

# **Climate Change Policy System in Southeast Asia: From Research to Policy Actions towards Sustainable Food Systems<sup>1</sup>**

## **Background**

The process of sustainable food system transformation in the context of climate change in Asia raises several research questions for applied economists. The majority of agricultural and resource economics research aims to provide evidence by addressing broad challenges such as: what are the effects of climate change adaptation strategies on production efficiency; what are the economic impacts of investment in agricultural research; what are appropriate technologies to be adopted; what outreach and extension programs are needed; and so on. Yet, translating research outputs into evidence-based policy change is an important step to achieving sustainable food system transformation. Understanding the policy process that uses evidence generated by research and analysis is therefore crucial for facilitating such translation of research outputs into action and impact.

Because quantitative, qualitative, or mixed methods policy research can be conducted at different stages of the policy process, understanding research pathways and instruments for policy formulation, adoption, implementation, and evaluation is important for policy research to achieve impacts. Policy research may focus on generating evidence and understanding how this evidence can be used to formulate policy solutions. Research may examine different factors that influence the implementation of policies, or it may assess the economic impacts or unintended consequences of a policy, as well as the factors that facilitate its sustainability. Understanding the policy process, although complex and dynamic, could provide an opportunity for researchers to ask relevant research questions and to apply research tools to promote effective policy implementation and dissemination. Due to the complexity and scope of climate change impacts beyond an individual country, the policy process needs to include an understanding of various challenges of multiple actors from diverse disciplines right from the initial stage, and also on the

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<sup>1</sup> Selected symposium prepared for the 11<sup>th</sup> Asian Society of Agricultural Economists (ASAE) International Conference, Aoyama Gakuin University, Tokyo. March, 17-20, 2023

implications of the implementation of alternative policies. The challenges of multiple actors may vary in different geographies, and hence some case scenarios may be brought out to get insights from multiple contexts.

**Symposium Objective:**

- To identify the kinds of policy systems and processes in operation in Southeast Asia, at country and regional levels, and how they influence research uptake into policy formulation and implementation
- To identify approaches to policy research and outreach that ensure better policy uptake from research
- To create a network of policy researchers, analysts, and experts who understand policy process and provide high-quality research evidence for translation of research into policy and impact

**Organizers:**

Kasetsart University, Thailand

Michigan State University, USA

International Food Policy Research Institute (IFPRI), USA

E R I A [Economic Research Institute for ASEAN and East Asia]

Agricultural Economics Society of Thailand Under Royal Patronage, Thailand

Asia-Pacific Association of Agricultural Research Institutions (APAARI), Thailand

**Keywords:** policy systems, policy process, climate change, sustainable food systems, academia and Research Institutions, ARIs, policy implementation, policy formulation

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## **Evidence-based Policy Process for Climate-resilient Food Systems in Asia: Frameworks, Approaches, and Lessons**

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Across the globe, food security challenge is intensified by agriculture's extreme vulnerability to climate change. Increasing temperatures, weather variability, shifting agroecosystem boundaries, invasive crops, and pests are contributing factors to the reduction in crop yields, reduction in nutritional quality, and lowering of livestock production. Events such as droughts affect the crops and livestock sub-sectors disproportionately relative to all other sectors of the economy, resulting in food insecurity and hunger crisis. Rise in frequency of severe extreme climate events is disrupting supply chains, especially in low-income countries. Climate change related events are adversely affecting food systems in Asia. Rising temperatures and extreme climate events have contributed to reductions in land and soil quality, availability of water resources for irrigation and human use, and crop yields. Land degradation is a major challenge. Data availability on climate change and food systems and weak analytical capacity are some other issues facing the region. Urbanization and rising household income have changed food preferences toward products, which have more resource-intensive production and produce more greenhouse gas (GHG) emissions (IFPRI, 2022; IPCC, 2022; FAO, 2022).

To ensure that climate change policies create the desired impact, it is important to understand the policy processes (Resnick et al, 2018). Climate adaptation policies are becoming central to the future of food (Patra and Babu, 2022). Climate adaptation refers to changes in processes, practices, and structures to moderate potential damages or to benefit from opportunities associated with climate change. Investments in climate adaptation solutions take many shapes

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and forms, depending on the unique context of a community, business, organization, country, or region. Substantial investments in adaptation and mitigation innovations and technology will be required to maintain yield levels, achieve food demand, and enhance food quality. Additionally, agriculture also contributes to rising climate change by generating greenhouse gas (GHG) emissions (World Bank, 2021; FAO, 2022). The USAID’s Strategy for Climate Change 2022 and President Biden’s Emergency Plan for Adaptation and Resilience (PREPARE) highlight the need for urgent action. Some key aspects included in the USAID strategy focus on mitigation, adaptation, country support, and finance support (USAID, 2022a).

#### *Comprehensive Action for Climate Change Initiative in Asia (CACCI-Asia) Approach*

Climate resilient agriculture is recognized as a key integration dimension from the perspective of achieving sustainable development goals including zero hunger. In this regard, as part of their commitment to addressing climate change challenges, Asian countries submitted their Nationally Determined Contributions (NDC) and have developed National Adaptation Plans (NAPs) that identify strategies to meet their NDC commitments. USAID is supporting Asian countries in translating their commitments into specific activities through CACCI-Asia. CACCI aims to strengthen coordination between key stakeholders involved in NDC implementation, enhance evidence-based policy process and investment analysis for climate change, and develop tracking, and measurement, and reporting systems to analyze current status and progress made on climate change measures.

Governments in Asia have recognized the importance of sectoral strategies in their NAPs and are in the process of developing interventions to achieve their mitigation and adaptation goals. Asian countries are in different stages of initiating implementation of their NDCs and NAPs. Overall, this initiative will create transformational policies, strengthen human capacity, and improve

institutional infrastructure towards a net zero carbon Asia which is food secure and resilient to climate change (USAID, 2022b). Currently, CACCI is currently being implemented in Tajikistan and is in the process of being expanded to other countries in the region.

The following broad activities are planned as part of the project are:

- Accelerate action to tackle the climate crisis through collaboration between governments, businesses and civil society, the first activity focuses on mapping the policy system, partners, institutions, resources, and stakeholders involved in NDC implementation
- Through a series of consultative workshops and processes, strengthen institutional capacity for national level coordination for NDC implementation including project development, national network of partners, resource mobilization, and policy and strategy integration
- Promote innovation and Strengthen analytical capacity of the network partners in generating evidence for the project and program design through specific skill development workshops, including policy analysis and preparing evidence-based programming for NDC implementation
- Develop a strategy for a prototype monitoring, tracking, and reporting system by compiling the existing data sources and developing a dashboard for real time reporting of the progress

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## **How to drive climate change research for policy actions?: Experience from Thailand**

Witsanu Attavanich<sup>3</sup>

While Thai agriculture has played a crucial role as major sources of food, employment and export revenue (Attavanich, 2016), recent studies revealed that it is the most sensitive economic sector to climate change because farm households have limited access to water sources, small size of farmland, low education and faced ageing problem (Attavanich et al., 2019; Word Bank, 2022). As a result, studies revealed that the production of major crops (i.e., rice, sugarcane, and cassava) is projected to decline under future climate change scenarios (IPCC, 2022; Pipitpukdee, Attavanich and Bejranonda, 2020a; 2020b; Pipitpukdee 2020).

To address the impact of climate change in Thai agriculture, Thai government led by Ministry of Agriculture and Cooperatives have launched climate change policies and strategies. Meanwhile, the topic of climate change has increasingly attracted interest from researchers aiming to investigate the impact of climate change in agriculture and explore appropriate mitigate and adaption options to reduce greenhouse gas emission and the impact of climate change.

Unfortunately, a majority of climate change research has not been used to design and implement policies. To make effective utilization of research findings for policy actions, it is important to understand policy systems and processes as well as strategies to close gaps between researchers and policymakers.

The objectives of this presentation are: 1) To identify climate change policy systems and processes in operation in Thailand; and 2) To identify problems and provide approaches to drive climate change research into policy actions. Primary data was obtained from the presenter's

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experience, while secondary data about the policy system and process was collected from official sources.

Past experiences in driving the climate change research to policy actions of the presenters were drawn from drafting, for example,: 1) The Agricultural Strategic Plan for Climate Change (ASPCC) 2017-2022; 2) the Agricultural Action Plan to Tackle Climate Change (AAPTCC) of Thailand's Ministry of Agriculture and Cooperatives (MOAC) 2023-2027; 3) Thailand Greenhouse Gas Reduction Goals and Guidelines Project under the 2<sup>nd</sup> Nationally Determined Contributions; 4) the Manpower Development Plan in the Agricultural Sector of Thailand; 5) Policy to Promote Maize Replacement for Off-Season Rice; and 6) Sustainable Integrated Measures to Solve the Problem of Burning Sugarcane.

For the climate change policy systems and processes implemented in Thailand, the conference participants will understand the linkage between national and agricultural policies, and mechanisms for climate change actions at the national and agricultural sectors via the role of Thailand's National Climate Change Policy Committee, and Thailand's Agricultural and Cooperative Development Policy and Planning Committee (Office of Agricultural Economics, 2022). Moreover, several problems in driving climate change research to policy actions in Thailand will be discussed. For example, first, policymakers politically prioritize climate change as a last resort. Second, there are many stakeholders involving with the problem of climate change making it difficult to find a unanimous solution. Third, tackling climate change problems require integration across academic disciplines. Fourth, few government workforces understand climate change issues. Finally, laws and regulations are unfavorable (Attavanich and Udomwitid, 2023).



To effectively push the research findings to policy actions, there are several recommended approaches. First, the researchers must consistently produce high quality research and publish them in the high impact factor journals to gain the trust of the policy makers. Second, researchers should seek research problems from research users. Third, researchers should conduct research on that subject continually in order to fully understand the problem and where possible they should go to the real field to talk to the research users (i.e., farmers, private companies, and government officers). Fourth, researchers should work across disciplines with other researchers to understand multiple perspectives. Fifth, researchers should present policy recommendations that are based on participation from all stakeholders via the in-depth interview, focus groups and public hearing, and considering practical feasibility of their recommendations. Sixth, researchers should seek to build capacity for policymakers and other users by providing sufficient knowledge to enable policy makers and other users to fully understand the research findings and corresponding policy recommendations. This capacity building can be done by regularly digesting the research findings for policymakers through various channels such as conferences, speakers, and public media sources. Last but not least, researchers should have a service mind and regularly assist policymakers to build trust and friendship.

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## ASEAN-CGIAR *Innovate for Food* Regional Program

Nafees Meah<sup>4</sup>

Achieving the UN Sustainable Development Goals by 2030 requires ASEAN countries to work collaboratively to address complex, interrelated challenges such as climate change, urbanization, biodiversity loss, water scarcity, poverty, food safety and nutrition, and social inequity. Making the agri-food system more sustainable economically, environmentally, and societally is an essential part of addressing these challenges. For example, more women than men are employed in the ASEAN agri-food sector, and they can play a big role in making food production more sustainable, provided they are empowered and given fair access to resources. In addition, given the important role that ASEAN countries have in global food security and trade, strengthening food and innovation systems research in the region is imperative. To address these challenges, ASEAN has developed a shared vision for the future food system in the region which has been articulated through a series of policy documents (ASEAN 2015a, ASEAN 2015b, ASEAN 2020, ASEAN 2021).

In addition, ASEAN is currently developing new *Strategic Guidelines on Sustainable Agriculture* which bring new ideas on the application of the circular economy principles to the agri-food system. The new guidelines include, amongst other things, key strategies for reducing the use of agrochemicals in crop production, livestock, and fisheries; promoting nature-based solutions to environmental challenges; and achieving carbon neutrality in the farming, forestry, and food sectors.<sup>5</sup>

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<sup>5</sup> <https://snrd-asia.org/policy-framework-for-promoting-sustainable-agriculture-in-asean/>

However, if this shared vision for ASEAN that is set out in these policy documents is to be realized, then scaling up and out innovations along the food value chain, from production to consumption and reuse of waste, is essential. CGIAR is working with the ASEAN Secretariat, ASEAN Member States, and a range of funding and other partners on a multi-year research and innovation program which will develop *bold integrated solutions* around three strategic issues: resilience of the food system to climate change, sustainable and equitable transformation of the food system applying the principles of the circular economy, and recovery from the COVID-19 pandemic at the regional level. The new regional program will be a bottom-up, cross, and trans-disciplinary CGIAR-ASEAN program. This program is being co-created and, therefore, will be fully co-owned by ASEAN partners.

Under the ASEAN-CGIAR Innovate for Food Regional Program, the following eight intervention packages (IP) have been developed:

*INTERVENTION PACKAGE 1: Regenerative Agriculture & Aquaculture and Agro-Chemical Use*

The IP seeks to support the implementation of regenerative agriculture practices, including circular economy principles and reduced use of harmful agrochemicals, in key agroecological systems in ASEAN member states through public-private sector collaboration, multi-stakeholder platforms and participatory research, and the development and implementation of facilitating policies and market systems.

*INTERVENTION PACKAGE 2: Climate Neutrality and Circular Agriculture*

The IP seeks to enhance land sinks and reduce greenhouse gas emissions and the carbon footprint of ASEAN agri-food systems through low-emissions landscape and waterscape

management, greater use of nature-based solutions, and reduced food losses in losses in agricultural value chains and emphasizing circular economy.

*INTERVENTION PACKAGE 3: Enhancing ASEAN Agrobiodiversity use and landscape biodiversity*

The IP seeks to strengthen regional cross-sectoral cooperation and help develop evidence-based policies that safeguard and harness the use of agrobiodiversity (plant, animal, aquatic) for diversified production, improved diets and nutrition and more resilient landscapes. A particular focus will be on developing community-based approaches that enhance income and livelihoods, especially of women and youth.

*INTERVENTION PACKAGE 4: Enhancing Value Chains and Regional Trade*

The IP seeks to provide evidence on the types of innovations and policies that are the most effective for stimulating inclusive, efficient, safe and sustainable agri-food trade and value chains in ASEAN.

*INTERVENTION PACKAGE 5: Transboundary Pests and Diseases*

The IP seeks to better prevent, control, and manage plant and animal pests and diseases and food safety, including anti-microbial resistance (AMR), across ASEAN countries with emphasis on (traditional) supply chains. This will be achieved through using a regional food systems and *One Health* approach.

*INTERVENTION PACKAGE 6: Private Sector Investment and Sustainable Financing*

The IP seeks to combine existing traditional investment methodologies with CGIAR-derived science and data-driven tools coupled with strategic partnerships at multiple stages of the investment cycle, for multi-dimensional assessment, selection, and de-risking of investments.

*INTERVENTION PACKAGE 7: Farmer-led irrigation for Climate-Resilient Agri-Food Systems*

The IP seeks to increase the resilience, diversity, and productivity of agri-food systems in the ASEAN region to future climates by securing better and more affordable access to water resources using, where feasible, renewable energy for water abstraction and conveyance.

*INTERVENTION PACKAGE 8: Food Systems Transformation for More Nutritious and Healthy Diets*

The IP intends to stimulate the demand for and consumption of sustainable healthy diets, the supply of sustainable and healthy foods, while improving livelihoods, gender equity and social inclusiveness in sub sectors of food systems in ASEAN.

The ASEAN-CGIAR *Innovate for Food* Regional Program will have a 10 year horizon and is planned to be implemented in a phased approach.

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## **Climate-Smart Agriculture and Resilient Value Chains for Food Security**

Venkatachalam Anbumozhi<sup>6</sup>

Climate change disrupts food markets, posing population-wide risks to food supply. Climate-smart agriculture (CSA) is an approach for transforming and reorienting agricultural systems to support food security under the new realities of climate change. Threats can be reduced by increasing the adaptive capacity of farmers as well as increasing resilience and resource use efficiency in agricultural production systems. CSA promotes coordinated actions by farmers, policy makers, private sector, researchers, and civil society towards climate-resilient pathways through three main action areas of (1) increasing productivity, incomes, and livelihoods; (2) fostering resilience through adoption of technologies and best institutional practices to reduce the vulnerability to climate related risks and shock; (3) mobilising finance resources through innovation, experimentation, and public private partnerships. CSA differs from 'business-as-usual' approaches by emphasizing the farmers' capacity to implement flexible, context-specific solutions, supported by innovative policy actions, by systematically considering the trade-offs between productivity, resilience and capturing new opportunities to close the gaps in agriculture infrastructure investments.

Foremost objective of CSA is to produce more and better food in a sustainable manner for enhanced nutrition and higher income. Agriculture including forestry and fisheries with share of 26.6 percent is the second largest source of employment worldwide after the service sector for decades (Anbumozhi et al., 2013). Enhancing the efficiency of production inputs through CSA can help in increasing labour productivity, thus protecting livelihoods and at the same time attaining higher levels of agricultural output. Climate smart agriculture practices emphasise a

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production system that utilize ecosystem services to support increase in the productivity, adaptation, and mitigation. Examples include integrated crop, livestock, aquaculture and forestry systems; improved pest, water and nutrient management; practices such as residual tillage and use of diverse varieties and breeds; restoring degraded lands; improving the irrigation efficiency and fertilizer uses; and manure management, 2013), including the use of biodigesters , integrated crop, livestock, aquaculture and agroforestry systems (FAO , 2013). Enhancing soil quality can generate production and livelihood benefits for farmers. Sustainable land management of farming system is important part of CSA while simultaneously dealing the climate vulnerability and the daunting food security and access to nutritious food to maintain healthy and active lives of small holding farmers in global south (AGRA, 2020). Thus, CSA has function beyond the production and distribution of food, such as delivery of water, energy, fibre and building materials that minimise negative effects of climate change, while securing quality livelihood for a growing rural population developing countries in Asia, Africa and Latin America.

Second, Vulnerability to climate change is not only determined by the degree of climate change, but also by the prevailing social, economic and environmental conditions in a community and the existing management practices in a system. Although farmers have always dealt with variability and uncertainty in weather patterns, the increased uncertainty calls for more flexible and rapid response capacity. Building resilience means reducing the risk of becoming food insecure and increasing the adoptive capacity with climate smart technologies and practices to cope with risks and respond to change (Anbumozhi, Breiling and Reddy, 2019). Therefore, successful CSA should include technological interventions and actions that are directed at improving hazardous climatic conditions and management practices. Incremental changes include better early warning

systems on droughts, cyclones , timely access to production inputs using digital platforms; shifts in production techniques to enhance eco-system services; improve agriculture market information services through digital connectivity to reduce price volatility and expanded insurance and safety net program for financial inclusion.

Technology development has long been a major thrust of agriculture development. Real time weather information via information and communication technologies (ICT) is already being deployed by public and private sector actors along agriculture value chains in many countries and could be greatly extended to include technology information related to CSA practices.

Empirical evidences suggest that four main policy areas in reducing the costs and barriers viz; extension and information dissemination, particularly on adopting the technologies and practices to local conditions; coordinated efforts where adoption of climate smart technologies and practices generate positive spill over or benefits; comprehensive risk management strategies for managing extreme weather events that affect many farmers simultaneously across the countries and reliable, timely equitable access to inputs to support the adoption of technologies and practices (Vervoot et al., 2014)

Third, the effective implementation, adoption, promotion, and inclusion of CSA in agri-food system requires targeted financing that also at a scale. Linking climate finance to traditional sources of agriculture finance is an important part of those efforts to upscale investments. There is need for larger investments in the immediate and short-run, whereas many of these would have long pay-back periods. Investment finance for agriculture is insufficient to meet the demand and often poorly targeted . Although climate finance may increase significantly in future years, it is still likely to meet only relatively small share of total agriculture investment needs which are estimated at US\$209 billion year by 2050 to increase agricultural production just to meet

increased demand (UNFCCC, 2020). Identifying and crediting mitigation benefits generated through the carbon markets is an important means of augmenting financial process. Besides, the issues of externalities and resultant free-rider problems are to be addressed, at least for the investments which are not in the nature of creating public goods like lower contribution to greenhouse gases (GHGs) from the agriculture sector.

The most promising climate financing sources for CSA and resilient supply chain include: the adaptation fund, an innovative finance mechanisms that focus on the needs of the most vulnerable communities and the possibility of direct access; the Global Environment Fund (GEF); and the Green Climate Fund (GCF). Allocations from public funding mechanisms can be leveraged by supplementing private sector investments with credit guarantees from the multilateral development banks and international financial institutions. Discussion regarding the role of capital markets enlist new opportunities for financing CSA technologies by directly funding research and development through public and private partnerships and reducing the tax burdens for innovators.

Widespread adoption of natural capital accounting and perhaps underpinned by appropriate regulations as well as financial accounting are also needed. The insurance industry can incentives the farmers actions towards greater climate resilience. For example, the impacts and risks of large-scale extreme weather events on small scale farmers could be shared by innovative risk sharing mechanism through public-private- community partnerships – making important contributions to the resilience of global food system.

Recognition of synergies and trade-offs among the three components of CSA is particularly important in the global south, where agricultural growth, adaptation for food security, and

inclusive economic growth to supply nutrition, are priorities, and where poor small-holding farmers are most affected by but contributed least to climate change.

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**Policycentric policy processes for climate resilient and low emissions agriculture in ASEAN countries: Contributions of the ASEAN Climate Resilience Network and the ASEAN Negotiating Group for Agriculture**

Imelda Baccudo<sup>7</sup>

The global climate governance framework needs to include a wide range of groups representing different geopolitical and sector-specific interests to engage in climate action. Agriculture and agri-food systems are a critical sector because of their vulnerability to climate change as well as their potential contribution to mitigation goals. In ASEAN countries there is an added layer of political sensitivity as many agri-food system stakeholders – smallholder farmers, laborers, consumers – are poor. In wealthier countries with large agriculture sectors there are powerful industry lobbies that politicians must contend with. Consequently, in the context of the United Nations Framework for Climate Change Convention (UNFCCC), the agriculture sector comes with a “Fragile – Handle with Care” warning!

Not only is agriculture a sensitive sector, but most ASEAN countries are relatively small in terms of population, GDP and technical capacity. One way to address this limitation is through collective action. Yet collective action does not just appear like mould in the monsoon season; it has to be fostered to overcome structural differences (net food importers versus net food exporters, for example) as well as bureaucratic inertia and fragmentation. Examples include:

- Collective political recognition of the stakes and will to resolve them at ministerial level;

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- empowerment of technical experts from member countries to formulate technical options and evolve common negotiating positions;
- reaching across ministry “silos” at country level and engaging local stakeholders;
- training of the negotiating team in large forum international negotiation processes;
- continuity of participation in working group meetings; and
- harmonizing working group timelines with UNFCCC timelines.

This paper’s contribution to the symposium is to reflect on lessons learned through the establishment of the ASEAN Negotiating Group for Agriculture (ANGA) and its engagement with the UNFCCC framework negotiations and the process of collaboration and self-organization of the ASEAN Climate Resilience Network (ASEAN CRN) to highlight the specific needs of the region in the context of the global climate governance framework.

ASEAN-CRN was formed in 2014, providing a platform for regional exchange by the ASEAN Technical Working Group on Agriculture Research and Development (ATWGARD) reporting to the ASEAN Ministers of Agriculture and Forestry (AMAF). Utilizing knowledge products and insights from the activities of the network, the ASEAN Negotiating Group on Agriculture (ANGA) was further established by AMAF to enhance regional engagement in multilateral environmental agreements on issues related to agriculture.

The ASEAN Negotiating Group on Agriculture (ANGA) enables the region’s agriculture sector to shape global climate governance frameworks. The case of ANGA highlights that opening up space for polycentric systems can foster climate action in relevant sectors. Supporting regions to navigate UNFCCC processes can further enable polycentric systems, enhancing climate resilience and adaptation.

Efforts of the ASEAN Negotiating Group for Agriculture (ANGA) are recognized by negotiating groups under the UNFCCC such as the G77 and China, the EU and US negotiation groups. It is pioneering as ANGA is the first of its kind to negotiate for ASEAN jointly under UNFCCC processes. ASEAN CRN, on the other hand, are recognized as the first and consistent entity to introduce and support ASEAN agriculture sector in dealing with the impacts of climate change.

The approaches to get to the current results right now are multi-pronged, creative, and have often ran into intrinsic bureaucratic systems at the national and regional levels. This presentation will highlight more than the achievements, but the approaches taken to support climate action within the agrifood system as models of polycentric governance approaches.

## **References**

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