Proceedings

23rd Asia Pacific Agricultural Policy Forum

"Enabling Agrifood Systems Research and Policies towards the Sustainable Food System Transformation in the Asia Pacific Region"

- *Regional Policies on Agrifood System and Rural Transformation*
- *Policy-driven Agrifood System Research*

Date November 18~19, 2024

Venue Asawin Grand Convention Hotel, Bangkok, Thailand

Proceedings
23rd Asia Pacific Agricultural Policy Forum

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The 23rd Asia Pacific Agricultural Policy Forum was a highly collaborative effort, organized by a team of professionals and experts:

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Each committee member contributed his/her unique expertise to the creation and execution of a dynamic and well-structured Forum.

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23rd Asia Pacific Agricultural Policy Forum

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Policy Synthesis of the 23rd APAP Forum

23rd Asia Pacific Agricultural Policy Forum

The 23rd Asia Pacific Agricultural Policy Forum

Enabling Agrifood Systems Research and Policies towards the Sustainable Food System Transformation in the Asia-Pacific Region

November 18, 2024, Bangkok, Thailand

Context

As food systems in the Asia-Pacific region evolve, they face the dual burdens of ensuring sustainable agricultural practices while improving livelihoods and nutrition outcomes for their populations. These challenges are compounded by the widespread implications of climate change, which profoundly affect agrifood systems across the region. The Asia-Pacific region's diverse economies, agrifood systems, and political landscapes underscore the importance of collaboration and knowledge-sharing among stakeholders. Scientific research and evidence-based policymaking are increasingly critical for addressing issues such as climate resilience, environmental sustainability, and food security. Partnerships between the public and private sectors are particularly vital in driving effective solutions.

The 23rd Asia Pacific Agricultural Policy (APAP) Forum, held on November 18, 2024, in Bangkok, marked a significant milestone in the collective effort to transform the region's agrifood systems. Under the theme, "Enabling Agrifood Systems Research and Policies Towards Sustainable Food System Transformation in the Asia-Pacific Region," the forum addressed critical challenges at the intersection of agriculture, environment, and societal well-being.

The forum featured research and discussions that emphasized the region's growing momentum in tackling the integrated challenges of climate change, environmental degradation, inequality, and food and nutrition security. Asia-Pacific's agrifood systems underpin global food security but face significant challenges, particularly among marginalized populations such as smallholder farmers, women, and children. These groups are disproportionately impacted by limited access to labor-saving technologies, inadequate policy engagement, and climate vulnerabilities. Innovations in sustainable agrifood systems were shared alongside efforts to foster gender inclusivity and rural resilience. Despite these strides, gaps persist in translating research into actionable policy, particularly for vulnerable communities.

By fostering regional solidarity and actionable knowledge-sharing, the APAP Forum continues to advance inclusive growth, resilience, and access to affordable and nutritious food. This year's discussions reinforced the critical role of mobilizing research and policy innovation to address systemic barriers in agrifood systems.

Climate Change and Agriculture

Agriculture in the Asia-Pacific region faces the dual challenges of meeting food security needs while adapting to climate change. Climate change-manifesting as droughts, floods, and saltwater intrusion-has disrupted agricultural productivity and household livelihoods. In regions like the Tonle Sap Lake in Cambodia and the sago-producing Mukah Division in Malaysia, environmental and socio-economic pressures compound vulnerabilities.

Rice is a cornerstone of food security and livelihoods in the Asia-Pacific region and is the staple food for about 4 billion people globally, contributing 16% of global calorie intake. However, climate change poses significant threats to rice production. Projections suggest a median decline of 0.7% in rice yields per decade, exacerbating food insecurity among vulnerable populations.

Yet, the Asia-Pacific region's diverse ecosystems offer unique opportunities to drive sustainable change while addressing greenhouse gas (GHG) emissions associated with food systems. Rice farming also contributes to climate change as 10% of agricultural greenhouse gas emissions globally stem from rice production. Practices such as alternative wetting and drying, residue management, and the adoption of low-emission rice varieties can reduce emissions by up to 65%. Despite these opportunities, investment in mitigation remains disproportionately low compared to potential returns. Efforts to develop rice carbon markets and promote sustainable practices through platforms like the Sustainable Rice Platform (SRP) offer promising pathways for progress.

Technological advancements and precision tools are increasingly being utilized to adapt to climate risks. High-resolution mapping, satellite imagery, and flood assessments help predict yields and guide timely interventions. In Lao PDR, cluster-based adaptation strategies have been piloted, incorporating breeding for drought, flood, and heat tolerance. Such innovations underscore the importance of data-driven approaches to enhance resilience. Regional collaborative efforts to share adaptation strategies and invest in infrastructure are essential to mitigate these impacts and bolster resilience.

Food and Nutrition Security in Food System Transformation

Transforming food systems to ensure healthier diets is a pressing challenge in the Asia-Pacific region, where undernourishment, moderate to severe food insecurity, and diet-related non-communicable diseases (NCDs) persist. The prevalence of child wasting, rising rates of obesity, and the increasing consumption of unhealthy diets contribute significantly to the region's health burden. Notably, 74% of deaths in Thailand are attributed to NCDs, with sugar-sweetened beverages (SSBs) playing a prominent role in dietary risks.

A food systems framework was introduced to address these challenges, focusing on food supply, food environment, and consumer behavior. Four core principles-adequate nutrition, balanced energy consumption, dietary moderation, and food diversity-underpin the development of healthy diets. Features of healthy dietary patterns include limiting harmful components like excessive salt, sugar, and saturated fats while promoting nutrient-rich local foods that meet physiological requirements. The framework also recognizes that achieving these goals hinges on addressing the cost of healthy diets, with affordability remaining a key barrier. In the Asia-Pacific region approximately 232.8 million people unable to afford nutritious meals.

Promising approaches include food-based dietary guidelines (FBDGs) that guide food choices across different age groups and life stages, emphasizing agricultural diversification and innovation. For example, Thailand's linear programming approach has identified local foods to bridge nutrient gaps, while Myanmar has adopted Thai food composition data to develop its FBDGs. Biofortification initiatives, such as vitamin A-rich sweet potatoes and iron-fortified beans, have demonstrated measurable health benefits, including reduced vitamin deficiencies and improved cognitive outcomes.

Policy measures, such as Thailand's tax on SSBs, have successfully reduced consumption among vulnerable groups. However, comprehensive public health policies are needed to address sugar intake from non-taxed sources, such as street foods. Recommendations include combining fiscal measures with broader initiatives to enhance consumer awareness, align food supply chains with nutritional goals, and connect food systems with health, education, and climate agendas. These coordinated efforts are critical for addressing malnutrition, improving public health, and fostering sustainable dietary practices.

Need for Regional Collaboration in Food Systems Transformation

The complexity of agrifood systems in the Asia-Pacific region necessitates coordinated regional action to address shared challenges and achieve sustainable food system transformation. Collaborative efforts are vital to tackling issues such as labor migration, transboundary haze pollution, and climate-driven disruptions, which have wide-reaching socio-economic and environmental consequences.

A particularly urgent issue is crop residue burning, a prevalent practice in countries like Thailand, Laos, Myanmar, Cambodia, and Vietnam. While burning is a cost-effective method for land preparation, it produces significant PM 2.5 emissions, contributing to air pollution, transboundary haze, and severe public health risks. Addressing this issue requires a multi-pronged approach, including policy incentives for alternative land preparation methods, farmer education on residue management, and the development of public-private partnerships to create markets for agricultural residues. However, more research is needed, particularly at the farm-level, to inform evidence-based regional policy and develop scalable solutions.

Labor migration emerged as another critical area requiring regional collaboration. Migration patterns influence agricultural labor availability and agrifood system productivity, particularly in conflict-affected areas such as Myanmar, while remittances are key source of household income in the region. Collaborative research on migration can inform policies that improve labor conditions, support remittances, and integrate migrant workers into resilient agrifood systems.

To accelerate progress, the forum provided actionable recommendations for key stakeholders:

Governments: Integrate climate-smart agricultural practices into national and regional frameworks, provide incentives for sustainable farming, and prioritize marginalized communities in policy design and implementation.

Researchers: Generate actionable insights into climate resilience, equity, and technological innovation, ensuring these insights translate effectively into practice.

Development Partners and Private Sector: Invest in capacity building, public-private partnerships, green finance, and technology transfer to foster inclusive and sustainable growth.

Scale investments in regional capacity building, public-private partnerships, green finance, climate change adaptation, and technology transfer to foster inclusive and sustainable growth.

Participants also called for stronger regional institutions to facilitate knowledge-sharing, harmonize regulatory frameworks, and support multi-country initiatives. Enhancing integration between food systems and strategies related to health, education, and climate was emphasized as a key opportunity to align sustainable development goals with food system transformation.

By embedding inclusivity, resilience, and sustainability into policies and practices, regional collaboration can address interconnected challenges such as climate change, food insecurity, and inequality. Strengthened research capacities, multi-sectoral partnerships, and innovative policies are essential to drive transformative progress. These efforts will ensure that food systems not only adapt to emerging challenges but also contribute meaningfully to equitable and sustainable development across the Asia-Pacific region.

ACKNOWLEDGEMENT

The 23rd APAP Forum was co-hosted by Kasetsart University, Korean National Committee on Irrigation and Drainage, and the APAP Forum Secretariat, and co-organized by the USAID-funded Feed the Future Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI) and the Global Agriculture Policy Institute.

The organizers wish to acknowledge the speakers, panelists, sponsors, and rapporteurs whose contributions were indispensable to the success of the conference.

SPONSORS

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Korea Rural Community Corporation

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The 23rd Asia Pacific Agricultural Policy Forum

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23rd Asia Pacific Agricultural Policy Forum

23rd Asia Pacific Agricultural Policy (APAP) Forum

Concept Note

Enabling Agrifood Systems Research and Policies towards the Sustainable Food System Transformation in the Asia Pacific Region

- ☐ Date： November 18~19, 2024
- ☐ Venue： Asawin Grand Convention Hotel, Bangkok, Thailand
- ☐ Hosts： Kasetsart University, Korean National Committee on Irrigation and Drainage, & APAP Forum Secretariat
- ☐ Organizers： Department of Agricultural and Resource Economics, Kasetsart University, USAID-funded Feed the Future Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI), Global Agriculture Policy Institute (GAPI)
- ☐ Sponsors : Korea Rural Community Corporation (KRC), Kasetsart University

The economies of nations within the Asia Pacific region evidence the momentum of their concerted efforts to support research and promote climate change policies addressing issues confronting food value chains, by developing climate-resilient agriculture and fisheries. To remedy the recurring impact of climate change in the region that has adversely eroded economic gain, requires regional solidarity and cooperation in research endeavors and policy formulation.

Significant strides in research and policies have focused on sustainable economic growth projections and food security, which are aligned with encouraging governance efforts to advance gender inclusivity and equity. These noble efforts, however, should be purpose-driven and more fully integrated to address concerns of marginalized communities and vulnerable groups, particularly in rural economies. The intent of research and policy actions should be to boost agricultural economics and fishery food systems, as measures to mitigate future adverse effects of unsecure food systems.

In recent past decades, the impacts of climate change have become increasingly evident and have especially adversely affected marginalized farming communities and rural economies in most countries in the region. Rural sectors of society invariably struggle with the consequential effects of poverty, including access to affordable, nutritious diets. To mitigate these harsh realities,

governments and academic research institutions, international development agencies, and private sector entities are investing significant resources to innovate and promote evidence- based solutions across agrifood systems. In recent years, there has been a considerable number of published research studies, leading to policies related to agrifood systems, not focusing solely on agricultural productivity, but also examining food and nutrition, environmental sustainability, and the inclusion, empowerment, and resilience of women. In effect, inclusive and resilient approaches are essential to link research and policy targets so that scientific knowledge becomes the dominant source for implementing evidence-based policies.

Targeted policy research is critical to effectively address environmental sustainability and climate adaptation measures, highlighting the role of agriculture and food system in reducing global emissions. Effective policy research projects are often constrained by inadequate data generation capacities, appropriate methodologies, and limited access to innovative technologies. The greatest need is to focus on vital agricultural research sectors, such as aquaculture and fisheries, and forest management. Each facet is equally fundamental, given their important linked roles and contributions to agrifood systems.

Despite the proliferation of research studies and policies, there is limited research and few policy measures directed at the issues that are key to transforming the agrifood system, particularly, those affecting smallholding farmers and local producers, rural women and children who are the vulnerable groups most affected by climate change, hunger, and poverty. This would require regional solidarity and cooperation in promoting systematic efforts to integrate and harmonize research with policy interventions, intended to promote inclusive transformation of the agrifood systems and sustain development assistance.

It is in this context that decision-makers, academic champions, and development practitioners in the Asia Pacific region are again tasked to foster and share significant research works and policy measures that will contribute to the inclusive transformation of agriculture and food systems. These matters are deemed essential for creating resilience in the face of climate change, and fostering better access to affordable and nutritious food, as well as ensuring environmental and economic sustainability throughout the Asia Pacific region.

The Asia Pacific Agricultural Policy (APAP) Forum that was launched in 2002 is a network and coalition of various organizations, institutions and individuals, seeking to foster understanding of policies and to build cooperation in sustainable agricultural and rural development among countries in the Asia-Pacific Region.

During 2024 APAP Roundtable held at the Perbanas Institute on 26 April 2024, the APAP Board Meeting acknowledged the significance of continuing the exchange of knowledge and sharing research efforts, leading to policies that will promote inclusive rural transformation and improve agrifood systems.

The Board of Directors agreed to the theme of the 23rd APAP Forum: Enabling Agrifood Systems Research and Policies towards the Sustainable Food System Transformation in the Asia Pacific Region. The 23rd APAP Forum, scheduled for November 18-19, 2024, will be co-hosted by Kasetsart University, the Korean National Committee on Irrigation and Drainage (KCID), and the APAP Forum Secretariat, co-organized by the USAID-funded Feed the Future Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI), and the Global Agriculture Policy Institute (GAPI), and sponsored by the Korea Rural Community Corporation (KRC), to emphasize the importance of evidence-based research in policy processes.

Objectives

1. To foster common understanding among stakeholders in policy and program development towards sustainable food systems at the national and the Asia-Pacific regional levels.
2. To discuss and exchange views on current issues and challenges in implementing policies for transboundary environmental and resource management, sustainable food systems development, and food and nutrition security into practice.
3. To promote knowledge exchange and sharing of research evidence in policy-making.
4. To identify best policies from collaborative efforts to promote the development of sustainable agriculture and food systems in the Asia-Pacific region.

Program

Time	Activities	Notes
08:00 - 08:30	• **Registration**	Phra-in Meeting Room (Floor 2)
08:30 - 09:00	• **Opening Session**	
	• **Welcome Remarks**	**Herman Z. Ongkiko**, Chairman, APAP Forum & President, Orient Integrated Development Consultants, Inc. (OIDCI), Philippines **Chongrak Wachrinrat**, President, Kasetsart University, Thailand
	• **Opening Address**	**Ki Hee Ryu**, Secretary General, APAP Forum & Professor, GBST, Seoul National University & Former Unit Head, Southeast Asia Department, ADB, Republic of Korea
	• **Message from Honorary Chaiman, APAP Forum**	**Sang Mu Lee**, President, Korea Overseas Agro- Resources Development Association & Chairman, Global Agriculture Policy Institute (GAPI), Republic of Korea
	• **Message from Feed the Future Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI)**	**David Tschirley**, Director, PRCI, Michigan State University, USA
	• **Message from Korean National Committee on Irrigation and Drainage (KCID),**	**Byung Ho Lee**, Chairman, Korean National Committee on Irrigation and Drainage, Republic of Korea
	• *Photo session*	
09:00 - 10:00	• **Keynote Session**	Moderator: **Orachos Napasintuwong**, Associate Professor, Kasetsart University, Thailand
	Sustainable Agrifood Systems Transformation in Asian and Pacific Region	**Meeta PunjabiMehta**, Senior Food System Officer, FAO Regional Office for Asia and the Pacific, Bangkok, Thailand
	Nutritional and healthy diet for food system transformation in Asia	**Emorn Udomkesmalee**, Senior Researcher and Former Director, Institute of Nutrition, Mahidol University, Thailand & Former International Food Policy Research Institute Board Chair
10:00 - 10:20	• **Coffee Break**	
10:20 - 12:00	• **Session 1: Regional Policies on Agrifood System and Rural Transformation**	Moderator: **Larry C.Y. Wong**, Senior Visiting Fellow, Institute of Strategic and International Studies Malaysia & Adjunct Professor, Taylor's University, Malaysia

Time	Activities	Notes
10:20 - 10:40	Presentation 1: Climate change in Asian agriculture: Mitigation and adaptation strategies in rice production	**Alisher Mirzabaev**, Senior Scientist for Policy Analysis and Climate Change, International Rice Research Institute, Philippines
10:40 - 11:00	Presentation 2. Sustainable Rice Practice: How SRP encourage GHG reduction	**Wyn Ellis**, Executive Director of Sustainable Rice Platform, Thailand
11:00 - 11:20	Presentation 3. Crop residual burning policy in Cambodia-Laos-Thailand- Vietnam	**Piya Wongpit**, National University of Laos, Laos PDR (PRCI research group)
11:20 - 12:20	• **Discussion on Policy Implications:** 1. **Nipon Poapongsakorn**, Distinguished Fellow, Thailand Development Research Institute (TDRI), Thailand 2. **Ravi Khetarpal**, Executive Director, Asia-Pacific Association of Agricultural Research Institutions, Bangkok, Thailand 3. **Pouchamarn Wongsanga**, Regional Component Leader, Promoting Sustainable Agricultural Value Chains in ASEAN (ASEAN AgriTrade) Project Director, Agriculture and Food Cluster, GIZ Thailand 4. **Herman Z. Ongkiko**, President, Orient Integrated Development Consultants, Inc. (OIDCI), Philippines 5. **David Ortega**, Professor, Michigan State University, USA	
12:20 - 13:40	• **Lunch Break**	Pra Visanu (3rd)
13:40 - 14:00	• **Special talk:** Development and Validation Study Outcomes of Low- Carbon Rice Farming Management Using Water Depth Sensors	**Wonho Lee**, Director, Climate Technology Solutions, Division, Greenery Inc., Republic of Korea
14:00 - 16:00	• **Session 2: Policy-driven Agrifood System Research**	Moderator: **Sahat M. Pasaribu**, Agricultural Economist, National Research and Innovation Agency (BRIN), Indonesia
14:00 - 14:20	Presentation 1: The continuous rise in the adoption of labor-saving agricultural technologies in Asia: Evidence from Myanmar	**Bart Minten**, Senior Research Fellow, Development Strategies and Governance Unit, International Food Policy Research Institute, IFPRI, Myanmar program, Laos PDR
14:20 – 14:40	Presentation 2: Food security in marginalized and vulnerable areas of Southeast Asia	**Anita Rosli**, Universiti Putra Malaysia, Malaysia (PRCI research group)

Time	Activities	Notes
14:40 - 15:00	Presentation 3: Consumption inequality between farm and non-farm households in rural Vietnam	**Pham Le Thong**, Dean of Faculty of Agricultural Economics, Can Tho University, Vietnam(PRCI research group)
15:00 – 15:20	Presentation 4: Agrobiodiversity, dietary diversity, and food system transitions: Reflections from Southeast Asia and the Pacific	**Deborah Nabuuma**, Scientist I– Nutrition Food environment and consumer behavior, Alliance of Bioversity International and CIAT, Malaysia
	Presentation 5: Youth in agriculture transformation: A story from Bangladesh (recorded for review)	**A.S. Moniruzzanman**, Khan Head, Climate Change Programme, Bangladesh Rural Advancement Committee (BRAC), Bangladesh
	Presentation 6. Facilitating agriculture green development in China: The current efforts and the way forward (recorded for review)	**Jikun Huang**, Professor, School of Advanced Agricultural Sciences, Peking University, People's Republic of China
15:20 - 15:40	• **Coffee Break**	
15:40 - 16:20	• **Discussion on Policy Implications** 1. **Shoichi Ito**, Professor Emeritus, Kyushu University, Japan 2. **Zaw Oo**, Executive Director, Centre for Economic and Social Development, Myanmar 3. **Ganesh Thapa**, Former Regional Economist, Asia and the Pacific Division, IFAD, Nepal 4. **Samnang Nguon**, Director, ECOLAND and Dean, Graduate School, Royal University of Agriculture, Cambodia	Moderator: **Aileen Lapitan**, Dean, College of Public Affairs and Development, University of the Philippines Los Banos, Philippines
16:20 - 16:40	• Vote of Thanks • Closing Message	**Hoang Thi Dzung**, Secretary General, Vietnam Federation of Agriculture and Rural Development Associations, Vietnam **Tin Htut Oo**, Chairman, Agribusiness and Rural Development Consultants (ARDC), Myanmar
17:00 - 17:30	• **APAP Board Meeting**	Phra Mae Thorani Meeting Room (1st floor)
18:00	• Depart for dinner (APAP Board members and invited guests)	Dinner at Faculty of Economics, Kasetsart University

Updated on November 15, 2024 12:45

For updates about the 23rd APAP Forum, please visit https://kasets.art/I3TP0y.

〉〉 About APAP Forum

Asia Pacific Agricultural Policy Forum

The **Asia Pacific Agricultural Policy (APAP) Forum**, launched in 2002, is a network and coalition of non-governmental organizations and individuals seeking to foster understanding of agricultural policies and build cooperation in agricultural development among countries in the Asia-Pacific Region.

The Forum has hosted annual meetings to have presentations and discussions on the current issues in agricultural and fisheries sector since 2002. From 2011, it started holding the APAP Roundtable mainly with board of directors of the Forum for detailed and in-depth deliberations on the topic and better preparation for annual meetings of the Forum.

Rationale

Since WTO Regime, the predominant spread of FTA/RTA and the on-going negotiation of WTO/DDA over the world affect the market in the fields of agriculture toward the globalization and openness. Under the situation of intensifying competition in securing the resources including food in the global market, the agriculture and rural community in Asia-Pacific region are facing more unfavorable condition, considering that those of the region are suffering from poor resources, food insecurity, and inefficient production due to the traditional, conventional farming environments.

Under the difficulties, the further development of agricultural and rural economy in the region needs more firm cooperative relations among member countries through exchanging respective experience and information in terms of agricultural policy and research. Though the members need the network for such cooperation throughout the region, the establishment of substantial and effective cooperative network in and out of region is still underway due to the differences in the regional, historical background, and the stages of development in agriculture.

In the context of such needs and desires, the Forum aims to contribute to the strong cooperative network among experts, policy-makers, and private stakeholders in the fields of agriculture in the region, and seek for recommendable alternatives applicable to the agricultural field in the region.

Objective

1) To foster and reinforce cooperation on agricultural development issues among Asia-Pacific countries;

2) To hold symposia on major agricultural policy issues impinging on agricultural and rural development in the region; and

3) To support research on agricultural and rural development issues toward improving the information base for policy decision-making

List of Board Members

- Chairman: **Mr. Herman Z. Ongkiko**, President, Orient Integrated Development Consultants, Inc. (OIDCI), Philippines
- Vice Chairman: **Dr. Sahat M. Pasaribu**, Agricultural Economist, National Research and Innovation Agency (BRIN), Indonesia
- Secretary General: **Dr. Ki Hee Ryu**, Professor, GBST, Seoul National University & Former Unit Head, Southeast Asia Department, ADB, Korea
- Honorary Chairman: **Dr. Sang Mu Lee**, President, Korea Overseas Agro-Resources Development Association, Korea

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	Mr. A.S. Moniruzzanman Khan (Head, Climate Change Programme, BRAC)
China	Dr. Jikun Huang (Professor, School of Advanced Agricultural Sciences, Peking University)
	Dr. Zhong Tang (Chair Professor, School of Agricultural Economics and Rural Development, Renmin University of China)
India	Dr. P.K. Joshi (Former Director for South Asia, IFPRI)
Indonesia	Dr. Hermanto Siregar (Rector, Perbanas Institute)
Japan	Dr. Shoichi Ito (Professor Emeritus, Kyushu University)
	Dr. Masahiko Gemma (Professor and Vice President for International Affairs, Waseda University)
Korea	Mr. Yong Kyu Choi (Former Chairman, Global Agriculture Policy Institute)
Malaysia	Dr. Larry C.Y. Wong (Senior Visiting Fellow, Institute of Strategic and International Studies Malaysia & Adjunct Professor, Taylor's University)
Myanmar	Mr. Tin Htut Oo (Chairman, Agribusiness and Rural Development Consultants (ARDC) & Former Union Minister for Agriculture, Livestock and Irrigation)
	Dr. Zaw Oo (Executive Director, Centre for Economic and Social Development, CESD)
Nepal	Dr. Ganesh Thapa (Former Regional Economist, Asia and the Pacific Division, IFAD)
Philippines	Dr. Arsenio M. Balisacan (Secretary, National Economic and Development Authority)
	Dr. William C. Medrano (Former Undersecretary for Livestock, Department of Agriculture)
Thailand	Dr. Nipon Poapongsakorn (Distinguished Fellow, Thailand Development Research Institute)
	Dr. Orachos Napasintuwong (Associate Professor, Department of Agricultural and Resource Economics, Kasetsart University)
Vietnam	Ms. Hoang Thi Dzung (Secretary General, Vietnam Federation of Agriculture and Rural Development Associations)
	Dr. Dang Kim Son (Head of Science Board, Institute of Agriculture Market and Institution Research, Vietnam National University of Agriculture & Former Director General, IPSARD)

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History of Forum

	Subject	Date & Venue
23	Session 1: Regional Policies on Agrifood System and Rural Transformation Session 2: Policy-driven Agrifood System Research	Nov 18~19, 2024 Bangkok, Thailand
	2024 APAP Roundtable on Fostering Climate Resilient Agrifood Systems and Digital Agriculture Toward Inclusive Rural Transformation and Sustainable Development	Apr 26~27, 2024 Jakarta, Indonesia
22	Session 1: Regional Perspectives in Agrifood Supply Chain and Digital Technologies Session 2: Country Perspectives in Agricultural Production Systems and Digital Technologies	Sep 14~16, 2023 Ansan, Korea
	2023 APAP Virtual Roundtable on Enabling Strategic Policies and Regional Cooperation to Mitigate Greenhouse Gas Emissions Toward Resilient Agriculture and Sustainable Rural Development	Apr 24, 2023 Virtual (Manila, Philippines)
21	Session 1: Regional Perspectives on the Dynamics of Digital Transformation Session 2: Enabling Country Policies and Programs in Digital Transformation Toward Resilient Agriculture and Sustainable Rural Development	Oct 14 & Nov 18, 2022 Virtual
	2022 APAP Virtual Roundtable on Enabling Resilient Agriculture and Inclusive Rural Development Through Digital Transformation	May 27, 2022 Virtual (Hanoi, Vietnam)
20	Session 1: Enhancing Regional Solidarity and Cooperation on Recovery Measures Towards Food Security Session 2: Country Level Enabling COVID 19 Recovery Measures for Sustainable Agriculture and Rural Development	Oct 20 & Nov 20, 2021 Virtual
	2021 APAP Virtual Roundtable on Enabling Recovery Measures Toward Sustainable Agriculture and Rural Development: Prospects for Resilient and Inclusive Growth Amidst the COVID Pandemic	Apr 29 & May 27, 2021 Virtual
19	Seminar 1: Impact of COVID-19 Pandemic on Food Security, Agriculture and Rural Economy: Current Issues and Challenges Seminar 2: Enabling Policies and Emerging Good Practices in Addressing Food Security and Market Scare Amidst the COVID Pandemic	Nov 4 & Dec 2, 2020 Virtual
18	Session 1: Regional Policies and Enabling Environment for Secured Happiness through Inclusive Rural Transformation Session 2: Country Perspectives in Enabling Human Happiness and Well-being in Rural-Urban Continuum	Aug 29~30, 2019 Seoul, Korea
17	Session 1: Regional Policies and Development Measures on Inclusive and Sustainable Rural Transformation Towards Secured Happiness Session 2: Country Perspectives in Enabling Inclusive and Sustainable Rural Transformation and Secured Happiness in Rural Communities	Aug 30~31, 2018 Ansan, Korea
	2018 APAP Roundtable on Enhancing Regional Food Security Through Inclusive Rural Transformation	Mar 24~25, 2018 Chiang Mai, Thailand
16	Session 1: Inclusive Rural Development focusing on Poverty Eradication Session 2: Enabling the Environment Towards the Enhancement of Agricultural Competitiveness Session 3: Regional Integration in the Context of Food Safety	Aug 31~Sep 1, 2017 Seoul, Korea
	2017 APAP Roundtable on Sustainable Public Private Partnerships and Agricultural Trade Policies Towards Regional Food Security	Apr 6~7, 2017 Kitakyushu, Japan
15	Session 1: Alternative Future Production Systems with Sustainable Management of Land and Water Resources for Agriculture and Food Security Session 2: Public Private Partnership and Appropriate Trade Policies for Sustainable Use and Management of Land and Water Resources for Agriculture and Food Security	Sep 8~9, 2016 Seoul, Korea

	Subject	Date & Venue
	2016 APAP Roundtable on Sustainable Management of Water Resources for Agriculture and Food Security	Apr 20-22, 2016, Beijing, China
14	Session 1: Trade Agreement and Agricultural Investment Session 2: Rice Industry Development and Regional Rice Cluster Focusing on Supply Chain and its Integration Session 3: Climate Change and Food-Energy-Water Nexus with Sustainable Agricultural Development in PPP Session 4: Agricultural and Rural Infrastructure Development with Human Resource Development and Governance Issues	Aug 31~Sep 1, 2015 Seoul, Korea
	2015 APAP Roundtable on Agricultural Investment and Competitiveness Facing the Era of ASEAN Economic Community and ASEAN+3	Mar 26~27, 2015 Bali, Indonesia
13	Session 1: Regional Integration for Rice Trade, Food Security and Inclusive Development Session 2: Promotion of Green Growth and PPP in Rural Development in the Changing Asia and the Pacific Session 3: Negotiation for Greater Regional Cooperation and Integration in Asia and the Pacific	Sep 1~2, 2014 Seoul, Korea
	2014 APAP Roundtable on A Way Forward to Regional Integration Focusing on Rice Industry and Rural Development through Strengthening Public Private Partnership	Mar 17~18, 2014 Manila, Philippines
12	Session 1: PPP for Strengthening Food Security and Farmers' Welfare: the Case of Rice Session 2: PPP in Cash Crops for Sustainable Agriculture Development Toward Food Security and Green Growth Session 3: PPP in Fruits and Vegetables Sector for Inclusive Sustainable Development, Food Security and Green Growth Session 4: PPP in the Livestock Sector Towards Food Security and Green Growth Session 5: PPP in the Fisheries Sector Towards Food Security and Green Growth	Aug 30~31, 2013 Seoul, Korea
	2013 APAP Roundtable on Green Growth through Public Private Partnership and Food Security	Apr 1~2, 2013 Miyazaki, Japan
11	Session 1: PPP in Rice Sector: Lessons Learned and Ways to Move Forward Session 2: Cash Crop-Public Private Partnership for Sustainable Development Session 3: Importance of PPP for Fruits and Vegetables Production and Trade Session 4: Patterns and Directions of PPP Towards Sustainable Livestock Development Session 5: Fisheries Forward-Opportunities, Challenges and Practices for PPP Session 6: PPP Modalities	Sep 3~4, 2012 Seoul, Korea
	2012 APAP Roundtable on Rethinking New Vision for Agriculture in the Asia Pacific Region: Towards Sustainable Food Security through Harmonized Public Private Partnership	Apr 5~6, 2012 Danang, Vietnam
10	Session 1: The Impact of Regional Economic Integration Expansion on Regional Rice Production and Trade Session 2: Strengthening the PPP in Agriculture on Cash Crops in the Asia Pacific Region Session 3: Regional Fruits and Vegetables Production, Consumption, and Developing Supply Chain & Trading Networks Session 4: Strengthening the PPP in Livestock Production in the Asia-Pacific Region Session 5: The Role of PPP in Enhancing Aquaculture Development in the Asia-Pacific Region	Aug 29-30, 2011 Seoul, Korea
	2011 APAP Roundtable on Market Integration and Regional Trade Expansion	Apr 1~2, 2011 Gyeongju, Korea

	Subject	Date & Venue
9	Session 1: Rethinking Strategies for Global and National Food Security Session 2: New Agricultural Policy Era after Food and Financial Crisis Session 3: Biofuel Development Food Price and Food Security Session 4: Climate Changes, Water Security and Agricultural Development	Jun 21-22, 2010 Seoul, Korea
8	Session 1: Negotiations Beyond WTO/DDA, FTAs, RTAs and EPAs Session 2: Food System Development Session 3: Aqua-Industry Development & Resource Management Improvement Session 4: Climate Change, Renewable Energy Resources & Bio-Security Session 5: Sustainable Rural Development Preventing Marginalization Session 6: Citrus & Blueberry Industry Development	Sep 1-2, 2009 Jeju Island, Korea
7	Session 1: Agricultural Negotiations & Regional Cooperation Session 2: Agri-Business & Agro-Food Industries - Changing Trends & Environmental Concerns Session 3: Ag-Flation & Agriculture Resource Management Session 4: Bio-Diversity, Bio-Security, Agriculture R&D and Environmental Sustainability Session 5: Off-Farm Income & Rural Development Session 6: Capacity Building Human Resource Development & Institutional Reform	Sep 9-10, 2008 Seoul, Korea
6	Session 1: Agricultural Negotiations & Regional Cooperation Session 2: Bio-Energy Development & Asia Pacific Agriculture Session 3: Information System Development for R&D and Extension in Agri-Rural Sector Session 4: Rural Credit System Development & Rural Investment Expansion	Sep 10-11, 2007 Jeju Island, Korea
5	Session 1: Food System Development and Agro-Food Industries Session 2: Agricultural Trade Negotiations and Asia-Pacific Agriculture Session 3: Fruits Industry, It's Development & Prospect Session 4: Sustainable Rural Development Session 5: Information Technology in Agriculture and Rural Sector Session 6: Fisheries Development & Resource Management	Sep 14-16, 2006 Jeju Island, Korea
4	Session 1: WTO/DDA Negotiations and Asia-Pacific Agriculture Session 2: Agricultural Mechanization and Post-Harvest Modernization Session 3: Management Strategy of Fisheries Resources for the Sustainable Fishery Development in the Northeast Asia Session 4: Forestry & Sustainable Mountain Village Development	Sep 5-6, 2005 Jeju Island, Korea
3	Session 1: The WTO/DDA negotiations and the Asia-Pacific agriculture Session 2: Livestock products market in the Asia-Pacific region Session 3: Strengthening the agricultural infrastructure and vitalizing the cooperative movements	Sep 22-23, 2004 Seoul, Korea
2	Session1: Agricultural Policy Reforms Adjusting to WTO Session 2: Cooperative Development and Rural Institutions in AP Countries Session 3: Agricultural Policy Simulation Modeling	Oct 22-26, 2003 Jeju Island, Korea
1	Session 1: WTO/DDA, Food Security and SARD in Asia-Pacific Session 2: Technology transferability for FS & SARD in Asia-Pacific Session 3: Resource mobilization for FS & SARD in Asia-Pacific	Nov 13-16, 2002 Jeju Island, Korea

3

Opening Program

- **Welcoming Remarks**
  - Mr. Herman Z. Ongkiko | Chairman, APAP Forum & President, Orient Integrated Development Consultants, Inc. (OIDCI), Philippines
  - Dr. Chongrak Wachrinrat | President, Kasetsart University, Thailand
- **Opening Address**
  - Dr. Ki Hee Ryu | Secretary General, APAP Forum & Professor, GBST, Seoul National University, Korea
- **Congratulatory Remarks**
  - Dr. Lee, Sang Mu | Honorary Chairman, APAP Forum & President, Korea Overseas Agro-resources-development Association, Korea
  - Dr. David Tschirley | Director, PRCI, Michigan State University, USA
  - Mr. Byung Ho Lee | Chairman, KCID, Korea

23rd Asia Pacific Agricultural Policy Forum

Opening Program

①	②	③
④	⑤	⑥

① Welcoming Remarks:
Mr. Herman Z. Ongkiko
② Welcoming Remarks:
Dr. Chongrak Wachrinrat
③ Opening Address:
Dr. Ki Hee Ryu
④ Congratulatory Remarks:
Dr. Sang Mu Lee
⑤ Congratulatory Remarks:
Dr. David Tschirley
⑥ Congratulatory Remarks:
Dr. Young Jin Park

Welcoming Remarks

Herman Z. Ongkiko
Chairman, APAP Forum & President, Orient Integrated Development Consultants, Inc. (OIDCI), Philippines

To our Revered Honorary Chairman of the APAP Forum, Dr. Sang Mu Lee, President, Korea Overseas Agro-Resources Development Association, Republic of Korea
Our distinguished Keynote Speakers
Honored Guests, Prominent APAP Board of Directors
Dear Colleagues, Ladies and gentlemen.

I take this a distinct privilege to welcome you all to the 23rd Asia Pacific Agriculture Policy (APAP) Forum in this elegant venue. Significantly, this Forum is co-organized by the Kasetsart University and the USAID funded Feed the Future, Innovation Lab for Food Security Policy, Research, Capacity and Influence (PRCI). This joint event underscores the importance of evidence-based research in policy formulation and decision-making process for inclusive agrifood system towards sustainable rural development.

This event today brings together policy decision-makers, development practitioners and academic champions to share knowledge and exchange views on current issues and emerging challenges in undertaking research and implementing policies for transboundary environmental and resource management, sustainable food systems development, and food and nutrition security into practice. The knowledge exchanges that will ensue are meant to look at enabling environment that would address the recurring impact of climate change in the Asia Pacific Region that has adversely eroded economic gains. We are all aware that significant strides in research and policies have focused on sustainable economic growth projections including food security, with encouraging gains in the integration of inclusivity and resiliency. These noble efforts however, should be purpose-driven and harmonized to address essential concerns of marginalized communities and vulnerable groups in the rural economies. The intent of research and policy actions should lead to boosting agriculture and fishery food systems as measures to mitigate the effects future food insecurity.

The Theme of the 23rd Asia Pacific Agricultural Policy Forum which is Mainstreaming Agricultural Systems Promoting Sustainable Rural Transformation and Regional Food Security is as timely as today's critical global concerns. The objectives of this Forum is noteworthy which is to foster common appreciation among key stakeholders in academic research, policy formulation and program development towards sustainable agrifood systems and promote knowledge exchanges and sharing of research evidence in policy making.

Join me as we acknowledge and welcome the presence of the eminent President of Kasetsart University of Thailand Dr Chongrak Wachrinrat We are deeply honored by the participation of Dr. David Tschirley, PRCI Director from the Michigan State University, who will share his discourse on Feed the Future Innovation. We are also joined by Dr. Wonho Lee, Director of Climate Technology Solutions. Greenery Incorporated, Republic of Korea and my good friend Dr. Byung Ho Lee, Chairman of the Korean National Committee on Irrigation and Drainage. We express our profound appreciation to our distinguished Moderators, Presenters and Discussants from the APAP Board of Directors, Kasetsart University and PRCI.

On behalf of the APAP Board of Directors, I would like to extend our sincere thank you to Dr. Orachos Napasintuwong, Associate Professor and the Kasetsart University for co-hosting this important event with the APAP Secretariat headed by Mr, Jiwan Yoon. To our benevolent sponsors, the USAID-funded Feed the Future, Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI and to the Global Agricultural Policy Institute (GAPI), Republic of Korea, our express our profound gratitude.

Let us all look forward to another meaningful and productive APAP Forum.
Good Day Everyone.

Welcoming Remarks

By

Dr. Chongrak Wachrinrat

Acting President, Kasetsart University

Mr. Herman Z. Ongkiko

President of Orient Integrated Development Consultants Incorporated, the Philippines, and Chairman of the Asia Pacific Agricultural Policy Forum

Dr. Ki Hee Ryu

Professor, GBST, Seoul National University & Former Unit Head, Southeast Asia Department, ADB, Republic of Korea

Dr. Sang Mu Lee

President of Korea Overseas Agro-Resources Development Association, and Chairman of the Global Agriculture Policy Institute, Republic of Korea

Dr. David Tschirley

Director of Feed the Future Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI), Michigan State University, USA

Honorable speakers,

Distinguished guests,

Ladies and gentlemen.

Good morning. It gives me great pleasure to welcome you on behalf of Kasetsart University, and to join with you at this opening of the 23rd Asia Pacific Agricultural Policy Forum, or it is called the APAP Forum for short.

We are all aware of the many significant challenges caused by climate change and damage to our environment, which has placed great demands on our food production systems. The success of APAP has been increasingly evidenced by advancements in academic, governmental, and commercial sectors, achieved by connecting collaborative research with evidence-based policies, which dynamically affect the economic realities of our societies.

Kasetsart University was established, more than 80 years, first focusing on research and education related to agricultural production and processing. Since then, the university has taken steps to become the leading university in Thailand and in the region, by promoting comprehensive academic programs, linking research outcomes to science-based policy making, and commercial development.

Kasetsart University has intentionally embraced the UN Sustainable Development Goals as a central part of its academic programs, and these goals have shaped many of its learning and research initiatives especially SDG1–no poverty and SDG2–zero hunger. As evidence of its continuing commitment, the university continues to grow and expand its reach, most recently by opening programs that provide advanced studies in medicine, nursing, and healthcare promoting SDG3–good health and wellbeing.

Kasetsart University's diverse academic programs are aligned with the United Nation's Sustainable Development Goals and with the objectives of this Forum. In particular, I want to recognize our Faculty of Economics, Department of Agricultural and Resource, for its role in organizing this forum. The Faculty of Economics has systematically undertaken to integrate economic analysis into agricultural development. With regard to the agricultural sector, KU's collective goals are intended to promote secure, sustainable agriculture production to achieve zero hunger, better nutrition, and good health, seeking to promote the health and well-being of all sectors of the global community.

I understand that the topics of this year's forum extend beyond issues directly related to climate change, crop yields, food production, and sustainable agrifood systems, but also includes conversations about regional policies that impact agrifood systems, food security, and rural transformation, particularly in marginalized and vulnerable areas in the Asia Pacific region. Achieving greater economic and gender equity are critical aspects of APAP's goals.

The primary purpose of today's program is to provide an opportunity for the speakers and all participants to share their expertise and exchange knowledgeable viewpoints on food security and sustainable development. I encourage all in attendance to actively participate in the discussions.

I am sure that your time will be well-spent during this valuable forum.

On behalf of Kasetsart University, I would like to express our sincere appreciation to all the distinguished speakers for your contributions and support, and to all honorable guests for your precious time.

Special appreciation goes to the APAP leadership team and staff for your efforts to make this program successful.

Now I would like to formally welcome you to Thailand and to this forum and wish you all a stimulating and fruitful discussion.

Thank you very much.

Opening Address

By

Dr. Ki Hee Ryu

Secretary General, APAP Forum, Professor, GBST, Seoul National University,
Korea and Former Portfolio Management Head, Southeast Asia Department, Asian Development Bank

The World's agrifood system has potential to help reduce poverty, improve food security and provide environment benefits. But the UN General Assembly in September 2023 reported that the targets of SDG 1 to end poverty and SDG 2 to zero hunger are not meeting the goals. SDG target 2.1 aims for a world free from hunger; it presents a vision of a world in which all people have access to safe, nutritious and sufficient food all year round. SDG Indicator 2.1.2, the prevalence of moderate or severe food insecurity in the population tracks progress towards the realization of the right to adequate food for all. In 2023, an estimated 28.9% of the global population (2.33 billion people0 were moderately or severely food insecure, meaning they did not have regular access to adequate food. The prevalence of moderate or severe food insecurity in Africa (58.0%) is nearly double the global average, while the prevalence in Asia (24.8%) is closer to the global estimate.

The UN urged developed countries to scale up and fulfill their respective ODA commitments to achieve the ODA target of 0.7 per cent of gross national income (GNI) for developing countries. All the development partners committed their call for actions to increase the investment in SDGs.

As the Asia Pacific region faces the recurring negative impact of climate change, their research on climate change policies needs to address issues confronting sustainable food system. It is essential to adopt inclusive approaches to link research and policy targets so that scientific knowledge becomes the dominant source for implementing evidence-based policies.

Agrifood systems are linked with population and markets that rely on transactions and information that influence the decisions farmers make about inputs, land, labor, capital, and outputs, and the choices consumers make about the food prices, production practices, and environmental impacts.

In addition, targeted policy research is critical to effectively address environmental sustainability and climate adaptation measures in agriculture and food system in reducing global emissions. Effective policy research projects are often constrained by inadequate data generation capacities, appropriate methodologies, and limited access to innovative technologies. However, there is limited research and few policy measures directed at the issues that are key to transforming the agrifood system for those affecting smallholding farmers and local producers who are the vulnerable groups most affected by climate change, hunger, and poverty.

The Asia Pacific Agricultural Policy (APAP) Forum aims to foster and share significant research works and policy measures that will contribute to the inclusive transformation of agriculture and food systems. During 2024 APAP Roundtable held at the Perbanas Institute, Indonesia in April 2024, the APAP Forum acknowledged the significance of continuing the exchange of knowledge and sharing research efforts, leading to policies that will promote inclusive rural transformation and improve agrifood systems.

This 23rd APAP Forum is co-hosted by Kasetsart University, Korean National Committee on Irrigation and Drainage and APAP Forum Secretariat. This forum is co-organized by USAID funded Feed the Future, Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI), and Global Agriculture Policy Institute (GAPI). We appreciate the honorable representatives of the co-hosting agencies, in particular the honorable President of Kasetsart University.

The Forum agenda will have a two-day program for about seventy participants from 14 countries in the Asia Pacific region. After the opening session, we will have three moderators who will lead the keynote session and two sessions with panel discussion for global and regional trends and country experiences. Tomorrow, we will have a field trip to Pathum Thani province.

By opening the session, the Secretariat wishes you have fruitful experience from active participation in this intensive Forum discussion in regional policies and policy-driven researches for the sustainable food system in the Asia and Pacific region.

Congratulatory Remarks

By

Dr. Sang Mu Lee

President, Korea Overseas Agro-resources-development Association & Chairman,
Global Agriculture Policy Institute

Excellencies, Honorable Guests, Board Members, Distinguished Participants, Ladies and Gentlemen,

Good morning, everyone. It is a privilege to acknowledge Dr. Orachos Napasintuwong, a professor at Kasetsart University and an invaluable member of the APAP Forum Board, whose exceptional dedication and support have been essential in bringing this Forum to life.

I would also like to extend my sincere thanks to Dr. Chongrak Wachrinrat, President of Kasetsart University, and Professor David Tschirley, Director of PRCI (USAID funded Innovation Lab for Food Security Policy Research, Capacity and Influence) at Michigan State University, for honoring us with their presence today.

Especially, the name 'Michigan State University' brings back fond memories of my time as a Spartan—first as a Master's student (1975-1976) and later for my PhD (1986-1989). I am truly glad to meet a fellow Spartan today.

Since its establishment, the APAP Forum has fostered the knowledge exchange and collaboration among the participants, strengthening its network by engaging eminent policy experts, decision makers, development practitioners and academic leaders from across the Asia-Pacific region.

This Forum, organized in conjunction with the PRCI workshop at Dr. Ora's suggestion, offers significant value by facilitating synergy between APAP board members and other distinguished experts, creating valuable opportunities for cooperation and the sharing of expertise.

The global economic landscape remains unpredictable, shaped by a range of complex factors such as persistent inflation, the ongoing effects of climate change, and rising geopolitical tensions. These challenges are aggravating poverty and food insecurity in the region, which is deeply affected by the growing interdependence of the global markets.

Agriculture and food systems in the region face mounting strain from rapid demographic shifts, urbanization, climate change, and resource depletion. Rising food and energy prices, supply chain disruptions, and inadequate infrastructure further threaten the fight against poverty and hunger.

Across the region, many smallholder farmers remain in rural areas, where poverty and food insecurity persist. Billions of people, particularly in low- and middle-income countries, have limited access to nutritious diets, including fruits, vegetables, and other essential foods. As climate change intensifies, these challenges are growing more critical.

As reported by IFPRI (International Food Policy Research Institute), agricultural research spending has stagnated, with Southeast Asia's agricultural research intensity falling from 0.50% of agricultural GDP in 2000 to just 0.33% in 2017—well below the 1% investment target set by the UN and African Union. Such underinvestment restricts the region's capacity to develop innovative solutions for these pressing challenges.

To tackle these challenges, we need advanced agrifood systems that empower vulnerable groups, especially smallholder farmers, rural women, and children. Digital technologies and innovative breakthroughs offer great potential to enhance agricultural productivity, improve food distribution, and reduce environmental impacts.

However, achieving these objectives requires a holistic approach that balances sustainability with equity, ensuring access to nutritious food for all and securing long-term food security in the face of climate change.

In this regard, governments, international partners, academia, and the private sector must work together to boost investments in agricultural R&D and innovation, while pursuing evidence-based approaches to transition toward sustainable, inclusive, and resilient agrifood systems.

Ladies and gentlemen,

Today's presentations and discussions provide a unique opportunity to deepen our insights into the multifaceted dynamics shaping climate-resilient agrifood systems, digital technologies, and the vital role of agricultural research.

The knowledge shared today will not only broaden our collective understanding but also guide us toward actionable and innovative strategies. And I am confident that this will represent another significant step forward in the continued success of the APAP Forum.

Before I conclude, I want to take a moment to thank our hosts, Kasetsart University and Korean National Committee on Irrigation and Drainage (KCID), along with our organizers, PRCI, Global Agriculture Policy Institute (GAPI) and the sponsor, Korea Rural Community Corporation (KRC) for their crucial role in ensuring meaningful outcomes of this gathering.

To all our esteemed participants, I wish you a meaningful and memorable stay in Bangkok, a dynamic city where history and modernity come together. Enjoy every moment in this vibrant capital. Thank you.

Congratulatory Remarks

By
Dr. David Tschirley
Director, PRCI, Michigan State University, USA

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

INNOVATION LAB FOR FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI)

The Feed the Future Innovation Lab for Food Security Policy Research, Capacity, and Influence (PRCI)

Presented at the 23rd Asia-Pacific Agricultural Policy Forum
November 18, 2024
Bangkok, Thailand

USAID | MICHIGAN STATE UNIVERSITY | IFPRI | Cornell University | ReNAPRI | UNIVERSITY OF GHANA | I&SER | KU KASETSART UNIVERSITY | RIS Research and Information System for Developing Countries

Assisting partners to build their own sustainable institutional capacity for food security policy research with impact

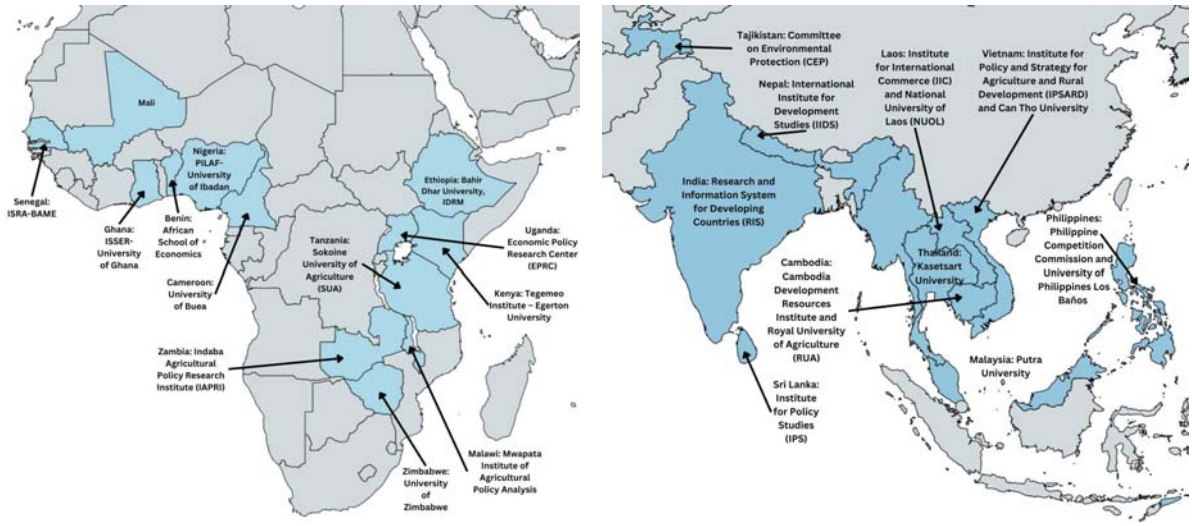
2

Deep Localization

- Start with what exists, including our partners' priorities
- Work with them to engage with ***their*** stakeholders' priorities
- Generate high quality, relevant empirical information
- Continuously engage with policy makers
- *Build programs of long-term, applied, stakeholder-engaged policy research and capacity strengthening around this approach*

3

A footprint across Africa and Asia



A footprint across Africa and Asia

- 13 countries in Africa
- 12 centers across 10 Countries in Asia

In Southeast Asia

- Supporting Kasetsart University's vision of building out a ***locally-led regional network*** of applied policy researchers on food systems transformation
  - Thailand, Cambodia, Laos, Vietnam, Malaysia, Philippines, Myanmar

6

Acknowledging

- KU's high level support
- Dr. Orachos Napasintuwong for her constant vision and leadership
- Dr. Uchook Duangbootsee for his leadership of one of the two current studies
- Dr. Piya Wongpit, National University of Laos and Dr. Anita Rosli, Universiti Putra Malaysia
  - Representing the two study teams
- Dr. David Ortega and Dr. Joey Goeb, MSU, supporting the two teams

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Thank You!

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Congratulatory Remarks

By
Mr. Lee Byung-ho
Chairman of Korean National Committee on Irrigation and Drainage

Good day!

I am Youngjin Park from the Korea Rural Community Corporation's Rural Research Institute. It is an honor to attend on behalf of Byungho Lee, the Chairman of the Korean Committee on Irrigation and Drainage, who is co-hosting today's APAP Forum. I will now read the congratulatory address on behalf of Chairman Byungho Lee.

I am delighted to congratulate you on hosting the 23rd AsiaPacific Agricultural Policy (APAP) Forum. I also extend a warm welcome and heartfelt thanks to all participants from the Asia-Pacific region for joining us at this significant event.

I would like to especially thank Kasetsart University in Thailand for organizing today's event, and extend my sincere appreciation to Chairman Herman Ongkiko, Vice Chairman Sahat Parsaribu, President of Korea Overseas Agro-resources-development Association and Honorary Chairman of the APAP Forum Sang Mu Lee and SecretaryGeneral Ki-hee, Yoo for traveling such long distances to be with us.

The global economic downturn has shifted the agricultural industry's structure from a global value chain to a more nationcentric approach. Additionally, frequent natural disasters caused by climate change are threatening the food production bases of developing countries. In response, countries worldwide are collaborating to overcome these challenges and develop sustainable strategies for agricultural and rural development.

Agriculture is a vital industry that responds sensitively to external factors, including climate, ecosystems, food supply chains, and consumption patterns. Unpredictable variables can lead to decreased agricultural production, potentially causing economic downturns in the Asia-Pacific's

agricultural and rural sectors. This forum aims to proactively address these challenges by sharing analyses on food security, agriculture, and rural economies, and by exploring effective strategies for regional agricultural and rural development. Discussions will also cover strategic policies to enhance agricultural competitiveness through digital technologies, promote sustainable rural development, and establish effective collaboration with various related organizations.

This forum will provide a foundation for researching viable agri-food systems and shaping policies to help transition to sustainable food systems across the Asia-Pacific region. It will also be a valuable opportunity for government officials, academics, and private sector leaders to openly share policy ideas and build a solid network for multilateral cooperation.

Finally, I would like to thank to all the organizers of the APAP Forum once again for organizing this meaningful platform for international exchange each year. I hope this Forum will serve as a valuable step forward for the future of agriculture and rural communities.

Thank you

23rd Asia Pacific Agricultural Policy Forum PROCEEDINGS

4

Keynote Session

- Keynote Speech 1: Dr. Meeta PunjabiMehta
  "Sustainable Agrifood Systems Transformation in Asian and Pacific Region - Key Findings from Thailand"
- Keynote Speech 2: Dr. Emorn Udomkesmalee
  "Nutritional and Healthy Diet for Food System Transformation in Asia"

23rd Asia Pacific Agricultural Policy Forum

Keynote Session

Moderator: Dr. Orachos Napasintuwong

Speaker1: Dr. Meeta PunjabiMehta

Speaker2: Dr. Emorn Udomkesmalee

Food and Agriculture Organization of the United Nations

AGRIFOOD SYSTEM TRANSFORMATION IN ASIA AND THE PACIFIC – KEY FINDINGS FROM THAILAND

23rd Asia Pacific Agricultural Policy Forum

Enabling Agrifood Systems Research and Policies towards the Sustainable Food System Transformation in the Asia Pacific Region

18 November 2024

Meeta Punjabi, Senior Food Systems Officer, FAO, RAP

GLOBAL AGRIFOOD SYSTEMS ARE NOT FIT FOR PURPOSE – FOR PEOPLE AND THE PLANET

The structure and state of the global food system is **future-unready**.
Globally, Agrifood systems face a range of interconnected structural and systemic issues:

FOOD AND NUTRITION	While some populations face overnutrition, others continue to suffer from undernutrition and micronutrient deficiencies
NATURAL RESOURCES	Unsustainable farming and livelihood practices contribute to deforestation, soil erosion, and water scarcity, undermining long-term agricultural potential
GHG EMISSIONS	The agrifood system contributes a significant portion of global GHG emissions through various stages from production to consumption.
RURUAL-URBAN DIVIDE	Disparities between rural areas, where most food production occurs, and urban areas, which are major centers of consumption

ASIA-PACIFIC REGION – DIVERSE AND DYNAMIC

The Asia and Pacific region has a **dynamic** and **diverse** nature. The region encompasses a wide range of economic, cultural, and ecological landscapes, each with distinct characteristics and complexities.

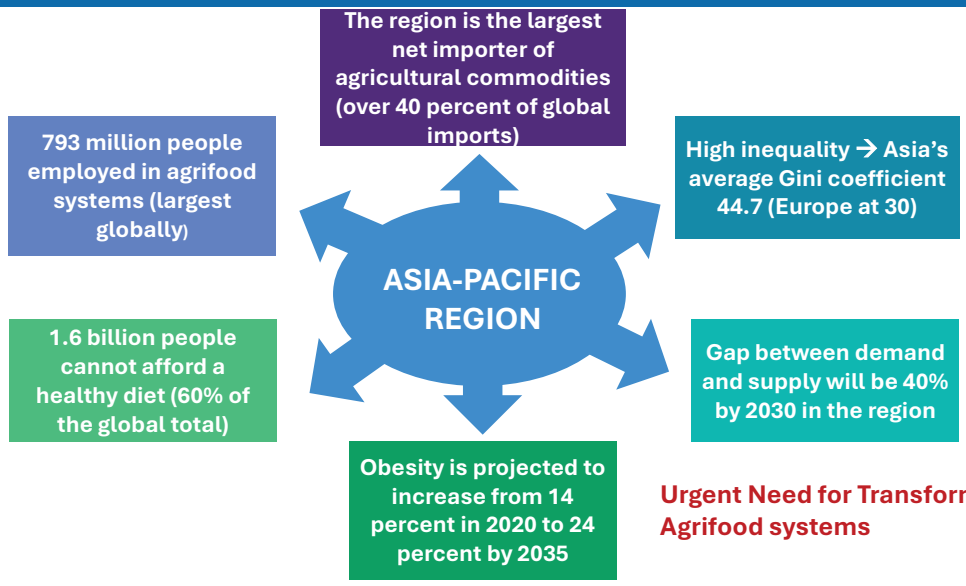
DIVERSE LANDSCAPES AND SUB-REGIONS

- South-East Asia
- South Asia
- Pacific SIDS
- China
- Mountain countries (Nepal, Bhutan)
- Australia, New Zealand
- Japan, ROK

DYNAMIC ECOSYSTEM

- Economic powerhouses - highest growth rate of GDP (India, China)
- Global leaders in agrifood export (however this came at the cost of NR depletion)
- Advanced technology hubs and rising digital economies
- Largest number of cities in the world

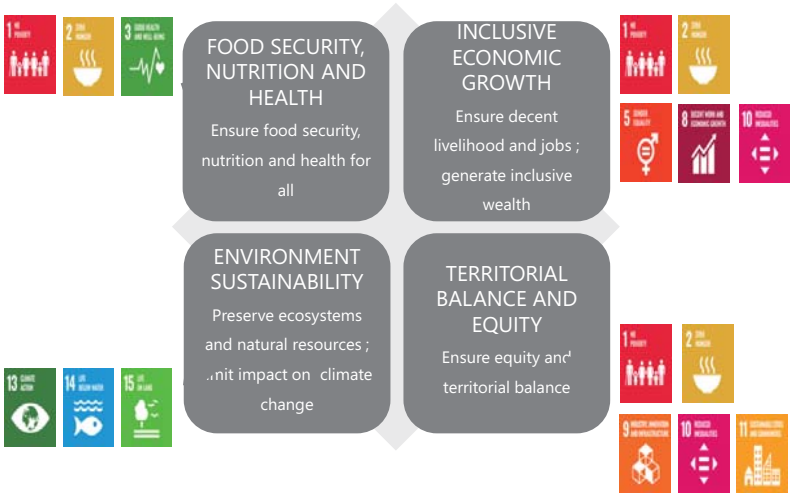
ASIA-PACIFIC REGION – IMMENSE CHALLENGES



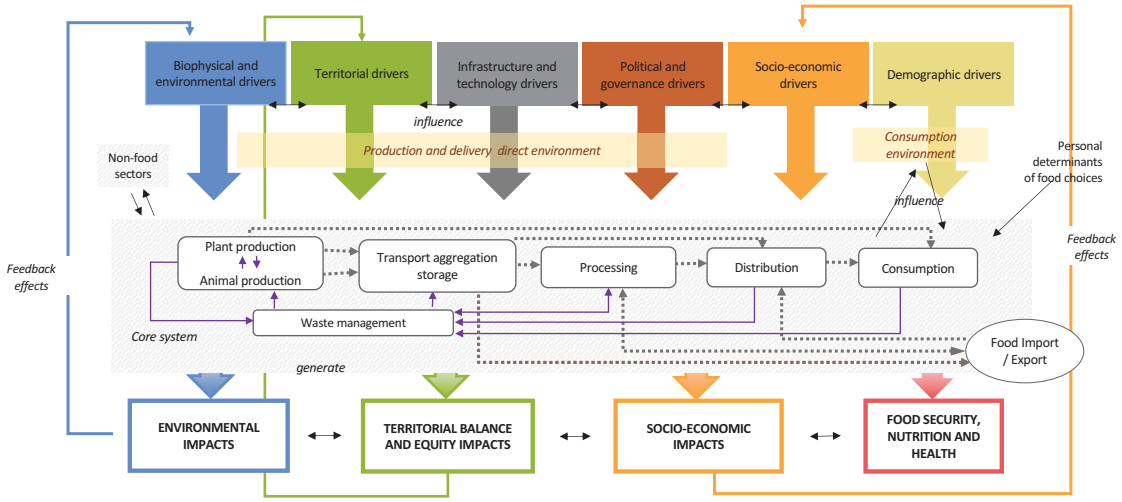
Urgent Need for Transformation of Agrifood systems

AGRIFOOD SYSTEM TRANSFORMATION – 4 GOALS

Agri-food systems encompass the **entire range of actors** and their **interlinked value-adding activities** involved in the **production, aggregation, processing, distribution, consumption and disposal of food products** that originate from **agriculture, forestry or fisheries**, and parts of the broader economic, societal and natural environments in which they are embedded (FAO, 2018).



Methodology for Assessment of Agrifood Systems – FAO- EU- CIRAD – Applied in 50 countries



www.fao.org/support-to-investment/our-work/projects/fsa2021/en/

Assessment of Agrifood Systems in Thailand– Preliminary findings

Key challenges to agrifood systems transformation

Despite reduction in undernourishment, the problems still persist leading, at the same time, increase in the consumption of unhealthy foods are leading to an increase in overweight, obesity and diabetes.

Intensive production practices based on use of agrochemical inputs leading to degradation of natural resources (soil and water) further worsened by climate change

Despite being a leading exporter of agricommodities in the global market, Thailand is evidencing a deterioration in export competitiveness. Which also points to the need for "sustainable competitiveness"

Current situation of land ownership and access to natural resources combined with farm assistance policies are driving high inequality in incomes.

Assessment of Agrifood Systems in Thailand– Preliminary findings

Entry Points for Agrifood Systems Transformation – Policies and initiatives

Promote nutrition education, awareness, policies and information to improve food consumption behaviors; responsible consumption

Propose the assistance farm package (e.g. financial support, loans with low interest rate, network, farm advisors) to incentivize high potential young smart workers to work in the farm sector

Assess the unconditional farm assistance - switch to more conditional assistance (both financial and knowledge) to encourage farmers to improve their farm productivity and resilience from climate change;

Expand the adoption of climate-smart agricultural innovations and technologies: enhance the use of data, information, and digital science for all actors in the food systems for building climate resilience;

From Knowledge to Action – implementing Agrifood Systems Transformation

What is a Transformed of Agrifood Systems

VISION for Agrifood Systems Transformation

Goals will be identified based on the specific challenges and opportunities the country is facing and the priorities of the country – what objectives it is trying to achieve

Solutions will be context specific – subregional, national, sub-national

DATA AND SITUATION ANALYSIS

Agrifood assessments → Understanding the current state of food systems, identifying gaps, barriers and opportunities

FUTURE SCENARIOS (FORESIGHT ANALYSIS)

- Business as usual
- Worst case scenario!
- Identification of preferred outcomes
- Helps to assess tradeoffs

KEY ELEMENTS OF AGRIFOOD SYSTEMS TRANSFORMATION

1 Multistakeholder partneships – government, donor agencies, civil society, private players

Stakeholders should take ownership of both the challenges and solutions. Policymakers, businesses, farmers and consumers must **work together**, each fulfilling their roles to create systems that are economically, socially, and environmentally sustainable.

Creation of a **people-policy-private sector partnership**. Some examples:

- Community-based food safety, nutrition and cut-food-waste initiatives.
- Food assistance to the vulnerable and displaced in times of natural and man-made disasters.
- The rise of "food policy councils" at local level, where engaged citizens partner with local government and stakeholders to address food insecurity.

KEY ELEMENTS OF THE POLICY FRAMEWORK

2 Governance structure - ministries beyond agriculture – health, education, trade, environment

Different ministries are involved in agrifood systems transformation because of the **interconnectedness** and **multidimensional nature** of the food system – governance structure engaging key ministries

As an example:

Ministry of health → food systems are deeply tied to public health. This ministry ensures that food policies promote nutritious diets, reduce the incidence of **diet-related diseases**, and **regulate food safety**. The economic costs associated with obesity and overweight are likely to increase from under USD 2 trillion in 2020 to over USD 4.3 trillion annually if prevention and treatment measures do not improve.

KEY ELEMENTS OF THE POLICY FRAMEWORK

3 Investments - R&D, digitalization, infrastructure, technology and innovation

Investments are critical for the transformation of agrifood systems because the process involves **large-scale changes** across multiple sectors.

Example:
Mainstreaming practices for sustainable agrifood systems transformation. For example, agro ecology based production practices are being followed by a very small share of the producers

KEY ELEMENTS OF THE POLICY FRAMEWORK

4 Evidence based - Coherent Policy Framework for Agrifood Systems Transformation

Coherent policies across ministries and sectors are key for agrifood systems transformation

Example:
Policies regarding subsidies for farmers, trade, sustainable agriculture need to be coherent. An intensive production focused policies emphasizing exports may conflict with the policies for improving soil and water situation.

Need for research to fill the critical knowledge and information gaps for guiding policy formulation

THANK YOU

Nutritional and healthy diet for food system transformation in Asia

Emorn Udomkesmalee
Institute of Nutrition, Mahidol University

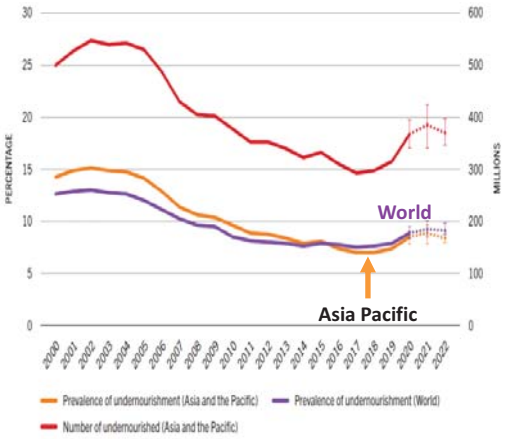
Presented at the 23rd APAP Forum, Bangkok, Thailand on 18 November 2024

OUTLINE

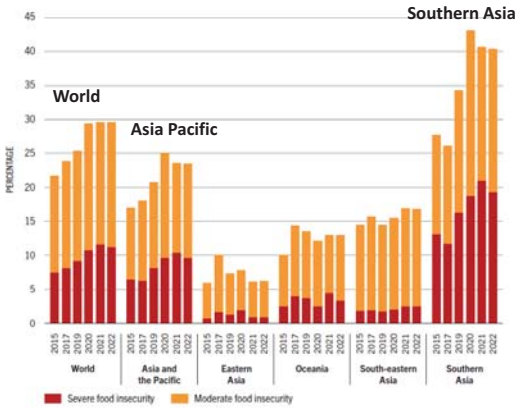
- Challenges: food Insecurity/malnutrition in Asia Pacific at-a-glance
- Food systems framework-healthy diet concept; consumer-focus
- Selected promising approaches:
  - Food-based Dietary Guidelines (FBDGs)
  - Nutrients in Food Supply-small farm, biofortification, large-scale food fortification
  - Fiscal policies - example of sugar tax
- Key messages

Asia Pacific: Undernourishment and Moderate/Severe (Hunger) Food Insecurity- HALF of the World population, higher than pre-pandemic era

Undernourishment: 8.4% AP vs 9.2% World; AP- 370 M affected (2022)



Food Insecurity: 23.5% AP vs 29.6% World; highest in Southern Asia (2022)



FAO. 2023. Asia and the Pacific – Regional Overview of Food Security and Nutrition 2023: Statistics and trends

The Challenge: Malnutrition in all its forms

- Undernutrition

  - Wasting: low wt for ht from food insecurity and/or infection; mod/severe child-wasting increases risk of death

  -Stunting: low ht for age due to chronic/recurrent undernutr; poverty; poor maternal hlth/nutr; frequent illness; inappropriate infant-young child feeding

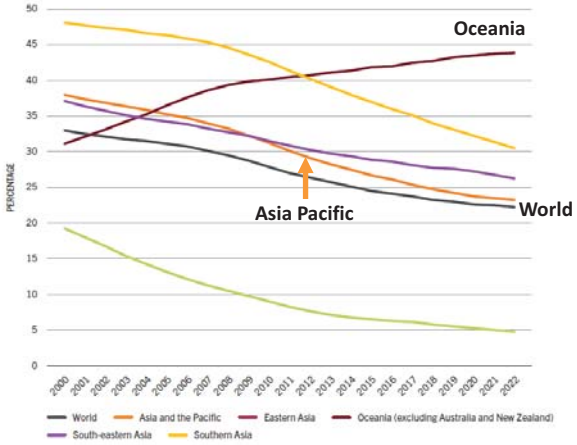
  -Underweight: low wt for age – coupled with stunting and/or wasting

- Micronutrient-related malnutrition: deficiencies of iodine, vitamin A, iron – main PBH concerns (Note: zinc, folate,vit D, thiamine--sp. settings)
- Overweight/Obesity: too heavy for ht; excess fat accumulation; BMI >25 or >30 due to intake of energy-dense foods + too little physical activity
- Diet-related non-communicable diseases (NCDs): diabetes, hypertension, cardiovascular diseases, cancer etc

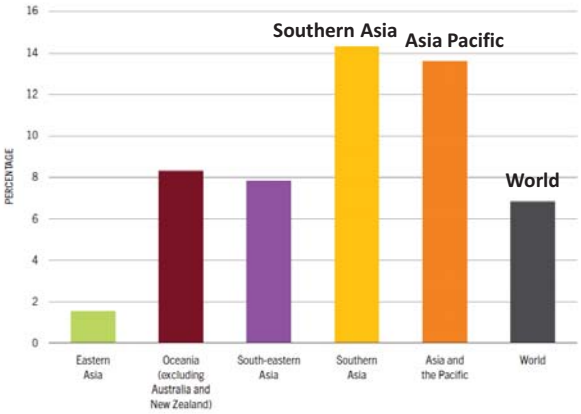
WHO/Newsroom/Fact Sheets/Detail/Malnutrition 2024

Asia- Pacific unfinished agenda: under-5 Stunting decline towards world avg except Oceania; Wasting – double world's figure, highest in Southern Asia

Stunting 23.4% AP vs 22.3% world; 44% Oceania (2022)



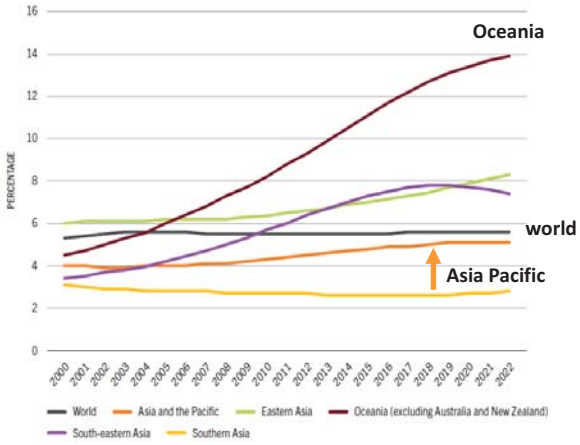
Wasting 13.6% AP vs 6.8% world; 14.3% Southern Asia (2022)



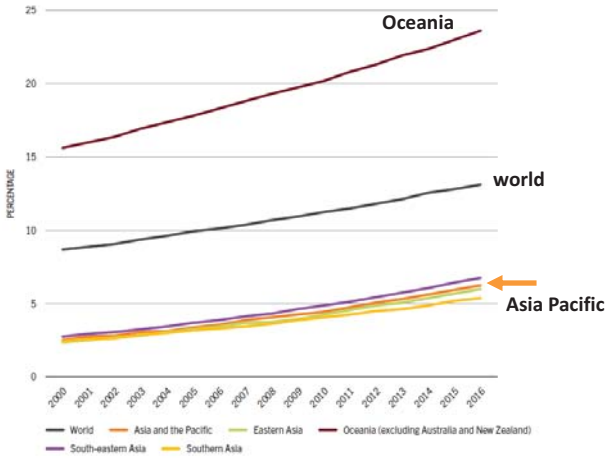
FAO. 2023. Asia and the Pacific – Regional Overview of Food Security and Nutrition 2023: Statistics and trends

Asia Pacific-rising trends in under 5 overweight and adult obesity; highest prevalence in Oceania

Overwt: 5.1% AP vs 5.6% World; 13.9% Oceania (2022)

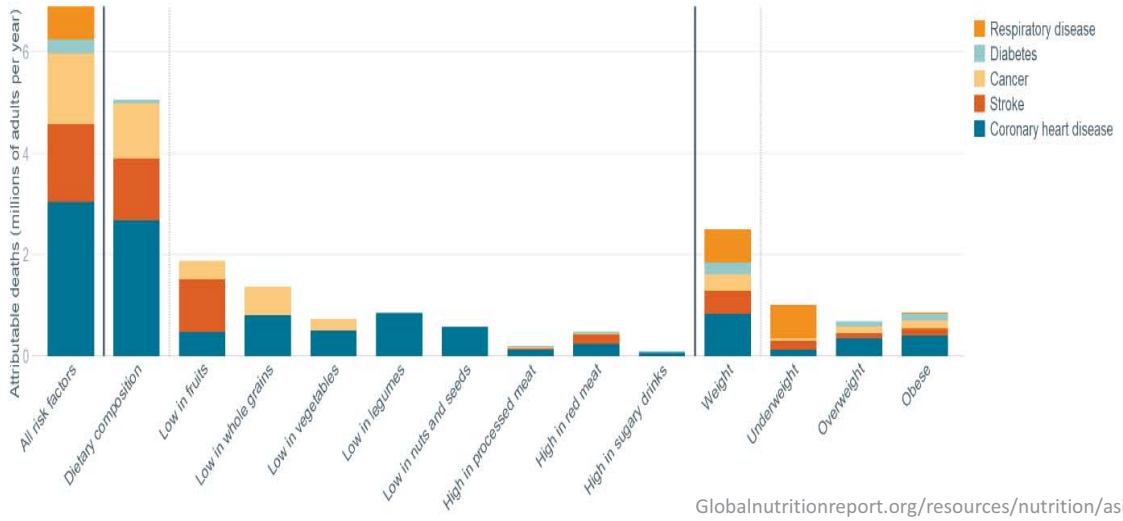


Adult Obesity: 6.2% AP vs 13.1% World; 23.6% Oceania (2016)



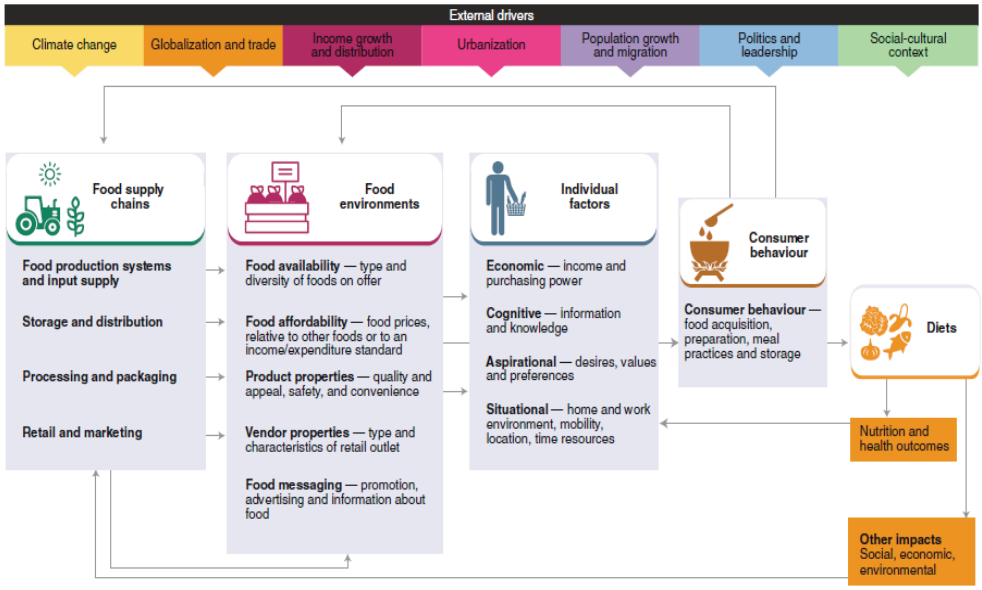
FAO. 2023. Asia and the Pacific – Regional Overview of Food Security and Nutrition 2023: Statistics and trends

Unhealthy diet – major attribute for deaths due to NCDs in ASIA



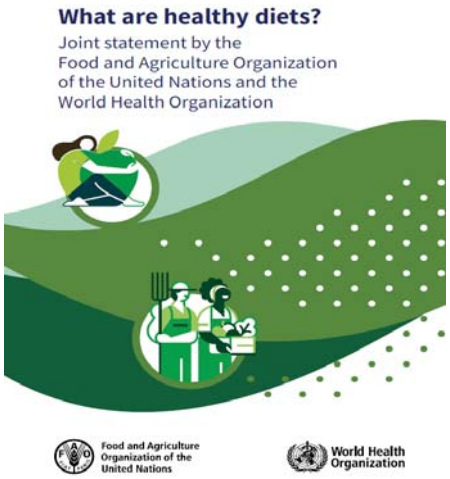
Globalnutritionreport.org/resources/nutrition/asia

Food Systems Framework to deliver Healthy Diets for Nutrition/Hlth outcomes



Source: The Food Systems Dashboard. Global Alliance for Improved Nutrition (GAIN) and Johns Hopkins University. 2020.

What constitute Healthy Diets?



Four Core Principles plus SAFETY in diets/beverages

Adequate	Balanced
Providing enough essential nutrients to prevent deficiencies and promote health, without excess.	In energy intake, and energy sources (i.e., fats, carbohydrates and proteins) to promote healthy weight, growth and disease prevention.
Moderate	**Diverse**
In consumption of foods, nutrients or other compounds associated with detrimental health effects.	Including a wide variety of nutritious foods within and across food groups to favour nutrient adequacy and consumption of other health promoting substances.

Source: What are healthy diets? Joint Statement FAO-WHO 2024

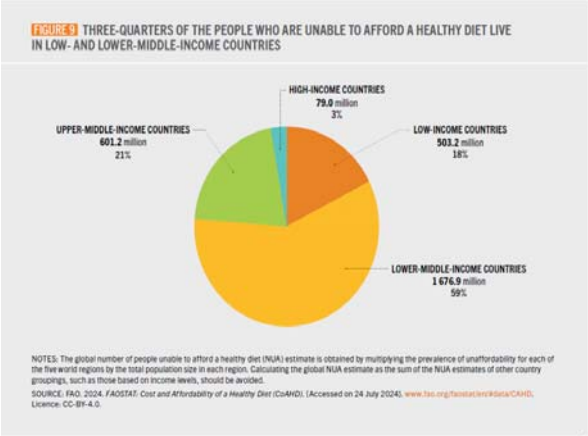
Features of Healthy Dietary Pattern

- Provide Nutrients from diversity of foods: whole grains, vegetables, fruits, legumes, nuts, animal source foods in varying quantities
- Focus on health protective elements: MORE foods with nutrients, fiber, bioactive components; LIMIT those with high salt, sugar, saturated fat
- Recognize availability of local foods, cultural contexts, consumer's preferences
- Consider physiological nutrient requirements based on age, gender, physical activity, specific conditions- pregnancy and lactation

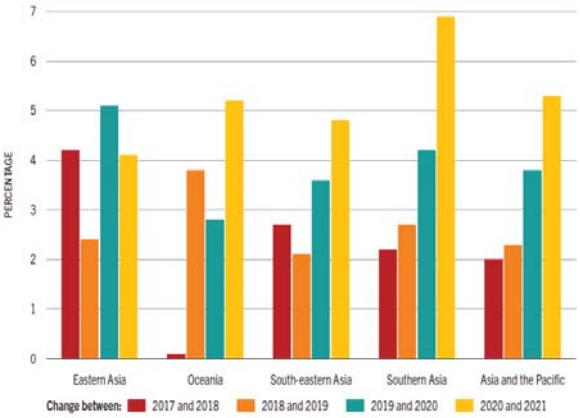
IFPRI 2024 Global Food Policy Report: Food Systems for Healthy Diets and Nutrition

The Cost of Healthy Diet is beyond reach for 2.83 Billion World Population

77% of those unable to afford healthy diet live in Low-& LMICs (SOFI 2024)



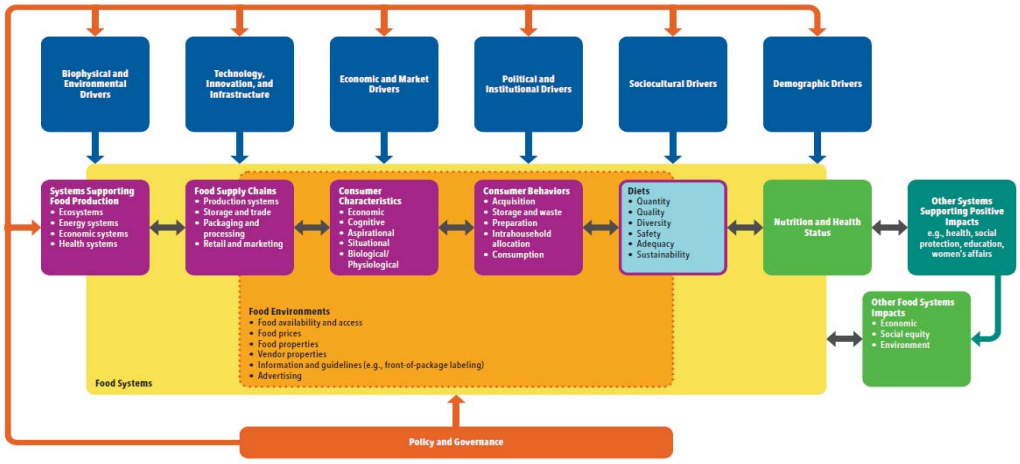
Avg cost of healthy diet in AP 4.15 PPP dollars – 5% increase, est 232.8 M unable to afford in 2021



FAO SOFI 2024, SOFI 2023 Asia and the Pacific

Reorient Food Systems to address demand-Consumer; food environment esp Affordability and Nutrients in food supply; **connectivity with other systems: health, education, social protection, WASH

A CONSUMER-FOCUSED FOOD SYSTEMS FRAMEWORK FOR SUSTAINABLE HEALTHY DIETS



Source: Adapted from High Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, *Food Security and Nutrition: Building a Global Narrative Towards 2030* (Rome: 2020).

IFPRI 2024 Global Food Policy Report: Food Systems for Healthy Diets and Nutrition

Selected Promising Approaches

- Guiding the DEMAND on Healthy Diets: National Food-Based Dietary Guidelines
- Leveraging Nutrients in Food Supply: Small farms, Biofortification and Large-scale Food Fortification (LSFF)
- Regulation to PROTECT consumer's health: Fiscal Policies- Sugar Tax

What are food-based Dietary Guidelines (FBDGs)?

National evidence-based FBDGs as a policy and education tool:

- A food-based approach to guide the public on food choice, food preparation and intake for healthy diets across age groups: preschool, school-adolescents, adults, elderly; as well as pregnant/lactating women
- Guide Nutrition/school education, diet counselling (SBCC), health promotion, individual/ inst meal planning etc
- Strategic planning - agricultural diversification, food production and product innovations
- *Consumer empowerment to demand more nutritious foods from the food systems

More than 100 countries have established National Food-based Dietary Guidelines

Africa: 11	Europe: 34
Asia & Pacific: 18	Latin America & the Caribbean: 29
Near East: 6	North America: 2

Food and Agriculture Organization of the United Nations | SUSTAINABLE DEVELOPMENT GOALS

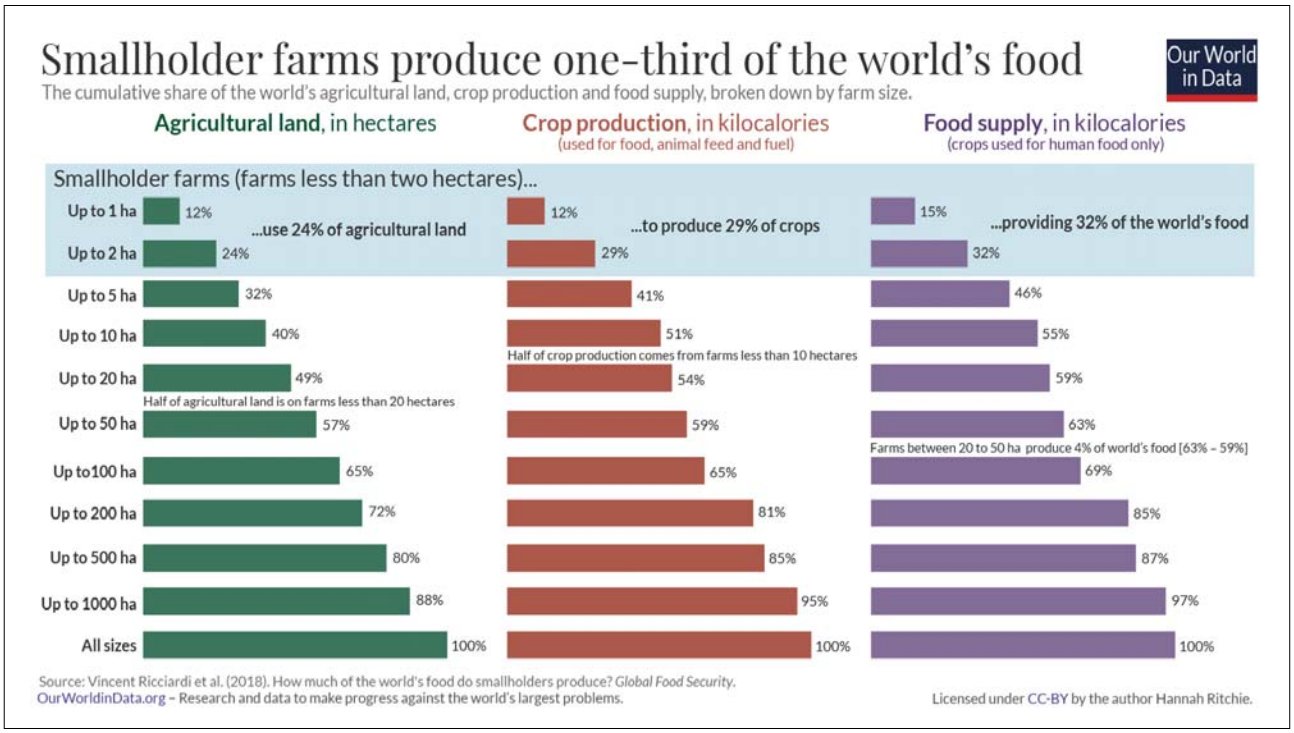
A Science-based approach to embed the 4 principles/ properties of a healthy diet into the development of FBDGs

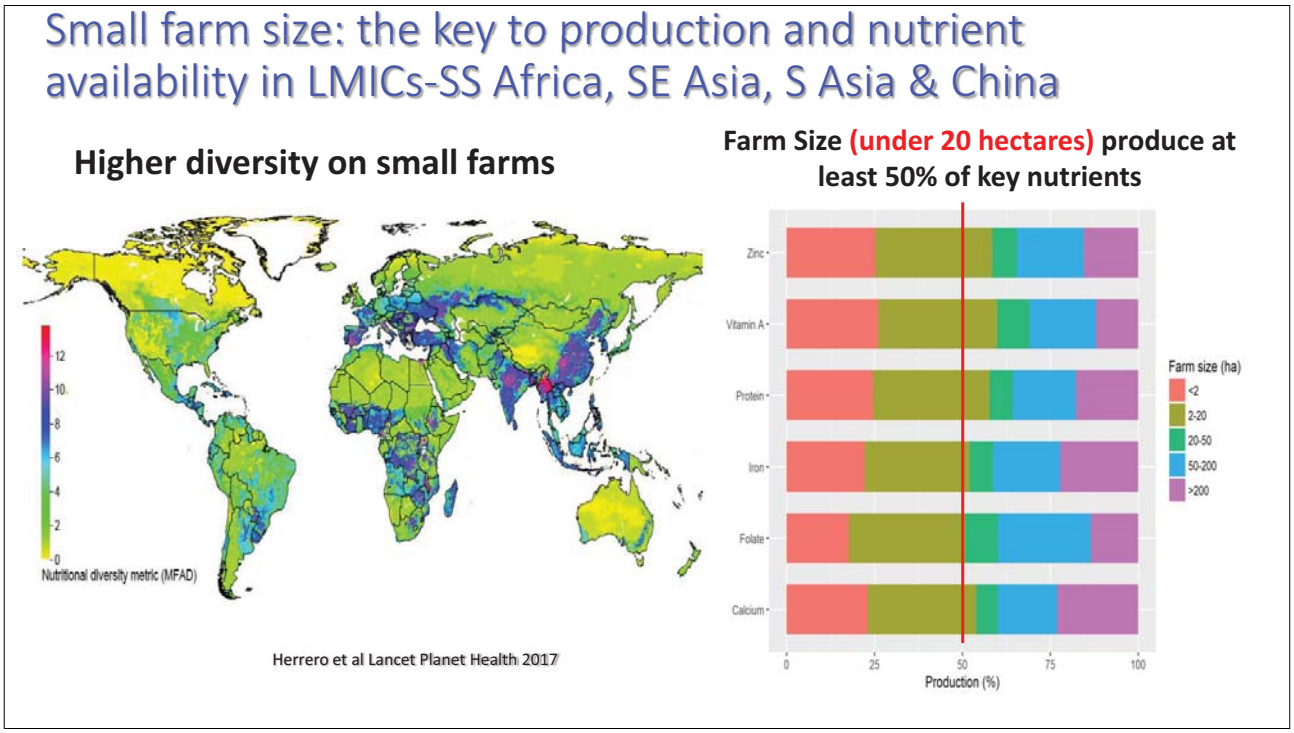
	Nutrient Adequacy	Macronutrient Balance	Moderation	Diversity
Evidence Review – Country situations on Health & diseases, food production & consumption, culturally food habits, food trade, food prices, food environment, food & nutrition policies & programmes, etc.	Yes	Yes	Yes	Yes
Evidence Review – Global/Natl RDAs, Diet/Hlth Recommendations	Yes	Yes	Yes	Yes
Multi-stakeholder consultation			Yes	Yes
Diet Modelling for **optimizing diversity & quantity of food intake**	Yes	Yes	Yes	Yes
Pilot testing of FBDG		Yes	Yes	Yes

Example-FBDGs for children 2-5 yr: Thailand-Linear Programming Optifood to identify best local foods for limiting nutrients; Myanmar adopted Thai Food Composition database in FBDGs development

FBDGs Thailand-Nutrition Flag for 2-5 yrs old

Sources: Nutrition Bureau, MOPH/Thailand; FAO/RAP, Bangkok, Thailand


Smallholder farms produce one-third of the world's food
The cumulative share of the world's agricultural land, crop production and food supply, broken down by farm size.
Our World in Data
Agricultural land, in hectares
Crop production, in kilocalories
(used for food, animal feed and fuel)
Food supply, in kilocalories
(crops used for human food only)
Smallholder farms (farms less than two hectares)...
...use 24% of agricultural land
...to produce 29% of crops
...providing 32% of the world's food
Up to 1 ha 12% 12% 15%
Up to 2 ha 24% 29% 32%
Up to 5 ha 32% 41% 46%
Up to 10 ha 40% 51% 55%
Half of crop production comes from farms less than 10 hectares
Up to 20 ha 49% 54% 59%
Half of agricultural land is on farms less than 20 hectares
Up to 50 ha 57% 59% 63%
Farms between 20 to 50 ha produce 4% of world's food [63% - 59%]
Up to100 ha 65% 65% 69%
Up to 200 ha 72% 81% 85%
Up to 500 ha 80% 85% 87%
Up to 1000 ha 88% 95% 97%
All sizes 100% 100% 100%
Source: Vincent Ricciardi et al. (2018). How much of the world's food do smallholders produce? Global Food Security.
OurWorldinData.org – Research and data to make progress against the world's largest problems.
Licensed under CC-BY by the author Hannah Ritchie.


Small farm size: the key to production and nutrient availability in LMICs-SS Africa, SE Asia, S Asia & China
Higher diversity on small farms
Farm Size (under 20 hectares) produce at least 50% of key nutrients
Nutritional diversity metric (MFAD)
Herrero et al Lancet Planet Health 2017
Zinc
Vitamin A
Protein
Iron
Folate
Calcium
Farm size (ha)
<2
2-20
20-50
50-200
>200
Production (%)

Biofortification:selection/develop staple crops with high micronutrients - One Piece of the Puzzle

Supplementation

Commercial Fortification

Agricultural intervention

Dietary Diversity

Source: H Bouis, HarvestPlus

Biofortification Works

- Nutrient levels can be increased to high enough levels in high-yielding backgrounds
- The extra nutrients are absorbed at sufficient levels that micronutrient status is improved
- Encouraging evidence that farmers will adopt and consumers buy/eat in sufficient quantities
- Biofortification is being mainstreamed

Source: H Bouis, HarvestPlus

Release Dates for Crops for Africa & Asia

Sweetpotato
Vitamin A Uganda

Cassava Vitamin A
Nigeria & DRC

Beans Iron
Rwanda & DRC

Maize Vitamin A
Zambia

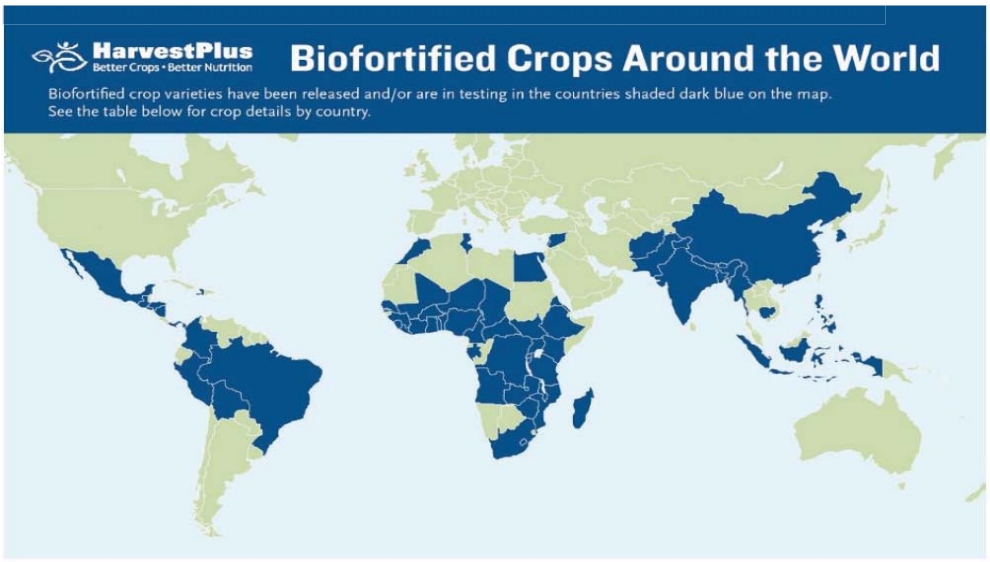
Pearl Millet Iron
India

Rice Zinc
Bangladesh

Wheat
Zinc
India |
Pakistan 2015

Source: H Bouis, HarvestPlus

>340 biofortified varieties of 12 crops released or in testing in Africa (37), Asia (11), Latin America/Caribbean (15)



CAST- Issue Paper #69 October 2020

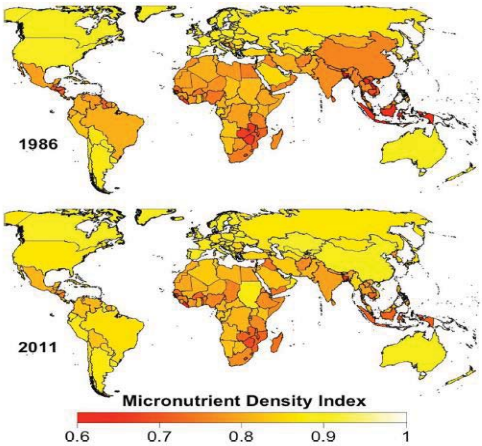
Biofortified crops: Nutrition/Health Benefits

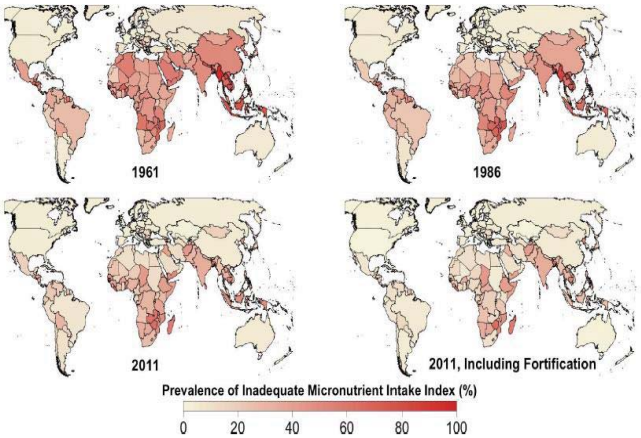
Research has confirmed a number of important health benefits from biofortified crops.

- **Vitamin A-biofortified crops** were shown to reduce vitamin A deficiency, improve night vision, and reduce the incidence of diarrhea—leading causes of morbidity and mortality in young children.
- **Iron-biofortified crops** were found to reverse iron deficiency and iron-deficiency related anemia, reduce fatigue in women, and improve cognitive and physical performance in women.
- **Zinc-biofortified crops** were shown to reduce susceptibility and duration of various illnesses in women and children, such as respiratory infections, inflammation, pneumonia, vomiting, and fever.

Source: HarvestPlus, Calls to Action 2021

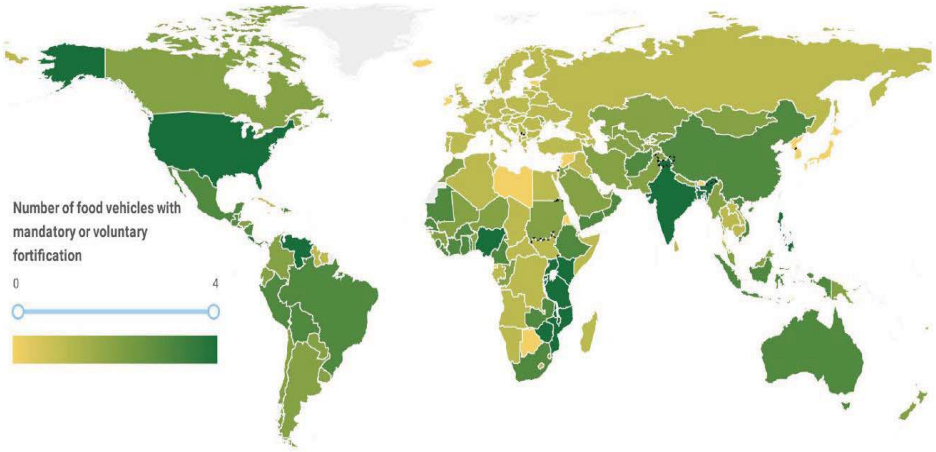
Country Index–Prevalence of Inadequate MN Intake improved with increased MN density in food supply and further reduced by food fortification; Macro/MNs of inadequate intake: calcium, iron, vitamin A, folate, zinc, riboflavin and B12





Beal T et al PLoS ONE 2017

Mandatory/voluntary fortification programs in countries eg salt-iodine, milk-vit D, flours/bread (vit Bs, iron), oil (vits A/D/K) etc



Source: Global Fortification Data Exchange 2020; Mkambula P et al GAIN Discussion Paper#10, 2022

LSFF in LMICs: improved MN status/health outcomes
Systematic Review and meta analysis

LSFF-VA protects 3M children/yr

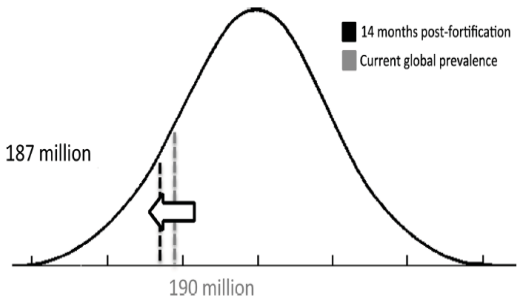


FIGURE 2 Change in distribution of global vitamin A deficiency (serum retinol <70 μmol/L) in children (0–9 y) after 14 mo of LSFF with vitamin A. LSFF, large-scale food fortification.

LSFF w Micronutrients

- Increased serum MNs
- LSFF-iron: 34% reduction in anemia
- LSFF-iodine:74% reduction in odds of goiter
- LSFF-folate: 41% reduction in odds of neural tube defects

Ref: Keats et al AJCN 2019

Food fortification across life stages: potential benefits- high in WRA, Adult and the Elderly

	Pregnancy	Lactating mother	6–23 mo	2–5 years	5–18 years	WRA (15–49 years)	Adult men	Elderly
Micro-nutrient need	very high	very high	very high	high	moderate to high	moderate to high	low to moderate	moderate to high
Amount of food eaten	moderate	moderate	low	low, increasing with age	increases with age	moderate	high	moderate
Potential to benefit	high	high	low	low, increasing with age	increases with age	high	high	high
Potential to fully meet need	low	low	no	low, increasing with age	increases with age	high	high	high

Figure 1. Potential benefits of food fortification across the life cycle. Source: Irizarry, L, Prost, MA, Murillo, D, Lopez de Romaña Daniel et al. 2017. Scaling Up Rice Fortification in Latin America and the Caribbean. World Food Programme and *Sight and Life*: 2017. WRA = Women of Reproductive Age.

Olson R et al Nutrients 2021

Food vehicles fortified/biofortified with nutrients can reinforce each other while avoid excess

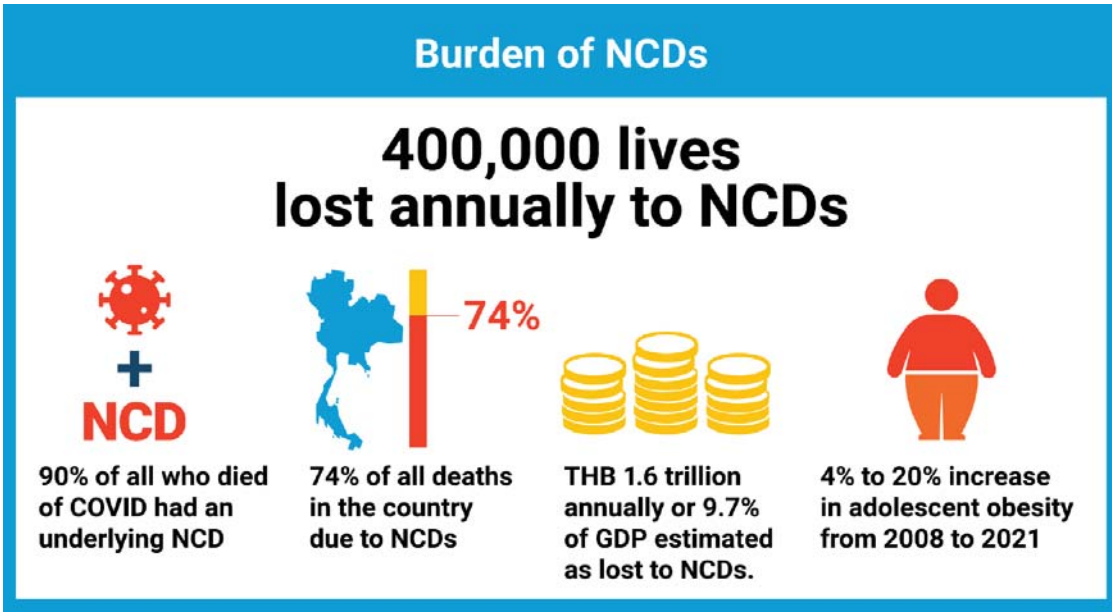
Food vehicle	Large-scale food fortification	Biofortification
Beans	-	Iron and zinc
Cassava	-	Vitamin A
Maize	Iron, Calcium, Zinc, Folic acid, Vitamin B12, Vitamin A, Zinc, Thiamine, Niacin, Vitamin B6, and/or Vitamin D	Vitamin A or Zinc
Milk	Vitamin A and/or Vitamin D	-
Oil	Vitamin A, Vitamin D, and/or Vitamin K	-
Pearl millet	-	Iron
Rice	Iron, Folic acid, Vitamin B12, Vitamin A, Zinc, Thiamine, Niacin, and/or Vitamin B6	Zinc
Sweet potato	-	Vitamin A
Salt	Iodine, Iron	-
Wheat	Iron, Calcium, Zinc, Folic acid, Vitamin B12, Vitamin A, Zinc, Thiamine, Niacin, Vitamin B6, and/or Vitamin D	Zinc

Mkambula P et al GAIN Discussion Paper#10, 2022

Key messages- Biofortification & LSFF at scale

- Both proven to be acceptable, efficacious, cost effective, scalable interventions to improve nutrient intakes and health outcomes
- Bringing both interventions to scale → enriched multiple food vehicles → fill gaps of nutrients-coexisting defs → reach different target populations
- By enriching broadly consumed staples and condiments, food systems can be transformed without calling for changes in consumer's behavior or significant costs to consumers, producers/manufacturers

Mkambula P et al GAIN Discussion Paper#10, 2022



United Nations Thematic Working Group on Noncommunicable Disease Prevention and Control: case study – Thailand 2021

Rationale for Sugar Sweetened Beverage (SSB) Tax in Thailand

- Sugar intake of 25 tsp or 100 g/d --exceeds WHO Recommendation (6 tsp or 25 g/d)
- Among foods, largest source of sugar consumption – SSB; 24% population at least one serving SSB/d; rising popularity in school children/adolescents
- Increasing health problems related to sugar consumption: Obesity (major risk factor of NCDs), Diabetes, Hypertension, Cardiovascular Disease and Dental Caries.
- SSB taxation recommended by WHO as one of the 'best buy' interventions to prevent overweight and obesity
- Influenced by key Health Actors: the Sweet Enough Network (reduced sugar intake campaign), Thai Health Promotion Foundation (funded by 2% alcohol/tobacco tax – communication, advocacy, policy/program research), and International Health Policy Program (evidence-informed policy)

Urwanachotima N et al BMC Oral Health 2020; Phonsuk P et al PLOS ONE 2021; WHO Technical Meeting Report 2015

Specific tax rate: > 18 g/100 ml highest, < 6 g/100 ml zero; grace period of 2 yr X 3; tax rate to increase every 2 yrs until 2023; SSBs- carbonated soft drinks, fruits/veg juices, coffee/tea, energy drinks, beverage concentrates (vending machine).

Thailand Excise Act BE 2560 – reformulation of excise tax –September 2017

Post SSB Tax- Consumption changes?

- Analyze taxed vs non-taxed SSB consumption at population level
- A cohort study – natl representative of 6 yrs and older, total 5,594 persons during 2018 vs 2019

Key findings

- Significant reduced consumption in taxed vs non-taxed SSB
- For taxed items, reduction *largest in carbonated & herbal drinks* carrying higher prices
- SSB tax deterred consumption among older persons, lower income groups and unemployed but not those w higher income/education

Next: decline in consumption sustained or not?; any impact on health problem?; to review threshold of tax-tiered structure for desirable outcomes/impact

Ref: Phulkerd S et al Nutrients 2020

Modeling Impact of SSB Tax in Thailand

Overweight/Obesity

- Applying 11 (existing), 20, 25% price increase to the model reduces SSB consumption by 14, 26, 32%; the decline in obesity prevalence of 1.73%, 3.83%, 4.91%

Recommendation: new excise tax structure of SSB to 20 or 25%

Dental Caries

- Simulation model – current SSB tax policy reduces prevalence of dental caries by only 1% in 2040. *Issue raised: majority sugar consumed from non-tax sugary foods/beverages under 'street foods culture'*

Recommendation: combine SSB Tax with comprehensive public health policy aimed to reduce total sugar intake from non-SSB sources

Urwanachotima N et al BMC Oral Health 2020; Phonsuk P et al PLOS ONE 2021

Key Messages

Policy Implications to address all forms of malnutrition & NCDs

- Consumer-focused food systems to mainstream nutrition across supply chains-food environment-individual choices/consumption
- A whole-of-system coordination: CONNECT food systems with health, social protection, education, WASH, women/climate agenda

Research/evidence

- R&D on 'affordable' healthier foods/products, effective behavior change
- Implementation Research to guide the best of 'How'
- Data system – link monitoring/evaluation to existing surveillance routine for evidence-informed policy

23rd Asia Pacific Agricultural Policy Forum PROCEEDINGS

5

Session 1 _ Regional Policies on Agrifood System and Rural Transformation

- Presentation 1：Dr. Alisher Mirzabaev

  “Climate Change in Asian Agriculture: Mitigation and Adaptation Strategies in Rice Production”

- Presenter 2：Dr. Wyn Ellis

  “Reducing GHG Emissions in Rice: How can the Sustainable Rice Platform Contribute?”

- Presenter 3：Dr. Piya Wongpit

  “Farmers’ Preferences Towards Policy Options for Reducing Rice Residue Burning in Cambodia, Laos, Vietnam, and Thailand”

23rd Asia Pacific Agricultural Policy Forum

Session 1

① Moderator: Dr. Larry C.Y. Wong
② Presentation 1: Dr. Alisher Mirzabaev
③ Presenter 2: Dr. Wyn Ellis
④ Presenter 3: Dr. Piya Wongpit
⑤ Dr. Nipon Poapongsakorn
⑥ Session 1 Discussssants
Dr. Ravi Khetarpal
Dr. Herman Z. Ongkiko
Dr. Pouchamarn Wongsanga
Dr. David Ortega
Dr. Nipon Poapongsakorn

Climate change in Asian agriculture:

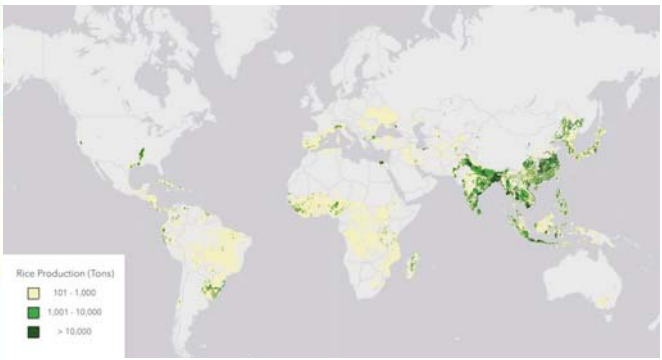
Mitigation and adaptation strategies in rice production

Alisher Mirzabaev
Senior Scientist, Policy Analysis and Climate Change

23rd Asia Pacific Agricultural Policy Forum
18 November 2024, Bangkok, Thailand

IRRI International Rice Research Institute CGIAR

Top rice producing countries and areas in the world (2022)

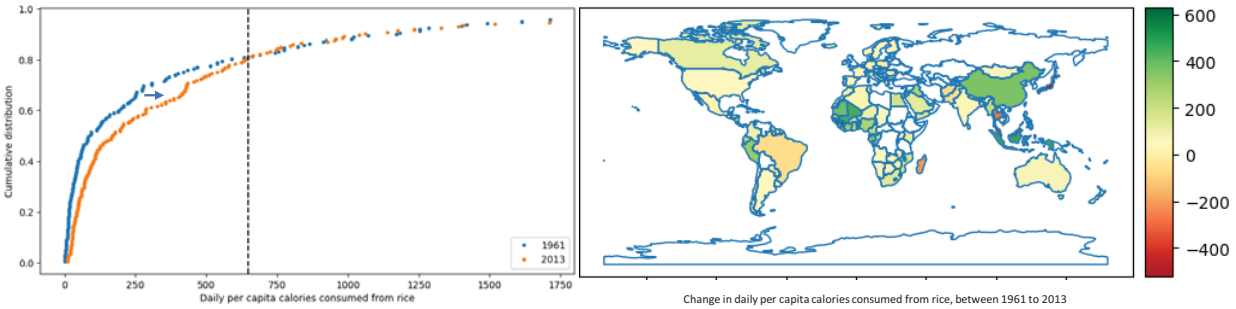


- Strong concentration of global rice production in Asia
- Top 10 countries produced about 82% of the global supply of 761 million tons in 2022.
- Only about 7% of rice was traded internationally in 2022.

Sources: FAO, USDA

2

Growing consumption of rice globally



- Global consumption of rice increased from 157 million tons in 1961 to 520 million tons in 2022.
- Daily per capita consumption of rice has risen particularly among those countries which were at the lower end of rice consumption in 1961.

Source: based on FAO data

3

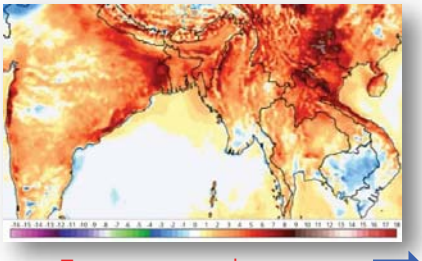
Rice is central to achieving Sustainable Development Goals

- About 4 billion people have rice as their staple food.
- More than 16% of the calorie intake of the world's population, and 70% of that of the poorest of the poor in Asia, come from rice.
- The rice sector provides a living for more than 20% of the world's population, of whom 400 million are poor and food insecure.

Source: IRRI Climate Change Strategy (2022-2027)

4

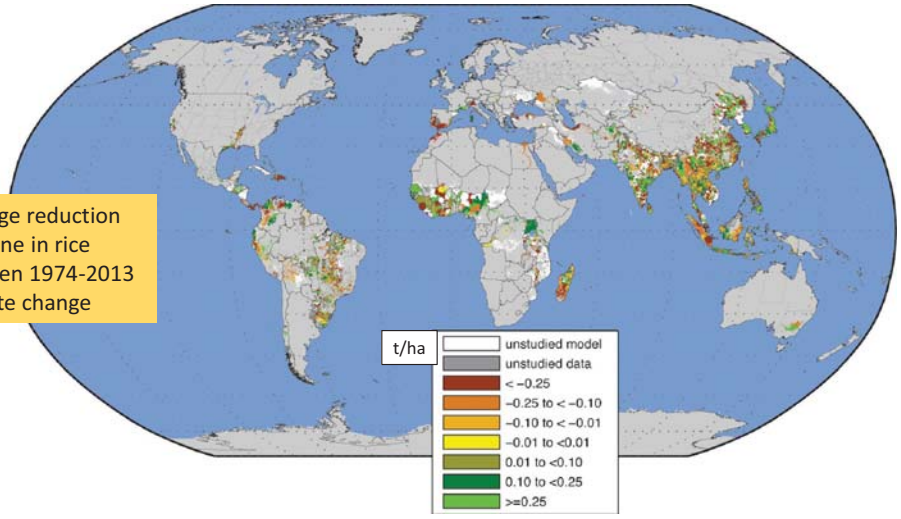
Climate change impacts on rice production



Extreme weather events

Climate change is already impacting rice yields

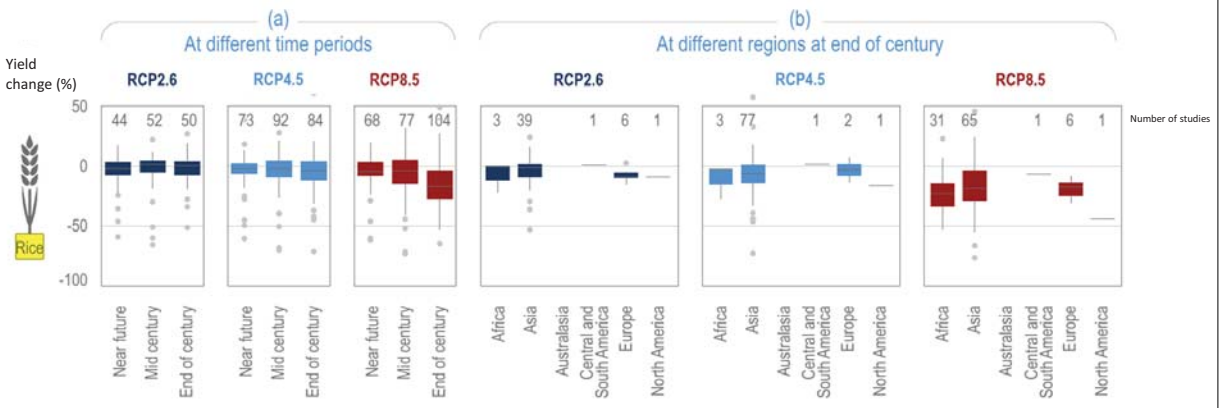
Global average reduction of 0.3% decline in rice yields between 1974-2013 due to climate change



Source: Ray et al. (2019)

6

Projected impacts of climate change on rice yields



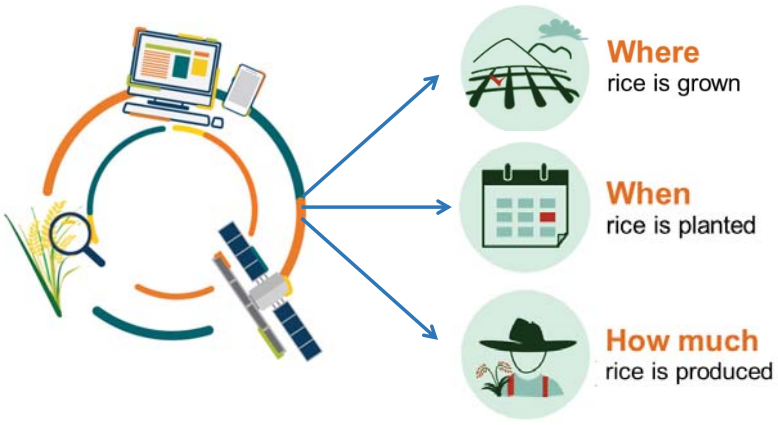
A median global decline of 0.7% in rice yields per decade across all scenarios

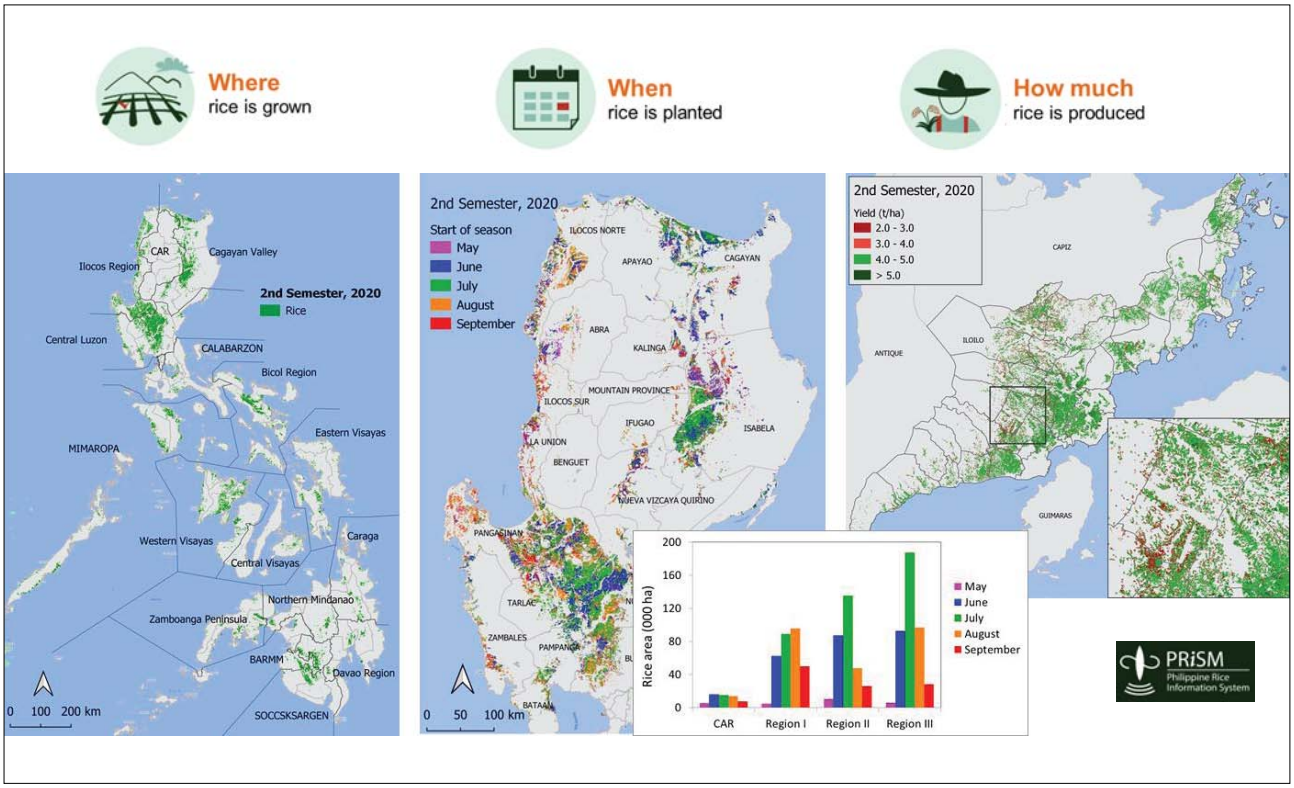
Source: IPCC (2022)

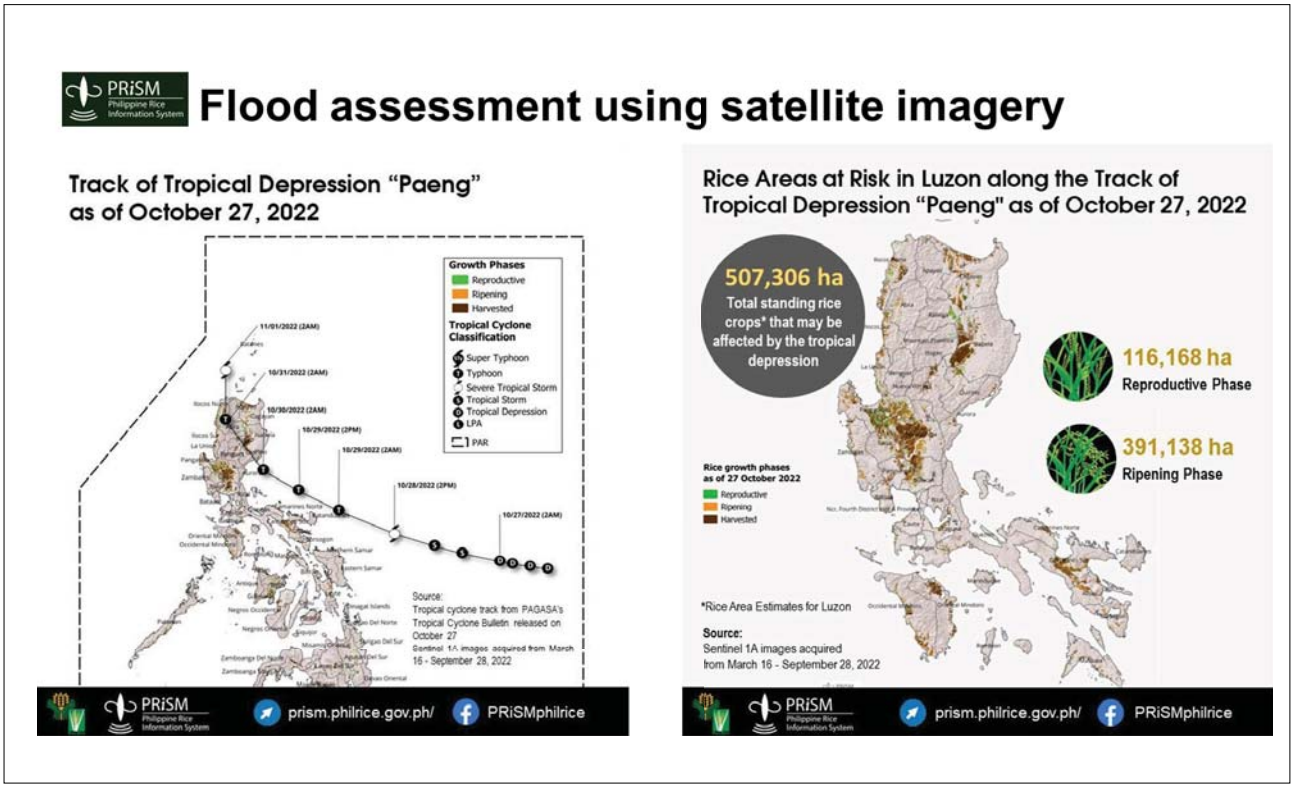
7

Mapping rice from space for climate change adaptation

Use of remote sensing, crop modeling and smartphone-based surveys to generate information on rice.

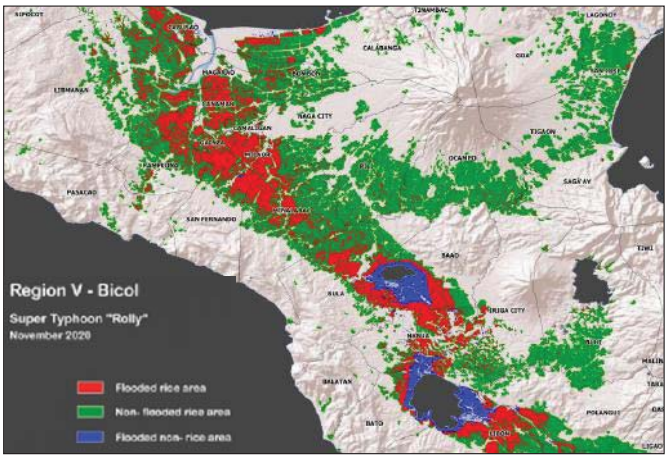



Where
rice is grown
When
rice is planted
How much
rice is produced
2nd Semester, 2020
Rice
CAR
Cagayan Valley
Ilocos Region
Central Luzon
CALABARZON
Bicol Region
Eastern Visayas
MIMAROPA
Western Visayas
Caraga
Central Visayas
Northern Mindanao
Zamboanga Peninsula
BARMM
Davao Region
SOCCSKSARGEN
0 100 200 km
2nd Semester, 2020
Start of season
May
June
July
August
September
ILOCOS NORTE
APAYAO
CAGAYAN
ABRA
KALINGA
MOUNTAIN PROVINCE
ILOCOS SUR
IFUGAO
ISABELA
LA UNION
BENGUET
NUEVA VIZCAYA QUIRINO
PANGASINAN
TARLAC
ZAMBALES
PAMPANGA
BATAAN
0 50 100 km
2nd Semester, 2020
Yield (t/ha)
2.0 - 3.0
3.0 - 4.0
4.0 - 5.0
> 5.0
CAPIZ
ILOILO
ANTIQUE
GUIMARAS
Rice area (000 ha)
200
160
120
80
40
0
CAR
Region I
Region II
Region III
May
June
July
August
September
PRiSM
Philippine Rice Information System

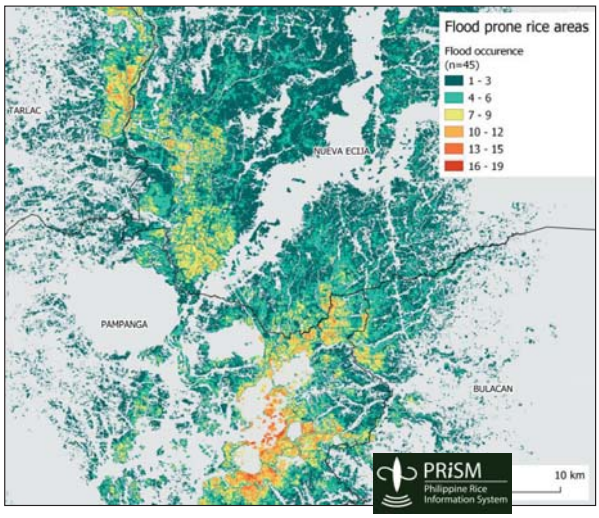

PRiSM
Philippine Rice Information System
Flood assessment using satellite imagery
Track of Tropical Depression "Paeng"
as of October 27, 2022
Growth Phases
Reproductive
Ripening
Harvested
Tropical Cyclone Classification
Super Typhoon
Typhoon
Severe Tropical Storm
Tropical Storm
Tropical Depression
LPA
PAR
11/01/2022 (2AM)
10/31/2022 (2AM)
10/30/2022 (2AM)
10/29/2022 (2PM)
10/29/2022 (2AM)
10/28/2022 (2PM)
10/27/2022 (2AM)
Source:
Tropical cyclone track from PAGASA's Tropical Cyclone Bulletin released on October 27
Sentinel 1A images acquired from March 16 - September 28, 2022
PRiSM
Philippine Rice Information System
prism.philrice.gov.ph/
PRiSMphilrice
Rice Areas at Risk in Luzon along the Track of Tropical Depression "Paeng" as of October 27, 2022
507,306 ha
Total standing rice crops* that may be affected by the tropical depression
116,168 ha
Reproductive Phase
391,138 ha
Ripening Phase
Rice growth phases as of 27 October 2022
Reproductive
Ripening
Harvested
*Rice Area Estimates for Luzon
Source:
Sentinel 1A images acquired from March 16 - September 28, 2022
PRiSM
Philippine Rice Information System
prism.philrice.gov.ph/
PRiSMphilrice

Damage assessment

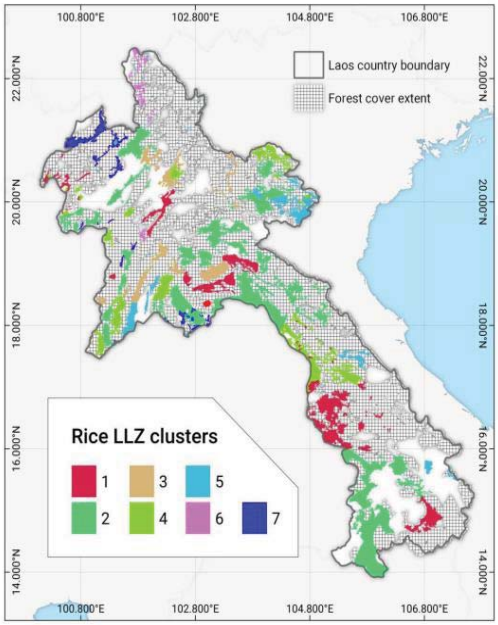
Effect of Super Typhoon Goni in the Philippines (2020)



Flood-prone rice areas in the Philippines (2014-2020)



Adaptation options – Lao PDR

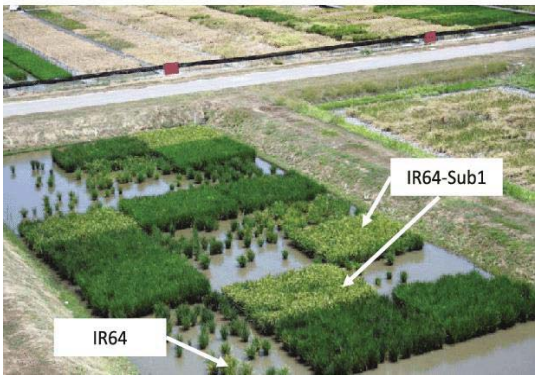


- ***Investment in irrigation*** to improve water availability and development of new farming practices will help farmers to mitigate potential impacts of climate change on rice, particularly for cluster 6
- There is a need to improve adoption/use of ***improved seed and crop varieties of rice*** to cope with challenges brought by CC, particularly for clusters 1 & 7
- Improvement in ***access to credit*** and income sources will help farmers particularly in areas where livelihood diversification is needed due to loses in climate suitability of rice – with emphasis for clusters 1 to 6
- ***Ecosystem-based adaptation*** may be explored in clusters with low levels of soil fertility and steep terrains, particularly for clusters 3 and 6

Palao et al. 2021

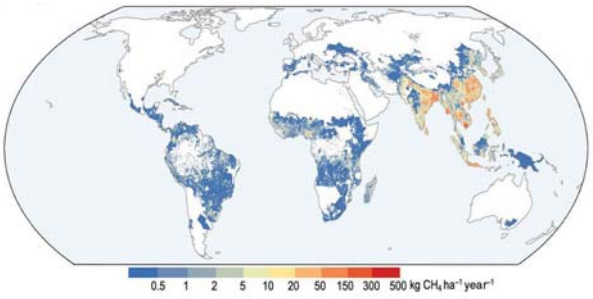
Breeding for climate resilience

- Breeding for tolerance to drought, flood, heat, cold, and soil problems like high salt and iron toxicity

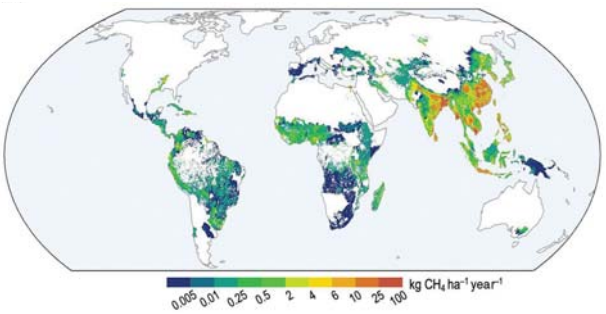


IRRI's speed breeding facility in India

CH_4 emissions from rice cultivation and mitigation potential



CH_4 emissions from global rice cultivation in 2020



Technical abatement potential of CH_4 emissions from rice cultivation

Rice production contributes 10% of the total greenhouse gas (GHG) emissions from the agricultural sector in the world, of which about 1/3 could be mitigated.

Sources: Wang et al. (2023), Roe et al. (2021)

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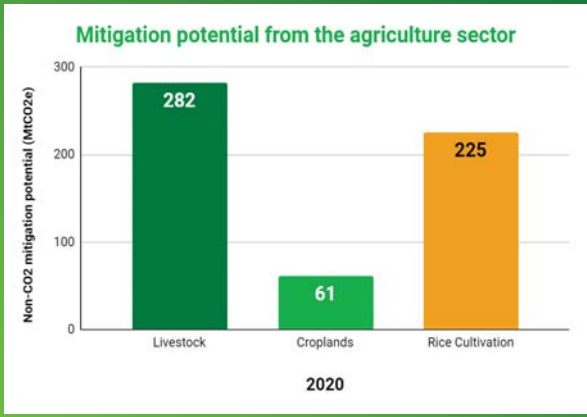
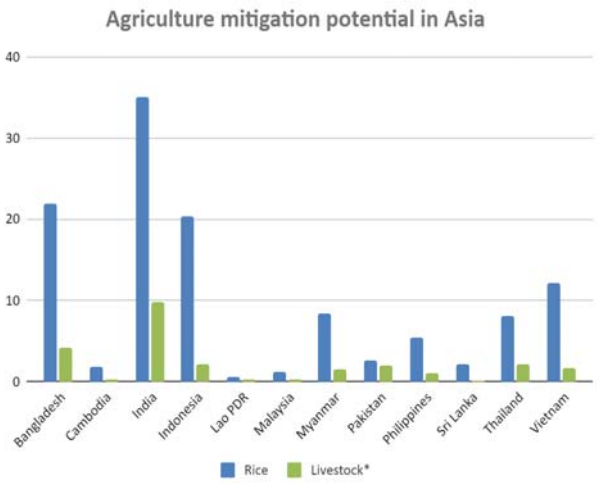
Mitigation potential from rice

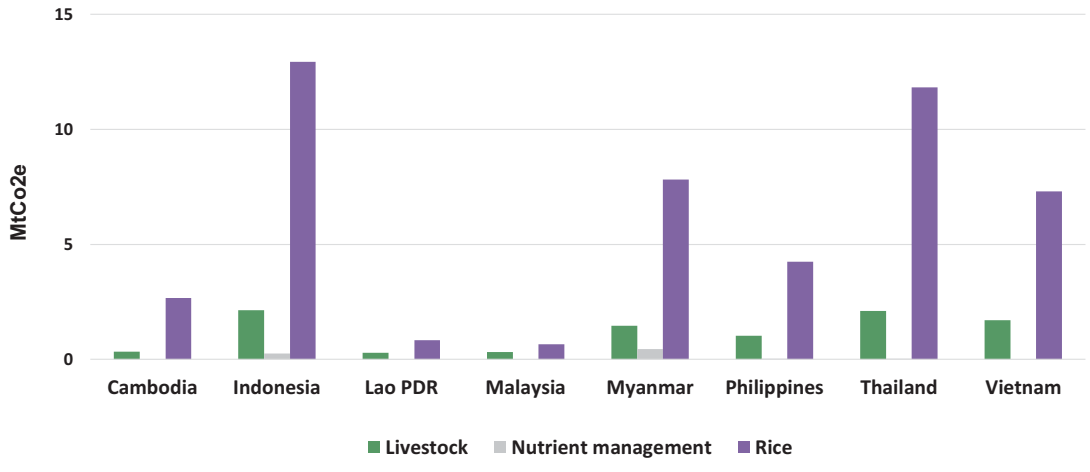


- The relative mitigation potential for rice (36%) is much higher than that of livestock (9%), and croplands (3%) (Roe et al., 2021; EPA, 2021)
- This presents immense opportunities for channeling climate funding to rural communities and smallholder rice farmers



By 2030, approximately 28% of the potential abatement in rice, or 62 $MtCO_2e$, can be abated at prices below $\$0/tCO_2e$ with an additional 26% reduction from baseline possible between \$0 and $\$20/tCO_2e$ (EPA, 2021).

GHG Reduction Potential in ASEAN agriculture



Sources: Roe et al. (2021), EPA (2021), Nelson (2023)

Existing mitigation options across the rice production cycle

can reduce as much as 65% - mostly methane

Different **rice cultivars** have different CH_4 emission potentials

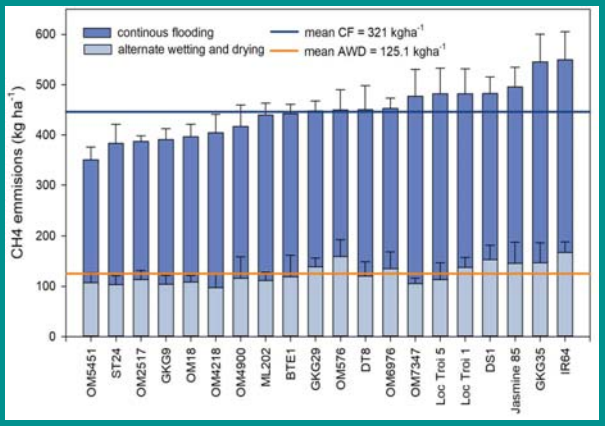
Water-saving technologies adapting rice production to climate change while reducing emissions

a) Mushroom production for a nutritious, profitable product

b) Mechanized composting to produce organic fertilizer

Technological innovations for low-emissions sustainable paddy rice production

New frontiers: Identifying low-emission rice varieties



Field experiment of Hohenheim University and IRRI in Vietnam

Source: Vo et al., 2023, manuscript in preparation

Common practices for managing rice straw

Rice straw produced (Asia)

*600 - 800 Million tonnes/year

Open-field burning (>50%)

- Nutrient loss
- GHGE and pollutions
- Biodiversity loss (soil-dwelling organisms such as fungi, bacteria and rotiferal)

Incorporation (>30%)

- CH4 (1 CH4 = 28 CO2-eq)
- Methane toxicity, black root diseases

(Source: https://www.irri.org/rice-straw-management)

Valorizing rice straw to enable low-emission practices

Mechanized Collection

Mechanized composting

Mushroom

Rice straw-based biomaterials/ products

Rice straw based circular economy

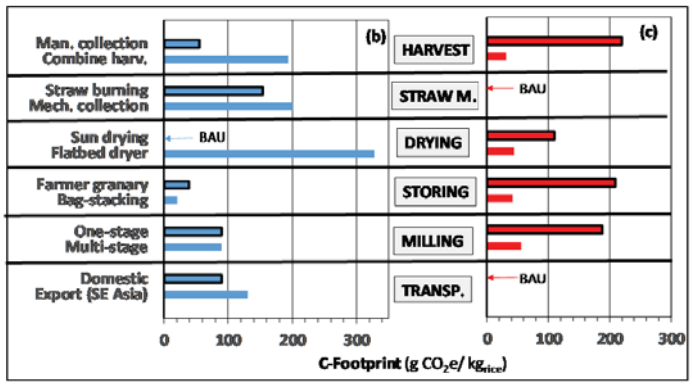
Rice straw-based circular economy with mechanized collection, mushroom, composting; adding 10% income and reduce up to 30% carbon footprint

Low-emission rice value chains: Reducing losses

CF-Rice

- Losses are unnecessary emissions
- Different technologies are associated w/ different amounts of GHGs (blue) and losses (red)

Manual harvest entails high emissions from losses; combine harvesters, although using diesel, are net climate-beneficial



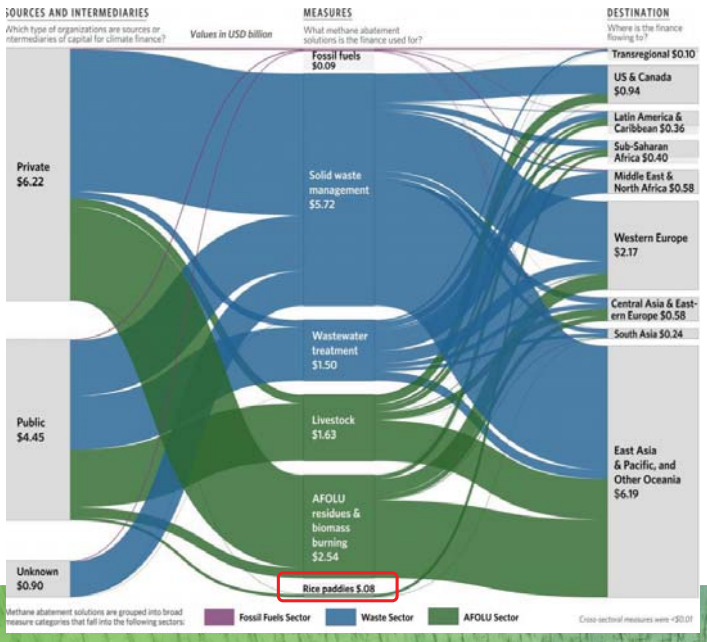
Combining adaptation and mitigation: SRP Standard for Sustainable Rice Cultivation

SRP standard, the world's first voluntary sustainability standard for rice

A framework of 12 performance indicators (PIs) is used to measure the economic, social and environmental outcomes of farmers applying the practices prescribed by the standard.

Integrated and comprehensive approach allows to achieve synergies and avoid tradeoffs

Rice Methane Reductions: yet Unrealized Opportunity



Sources: Climate Policy Initiative (2022), EPA (2021)

- Investments for methane reduction are geared towards waste management/ wastewater treatment, followed by livestock and residue burning
- Investments in GHG abatement in rice is very low compared to the mitigation potential
- By 2030, approximately 28% of the potential abatement in rice, can be realized at prices below $0/tCO$_2$e, with an additional 26% reduction from baseline possible between $0 and $20/tCO$_2$e (EPA, 2021).

Carbon Registries for certifying emission reduction

United Nations Framework Convention on Climate Change

Gold Standard
Climate Security & Sustainable Development

Verified Carbon Standard
A VERRA STANDARD

SOCIALCARBON®

Methodologies

Methane emission reduction by adjusted water management practice in rice cultivation

- The only methodology for flooded paddy rice
- **Clean Development Mechanism (CDM): *AMS-III.AU***
  - Initially developed for Kyoto Protocol (mandatory emission reduction)
  - Previously accepted by voluntary carbon markets (VCS, Gold Standard, etc.) but as of March 20, 2023 Verra has inactivated the methodology

Voluntary carbon market approved methodologies:

- Gold Standard: Released July 7, 2023 - Methane emission reduction by adjusted water management practice in rice cultivation - includes N20; field stratification; standardized in-field measurements; all project sizes; new additionality requirements
- Verra VCS: ***VM0042*** *Methodology for Improved Agricultural Land Management* (complex models, not appropriate for flooded paddy soils or small-scale, highly variable management; focused on increasing soil organic carbon (SOC) storage)

What's needed to develop rice carbon market projects?

- Knowledge on carbon market eligibility and how to calculate emissions based on farmers' practices
- Training on practices that reduce emissions in rice production
- Capacity to monitor, report, and verify changes in practices that reduce emissions
- Financing for low-emission rice projects
- Government policies and regulatory frameworks for emissions trading

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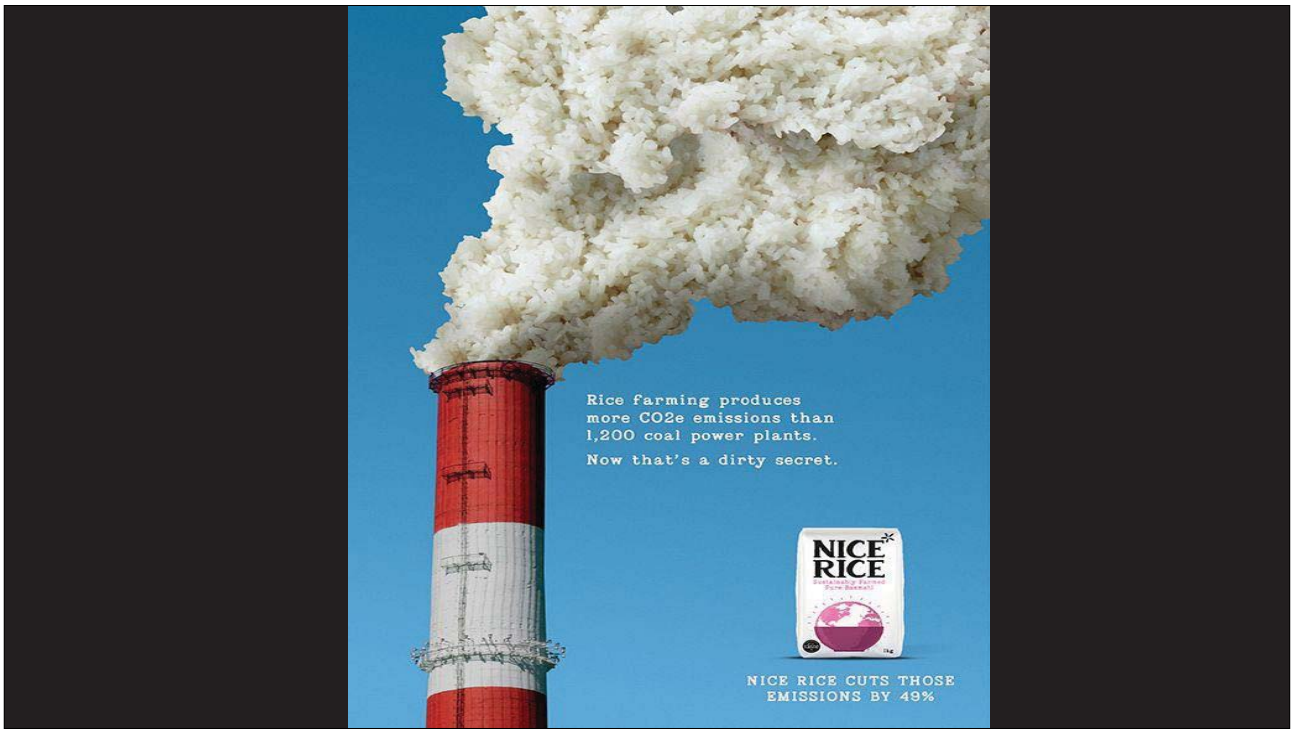
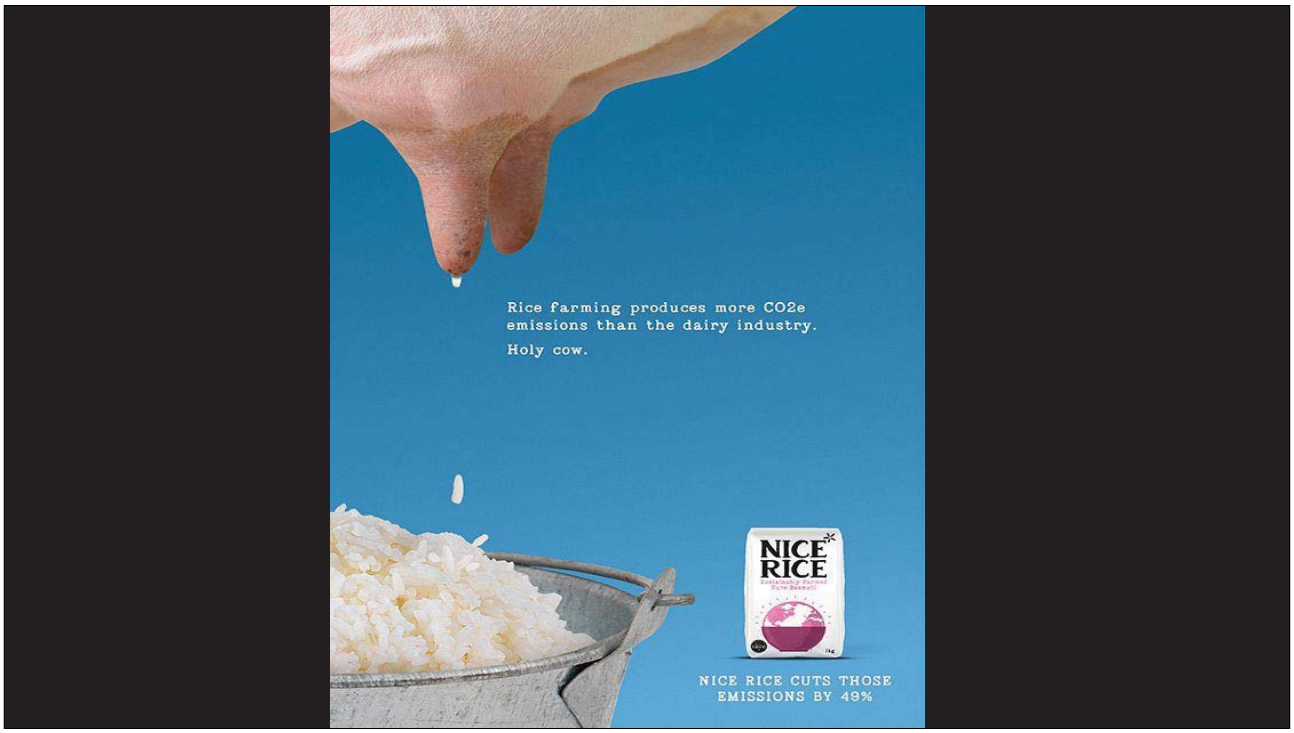
Contacts:

Alisher Mirzabaev
Senior Scientist, Policy Analysis/Climate Change,
International Rice Research Institute
Email: a.mirzabaev@irri.org


Sustainable Rice Platform
SRP
Reducing GHG emissions in rice:
How can the Sustainable Rice Platform contribute?
W Wyn Ellis, Ph.D.
23rd Asia Pacific Agricultural Policy Forum
Enabling Agrifood Systems Research and Policies towards the Sustainable Food System Transformation in the Asia Pacific Region
18 November 2024
Asawin Grand Convention Hotel, Bangkok, Thailand


Rice farming produces more CO2e emissions than global air travel.
That's plane stupid.
NICE RICE
NICE RICE CUTS THOSE EMISSIONS BY 49%
London Lites
14:41:48
P HE17
Permit holders parking only past this point
Mon - Sat
9 am - 5 pm
Taxi
Mon - Sat
7 - 10 am
4 - 7 pm


Rice farming produces more CO2e emissions than 1,200 coal power plants.
Now that's a dirty secret.
NICE RICE
NICE RICE CUTS THOSE EMISSIONS BY 49%


Rice farming produces more CO2e emissions than the dairy industry.
Holy cow.
NICE RICE
NICE RICE CUTS THOSE EMISSIONS BY 49%

Contributor to, and victim of climate change

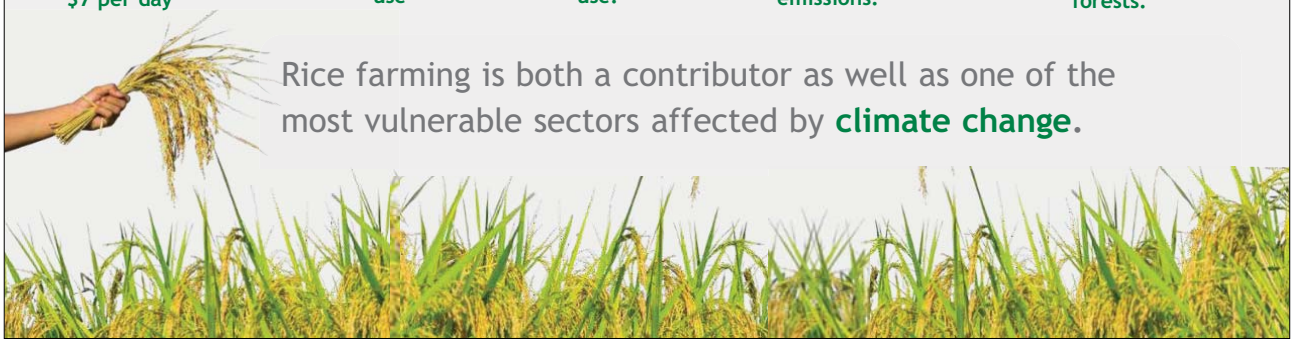
Smallholder farmers earn $2 - $7 per day

30-40% global fresh water use

13% global fertilizer use.

10% global methane emissions.

Biodiversity and habitat loss in wetlands and forests.



Rice farming is both a contributor as well as one of the most vulnerable sectors affected by **climate change**.

Contents

1. What's the problem?
2. About SRP, the SRP Standard, Indicators and impacts
3. Assurance and markets for SRP-Verified rice
4. Upscaling impact via GEF
5. New initiatives at SRP

Thailand rice sector emissions

- Rice accounts for half of all agricultural land, employs >18 million smallholder farmers
- Thailand is one of world's top exporters
- Ag sector contributes 15.23% of total GHG emissions- 2nd largest source after energy
- Rice accounts for 50.58% of total ag emissions
- 4th-largest emitter of GHG emissions from rice
- Thailand has set a goal of reducing GHG emissions from rice by 26%. The country has also pledged to reduce GHG emissions by 30-40% below BAU baseline level by 2030.

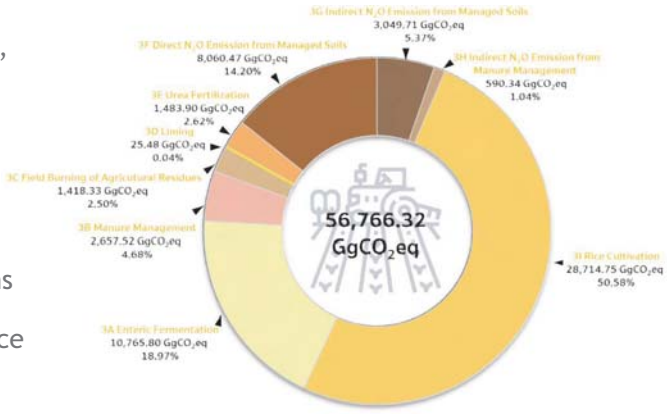


Figure 2-6: GHG emissions in Agriculture Sector, 2019

Source: Thailand 4th BUR 2022

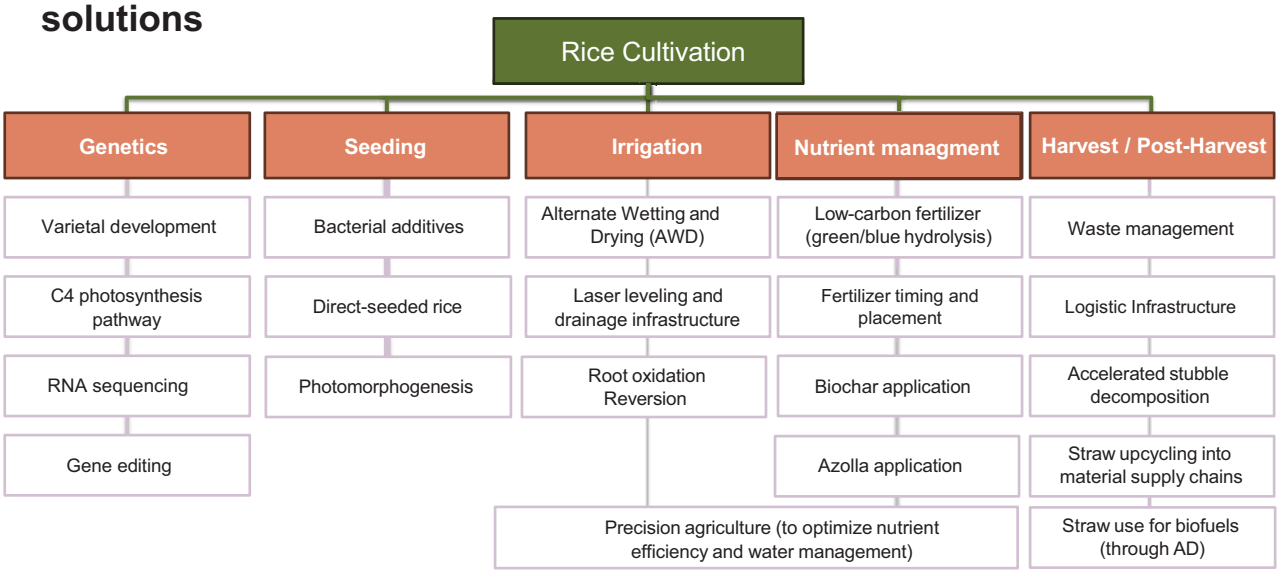
Impacts

Farmers are most vulnerable to cc impacts:

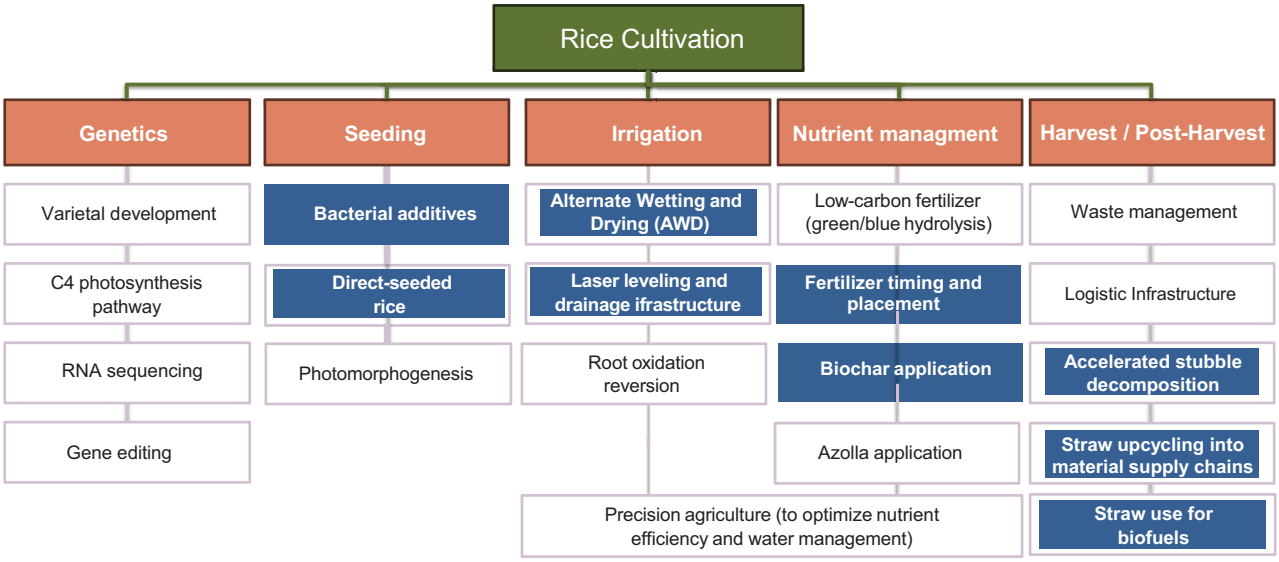
- Extreme weather
- Fluctuations in rainfall patterns
- Floods, drought
- Sea level rise/salinization
- Temperature rise

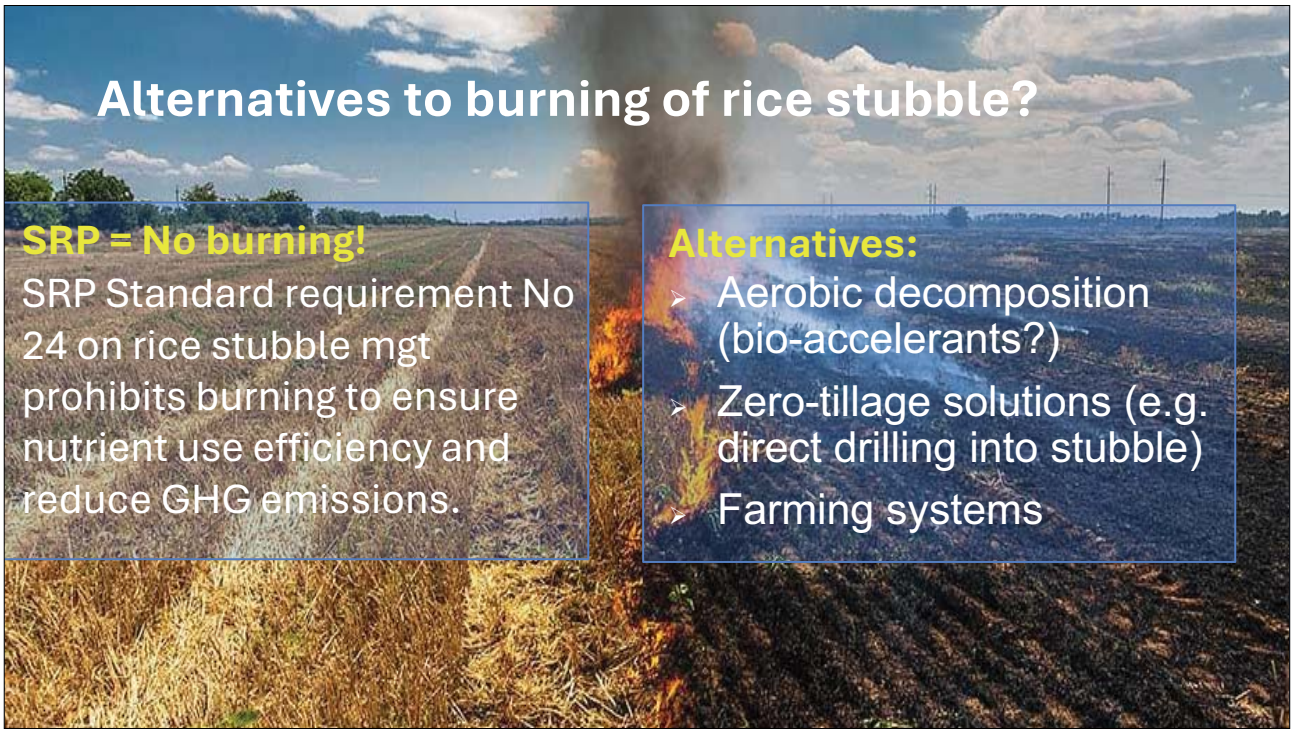
Technologies for sustainability in rice?

Rice decarbonization can draw upon a large set of proven solutions



Some available solutions for rice decarbonization…





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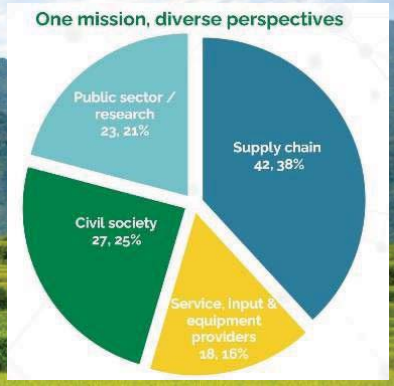
Solutions in rice cultivation offer substantial co-benefits

Prioritized solutions: (showcase highest mitigation potential and asset class fit)	Adaptation and Resilience	Health Improvement	Restoring Nature	Circular Economy	Climate Justice	Building Local Economies
S3: RNA-Seq.	✓		✓			
S4: Gene Editing	✓	✓	✓			
S5: Bacterial Additives			✓			
S6: Direct-seeded Rice	✓				✓	
S7: Photomorphogenesis	✓		✓			
S8: AWD	✓	✓	✓		✓	
S11: Root Oxidation Rev.			✓			
S14: Biochar			✓	✓	✓	✓
S15: Azolla			✓			✓

Sustainable Rice Platform

A not for profit global multi-stakeholder alliance working to transform the global rice sector:

- **Improving** social working conditions and livelihoods of smallholder and workers
- **Mitigating** environmental and climate impacts and boosting resource use efficiency
- **Facilitating** the global rice market an assured supply of sustainably produced rice.



115 members
33 countries

Photo credits: Suratman

SRP System of Tools

New! SRP Low-Carbon Assurance Module

Photo credits: Nguyen Thanh/Rikolto

SRP Standard & Performance Indicators

SRP Standard

- The world's first voluntary sustainability standard for rice.
- Guides farmers to shift to adopt proven climate-smart, sustainable best agricultural practices.
- 41 basic on-farm requirements, organized under 8 themes.

SRP Performance Indicators (12 PIs)

- Aligned with the SRP Standard, allow to measure the sustainability impacts.

Image by Preferred by Nature

Thai Agricultural Standard: Sustainable Rice (TAS 4408-2022)


มาตรฐานสินค้าเกษตร
มกษ. 4408-2565
THAI AGRICULTURAL STANDARD
TAS 4408-2022
ข้าวยั่งยืน
SUSTAINABLE RICE
สำนักงานมาตรฐานสินค้าเกษตรและอาหารแห่งชาติ
กระทรวงเกษตรและสหกรณ์
ICS 65.020.20
ISBN

SRP delivers multiple benefits:

On average, farmers adopting the SRP Standard:

- Reduce water use by **20%**
- Reduce farm chemical use by **15-20%**
- Earn **10%** higher net income
- Reduce GHG emissions by up to **50%**

Benefits are market-agnostic: Higher net incomes for ***all*** farmers, not only those accessing export markets

**Impact numbers based on early field studies looking at the economic, social and environmental benefits of adoption of the SRP Standard.*

Photo credits: Sou Nat/SMP Cambodia

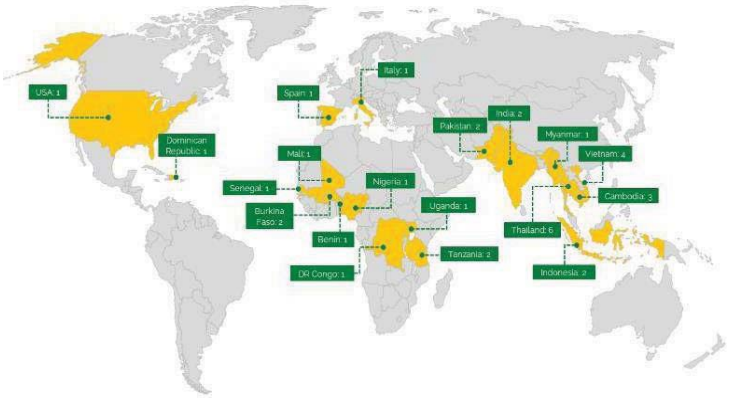
SRP Approach & Reach

A. Market-led (private sector):
Value chain initiatives
(sustainable procurement)

⇕

B. Development-led (public sector):
Drive scale through partnerships (PPP)

22 registered projects
19 countries
>187,000 farmers



SRP: New developments

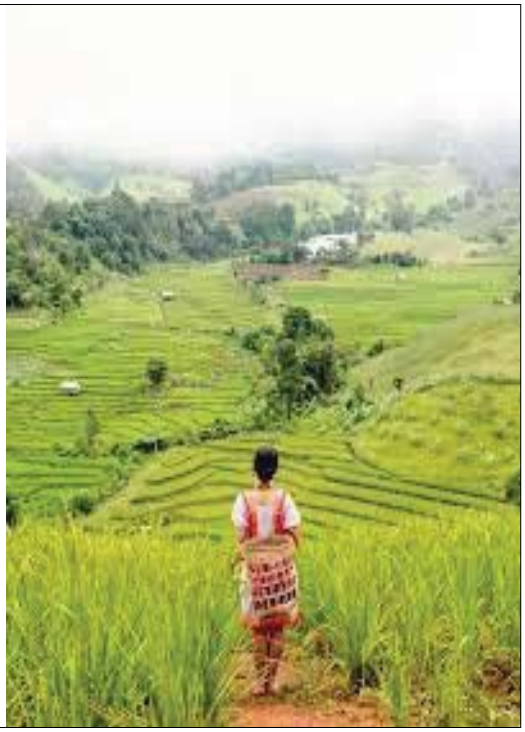
- Revision of SRP Standard and Performance Indicators
- Benchmarking SRP Standard for IFC Global Trade Supplier Finance Program (GTSF)
- Assurance Scheme v 2.0 digital platform
- Low-Carbon Assurance Module (insetting)
- RiceTrace digital Chain of Custody / traceability platform
- Financial instruments (blended finance)


A growing market for SRP-Verified Rice in EU
20+ Countries
Basmati
Jasmine
Long grain
10.000+ supermarkets in reach
6 Brands
pioneered SRP-Verified rice.
10+ Products
carry the on-pack SRP-Verified Label.


Sustainable Rice Platform
SRP
SRP Low Carbon Assurance Module
Schweizerische Eidgenossenschaft
Confédération suisse
Confederazione Svizzera
Confederaziun svizra
Swiss Confederation
Federal Department of Economic Affairs, Education and Research EAER
State Secretariat for Economic Affairs SECO
MARS Food & Nutrition
Gold Standard
regrow
LT Foods
Ebro

Inclusive Sustainable Rice Landscapes in Thailand (ISRL)

- **Transform the rice sector into a sustainable agricultural system through integrated land use, natural resources and environmental management.**
- US$ 5.5 m GEF grant + $ 67.3m cofinancing
- Managed by UNEP / GIZ / MOAC / SRP and national partners
- 45,000 farmers trained
- 3,287,007 tCO2e mitigated by end Year 5
- **Components**
  1. Policy support on landscape-scale management for sustainable rice production
  2. Enhance the management of forests, watersheds, and biodiversity
  3. Establish finance mechanisms for sustainable rice production
  4. Knowledge management and outreach



Key messages

1. Sustainability is increasingly embedded in value chains and mandated by regulation
2. Proven technologies are ready for delivery
3. Low-carbon goals need to be pursued as part of a holistic climate-smart best practice framework – it's not just about AWD!
4. Broadening demand for SRP-Verified Rice beyond basmati (Hom Mali and long-grain)
5. Global financing mechanisms are emerging

Photo credits: Nguyen Thanh/Rikolto

Sustainable Rice Platform
SRP

Register today for the 3rd Global Sustainable Rice Conference & Exhibition:
Food, Climate & People
UN Conference Centre Bangkok
26-27 November 2024

Photo credits: Phan Tuấn Anh

Feed the world. Sustainably!

Email: wyn.ellis@sustainablerice.org | **Web:** www.sustainablerice.org

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The U.S. Government's Global Hunger & Food Security Initiative
INNOVATION LAB FOR
FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI)
Farmers' Preferences Towards Policy Options for Reducing Rice Residue Burning in Cambodia, Laos, Vietnam, and Thailand
Assoc. Prof. Piya Wongpit, PhD
National University of Laos
USAID
MICHIGAN STATE UNIVERSITY
Cornell University.
KU KASETSART UNIVERSITY
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Contents
1. Current state of Rice Residue Burning
2. Reasons of Rice Residue Burning
3. Research Questions
4. Methodology
5. Pathways of Policy Influencing

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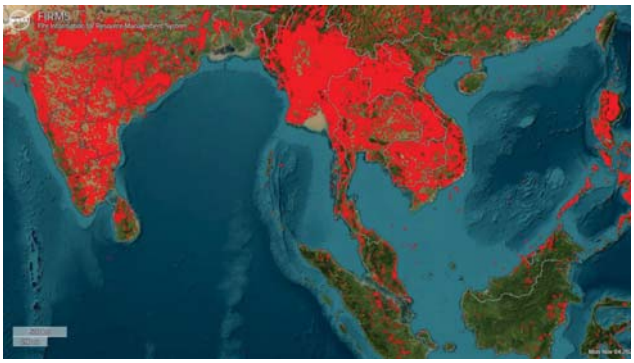
The Current State of Rice Residue Burning

1. Widespread Practice
2. Environmental Concerns
3. Transboundary Impacts
4. Government Regulations

1 Widespread Practice

- Crop burning is a global issue
- Thailand, Laos, Myanmar, Cambodia, and Vietnam, face persistent environmental and economic challenges due to the widespread practice of open burning of agricultural residues.
- This practice, particularly prevalent during the dry season
- The primary food crops cultivated are rice, wheat, and maize, resulting in a large quantity of crop residues being produced and burned across the region.



2 Environmental Concerns

- Crop burning is a major contributor to pollution. It releases fine particulate matter known as PM2.5.
- PM2.5 can penetrate the lungs and enter the bloodstream, posing significant health risks (Mueller et al., 2020; WHO, 2021).

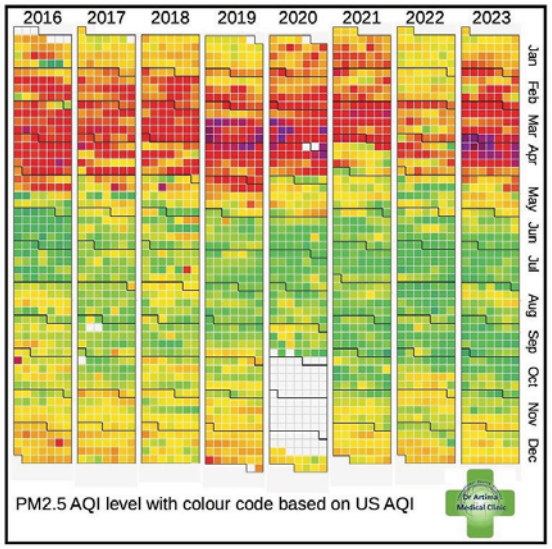
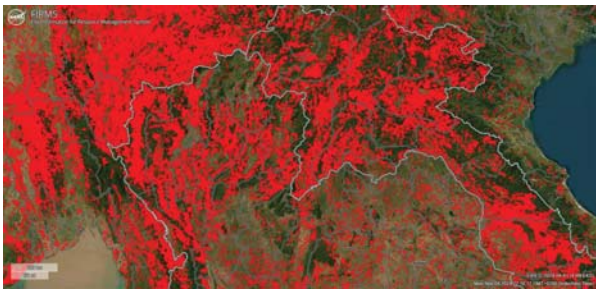


Figure 1: Record of air pollution (PM2.5) in Chiang Mai between 2016 and 2023 as AQI color code.

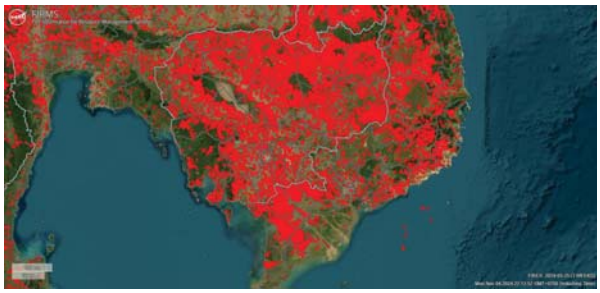
3 Transboundary Impacts

- The proximity of Thailand, Laos, Cambodia, and Vietnam which share a long border, exacerbates the transboundary haze problem,
- Pollution from burning activities in one country directly impacts the air quality of the other.
- This haze frequently crosses borders, affecting neighboring countries.

Myanmar, Thailand, and Lao PDR



Cambodia and Vietnam



4 Government Regulations

- Several regulations, subsidy, or penalties, to reduce burning
- Enforcement remains challenges

2. Reasons for Rice Residue Burning

Traditional Practices

Rice residue burning has been a long-standing practice in this region, providing a simple and effective way to prepare land for planting.

Limited Alternatives

Farmers may lack access to alternative land preparation methods or the resources to adopt sustainable practices.

Low Cost

The cost of managing the fields is the lowest.

3. Research Questions

1. **Reasons for Rice Residue Burning**
   What are the primary reasons farmers' rice residue burning?
2. **Government Policies**
   What are the policy preferences for farmers in reducing the burning of rice residue?
3. **Policy Prioritization**
   Which policies are prioritized by the country?
4. **Factor influencing preference policy?**
   What factors influence the likelihood of farmers adopting these policies?

4. Methodology

- This study focuses on rice, the main crop in this region, where farmers predominantly practice rice residue burning.
- The questionnaire consists of three sections:
  1) Policy options,
  2) Farmer information, and
  3) Country-specific issues.
- Target sample:
  - Rice farmers
  - Community member who was impacted by residue burning

4. Methodology

- The Best-Worst Scaling (BWS) method will be used in this study to rank the preferences of stakeholders
- The following policy options will be presented to stakeholders for evaluation using the BWS method.
  1. **Outreach and Training Program:** Farmers will receive free, hands-on training from agricultural extension agents and experts on how to manage crop residues without burning, helping producers learn about and apply new techniques and technologies for using rice residue productively.
  2. **Subsidized Equipment Program:** The government will provide price discounts to hire machinery to plow and plant through residues (e.g., rotary tractors, Happy Seeder planter) or to remove rice residue (e.g., straw balers) making it easier and cheaper for farmers to handle crop residues without burning.
  3. **Strict Anti-Burning Enforcement:** The government will strictly enforce laws against burning crop residues. This means increased monitoring of fields and significant fines for those caught burning.
  4. **Payments for Not Burning:** Farmers will receive cash payments from the government for not burning their crop residues. The payment amount will consider the land size and environmental benefits achieved, such as reduced air pollution and soil health, rewarding effective residue management without burning.
  5. **Rice Residue Market Support Program:** Government will support new programs to ensure farmers can sell their rice residue like straw at a fair price. This will include collection centers near farms to buy residue as well as support for straw processing industries that convert rice straw to useful products, creating a new income stream from what was previously burned.

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4. Methodology

- Mixed Logit Regression:
  - A statistical model was used to analyze the factors influencing policy adoption.
  - Accounts for preference heterogeneity across farmers
- Variables to Consider:
  - Demographics (age, education, farm size).
  - Economic factors (income level, access to credit).
  - Environmental awareness.
  - Previous experience with alternative practices

INNOVATION LAB FOR FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI)

5. Pathways of Policy Influencing

- The research provides evidence-based insights into the preferences of key stakeholders regarding policy options to reduce rice residue burning
- The results will be disseminated through several activities
  - Publishing policy briefs and journal
  - Presenting findings at governmental meetings, and hosting workshops.
  - Collaborating with civil society organizations advocating for clean air and sustainable agricultural practices to amplify our findings.

23rd Asia Pacific Agricultural Policy Forum PROCEEDINGS

6

Special Talk

- Dr. Wonho Lee

"Development and Validation Study Outcomes of Low-Carbon Rice Farming Management Using Water Depth Sensors"

23rd Asia Pacific Agricultural Policy Forum

Special Talk

Special talk: Dr. Wonho Lee

1. Background

GHG Reduction in the Agricultural Sector is recognized as One of the Four Major Sources for GHG emission

2050 Carbon Neutrality Declaration

- **2050 Carbon Neutrality Declaration by 196 Countries**
  - The declaration of carbon neutrality by various countries around the world in response to global climate change.
- **As an interim target, the NDC(Nationally Determined Contributes) for 2030 has been established**

Intensification of GHG Reduction Demands on Enterprises

- **Global regulations such as EU's CBAM (Carbon Border Adjustment Mechanism) and the imposition of carbon prices are being strengthened**
- **Pressure to reduce emissions is increasing due to regulations like the EU Battery Regulation and ESG disclosures**

Agricultural GHG emission reduction is crucial, recognized as one of major source of emissions.

- **Rice farming holds significant amount of methane emissions contributions**
  - Methane has over 28 times the warming impact compared to carbon dioxide.
- **30% reduction is needed by 2030**
  - Government are committed to a 30% reduction by 2030 by joining the Global Methane Pledge

2

1. Background

To achieve low carbon agriculture, systematic approach (e.g. Data collection) **is critical**

- **Agriculture industry in general has a weak digital infrastructure,** with insufficient systems in place to effectively use data-driven methods for reducing inefficiencies.
- Traditional **farming methods demand labor-intensive** efforts from farmers, which hampers the speed of GHG initiative and creates challenges in accurately measuring their impact.

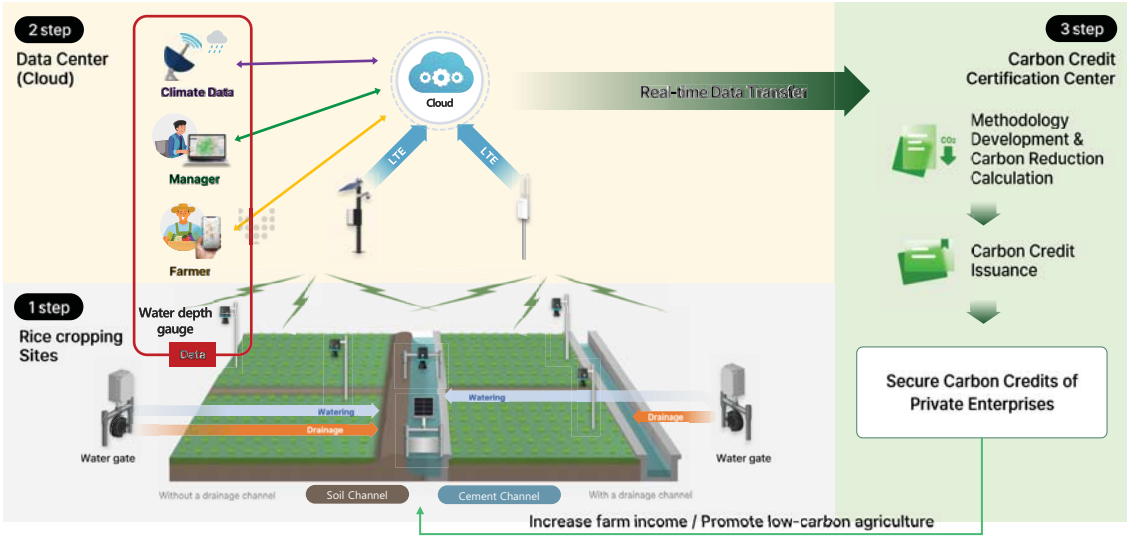
✓ An urgent need for a system to effectively harness and manage the dispersed and fluctuating agricultural data available.

✓ An innovative operational model/structure is required for low-carbon agriculture through private company-farmer collaboration, enabling carbon neutrality for both government and companies

3

2. Overview - Project

Systematic approach to Calculate Carbon Reductions using Real-time Data from Rice Paddy fields



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3. Project Benefits

Implementation of Economic Cycle for Greenhouse Gas Reduction through Data-Driven Solutions

Greenhouse Gas Reduction Effect

- ✓ Reduction of Approximately 1.9 Tons of Greenhouse Gases per Hectare.

Agricultural Practices to Respond to Climate Changes and 30% Water Savings

- ✓ Flexible Paddy Water Management using Integrated Data on Water Levels, Weather, and Soil
- ✓ 30% Water Savings with Additional Water Saving from Intermittent Drainage

Expanding the Cooperative Structure / Model between Enterprises and Farmers

- ✓ Sell Issued Carbon Credits in Partnership with Companies
- ✓ Revenue from credit sales are Allocated to Farmers, Expanding Their Income

5

4. Data Application

Data structure to ensure the Accuracy and Reliability of Carbon Reduction Calculations

List of Data Collection and Application

Water depth measurement data

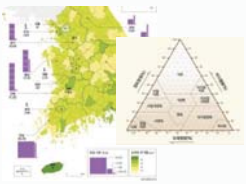
- ✓ The water level in rice paddies affects methane production by microbes and creates an anaerobic environment

Climate data

- ✓ Temperature, rainfall, solar radiation, and evaporation affect rice paddy water levels

Soil data

- ✓ Complex effects on soil organic matter, moisture, and microbial activity



Farming data

- ✓ Water depth influenced by irrigation/drainage
- ✓ Microbial ecosystem affected by straw application, fertilizers, and pesticides.

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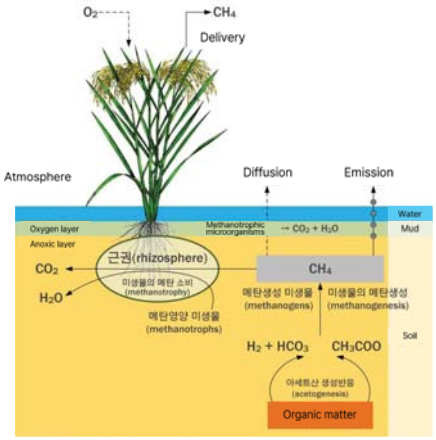
4. Data Application

Data for a GHG Emission Model Reflecting Methane Generation in Rice Cultivation

Methane Generation Mechanism



GHG Emission Calculation Model

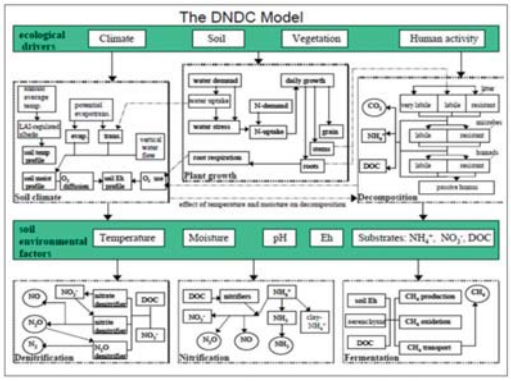


Fig. 1. Structure of the DNDC model (http://www.dndc.sr.unh.edu).

5. Methodology

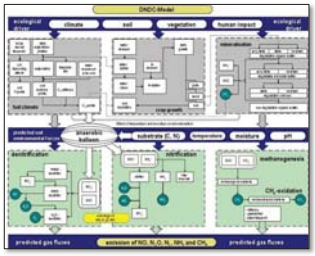
Introduction of International Paddy Water Management Methodology Based on Biogeochemical model and Tier 3 data parameters

Reference Methodology

CDM[AMS-III.AU]

Methodology designed based on Tier 1 data, utilizing IPCC default factors

Biogeochemical Model



A biogeochemical model centered on Tier 3 to forecast GHG emissions

Methodology Development

1. **Methodology Idea Note**
   - Baseline scenario
   - Analyze Tier factors
   - Methodology application and additionality
2. **Methodology Development**
   - Verify scenario and data suitability
   - Process for data collection and management
   - Optimal monitoring methods (QA/QC)
3. **Methodology Proposal & Evaluation**
   - Establish baseline scenario
   - Identify and present GHG emission source
   - Development of reductions calculation formula including Tier 3 data
   - Definition, purpose, management plan for each parameter
   - Third-party review and evaluation by experts

* Methodology: A document describing the standards, assumptions, calculation methods, and procedures applied to calculate and monitor GHG reductions or removals

5. Methodology

Establish Baseline and Project Scenario Criteria for Methodology

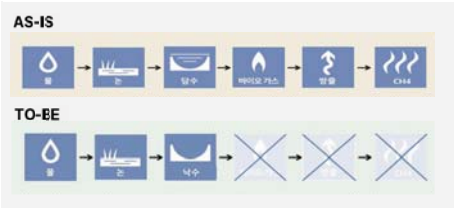
Total Reductions
= ① Baseline Emission – ② Project Emission

① Baseline Emission (BE)

Methane emissions before changing agricultural practices (continuous flooding or intermittent flooding)

② Project Emission (PE)

Methane emissions after changing agricultural practices and emissions resulting from additional activities performed for the change



Key points of the water management methodology	
Scope	• **Rice farms that change the water regime during the cultivation period** from continuously to intermittent flooded conditions and/or a shortened period of flooded conditions • **Alternate wetting and drying method** and aerobic rice cultivation methods
Applicability	• **Applicable regardless of scale**, but data level (Tier) is determined based on scale • Excludes upland soils, rainfed areas, and deep water cultivation • **Applicable to sites with irrigation and drainage facilities** • **Should not affect rice yield** • No additional land use changes for the project • Provide farmers with sufficient education about the project • **Compliance with regulations of the local government** or authorities governing the agricultural area
Additionality	• Must not violate **national, local, or international laws or regulations** • Economic additionality assessment is mandatory if emissions exceed 60,000 tons

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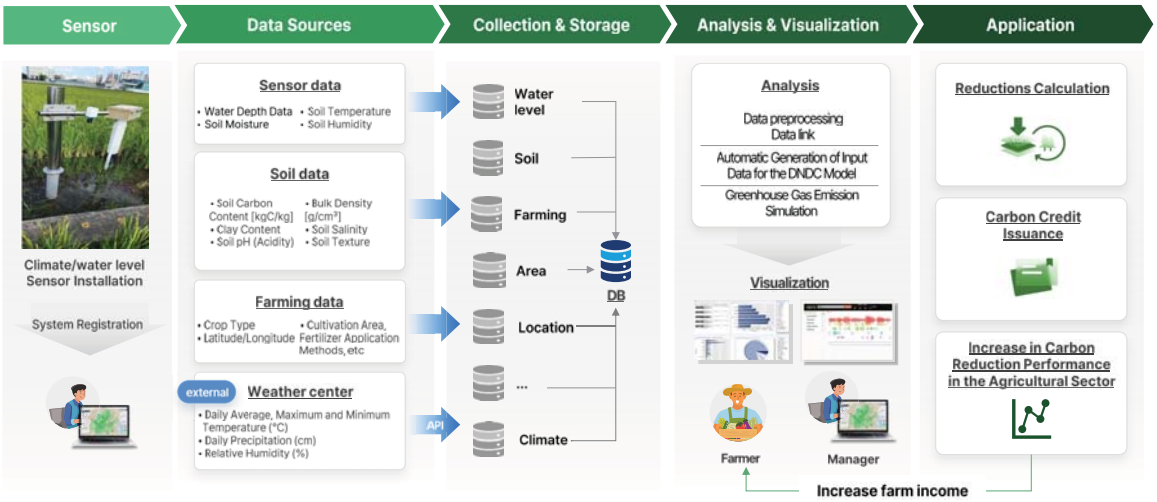
6. Project Process

Automated Data Collection from Farm Sensors, Carbon Reduction Calculation, Visualization, to Carbon Credit Issuance



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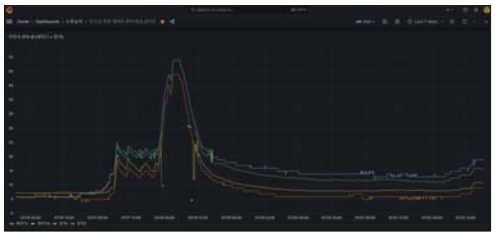
6. Project Process

Installation of Water Depth Sensors and Data Collection in Rice Paddy fields

Installation of Water Depth Sensors and Automated Water Gate System

Real-time Monitoring of Paddy Water Data



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6. Project Process

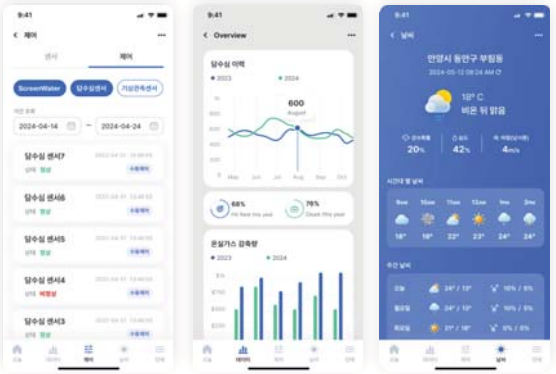
Real-time based Data Monitoring (via Dashboard)and Data Analysis

Web Interface for Managers

Check Collection Status

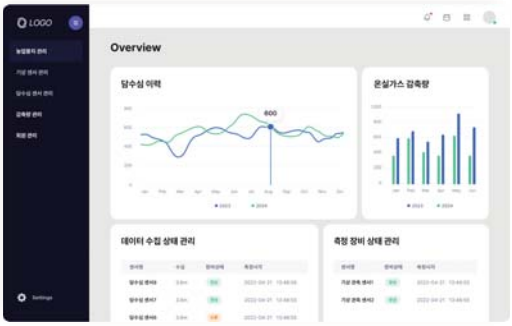
Monitor history of water level sensing and GHG reductions

Current Weather Conditions Near the Cultivation Area



App Interface for Users

- Check Flood Depth Status and Greenhouse Gas Reduction Amount for Registered Farms and Provide Charts
- Alert for Abnormal Conditions of Remote Sensing Equipment and Remote Control



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11. SDGs Achievement

Achieving Sustainable Development Goals along with GHG Reduction in Agriculture

SDGs, Sustainable Development Goals

ZERO HUNGER
Promoting Sustainable Agricultural Revitalization through Low-Carbon Agriculture

GOOD HEALTH AND WELL-BEING
Improving Food Security

CLEAN WATER AND SANITATION
Ensuring Water Use Efficiency and Improving Water Management through Automation Technologies

CLIMATE ACTION
Contributing to Climate Change Mitigation through Greenhouse Gas Reduction

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7. Project Partnership

Collaborating with Water Solution Companies and Research Institutions to Issue International-Standard Carbon Credits

Project Leading Company

GREENERY

Climate Related Solution Development

- Conducting **Carbon Emission Monitoring and Carbon Reduction Consultation** for Companies
- LCA and Development of Methodologies for Carbon Reduction Assessment

Development of Automation Technologies for the Carbon Market

- Technologies for Automatic Calculation of Carbon Reduction Amounts and Automation of Carbon Credit Purchases

Partner Organizations

Ministry of Agriculture, Food and Rural Affairs
Support for **Expanding Low-Carbon Agricultural Activities and Quantification of Reduction Amounts**, Policy Development, and Assistance for International Expansion of Carbon Credit Issuance Services

National Information Society Agency
Agency leading South Korea's digitalization **funded project**. Policy advancements with multiple government ministries

ISTEC, ltd.
Delivery and Installation of **Water Depth Sensors** by a Water Management and Sensor Specialist Company

Seoul National University, College of Agriculture and Life Science
Consulting on the **Development of GHG Reduction Methodologies** and Analysis of Water Savings Effects in Water Management

Korea Agriculture Technology Promotion Agency
Collaboration on **Developing Optimization Technologies** for Paddy Water Management

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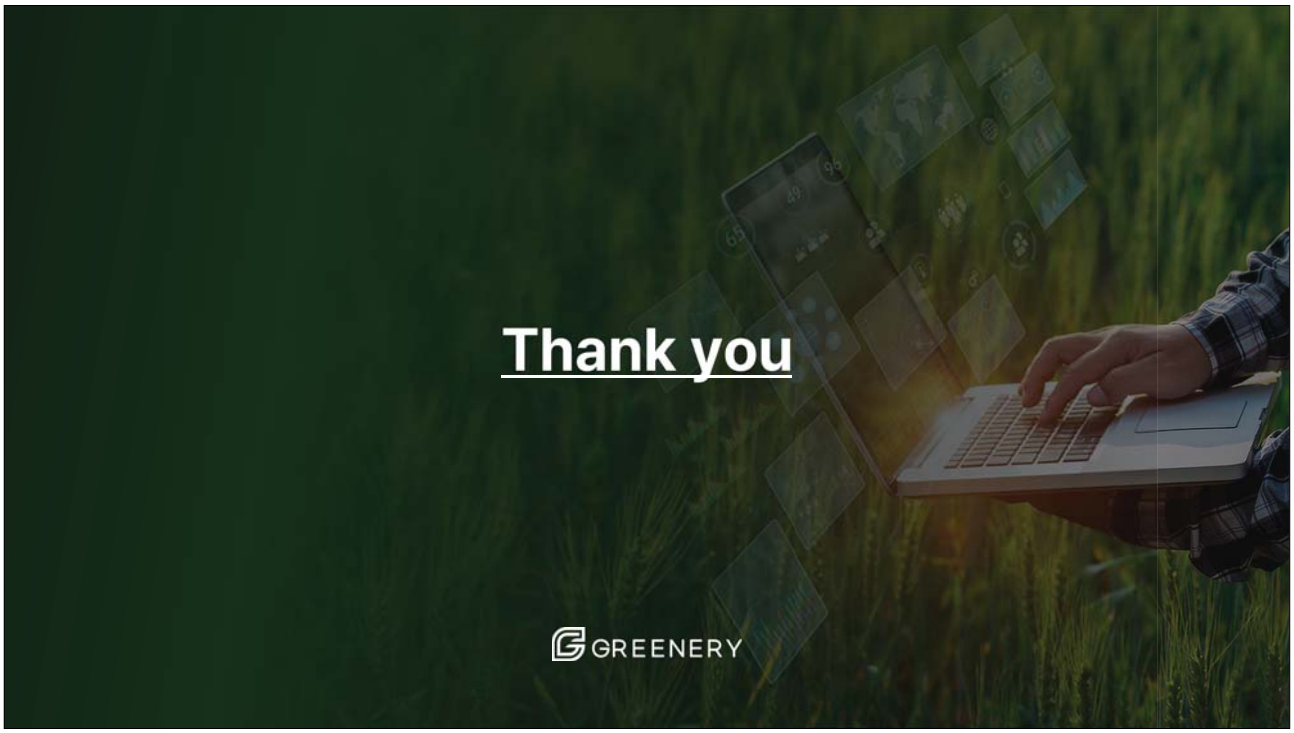
Thank you
GREENERY

23rd Asia Pacific Agricultural Policy Forum PROCEEDINGS

7

Session 2 _ Country Perspectives in Agricultural Production Systems and Digital Technologies

- Presenter 1：Dr. Bart Minten

  "The Continuous Rise in the Adoption of Labor-saving Agricultural Technologies in Asia: Evidence from Myanmar"

- Presenter 2：Dr. Anita Rosli

  "Food Security in Marginalized and Vulnerable Areas of Southeast Asia"

- Presenter 3：Dr. Pham Le Thong

  "Consumption Inequality between Farm and Non-Farm Households in Rural Vietnam"

- Presenter 4：Dr. Deborah Nabuuma

  "Agrobiodiversity, Dietary Diversity, and Food System Transitions: Reflections from Southeast Asia and the Pacific"

- Presenter 5：Mr. A.S. Moniruzzaman Khan

  "Youth in Agriculture Transformation: A Story from Bangladesh"

- Presenter 6：Dr. Jikun Huang

  "Facilitating Agricultural Transformation and Green Development in China: The Past Efforts and the Way Forward"

23rd Asia Pacific Agricultural Policy Forum

Session 2

① Moderator: Dr. Sahat M. Pasaribu
② Presenter 1: Dr. Bart Minten
③ Presenter 2: Dr. Anita Rosli
④ Presenter 3: Dr. Pham Le Thong
⑤ Presenter 4: Dr. Deborah Nabuuma
⑥ Discussion Moderator: Dr. Aileen Lapitan
⑦ Session 2 Discussssants
Dr. Samnang Nguon
Dr. Zaw Oo
Dr. Ganesh Thapa
Dr. Shoichi Ito

①	②	③
	④	⑤
⑥	⑦	

FEED THE FUTURE
The U.S. Government's Global Hunger & Food Security Initiative

The continuous rise in the adoption of labor-saving agricultural technologies in Asia: Evidence from Myanmar

Bart Minten
November 18
APAP, Bangkok

Photo Credit: SOMRERK WITTHAYANANT/Shutterstock

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INTRODUCTION

- Agri-food systems rapidly transforming, driven by population growth, urbanization, policy reform, and improved road and communication infrastructure
- Farm sector reforming accordingly:

1/ Increasing spread of improved and yield-increasing technologies

2/ The rise in adoption of labor-saving agricultural technologies

- Look at changes in the adoption of agricultural technologies in Myanmar over the last ten years

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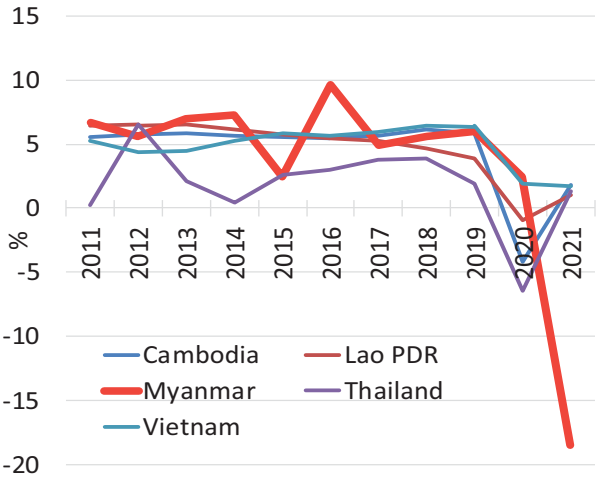
BACKGROUND

- **Economic boom:**

In the beginning of the 2010s, economic policy reform program (relaxation import restrictions, reform banking, migration, FDI, relaxation cropping controls) - Myanmar's economy 50% bigger in 2020 compared to 2011



- **Economic bust and crisis**

COVID-19, coup, upheaval and conflict: Myanmar's GDP in 2022 13% smaller than in 2019

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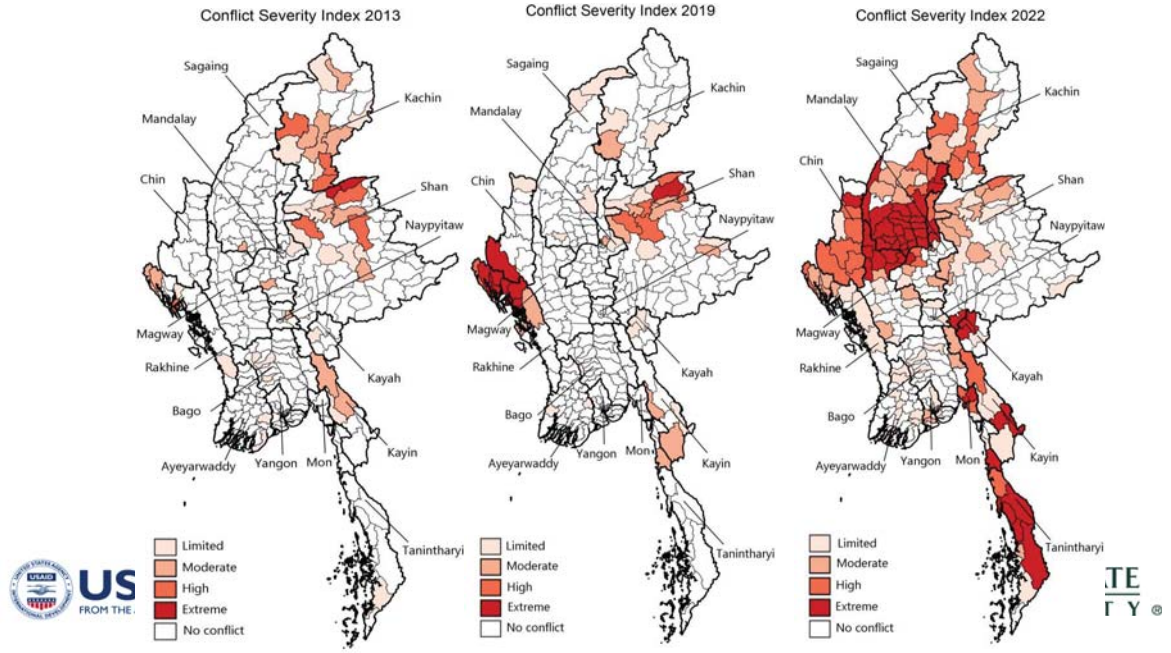
"THE BURMESE CIVIL WAR IS THE LONGEST-RUNNING ARMED CONFLICT IN THE WORLD… IN A WAY BURMA IS A PLACE WHERE THE SECOND WORLD WAR NEVER REALLY STOPPED"
THANT MYINT U



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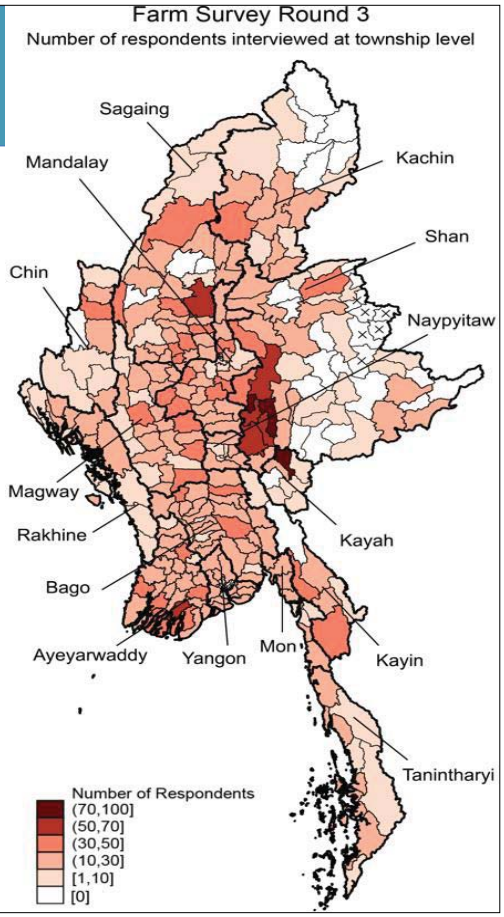
DATA

- Myanmar Agricultural Performance Survey:
- 4,961 crop farmers
- January 23rd - February 22nd, 2023
- Monsoon season

- Average size farm: 5.6 acres
- Share of farmers cultivating
1/ rice: 60%
2/ pulses: 11%
3/ maize: 10%

- Focus on recall data:
1/ 2013: opening economy
2/ 2019: before crisis
3/ 2022: last monsoon



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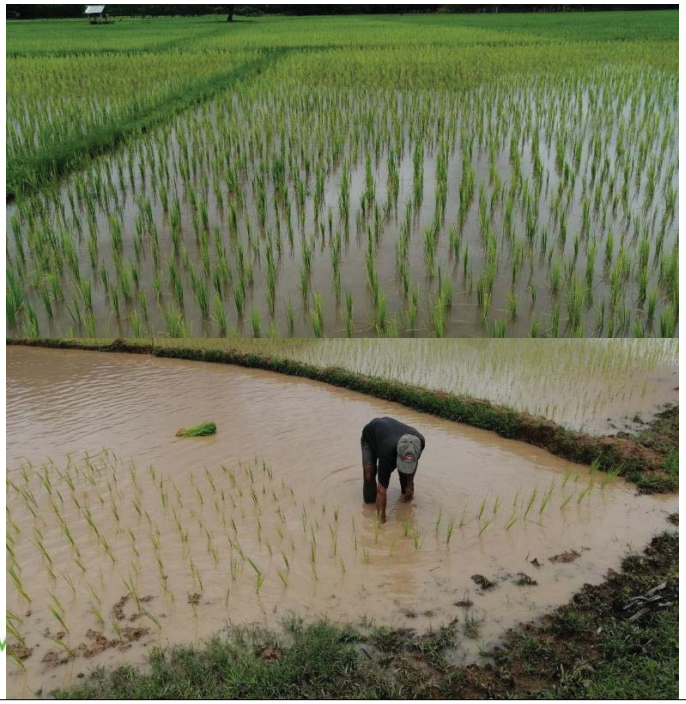
LABOR-SAVING AGRICULTURAL TECHNOLOGIES

Transplanting of rice

- 30 people/day/ha
- use rice seedlings grown in nursery, replanted after 15 – 45 days
- ensuring higher rice yields through uniform plant stands and better weed control

Direct seeding
Row planting



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LABOR-SAVING AGRICULTURAL TECHNOLOGIES

Herbicides

- Rapidly taking off globally
  - patent expiration
  - cheap generic products
  - complementarity to changing agricultural management techniques
  - increased labor costs
- *Glyphosate* (First registered in "Roundup")
  - applied before crop emergence
  - non-selective
- *Selective herbicides*

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LABOR-SAVING AGRICULTURAL TECHNOLOGIES

Mechanization

- Machines mostly imported from China

1. Plowing
   - 2- or 3-wheel tractors
   - 4-wheel tractors, typically done by service providers

2. Combine-harvesters
   - typically done by service providers

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PROBLEMS IN INPUT MARKETS (MONSOON 2023)

	Unit	Agricultural labor	Pesticides/ herbicides	Mechanization
Financial difficulties to purchase inputs	%	3.9	4.7	6.5
Inputs have become more expensive	%	4.9	5.4	5.9
Cannot find enough of the inputs - inputs not available	%	14.2	1.8	3.2
Required to pay in cash, instead of on credit	%	0.6	0.2	0.4
Difficulty to travel to purchase inputs/high transportation costs	%	10.0	1.7	10.3
No difficulties	%	58.2	52.9	52.4

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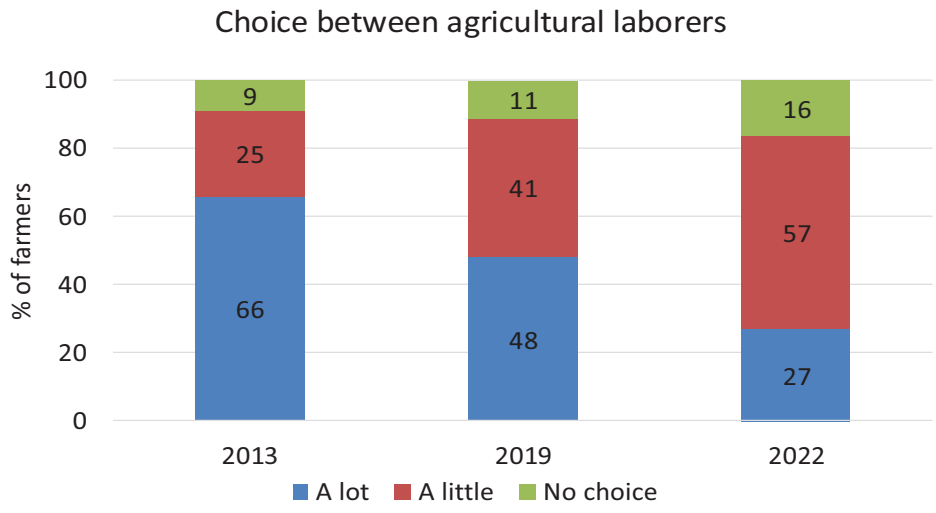
TIGHTENING OF AGRICULTURAL LABOR MARKETS



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ADOPTION LABOR-SAVING TECHNOLOGIES

	2013	2019	2022	Significance of change	
				2019 vs 2013	2022 vs 2019
Seeding methods (%)					
Transplanting	63.5	46.1	40.1	***	***
Broadcasting	23.3	38.3	43.4	***	***
Row planting	7.5	9.0	9.9	*	n.s.
Combination	5.8	6.6	6.6	n.s.	n.s.
Herbicide use (%)					
Glyphosate	2.6	21.7	23.0	***	n.s.
Selective herbicides	6.5	41.0	45.3	***	***
Mechanization on most rice plots (%)					
Tractor used	39.2	77.7	83.1	***	***
Combine-harvester used	10.2	45.0	51.1	***	***
Asterisks show significant differences at p-values: * p < 0.10, ** p < 0.05, *** p < 0.01; n.s.: not significant					

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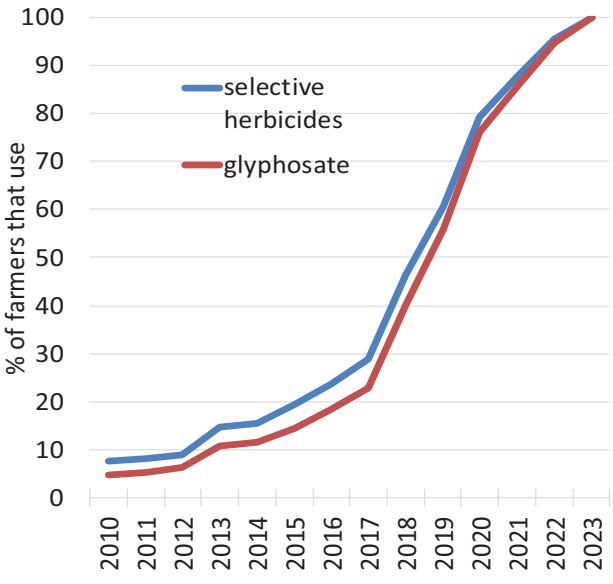
HERBICIDES

YEAR THAT FARMERS STARTED USING HERBICIDES (FOR USERS)

- 50% of farmers only started using herbicides in 2018/19; further uptake in crisis years

- Adoption possibly linked to direct seeding methods

- Direct seeding requires non-flooded conditions, allow more weeds to germinate, making weed management bottleneck



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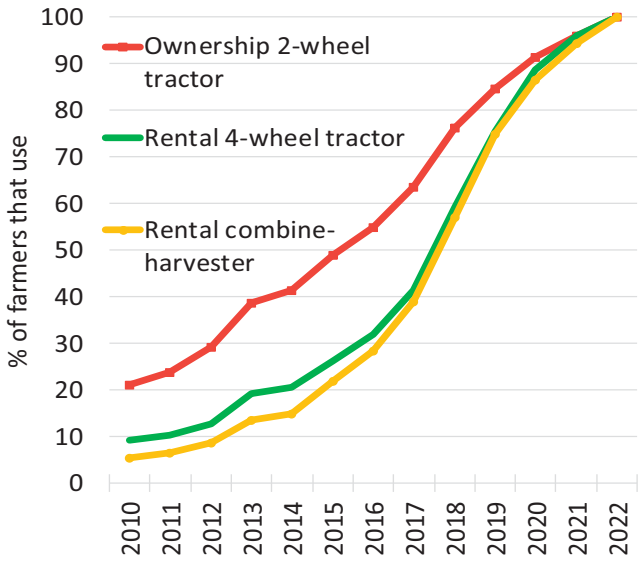
MECHANIZATION

YEAR THAT FARMERS STARTED USING MECHANIZATION (FOR USERS)

- Ownership and use low in 2010

- Ownership of 2-wheel tractors gradual

- Use of rental services more recent phenomenon:
  a. 43 % started doing only since 2018
  b. 13% started since the crisis started



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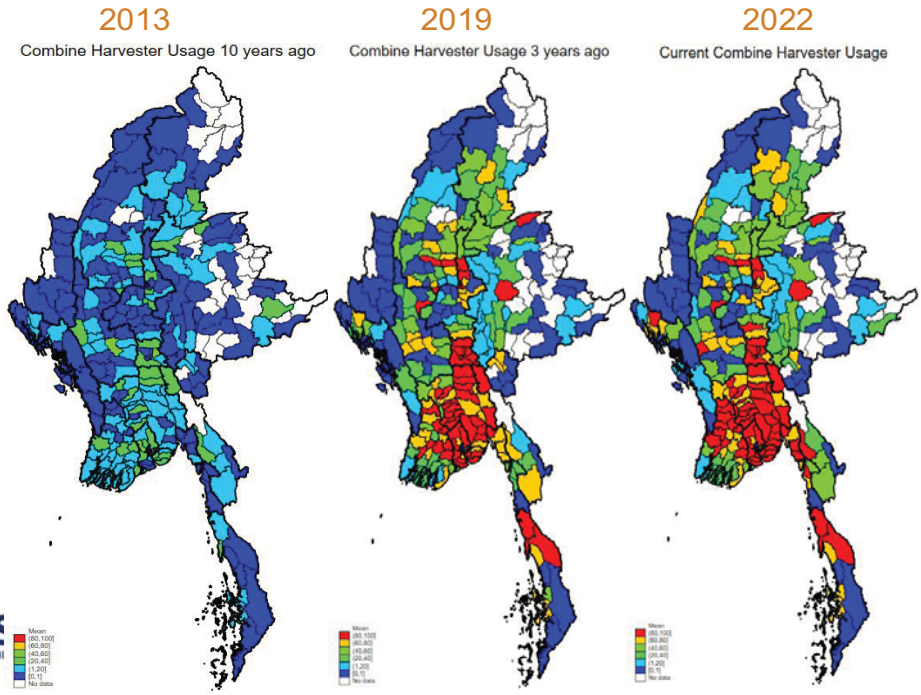
MECHANIZATION – COMBINE-HARVESTERS



STATE

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METHOD

$$A_{hrt} = \alpha_h + \sum_{t=1}^{n} \beta_t Y_t + \gamma\, CSI_{rt} + \sum_{t=1}^{n} \delta_t [Y_t * R_h] + \varepsilon_{hrt}$$

- variable A_{hrt} - adoption of an agricultural technology by household *h* at time *t* in area *r*
- α_h - household fixed effect
- Y_t - yearly dummies
- CSI_{rt} - conflict severity index
- R_h - vector measuring remoteness of the farmer and the size of the farm
- ε_{hrt} - error term

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HETEROGENOUS EFFECTS

- Linear probability model

- Very insecure areas less likely to adopt

- 4-wheel tractors and combine-harvesters (mostly hired):
1. Small farms less likely to adopt
2. Remote farmers less likely to adopt

		Any tractor for plowing		4-wheel tractor		Combine-harvester	
	Unit	Coeff.	z-value	Coeff.	z-value	Coeff.	z-value
Year 2019	yes=1	**0.410**	**23.09**	**0.364**	**21.23**	**0.528**	**29.91**
Year 2022	yes=1	**0.467**	**24.56**	**0.439**	**23.09**	**0.623**	**33.20**
CSI group 1 (Moderately insecure)	yes=1	-0.025	-1.85	**-0.034**	**-2.66**	-0.023	-1.74
CSI group 2 (Very insecure)	yes=1	**-0.042**	**-2.77**	**-0.034**	**-2.31**	**-0.043**	**-2.84**
Interactions size of farm							
Year 2019*small farm	yes=1	-0.022	-1.13	**-0.068**	**-3.92**	**-0.101**	**-5.45**
Year 2022*small farm	yes=1	-0.010	-0.50	**-0.042**	**-2.21**	**-0.117**	**-5.96**
Interactions remoteness township to city							
Year 2019*remoteness city	yes=1	0.003	0.16	**-0.054**	**-3.12**	**-0.102**	**-5.53**
Year 2022*remoteness city	yes=1	0.029	1.48	**-0.050**	**-2.61**	**-0.094**	**-4.88**
Interactions remoteness within township							
Year 2019*remoteness in township	yes=1	-0.025	-1.29	**-0.099**	**-5.76**	**-0.094**	**-5.09**
Year 2022*remoteness in township	yes=1	-0.029	-1.46	**-0.108**	**-5.76**	**-0.110**	**-5.70**
Intercept		0.405	64.11	0.119	20.30	0.105	16.96
Household fixed effects		yes		yes		yes	

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CONCLUSIONS

1. Availability of technologies and increased labor scarcity leading to rapid changes in adoption of labor-saving agricultural technologies in Myanmar
2. Increase in adopting farmers over 10 years: tractors for plowing +43%, combine-harvesters: +41%, herbicides: +39%, direct seeding: +20%
3. Trends continued over crisis years
4. Remote and conflict-affected smallholders lower adoption - lowest agricultural labor productivity increases, with important implications for their welfare
5. Importance of labor markets as driver of change in agriculture

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IMPLICATIONS

1. Role of private sector in ensuring resilience in ag. input sector
2. Increasing demand for mechanization – need for training of skilled people, repair of machinery, as well as better machinery
3. Increased use of agro-chemicals, possibly having environmental and health effects – good regulatory framework and enforcement needed
4. Direct seeding leading to lower yields – need for integrated crop management techniques and improved weed management
5. Need to collect data in household surveys beyond land-increasing technologies

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INNOVATION LAB FOR FOOD SECURITY POLICY RESEARCH, CAPACITY, AND INFLUENCE (PRCI)

Food Security in Marginalized and Vulnerable Areas of Southeast Asia

Researchers:

Anita Rosli, Mark Buda, Pham Le Thong, Nguyen Phu Son, Orachos Napasintuwong, Piyapak Bhumibhamon, Samnang Nguong, Theara Mao, Phurum Or, Cho Cho San, Nilar Aung

Presented by:

Anita Rosli (Universiti Putra Malaysia)

Presented at the 23rd Asia Pacific Agricultural Policy Forum: Enabling Agrifood Systems Research and Policies towards the Sustainable Food System Transformation in the Asia Pacific Region. 18 November 2024, Asawin Grand Convention Hotel, Bangkok, Thailand

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Outlines

- Introducing food security in Southeast Asia
- Selected cases in:
  1. Vietnam
  2. Malaysia
  3. Thailand
  4. Myanmar
  5. Cambodia
- Conclusion

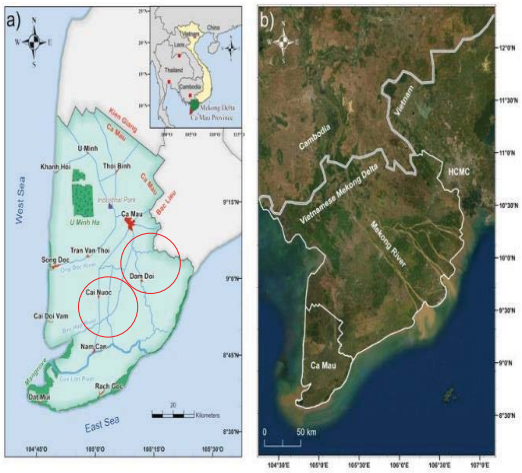
Introducing food security in Southeast Asia

- Southeast Asia food security in littoral areas
  - Fragile land and ecosystems
  - Vulnerable to climate change and weather irregularities.
  - Impacts on agricultural and fishery production
  - Vulnerable to food scarcity and food security

- Limited high-quality and reliable evidence, cross-country research to address common issues in marginalized and vulnerable areas.

1. Salinity intrusion, drought and its impacts on food security in Ca Mau, Vietnam

- Salinity intrusion and drought cause huge loss to farmers in coastal areas of Ca Mau, the southern most tip of the Mekong Delta, Vietnam.
  - Tran Van Thoi and Thoi Binh are two districts which suffer the loss the most.
  - About 25,000 hectares of agricultural land suffers the damage caused by the drought in 2024.



Maps of Ca Mau and Tran Van Thoi and Thoi Binh district

1. Salinity intrusion, drought and its impacts on food security in Ca Mau, Vietnam

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❑ Challenges and issues

- Several adaptive measures have been taken, depending on household livelihood assets.

❑ Research questions

- How do household assets capital determine climate change adaptation measures?
- How do adaptation measures affect household food security in Ca Mau?

❑ Expected outputs

- Providing evidence of the importance of household livelihood assets in choosing adaptation measures and how adaptive strategies affect food security at the study sites.
- Seeking policy implication on the critical intersection of salinity, agriculture, and food security.

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2. Food Insecurity Status, Livelihood Vulnerability and Strategies of Sago Communities to Climate Change in Mukah, Sarawak, Malaysia

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Photo:https://www.vectorstock.com/

❑ The Mukah Division in Sarawak is home to Malaysia's main sago-producing region

❑ The small-scale sago farmers in Sarawak have grown sago on 43,426 hectares of land, whereas estate sago plantations have grown sago on 24,531 hectares.

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Issues among Sago Communities

- Sago palm can be harvested 7 to 15 years after planting. Since it might take years for sago palm to mature, majority of people who live in Sarawak's peatlands engage in other agricultural and non-farm pursuits, such as fishing.
- Sago production, fishing, and other peatland activities may be impacted by changes in the annual maximum rainfall brought on by climate change.
- Households depending on the peatland and coastal activities are vulnerable to food insecurity.

2. Food Insecurity Status, Livelihood Vulnerability and Strategies of Sago Communities to Climate Change in Mukah, Sarawak, Malaysia

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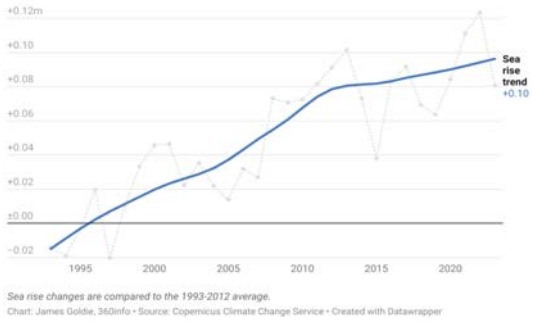

Photo: https://thediplomat.com/2024/11/sea-level-rise-is-a-clear-threat-to-malaysia/

Impact of climate change on Sarawak areas:

1. Rising Sea Levels and Coastal Erosion
   - Flooding
2. Temperature Increases and Extreme Weather
   - Heatwaves
   - Droughts and Rainfall Changes

Mukah area challenges

1. Agricultural challenges
   - crop yield declines - crops may suffer from erratic weather, high salinity levels degrade soil quality
   - Pests and Diseases - warmer, more humid conditions favor the spread of pests and diseases
2. Impact on Indigenous Communities
   - Livelihood Disruption – agricultural and fisheries
   - Cultural and Heritage Loss - affecting indigenous identities
3. Food is imported from outside the area.
4. Food insecurity

Research questions: What the level of food insecurity and the livelihood strategies used by households in sago communities in Mukah?

Zulfaqar, Zaher, Aitazaz, Nur, Mohd, & Zafar (2023)

- significant changes in rainfall due to significant increase in temperature either at night and/or day will play a major role in modulating the extremity of the changing climate in Sarawak peatland.
- Higher rainfall intensity during the Northeast (NE) monsoon indicates that Sarawak peatland will be at risk of flood and inundation for a longer period than usual as peatland becomes saturated. This might affect the productivity of the agricultural land in the area

3. Southern Thailand Island Issues

- Thailand has 936 islands
- Provinces that have highest number of islands are Phuket (155) and Krabi (154).

Phuket and Krabi in Southern Thailand

Photo source: https://kampatour.com/krabi-or-phuket

Krabi province island issues

- Most ag is econ crops, mainly rubber. Planting alternative crops is still limited.
- Staple food is imported from outside the area.
- Fishery and aquaculture generate income but not as much as tourism.
- Insufficient seafood supply and labor supply during high tourist season.
- Ageing farmers, labour scarcity for farming/fishery.
- Food processing industry is still primary level, generate low value products

Thailand's Coastal and island challenges

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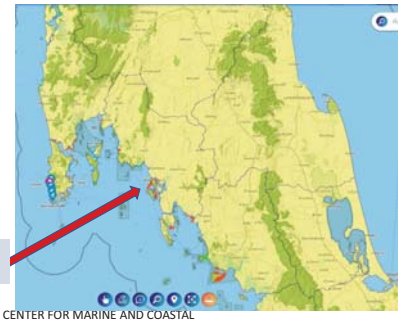
Impact from climate change on coastal and island

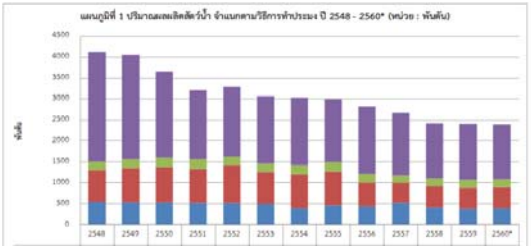
- Rising temperature
- Seagrass degradation
- Coral bleaching



Severe seagrass degradation area shown in red

Source: GEO-INFORMATICS DATA CENTER FOR MARINE AND COASTAL

Declining marine animal products, 2005-2017



Source: Suttasinee Santhirat
Fisheries Policy and Development Strategy Division

Krabi province, Thailand challenges

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- Declining marine animals implies less income and food availability
- Most ag is econ crops, mainly oil palm and rubber. Planting alternative crops is still limited.
- Food is imported from outside the area.
- Insufficient seafood supply during high tourist season.
- Agricultural processing industry is still primary level.
- Food insecurity

Research questions: How can we improve climate resilience and food security of vulnerable groups on small islands

Source: Krabi province development plan, 2023-2027

4. Climate Change and Food Security among Fisheries Households in Myanmar

Fisheries play a vital role in economy, national food security, nutrition and rural livelihoods

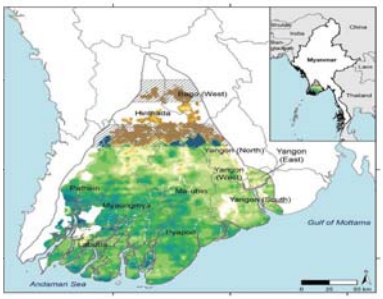
- Livestock and fisheries contribute 8.6% of GDP (DOF 2021).
- Employed 6% of total population (Belton et al. 2015).
- 15 million people in Myanmar earn income from the fisheries sector (Khin et al. 2020).
- Fish consumption: 46.5 kg per person/year.
- Significant participation of women in the fisheries sector (post-harvest activities).
- Over one-third of workers in agriculture, forestry and fisheries sector are female (Chan et al. 2018).

Delta Region: Ayeyarwady, Bago and Yangon

90% of total fish pond areas (DOF 2021).

90% of Myanmar fish production (Karim et al. 2020).

Largest farmed fish wholesale markets in Yangon.



4. Climate Change and Food Security among Fisheries Households in Myanmar

Climate change impacts on fisheries

- One of the most vulnerable areas (MONERC 2019)
- Cyclones, floods, saltwater intrusion, and intense rain
- Rising temperature
- Damage to fishpond infrastructure (decreased production)
- Decreased availability of fish, and lower fish consumption (Thant et al. 2023)

Research Questions

1. Are fisheries households more (or less) food secure than their (non- fisheries) neighbors?
2. Do fisheries households experience different climate shocks and employ different adaptation strategies than their neighbors?
3. Do climate shocks have greater (or lesser) effects on food security for fisheries households?
4. Does women participation and empowerment in fisheries improve household food security?

5. A Case Study of Food Security in the Prek Toal Ramsar Site, Tonle Sap Lake, Cambodia

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The Prek Toal Ramsar Site

- Locate on the Tonle Sap Lake's northwest of Cambodia
- Is a Core Zone of Biosphere Reserve established by a Sub-Decree in 2001
- Covering 21,342 hectares
- Total 12,424 people and 2,704 households
- It plays a crucial role in biodiversity conservation and supports various economic activities, including fishing and agriculture.

5. A Case Study of Food Security in the Prek Toal Ramsar Site, Tonle Sap Lake, Cambodia

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Issues in the Prek Toal Ramsar Site

- Is a vital wetland ecosystem that underpins the livelihoods of marginalized communities, particularly in the context of food security.
- These communities face significant challenges related to food security, exacerbated by environmental changes, socio-economic disparities, and limited access to resources.

Prek Toal Ramsar Site Landscape, Cambodia

5. A Case Study of Food Security in the Prek Toal Ramsar Site, Tonle Sap Lake, Cambodia

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Research Questions

1. What is the current state of food security among marginalized communities living in and around the Prek Toal Ramsar Site?
2. How do environmental factors, including climate change and land use changes, impact food security in these communities?
3. What socio-economic challenges do community members face that affect their access to food?
4. What coping strategies are employed by these communities to mitigate food insecurity?
5. How do cultural practices and traditional knowledge influence food security and resilience in these settings?

Expected Outputs

1. Providing the evidence of the current state of food security among marginalized communities in/around the Prek Toal Ramsar Site and coping strategies deploy by local in response to food insecurity.
2. Characterization of the environmental and socio-economic factors affecting food security.
3. Foster collaboration with local stakeholders to ensure the research is grounded in community experiences and needs.

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Conclusion

- Regional perspectives on food security:
  - Increasing challenges of food security in vulnerable areas climate-change
  - Marginalized and vulnerable communities will need appropriate policies to mitigate food insecurity problem
- Expected output: State of climate vulnerability, food security and factors associated with scale of food insecurity of selected littoral areas.
- Expected policy influence: Recommendations towards climate resilient and food secured littoral communities.

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23rd Asia Pacific Agricultural Policy Forum

Consumption inequality between farm and non-farm households in rural Vietnam

Presented by **Pham Le Thong**,
Faculty of Agricultural Economics,
School of Economics, Can Tho University

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Organization of the presentation

1. Introduction
2. The Vietnamese context
3. Estimation method
4. Data and variable description
5. Estimation results and discussion
6. Conclusion and Policy implication

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Introduction

- The importance of non-farm employment is growing
- Rigg (2006) observes rural South countries and reports:
  - Non-farm activities are becoming central to rural livelihoods.
  - Agricultural development is no longer the best instrument for generating rural income and improving livelihoods

3

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Introduction

- Non-farm income **in rural Vietnam has** risen from 48% in 1993 to 73% in 2016.
- The average growth rate of income per capita is estimated at 7.4% per annum (GSO, 1994, 2018).
- Non-farm employment has potentials to increase inequality among rural households.

4

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Introduction

- Little is known about the sources of inequality between farm and non-farm households.
- This stydt decomposes the gap in household per capita consumption expenditure for the entire distribution
  - Use the 2016 Vietnam Living Standards Survey associated with the Unconditional Quantile Regression model.

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The Vietnamese context

- Before 1980s, all agricultural land was assigned to cooperatives.
- The 1988 Land Law assigned agricultural land to individual households with 10-20 years of secure land use right.
  - Land use and crop choice decisions were still controlled by the state.
- Subsequent revisions of the land law granted more land title and security to households

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The Vietnamese context

- Land has been re-allocated to households who are more productive
- Land acquisition due to rapid industrialization and urbanization also drives farmers out of traditional agricultural activities
- The proportion of households engaged in non-farm economy increased from 16.5% in 1993 to 34% in 2008.

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The Vietnamese context

- Non-farm activities significantly not only increases rural household living standards but also the inequality.
  - Households with more favorable socioeconomic conditions are more likely to participate in high-return activities.
  - Poorer households partake in low-return activities.

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Estimation method

- The decomposition method proposed by Firpo et al. (2018), also known as FFL.
- Two-stage procedure of estimation:
  - The first stage identifies determinants of real household expenditure at the mean and selected quantiles for both groups.
  - The second stage decomposes the expenditure gap into endowment effect and coefficient effect.

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Data and variable description

- The data comes from the Vietnam Household Living Standards Survey (VHLSS) in 2016.
- Sampled households are randomly selected by a three-stage stratified sampling method.
- The 2016 consists of 6,570 rural households
  - 1,900 are farm households (28.9%)

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Table 1. Description and summary statistics of key variables

Variable	Description	Farm household Mean	Farm household Standard deviation	Non-farm household Mean	Non-farm household Standard deviation
pce	Per capita expenditure (1,000 VND/year)	18,371	16,410	21,191	15,312
Household heads' characteristics					
age	Age of household head	48.96	13.00	52.24	14.49
ethnic	Kinh ethnicity = 0; others = 1	0.40	0.49	0.15	0.36
educ	Years of schooling of head	6.10	3.61	7.20	3.89
Households' characteristics					
hhsize	Household size	4.01	1.65	3.75	1.58
dep15	Ratio of household members under 15	0.22	0.21	0.20	0.21
dep65	Ratio of household members over 65	0.08	0.20	0.13	0.28
Socio-economic characteristics					
domremit	Domestic remittances (1,000 VND)	2,958	6,858	6,471	13,527
forremit	International remittances (1,000 VND)	263	3,621	2,777	24,220
income	Income per capita from economic activities (1,000 VND)	25,440	37,373	30,706	25,792
Regions					
reg_1	Red river delta	0.09	0.29	0.26	0.44
reg_2	Northern midlands and mountain areas	0.33	0.47	0.15	0.36
reg_3	North Central and Central coastal areas	0.17	0.38	0.24	0.43
reg_4	Central Highlands	0.13	0.33	0.04	0.21
reg_5	South East	0.05	0.23	0.09	0.29
reg_6*	Mekong Delta	0.22	0.42	0.21	0.41

Note(s): * reference group
VND stands for Vietnamese currency (dong). The exchange rate was 22,800 VND/USD in 2016
Source(s): Authors' calculation from 2016 VHLSS

Expenditure and income gap between farm and non-farm households across percentiles

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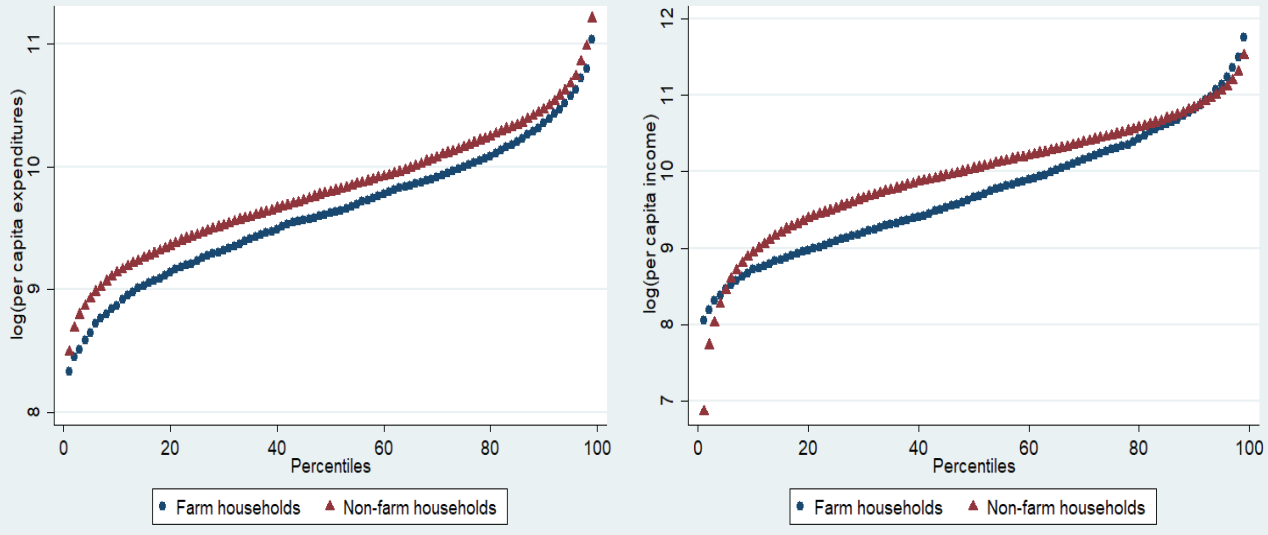

Source: Computed from 2016 Vietnam Household Living Standards Survey

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Decomposition results from the extended OB model at mean and selected percentiles

Quantiles	Mean		10th percentile		25th percentile		50th percentile		75th percentile		90th percentile	
Predicted gap	0.175	***	0.271	***	0.209	***	0.172	***	0.153	***	0.111	***
Endowment effects	0.177	***	0.250	***	0.222	***	0.188	***	0.139	***	0.114	***
Coefficient effects	-0.002		0.021		-0.013		-0.016		0.014		-0.003	

- The per capita expenditure gap almost comes from the endowment effect.
- The gap is estimated at 27.1% at 10th percentile and steadily decreasing to 11% at 90th percentile.

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Decomposition results

- Ethnic differential accounts for the largest proportion in the endowment effects
- Education enlarges the gap in both endowment and coefficient effect.
  - The size of the coefficient effects is much larger than that of endowment effects, indicating the importance of the returns to education in terms of expenditure in non-farm activities
- Remittances, household composition are also key predictors of the expenditure gap.

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Conclusion and policy implication

- Non-farm employment not only increase rural household welfare but also the inequality.
  - Households with better access to non-farm activities enjoy more benefits.
- Differences in household characteristics such as ethnicity, education, household composition, transmittances and income explain most of the gap

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Conclusion and policy implication

- Policy implication
  - Training and education are crucial to help rural workers get access to non-farm activities,
  - Help the poor access to productive resources, including capital, education, etc.
  - Increasing access to non-farm employment for ethnic minorities by vocational training.
    - improvement of infrastructures in disadvantage areas.

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CGIAR

Agrobiodiversity, dietary diversity, and food system transitions: Reflections from Southeast Asia and the Pacific

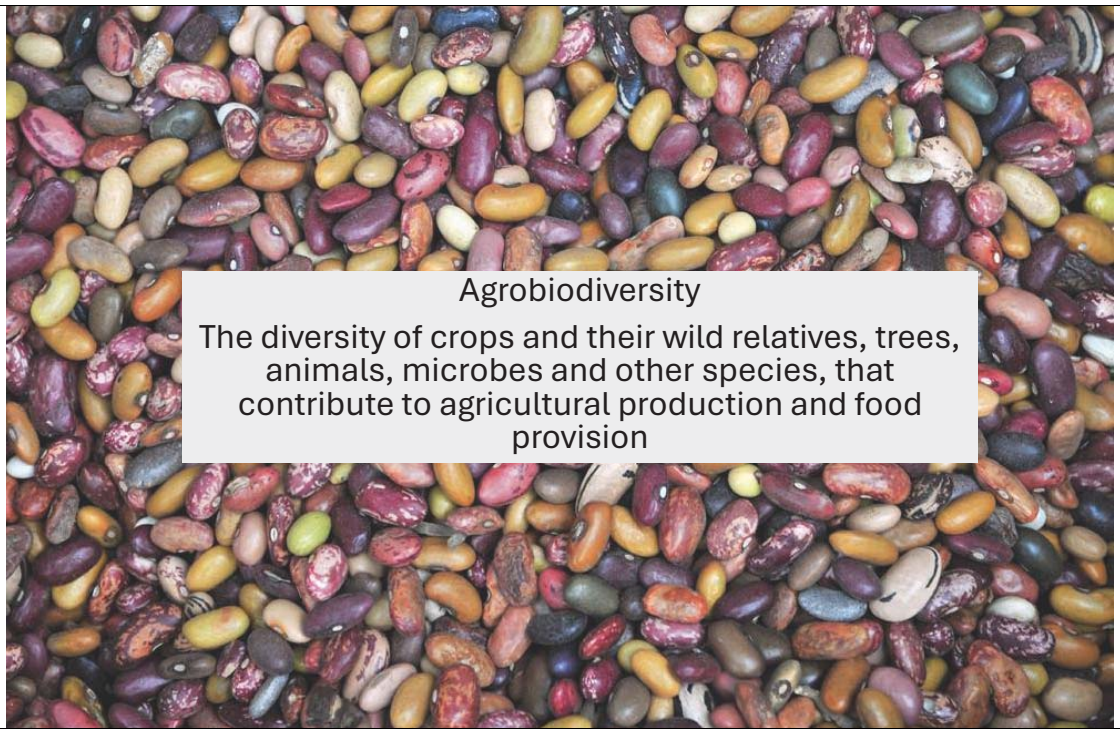
Deborah Nabuuma (PhD)

Alliance of Bioversity International and CIAT

23rd Asia Pacific Agricultural Policy Forum

18 Nov 2024

The Alliance of Bioversity International and the International Center for Tropical Agriculture (CIAT) is part of CGIAR, a global research partnership for a food-secure future

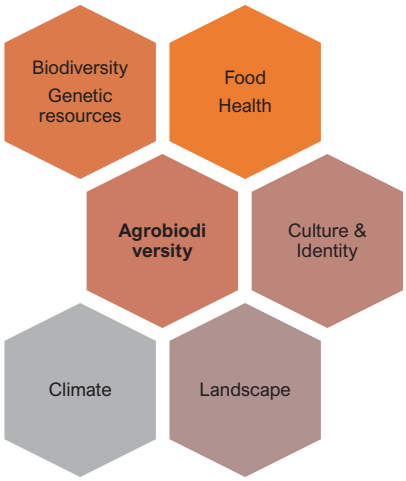


Agrobiodiversity

The diversity of crops and their wild relatives, trees, animals, microbes and other species, that contribute to agricultural production and food provision

Agrobiodiversity for the food system

- Nutrition: Access to a variety of nutritious foods; year-round availability
- Food culture and indigenous knowledge: From production, preparation, consumption, to cultural heritage and identity
- Market opportunities and economic benefits: from high value products to unique and niche products; different products with the seasons
- Resilience: against environmental stressors - climate change, pests, and diseases, etc.



Agrobiodiversity for the food system

Harnessing agrobiodiversity for more sustainable, resilient, and nutritionally diverse food systems

consumers
producers
custodians
farmers
retailers
processors
innovators

Argumedo et al., 2021; Maysoun et al., 2021; Leippert Argumedo et al., 2020

Available resources

❖ Land: which farming system, crops, and species to prioritise
- Market demand versus local nutrition

❖ Knowledge & skills:
- Learning/ re-learning practices that incorporate & support diversity
- New technologies and applicability across species
- Loss and displacement of traditional practices and indigenous knowledge systems

❖ Labour:
- Fewer household/ community members involved in agriculture
- Access to sufficient and skilled labour

❖ What can feasibly be expected of farmers?

Northern Vietnam:
- 500 ethnic minority households
- Large vegetable diversity: 90 vegetables
- Only a quarter of the diversity was produced by >10% of the households
- Land and labour major imitations of the diversity and quantities

Needs and preferences

❖ Livelihoods
- Rising cost of living & challenging environment –focus on high value crops & animals
- Nutritious and underutilised foods can also end up fully commercial

❖ Food
- Diet transition and urbanization of diets
- Diverse landscapes: reduced consumption – lowering likelihood of production & maintenance
- Less diverse landscapes: promoted diversity needs to have multiple (tangible & perceived) benefits

❖ Does the food environment support demand for healthy diets and the translation of income into healthy & diverse diets?

Solomon Islands and Vanuatu:
- 30% experienced moderate or severe food insecurity
- >90% did not meet the recommended infant and young child feeding practices and minimum dietary diversity for women
- Large diversity of species and varieties of foods like taro, yam, plantain, nut trees, fruits
- Increasing consumption of rice, noodles, tinned foods, etc.
- Poor taste, low preference and limited preparation skills limited regular use and consumption of locally available foods

Market access

❖ Input and output markets:
- Adequate inputs tailored/ required for a more diverse agricultural system
- Accessing markets for diverse crops; profitability

❖ Food markets:
- Produced diversity available for other markets/ consumers
- Producing communities: Access to high quality, affordable, safe, diverse, preferred foods?
- Appeal of processed and ultra-processed foods
  - Well marketed, varying nutritional quality, cheaper, less seasonal effects and time requirements

❖ How do knowledge and income fare against price, nutritional quality, preference, and diversity?

Solomon Islands and Vanuatu:
- Participatory development of nutrition behaviour change strategies:
  - Wide variety of crops available from on-farm, market, shops, and wild
  - Increasing availability and access of affordable easy to cook, highly processed foods
  - Inaccessibility of markets with diverse foods

Policy environment

❖ Addressing multiple food system objectives:

- Productivity
- Food Security
- Livelihoods
- Climate Resilience
- Agrobiodiversity
- Environmental Sustainability
- Equity and social inclusion
- Economic Growth
- Nutrition and Health Outcomes

- Unique contexts, Complex interactions, Trade-offs, ...
- Island nations face unique challenges related to food sovereignty, with high dependence on imported foods and fragile ecosystems

More questions than answers?

- ❖ Holistic and integrated approaches that considers the socio-economic, cultural, and environmental contexts of farming communities and nutritional aspects of agrobiodiversity along the entire value chain
  - Supporting sustainable food systems and the nutrition and livelihood outcomes
- ❖ Multidisciplinary approaches that consider the complex interactions between agriculture, ecology, economics, and social dynamics to develop (and assess, understand, monitor, implement) the agri-food system

- How well do the holistic, integrated approaches link with how we presently design, implement and assess impact of agrobiodiversity/ agri-food system research?
- How can our research perspectives align with and motivate farmers, consumers, and policymakers to make decisions that support agrobiodiversity, livelihoods and nutrition outcomes?

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NWO | IFAD Investing in rural people

CGIAR Initiative on Nature-Positive Solutions | CGIAR Initiative on Asian Mega-Deltas

WorldFish | Wageningen University & Research | World Vision

Thank You!

d.nabuuma@cgiar.org

Youth in Agriculture Transformation : A case story from Bangladesh

A S Moniruzzaman Khan
Programme Head
Climate Change Programme BRAC

THE MAIN OBJECTIVE OF THIS PRESENTATION

"To explore and analyze how youth participation has influenced the transformation of the agricultural sector in Bangladesh, highlighting key challenges, opportunities, and the impact of young innovators in advancing sustainable agricultural practices."

SOME GLOBAL INSIGHTS

- Today, there are **1.2 billion young people** aged 15 to 24 years, accounting for 16% of the global population.
- In 2023, **35% of the world's youth** between 15 and 24 years were employed.
- Agriculture accounts for **32% of total employment globally** and 39% in developing Asia and the Pacific.
- A 2020 report by AgFunder shows that **32% of venture capital investment** in Agri-Tech startups went to companies founded by entrepreneurs under 35, a key indicator of youth involvement in this sector.

CONTRIBUTION OF AGRICULTURE TO BANGLADESH'S ECONOMY

Impact on GDP and Employment

11.3%

Significant Contribution to GDP

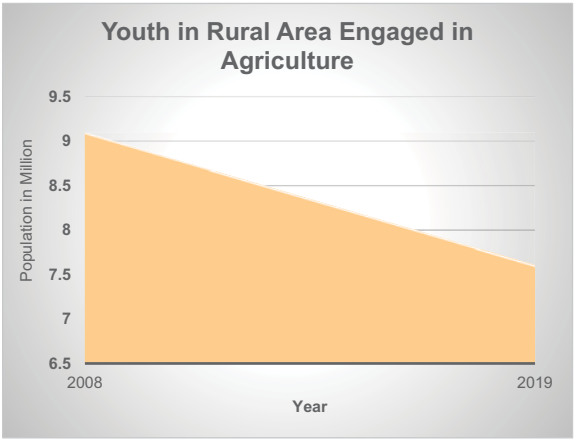
45.33%

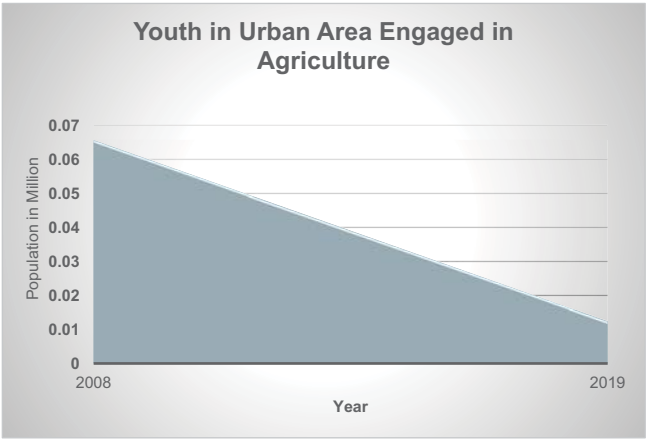
Employment in Agriculture

However, specific data detailing the percentage of youth (typically defined as individuals aged 15 to 24) engaged in the agricultural sector is limited.

BANGLADESH: AGRICULTURE CENSUS 2008 & 2019 INSIGHTS

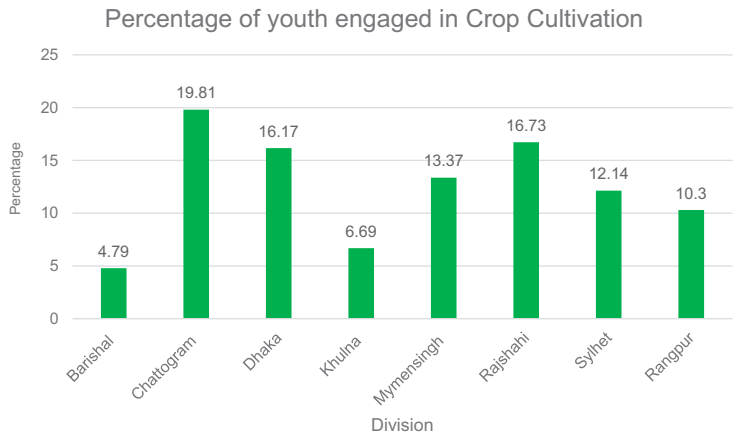
Age(17-35) and Participation Comparison

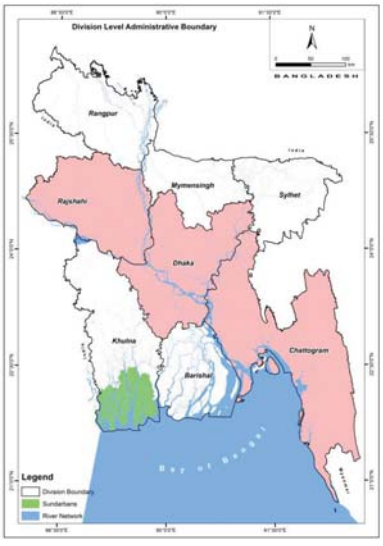




Source: Agriculture Census 2008 & 2019

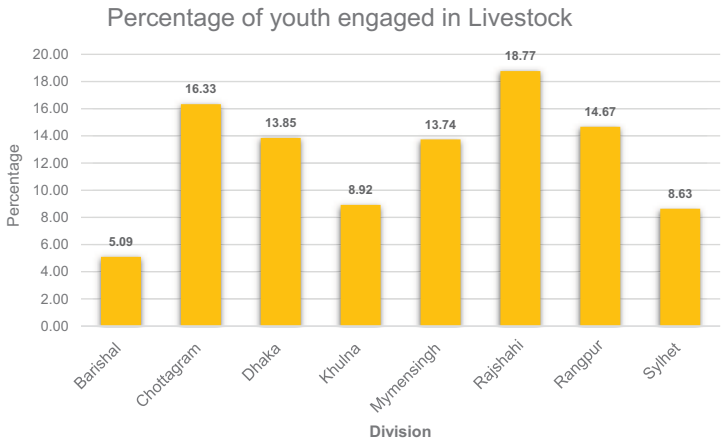
BANGLADESH: YOUTH PARTICIPATION IN CROP CULTIVATION BY DIVISION

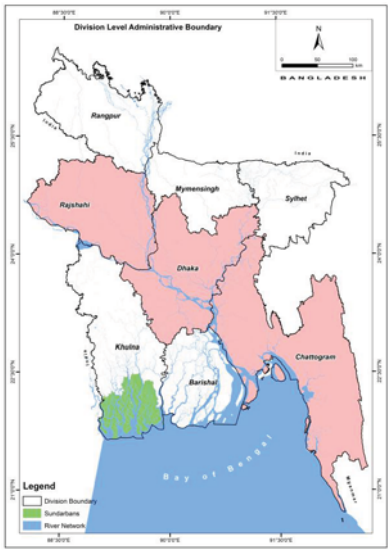




Source: BBS Sample Census (Crop 2020)

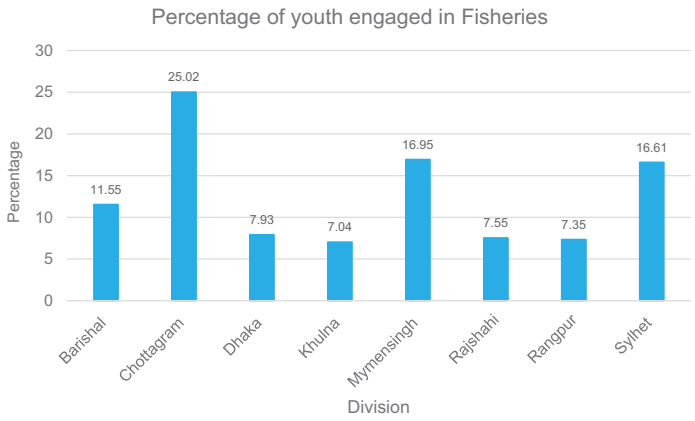
BANGLADESH: YOUTH PARTICIPATION IN LIVESTOCK BY DIVISION

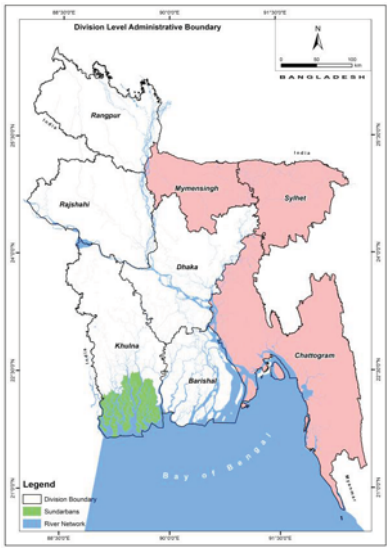




Source: BBS Sample Census (Livestock 2020)

BANGLADESH: YOUTH PARTICIPATION IN FISHERIES BY DIVISION





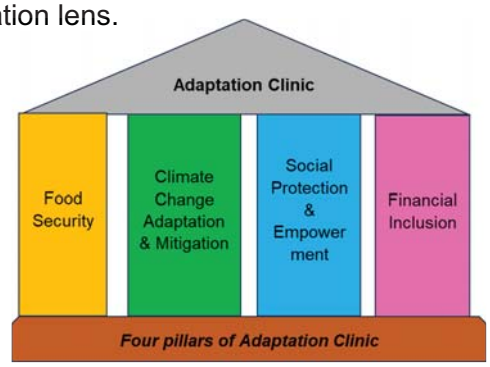
Source: BBS Sample Census (Fisheries 2020)

WHY AGRICULTURE IS LESS PRIORITY SECTOR FOR YOUTH IN BANGLADESH

- Phyco-Social Issue: Farming Appears To Be **Socially Non-Prestigious**.
- **Unstable Market Condition**: Return over investment is very risky in Agriculture.
- Climatic Hazard: **Climate change** is making agriculture increasingly vulnerable, deterring youth from investing in the sector.
- Expansion of Service & Industrial Sector: In Bangladesh, Commercial Services and **Industrial sector creates more job** opportunities for youth in comparison to Agricultural Sector.
- Access to Information & Knowledge: **Lack of Knowledge in agriculture** is hindering the development of entrepreneurial ventures and farm productivity.
- Limited **Access to Financial System**: Financial service providers are reluctant to provide their services including Credit, Savings and Insurance to rural youth due to lack of existing policy and procedures.
- Choice of Generation: nowadays, youth are primarily interested in the **Digital Environment** rather than the Natural.

BRAC'S ADAPTATION CLINIC

A one-stop service center for the climate vulnerable farming communities that provides holistic services including climate adaptive technologies and advisory support, Agri-inputs support (quality and tolerant seed, organic fertilizer, machineries etc.), weather and climate-based information, market linkages and capacity building with a Climate Change Adaptation lens.



24 Adaptation Clinic operated
19,290 Farmers Reached
28,457 bighas land are under Climate Adaptive Agricultural Practices
221% Average Cropping intensity

*8921 farmers received **Advisory Services** through the* **Mobile Adaptation Clinic**

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ADAPTATION CLINIC PARTICIPANTS

- ❑ Small Holder Farmers - up to 2.4 acres
- ❑ Medium farmer - 2.5 to 7.4 acres
- ❑ Large farmer - 7.5 acres or more

(BBS, 2023)

Year	Total surveyed	Landless farmer	Small Holder farmer	Medium farmer	Large farmer
2023	12540	5.7%	93.2%	1.1%	0.0%
2024	31681	14.1%	84.8%	1.0%	0.2%

Emphasizing more in small holder and marginal farmers

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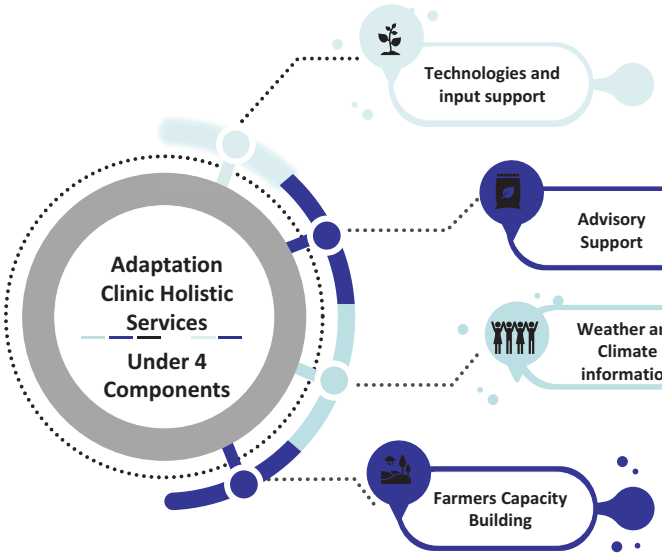
HOLISTIC SERVICES OF ADAPTATION CLINIC



Context-specific climate adaptive technologies identification and dissemination, Stress-tolerant crop varieties/ seeds promotion, Distribution and rational use of fertilizers and pesticides, User friendly agri-machineries making accessible to smallholder farmers.

Providing information of year round crop production and management, Mobile adaptation clinic and office adaptation clinic advisory services, Referral for savings, loans, crop insurance, Market linkages support, Forming advisory committees for the community

Dissemination of extreme weather information, Crop protection advice based on the weather information, Awareness on climatic events.

Training on crop production technologies, Continuous hands-on coaching at the farmers' field, Farmers field visits and crop management support

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YOUTH PARTICIPATION IN DIFFERENT BRAC'S ADAPTATION CLINICS

Year	Division	Total Number of Farmer	%of youth Participant	Receive Machinery Support	High-Value Crops Seed Support	Fisheries Support	Receive Training on Agriculture Technology
2022	Barishal	5368	**40%**	98	**5211**	157	5368
	Khulna	2471	**34%**	63	2369	102	2471
2023	Barishal	7081	**47%**	110	**6875**	206	7081
	Khulna	2505	**43%**	75	2362	143	2505
	Rajshahi	528	38%	42	505	23	528
	Mymensingh	1337	48%	65	1178	159	1337

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HOW DOES THE ADAPTATION CLINIC ATTRACT YOUTH TO AGRICULTURE?

- **Disseminate Information on Technology-based production** and receive high return on investment.
- **Provides support to marketing of produced agricultural products** So that farmers get fair prices and make favorable profit.
- **Frequent Hands-on Coaching** on Precision Agriculture
- **Received resilient inputs** through Adaptation Clinic.
- Got orientation on **different relevant websites and apps on agriculture**.
- The **Advancement of Entrepreneurship and Financial Inclusion**, with Emphasis on Credit and Crop Insurance.
- Receiving **one-stop services** regarding any agricultural issues.

YOUTH AS A CHANGE AGENT IN BANGLADESH AGRICULTURE

Key Contributors

Golam Nabi

Started dragon fruit cultivation in Natore. He's gaining worldwide recognition and sharing his knowledge in places like Vietnam.

Sabina Yeasmin

Founded Alif Goat and Dairy farm in Faridpur. which has provided her with much-needed self-sufficiency.

Kamrunnesa Mira

Launched the 'Chashibon' project in Natore which removes middlemen and introduces AI and robotics in agriculture, promoting sustainable practices and fair prices for farmers.

AGRICULTURAL APPLICATIONS AND INNOVATIONS

Empowering Farmers with Technology

iFarmer
A young entrepreneur, Fahad Ifaz founded iFarmer to address financial challenges in agriculture and reduce exploitation by middlemen. It connects farmers and buyers, creating a fairer supply chain for agricultural products.

Krisaker Janala
Krisoker Janala (Farmers Window) is a newly developed app that is used by the agricultural extension agent of Bangladesh to spread information to the farmers. It offers farmers information on 120 crops, assisting them in diagnosing plant diseases and issues without the need for internet access.

HYDROPONICS AND AQUAPONICS INNOVATIONS

Sustainable Urban Farming

Tanvir Hossain Siddiqui

Tanvir, a graduate from Ahsanullah University, embraced aquaponics, a system that combines raising fish (aquaculture) with hydroponic farming. He is growing vegetables like spinach and lettuce using nutrient-rich water from fish tanks. This innovation allows for water conservation and pesticide-free farming, ideal for urban environments. Tanvir's clients include high-end grocery stores like Meena Bazaar, and he continues to revolutionize urban agriculture in Bangladesh.

STRAWBERRY FARMING SUCCESS

Innovative Agricultural Practices

Sadat Rahman

Sadat Rahman has successfully introduced strawberry farming in northern Bangladesh. Despite strawberries being a rare crop in the region, Sadat capitalized on the increasing demand for the fruit, cultivating it organically and marketing it across the country. His efforts have made strawberries more accessible and popular in local markets, proving that non-traditional crops can thrive in Bangladesh with proper care.

SALMA AKTER ADURI: A STORY OF AGRICULTURAL TRANSFORMATION

Empowering Communities through Innovation

Salma

Potato Farmer

A potato farmer from Rangpur, Salma expanded her access to finance, markets, and technology through the Birahim Cooperative. She is successfully exporting potatoes and launching a vegetable seed business. Her leadership and innovations have led to financial stability and community empowerment.

CASE STUDY: RAJOB ALI, AQUACULTURE ENTREPRENEUR

Rajob Ali, a young fish farmer in Bangladesh, has become a successful aquaculture businessman. He started as a farm manager at his father's small-scale rice farm and now owns a 2,400 decimals fish farm in Fulpur upazila, Rajshahi.

brac

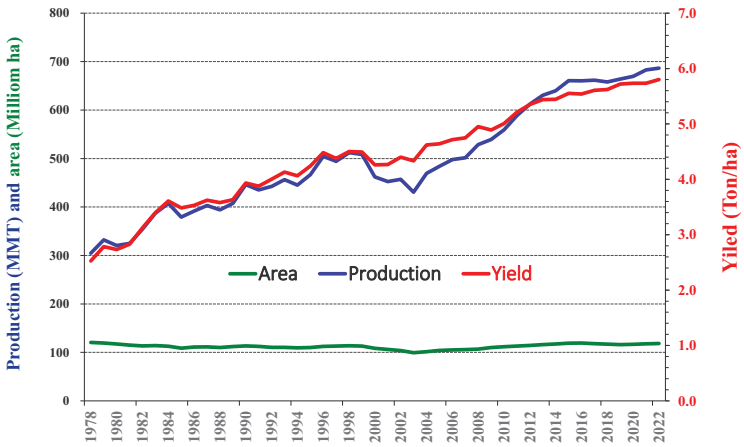
Thank You!

Facilitating Agricultural Transformation and Green Development in China: the Past Efforts and the Way Forward

Jikun Huang

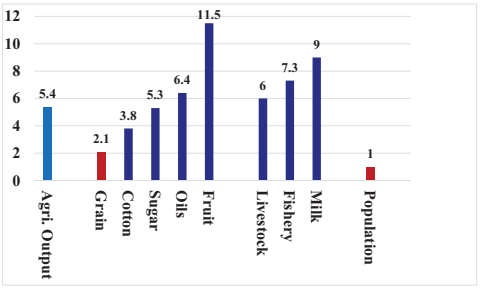
School of Advanced Agricultural Sciences
Peking University

Grain area, yield and production in 1978-2022

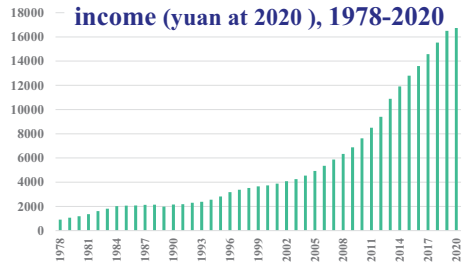


	Grain area/total crop area %
1978	80
2022	70

Annual growth of agriculture and population in the past 4 decades, %



Rural household per capita income (yuan at 2020), 1978-2020



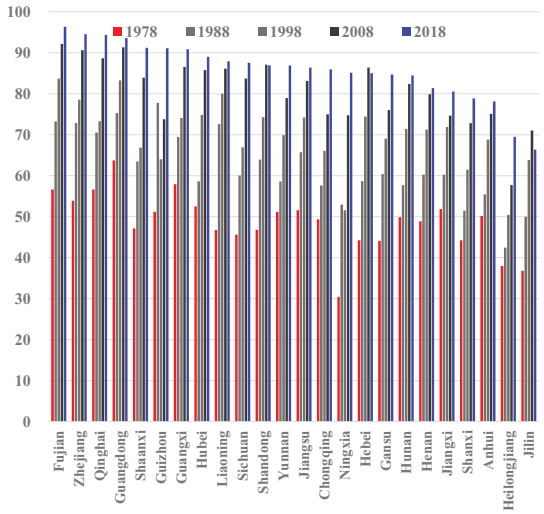
Rural labor transformation

Share of rural labor with full or part-time **non-farm works**

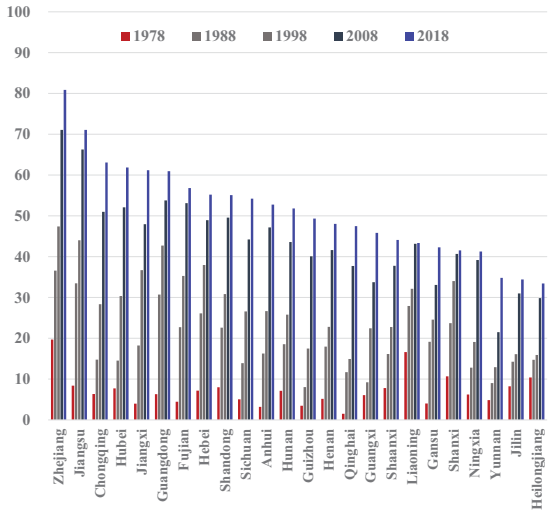
- **1978: 9%**
- **2020: 85%**

Agricultural growth + non-farm work
→ Income growth
→ improve national & household food security

Rural transformation within agriculture (RT1): Share of high-value agriculture (non-grain) in 1978-2018

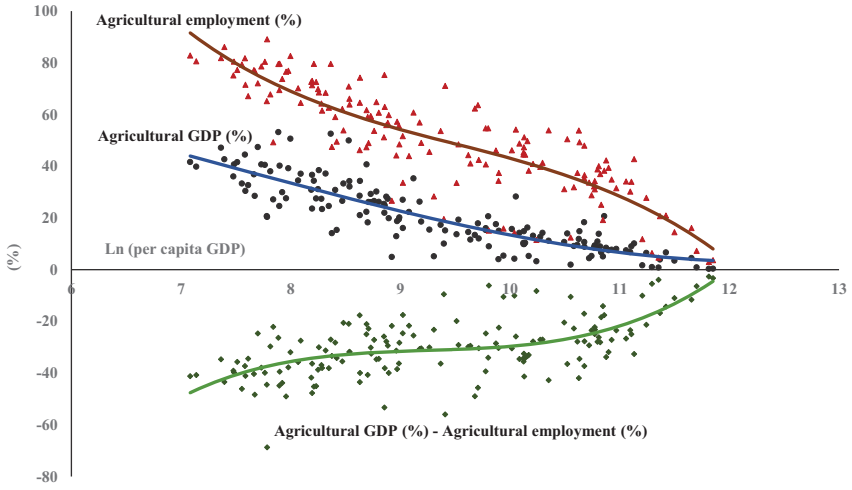


Rural transformation of employment (RT2): Share of rural labor in non-farm employment in 1978-2018



Structural transformation (ST) in China

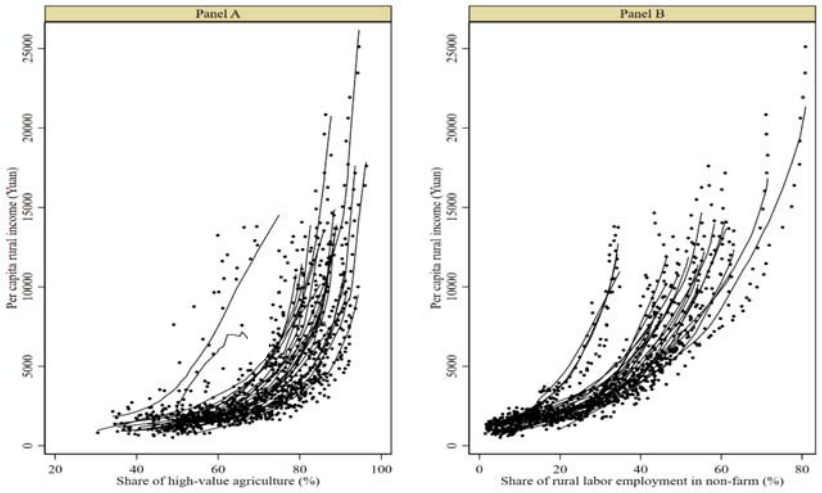
Convergence of shares of agricultural GDP and employment by province in 1978-2018



Pathway of rural transformations in China

	Paths of Transformation
1	**Primary on staple food production:** before the early 1990s
2	**Diversification/commercialization:** since the early 1990s
3	**Farming + part time off-farm:** since the middle 1990s **Mechanization + full time off-farm:** since the late 1990s
4	**Grain security + high value agriculture**: since 2000 **Green agriculture:** since the early 2000s, especially since 2017 **Integrated urban-rural:** since the middle 2000s

Rural transformation and per capita rural income by province in 1978–2018



How?

Pathway and IPIs of rural transformation in China

Stage	Major features	Major Institution, Policy & Investment (IPIs)
1	**Primary on staple food production:** before the early 1990s	**Institution** (land-HRS) + **irrigation** + **tech-1** (seed, chemical, etc)
2	**Diversification/commercialization:** since the early 1990s	**Plus agri. mkt + road infrastructure + tech-2** (tech for high-value agri.)
3	**Farming + part time off-farm:** since the middle 1990s **Mechanization + full time off-farm:** since the late 1990s	**Plus labor. mkt + land mkt and consolidation + custom services tech-3** (capital intensive tech +labor saving tech)
4	**Grain security + high value agriculture** **Green agriculture + Integrated urban-rural**	**The way forward?** • **Past experiences** • **Challenges faced**

Huang (2018) paper on rural transformation, in Chinese
Huang (2022), Rural Transformation and Policies: Past Experience and Future Directions, *Engineering*, 18(2022):21-26

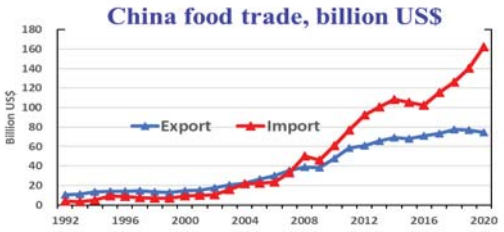
4 major sources of agricultural growth and RT

- **制度创新 Institution innovation**
- **技术进步 Technology change**
- **市场改革 Market reform policy**
- **农业投入 Investment in agriculture**

Huang (2018), Forty Years of China's Agricultural Development and Reform and the Way forward in the Future, *Journal of Arotechnical Economics,* No. 3(2018): 4-15

The challenges

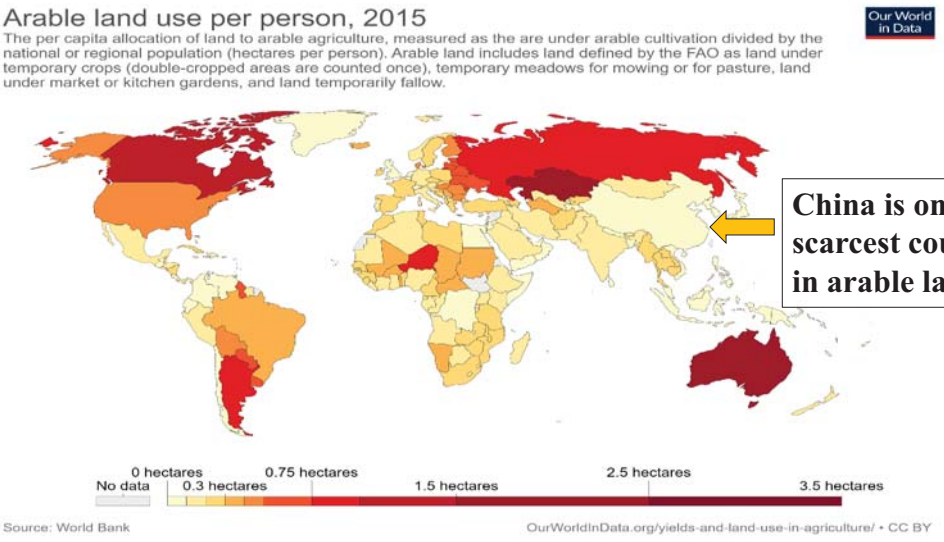
- **Food security:** Despite rapid growth of agricultural production in the past 4 decades, feed and food imports have been rising since the early 2000s.



- **Environmental degradation and sustainability:** Past production growth has been in expensive of resource and environmental degradation.

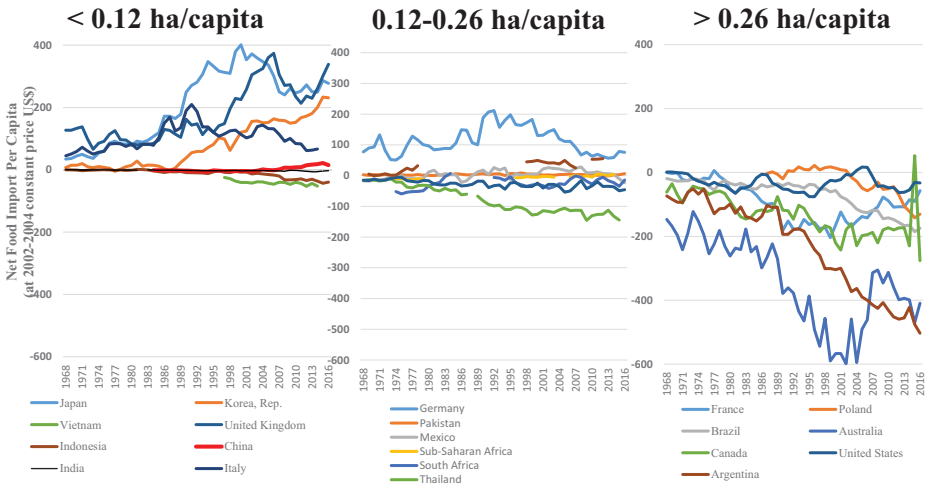
- **Falling groundwater table**
- **Soil deterioration**
- **Non-point pollution**
- **Rising ecological stress**
- **…**

Trade is one of important measures to ensure national and global food security and sustainable use of land



Important role of trade in ensuring national and global food security

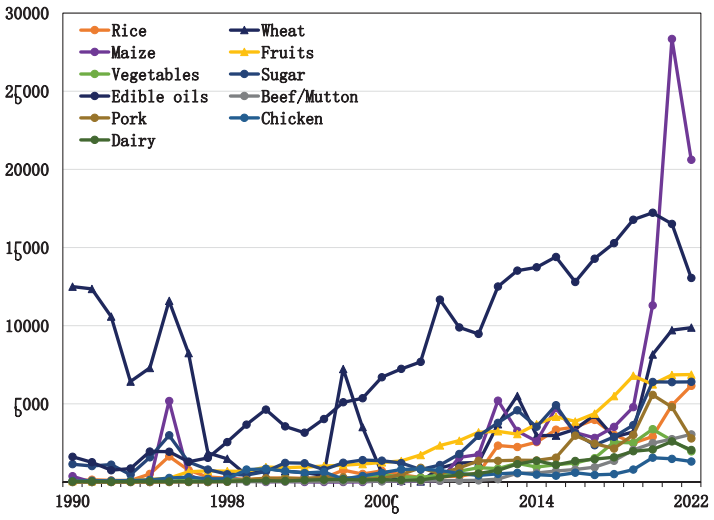
Per capita net food import (US$) in the past 50 years



2015年：世界平均0.19公顷；中国0.09公顷

Source: FAOSTAT, 2018; WDI

Imports of major agricultural products (1000 ton)

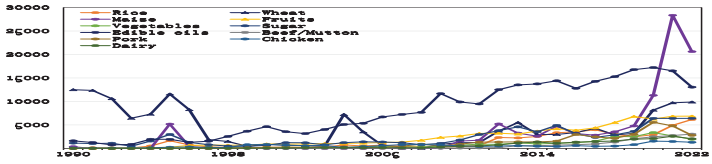


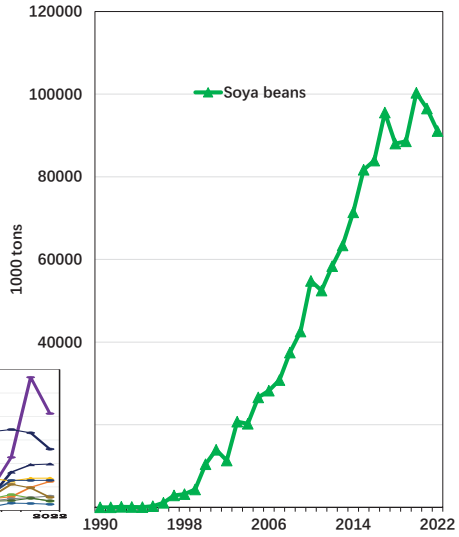
Source: FAOSTAT

There is a big misunderstanding of China's grain security in China and abroad

Imports of major agricultural products

Except for soybean used for protein feed and edible oil, all other imports are limited and controllable considering the size of China





Source: FAOSTAT

National strategies and policies: Grain security

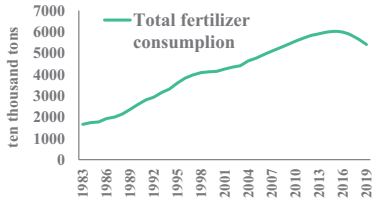
- **"Store Grains (Food) in Technology" Strategy 藏粮于技战略**
  - **Enhancing R&D innovation capacity, particular biotech & breeding program (种业振兴) and digital tech**
  - **Public agri. R&D expenditure: USD$ 4.1 billion in 2015, ranking the top in the world, and has continued to increase significantly since 2015**

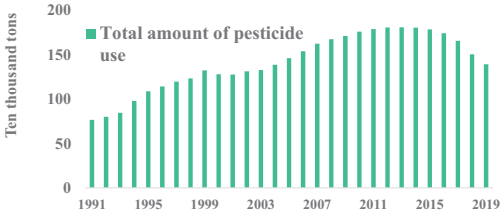
- **" Store Grains (Food) in Land " Strategy 藏粮于地战略**
  - **Set a red line of cultivated land: 1.8 billion mu (120 million ha)**
  - **Improve soil quality: the Construction of High-Standard Farmland** (highly resilience to drought and flood, water saving, stable and high yield, and ecological friendliness)**:**
    - **400 million mu in 2015**
    - **800 million mu in 2020**
    - **1.08 billion mu in 2025 under the national plan**
    - **1.20 billion mu in 2030 under the national plan**

- **Anti-Food Waste Law in 2021:** aimed to reduce food losses and waste by law
- **Grain Security Law in 2024《中华人民共和国粮食安全法》**

National strategies and policies: Greener agriculture

1. **Grain for Green Program by converting the sloped farmland to forest (or grass) land** (pilots → national) **since 1999**
   – Moer than 500 billion yuan (6.9 ¥ = 1 US$ in 2019) and covered >33 million ha in 1999-2018
2. **Protecting Natural Forest Resource Program by completely stopping commercial logging** (pilots → national) **since 1999**
   – 1999-2018 : >380 billion yuan, covered 2,966 million mu (or 64% of China's forest area)
3. **Ecological Compensation Program to reduce grazing intensity through compensation** (pilots → national) **since 2011**
   – 2011-2020 : >171 billion yuan, Covered all grassland rich provinces
4. **Zero-growth plan of chemical uses: a** special S&T project to reduce chemical uses



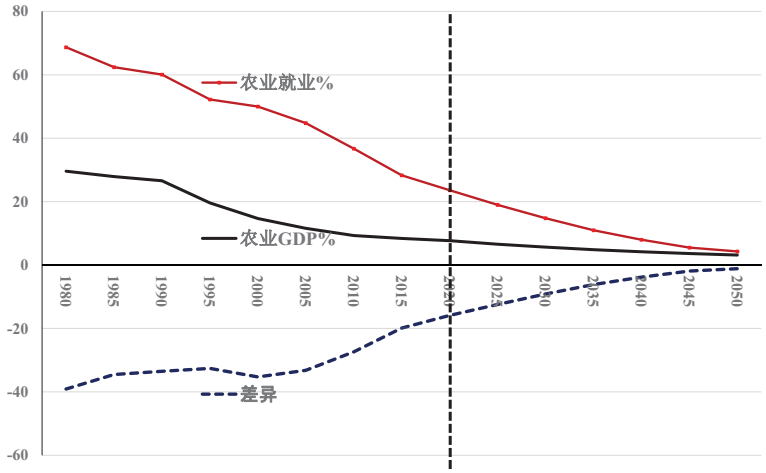


National strategies and policies: Greener agriculture

5. **More greener development since 2017**
   - **2017:** "the Opinions on Innovating Systems and Mechanisms to Promote Green Agricultural Development"
   - **2018:** The Technical Guidelines on Green Agricultural Development in 2018-2030. Establish an efficient, safe, low-carbon, circular, intelligent and integrated technology system for greener agricultural development, and promote greener agricultural S&T innovations
   - **2020:** Implement a 10-year plan to ban fishing in the Yangtze River
   - **2021:** The Green Development Plan for Agriculture during the 14th Five-Year Plan (2021-2025)
   - **2023: Mainstream agriculture into climate change** to reduce emission and increase carbon sink in agriculture
   - …

The Way Forward

1980~2050年中国农业：GDP占比和就业占比
Agricultural GDP and employment shares in 1080-2050



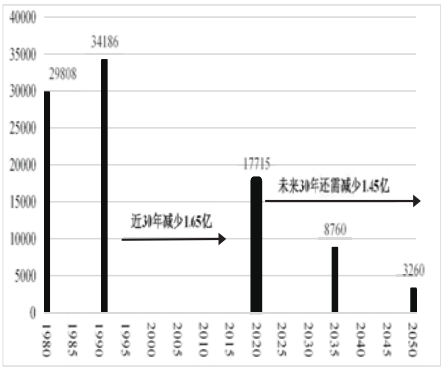
Achieving common prosperity of farmers with all other people:
Ideal Vision I 农民和其他国民共同富裕 - 愿景1

- Labor productivity in agri. & non-agri. must converge: $Y_{agri}=Q/L$
- How? Urbanization, facilitating small & medium-sized cities, county-towns and townships

Shares of agricultural GDP and employment and labor productivity gap in 1970-2050

	1970	2000	2020	2050
Ag. GDP %	40	15	8	3.2
Ag. labor %	81	50	24	4.3
Labor productivity Non-Agri /Agri	2.0	3.3	3.1	1.3

Agri. Labor (10,000) in 1980-2050



Huang et. al. (2022), Development Visions and Policies of China's Agriculture by 2050, *Strategic Study of CAE*, Vol. 24, No. 1(2022):11-19.

China's agricultural labor and cultivated land in 2020 and 2050: A big country with small farms 大国小农

	2020	2050	
Agri. labor %	23.6	4.3%	
Agri. labor (thousand)	177,150	32,600	
Crop sector (thousand)	159,000	29,300	
Cultivated land (100 million mu)	19.2	18.0	
Land/labor (mu)	12	61	≈ 4 ha

愿景-2: 保障粮食安全+实现农民共同富裕
Achieving grain security and all farmers' common prosperity: Ideal Vision II

Crop Sector: Need to move towards **"20-80 Pattern" "二八格局"** in order to ensure grain security and achieve common prosperity among small and large farmers

- **Large farms: "20%"**
  - will produce grain and other bulk commodities to ensure national grain security; and
  - will rely on the scale of farms and income support policy to raise their income.
- **Small farms: "80%"**
  - will develop high-value agriculture to ensure national nutrition and health; and
  - will raise their incomes through high-value agricultural production

Need two separate policy support systems

- **Grain and other bulk commodities**
- **High-value agriculture**

Huang (2022). Facilitating Farmer's Income Growth and Common Prosperity through Accelerating Rural Economic Transformation, *Issues in Agricultural Economy,* No. 7 (2022): 4-15.

Pathway and IPIs of rural transformation in China

Stage 阶段	Major features 主要特征	Major Institution, Policy & Investment (IPIs) 主要制度、政策和投资
1	**Primary on staple food production:** before the early 1990s	**Institution** (land) + **irrigation** + **tech-1** (seed, chemical, etc)
2	**Diversification/commercialization:** since the early 1990s	**Plus agri. mkt + road infrastructure + tech-2** (tech for high-value agri.)
3	**Farming + part time off-farm:** since the middle 1990s **Mechanization + full time off-farm:** since the late 1990s	**Plus labor. mkt + land mkt and consolidation + custom services tech-3** (capital intensive tech +labor saving tech)
4	**Grain security + high value agriculture** **Green agriculture + Integrated urban-rural** **Farm: Toward division of large- (e.g., grain) & small-scale (high-value) farms**	**How?** • **4 driving forces or new IPIs: New Institutions, New Policies (e.g., tech., market reform, supporting policies, etc.) and New Investment** • **Appropriate IPIs matter** • **Sequence of IPIs is important**

Thanks!

8

Closing Program

- Vote of Thanks
  - Ms. Hoang Thi Dzung | Secretary General, Vietnam Federation of Agriculture and Rural Development Associations, Vietnam
- Closing Message
  - Mr. Tin Htut Oo | Chairman, Agribusiness and Rural Development Consultants (ARDC), Myanmar

23rd Asia Pacific Agricultural Policy Forum

Closing Program

◀ Vote of Thanks: Ms. Hoang Thi Dzung

Closing Message : Mr. Tin Htut Oo ▶

VOTE OF THANKS

By

Ms. Hoang Thi Dzung

Secretary General, Vietnam Federation of Agriculture and Rural Development Associations, Vietnam

First of all, I would like to express my appreciations to the organizer for your invitation to share our vote of thanks at today's program of APAP Forum.

For the success of the Forum, we highly appreciate the sponsorship of KRC and close collaboration among co-hosted organizations including Kasetsart University, KCID, USAID, PRCI and the Global Agricultural Policy Institute (GAPI).

I would like to express our special thanks to Ora and her team who made their great effort to realize successfully our Forum's program.

The program of our Forum cannot be a success without the valuable contribution of numbers of comprehensive and impressive presentations as well as discussants from respective presenters and discussants different nationalities. Please give big hand for all.

Last but not least, Thank you APAP Secretariat for your very efficient assistance so far. Jiwan, thank you very much for everything you have done and will be done in the future.

Thank you all for your active participation to the successful of our Forum.

Closing Message

By
Tin Htut Oo
Chairman, Agribusiness and Rural Development Consultants (ARDC), Myanmar

Honorable Dr. Sang Mu Lee, Honorary Chairman, Dr. Herman Ongkiko, Chairman,
Dr. Ki Hee Ryu, Secretary of APAP Forum, and APAP Board Members,
Distinguished Moderators, Speakers and Discussants,
Distinguished Guests, Ladies and Gentlemen,
Good afternoon, Mingalaba!

As we bring this insightful and impactful forum to a close, I am profoundly inspired by the wealth of knowledge and innovative ideas shared. Our collective efforts to advance agrifood systems research and policies towards sustainable food system transformation in the Asia Pacific region are not just essential—they are our mandate for a resilient future.

First and foremost, I would like to extend our heartfelt gratitude to **Kasetsart University, Agricultural and Resource Economics Department**, for co-hosting this forum together with the **Korean National Committee for Irrigation and Drainage (KCID)** and the **APAP Secretariat**. We also owe a special thanks to the **USAID-funded Feed the Future Innovation Lab for Food Security Policy Research, Capacity and Influence (PRCI)** for co-organizing this event. Your support and collaboration have been instrumental in making this forum a success.

Sustainable food system transformation in the Asia and Pacific region is a necessity to fit into the changing new world order and new form of globalization. Asia is rising, with China remaining the second largest economy while India is expected to maintain its present high rate of economic growth, outpacing Japan and Germany by 2030 to become the world's third largest economy. There is an urgent need for institutional and structural reforms that will contribute to the inclusive transformation of agriculture and food systems to ensure the food and nutrition security as well as food safety of the people in the Asia and the Pacific region.

Throughout our discussions, we have explored a wide range of critical topics that underscore the importance of innovative and sustainable practices in agriculture. We have highlighted the essential strategies needed to mitigate and adapt to climate change, the benefits of sustainable practices in rice production, and the significance of regional policy frameworks in addressing environmental challenges. Our conversations have also underscored the importance of strategic planning and innovation in driving a greener agricultural future, as well as the transformative steps being taken to enhance food systems in various countries in the Asian region.

Additionally, we have recognized the urgent need to support vulnerable communities, ensuring that all individuals have access to secure and sustainable food sources. The potential and enthusiasm of the younger generation in driving agricultural innovation have also been a source of inspiration, highlighting the critical role of youth in shaping the future of agrifood systems.

In light of the rapid economic growth in Asian developing countries, driven by rising middle-income populations and urbanization, we face new challenges and opportunities. This economic transformation demands robust policies and collaborative efforts to ensure that the benefits of growth are equitably shared and that our agrifood systems remain resilient and sustainable.

This year, the devastating impacts of super cyclones and floods across Asia and the Pacific region have underscored the need for comprehensive policies focused on both adaptation and mitigation. We need advanced early warning systems, resilient infrastructure, disaster risk reduction strategies, climate-resilient agricultural practices, and the integration of these approaches into national and regional policies.

In this regard, our forum also introduced groundbreaking studies and discussions on reducing carbon emissions in rice farming, the rise of labor-saving agricultural technologies, addressing consumption inequality, and the importance of biodiversity and diverse diets in creating resilient food systems.

As we leave this forum, let us carry forward the invaluable knowledge and inspiration we've gained. It is our collective responsibility to implement these best practices and policies in our respective regions. Together, we can make a tangible difference in promoting sustainable agrifood systems, safeguarding our environment, and ensuring a prosperous future for all.

Thank you for your active participation and dedication. Let's continue to work together towards a sustainable and food-secure Asia Pacific.

Safe travels and see you at the next forum.

23rd Asia Pacific Agricultural Policy Forum

PROCEEDINGS

9

Speakers' Biodata

23rd Asia Pacific Agricultural Policy Forum

A S Moniruzzaman Khan

Programme Head, Climate Change Programme
Bangladesh Rural Advancement Committee (BRAC), Bangladesh

A S Moniruzzaman Khan, a seasoned expert in climate change adaptation and natural resource management, is presently the Programme Head of the BRAC Climate Change Programme (CCP).With a proven track record of impactful work in both national and international organizations, Mr Khan contributes a wealth of experience to his role. Additionally, he has a robust academic foundation. As Programme head, Mr. Khan is instrumental in developing and executing strategies that address a variety of climate-related issues. His multifaceted approach includes project development, energy efficiency, agriculture, food security, infrastructure, livelihoods, and climate adaptation. His work also encompasses critical areas such as sector coordination and resource mobilization, demonstrating a comprehensive comprehension of the intricacies associated with climate change challenges. Mr. Khan is at the vanguard of the BRAC Climate Change Programme's innovative initiatives. One notable initiative is the "Adaptation Clinic," a pragmatic agricultural service facility designed to enhance climate-vulnerable farmers' resilience.

Furthermore, Mr Khan is overseeing a project that is designed to address the urgent need for safe drinking water in the coastal belt of Bangladesh. This initiative directly addresses the challenges of salinity intrusion and water scarcity by establishing rainwater harvesting systems at the domestic and community levels. The initiative is consistent with the government's national adaptation plans for climate change, thereby guaranteeing that it directly contributes to local priorities. A S Moniruzzaman Khan's leadership at the BRAC Climate Change Programme is indicative of a practical and hands-on approach to addressing climate change issues. His initiatives are a testament to his dedication to sustainable solutions and community resilience, and they have made a substantial contribution to the ongoing global efforts to combat the effects of climate change. At present, he occupies the position of Vice Chair of the IUCN Bangladesh National Committee.

Aileen Virrey Lapitan

Dean, College of Public Affairs and Development
University of the Philippines Los Banos, Philippines

Aileen Virrey Lapitan is the Dean of College of Public Affairs and Development, University of the Philippines Los Banos (UPLB), where she is concurrently the Director at the Center for Strategic Planning and Policy Studies (CSPPS). She also leads the implementation of the Development Innovations and Policy Laboratory (DIPLab) at CSPPS, which delivers capacity building interventions to researchers in the agriculture, aquatic, and natural resources sector so they can transform their findings into policy relevant information, for use in the policy process. As a faculty member, she is involved in curriculum development and student mentoring for graduate programs in Development Management and Governance, Public Affairs, and Development Studies. She is a member of the American Evaluation Association, a Certified Expert in Adaptation Finance, and a John Dillon Fellow. Dr. Lapitan holds a bachelor's degree in Agricultural Economics from UPLB, Master of Arts (Economics) from the University of the Philippines-Diliman, and a doctorate degree in Public Policy from the University of North Carolina at Charlotte, USA.

Alisher Mirzabaev

Senior Scientist on Policy Analysis/Climate Change International Rice Research Institute (IRRI), Philippines

Alisher Mirzabaev is a Senior Scientist on Policy Analysis/Climate Change at the International Rice Research Institute (IRRI). Before joining IRRI he served as Interim Chair and Professor of the Production Economics Group, Institute for Food and Resource Economics (ILR) at the University of Bonn. Dr. Mirzabaev was a lead researcher in several international projects with both global and regional focus on Africa and Asia. He was a Coordinating Lead Author of the Chapter on Desertification of the IPCC Special Report on Climate Change and Land. He has authored more than 100 scientific publications on climate change impacts and adaptation, the economics of land degradation and ecosystem restoration, and the water-energy-food security nexus.

Anita Rosli

Universiti Putra Malaysia Bintulu Campus, Sarawak Malaysia

Anita Rosli is a Senior Lecturer at the Department of Social Science and Management, Faculty of Humanities, Management and Science, Universiti Putra Malaysia Bintulu Campus, Sarawak. She has a Bachelor of Social Science, majoring in Development, Planning and Management in 2006. From 2007 to 2008, she pursued her Master of Economics, majoring in Development Economics. She is a PhD holder in Agricultural Development Economics (Agricultural Economics). She teaches Agricultural Economics, Agribusiness Project Planning and Management, Agricultural and Man Agrobio-Marketing, and Ethics and Social Responsibility for Diploma and Bachelor programmes. Her current research and publication activities are focused on agricultural production and business marketing.

Bart Minten

Senior Research Fellow, Development Strategies and Governance Unit
International Food Policy Research Institute (IFPRI)
Lao People's Democratic Republic

Bart Minten, a Belgian citizen, is a Senior Research Fellow in the Development Strategies and Governance Unit of the International Food Policy Research Institute (IFPRI). He is out-posted in Vientiane (Laos) and focuses mostly on research, capacity building, and outreach and communication of research related to food and agricultural issues in Myanmar. Previously, he worked in Addis Ababa as the Program Leader of the Ethiopia Strategy Support Program and in the New Delhi Office, where his work focused on agricultural value chains in South Asia. Prior to joining IFPRI, he was a Senior Research Associate for the Cornell Food and Nutrition Policy Program in Madagascar. He also has held the position of Assistant Professor at the Department of Agricultural and Environmental Economics, KU Leuven, as well as teaching positions at Cornell University and the University of Antananarivo, Madagascar. Bart received his PhD in Agricultural and Resource Economics from Cornell University and his bio- engineering degree from KU Leuven.

Byung-ho Lee

Chairman, Korean National Committee on Irrigation and Drainage (KCID) &
President, Korea Rural Community Corporation (KRC), Republic of Korea

Byung-ho Lee currently serves as the Chairman of Korean National Committe on Irrigation and Drainage (KCID) and the President of the Korea Rural Community Corporation (KRC). He earned his degree in Agricultural Economics and Rural Development from Seoul National University, where he also completed a master's program in Regional Information. Mr. Lee has a distinguished background in agricultural policy and organizational leadership. He previously served as an expert member on the Presidential Committee on Agriculture, Fishery, and Rural Policies and as the Executive Director of the Unification Agriculture and Fisheries Program. His leadership roles include serving as President of the Seoul Agro-Fisheries & Food Corporation and President of the Korea Agro-Fisheries & Food Trade Corporation. Since 2022, he has been serving as the president of KRC.

David Ortega

Professor, Department of Food, Agricultural, and Resource Economics
Michigan State University, USA

David Ortega is a Professor at Michigan State University and a College of Agriculture & Natural Resources Faculty Laureate. He is appointed in the tenure system. His research program focuses on understanding consumer, producer, and agribusiness decision-making to better inform food policies and marketing strategies. Dr. Ortega has research experience in several developing and emerging countries, including China, India, Kenya, Malawi, and Rwanda. Over the past fifteen years, his work in China has focused on the economics of food quality and on evaluating emerging markets for U.S. agricultural products. His research has been published in high-impact peer-reviewed journals, including Food Policy, World Development, Applied Economic Perspectives and Policy, Economic Development and Cultural Change, American Journal of Agricultural Economics, Agricultural Economics, China Economic Review, and the European Review of Agricultural Economics, to name a few. Dr. Ortega provides timely analysis of forces and events affecting the agricultural and food sector. He has been called to provide expert testimony before federal and state agencies, including the U.S. Congress. He is frequently interviewed by prominent media outlets, including The New York Times, The Wall Street Journal, NPR, USA Today, CNN, PBS, Forbes, Politico, Newsweek, and the Detroit Free Press, among others. Dr. Ortega earned his Ph.D. in Agricultural Economics from Purdue University.

David Tschirley

Professor, Department of Food, Agricultural, and Resource Economics
Michigan State University, USA

David Tschirley is fixed-term Professor in the Department of Food, Agricultural, and Resource Economics. He serves as co-Director of AFRE's Food Security Group (FSG) and Director of its flagship USAID-funded Innovation Lab for Food Security Policy Research, Policy and Influence (PRCI). He has over 30 years of experience in applied food security research, mentoring of developing country researchers, and active policy outreach. David's work emphasizes three main areas: 1) agrifood system transformation in Africa focusing on the impacts of changing diets, the evolving roles of "modern" and "traditional" marketing channels, and implications for public-private investment in these systems, 2) the intersection of food aid, staple food markets, and emergency response, including extensive work on monetization, local and regional food aid procurement, and the role of food trade and government policy in emergency response, and 3) institutional approaches to linking smallholder farmers to cash crop markets such as cotton and fresh produce. Most recently Dr. Tschirley's research has focused increasingly on issues regarding diet change and agrifood system transformation in Africa and Asia. He is author or co-author of over 40 journal articles, multiple book chapters and dozens of working papers.

Dr. Tschirley has served as the Lead External Author for IFAD's 2019 Rural Development Report, was a member of the World Food Program's Technical Review Panel for its Purchase for Progress (P4P) program, and has been a consultant to the Inter-American Development Bank, World Bank, the International Fund for Agricultural Development (IFAD), International Food Policy Research Institute (IFPRI) and the CGIAR system, USAID, World Food Program (WFP), and the Food and Agriculture Organization of the U.N. (FAO). In 2022, he received the Ralph Smuckler Award for Advancing International Studies and Programs at MSU, in recognition of his long-term distinguished achievement in the promotion of international activities (research, teaching, and outreach) at Michigan State University. Fluent in Spanish and Portuguese, Dr. Tschirley has had long-term assignments in Ecuador (1987-1990) and Mozambique (1995-98).

Deborah Nabuuma

Scientist I– Nutrition, Food environment and consumer behavior
Alliance of Bioversity International and CIAT , Malaysia

Deborah Nabuuma is a Scientist with The Alliance of Bioversity International and CIAT. Her work focuses on understanding the dynamics of the food environment and consumer behaviour to improve access to and the adoption of healthy diets. She also explores the integration of nutrition into farming and seed system research, and harnessing agrobiodiversity to promote food and nutrition security. Her research seeks to create sustainable and resilient food systems that enhance nutrition and health outcomes and livelihoods. Joining The Alliance in 2013, Deborah has attained research experience in Eastern Africa, Southeast Asia and The Pacific in the assessment and improvement of diets; development and implementation of strategies that enhance the utilization of agrobiodiversity; and integration of nutrition in farming and seed system interventions to enhance food security and nutrition outcomes.

Deborah has a PhD in Nutritional Sciences from Stellenbosch University, an MSc in Applied Human Nutrition from Makerere University, and a BSc in Food Science and Technology from Makerere University. She is currently based in Penang, Malaysia. Before joining the Alliance, Deborah worked as a Graduate Assistant at the School of Food Technology, Nutrition and Bio-engineering, Makerere University where she developed new ready-to-use therapeutic foods formulations and assessed and improved the nutritional functionalities of peanuts and amaranth. Prior, she worked as a nutritionist at the Mwana Mugimu Nutrition Unit, Mulago National Referral Hospital, Uganda.

Emorn Udomkesmalee

Senior Advisor, Institute of Nutrition, Mahidol University,
Thailand

Associate Professor Emorn Udomkesmalee is the Senior Advisor and Former Director of the Institute of Nutrition, Mahidol University, Thailand. She holds a current position of Adjunct Associate Professor in the Department of International Health, Bloomberg School of Public Health, Johns Hopkins University, USA. Internationally, she's the former Board Chair of IFPRI; former Member of the Board of Directors of the Micronutrient Forum as well as Sight and Life Foundation Board of Trustees. She currently serves on various international positions: Paris Peace Forum-Independent Expert Panel for Nutrition for Growth Summit (N4G) 2025; the Country Working Group of the Standing Together for Nutrition (ST4N) Consortium; Technical Advisory Group for Global Anemia Exemplars; Scientific Committee of Agriculture, Nutrition and Health Academy; International Life Sciences Institute (ILSI) Global Board and Scientific Director of ILSI Southeast Asia Region. At national level, she holds the position of the Eminent Panel member under the National Policy Council on Higher Education, Science, Research and Innovation; Chair of Sub-Committee on Agriculture and Nutrition, Office of Atoms for Peace (Thailand) as well as Board member of Ajinomoto Foundation/Thailand. Her research interests include micronutrients; efficacy of food-based interventions; maternal and child nutrition policy and program implementation.

She received her Ph.D. in nutritional biochemistry and metabolism from Massachusetts Institute of Technology (MIT), USA in 1985. Her post-doctoral training was at the Vitamin and Mineral Nutrition Laboratory, Beltsville Human Nutrition Research Center, USDA, Beltsville, Maryland, USA (1987).

Ganesh Thapa

Former Lead Regional Economist for Asia and the Pacific Region
International Fund for Agricultural Development (IFAD), Nepal

Ganesh Thapa worked for the International Fund for Agricultural Development (IFAD), a specialized agency of the United Nations from 1998 to 2014 as the Lead Regional Economist for Asia and the Pacific Region. From 2008 to 2011, he was concurrently IFAD's Country Programme Manager for the Democratic People's Republic of Korea. Prior to this, he has worked as Country Director for Winrock International in Nepal and as a Senior Economist for the Ministry of Agriculture, Nepal. He is currently a Board Member of the Asia-Pacific Agricultural Policy Forum (APAP). He is also a former Visiting Fellow at the International Centre for Integrated Mountain Development (ICIMOD), a former Board Member of the Mountain Institute (TMI), Washington D.C., and a former Research Fellow of the International Rice Research Institute (IRRI). He has undertaken consultancy work for a number of international organizations including the International Food Policy Research Institute (IFPRI), World Vegetable Center, U.N. Economic and Social Council for Asia and the Pacific (ESCAP), International Water Management Institute (IWMI), United Nations Development Programme (UNDP).
He has a Ph.D. in agricultural economics from Cornell University, USA and a M.S. in agricultural economics from the University of the Philippines. He has undertaken research and published books and articles on risks, vulnerability and poverty reduction; microfinance; indigenous peoples; impact of new agricultural technologies; agricultural marketing; and food security.

Herman Ongkiko

President and Chief Executive Officer of Orient Integrated Development Consultants, Inc (OIDCI), Philippines and Asia Pacific Agricultural Policy Forum Chairman

Herman Ongkiko is currently President and Chief Executive Officer of Orient Integrated Development Consultants, Inc (OIDCI), a development consulting company operating in the Philippines and in other Asian countries. OIDCI is one of the leading Philippine-based consulting firm that is accredited by national government agencies and international financial institutions like the World Bank, Asian Development Bank, International Fund for Agricultural Development, Japan International Cooperation Agency. He was recently elected as Chairman of the Board of the Asia Pacific Agricultural Policy (APAP) Forum after having served as the APAP Secretary-General for seven (7) years. The APAP Forum is a coalition of decision makers, development practitioners and academic champions fostering regional solidarity and knowledge sharing on current and emerging policies in resilient agriculture and sustainable rural development. Mr. Ongkiko served as Undersecretary for Foreign-assisted Projects of the Department of Agrarian Reform, the rural development agency of the Philippine government where he was responsible in preparing and negotiating investment programs and development loan packages for the agrarian reform communities in the Philippines. His international consultancy services include his engagement by Norconsult (Norway) as International Team Leader of the Nordic Development Fund (NDF)-assisted Greater Mekong Subregion (GMS) Corridor Towns Development Project. He was recruited by ADB as Consultant in the formulation of the Regional Investment Framework for the Greater Mekong Subregion covering Vietnam, Cambodia, Laos and Myanmar. Mr. Ongkiko was engaged by the Korean Rural Community Corporation (KRC) as the Socio-Economic Development Specialist in Myanmar for the WB-funded Irrigated Agriculture Inclusive Development Project and the ADB-financed Agricultural Development Support Project.

Hoang Thi Dzung

Secretary General, Vietnam Federation of Agriculture and Rural Development Associations, Vietnam

Hoang Thi Dzung is Secretary General, Vietnam Federation of Agriculture and Rural development Associations (VFARDA) since 2013. She retired from the Ministry of Agriculture and Rural development of Vietnam in 2012. During 2000 to 2012, she served as Deputy Director General of International Cooperation Department (ICD), Ministry of Agriculture and Rural Development (MARD) – cum- Director General of the Vietnam National SPS office, a member of the National Trade Negotiation Team, involved in the negotiation of WTO, Vietnam- Japan FTA, TPP (now changed to CPTPP), EV FTA. She was ASEAN Senior Officials' Meeting (SOM) leader of the Vietnamese Team in the ASEAN Agricultural and rural development Community. Her earlier work included officer and senior officer of the international cooperation department, Ministry of Agriculture and Rural development of Vietnam during 1979 to 1999. Hoang Thi Dzung received BSc in Economy (Vietnam) in 1978, Post Graduate in Sociology (Hungary) in 1987, MA in Agriculture and Rural Development (The Netherland) in 1991.

Jikun Huang

Dean, School of Advanced Agricultural Sciences and Founding Director, China Center for Agricultural Policy (CCAP), Peking University, People's Republic of China

He is Changjiang Distinguished Professor and Dean of the School of Advanced Agricultural Sciences, Director of New Rural Development Institute, Peking University and a founding director of China Center for Agricultural Policy (CCAP). He is also Fellow of the World Academy of Sciences (TWAS), Honorary Life Member of International Association of Agricultural Economists, Fellow of Agricultural and Applied Economics Association, Vice President of China Agricultural Economics Association, the Past President of Asian Society of Agricultural Economists, the co-editor or editorial board member of more than 30 international and domestic journals. He has been in several policy advisory committees in China, including Chinese People's Political Consultative Conference, Expert Advisory Committee of Rural Leading Group Office of the Central Committee of CPC, National Development and Reform Commission, and Ministry of and Ministry of Agriculture and Rural Affairs. He was a member of the Scientific Group of the UN Food Systems Summit 2021 and the co-coordinator of the Scientific Group on Advancing Equitable Livelihoods. He received his PhD in agricultural economics from University of the Philippines at Los Banos in 1990. His research covers a wide range of issues on agricultural policy, food security and rural development. He has published 25 books and more than 640 journal papers, including the papers published in Science, Nature and many leading journals in development economics. He has repeatedly ranked first among Chinese highly cited scholars released by Elsevier in the field of “Economics, Econometrics and Finance” since 2015. He received Award for China’s Outstanding Youth Scientists in 2002, Fudan Prize for Eminent Contributor to Management Science in 2008, the Sun Yefang Economic Science Award in 1998, the First Prize in Economics for Scientific Research from the Ministry of Education in 2023, a number of S&T progress awards at ministerial levels, and honors such as Outstanding Alumni of the International Rice Research Institute and the University of the Philippines at Los Banos. He has advised more than 90 MS and PhD students and supervised more than 30 post-doctors by 2023.

Ki Hee Ryu

Professor/Principal Researcher, Institute of Green Bio Science and Technology, Seoul National University, Republic of Korea

Ki Hee Ryu is a Professor/Principal Researcher, Institute of Green Bio Science and Technology, Seoul National University, South Korea focuses global partnerships in innovative technologies in the green bio science and technology sector. Since 2013 up to now for 10 years, Dr. Ryu has worked in bio-technology development in Africa, Asia and Latin America, including Kenya, South Africa, Uganda, Indonesia, Mongolia, Philippines, Vietnam, Ecuador and Uruguay. Before joining the university, he worked as Head, Portfolio Management Unit in Asian Development Bank (ADB), Manila, Philippines, from 1997 to 2013 for 16 years and as Head, Agriculture and Irrigation Unit, Mekong River Commission Secretariat, Bangkok, Thailand from 1993 to 1997 for four years. Dr. Ryu received his PhD degree in agricultural engineering from Colorado State University in the United States of America. He worked in South Asia, including ADB's Bangladesh and Nepal Resident Missions of the ADB. All of his professional careers involve programming, identification, processing, implementation and impact evaluation of the projects and programs in the agriculture, environment, rural development, water resources and natural resources management areas.

Larry Wong

Senior Visiting Fellow, Institute of Strategic and International Studies Malaysia, Adjunct Professor, Taylor's University, Malaysia

Larry Wong is a development economist with over 45 years of experience in development, business planning, policy analysis, and implementation. His career spans the public sector, private enterprises, and think tanks/academia, with a focus on food security, agrifood value chains and trading networks, future food systems, food diplomacy, agricultural transformation, regional integration, and sustainable development. He has authored, edited, and peer- reviewed scholarly works on these topics. Dr. Wong is a Senior Visiting Fellow at the Institute of Strategic and International Studies in Malaysia, an Adjunct Professor at Taylor's University in Malaysia, and a co-founder of Lannew Resources Sdn Bhd and Myanmar Praxis Co Ltd. He serves as a Senior Advisor to the Myanmar Rice Federation and the Myanmar Agribusiness Public Corporation Limited. He is a member of the Executive Committee on National Food Security Policy in Malaysia; a board member of the Asia Pacific Agricultural Policy Forum; and a member of the Editorial Advisory Board for the Asian Journal of Agriculture and Development.

Dr Wong's extensive involvement in Myanmar's agricultural sector began in 1997 when he led BERNAS's international agrifood business, focusing on supply chain and trading network development across Asia, Africa, and further afield. He continues to work in Malaysia's and Myanmar's agriculture, livestock, and fisheries subsectors. g has consulted for international organisations, including The World Bank, IFC, ADB, UNDP, FAO, UNESCAP, IFPRI, USAID, and IRRI. His consultancy work has covered various aspects of value chains, agribusiness, and food security across Asia, Africa, and other regions. He has held senior positions at the Malaysian Agricultural Research and Development Institute, the Economic Planning Unit of the Prime Minister's Department, the Muda Agricultural Development Authority, and the North- West Selangor Integrated Agricultural Development Project of the Malaysian Ministry of Agriculture.

Meeta Punjabi Mehta

Senior Food Systems Officer, UNFAO
Regional Office for Asia and Pacific (FAO RAP), Thailand

Meeta is the Senior Food Systems Officer at the UNFAO, Regional Office for Asia and Pacific (FAO RAP), in Bangkok. She holds a Ph. D Agricultural Economics, Michigan State University, USA. Meeta is a seasoned professional with a rich and diverse experience of 25+ years in the agricultural sector and rural development working in many countries across South/South-east and Central Asia and has authored over 80 publications.

In recent years, she has gained extensive experience in the global and regional issues in Sustainable Agrifood Systems Transformation, working with a team of experts to assess the challenges to sustainable agrifood systems in more than 50 countries across the globe.

Nipon Poapongsakorn

Distinguished fellow, Thailand Development Research Institute Foundation (TDRI), Thailand

Nipon Poapongsakorn is currently a distinguished fellow, Thailand Development Research Institute Foundation (TDRI). He formerly held the position of President of TDRI, and Dean and associate professor of the Faculty of Economics, Thammasat University. He is the author of over 200 research projects, academic papers and publications in six areas of economic policy analysis, i.e., agri-food value chain, technological change and Agri-food system transformation; pricing & marketing of agricultural produce; water management and institutional reform under climate change and recently mitigation and adaptation policies in agriculture; agricultural and rural credit markets; agricultural trade, competitiveness and competition policies; and labor market and human capital development. Two of his research reports were awarded the distinguished research by the Thailand Research Fund. He has extensively served as council members of public, private and international committees such as the National Rice Management Policy Committee, the Legal Development Committee of the Council of State, the Board of Investment, the National Economic and Social Development Board, the Trade Competition Committee, the Port Authority of Thailand, TMB Board of Directors, the National Reform Assembly Committee, advisor to the Minister of Finance in 2006-2008, president of the Thai Economics Society, the Asian Society of Agricultural Economists, and the Asia Pacific Agricultural Policy Forum (APAP).

Dr. Poapongsakorn received a BA in economics from Thammasat University, MA (economics) from Middle Tennessee State University, and PhD (economics) from University of Hawaii, Manoa. He also received certificates from the Director Certification Program, the Thai Institute of Directors (IOD), and the Capital Market Academy Leadership Program, the Capital Market Academy.

Orachos Napasintuwong

Associate Professor, Department of Agricultural and Resource Economics Kasetsart University, Thailand

Orachos Napasintuwong is an Associate Professor, Deputy Department Head of International Affairs and a Chairperson of Ph.D. program in Agricultural and Resource Economics (International Program) at Department of Agricultural and Resource Economics, Kasetsart University, Thailand. Her work focuses on sustainable agri-food system transformation in Southeast Asia. She serves as executive member of Agricultural Economic Society of Thailand under Royal Patronage, Asia Pacific Agricultural Policy Forum, Food and Fertilizer Technology Centre for the Asian and Pacific Region Agricultural Policy Platform and Feed the Future Innovation Lab for Food Security Policy Research, Capacity, and Influence in Southeast Asia and Editor of Asian Journal of Applied Economics, Asian Journal of Agriculture and Development and Agro Ekonomi. She received her Ph.D. in Food and Resource Economics from University of Florida, USA, MBA from Louisiana State University, USA and B.Sc. in Biotechnology from Mahidol University, Thailand.

Pham Le Thong

Faculty of Agricultural Economics, School of Economics, Can Tho University, Vietnam

Pham Le Thong is currently Associate Professor, Dean of Faculty of Agricultural Economics at the School of Economics, Can Tho University. He teaches microeconomics, econometrics and agricultural economics. His research interests relate to issues in Farm Household Economics, Production Economics and Applied Econometrics. He has published in international journals including Journal of Population Economics and Journal of Asian Business and Economic Studies. He received his doctorate from the University of Groningen, The Netherlands.

Piya Wongpit

Faculty of Economic and Business Management National University of Laos,
Lao People's Democratic Republic

Associate Professor Piya Wongpit heads the Finance and Banking Department at the Faculty of Economics and Business Administration, National University of Laos. He instructs students across bachelor's, master's, and Ph.D. levels in subjec like research methodology, public financial management, and securities analysis. With a rich background in agriculture economics, trade, and economic development research, he's conducted numerous feasibility studies and offered training to both government staff and private entities. As a board member of the Policy Think Tank at the National Agriculture and Rural Development Institute, Lao PDR, he advises the government, particularly the Ministry of Agriculture and Forestry. His academic credentials include a Ph.D. and Master's in Economics from Kobe University, Japan, and a Bachelor's in Business Administration with a finance major from the University of the Thai Chamber of Commerce, Bangkok

Pouchamarn Wongsanga

Project Director, Agriculture and Food Cluster, GIZ Thailand
Senior Regional Coordinator, ASEAN Sustainable Agrifood Systems Project

Pouchamarn Wongsanga is a dedicated professional specializing in sustainable development, in particular agriculture and food systems in Southeast Asia. With almost 40 years of experience in regional cooperation, she has held key roles in intergovernmental organizations. She worked at the Southeast Asian Fisheries Development Center (SEAFDEC) for 25 years, and at the ASEAN Secretariat in Jakarta from 2011 to 2013, facilitating regional cooperation in Fisheries, Food Security, Climate Change, and Forestry. Since 2014, she has been with GIZ, advancing to Project Director and Regional Component Lead, managing ASEAN- German projects on Sustainable Agriculture and Agricultural Value Chains. She also manages and implements the regional projects as well as global projects implemented in Thailand on Sustainable Agriculture, promoting public and private cooperation and partnership. Since October 2023, she leads the EU-co financing project on the European Union Regulation on Deforestation Free Products (EUDR) for Thailand.

Ravi Khetarpal

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

Ravi Khetarpal has been the Executive Secretary of Asia Pacific Association of Agricultural Research Institutions (APAARI) since 2017. He has engaged in strategic planning for institutional growth and facilitates and promotes networking, capacity building, policy interventions, knowledge management and partnerships in the region for agri-food system transformation. He co-ordinates and executes a number of multi-country regional/ global projects sponsored by USDA, WTO, FAO, ACIAR, EU, GFAiR, World Bank etc in Asia and the Pacific countries, including projects on agricultural innovation system, inclusive digital transformation, phytosanitary compliances to WTO norms, collective action on forgotten foods, strengthening sanitary and phytosanitary compliances for International seed movement, pesticide risk mitigation and so also on One Health. Dr. Khetarpal worked for National Agricultural Research System in India for three decades mainly contributing towards biosecurity, plant quarantine and germplasm health. Served for CABI – South Asia as Regional Director for seven years. Also served as Consultant for 11 projects of FAO, UNDP and World Bank on compliances of SPS Agreement of WTO. He is serving as the Chairman of Global Forum on Agricultural Research and Innovation and member of the CG System Council and its Strategic Impact, Monitoring and Evaluation Committee (SIMEC).

Sahat M. Pasaribu

Senior Researcher, Research Center for Economics of Industry, Services, and Trade at the National Research and Innovation Agency, Indonesia and Vice Chairman, Asia Pacific Agricultural Policy Forum

Sahat M. Pasaribu is a senior researcher at Research Center for Economics of Industry, Services, and Trade at the National Research and Innovation Agency, Indonesia and Vice Chairman, Asia Pacific Agricultural Policy Forum. He is a Senior Researcher at the Research Center for Economics of Industry, Services, and Trade, National Research and Innovation Agency (BRIN), Indonesia. Prior to his service at BRIN (2022), he worked at the Center for Agricultural Socio-Economic and Policy Studies, Ministry of Agriculture for about four decades. After appointed as one of the Board Members in 2012, he recently elected as Vice Chairman of the Asia Pacific Agricultural Policy (APAP) Forum, an international organization that aims to foster understanding of various agricultural policy issues and build cooperation among countries in the Asia and Pacific region for sustainable agricultural development.

His long service of more than 40 years as a researcher has given him a wide range of professional experiences in working in the field of agro-socioeconomics, including research topics on rural finance and agricultural insurance, agricultural value chains and agro-based industries, agricultural institutions and rural transformation development. He is actively involved in designing and implementing research projects, analyzing data and writing reports to produce valuable recommendations in preparing inputs for agricultural policy development. He holds a Bachelor degree in agricultural economics (BS) from Bogor Agricultural University (IPB, 1979) Indonesia. Master of Engineering (M.Eng.) in rural planning from the Rural and Regional Development Division, Asian Institute of Technology (AIT, 1985), Thailand, and Doctor of Philosophy (Ph.D.) in regional and rural development planning from the School of Environment, Resources, and Development (AIT, 2005).

Samnang Nguon

Dean, Graduate School and
Center Director, Ecosystem Services and Land Use Research Center (ECOLAND)
Royal University of Agriculture, Cambodia

Samnang Nguon is a distinguished scholar and expert in agriculture and food science. He earned his PhD in Agriculture in Tropics and Subtropics from the Czech University of Life Sciences Prague, Czech Republic, an MS in Food Science from the University of the Philippines Los Baños, the Philippines, and a BS in Agro-Industry (Food Technology) from the Royal University of Agriculture (RUA) in Cambodia. Currently serving as the Dean of Graduate School and Center Director of ECOLAND (Ecosystem Services and Land Use Research Center) at RUA, Dr. Nguon excels in research, innovation, and teaching in tropical and subtropical agriculture and food science. His research interests include food quality, nutrition, food safety risk assessment, and the study of biologically active natural products. Dr. Nguon is particularly passionate about the phytochemistry and ethnobotanical properties of neglected and underutilized crops, spices, and medicinal plants, aiming to enhance their value in agriculture and health. With an extensive portfolio, he has participated in 21 national and international R&D projects and has contributed over 32 scientific presentations and 11 peer- reviewed publications. Dr. Nguon is dedicated to advancing knowledge and practices in his field, making significant contributions to agriculture, food safety, and human health.

Sang Mu Lee

President, Korea Overseas Agro-Resources Development Association and Chairman,
Global Agriculture Policy Institute (GAPI), Republic of Korea

Sang Mu Lee is an esteemed leader, currently serving as the President of the Korea Overseas Agro-Resources Development Association and the Chairman of the Global Agriculture Policy Institute. He has a rich background in agricultural and rural development policy, having progressed through various roles in the government, culminating in his appointment as Deputy Minister at the Ministry of Agriculture, Forestry and Fisheries in 1996. From 1999 to 2004, Dr. Lee served as the FAO Representative to the Philippines and led the Korea FAO Association and the Regional Office of AARDO for the Far East for nearly a decade. He was also the President of the Korea Rural Community Corporation (KRC) from 2013 to 2016. This year, he was appointed as Honorary Chairman of the Asia Pacific Agricultural Policy (APAP) Forum after over 20 years as its founding Chairman.

He holds a Bachelor's degree in Agronomy and a Master's degree in Public Administration from Seoul National University. He further earned another Master's degree and a Ph.D. in Agricultural Economics from Michigan State University. An accomplished author, he has written several books on both domestic and international agricultural policies and has contributed numerous articles to various newspapers and magazines.

Shoichi Ito

Professor Emeritus, Kyushu University, President of i-DCR Research Institute Fukuoka, Japan

Shoichi Ito is a Professor Emeritus of Kyushu University, Japan, and currently serves as President of i-DCR (Research Institute of International Food and Agricultural Development and Policies). His research areas include International Food Supply and Demand Potentials focusing on rice, wheat, corn and soybeans. Recently, the emphasis of his research is expanded to the issues of "Food and Health and Change in Agriculture" with globally emerging WFPB (Whole Food Plant-Based) and Vegan style food consumptions. After obtaining his MS from the University of Arkansas and PhD from Texas A&M University, he served as a professor at Tottori Univ. and Kyushu Univ. in Japan until he got mandatory retirement in 2018. He conducted global surveys for food supply potentials visiting over 50 countries with several funds from the Ministry of Education, Japan, hosted many conferences and symposiums in Japan and other countries. While he has continued his researches, he has monthly updated his global food data online "Global Food Statistics and Graphics" available for http://worldfood.apionet.or.jp modifying the original data from the USDA's PSD Online in four languages, Japanese, English, Chinese and Spanish as well as the global price data series from 1960s to current.

U Tin Htut Oo

Chairman and CEO, Agribusiness and Rural Development Consultants (ARDC) Myanmar

U Tin Htut Oo, former Minister of Agriculture, Livestock and Irrigation, is currently the Chairman and CEO of Agribusiness and Rural Development Consultants (ARDC) in Myanmar. He is also Chairing the Board of the Center for Economic and Social Development (CESD). From 2001 to 2009, he was the Director-General of the Department of Agricultural Planning, Ministry of Agriculture and Irrigation and before that held various posts in the same Ministry since 1974. He retired from the Civil Service in 2009. U Tin Htut Oo served as the Chairman of the National Economic and Social Advisory Council (NESAC), and Economic Advisor to the President, the Republic of the Union of Myanmar (2012-2016). In his capacity with the UN and international organizations, he served as Senior Advisor to the Executive Secretary, UNESCAP from 2009-2011. U Tin Htut Oo has been awarded 5th Dioscoro L. Umali Achievement Award in Agricultural Development in 2015 which recognizes exemplary individuals who have advanced agricultural development in Southeast Asia.

He holds a Bachelor of Agriculture degree (B. Ag) from the Institute of Agriculture, University of Mandalay (1971) Myanmar and M.Sc. (Agricultural Economics) from Ohio State University (1985) USA. He was a Visiting Research Fellow at the Institute of Developing Economics, Tokyo, Japan in 1994-1995.

Wonho Lee

Climate Technology Solutions, Division Greenery Inc
Republic of Korea

Wonho Lee is the Director of the Climate Technology Solutions Division at Greenery Inc. His team offers consulting services aimed at achieving carbon neutrality, including the development of carbon reduction methodologies, project initiatives, and environmental consulting services that encompass life cycle assessments, Net-Zero strategy development, and sustainability report creation. With a diverse professional background, Wonho has cultivated a unique skill set that has shaped his career path. His experience in the ERP industry has deepened his expertise in information technology, particularly in data management. This includes designing data management platforms and implementing effective data practices. His proficiency in data handling has enabled him to thrive in the ESG field, where strong data management is essential.

He earned a Bachelor of Science in International Business Administration from Erasmus University in the Netherlands (2006), a Master of Science in Strategic Management from the same institution (2009), and a Ph.D. in Organization Management and Strategic Management from the Korea Advanced Institute of Science and Technology (KAIST) in 2018.

Wyn Ellis

Executive Director, Sustainable Rice Platform
Thailand

Wyn Ellis is Executive Director of the Sustainable Rice Platform, a multi-stakeholder initiative dedicated to transformation of the global rice sector through market-led and development- driven scaling partnerships. Based in Thailand for the past 40 years, he has contributed in diverse roles working with bilateral and multilateral development partners, governments, academia, the private sector and NGOs both in Asia and Africa. His specific expertise includes agronomy, agro-innovation, organic and sustainable food systems, pest management and climate change. With a Ph.D. from Chulalongkorn University in Thailand and M.As from Oxford and Reading Universities in UK, he has published extensively and served on the Editorial Board of several international journals.

Zaw Oo

Executive Director, Centre for Economic and Social Development (CESD)
Myanmar

Zaw Oo is Executive Director of the Centre for Economic and Social Development, an independent and non-profit think-tank advising and designing major economic reforms of Myanmar since 2012. He also played a leading role in Myanmar's reengagement with the international community. He was a chief negotiator for the Paris Club's debt relief programs in 2013 before Myanmar was reintegrated into international financial institutions. He served as the first national coordinator from 2012 to 2017 for the Extractive Industry Transparency Initiative, an Oslo-based international organization, in facilitating major reform initiatives in energy and mining sectors. Under his leadership, the CESD implemented the Food Security Program, a research grant under the guidance of the Michigan State University and the International Food Policy Research Institute, as well as agriculture and rural development projects with development partners including GIZ, FAO, IFAD and ADB from 2013 to 2020. Zaw Oo continues to advise various industrial associations and private sector stakeholders in upgrading a dozen of agriculture value chains and linking with regional markets.

Zaw Oo holds graduate degrees in international development, banking, and finance from the School of International and Public Affairs in Columbia University and the School of International Service from American University. He also receives executive training from Harvard University, Oxford University and Turin University on public finance, energy and labor economics. He has held fellowships and research positions in various universities including Chiang Mai University of Thailand, National University of Singapore, Institute of World Politics and Economics of Vietnam, Stockholm School of Economics of Sweden, Chr. Michelsen Institute of Norway, and United States Institute of Peace.

23rd Asia Pacific Agricultural Policy Forum Proceedings

In the face of escalating challenges from climate change, food insecurity, and growing inequalities, this year's Forum focused on transforming agrifood systems to ensure sustainability, resilience, and inclusivity across the Asia-Pacific region. As food systems in the region evolve, they must address the dual burden of ensuring food security and improving nutrition outcomes while adapting to the adverse impacts of climate change. The Forum brought together policymakers, researchers, and development practitioners to explore innovative solutions that strengthen agrifood supply chains, enhance food and nutrition security, and foster sustainable agricultural practices.

Held in collaboration with experts from the PRCI network (USAID-funded Feed the Future Innovation Lab for Food Security Policy Research, Capacity, and Influence), the Forum provided a meaningful platform for sharing knowledge and advancing policy action. Central discussions focused on the importance of climate-smart agriculture, innovations in food systems, and the integration of nutrition-sensitive approaches to address the region's growing health burden, particularly issues like child malnutrition, diet-related non-communicable diseases (NCDs), and the rising consumption of unhealthy diets.

The proceedings features a comprehensive policy synthesis, followed by a series of presentations and speeches that underscored the need for coordinated, evidence-based policies to strengthen food security, promote healthier diets, and enhance resilience in vulnerable communities. Special emphasis was placed on strategies to reduce agricultural emissions, improve livelihoods for marginalized groups, and promote gender inclusivity and rural resilience in the face of climate challenges.

By fostering regional collaboration and leveraging research and policy innovation, the Forum deepened the understanding of how interconnected agrifood systems, health, and climate agendas can contribute to sustainable and equitable rural development. These proceedings offer valuable insights into how coordinated actions, targeted investments, and inclusive policies can ensure a more resilient and sustainable agrifood future for the Asia-Pacific region.

About APAP Forum

APAP Forum, launched in 2002, is a network and coalition of non-governmental organizations and individuals seeking to foster understanding of agricultural policies and build cooperation in agriculture and rural development among countries in Asia and the Pacific region.

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