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Food Systems Transformation in ASEAN: Debates and Way Forward

By Jose Ma. Luis Montesclaros and Kayven Tan



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Synopsis

There has been a rising chorus of organisations calling for the need for food systems transformation (FST) globally in furthering the sustainable development goals. Yet, FST remains a much-debated issue, given differences in beliefs on the types of transformations needed, and how these are to be achieved. These include debates over government support to agriculture as going against free trade norms; disagreements surrounding the prioritisation of environmental concerns amidst climate change's negative impacts on food supplies; and issues over the benefits and challenges in implementing environmental social governance (ESG) frameworks. Such global debates, however, are better addressed when contextualised at the lower geographic levels, considering the unique circumstances of regions and countries. We highlight their relevance in Southeast Asia, and argue for the need for a pragmatic approach to FST.

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Introduction

In 2020, the UN Secretary General's (UNSG) office declared a "UN Decade of Action,"¹ and subsequently launched the 2021 United Nations Food Systems Summit (FSS).² to push for food systems transformation to address the 2nd SDG of Zero Hunger. Food systems refer to the "complex web of actors and processes involved in growing, processing, distributing, consuming, and disposing of agricultural commodities, including food (and) export crops (...)." ³ The call for transformation relates to the sustainable development goals (SDGs), especially the 2nd Sustainable Development Goal (SDG 2) of "Zero Hunger" by 2030, of which the most prominent target is to "end hunger and ensure access by all people... to safe, nutritious and sufficient food all year round" (SDG 2.1).⁴

Following the UNSG office's rallying call, other global multilateral organisations have since launched their own calls for FST, including the UN Food and Agriculture Organisation (UN FAO), UN Development Programme (UNDP), the World Bank and the World Economic Forum. The latest addition was the adoption of FST as part of the 2025-2030 agenda of Asian Development Bank, a regional multilateral organisation, highlighting the need to address structural challenges to sustainable food systems, including "financing for agribusinesses," "rural economic revival," "quality jobs," "gender equity," "technological innovation", "nature-positive practices" and "open trade for efficient access to nutritious foods."⁵

The problem however is that beneath the appearances of a unified push for FST, there are still deep contentions on what transformations to aspire to, and how these should be achieved. Evidence of such active debates is the boycott by multiple civil society organisations of the 2021 FSS. ⁶ What makes this problem challenging is that there are even contentions on what the facts are, with different views on the global problems at hand, and diverging interests between the proponents of these views.⁷ In today's increasingly polarised world, a unique regional perspective is required. This NTS Insight discusses three among the points of contention followed by implications for Southeast Asia.

Debates on Free Trade vs. Government Support to Agriculture

A key area of debate is at the level of international trade, and relates to the extent to which governments should be providing support to the agricultural sector. It reflects a disagreement on whether laissez faire approaches should be supported, or whether there should be more room for government policy support to agriculture.

Arguments for a Laissez Faire Approach

On one hand, the benefits of a laissez-faire approach can be gleaned in part from the coinciding patterns of declining undernourishment alongside increasing trade liberalisation. Food systems have been slowly transforming over the past centuries. Farming approaches have moved towards the adoption innovations that allow for higher productivity, amidst the Green Revolution in the 1960s-80s. This has coincided with an expansion in goals of farming production, with farms

¹ "Decade of Action," *UN Website*, <https://unsdg.un.org/16019-resident-coordinators-and-decade-action>, accessed 9 June 2025.

² "Food Systems Summit 2021," *UN Website*, <https://www.un.org/en/food-systems-summit/documentation>, accessed 10 June 2025.

³ Danielle Resnick, and Johan Swinnen, "Introduction: Political economy of food system transformation" in D. Resnick and J. Swinnen (Eds.), *The political economy of food system transformation: Pathways to progress in a polarized world* (2023), 2.

⁴ "SDG Goal 2: Progress and Info," *UN Website*, accessed 6 June 2025, https://sdgs.un.org/goals/goal2#progress_and_info.

⁵ Masato Kanda, "Transforming Food Systems for a Sustainable Future in Asia and the Pacific," *Asian Development Bank Website*, 7 May 2025, <https://www.adb.org/news/speeches/transforming-food-systems-sustainable-future-asia-and-pacific-masato-kanda>, accessed 18 November 2025.

⁶ Felix Anderl and Michael Hißen, 2024, "How trust is lost: the Food Systems Summit 2021 and the delegitimation of UN food governance," *European Journal of International Relations*, 30(1), 151-175.

⁷ Koen Deconinck, "Facts, interests, and values: Identifying points of convergence and divergence for food systems," in D. Resnick and J. Swinnen (Eds.), *The political economy of food system transformation: Pathways to progress in a polarized world* (2023), 32-53.

in earlier periods only seeking to meet the needs of their own households (subsistence farming), and later ones seeking to grow food for commercial purposes.⁸

Food systems have further evolved into forms which are more dependent on international trade, leading to the broadening of focus from food production towards the more encompassing agri-food supply chains. The latter development owed in part to the increasing commercialisation of food production and the liberalisation of international trade regimes,⁹ alongside advancements in storage practices and logistics infrastructure amidst the “supermarket revolution.”¹⁰ A key multilateral trade agreement is the 1995 Agreement on Agriculture. Asia has also seen significant agreements such as the Asia Pacific Trade Agreement (formerly the “Bangkok Agreement”) in 1975 and the ASEAN Free Trade Area in 1992.

Such evolutions in food systems have resulted in increased food availability globally owing to increased production, as well as improved physical food access owing to trade, and economic access since trade allows for lower food prices from countries holding a comparative advantage in agriculture. In 1969-1971, the extent of undernourishment was estimated to be 37% within developing countries (where majority of the undernourished reside), but by 2000, undernourishment had fallen to 17% globally; during these periods, Asia’s undernourishment fell from above 40% to 16%.¹¹

The need for interventions in the face of new food security threats

The downside to a liberalised approach is that countries providing support to their agricultural sectors could be criticised as intervening in markets. Trade liberalisation requires reciprocal actions and cooperation among countries in reducing trade barriers, so countries are limited in forms for agricultural support. Yet, government remedies are required amidst the global disruptions from the 2020s, such as COVID-19 and the Russia-Ukraine war. One narrative highlighted a rather permanent increase of 122 million undernourished people from 2019 to 2022, attributing the problem to the COVID-19 pandemic as well as the geopolitical disruptions from the Russia-Ukraine war.¹² Despite historical progress in addressing undernourishment, the latest UN FAO report has acknowledged that the “world is still experiencing moderate or severe food insecurity above the pre-pandemic level.”¹³

Climate change is a further issue, which has had worsening impacts on undernourishment and hunger, even before the disruptions of the 2020s.¹⁴ An earlier 2017 SOFI report reflected that “after a prolonged decline, world hunger appears to be on the rise again,”¹⁵ and that “the global prevalence of undernourishment in 2016 may have actually risen to 11 percent, implying a return to the level reached in 2012.”¹⁶ These climate-related “reductions in food availability and increases in food prices in regions affected by El Niño / La Niña-related phenomena – most notably in Eastern and Southern Africa and in South-Eastern Asia,” alongside increasing numbers of conflict events that affect rural productivity, or in areas experiencing economic slowdowns as well as “drained foreign exchange and fiscal revenues”¹⁷ contribute to undernourishment.

⁸ Philip McMichael, “A food regime genealogy,” In *Critical Perspectives in Rural Development Studies*, pp. 129-158. Routledge, 2013.

⁹ Ibid.

¹⁰ Thomas Reardon, C.P. Timmer, and B. Minten, “Supermarket revolution in Asia and emerging development strategies to include small farmers,” *Proceedings of the national academy of sciences* 109, no. 31 (2012): 12332-12337.

¹¹ UN FAO, 2005, *The State of Food and Agriculture 2005: Agriculture Trade and Poverty—Can trade work for the poor?* Rome: UNFAO, 117.

¹² UN DESA, SDG Goal 2: Progress and Info, Op. Cit.

¹³ UN FAO, *The State of Food Security and Nutrition in the World 2025: Addressing high food inflation for food security and nutrition*, Rome: UN FAO, 2025. 208.

¹⁴ Jose Ma Luis Montesclaros, “Changing the narrative of ASEAN progress in addressing hunger: ‘Snoozing’ the alarm for SDG# 2?” *Food Security* 13, 5 (2021): 1283-1284.

¹⁵ FAO et al., 2017, *The State of Food Security and Nutrition in the World 2017: Building Resilience for Peace and Food Security*. Rome, FAO, 2. <https://openknowledge.fao.org/items/0f85cf59-0370-461b-9481-f0f708ed024d>

¹⁶ Ibid., p. 5.

¹⁷ Ibid., p.7.

Yet today, even if governments wished to provide increased support to their food producers or consumers, such actions could be perceived negatively as forms of market intervention, from the viewpoint of the global multilateral framework that supports free trade. Some developing countries feel they do not have sufficient “policy space” to provide sufficient support to their agricultural sectors, even with the 1995 Agreement on Agriculture (AoA) which was intended to allow this.¹⁸ This is given that providing a level of support which developing countries feel is needed, is presently seen as exceeding the limit allowed by the AoA.

Debates Surrounding Prioritisation of Environmental Concerns Amidst Climate Change’s Negative Impacts on Food Supplies

FST is a multifaceted concern since food systems impact on multiple SDGs beyond just undernourishment, including climate change. Yet, there are debates on whether declining productivity growth should still be problematised, and whether states should give equal (or even greater) priority to technologies that would reduce greenhouse gas emissions from the sector.

The problematique of supply-driven hunger is presently at the crux of division on the way forward for environmental sustainability within the FST discussions. While Green Revolution (GR) technology critics argue that the risks and uncertainties to human health and the environment are too great, GR technology proponents argue that the food supply remains a critical issue.

Critics of Green Revolution technologies: Agriculture’s Impacts on the Environment

Climate change has been a constant damper to raising food productivity to meet the region’s growing food consumption requirements, thus feeding into food price inflation. GR technologies, in this regard, focus on improving the productivity of land and labour amidst climate change, through inputs in the form of improved seeds whether through selective breeding or genetic modification, fertilisers, pesticides, and even the use of machinery in large-scale farming.

While undernourishment is an issue, GR critics argue it should be placed at the same level as the goal of reducing carbon emissions. They argue that the overuse of GR inputs leads to greater carbon emissions, with unknown (and in some cases, negative) impacts on human health and crop biodiversity. They have thus pushed for agroecological and regenerative agriculture approaches, including organic food production practices that minimise agriculture’s emissions.

In some cases, such movements are considered as part of a version of “food sovereignty” as well, where the interpretation focuses on the autonomy of smallholder farmers from corporate control by large commercial multinationals. These debates resurfaced during the recent UN Food Systems Summit (FSS) in 2021. Over 500 civil society groups as part of an autonomously established Civil Society and Indigenous Peoples’ Mechanism (CSM), announced a boycott of the FSS amidst the significant presence of crop multinationals that espouse GR technologies. They decried the alliance between the UN and the World Economic Forum (WEF), as well as in the selection of a private multinational lead, who was then President of the Alliance for a Green Revolution in Africa (AGRA), as UN Special Envoy to the FSS.¹⁹

¹⁸ Lars Brink and David Orden, “Taking Stock and Looking Forward on Domestic Support under the WTO Agreement on Agriculture,” *Commissioned Paper 23, International Agricultural Trade Research Consortium (IATRC)*, 2020. <https://ssrn.com/abstract=3608481>

¹⁹ “Letter from CSM to the Secretary General,” *Food Sovereignty.Org Website*, accessed 18 November 2025, https://www.foodsovereignty.org/wp-content/uploads/2020/02/EN_Edited_draft-letter-UN-food-systems-summit_070220-4.pdf.

One critical article in the *Journal of Sustainable Agriculture* questioned whether the food supplies and productivity should continue to be seen as an overarching issue in shaping undernourishment. The authors argued, there is already sufficient food to meet the needs of the global population,²⁰ referencing the UN FAO's 2009 report themed "Food Insecurity in the World: Economic Crises – Impacts and Lessons Learned."

If food supply insufficiency in local contexts no longer poses a critical issue that hampers the task of addressing food insecurity, GR-critics argued, then there should be a movement towards organic agriculture approaches which rely on fewer chemical inputs. There were further discussions on whether the processes would still be inclusive to smallholder farmers, if multinationals were involved.

Proponents of GR Technologies: Problematising Local Food Insufficiency

GR proponents see that supply-driven food insecurity is still an existential threat. The same 2009 FAO report cited in the *Journal of Sustainable Agriculture* as stating that "there is already sufficient food..." did not argue that food supplies were no longer an issue in general, they argue; rather, economic crises could pose constraints to food security *on top of* food insufficiency issues.²¹

While the FAO noted that "high domestic food prices, lower incomes and increasing unemployment have reduced access to food by the poor" in the 2009 report,²² it re-emphasised the supply-demand problem in succeeding reports. Crop productivity was projected to decline by 2030-2050, given "the negative impacts of climate change on the productivity of crops, livestock, fisheries and forestry," as a hurdle to meeting global demand growth by at least 60 percent from 2006 to 2050 amidst "population and income growth, as well as rapid urbanization."²³

In fact, GR proponents have argued that undernourishment outcomes would have been worse had these technologies not been leveraged. Simulations showed that global crop production levels in the year 2000 would have been 20% lower had Green Revolution agricultural technologies not been applied from the 1960s, pushing up food prices by 30-60%, and making 6 to 8% more children undernourished.²⁴

Proponents of GR technologies, including multinationals as well as academic communities, have acknowledged that farmers' practices may vary, (leading to the overuse of chemical inputs in some cases) and emphasise the need for greater farmer education and training. They also argue that there is no rigorous empirical basis for the accusations on the negative impacts on human health and crop biodiversity. However, attempting to raise agricultural productivity is a complex problem in itself too, given the issue of land degradation. While fertiliser over-use in rainfed settings contributes to hastening the decline in soil fertility, it is also common to observe that fertilisers are under-used in some areas, especially within irrigated plots of land as these allow for the highest levels of productivity. In the Philippines, for instance, a third to up to half of the gaps in rice yields were attributed to the underuse of fertilizers.²⁵

Beyond these, proponents argue that GR technologies also offer sustainability benefits. One article earlier argued that India would have needed to clear 36 million *more* hectares of land to meet its wheat production levels in 1992, had GR

²⁰ Eric Holt-Giménez et al., "We Already Grow Enough Food for 10 Billion People ... and Still Can't End Hunger," *Journal of Sustainable Agriculture*, 36:6 (2012): 595-59. <http://dx.doi.org/10.1080/10440046.2012.695331>

²¹ FAO, *The State of Food Insecurity in the World 2009: Economic Crises – Impacts and Lessons Learned*, Rome: UN FAO, 2009.

²² *Ibid.*, 2.

²³ FAO, *The State of Food and Agriculture: Climate Change, Agriculture and Food Security*, Rome: UN FAO, 2016.

²⁴ R.L. Paarlberg, "Sustainable food and farming: When public perceptions depart from science." In D. Resnick and J. Swinnen (Eds.), *The Political Economy of Food System Transformation: Pathways to a Polarized World*, Oxford: Oxford University Press and International Food Policy Research Institute, 2023.

²⁵ J.V. Silva et al., "Explaining rice yields and yield gaps in Central Luzon, Philippines: An application of stochastic frontier analysis and crop modelling," *European Journal of Agronomy* 82 (2017): 223, <https://www.sciencedirect.com/science/article/abs/pii/S1161030116301307>.

technologies not been leveraged.²⁶ This is relevant to what is today's most populous country, and which continues to serve as the main source for rice exports, globally.

Debates on the Benefits and Challenges to Environmental Social Governance (ESG) Framework

Another notable debate, which runs somewhat in parallel with the debates on productivity-first as opposed to a balance between productivity and sustainability, is on whether Environmental Social Governance (ESG) serves as an appropriate framework for companies and societies to adopt in pursuing FST.

Proponents of Environmental Social Governance (ESG) Framework

There is growing public and regulatory scrutiny of the food and beverage sector, as it accounts for approximately 70% of global freshwater withdrawals and contributes an estimated 21-37% of total greenhouse gas emissions.²⁷ In this regard, there has been an increase in the adoption of ESG as a corporate and investor-focused framework assessing how environmental, social, and governance factors affect business performance. ESG has gained prominence as firms respond to pressure to shift from profit-driven models to those that integrate sustainability.²⁸

In recent years, ESG has shaped corporate strategies, with regulators and investors demanding more transparency and risk mitigation.²⁹ Many food industries are also recognising the significance of ESG practices and adopting more of such practices,³⁰ and consumers are also increasingly choosing brands that are more sustainable and eco-friendlier. ESG thus presents an avenue for mobilising financing to farmers.

Critics of ESG Framework

The recent increase in adoption of ESG has fuelled accusations of "Greenwashing", where companies using ESG-reporting purportedly exaggerate or misrepresent their sustainability claims to attract buyers and investors.³¹ Such greenwashing practices are reported in many Southeast Asian countries, including Malaysia, Vietnam and Indonesia.³²

In the food sector, greenwashing often stems from misinterpreted eco-friendly labels and the absence of standardized criteria, allowing firms to apply inconsistent and misleading sustainability claims.³³ For instance, in Vietnam, rising demand for environmentally friendly products led several firms to market goods as organic, but companies have failed to substantiate these claims when challenged.³⁴

Critics have also argued that ESG reporting faces challenges of measurability and lack of universality. Standards vary widely in scope, focus and metrics. For instance, the United Nations Global Compact outlines voluntary sustainability principles alongside indicators related to human rights, labour, and anti-corruption whereas the Food Loss and Waste Protocol offers reporting guidance limited to only a specific domain.³⁵ Such fragmentation results in

²⁶ R.L. Paarlberg, Sustainable food farming, *ibid*.

²⁷ Krittat Sukmani and Karusin Uwansri, "The impacts of ESG scores on firm's performance in food and beverage industry", *European Journal of Economic and Financial Research*, Volume 8, Issue 5, 2024, pp 2.

²⁸ Jessica Fanzo et al., "A research vision for food systems in the 2020s: Defying the status quo", *Global Food Security*, Volume 26, 2020, 100397.

²⁹ Mahmut Aydođmuş et al., "Impact of ESG performance on firm value and profitability", *Borsa Istanbul Review*, Volume 22, Supplement 2, 2022, pp. S119-S127

³⁰ R.A.R. Ahmad, et.al, "Examining ESG disclosure practices and firm performance in the food and beverages industry: A content analysis approach", *Insight Journal*, 2023, pp. 80–96

³¹ Jurgita Malinauskaite and Hussam Jouhara, "Corporate Social Responsibility (CSR) and Environmental, Social and Governance (ESG)", *Sustainable Energy Technology, Business Models, and Policies*, Elsevier, 2024, pp 41-66.

³² A. Raj, "Greenwashing is becoming a big problem for ESG. Techwire Asia", 2022, <https://techwireasia.com/2022/08/greenwashing-is-becoming-a-big-problem-for-es>, accessed 3 July 2025.

³³ Stecker, M.J., "Awash in a sea of confusion: benefit corporations, social enterprise, and the fear of "greenwashing."", *J. Econ. Issues* 50 (2), pp 373–381

³⁴ T.T.H. Nguyen et al., "Greenwash and Green Purchase Intention: The Mediating Role of Green Scepticism," *Sustainability*, 11(9), 2019, 2653. <https://doi.org/10.3390/su11092653>

³⁵ Food Loss and Waste Steering Committee, "Food Loss and Waste Accounting and Reporting Standard Version 1.0", 2016, https://flwprotocol.org/wp-content/uploads/2017/05/FLW_Standard_final_2016.pdf.

inconsistent assessments, with rating agencies often disagreeing due to methodological differences.³⁶ In the food sector, such disparities coupled with long and complex supply chains further reduce the reliability and comparability of ESG reports.

In light of the limitations of ESG, many have called for a shift towards Economic, Social and Environmental Sustainability (ESS) Frameworks. Though related, ESG and ESS are distinct concepts. In contrast to ESG, ESS is commonly referred to in today's lexicon as "Sustainability", drawing on the definition first articulated by the United Nations Brundtland Commission, which is, "meeting the needs of the present without compromising the ability of future generations to meet their own needs."³⁷ ESS proponents take a broader, policy-oriented approach emphasising economic viability, social equity, and environmental sustainability to support long-term societal and systemic resilience.³⁸ While ESG, is business or investor-focused, ESS proponents argue that they present a more holistic lens, treating food systems as interconnected and accounting for trade-offs across economic, social and environmental dimensions, with the aim of optimizing outcomes holistically and supporting long-term resilience.³⁹

An ASEAN Approach to FST: Pragmatism for Regional Resilience

Today, there are ongoing discussions on the region's post-2025 agenda for the ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action, alongside its ASEAN Vision and Strategic Plan of Action for Food, Agriculture and Forestry (FAF). With the 2030 deadline for SDGs approaching, it is increasingly vital to recognise FST as a movement gaining traction and an emerging critical agenda in both global and regional discourse.

The challenge for ASEAN today is to identify the FST pathway that addresses its unique challenges and concerns. Yet, the preponderance of multiple debates on the issue of FST curtails the identification of the ideal FST pathway. The three debates, however, are interrelated, and this section integrates these debates to propose a way forward for ASEAN.

1. The urgency of addressing food insecurity and need for agricultural support

In the midst of the evolving debates on the issue of sustainability, the approach espoused even by multinationals is to focus on achieving both an increase in productivity *and* a reduction in emissions from agriculture. But the question remains, on whether the issue of undernourishment should be given equal priority as reducing carbon emissions despite the technological uncertainties, or whether it should be treated with utmost priority, given that there remain trade-offs between food productivity and sustainability amidst the existing technologies in use today.

ASEAN countries generally are unlike developed countries in North America or Europe where food is produced in abundance owing to high levels of agricultural support, and where the import of food is relatively cheaper (given their higher average per-capita income levels). ASEAN countries are net food importers, but even if food is available for import, some countries are less capable of purchasing these owing to lower income levels, and especially during periods of disruption. Ensuring sufficient availability of affordable food amidst climate change thus remains a pressing problem today.

Southeast Asia's undernourishment fell from 114 million in 2000 to 60 million in 2014; but amid slowdowns in crop yield growth, this figure increased to 63 million by 2016. The COVID-19 pandemic and the war in Ukraine, which

³⁶ Florian Berg et al., "Aggregate Confusion: The Divergence of ESG Ratings", *Review of Finance*, Volume 26, Issue 6, November 2022, Pages 1315–1344.

³⁷ "Sustainability," UN Website, <https://www.un.org/en/academic-impact/sustainability>, accessed 2 July 2025.

³⁸ "Sustainability vs ESG: What's the Difference and Why They Matter [Series 1 of 4]", *HSBC Website*, <https://www.businessgo.hsbc.com/en/article/demystifying-sustainability-and-esg>, accessed 2 July 2025.

³⁹ United Nations Environment Programme, *Collaborative Framework for Food Systems Transformation: A multi-stakeholder pathway for sustainable food systems*, 2019.

led to an increase of 5 million people being undernourished, had only served to amplify the climate disruption. The impacts of these could be seen in global food prices in 2021-22 exceeding those prices in the Global Food Price Crisis in 2007-08.⁴⁰

Agricultural support is thus needed in light of structural weaknesses faced by the region, given stagnant per-capita income growth in ASEAN from 2019 to 2022, even as the cost of a healthy diet had been rising at a faster rate amidst disruptions. Today, 36.7% of the ASEAN population are unable to afford a healthy diet amidst economic divides.⁴¹

Amidst the pandemic and Ukraine War, global food price inflation escalated dramatically, increasing from 5.8% in December 2020 to 23.3% by December 2022.⁴² The cost of a healthy diet in the region, has been increasing significantly from \$3.5 a day in 2017, to \$4.35 a day in 2022, or an increase of 6% per year,⁴³ at a rate that is faster than the world average food price inflation of 3.6% from 2017 to 2025, according to the Food Price Index.⁴⁴

Yet, the average annual income per person in ASEAN declined by 4.6% from 2019 to 2020, amid the pandemic, and it only started recovering in 2022 to match the pre-pandemic GDP per capita. By 2022, the FAO observed that existing policies, were “no longer delivering increasing marginal returns in reducing hunger, food insecurity and malnutrition in all its forms.”⁴⁵ Echoing the middle-line that was drawn by the UN FAO, subsidies should be provided, if they allow for a transition towards increasing the consumption and production of more nutritious goods such as fruits and vegetables, beyond just staples such as rice in ASEAN.⁴⁶

2. Regional supply chain resilience in ASEAN while preserving free trade

Another balance that needs to be struck is on the type of agricultural support. A practice by ASEAN in coping with such disruptions, *while preserving free trade*, is by building regional supply stockpiles. This can be seen in the ASEAN Plus Three Emergency Rice Reserve (APTERR) mechanism, in collaboration with ASEAN and its Plus Three Partners, namely China, Japan and South Korea.

The priority however has to be on improving the way such a mechanism is implemented. APTERR has only been used during emergencies that owe to natural disasters, and never in the form of rice purchased during periods when food prices have been increasing.⁴⁷ This is in part because the APTERR was never designed to be a price stabilisation tool. By contrast, a transformation that is much needed in ASEAN is to re-visit the potential roles of the APTERR to respond to supply disruptions that owe to market disruptions as well. There have been experimental approaches taken by the Philippines and Japan in engaging in rice futures contracts, i.e., a forward-looking contract for one country to sell rice at a pre-agreed price in the future.⁴⁸ However, a key limitation is that the real-time trading amidst supply chain disruptions has yet to be applied or tested.

⁴⁰ Rob Vos et al., “COVID-19 and food inflation scares.” In *COVID-19 and global food security: Two years later*, eds. John McDermott and Johan Swinnen. Part Two: Agricultural Production and Value Chains, CGIAR: 2022, pp. 64-72. https://doi.org/10.2499/9780896294226_10.

⁴¹ “FAOStat Database,” UN FAO Website, <https://www.fao.org/faostat/en>, accessed 18 November 2025.

⁴² FAO et al., *The State of Food Security and Nutrition in the World 2025 – Addressing high food price inflation for food security and nutrition*. Rome: FAO, 2025. <https://doi.org/10.4060/cd6008en>

⁴³ Measured at purchasing power parity as the average cost of a healthy diet.

⁴⁴ “Food Price Index,” FAO Website, <https://www.fao.org/worldfoodsituation/foodpricesindex/en/> accessed 4 June 2025

⁴⁵ FAO et al., *The State of Food Security and Nutrition in the World 2022: Repurposing food and agricultural policies to make healthy diets more affordable*. Rome: FAO, 2022. <https://doi.org/10.4060/cc0639en>

⁴⁶ Ibid.

⁴⁷ Kunmin Kim, “A study on the ASEAN Plus Three Emergency Rice Reserve as a food security institution in East Asia,” *Food and Life*, 2021(3), 87-97.

⁴⁸ “The Philippines and Japan successfully signed the Tier 1 extension deal to boost food security through the APTERR’s mechanism,” APTERR Website, 2023, <https://apterr.org/?view=article&id=244:signed-the-tier-1&catid=8>, accessed 18 November 2025.

A further transformation in regional approaches lies in exploring mechanisms for stabilising the supplies of other commodities beyond rice. The region is presently exploring such reserves through a new, Local Resource-Based Food Reserve (LRBFR) mechanism agreed in 2023. The aim of the LRBFR is to identify opportunities for ensuring regional “availability and affordability of essential farm inputs, such as seeds and fertilisers” and for improving “food storage and logistics facilities including cold chain, and post-harvest handling,” alongside “sustaining food supply, in part based on local food sources, diversified food production, and improved food supply chain logistics.”⁴⁹

3. Promoting science-based approaches in FST

A science-focused approach is essential in steering FST, ensuring that policies and interventions are grounded in localised evidence and addressing the multidimensional complexity of food systems. The ADB has projected a 50% reduction in the yields for rice among Southeast Asian farmers, heading up to 2100 especially for the Philippines as the region’s top importer, and Thailand and Vietnam as its top exporters.⁵⁰ A study by Croplife Asia, an industry group, has also noted USD 21 billion worth of agricultural production being lost to damaged infrastructure and disrupted planting schedules, whenever these were hit by extreme weather events between 2008 and 2018.⁵¹

For ASEAN which is home to more than 100 million smallholder farmers,⁵² it is critical to appreciate the complex challenges of affordability, dietary diversity and climate vulnerability. ESS offers a more promising pathway to address the unique multidimensional challenges faced by smallholder farmers in Southeast Asia like rising labour costs from urban migration, stagnant crop prices, and the surge of costs for fertilisers and pesticides by up to 250% in recent years.⁵³

ESG remains relevant, but its technical shortcomings require urgent solutions. Digitalisation presents an avenue for addressing the measurement issue on reductions in carbon emissions, thus allowing farmers to verify their claims of greenhouse gas emission reductions in exchange for financing. For example, the Singapore-based regenerative agriculture-focused climate tech firm, RegenX, embeds regenerative agriculture practices into supply chains, offering training and digital tools that help farmers improve productivity, cut emissions and raise profitability.⁵⁴ Their model demonstrates how understanding specific challenges and engaging diverse food system actors can enable more financially-inclusive, climate-resilient, and economically viable agricultural systems.

While ASEAN has witnessed improvements in some aspects of food security such as increased food availability, other challenges persist or are worsening, including undernourishment and the widening gap between the increasing cost of healthy diets and stagnant incomes. Science-based solutions that address these challenges could thus enable farmers to invest in modern, climate-resilient practices, while reducing their emissions. Such an approach could address and balance various trade-offs across different challenges more effectively. By holistically addressing interconnected economic, environmental, and social challenges, ASEAN can achieve a more integrated and scalable solution for transforming food systems in a way that is both equitable and sustainable for its member states.

⁴⁹ ASEAN, *ASEAN Leaders’ Declaration on Strengthening Food Security and Nutrition in Response to Crises*, 5 September 2023.

⁵⁰ ADB, *Food security and poverty in Asia and the Pacific: Key challenges and policy issues*, Mandaluyong City, Philippines: Asian Development Bank, 2012.

⁵¹ Croplife Asia and EU-ASEAN Business Council, “Report on ASEAN Food Systems Sustainability”, June 2024.

⁵² FAO, “Southeast Asian countries advance climate-smart agriculture through regional cooperation”, 24 January 2025,

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About the Authors

Dr Jose Ma Luis Montesclaros is a Research Fellow and Food Security Lead at the Centre for Non-Traditional Security Studies (NTS Centre) at the S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University (NTU), where he teaches a graduate course on the Political Economy of Development.

He conducts policy analysis with dynamic models of food security and climate change, having provided inputs to Singapore's Inter-Ministry Committee on Food Security (IMCFS). He is Co-Investigator in studies on digital technology futures in Southeast Asia and beyond with various local and international partners, including the Economic Research Institute for ASEAN and East Asia (ERIA), the German Development Agency, Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the ASEAN Secretariat, among others. He is also First Inventor of the UrbanAgInvest tool (© NTU) tool with Prof Paul Teng (Co-Inventor), for assisting governments to draw investments into their high-tech farming sectors. He likewise contributes to grantsmanship efforts as part of the team at NTS Centre, RSIS.

His Ph.D. dissertation in International Political Economy with RSIS, NTU, focused on "*Institutions and Agricultural Transformation: A Study of Induced Innovation in the Philippine Rice Sector*". Previously, he obtained his Master's in Public Policy with the Lee Kuan Yew School of Public Policy (LKYSPP), National University of Singapore as an ASEAN Scholar, and his BS Economics Degree with the University of the Philippines. He was one of the two "Leaders of Tomorrow" representing LKYSPP, NUS at the 44th Saint Gallen Wings of Excellence Awards in 2014 (Switzerland).

Mr Kayven Tan is a Senior Analyst at the Centre for Non-Traditional Security Studies (NTS), S. Rajaratnam School of International Studies (RSIS), Nanyang Technological University (NTU). He holds a Master of Science (MSc) in International Relations from the S. Rajaratnam School of International Studies, Nanyang Technological University (RSIS, NTU), and a Bachelor of Science (Hons) in International Relations from the University of London.

Kayven previously served as a Foreign Service Officer at the Ministry of Foreign Affairs, Singapore, where he formulated and reviewed Singapore's bilateral policies relating to technical assistance and facilitated capacity-building programmes for foreign government officials to share Singapore's development experience and expertise. He also steered the conceptualisation and implementation of the Singapore-Timor-Leste ASEAN Readiness Support (STARS) Package.

His research interests include Singapore's Foreign Policy, ASEAN and Multilateralism in the Indo-Pacific and Human and Food Security.

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