



ASEAN FOOD SECURITY: POST COVID POLICY STRATEGIES

Siti Mustaqimatud DIYANAH^{1,*} , Fathimah AZZAHRA² , Zulfa Az ZAHROH³ 

¹ Siti Mustaqimatud Diyanah, Research Associate, Economic Research Institute for ASEAN and East Asia

² Selçuk University, Institute of Natural Science, Agricultural Machinery and Technology Engineering Department, Konya, Türkiye

³ Jenderal Soedirman University, Agriculture Faculty, Agrotechnology Department, Purwokerto, Indonesia

ABSTRACT

The food and agriculture sectors are crucial to the ASEAN economy, offering significant employment and income for a large portion of the region's population. It contributes to ensuring national and regional food security and nutrition in ASEAN. Before COVID-19, ASEAN faced unprecedented challenges such as the increase in population, climate change, geopolitical tensions and natural disasters adversely impacting the agriculture and food systems. Recently, COVID-19 caused a major disruption in the food supply chain that affected the agriculture and food system. This paper aims to summarize the impact of COVID-19 on food security in ASEAN and post-COVID-19 policy strategies in ASEAN. COVID-19 affected economic slowdown, trade restrictions policy, and market disruptions that caused price hikes, agriculture input shortage, and other dynamic factors that threaten food security and nutrition in ASEAN. The prevalence of moderate or severe food insecurity in the total population increased far above the pre-COVID-19 level in ASEAN. ASEAN has been concerned about food security issues. ASEAN prepared the policy strategies for the post-COVID-19 and future crises such as the ASEAN Comprehensive Recovery Framework, Leader's Declarations and Regional Guidelines, AIFS Framework and SPA-FS 2021-2025, which were developed to ensure long-term food security in ASEAN. These documents encourage collaboration on rapid actions in response to crises within ASEAN and related development partners including private sectors, strengthening the function of cooperation agencies in ASEAN, accelerating the transformation of sustainable agriculture and digitalization, enhancing market connectivity, promoting investment in agricultural research and development, and facilitating access to finance.

Keywords: Food Security; COVID-19; ASEAN; Policy Strategy; Agriculture Sector.

1. INTRODUCTION

FAO defined food security as a condition where everyone has continuous physical, social, and economic access to enough safe and nutritious food to meet their dietary needs and preferences for an active and healthy life [8]. The World Summit on Food Security in Rome in 2009 adopted Five principles for sustainable global food security as follows, (i) principle 1: invest in country-owned plans, (ii) principle 2: foster strategic coordination at each level, (iii) principle 3: Strive for a comprehensive twin-track approach to food security that consists of direct action to immediately tackle hunger for the most vulnerable and medium and long-term sustainable agriculture, food security, nutrition and rural development programmes, (iv) principle 4: Ensure the strong role for the multilateral system by sustained improvements, (v) principle 5: Ensure sustained and substantial commitment by all partners to investment in agriculture, food security and nutrition [30].

Agriculture is the main sector for ensuring food security. The agriculture sector produces food and primary materials for industry. In this term, the agriculture sector holds a significant role in the world. However, for the last few years, the agriculture sector has been facing unprecedented challenges that

*Corresponding Author: siti.diyannah@eria.org

Receiving Date: 10.12.2024 Publishing Date: 30.12.2024

have affected food sustainability as well as food security. The increase in population, climate change, COVID-19, geopolitical tensions and natural disasters adversely impacted the agriculture and food systems [12].

The Association of Southeast Asian Nations (ASEAN) was established on 8 August 1967. ASEAN consists of 10 member countries, namely, Indonesia, Singapore, Malaysia, Thailand, Brunei Darussalam, Philippines, Cambodia, Lao PDR, Myanmar, and Viet Nam. ASEAN was established with the aim of accelerating economic growth, promoting regional peace and stability, promoting active collaboration and mutual assistance in response to various matters, assisting in training and research facilities, collaborating more effectively to encourage further growth in the agriculture, industry, and trade sectors, promote Southeast Asian studies, and maintain close and beneficial cooperation with existing international and regional organizations with similar aims and purposes. The ASEAN Community, anchored on three community pillars: Political-Security Community, Economic Community, and Socio-Cultural Community was launched in 2015 [27].

The food and agriculture sectors are crucial to the ASEAN economy, offering significant employment and income for a large portion of the region's population. The agriculture sector contributes to ensuring national and regional food security and nutrition in ASEAN [12]. Eight out of ten ASEAN member countries are relying heavily on this sector, contributing significantly to their economies. In Myanmar and Lao PDR, agriculture makes up over 40% of GDP. This region is a leading producer and exporter of palm oil, rubber, rice, sugar, seafood, and fruits, and holds an important position as an exporter and importer for the agricultural sector [1, 15]. In 2022, the ASEAN Agriculture, Forestry, and Fisheries (AFF) industry contributed US\$354.3 billion, or 9.8%, to the region's GDP. It also provided employment share for 27.6% of ASEAN's 337.9 million workers. The share of agricultural products in AFF's total trade grew from 68.7 in 2013 to 71.4 in 2022, with a trade value of USD 447.1 billion [3].

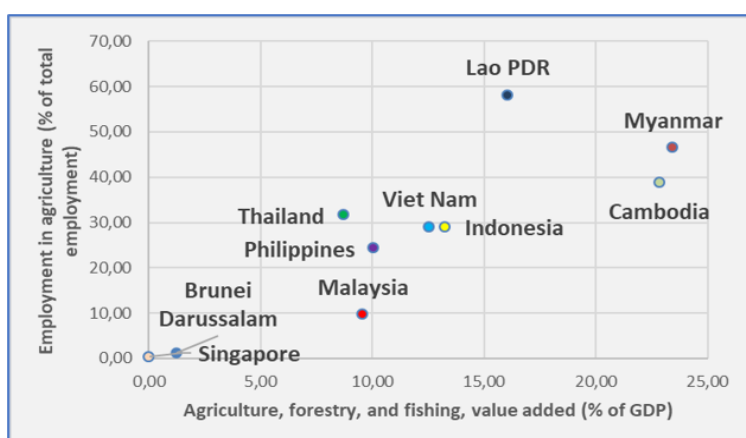


Figure 1. GDP and Employment Shares in ASEAN [7]

COVID-19 which spread rapidly worldwide in early 2020, implies food security and nutrition. Moreover, the major disruption of the food supply chain affected agriculture and food systems [9]. Global hunger, as indicated by the prevalence of undernourishment, remained significantly higher than pre-COVID-19-pandemic levels, impacting approximately 9.2 per cent of the global population in 2022, up from 7.9 per cent in 2019. About 122 million people experienced hunger in 2022 compared to 2019, prior to the global pandemic [6]. Trade restrictions affecting shortage in agriculture products. This situation causes price hikes in agricultural products. The food price index of cereals products increased 60.14% far above the price index in 2019 [10].

2. MATERIALS AND METHODS

The objective of this paper is to summarize the impact of COVID-19 on food security in ASEAN and post-COVID-19 policy strategies in ASEAN. A literature review approach to summarize the impact of COVID-19 on food security in ASEAN and the post-COVID policy strategies by ASEAN member states was used in this paper. The primary documents reviewed include the ASEAN Comprehensive Recovery Framework, ASEAN Integrated Food Security (AIFS) Framework, Strategic Plans of Action on Food Security (SPA-FS) 2021-2025, ASEAN Leaders Declaration on Strengthening Food Security in Response to Crises, ASEAN Regional Guidelines for Sustainable Agriculture in ASEAN, and ASEAN Regional Guidelines on Promoting Climate-Smart Agriculture (CSA) Practices Volume 3. These documents were chosen for their direct relevance to ASEAN’s coordinated response to food security challenges before, during, and after the COVID-19 pandemic.

In addition to the policy documents, statistical data from related authorities resources, journals, and related papers are utilised to support the review. All those resources were analyzed, focusing on post-COVID food security and sustainable agriculture practices policy strategies within the region. This approach ensured a comprehensive understanding of ASEAN’s efforts to strengthen regional food security and agriculture sustainability in tackling the challenges and crises.

3. RESULTS AND DISCUSSION

3.1. IMPACT OF COVID-19 ON FOOD SECURITY IN ASEAN

Before COVID-19 adversely impacted, ASEAN already being a region that highly vulnerable to climate change and natural hazards, such as heat, high humidity, and rising sea levels. Loss estimates due to climate change are higher than previously thought, exacerbated by high population densities and economic activities along extensive coastlines. Between 2008 and 2020, floods, droughts, and fires caused food crop losses amounting to \$21 billion [17]. COVID-19 brings out a domino effect that could affect food security in the long term. The dynamics of COVID-19 that threaten food security and nutrition are shown in Figure 2.

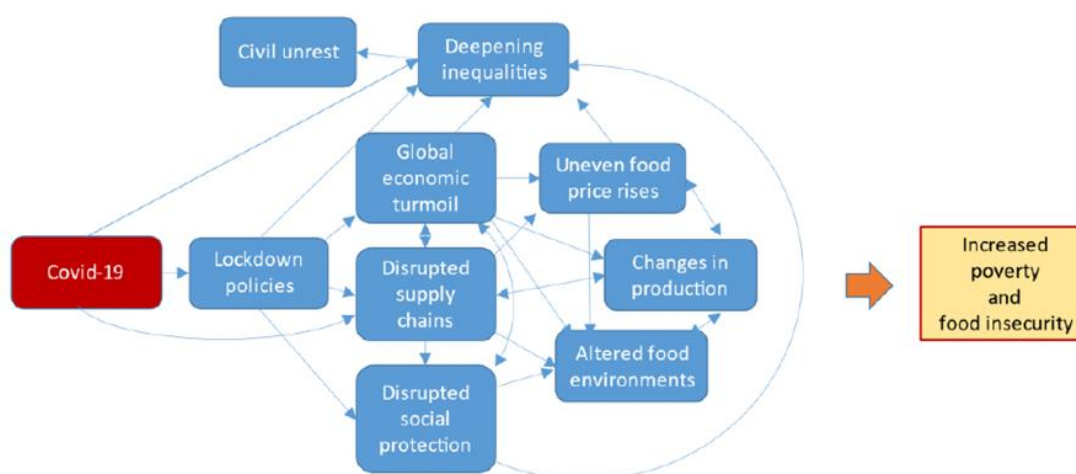


Figure 2: The Dynamics of COVID-19 that Threaten Food Security and Nutrition [11]

In ASEAN, the pandemic highlighted the necessity for resilient and sustainable food systems to ensure the availability, accessibility, and affordability of safe and nutritious food for the people. During pandemic COVID-19, the prevalence of moderate or severe food insecurity in the total population of ASEAN (Figure 3) increased by 2.40% from the pre-COVID-19 level. This situation indicates that the

domino effects of COVID-19 such as lockdown, economic slowdown, trade restrictions and health issues disrupted food access.

ASEAN is off track to meet UN agreed global Sustainable Development Goals (SDGs) for zero hunger by 2030, with the COVID-19 pandemic exacerbating vulnerabilities and uncertainties [14, 29]. The Pandemic COVID-19 has revealed a significant weakness in ASEAN farming the substantial and unsustainable imports of raw materials for feed and fertilizers from another region. The price hikes for those inputs exacerbated the problem in the agriculture sector within the region [24]. The pandemic has underscored the vulnerability of supply chains, including ASEAN economies. The adverse impact of the pandemic on livelihoods, education, food security, and nutrition, along with worsened poverty, vulnerabilities, and inequalities, could ultimately reverse the region's progress in reducing poverty and hinder efforts to achieve inclusive and sustainable development in the long term [21].

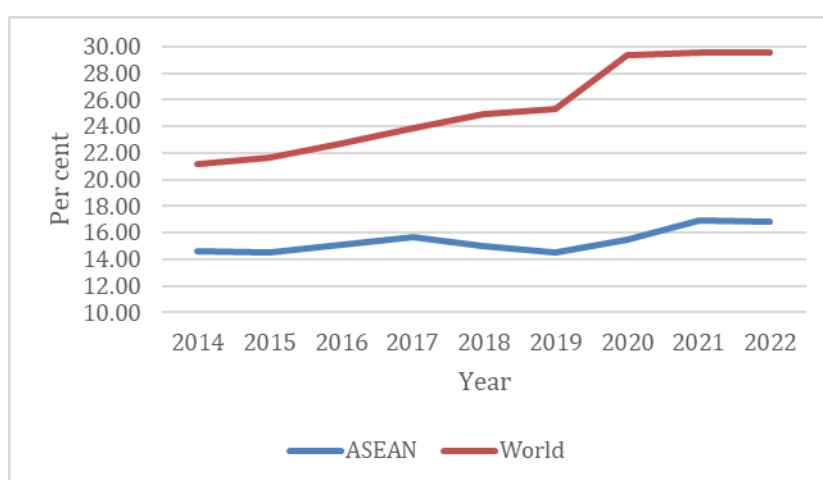


Figure 3: Prevalence of Moderate or Severe Food Insecurity In the Total Population [7]

The pandemic caused massive lockdowns around the world. This condition disrupted the supply of labor and agricultural inputs such as fertilizer. The absence of fertilizers can significantly reduce yields, while the lack of stress-resistant seeds and pesticides leaves crops more vulnerable to droughts, floods, pests, and diseases. The lockdowns also affected the disruption of market access. Disruption in market access increases the food prices, it could place food beyond the grasp of poorer populations, thus affecting their food security. Increased hunger and malnutrition are expected in many ASEAN Member States [19]. ASEAN is a net exporter of food and beverages. Brunei, Cambodia, Philippines, and Singapore are net importers while the rest are net exporters. COVID-19 directly affected the disruption of food supplies for the domestic in ASEAN. This crisis is more about logistic matters, than the food shortage [22].

3.2. POST-COVID-19 POLICY STRATEGIES IN ASEAN

In the post-COVID-19 era, ASEAN countries are urged to enhance regional cooperation, invest in innovative solutions, and promote sustainable agriculture. These efforts aim to build resilient and secure food systems capable of withstanding future shocks and supporting the well-being of ASEAN's growing population [18]. The unexpected impact of COVID-19 highlights the necessity for a departure from "business as usual" policies toward a more forward-thinking approach that prioritizes investment in productivity, sustainability, and resilience of the global food system. The COVID-19 pandemic has emphasized the need for a strong and resilient food system that operates effectively under any conditions, ensuring that all citizens have access to an adequate and affordable food supply [24]. Developing countries are highly diverse in various aspects of food security. Therefore, different types of food-insecure nations require tailored policy interventions to enhance their nutrition status [16].

Enhancing food security has become a critical agenda for ASEAN to mitigate the impacts of future crises and build resilience. Food security integration has been prioritized in ASEAN as a collective effort to build resilience against possible crises [5].

3.2.1. ASEAN Comprehensive Recovery Framework

COVID-19 made ASEAN recognize the importance of addressing unprecedented crises requires unprecedented actions not only within the region but also beyond. In this situation, strong coordination and cooperation among ASEAN, its stakeholders and external partners becomes important. A comprehensive recovery plan is crucial. ASEAN's recovery strategies focused on five broad strategies that looked as the most impactful for the recovery process and its aftermath. The five strategies are as follows (1) Enhancing health systems; (2) Strengthening human security; (3) Maximizing the potential of intra-ASEAN market and broader economic integration; (4) Accelerating inclusive digital transformation; (5) Advancing towards a more sustainable and resilient future. All these strategies will enhance the food security and nutrition in the region. To support this strategy, the priorities will emphasize advancing sustainability across various sectors in ASEAN, with a particular focus on investment, energy, agriculture, green infrastructure, disaster management, and sustainable financing.

Under the broad strategy of strengthening human security; Ensuring food security, food safety, and nutrition becomes a key priority area to guide ASEAN's recovery efforts. The ASEAN Ministers on Agriculture and Forestry committed to ensuring a sustainable supply of safe, nutritious, and affordable food during the pandemic while minimizing disruptions in regional food supply chains by keeping markets open and facilitating the transport of agricultural products. They also pledged to strengthen the ASEAN Food Security Information System (AFSIS) and ASEAN Plus Three Emergency Rice Reserve (APTERR) to reduce price volatility and ensure adequate food reserves and timely market information.

Under the broad strategy of advancing towards a more sustainable and resilient future, there are several actions to strengthen food security as follows improving the agriculture sector's productivity and strengthening the food value chain approach to food safety, security and quality by implementing relevant activities such as promoting climate-smart agriculture (CSA), implementing ASEAN Good Agricultural Practices, ASEAN Good Aquaculture Practices, and CSA practices, and developing strategies for promoting Public and Private Partnership (PPP). Building high-value food industries, such as processing, packaging, and retailing, is essential for capturing more value in agriculture and raising incomes for farmers and agricultural workers [21].

3.2.2. Long-term Food Security Policy in ASEAN

ASEAN has paid attention to food security since 1979 by establishing The ASEAN Food Security Reserve Board (AFSRB). It was created to assess food security at various levels. To support AFSRB, through the collaboration between ASEAN plus Three Countries (Japan, the Republic of China, and the Republic of Korea) developed the ASEAN Food Security Information System (AFSIS) and the ASEAN Plus Three Emergency Rice Reserve (APTERR) to enhance regional food security cooperation through systematic data collection, analysis, dissemination, and other activities [28].

To ensure long-term food security and improve the livelihoods of farmers in ASEAN, ASEAN Ministers of Agriculture, Fisheries, and Forestry (AMAF) adopted the formulation and implementation of the ASEAN Integrated Food Security (AIFS) Framework, and two Strategic Plans of Action on Food Security (SPA-FS) 2015-2020 extended 2021-2025. This framework and strategy focus on a strategic set of measures based on strong commitments and ownership among all ASEAN Member States (AMS) [23]. AIFS framework plays a role as a regional umbrella for food security initiatives. In this framework, two key mechanisms emphasised are APTERR and AFSIS. As APTERR only focused on rice, this mechanism could expand the coverage of target commodities such as maize, soybean, sugarcane, and

cassava which are important to regional food security. Moreover, to provide more stable data information from AFSIS, this project could be transformed into a permanent mechanism like The APTERR Secretariat [13].

Adopted by the 42nd AMAF on 21 October 2020, ASEAN Member States agreed to jointly address the multiple challenges in food security, food safety and nutrition as follows:

- Strengthening resilience against climate change
- Addressing the food and nutritional requirements of populations, particularly those in remote, rural, and vulnerable regions
- Boosting sustainable agricultural production and productivity
- Developing sustainable approaches to the growing competition for natural resources
- Providing solutions and recommendations to tackle food and nutrition insecurity during pandemics or disease outbreaks

This framework consists of 9 strategic thrusts that consist of various programs to increase collaboration and cooperation between ASEAN countries, strengthen the functions of agencies related to food security in ASEAN, increase the promotion of sustainable agriculture, and improve food and agri-based industry to enhance food security.

3.2.3. ASEAN Leaders Declaration on Strengthening Food Security in Response to Crises

Given the background of building a rapid response to crises and strengthening sustainable food and agricultural systems for the long term, ASEAN Member States consolidated the policy recommendations and unified roles of all relevant sectors to promote food security in the region through ‘ASEAN Leaders’ Declaration on Strengthening Food Security in Response to Crises’. This initiative is crucial in the face of geopolitical tensions, environmental issues, climate change, and the challenging recovery post-COVID-19 pandemic. This Leaders Declaration gathered AMS committed to joint action whenever crises happened in ASEAN.

The ASEAN Leaders’ Declaration consists of two sections as follows; (i) Rapid actions for food security and nutrition in response to crises and (ii) Strengthen preparedness for long-term resilience and sustainability of agri-food systems. ASEAN Leaders recognized the critical role of sustainable agriculture and food systems in ensuring food availability, accessibility, and affordability. Through the declaration, ASEAN committed to enhancing resilience against crises, such as global population growth, climate change, natural disasters, the COVID-19 pandemic, and geopolitical tensions. The declaration reaffirmed commitments to global and regional food security goals, including those outlined in the ASEAN Integrated Food Security Framework and Strategic Plan of Action on Food Security [25].

In regard to addressing food security and nutrition crises, ASEAN Leaders promise to take collective action. These include exploring and encouraging the development of local resource-based food reserves in member states, improving the productivity of agri-food systems by addressing immediate bottlenecks in inputs and logistics, and enhancing food supply chain resilience. They also committed to ensuring unimpeded trade of agri-food products, strengthening the ASEAN Plus Three Emergency Rice Reserves mechanism, and bolstering social welfare programs, including emergency food assistance. The overarching goal is to improve food security and nutrition, especially for the most vulnerable populations, while reinforcing regional cooperation and sustainability. Moreover, ASEAN is also committed to enhancing collaboration with the private sector, international organisations, and think tanks through engagement with relevant initiatives.

3.2.4. ASEAN Regional Guidelines for Sustainable Agriculture in ASEAN

The ASEAN Regional Guidelines for Sustainable Agriculture in ASEAN was adopted at the 44th Meeting of ASEAN Ministers on Agriculture and Forestry on 25 October 2022 [24]. As the document that was adopted during COVID-19 period, this guideline considered the vulnerable impact of COVID-19 on food security. The COVID-19 pandemic has exposed a critical weakness in ASEAN agriculture. ASEAN is significantly reliant on unsustainable imports of raw materials for feed and fertilizers from other regions. The guideline emphasizes the importance of enhancing agricultural input production from available resources within ASEAN, such as agriculture biomass and food waste. This approach promotes circular agriculture, reduces the cost of farming inputs, and enhances the competitiveness of ASEAN agricultural products. Moreover, the guideline also identifies policies, best practices, and incentives necessary to implement the solutions at the appropriate scope. This guideline outlined five principles and recommended 28 key strategies to boost sustainable agriculture in ASEAN.

The five key principles in guidelines balance the social, economic and environmental dimensions of sustainability as follows:

1. Improving efficiency in the use of our resources.
2. Conserving, protecting, enhancing natural ecosystems, promoting and enhancing nature resources and communities.
3. Protecting and improving rural livelihoods and social well-being.
4. Enhancing the resilience of people, communities and ecosystems, and
5. Promoting good governance of both natural and human systems [24]

The principles and key strategies serve as a foundation for crafting regional and national policies, strategies, programs, regulations, and incentives aimed at transforming agriculture to be more economically productive, viable, environmentally responsible, socially inclusive, and sustainable [12].

Through the key strategies in this guideline, ASEAN is trying to ensure food security within region as follows:

1. Exploring the widespread use of sustainable agriculture and food system within region. These initiatives include boosting aquaculture and production without expanding the land, safeguarding and restoring natural ecosystems, enhancing fish supply through better management of wild fisheries and aquaculture, and cutting greenhouse gas emissions from agriculture and food processing.
2. Facilitating funding with productive resources finance and services by providing incentives for ecosystem services. This initiative is designed to support farmers in adopting sustainable agricultural practices that enhance environmental health and strengthen long-term food security.
3. To enhance food production and develop food security in ASEAN, efforts should prioritize sustainably maximizing food output from already cleared areas, focusing on increasing productivity within the existing arable land.

Key milestone for improving food security could be to optimize the use of agricultural land while advancing farming technologies and increasing investments in agricultural infrastructure [16]. Ensuring food security in ASEAN is highlighted as a key strategy that needs to be prioritized in the mid long-term strategy and broader environment strategy [12].

3.2.5. ASEAN Regional Guidelines on Promoting Climate-Smart Agriculture (CSA) Practices Volume 3

ASEAN Regional Guidelines on Promoting Climate-Smart Agriculture (CSA) Practices Volume 3 is a practical guide that will provide guidance for AMS in planning the scaling-up of CSA programs, land use and rural development. proactively respond to the emerging impacts of climate change on social, environmental and economic aspects of food security. This guideline also adapted effectively to the challenges posed by COVID-19 pandemic.

This guideline provides several initiatives that directly respond the COVID-19 as follows:

1. Climate-Smart Village (CSV) Approach

The Climate-Smart Village (CSV) approach is used to identify, test and promote CSA in the community reflecting no one-size-fits-all approach in climate change adaptation in communities dominated by smallholder agriculture. The CSV approach naturally contributes to the local food system by using an end-to-end method that focuses on the entire process, from household consumption to market sales, demonstrating a comprehensive understanding of food systems. This approach's success is largely due to its focus on smallholder farmers. The COVID-19 pandemic helped ASEAN to understand the value of smallholder farmers to help resilience [26].

2. Direct-Seeded Rice (DSR) System Approach

COVID-19 pandemic made the labor shortage even worse in many countries. It also affected people's livelihoods including their income. DSR is one of COVID-safe strategies using drones, GPS and sensors will reduce labor requirements. DSR enables food system to sustain rice production even when facing water shortages, which are expected to be worsened in the future due to climate change. DSR is a CSA approach that can reduce labour costs and GHG emissions. DSR may reduce labour costs by 42% compared with puddled transplanted rice (PTR) and machine-transplanted rice [4].

3. Climate-Resilient Tilapia Farming Practice (CRTFP)

Aquaculture production serves as a major source of animal protein that helps AMS to achieve food and nutrition security and provides a vital economic driver in several AMS. COVID-19 impacting the availability of aquaculture input in ASEAN. The CRTFP utilise locally available resources as alternatives for these inputs. This approach integrates aquaculture technologies, agrometeorological tools, and capacity building for producers to tackle the diverse challenges climate change poses to tilapia aquaculture. It also strengthens the production aspect of aquaculture by ensuring sustainable supplies of tilapia to support subsistence, livelihoods, and greater economies of scale.

4. Low-Emission Animal Production System (LEAPS)

The livestock sector contributes to ASEAN countries' incomes and livelihoods, assets, nutrition, and food security. It also contributes to reducing poverty and enhancing food security in the region (Strategic Plan of Action for ASEAN Cooperation in Livestock, 2016-2020) [20]. It is important to develop climate-smart animal production systems by building resilience to climate change while also contributing to its mitigation. Low-Emission Animal Production System (LEAPS) comprises livestock mitigation technologies that improve sustainability and reduce environmental impact. It will optimise production in terms of livestock outputs as well as other dimensions for the economic, social and environmental well-being of communities. COVID-19 disrupted the livestock input through market closure during the lockdown. LEAPS helps the farmers use locally grown resources that meet the nutritional needs of the animals.

4. CONCLUSION AND RECOMMENDATIONS

Food security is a condition where everyone has continuous physical, social, and economic access to enough safe and nutritious food to meet their dietary needs and preferences for an active and healthy life. The agriculture sector as a sector that is crucial in ASEAN holds as a main actor in food security. The COVID-19 pandemic brings out unprecedented situations in the world including this region affecting economic slowdown, trade restrictions policy, and market disruptions that caused price hikes, agriculture input shortage, and other dynamic factors that threaten food security and nutrition in ASEAN. ASEAN countries are urged to enhance regional cooperation, invest in innovative solutions, and promote sustainable agriculture. Food security integration has been prioritized in ASEAN as a collective effort to build resilience against possible crises. ASEAN exemplifies its strong commitment to enhancing food security in the region by taking rapid action through developing and implementing Leaders' Declarations, Guidelines, and Frameworks. These documents encourage collaboration on rapid actions in response to crises within ASEAN and related development partners including private sectors,

strengthening the function of food security-related agencies in ASEAN, accelerating the transformation of sustainable agriculture and digitalization, enhancing market connectivity, promoting investment in agricultural research and development, and facilitating access to finance.

REFERENCES

- [1] ASEAN CSR. Food Security & Sustainable Agriculture, <https://www.asean-csr-network.org/c/programs/sustainable-agriculture: 2022> [accessed 14 August 2024].
- [2] ASEAN Ministers on Agriculture and Forestry (AMAF). ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security (SPA-FS) 2021-2025. <https://asean.org/wp-content/uploads/2020/11/42-AIFS-Framework-SPAFS-Final-13-July-2020.pdf>; 2021 [accessed 14 August 2024].
- [3] ASEANStats. *Role of Agriculture, Forestry, and Fishing Industry in ASEAN Economy*. ASEAN Statistical Brief. 7, 2024.
- [4] K.P. Devkota, C.M. Khanda, S.J. Beebout, B.K. Mohapatra, G.R. Singleton, and R. Puskur, *Assessing alternative crop establishment methods with a sustainability lens in rice production systems of Eastern India*. Journal of cleaner production, **244**, 2020.
- [5] Economic Research Institute of ASEAN and East Asia. Ensuring Food Security in Post Pandemic ASEAN. Event Reports, https://www.eria.org/uploads/media/ASEAN-on-Point/2022_Sep_AoP_Report.pdf; 2022 [accessed 14 August 2024].
- [6] FAO, IFAD, UNICEF, WFP and WHO. *The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum*. Rome, FAO. <https://doi.org/10.4060/cc3017en>; 2023 [accessed 18 July 2024].
- [7] FAOSTAT. Suite of Food Security Indicators, <https://www.fao.org/faostat/en/#data/FS>; 2024 [accessed 18 August 2024].
- [8] Food and Agriculture Organization of the United Nations (FAO). *An introduction to the basic concepts of food security*. Rome: FAO, 2008.
- [9] Food and Agriculture Organization of the United Nations (FAO). *Impacts of COVID-19 on food security and nutrition: developing effective policy responses to address the hunger and malnutrition pandemic*. HLPE issues paper 3rd Ed. <http://www.fao.org/cfs/cfs-hlpe>; 2021.
- [10] Food and Agriculture Organization of the United Nations (FAO). World Food Situation. <https://www.fao.org/worldfoodsituation/foodpricesindex/en/>; 2024a [accessed 18 July 2024].
- [11] HLPE Joint Steering Committee, *Impacts of COVID-19 on food security and nutrition: developing effective policy responses to address the hunger and malnutrition pandemic*, HLPE Paper 3rd Ed. Rome: HLPE Secretariat, 2021.
- [12] M. Kozono, K. Yamada, and S. Mustaqimatud, *Building and Enhancing Sustainable Agriculture and Food Systems in ASEAN: A Preliminary Scoping Study (No. PB-2023-10)*. 2023.
- [13] M. Kozono, *The Comprehensive Asia Development Plan 3.0 (CADP 3.0): Towards an Integrated, Innovative, Inclusive, and Sustainable Economy. Chapter 16 Food and Agriculture*. Jakarta: ERIA, 2022

- [14] W. Nelles, and P. Ferrand, P., eds. *Higher education for sustainable agriculture and agrifood systems to meet the Sustainable Development Goals in Southeast Asia: Challenges, opportunities and policy options for the Association of Southeast Asian Nations*. Policy brief #1. Bangkok, FAO & Chulalongkorn University. 2020.
- [15] OECD. OECD-FAO Agricultural Outlook 2022-2031, Paris: OECD Publishing, <https://doi.org/10.1787/f1b0b29c-en>; 2022 [accessed 14 August 2024].
- [16] K. Pawlak, and M. Kołodziejczka, *The role of agriculture in ensuring food security in developing countries: Considerations in the context of the problem of sustainable food production. Sustainability*, **12 (13)**, 2020.
- [17] D.S. Randhawa, *The challenge of food (In) security in ASEAN*. RSIS Commentaries, 015-24. S. Rajaratnam School of International Studies, NTU Singapore. 2024.
- [18] P. Sundram, *Food security in ASEAN: progress, challenges and future*. *Frontiers in Sustainable Food Systems*, **7**, 2023.
- [19] P.P. Teng, M. Caballero-Anthony, and J.M.L. Montesclaros, *ASEAN responses to COVID-19 for assuring food security*. In *Advances in food security and sustainability*. Elsevier **6**, 83-118, 2021.
- [20] The ASEAN Secretariat. *ASEAN Strategic Plan of Action For Cooperation and Livestock (2016-2020)*. Endorsed by the SSOM-37th AMAF. 2016.
- [21] The ASEAN Secretariat. *ASEAN Comprehensive Recovery Framework*. Jakarta: The ASEAN Secretariat, Community Relations Division (CRD), 2020.
- [22] The ASEAN Secretariat. *Economic Impact of COVID-19 Outbreak on ASEAN*. ASEAN Policy Brief, April 2020.
- [23] The ASEAN Secretariat, ASEAN Integrated Food Security (AIFS) Framework and Strategic Plan of Action on Food Security (SPA-FS) 2021-2025, <https://asean.org/asean-integrated-food-security-aifs-framework-and-strategic-plan-of-action-on-food-security-spa-fs-2021-2025-2/>; 2020 [accessed 18 July 2024].
- [24] The ASEAN Secretariat. *ASEAN Regional Guidelines for Sustainable Agriculture in ASEAN*. Adopted at the 44th Meeting of the AMAF. 2022.
- [25] The ASEAN Secretariat. ASEAN Leaders' Declaration on Strengthening Food Security and Nutrition in Response to Crises, <https://asean.org/asean-leaders-declaration-on-strengthening-food-security-and-nutrition-in-response-to-crises/>; 2023 [accessed 14 August 2024].
- [26] The ASEAN Secretariat. *ASEAN Regional Guidelines for Promoting Climate-Smart Agriculture (CSA) Practices Vol. 3*. Jakarta. 2023.
- [27] The ASEAN Secretariat. About ASEAN, <https://asean.org/about-asean>; 2024 [accessed 18 July 2024].
- [28] The ASEAN Secretariat. ASEAN Food, Agriculture, and Forestry. Retrieved from <https://asean.org/our-communities/economic-community/enhanced-connectivity-and-sectoral-development/asean-food-agriculture-and-forestry/>; 2024 [accessed 18 July 2024].

[29] UN DESA. *Sustainable development outlook 2020 achieving SDGs in the wake of COVID-19: scenarios for policymakers*. New York: Department of Economic and Social Affairs, 2020.

[30] World Summit on Food Security (WSFS). Declaration of the World Summit on Food Security. <https://www.mofa.go.jp/policy/economy/fishery/wsfs0911-2.pdf>; 2009.