

JUNE 2024

REPORT ON ASEAN FOOD SYSTEMS SUSTAINABILITY





About CropLife Asia

CropLife Asia is a non-profit society and the regional organization of CropLife International, the voice of the global plant science industry. We advocate for a safe, secure and sustainable food supply enabled by innovative agriculture. CropLife Asia supports the work of 15 member associations across the continent and is led by six member companies and one associate member company at the forefront of crop protection, seeds and/or biotechnology research and development. For more information, visit us at www.croplifeasia.org.



About EU-ASEAN Business Council

The EU-ASEAN Business Council (EU-ABC) is the primary voice for European businesses within the ASEAN region and is the only organisation that operates in the intersection of the private and public sectors between ASEAN and Europe. We are formally recognised by both the European Commission, and we are an accredited entity under Annex 2 of the ASEAN Charter.

Independent of both bodies, the Council has been established to help promote the interests of European businesses operating within ASEAN and to advocate for changes in policies and regulations which would help promote trade and investment between Europe and the ASEAN region. As such, the Council works on a sectorial and cross-industry basis to help improve the investment and trading conditions for European businesses in the ASEAN region through influencing policy and decision makers throughout the region and in the EU, as well as acting as a platform for the exchange of information and ideas amongst its members and regional players within the ASEAN region.

Report on ASEAN Food Systems Sustainability



Background

Background: On November 7-8, 2023, CropLife Asia and the EU-ASEAN Business Council hosted the first ASEAN Food Systems Sustainability Workshop in Jakarta. One of the central discussions of the workshop was identifying a sustainable path forward for ASEAN agriculture as the EU – which remains a significant market for ASEAN exporters – pushes a one-size fits all approach on agriculture and the environment. The two-day event brought participation from over 20 ASEAN Member State (AMS) officers across the ASEAN Sectoral Working Group on Crops (ASWGC), ASEAN Sectoral Working Group on Livestock (ASWGL), and the ASEAN Working Group on Forest Management (AWGFM) in person as well as over 150 regional food and agricultural sector stakeholders online. Workshop conversations centered around the EU Green Deal on ‘Day1’ and the ASEAN Regional Guidelines for Sustainable Agriculture in ASEAN as well as other regionally relevant sustainability topics on ‘Day 2’; and they were comprised of presentations and panel discussions by a diverse group of stakeholders from the United Nations’ Food and Agricultural Organization (FAO), the Mekong Institute, KPMG, the Global Farmer Network, Bayer, COP28 UAE, ISAAA, Control Risks, and Bryant Christie Inc. among other organizations. The workshop’s objective was to help find a path forward for greater public-private sector collaboration in the advancement of more sustainable ASEAN agriculture and food systems.

The report that follows summarizes proceedings from the Workshop.

An Overview



Though a variety of perspectives, data and regional/international examples were provided, the overall tone and higher-level takeaway from the Workshop were clear: sustainability across the larger food and agriculture sectors is not a one-size-fits-all proposition. Additionally, accelerating the adoption of more sustainable food systems in an AMS should complement the pursuit of national food security, trade and climate resiliency aspirations – not put them at greater risk. There was also general agreement that greater collaboration was needed between the public and private sectors to realize more sustainable regional food and agriculture systems; access to all agricultural innovation tools can and should be supported by the EU and AMS, as well as their development and trading partners ; and that individual AMS engagement is needed with respect to implications to regional food systems resulting from the EU Green Deal if realized as currently constructed.

Developed countries, primarily the EU, are leading a highly-prescriptive and environmentally-focused approach to agriculture that may be appropriate for wealthy countries but may have negative impacts on developing countries.

The EU Green Deal is a regulatory framework established by European policymakers that primarily addresses greenhouse gas emissions. It also contains a significant agriculture component ('Chemicals Strategy for Sustainability') that, inter alia, seeks to reduce pesticide use and promote organic farming by setting mandatory pesticide targets and agricultural practices.

There have been vocal objections to Green Deal policies from farmers, farmer groups and the agrifood sector across the European Union.

The Organisation for Economic Co-operation and Development (OECD) has noted the Green Deal and the broader EU regulatory approach could have an impact on innovation, and therefore output and productivity. The same concerns have been highlighted by researchers at other European institutions.



The OECD has recommended that the EU assess the impact of its regulatory environment to ensure it has an integrated approach to policymaking that will not hinder innovation and research, which is key to making environmental regulation effective.

The approach may be a suitable policy framework for wealthy developed countries with high levels of technical and financial support for the agricultural sector, but a similar approach in developing countries poses clear risks – chiefly:

- Limiting access to innovation in agriculture; and
- Reducing output and risking objectives of alleviating poverty, eradicating hunger and ensuring food security.

Introducing a similar approach in developing countries should only be considered where:

- A full economic and social impact assessment is taken, particularly for areas where agriculture contributes significantly to household income and economic welfare;
- There are financial mechanisms readily available to mitigate any negative economic impacts and losses to farmer incomes; and
- There are defined policies and policy frameworks to support implementation, which include technical and technological support.

Among the EU measures is the use of lowered MRLs (maximum residue levels). MRLs are standards used to help facilitate trade among countries. The FAO provides internationally-agreed benchmarks for MRLs under the Codex Alimentarius. The EU has chosen to unilaterally move beyond these benchmarks for environmental purposes.

This has raised concerns among multiple trading partners at the World Trade Organization (WTO). Broadly, the concerns are that:

- The lower MRLs have no basis in science and may not result in better environmental outcomes in non-EU countries; and
- They will operate as a trade barrier for exports to the European Union.

There are additional concerns that there will be a level of replication among the EU’s trading partners:

- If countries regulate similarly to maintain access to EU markets, it could be detrimental to the needs of their farming community.
- If the EU will promote ‘mirror clauses’ in trade agreements to replicate EU MRLs or removal of key molecules from the farmers toolbox; and
- This will put food production in developing countries at risk along with farmer livelihoods.

ASEAN should carefully consider the potential implications of proposals that follow or replicate the EU regulatory path, ensuring they align with broader development goals.



- The ASEAN socio-economic context is diverse, with varying levels of economic development and high population growth;
- Agriculture is also diverse with high numbers of smallholder farmers, small-sized farms and a sector that has not reached its potential; and
- The climatic and pest pressures faced by ASEAN farmers is different from that of EU and requires differentiated solutions to ensure successful operation.

Restricting innovative or conventional agricultural approaches that are internationally-accepted before they have been able to contribute to the region's development – and other environmental goals – may be premature.

There are approximately 100 million smallholder farmers across the ASEAN region; their farms often have lower productivity due to lack of access to technology or agricultural extension services.

A rapid prohibition on innovations may prompt further agricultural land expansion by smallholders, increasing risks of deforestation. This would undermine deforestation and climate goals within the region, as well as the EU's own goal of reducing deforestation in tropical countries.

Japan and ASEAN member governments are pushing for an approach that is more collaborative and focuses on continual improvement at the farm, innovation and regulatory levels.

In other countries the approach to sustainability of imports and optimizing environmental outcomes in partner countries has been less prescriptive.

- Japan has introduced its 'MIDORI Strategy' approach, which has a similar target for lowering chemical use domestically;
- Its approach to imports has been to target the sustainable sourcing of import materials; and
- It has consulted with exporting countries to determine the appropriate sustainability benchmarks that will not have a negative social and economic impact on partners.

ASEAN workshop stakeholders were more in favour of sustainability frameworks and schemes that align with national development goals, and ensuring that AMS governments are making their position known to EU officials. Rather than setting specific targets for MRLs or similar, there is greater interest in a model of continuous improvement. This comprises:

- Reducing use of highly hazardous pesticides (HHPs) where possible by assessing and mitigating risks associated with their use;
- Ensuring that regulatory approaches do not undermine either access to innovative products or broader environmental goals; and
- Ensuring that the sector follows best practices in implementation, with strengthened collaboration among industry, farmer groups and regulators.



Introduction: The EU Green Deal



Background and Overview

The European Green Deal is an environmental policy framework initiated by the European Union (EU) in 2019.¹ Its broader conceptual objective is a decoupling of economic growth from resource use. Its key strategy is zero carbon emissions from the EU by 2050. Alongside that it aims to protect, conserve, and enhance the EU's natural capital, and protect the health and well-being of citizens from environment-related risks and impacts.

Consequently, the Green Deal is a 'holistic' approach, encompassing policy initiatives across climate, energy, transportation, agriculture, construction and environment. Its cornerstone is to make the EU's climate law binding, ensuring that all EU countries collectively work towards achieving the 2050 climate neutrality goal, covering building standards, transport emissions, energy production and consumption. Additionally, the European Commission is working through the Joint Task Force to coordinate and implement these policies effectively, ensuring alignment across member states and addressing any challenges that arise.

The agricultural and environmental components of the Green Deal are under the 'Farm to Fork Strategy'. It sets ambitious targets for the reduction in use of fertilizers and chemicals in agriculture, aiming for a 20% reduction in the use of fertilizers and a 50% reduction in the use and risk of chemical pesticides by 2030. These targets are part of the EU's broader effort to mitigate the environmental and health impacts associated with chemical inputs in agriculture, such as water pollution, soil degradation, and loss of biodiversity. These are summarized below:

Objective	Target
Reduce pesticides use and risk	Reduction of use / risk by 50% by 2030 (e.g. chemical pesticides)
Reduce fertilizer use and risk	Reduction of use / risk by 20% by 2030
Increase EU organic farming	25% of agricultural land under organic agriculture by 2030
Lower MRLs	Environmental factors introduced in the MRI-3 framework
Revise GM imports regulation	Sustainability requirements for approval of GM crop imports
Genome-editing regulation	Opportunity for pragmatic regulatory framework for NGTs
Provide guidance on biologics	Facilitation market placing of pesticides containing biological actives
Increase diversity landscape	Sustainable use directive (IPM5), CAP (land set aside)
Install nature restoration targets	Proposal for nature restoration targets

The proposals have received a contentious response from European farmers.

November 2023

Proposal for the 50% reduction in fertilizers was voted down by European Parliament.

February 2024

The proposal – Sustainable Use of Pesticides Regulation (SUR) – was withdrawn completely by the European Commission.

The proposals have received a contentious response from European farmers. In November 2023, the proposal for the 50% reduction in fertilizers was voted down by European Parliament. In February 2024, the proposal – Sustainable Use of Pesticides Regulation(SUR)² – was withdrawn completely by the European Commission.

EU stakeholders are acutely aware that the imposition of Green Deal regulations will impact the competitiveness of its agricultural sector. The original Green Deal communication indicated that the European Union would be working with trading partners to “encourage” the adoption of similar regulations and requirements at the domestic level. The communication states that the EU would recognize “the need to maintain its security of supply and competitiveness even when others are unwilling to act,” and that it would undertake “bilateral efforts to induce partners to act and to ensure comparability of action and policies.”

This lack of competitiveness has been further underlined by the OECD. In 2023, the OECD noted that the current policy approach and overall lack of policy coherence in the European Union on agriculture – with particular reference to pesticides – may be hindering innovation in agriculture. It noted that there were not necessarily incentives to reduce or improve the use of existing pesticides; this has been combined with a desire to ban certain chemicals.

The EU approach on agriculture and its impact on trade relations has understandably been met with considerable concern by exporting nations, particularly in Southeast Asia, and the impact it would have on exports to the European Union.

EU MRLs and Global Architectural

2

Key Points

- The EU's application of stringent MRLs for pesticide residues with imported agricultural goods impacts non-EU countries, necessitating adherence to EU standards to access its market.
- The EU's 'Farm to Fork Strategy' aims to reduce environmental risk from pesticides by lowering MRLs for both domestic and imported products, significantly affecting Southeast Asian exporters to the EU.
- The EU's pesticide regulations, including bans on certain chemicals like neonicotinoids, indirectly encourage exporting countries to comply with EU standards, leading to challenges within the WTO by countries affected by these MRL adjustments.

A maximum residue level (MRL) is the highest levels of pesticide residues that are legally permitted in food products, as well as animal feeds when pesticides are applied correctly. MRLs are not safety limits; their function is as a control mechanism to ensure a product has been correctly used, according to its label.

These levels are set by regulatory authorities at the national level and are based on scientific assessments and help facilitate trade among countries. The international benchmark for MRLs is the Codex Alimentarius, which is established by the United Nations Food and Agriculture Organization.

The application of MRLs is particularly relevant for non-EU countries exporting agricultural goods to the EU. The EU's MRL standards require exporters to adhere to comparable pesticide use practices to ensure their products are eligible for the EU market.

The European Union's 'Farm to Fork Strategy' and specifically the SUR departed from the international consensus on MRLs in a particularly significant way.

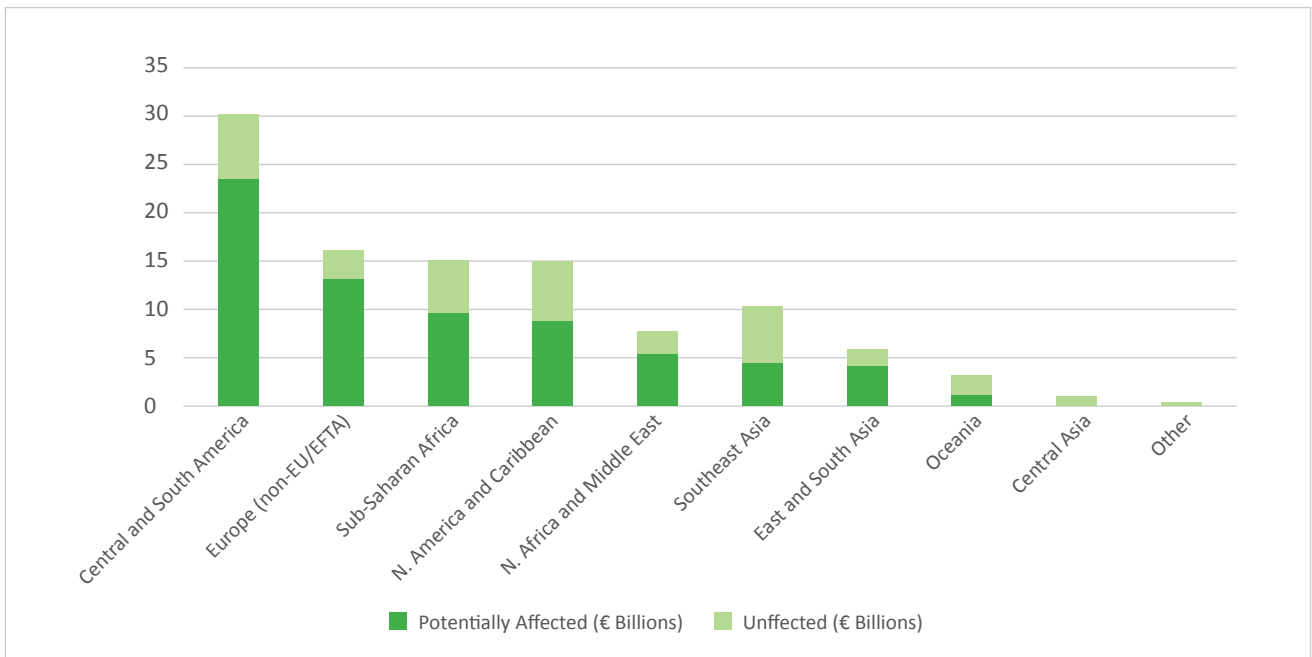
The Green Deal intended approach is to reduce the *environmental* risk of pesticides by reducing their environmental presence within the EU. However, it is using the lowering of MRLs – across both domestically produced and imported products – as a means to lower that risk.

This has broad implications for countries exporting commodities and food products to the European Union.

Southeast Asia is a large exporter of agricultural commodities and food to the European Union. Just under half of those exports would likely be affected by any changes to MRLs.

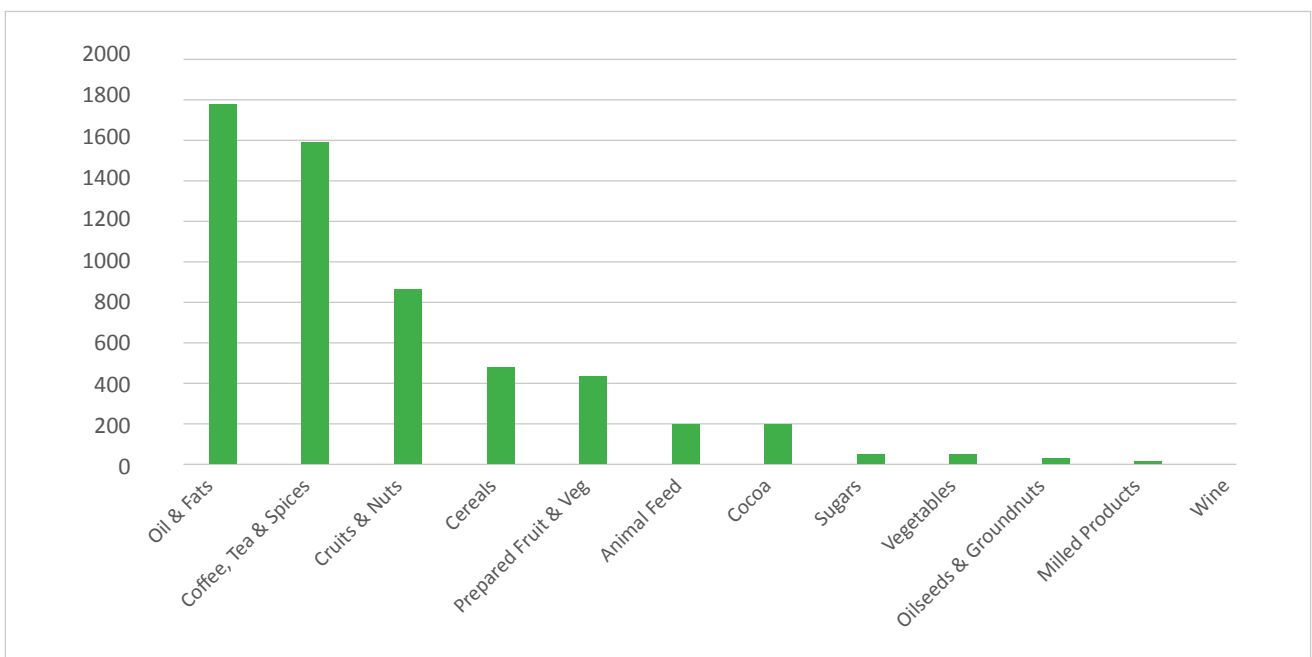


Regional exports of agricultural commodities impacted by EU MRL regulations



Source: Bryant Christie

Imports of agricultural commodities impacted by EU MRL regulations



Source: Bryant Christie

As the graphic illustrates, the largest of these commodity groups are: oils and fats; coffee, tea and spices; and fruits and nuts. Additionally, the largest exporters affected are Vietnam, Indonesia and Malaysia.

Despite the SUR proposal being withdrawn, MRLs have been particularly contentious among exporting countries. Proposed reductions in MRLs from the EU prompted a strong reaction within the World Trade Organisation, particularly from developing countries and countries utilising tropical agriculture.

In addition to the SUR, the EU’s licensing regime for pesticides and chemicals has a parallel impact on MRLs. The EU is able to ban the use of particular chemicals – for environmental purposes -- in the EU agricultural sector by not renewing permits or licenses for the use of that particular chemical.

Theoretically, the ban of the use of that chemical should take place via ban on sale and manufacturing rather than via a MRL for marketed food products and commodities – which largely have no impact on the environment.

For example, in 2018, the European Union completely banned the use of neonicotinoids to protect bee populations within the EU. When the decision was taken, existing MRLs for imports for neonicotinoids were maintained. In 2023, these MRLs were restricted with an implementation date of 2026. The regulation indirectly bans the use of these substances in exporting countries if they are considering exporting to the EU. This decision was consequently challenged in the European Court of Justice (ECJ).

In the most recent Trade Policy Review of the European Union at the WTO, the secretariat noted that around half of the sanitary and phytosanitary (SPS) concerns raised by members concerned MRLs.

The bans on these products have been raised by a number of countries in Southeast Asia within the WTO.³ When the ban was first proposed, Indonesia noted:



“Non-EU countries have their own regulatory frameworks for assessing the risk of pesticides and their use, including on the environment and the risk to pollinators. Despite the draft Regulation does not oblige the non-EU countries to ban the use of clothianidin and thiamethoxam in their own territory, the lowering of the MRLs to the Limit of Quantification (LoQ) is an indirect measure to avoid the use of clothianidin and thiamethoxam by those countries that have different agricultural practices to control pests, resulting in different but safe residue levels.”

Similar responses to the original regulation were put forward by India, Japan, Brazil, Canada, Kenya and New Zealand, noting that:

- MRLs are not intended to be an environmental safety management tools; and
- Using MRLs for alternative purposes may have unintended consequences that could undermine the development and use of related international standards.

The European Union’s general policy approach is to export its regulations. Its partner countries carefully consider before following its regulatory path, as it has the potential to reduce productivity, output and innovation, as was raised in the *ASEAN Food Systems Sustainability Workshop*.

Impact of the EUDR on Exports to the EU

3

Key Points

- The EU Deforestation Regulation (EUDR), approved in 2023, mandates importers to verify their products, including palm oil and soy, have not contributed to deforestation post-2020, with implementation beginning in 2025.
- Developing countries, particularly Indonesia, express concerns over the EUDR's trade impacts, predicting significant effects on exports and smallholder farmers.
- The complexity and potential compliance costs of the EUDR have raised significant concerns among exporting nations, with estimates suggesting significant financial burdens on companies and a potential reduction in exports, especially for less developed countries.

The EU Deforestation Regulation (EUDR) was first proposed by the European Commission in 2021 and eventually approved by European lawmakers in 2023.⁴

The regulation aims to prevent the importation of commodities and products that have been produced using land that was deforested after 2020. In order to achieve this, EU authorities will require importers of a limited number of goods and commodities (principally palm oil, soybean, beef, coffee, cocoa, rubber and timber) to undertake due diligence by confirming:

- Geolocation information on the origin of the commodities and derivative products they are importing;
- Information that indicates the land was not deforested after December 31, 2020; and
- Information that indicates the commodities have been harvested legally.

EU authorities will utilize customs authorities in member states to perform checks and audits on imports of products and commodities. The details for the implementation of the regulation are yet to be determined, but the regulation is slated to come into effect at the beginning of 2025.

TRADE IMPACTS

Little modelling has been undertaken to assess the impact of the EUDR on trade flows.⁵ However, it is apparent that the regulation will operate as a non-tariff measure impacting trade. Developing country exporters have raised a number of concerns around the introduction of the EUDR, both within the WTO and through their own stakeholder consultation processes.

Indonesian senior officials have expressed concern that the regulation will impact around USD6.7 billion of national exports to the European Union, and that it will impact around 8 million smallholder farmers across rubber, timber, cocoa, coffee and vegetable oils.^{6 7}

Thailand's rubber industry is similarly concerned about the impact on the sector,⁸ and is undertaking a number of country-wide initiatives that will attempt to meet the compliance costs of the regulation (see below).

In a submission to the WTO,⁹ Indonesia also noted that environmental and climate-related trade measures should support, rather than hinder, the achievement of the UN Sustainable Development Goals (SDGs). The country emphasized that domestic policies aimed at addressing environmental or climate issues should not penalize WTO members, especially developing countries, based on unilateral assessments of environmental compliance. Indonesia advocated for policies grounded in scientific evidence and objective analysis to prevent arbitrary measures that could be perceived as disguised protectionism.

COMPLEXITY AND COMPLIANCE COSTS

Exporting countries have been particularly concerned about the complexity and the potential compliance costs associated with the EUDR. While EU lawmakers have emphasised the geolocation of the original commodity and assurances that those sites are deforestation free, that ignores the complexities associated with supply chains. These concerns have been raised by EU stakeholders also; agriculture ministers from 20 EU states have called for a delay to implementation,¹⁰ as have a coalition of EU agriculture and manufacturing groups.¹¹

Initial estimates were that compliance with EUDR would cost European companies between USD170 million and 2.5 billion annually.¹² However, this is based on the compliance required by European companies, as opposed to the companies that must track and maintain data throughout the supply chain.

One Indonesian exporter estimates that six million data points will be required for a single shipment of palm oil from Indonesia to the EU because of the supply chain complexity. This has the potential to further reduce trade for countries unable to absorb those costs; one estimate for least developed countries is that exports will fall by as much as 9%.¹³

ONGOING POLICY RISKS

Indonesian officials have also been particularly critical of the EUDR superseding the European Timber Regulation (EUTR). The EUTR was introduced by the European Union in 2013 to prevent the importation of illegal timber products using a due diligence model similar to the EUDR.¹⁴ The EU pushed for developing country timber exporters to sign Voluntary Partnership Agreements (VPAs) that developed a legality standard and export permit system. The VPA would effectively serve as a 'fast lane' for exporting countries, allowing more straightforward exporting to the EU. The VPA and its standards became operational in 2016, and led to a reduction in timber exports of certain products from ASEAN to the EU.¹⁵

The shift away from the EUTR and VPA has been described by Indonesian stakeholders as 'moving the goalposts', particularly given the considerable time investment by Indonesia into developing the standards.

This example highlights the importance for developing countries to carefully consider before following EU standards, and making the assumption that this will guarantee or maintain export levels going into the future.

Shifting Supply Chains and Price Shocks



Key Points

- Amidst global geopolitical tensions and inflation, Southeast Asia remains relatively stable, poised for significant economic growth, with Indonesia, Vietnam, and the Philippines expected to emerge as major emerging markets by 2035.
- ASEAN is enhancing its trade architecture through agreements like RCEP and CPTPP, and is a dominant player in commodities like palm oil, rubber, and rice, contributing significantly to global trade despite facing access barriers to major markets.
- ASEAN's competitiveness and innovation in sectors like horticulture and coffee are crucial for growth, although challenges in sectors like rice and sugar need addressing through policy and technological improvements.

The world is currently facing an extended period of ongoing geopolitical tension and persistent inflation across most global markets. Within this landscape, Southeast Asia remains in a relatively stable position, and has managed to avoid much – but not all – of the geopolitical tension afflicting the globe.

From an economic perspective, Asia and Southeast Asia are likely to be the engines of economic growth of the APAC region throughout the next decade.

The trade architecture within the region will be a key driver for this growth, with ASEAN undertaking a number of upgrades to its existing agreements, and ASEAN member countries pursuing multilateral and bilateral agreements with economies within and outside the region. These include: Regional Comprehensive Partnership Agreement (RCEP)¹⁶; Comprehensive and Progressive Trans Pacific Partnership (CPTPP)¹⁷; and ASEAN+1 Agreements (China, Japan, India, Korea, and Australia/NZ).

ASEAN is a significant producer and exporter of major global commodities, and its exports represent around 9% of global agricultural trade. Its major exports include palm oil, rice, rubber, coffee, coconut products and seafood. The region's imports are lower, but it is nonetheless a significant importer of wheat, soya beans and maize.

Despite its large share in global trade, many ASEAN countries do not have unimpeded access to major global markets outside of the region. This may not change significantly in the near future, and there is growing scepticism towards trade liberalisation in many major economies, particularly for agriculture. The US has made it clear it will not be negotiating comprehensive trade agreements in the near term; and the EU faces internal opposition to opening its agricultural markets. This protectionism can manifest itself through technical barriers to trade and other non-tariff measures – including new sustainability demands.

Ultimately many of these factors are out of the control of ASEAN Member States, but there are two clear factors that remain within ASEAN economies' control.

First is competitiveness. Within certain sectors across ASEAN (e.g. Philippines' horticulture, Indonesian and Malaysian vegetable oils, Vietnamese coffee and seafood), the region's competitiveness is particularly high. However, there are some sectors where competitiveness is low, such as Indonesia's rice and sugar sectors, and soybeans across the region.

Improving competitiveness will require a range of policy and technological changes, including upgrading product quality standard, improving productivity, enhancing global market integration, establishing agricultural regional linkages, and reducing input costs.

Second, and this is related to the above point, is ensuring innovation is maintained across the sector, enabling greater productivity and by extension competitiveness.

Case Study: Japan's MIDORI Strategy for Sustainable Food Systems

5



Japan's Ministry of Agriculture, Forestry and Fisheries (MAFF) has introduced the MIDORI strategy as a comprehensive approach to addressing the multifaceted challenges facing the nation's agriculture, forestry, and fisheries sectors.¹⁸

Amid concerns such as depopulation, aging producers, stagnant rural communities, climate change, natural disasters, and disrupted supply chains, especially highlighted by the COVID-19 pandemic, the MIDORI Strategy emerges as Japan's commitment to sustainable food systems and the Sustainable Development Goals (SDGs).

The agriculture, forestry, and fisheries (AFF) sectors in Japan, while only accounting for about 4% of the national total greenhouse gas (GHG) emissions, contribute to 80% of the national methane emissions. However, significant progress has been made, with a 36% reduction in total methane emissions from 1990 levels, indicating a move towards more sustainable practices.

MIDORI STRATEGY GOALS AND MEASURES

The MIDORI Strategy sets ambitious key performance indicators for 2050, including achieving zero CO₂ emissions from fossil fuel combustion in AFF sectors, a 50% reduction in the risk-weighted use of chemical pesticides through integrated pest management and innovative alternatives, a 30% reduction in chemical fertilizer use, expansion of organic farming to 1 million hectares (25% of farmland), and significant enhancements in productivity and sustainable sourcing.

Interim goals for 2030 have been established to ensure progress towards these long-term objectives, with innovation and green policy tools at the core of the Strategy.

Approach and Innovations

The MIDORI Strategy emphasizes innovation in sustainability and productivity, reducing the environmental burden, and enhancing inputs sustainability. Key initiatives include:

- Shifting to more sustainable and productive methods in production, such as pinpoint pesticide application using drones and electrification of machinery;
- Promoting sustainable processing and distribution practices, including the adoption of sustainable import materials and the use of data science and AI to increase efficiency;
- Encouraging a sustainable consumption model by reducing food loss and waste, bridging the gap between consumers and producers, and promoting the Japanese diet as a balanced model; and
- Fostering R&D for the reuse and recycling of resources and the development of biological resources, such as biochar and blue carbon.



MIDORI ACT AND GLOBAL OUTREACH

The “MIDORI Act,” enacted in 2022, plays a crucial role in facilitating the Strategy’s implementation by offering incentives for the adoption of environmentally-friendly technology. The Act underscores Japan’s commitment to accelerating innovation for sustainability within the AFF sectors.

Moreover, Japan is extending its vision globally through the ASEAN and Japan MIDORI Initiative, collaborating with other countries to enhance sustainability through the dissemination of innovative technologies.

For example, Japan is working closely with a number of ASEAN Member States to align the MIDORI approach with appropriate national and regional standards from exporting countries. These include standards for forestry products and vegetable oil products, including the national Malaysian Sustainable Palm Oil (MSPO) and Indonesian Sustainable Palm Oil (ISPO) standards.

In the case of MRLs, in addition to collaborating with supplier countries via MIDORI, Japan has collaborated closely with ASEAN Member States on MRLs, including its harmonization of MRLs across ASEAN economies.

Importantly, Japan – through the Japan International Cooperation Agency (JICA) – continues to collaborate with ASEAN member states on MRLs and other sanitary and phytosanitary issues to improve the region’s food value chains.^{19,20}

Setting ASEAN'S Regional Guidelines



Key Points

- The ASEAN Regional Guidelines on Sustainable Agriculture, adopted at the 44th AMAF meeting, aim to promote sustainable, resilient, and equitable agricultural practices across Southeast Asia, addressing climate change and unsustainable food systems.
- In the implementation of the Guidelines and the accompanying ASEAN Action Plan, strong consideration should be given to the tropical and developing country context; mirroring measures like the EU's SUR on MRLs without considering regional specifics and recent EU policy reversals pose an unnecessary risk to regional food security.
- Approaches driving greater sustainability in regional food systems such as the Sustainable Pesticide Management Framework (SPMF) are good illustrations of the Guidelines in practice; SPMF and learnings from its execution in Thailand and Vietnam should be leveraged with implementation of the ASEAN Action Plan.

The ASEAN Regional Guidelines on Sustainable Agriculture represent an opportunity to realize more environmentally responsible, economically viable, and socially equitable agricultural practices across Southeast Asia.²¹

Recognizing the critical role of agriculture in the region – not only as a cornerstone of food and nutrition security but also as a vital source of livelihood for millions – the Guidelines address pressing challenges such as climate change impacts, unsustainable food systems, and practices detrimental to ecological balance.

The adoption of these Guidelines was a significant outcome of the 44th Meeting of the ASEAN Ministers of Agriculture and Forestry (AMAF) on October 25, 2022. The meeting underscored the necessity of a resilient, circular approach to food production, culminating in a consensus to both adopt and operationalize the Guidelines through a comprehensive Action Plan.

The Guidelines' scope extends beyond traditional farming, embracing aquaculture and animal husbandry, and advocating for the integration of renewable energy sources. This holistic view promotes synergy between various agricultural elements – farmers, inputs, land, water, and the environment – aiming to sustain not just the agricultural bases but also the communities and economies they support.

Central to the Guidelines is a set of objectives designed to catalyse a shift towards sustainability and circularity in agriculture. These include highlighting the criticality of sustainable policies, outlining mechanisms for policy-to-practice translation, guiding the adoption of sustainable practices, and fostering stakeholder engagement in sustainable agricultural development.

Key principles such as resource-use efficiency, conservation of natural resources, enhancement of rural livelihoods, ecosystem resilience, and effective governance underpin these objectives, ensuring a balanced approach to agricultural development.

The ASEAN Action Plan on Sustainable Agriculture, developed in tandem with the Guidelines, outlines a series of strategic initiatives aimed at widespread adoption of sustainable practices, ecosystem restoration, empowerment of small-scale farmers, and capacity building through training and technical support.

This plan is structured around short-term (0-2 years), medium-term (2-5 years), and long-term strategies, encompassing awareness and education, policy reforms, adoption of circular food systems, infrastructure development, and innovation in sustainable technologies.

The development of the Action Plan should first and foremost consider the local and regional context, as well as international norms.

For example, given that most ASEAN agriculture takes place within a tropical zone, ensuring that any and all related policies are adequate in this context is vital. The tropical climate of Southeast Asia permits a number of pests and diseases to grow rapidly. Accordingly, ensuring that pest and weed control is adequate to maintain farmer livelihood is therefore vital. Similarly, soil nutrient management can be problematic in tropical climates due to heavy rainfall, and the rapid decomposition of organic matter.

In these contexts, the European Green Deal's approach to reducing pesticide and chemical use may not be appropriate. Similarly, the developing country context must also be considered. The EU and developed economies have advanced agricultural extension services, appropriate infrastructure, competitive labor and input markets. Consequently, the introduction or mandating of farming techniques that may require more intensive labor, technical knowledge/training, etc. may not be appropriate.

Within the Guidelines themselves, it should be noted that there is a proposal to align regulations within the region to EU proposals such as the SUR on MRLs.²² There is specific reference to reduce and replace the use of HHPs, broad spectrum pesticides, and neonicotinoids in ASEAN agriculture. In addition, the ASEAN Ministers for Agriculture and Forestry (AMAF) meeting in 2023 issued a statement calling to eliminate the use of HHPs.

In these instances, the definition for HHPs should adhere to international definitions, as defined by the FAO/WHO guidelines, and utilizing the criteria for HHPs established by the FAO/WHO Joint Meeting on Pesticide Management (JMPPM).

There is a need for a pragmatic approach with respect to more sustainable regional pesticides management that does not unnecessarily threaten food security in Southeast Asia. One such approach is the Sustainable Pesticide Management Framework (SPMF).

CropLife International launched its flagship sustainability commitment, SPMF, in 2021; and has introduced the initiative regionally through programs currently underway in Thailand and Vietnam. The SPMF aims to accelerate the implementation of the International Code of Conduct on Pesticide Management through a multi-faceted program including best management practice integration of capacity-building of regulatory and stewardship practices, technical cooperation and information sharing to strengthen responsible pesticide management.

More importantly, the SPMF demonstrates an integrated approach through its three pillars of 1) reducing reliance on HHPs and demonstrating change, 2) increasing access to innovation and 3) responsible and effective use. This integrated approach has been well-received at ASEAN discussions in guiding the development of sustainable transition strategies in the region that are tailored to the local agricultural and socio-economic needs and conditions. A unique opportunity exists to ensure the approach put forward by SPMF in Thailand and Vietnam as well as learnings from its realization are leveraged as part of the implementation of the Guidelines' Action Plan.

Climate Change and Carbon Neutrality



Key Points

- Climate change poses a critical threat to Southeast Asia's agriculture. Extreme weather events between 2008 and 2018 caused agricultural production losses of around USD21 billion in the region. These impacts are projected to worsen.
- Specific crops face unique challenges: rice yields may drop due to higher temperatures and salinity; palm oil production is threatened by diseases like basal stem rot (BSR) amid changing climates; rubber yields are impacted by environmental stressors affecting latex production; and sugarcane cultivation is adapting through drought-resistant and high-yielding varieties.
- Adapting to European pesticide bans without considering Southeast Asia's unique climate change challenges and the need for resilience in agriculture, could undermine the region's ability to sustain crop productivity and disease management.

Climate change represents a significant threat to agricultural productivity in Southeast Asia. The region, home to over 640 million individuals, faces significant vulnerabilities due to its extensive coastlines and densely populated areas that are at low elevation, making it highly susceptible to extreme weather conditions and the rising sea levels brought on by global warming.

Extreme weather events between 2008 and 2018 caused production losses of around USD21 billion in the region.²³

Vietnam, Thailand and the Philippines are some of the most affected economies across the globe impacted by climate change.

Without significant changes to productivity and innovation, it is projected that rice yields across the region could fall by 15% commencing in 2040,²⁴ and that Philippines, Thailand, and Vietnam could experience reductions of up to 50% by the year 2100, relative to the yields recorded in 1990.²⁵

Moderate temperature increases can have a negative yield impact on crop yields – particularly grains and cereals – in low-lying areas. These temperature increases also promote evaporation and precipitation; impacts of this will vary across Southeast Asia. Meanwhile, water availability is expected to rise in high latitude regions and certain humid tropical areas, while diminishing in various arid zones at mid-latitudes and within the dry tropics.²⁶ Areas already susceptible to drought conditions could experience more intense and prolonged dry spells.

Climate change could alter the behavior and distribution of pests and diseases, potentially leading to decreases in agricultural output. Additionally, the heightened variability in climate conditions, along with a rise in the intensity and frequency of extreme weather events like droughts and floods, is likely to negatively impact agricultural productivity.



At the crop level, these changes can have significant impacts:

- **Rice:** The vulnerability of rice to diseases, including rice blast, is exacerbated by climate-related factors such as rising salinity levels. For instance, a significant saltwater intrusion event in Vietnam in 2016 led to the devastation of approximately 270,000 hectares of rice fields, resulting in financial losses around USD 455 million. Furthermore, in the Philippines, it is projected that each 1°C increase in temperature could result in a 10% reduction in rice yields. This is attributed to higher temperatures creating conditions more favourable for the spread of fungal diseases.²⁷
- **Palm Oil:** Basal stem rot (BSR) incidence is tied to the projected substantial reduction in climates suitable for palm cultivation, potentially leading to the unsustainability of the oil palm industry post-2050. This increase in BSR is primarily due to pathogenic adaptability to changing climates as compared to the adaptability of oil palm trees. The situation is aggravated by crop stress due to excessive rainfall, leading to reduced resistance against fungal attacks and promoting the spread of diseases. In Malaysia, a strong negative correlation has been observed among the annual average temperature, sea level rise, and oil palm productivity. Specifically, temperature increases ranging from 1°C to 4°C could lead to a significant reduction in oil palm yields, varying between 10% and 41%.
- **Rubber:** The incidence of diseases and the yield of rubber are affected by environmental factors such as increasing temperatures, drought, and intense rainfall. Specifically, diseases associated with *Phytophthora* are more prevalent during periods of excessive rainfall. Furthermore, the process of latex extraction, a critical component of rubber tree cultivation, is adversely impacted by any condition that restricts the tree's ability to absorb water, such as droughts and rising temperatures. This limitation in water uptake directly hampers the tree's ability to produce latex, leading to significant economic repercussions.
- **Sugar:** Climatic conditions significantly influence sugarcane production, with higher peak temperatures having a negative impact on yield, whereas increased rainfall is associated with enhanced productivity. To mitigate the effects of global warming and drought, Thailand is focusing on the development of drought-resistant sugarcane varieties capable of enduring significant water shortages. Concurrently, Indonesia is advancing its agricultural sector by breeding new, high-yielding sugarcane varieties as part of its crop improvement efforts.

Ensuring resilience in the face of these threats is vital, given the significance of agriculture to Southeast Asia's economy and changing demographics. Following European models for banning of certain pesticides without considering threats faced by climate change – and broader sustainable development objectives in the region – can therefore be problematic.

Innovation and Ensuring Sustainability



Key Points

- Transforming agrifood systems to address climate change and natural resource degradation requires strategic, context-sensitive approaches tailored to national circumstances, leveraging the benefits of innovation and science to drive sustainability.
- The FAO's Science and Innovation Strategy advocates for leveraging science and innovation for efficient, inclusive, resilient, and sustainable agrifood systems, aiming for better production, nutrition, environment, and life in alignment with the SDGs.
- Innovations in agriculture should be diverse, affordable, and sustainable, ranging from digital solutions for food distribution to advanced farming techniques and gene editing; they should also ensure food access without compromising smallholder farmers' incomes or the needs of growing economies.

Agriculture and agrifood systems are both a contributing factor to these issues and are adversely affected by them. Transformation of agrifood systems needs to be strategic and context-sensitive, tailored to the national circumstances and capacities, to address the climate emergency and the degradation of natural resources effectively. Any transition needs robust planning and understanding on the benefits and risks for each given country and cannot be directly transposed from one region to another.

Growing populations in the developing world, tropical agriculture and climate change – as social, economic and environmental challenges – call for new and innovative approaches to agriculture and sustainable development. Innovation and science in the face of these challenges must be at the forefront of sustainability.

Both innovation and science are dynamic and constantly evolving, presenting new avenues for achieving the SDGs. Significant progress has been observed in various scientific and technological arenas, including biotechnologies, the application of nuclear techniques in food and agriculture, digitalization, nanotechnology, big data, analytics, artificial intelligence, machine learning as well as advancements in ecology, agronomy, rural sociology, and innovative approaches to agroecology and agroforestry, particularly in the context of climate change challenges.

Agricultural innovations such as biotechnology and gene-editing are helping in meeting the food-related challenges that we face. Examples of biotechnology in agriculture includes Bt corn, Golden Rice and Bt eggplant. Current examples of Plant Breeding Innovation (PBI) include gene or genome editing (CRISPR/ Cas 9 and site directed mutagenesis) and cisgenesis.

Plant biotechnology has increased yields through improved control of pests and weeds. For example, between 1996 and 2020, insect-resistant (IR) crop technology used in maize has increased yields by an average of 17.7% relative to conventional production systems. Bt eggplant has improved yields for farmers by 17 to 26% in Bangladesh, and reduced pesticide use.²⁸

Meanwhile, PBI can help meet global agricultural challenges and deliver benefits for consumers, farmers and the environment by allowing more food to be grown from the same land, more abundant and reliable harvests and foods of consistent quality and longer lasting freshness. The 'non-browning banana' is relatively new PBI technology that has recently been cleared for planting in the Philippines and has the potential to reduce GHG emissions and food wastage by 25%.²⁹

The FAO's Science and Innovation Strategy sets out its vision and goal on this larger front and role of innovation and science clearly:

The vision of the Strategy is a world free from hunger and malnutrition, where the potential of science and innovation is fully leveraged to overcome complex social, economic and environmental challenges of agrifood systems in a globally equitable, inclusive and sustainable manner.

*The goal is for Members to harness science and innovation to realize context-specific and systemic solutions for more efficient, inclusive, resilient and sustainable agrifood systems for better production, better nutrition, a better environment, and a better life, leaving no one behind, in support of the 2030 Agenda for Sustainable Development.*³⁰

Science is the first half of the FAO's approach. This becomes particularly relevant in the implementation of the Strategy, and the enhancement of understanding agrifood systems within a local and regional context. Key areas of work include:

- Conduct science- and evidence-based studies, analysis and assessments at global, regional, sub-regional and national levels on a range of issues related to agrifood systems.
- Conduct strategic foresight exercises to explore alternative future scenarios related to sustainable agrifood systems with a view to achieving food security.
- Develop and promote tools, models and methodologies to inform assessment, monitoring, early warning, evaluation, planning and forecasting efforts.
- Support policymakers and other agrifood systems actors to develop science- and evidence-based and context specific policies, strategies and plans.

In other words, evidence-based assessments that inform innovations and technological approaches are key. Innovation in this agricultural and agrifood context is broad. In areas such as food distribution it can mean the novel digital innovations to improve efficiency in the marketplaces and payments for farmers, or solutions for food safety and traceability.

At the production level, it can be equally diverse. At one end, it can mean ensuring adequate training for farmers in new and more efficient farming techniques that use lower inputs and reduce costs. At the other, it can mean exploring the use of gene editing or newer crop protection innovations within agrifood systems. In all cases it should be oriented towards sustainable development, and above all, ensuring that populations are able to access the food and nutrition they need.

These solutions must also be affordable. Not only in the sense that they do not raise input costs, but also that, they do not reduce farm incomes through lower yields. The trade-off would not be acceptable for smallholder farmers in developing countries, nor an acceptable one for growing economies that are facing demographic and environmental changes.



Summary and Conclusions

9



Sustainable agriculture in Southeast Asia faces a competing set of sustainability pressures that are particularly different from those in the Western and developed world.

Southeast Asia is expected to surpass the European Union in population growth, adding almost 30 million people by 2030. Ensuring that the growing demand for food is met and that the population has reliable access to affordable food is essential and requires a productive and innovative agricultural sector.

The agricultural sector faces significant challenges from climate change. Climate change threatens to lower yields and increase risks from flooding and drought as well as the pests, weeds and disease that emerge. These are made acute by the nature of tropical agriculture, which has its own unique parameters.

Added to that, Southeast Asia has a low amount of agricultural land per person. Estimates are around 0.35ha per person, significantly lower than the global average of 0.6ha.³¹ These resource pressures will intensify as population increases and climate change impacts persist. Productivity and sustainability gains are therefore critical.

At the same time, many Southeast Asian economies remain export-oriented, and agricultural exports remain a key plank of their economic development pathways. This is notable in commodities such as coffee (Vietnam), palm oil / vegetable oil (Indonesia and Malaysia), and horticulture (Philippines). It should be noted that Vietnam is the second-largest coffee producer in the world; and Southeast Asia is the largest exporter of vegetable oil, and plays a valuable role in supplying global markets.

There is some pressure, particularly from developed countries, for Southeast Asia to adopt sustainability approaches on chemicals and deforestation that:

- do not align with the local and regional social, economic and environmental context;
- are attempting to solve environmental problems that are not applicable to the region; and
- prevent access to innovative agricultural approaches that would otherwise ensure climate resilience and resilience in the face of increased demand.

The clear risk in these approaches is that agricultural productivity will fall, imperilling broader sustainability goals in the region.

The clear solution is that agricultural approaches must be designed from and for the regional sustainability context, not outside of it.

References

- ¹European Commission. (2019). Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=COM%3A2019%3A640%3AFIN>
- ²European Parliament. (n.d.). Sustainable Use of Pesticides – Revision of the EU Rules. Retrieved from <https://www.europarl.europa.eu/legislative-train/spotlight-JD22/file-sustainable-use-of-pesticides-%E2%80%93-revision-of-the-eu-rules>
- ³World Trade Organization. (2023). Document. Retrieved from <https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/G/TBT/M89.pdf&Open=True>
- ⁴European Union. (2023). Regulation (EU) 2023/1115 of the European Parliament and of the Council. Retrieved from <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1115>
- ⁵Research Centre International Economics. (2024). FIW Research Report 2024/02. Retrieved from <https://www.fiw.ac.at/wp-content/uploads/2024/02/FIW-RR-02-24.pdf>
- ⁶Article Title. Retrieved from <http://ijop.id/index.php/ijop/article/view/69/51>
- ⁷Mongabay. (2023). Palm oil giants Indonesia, Malaysia start talks with EU over deforestation rule. Retrieved from <https://news.mongabay.com/2023/09/palm-oil-giants-indonesia-malaysia-start-talks-with-eu-over-deforestation-rule/>
- ⁸https://www.matichon.co.th/foreign/news_4173622
- ⁹ World Trade Organization. (n.d.). Documents List. Retrieved from https://docs.wto.org/dol2fe/Pages/FE_Search/FE_S_S009-DP.aspx?language=E&CatalogueIdList=303152,297927,294862,293610,292505,288420,284929,280275,276015,274828&CurrentCatalogueIdIndex=4&FullTextHash=&HasEnglishRecord=True&HasFrenchRecord=True&HasSpanishRecord=True
- ¹⁰EurActiv. (2023). Agriculture ministers push to weaken anti-deforestation rules for EU farmers. Retrieved from <https://www.euractiv.com/section/agriculture-food/news/agriculture-ministers-push-to-weaken-anti-deforestation-rules-for-eu-farmers/>
- ¹¹FEDIOL. (Year). Title of the document. Retrieved from [https://www.fediol.eu/data/President_Khattabi-Joint_cross_sector_coalition_letter_on_EUDR_implementation.pdf](https://www.fediol.eu/data/President_Khattabi-Joint_cross_sector_coalition_letter_on_EUDR_implementation.pdf)
- ¹²S&P Global. (n.d.). Global Impact of the EU's Anti-Deforestation Law. Retrieved from <https://www.spglobal.com/esg/insights/featured/special-editorial/global-impact-of-the-eu-s-anti-deforestation-law>
- ¹³resrep55175.pdf (jstor.org)
- ¹⁴Comparing the former EUTR and upcoming EUDR: Some implications for private sector and authorities - ScienceDirect
- ¹⁵Kim, K.-D., Shim, G., Choi, H.-I., & Kim, D.-H. (2023). Effect of the Timber Legality Requirement System on Lumber Trade: Focusing on EUTR and Lacey Act. *Forests*, 14(11), 2232. <https://doi.org/10.3390/f14112232>

- ¹⁶Incorporating ASEAN, China, Japan, South Korea, Australia and New Zealand, the agreement covers nearly a third of global output;
- ¹⁷Southeast Asian members include Vietnam, Singapore, Malaysia and Brunei, and the agreement, although smaller than RCEP, has significant liberalisation commitments;
- ¹⁸Ministry of Agriculture, Forestry and Fisheries, Japan. (n.d.). Environmental Policies. Retrieved from https://www.maff.go.jp/e/policies/env/env_policy/meadri.html
- ¹⁹Japan International Cooperation Agency. (n.d.). Report PDF. Retrieved from <https://openjicareport.jica.go.jp/pdf/12375432.pdf>
- ²⁰Japan International Cooperation Agency. (n.d.). Report PDF. Retrieved from <https://openjicareport.jica.go.jp/pdf/12358297.pdf>
- ²¹ASEAN. (2023). ASEAN Regional Guidelines for Sustainable Agriculture. Retrieved from https://asean.org/wp-content/uploads/2022/10/2023_App-1.-ASEAN-Regional-Guidelines-for-Sustainable-Agriculture_adopted.pdf
- ²²The EU withdrew the SUR in early 2024.
- ²³Sundram, P. (2023). Food security in ASEAN: Progress, challenges and future. *Frontiers in Sustainable Food Systems*, 7. <https://doi.org/10.3389/fsufs.2023.1260619>
- ²⁴Muhammad Habib-Ur-Rahman et al. (2022). Impact of climate change on agricultural production; Issues, challenges, and opportunities in Asia. *Frontiers in Plant Science*, 13, Article 925548. <https://doi.org/10.3389/fpls.2022.925548>
- ²⁵Green Climate Fund. (n.d.). FAO-Thailand Multicountry. Retrieved from <https://www.greenclimate.fund/sites/default/files/document/fao-thailand-multicountry.pdf>
- ²⁶Intergovernmental Panel on Climate Change. (2007). Climate Change 2007: Synthesis Report. Retrieved from https://www.ipcc.ch/site/assets/uploads/2018/02/ar4_syr_full_report.pdf
- ²⁷Frontiers in Sustainable Food Systems. (2022). Article Title. Retrieved from <https://www.frontiersin.org/articles/10.3389/fsufs.2022.1030540/full>
- ²⁸Giannini Foundation of Agricultural Economics. (2023). [Title of the article]. Retrieved from https://s.giannini.ucop.edu/uploads/giannini_public/34/0f/340f8c28-cf2d-4246-9f87-84fe661568cb/v22n2_4.pdf
- ²⁹Meir, O. (2023). Tropic's Gene-Edited Banana Determined as Non-GMO in the Philippines. *Crop Biotech Update*, [April 19, 2023 issue]. Retrieved from <https://www.isaaa.org/kc/cropbiotechupdate/article/default.asp?ID=20135>
- ³⁰Food and Agriculture Organization of the United Nations. (n.d.). Document Title. Retrieved from <https://www.fao.org/3/cc2273en/cc2273en.pdf>
- ³¹Organisation for Economic Co-operation and Development. (n.d.). Publication Title. Retrieved from https://www.oecd-ilibrary.org/sites/08801ab7-en/1/3/2/index.html?itemId=/content/publication/08801ab7-en&_csp_=cdae8533d2