like on deforestation. In addition, the external perception of this agricultural powerhouse supports a strong Brazilian position in international relations.

China intensifies its traditional "rice bowl in our hands" strategy for food security. Tensions with the US politically and economically can be identified as an important driver of policy changes, such as the enhanced focus on domestic supply and import diversification. So far, this has not changed the relevant role of agricultural imports sourced from the US in the country's total agricultural imports. However, increased de-risking by the US and by others could motivate an approach of greater independence through further strengthened China's self-sufficiency goals.

For the **EU**, food security has reemerged as objective, compared to its decline over time. For example, a "food-first" strategy in the context of the impact of the Russian invasion of Ukraine justified postponing certain environmental reforms. Food security is part of the overarching geostrategic goal of economic security as a response to the economic and trade behavior of other countries. These food-related approaches to monitoring and supporting the internal market are, however, comparatively less interventionist than similar approaches in other sectors such as setting numerical targets for self-sufficiency in raw materials. Trade-related geostrategic aspects recently emerged on balancing sustainability rules and attractiveness for trade partners. The prospective accession of the Ukraine, pushed by the war, also plays a general geostrategic role for food security. It will affect the EU's internal food market and intra-competition and can support the EU's role as a globally dominant agricultural powerhouse.

Nigeria is addressing food security as part of a broader economic resilience approach. This includes a shift away from the longstanding dependence on oil exports as the dominant driver of policy change. To operationalize this, self-sufficiency on agricultural product is targeted, especially on wheat and fertilizer. This goal is pursued through different measures like supporting the use in inputs. In addition, trade with a focus on intraregional trade (ECOWAS and continent-wide AfCFTA) shows a relational geo-perspective to aim at greater economic and political independence.

In the **Philippines**, a central part of its policy has been maintaining food price affordability and availability despite COVID-19 and the Russian invasion induced trade disruptions. This led to unprecedented efforts to liberalize trade in food products as a real shift. These changes have been driven by heightened domestic political competition and polarization, and by political ratings being linked to politicians' ability to control food price inflation. In terms of a geo-aspect, especially the agreement with India on rice can be understood as a reaction to India's often used restrictions on rice exports affecting rice availability and affordability in the Philippines.

The **UK** has started to highlight national food security with the publication of its first status report on food security in 2021. The UK's approach emphasizes the importance of both affordability and accessibility of food, highlighting the challenges that have arisen in the aftermath of COVID-19 and during an ongoing cost-of-living crisis. This can be partly attributed to the impact of Brexit, which also initiated the geostrategic slogan "Global Britain" as an important focal point for policy decisions. Recent trade agreements, particularly the Australia-UK agreement and the CPTPP, have underscored the geographical shift towards the Indo-Pacific region. Domestic agricultural interests have played a less prominent role than political ones, as evidenced by the extensive market opening of at the UK's agricultural sector in the Australia-UK-agreement.

The **US** stresses domestic food security through counter-cyclical farm production support, and substantial consumer nutrition assistance. Open trade is asserted in support of a narrative of international food security with limited budgets for international assistance. A major driver for geostrategic policy changes is the US-Chinese tensions with national security an increasing geostrategic objective affecting economic and other policies amid political competition and tension. The simultaneous shocks of COVID-19 and the Russian invasion have significantly reinforced a geostrategic shift in US trade policy. Pre-existing trade tensions were already indicative of a policy shift toward a geostrategic stance. However, the appearance of COVID-19 and the subsequent Russian invasion underlined security concerns and crystallized this strategic reorientation. The absence of both shocks may have resulted in a different, perhaps less pronounced, policy shift.

Table 7 Country patterns on "geo"-aspects in observed strategic shifts in food security policies

Country	"Geo"-aspects of strategic shifts
Brazil	• Strong positioning in trade relations as perceived agro-climate powerhouse • Sovereignty as overall policy goal
China	• Geopolitical tensions mainly vis a vis US and disruptions to world trading system • Possible strengthening of self-sufficiency in response to other countries' de-risking
EU	• Responding to overall global economic tensions • General focus on economic security with approaches on food less interventionist than in other sectors
Nigeria	• Trade diversification especially in terms of shift from oil dominance while in parallel aiming at food self-sufficiency • Focus on regional African trade
Philippines	• Larger trade agreements instead of bilateral ones • Food security as dominant factor for trade strategy
UK	• Positioning in demarcation to the EU due to Brexit • Global trade positioning and geographical shift towards Indo-Pacific
US	• Economic and political competition with China driving geostrategic shift away from multilateralism

Source: Own compilation

4. Conclusions and policy recommendations

The geostrategic dimensions of food security policies in different countries are shaped by each country's unique characteristics, such as its food trade balance or level of food security. Nevertheless, some overarching patterns have been identified beyond these individual influences. Here, the study provides some additional insights into factors influencing political decisions that are embedded in longer-term history and reflect recent shifts for geostrategic reasons, as we define them.

Following the research question on strategic shifts (long-term and systematic) and their "geo"-aspects (relational to other countries and beyond food security), some general conclusions can be drawn from the cross-country patterns.

- Food security is a recurring theme for most countries, either in the sense of reinforcing an already existing focus, or in the sense of setting a new focus in the light of recent crises. This emphasis may be expressed as a more general narrative within policy debates, or through specific policy interventions, and can often be identified as a stated goal independent of the actual situation of food security.
- The recent shocks have not been the main driver of recent policy changes in most countries. In most cases, policy trends had been underway for some time, but were sometimes reinforced by the shocks. A general pattern for the policy changes identified for food importers is the ambiguous tendency, often by the same country, to look more inward in terms of supporting an increase in production, while at the same time seeking more diversified sources of imports. This reflects the FAO's "availability" pillar of food security which emphasizes different options for ensuring food availability. These include increasing domestic production, imports, and food aid. Other FAO pillars are also addressed, for example, affordability is pursued in the domestic food aid programs of Brazil or the US.

The potential for **policy recommendations** arising from these observations is limited by the fact that the cases only illustrate certain patterns based on individually prioritized analyses, but they may indicate some trends. The results suggest that further analysis of both individual and historically rooted pathways to food security is needed to promote mutual understanding among different countries pursuing different policies. Moreover, the observations underscore the need for policy interventions that address both the common patterns observed – namely, awareness of food security issues and perceived value chain vulnerabilities – and the differences in

approaches identified between and within countries. In addition, it remains important to consider the spillovers of national decisions on other countries' food security, especially in the case of large trading actors. Political starting points to address these aspects could contribute to a framework supporting exchange:

(1) *Engage in "food policy diplomacy"* to share views on countries' different paths and priorities. Such dialogs contribute to awareness and understanding of individual and divergent country needs and concerns. This can support existing international and multilateral cooperative activities to address food security, such as further trade negotiations and food security discussions at the WTO and UN levels. The recent development of the WTO series of "Trade Dialogues on Food", which aims to stimulate debate on the role of international trade in food security, is an important step in this direction. The outcomes of MC 12, especially the "Geneva Package" on food security, emphasized the need for more transparency and better information and highlighted the challenges of balancing different objectives. In particular, the decision on food emergencies emphasized the need to consider the trade effects of emergency measures (WTO 2023). Leading up to MC 13, the working group on food security published a report on food security issues in LDCs and NFICs. A key finding was the need for continued exchange on this issue at a multilateral level (WTO 2023).

(2) *Exchange experiences on different policies and spillovers*, such as self-sufficiency and import substitution, or different instruments to open trade and to diversify import sources. Respective fora can promote knowledge and awareness of possible trade-offs between these options and also their impact on different objectives beyond food security being a relevant geo-parameter according to our understanding.

(3) *A policy assessment of the impacts related to "economic security" and "geo"-aspects* should be pursued specifically for single selected measures: e.g. emergency-alert measures are assumed to be less inefficient and less trade restrictive than other interventions and thus have fewer "geo"-aspects in terms of influencing others. Such impacts could be explicitly evaluated in the increasingly perceived "geopolitical" context to raise awareness of the spillover effects of national decisions on the decisions of other countries.

(4) *Lessons from food security for broader economic security*. Economic security has emerged as an important economic goal for many countries, prompting the development of numerous, often novel, approaches. In contrast, food security has a rich history of policy approaches, each with its own benefits, risks, and trade-offs. In the past some of these trade-

offs have led to adaptations in agricultural policy, such as the WTO agricultural rules, e.g. on limiting export subsidies, and the international monitoring system AMIS. Lessons learned in terms of how and whether the mentioned adaptations can be used for other economic sectors could enrich ongoing discussions and contribute to designing policy on economic security.

5. Further research needs

This study contributes to the recently burgeoning literature on geostrategic, geopolitical or geoeconomic challenges for economic policy in general, for which food policy can serve as a case. However, despite the broad reference to these "geo"-dimensions in academia and policy a systematic and general conceptual approach is lacking. Further basic research for a better and systematic understanding is needed. In particular, the experience of other academic disciplines than economics in dealing with these issues , should be elaborated in terms of whether and how economic approaches can integrate aspects of other disciplines. A further step is the application to agricultural economics, as this discipline has traditionally been immanently linked to "geo"-aspects, e.g. in theories of spatial allocation of production. In recent political debates, "geo"-aspects are also often related to agriculture, such as the "weaponization of hunger" in the context of the Russian invasion of the Ukraine. In this context, agricultural economics can provide valuable contributions and insights to the "geo"-approaches of economics and other disciplines.

Another area where food security intersects specifically with geostrategic concerns is the provision of international food aid. Our study focuses primarily on domestic food security as a sectoral application of the recent focus on domestic economic security. However, the receipt of international food aid is a relevant source of food security for many countries. From a donor perspective, the provision of food aid can have geostrategic implications in terms of defining partnerships. Therefore, international food aid should be an aspect of future analysis on geostrategic food policy.

Further research could also be done on relevant recalibrations and trade-offs other than those between different supply security approaches and ecology policies, where the cases showed some shifts. Possibly other trade-offs in regard to e.g. health or social policies could be analyzed.

The spatial scope of research could be broadened by including countries with other specific characteristics than in our case countries that would allow for even more comprehensive observations.

From a methodological point of view, it is important to explore the policy-making process in more depth, especially from a political economy perspective. Future research should address the involvement of key stakeholders in the design of “geo”-strategies. This is particularly relevant considering the widespread farmer protests that erupted globally in early 2024. Understanding the dynamics of coalition-building among farmers and other stakeholders, and assessing its implications for formulating geostrategic policies, are areas that warrant further research.

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