

Navigating the Food Crises – Insights from AgriFoSe2030 Projects Reports from East Africa and Southeast Asia



About this report

This report is produced by Agriculture for Food Security (AgriFoSe2030) which is a programme funded by the Swedish International Development Cooperation Agency (Sida) directly targeting Sustainable Development Goal (SDG) 2 – “..ending hunger, achieving food security, improving nutrition and promoting sustainable agriculture ...”. The programme builds capacity to synthesise and communicate the latest scientific knowledge to support the transformation of smallholder agriculture in low-income countries, particularly in sub-Saharan Africa and Southeast Asia. AgriFoSe2030 is implemented by a consortium of scientists from the Swedish University of Agricultural Sciences, Linköping University, Lund University and Stockholm Environment Institute.

Editors

Ivar Virgin, Ng'endo Machua-Muniu, Selorm Kugbega, Madelene Ostwald, Heather Mackay and Sofia Boqvist.

Authors

- David Jakinda Otieno and Samuel Omondi, University of Nairobi, Kenya
- Jeninah Karungi-Tumutegyereize, Mike Butseya Maliro, Geoffrey Arinaitwe, Anthony Raphael Ijala, Michael Kazooba, Nestor B. Mugabe, and Johnny Mugisha, School of Agricultural Sciences, Makerere University, Uganda
- Judith Nagasha, Kyambogo University, Uganda
- Frank Mugagga, Peter Kasaija, Paul Isolo Mukwaya, Patricia Nagawa Kiggundu and Ritah Nakanjakko, College of Agricultural and Environmental Sciences, Makerere University, Uganda
- Eunice Muyama, Mbale City Council, Mbale, Uganda
- Allen Kiiza, and Antony Philip Emenyu, Kasese Municipal Council, Kasese Uganda
- Rachmat Mulia, the Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF), Vietnam
- Flordeliz B. Dacuyan and Jisaiah Enoch Alban. UP Visayas Tacloban College, Philippines
- Le Thi Hoa Sen, Hue University of Agriculture and Forestry, Vietnam;
- Chou Phanith, Royal University of Phnom Penh, Cambodia

ISBN (electronic version): 978-91-8046-839-8

Publication date: April 2023

Design/layout: SEI graphic design

Cover photo: Edwin Remsberg/Getty Images

Contents

page **4 Introduction**

- 4 The challenge
- 5 Building science–translation capacity to improve policies and practices
- 5 AgriFoSe2030 reports from the field

6 AgriFoSe2030 project contributions

- 7 Transformation of pastoral livelihoods through enhanced capacity for adaptation of nutrition and commercialization policies to local contexts in West Pokot, Kenya. *David Jakinda Otieno, University of Nairobi, Kenya*
- 9 Improved governance of food systems in Nakuru and Kisumu Counties, Kenya. *Samuel Omondi, University of Nairobi, Kenya*
- 11 Participatory analysis of conventional agroecological intensification for increased productivity and sustainability in the coffee–banana systems in Uganda. *Jeninah Karungi–Tumutegyereize, Judith Nagasha, Mike Butseya Maliro, Geoffrey Arinaitwe, Anthony Raphael Ijala, Michael Kazooba, Nestor B. Mugabe, and Johnny Mugisha, School of Agricultural Sciences, Makerere University, Uganda*

- 13 Gender-based approaches for improving milk safety, value addition, and marketing among smallholder livestock farmers in western Uganda. *Judith Nagasha, Kyambogo University, Uganda*
- 15 Unlocking the potential of smallholder farmers in Mbale City and Kasese Municipality for more resilient urban food systems in Uganda. *Frank Mugagga, Peter Kasaija, Paul Isolo Mukwaya, Patricia Nagawa Kiggundu and Ritah Nakanjakko, College of Agricultural and Environmental Sciences; Eunice Muyama, Mbale City Council; Mbale Uganda, Allen Kiiza, and Antony Philip Emenyu, Kasese Municipal Council, Kasese Uganda*
- 17 Engaging Vietnamese smallholder fruit farmers in e-commerce. *Rachmat Mulia, the Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF), Vietnam*
- 19 Digitalization of extension services for smallholder farmers in Southeast Asia. *Flordeliz B. Dacuyan, UP Visayas Tacloban College, Philippines; Jisaiah Enoch Alban. Alban, UP Visayas Tacloban College, Philippines; Le Thi Hoa Sen, Hue University of Agriculture and Forestry, Vietnam; Chou Phanith, Royal University of Phnom Penh, Cambodia*

22 Concluding remarks

Introduction

Farmers in the Global South, particularly smallholder farmers, contribute approximately

40%

of the world's food

But in regions such as sub-Saharan Africa (SSA) and large parts of Asia, smallholder farmers provide about

80%

of all food consumed

The challenge

Each year, the distance widens to reaching most of the UN 2030 Sustainable Development Goals (SDGs), and 2030 is only seven years away. Reaching SDG 2, ending hunger, will be a daunting global challenge, as widespread food insecurity and recurrent famines plague many countries. Currently, most countries in East Africa are experiencing drought, with more than 15 million people facing severe food and water shortages. It is a humanitarian crisis with little sign of improvement in the near future. As the world grapples with climate change, COVID-19 pandemic recovery, Russia's war on Ukraine, and other shocks affecting food production and supply chains, the global threat to food security is

growing. Making agri-food systems more productive, sustainable, and resilient to ensure nutritious, safe, and affordable diets for all is one of our time's greatest global challenges.

Farmers in the Global South, particularly smallholder farmers, contribute approximately 40% of the world's food, but in regions such as sub-Saharan Africa (SSA) and large parts of Asia, smallholder farmers provide about 80% of all food consumed. Thus, support to smallholders in the global South is crucial in fulfilling SDGs 1 (no poverty), 2 (zero hunger), and 3 (good health and wellbeing). Governments in these areas are recognising that smallholders can play a strategic role in

increasing food security, alleviating poverty, and improving rural livelihoods. However, for smallholders to become more productive, profitable, and environmentally and socially sustainable, they need a transformation agenda to support them. This transformation is complex, and to be fully effective, it must be rooted in science and the best available knowledge and tailored to country-specific conditions. Scientists with an ability to analyse, synthesise, and communicate their research findings and collaboratively work with local stakeholders in supporting smallholder farming, are therefore greatly needed.

AgriFoSe2030 project map

Programme core activities:

- 1 Training and capacity building with researchers and other stakeholders to synthesise, analyse and communicate science.
- 2 High-quality synthesis and analysis on smallholder farming systems that is relevant to policy and practice
- 3 Innovative platforms and knowledge networks that connect scientists, practitioners, policy makers and others.

Africa



South and Southeast Asia



This project map shows all countries where AgriFoSe2030 has ongoing projects

Building science–translation capacity to improve policies and practices

Since its start in 2016, the Agriculture for Food Security 2030 Programme (AgriFoSe2030) has provided vital support for building the capacity of researchers and their home institutions in SSA and Southeast Asia to synthesise, analyse, communicate, and co-create knowledge in support of productive and sustainable small-scale farming. AgriFoSe2030 contributes to the social, economic, and environmental

sustainability of smallholder farming systems for improved nutrition and food security. The programme is active in several countries in the target regions and works with partners at universities and research institutes, using their networks to reach out to farmers, extension service providers, agricultural policymakers, regulatory institutions, and food-value-chain actors at various levels.

AgriFoSe2030 reports from the field

This brief includes seven AgriFoSe2030 reports from Kenya, Uganda, Vietnam, Cambodia, and the Philippines. From East Africa and Southeast Asia, AgriFoSe2030 project teams report on how their projects are responding to the food crises challenges and showcase how their interventions are contributing to more-resilient agri-food systems and improved food security.

AgriFoSe2030
project
contributions

Transformation of pastoral livelihoods through enhanced capacity for adaptation of nutrition and commercialization policies to local contexts in West Pokot, Kenya

David Jakinda Otieno,
University of Nairobi, Kenya

The situation in West Pokot

West Pokot in Kenya has experienced persistent droughts in recent years, leading to livestock losses upwards of 30% with each occurrence. This has weakened the nutrition- and food-security situation in the region, resulting in conflicts over pastures and water between pastoralists and agro-pastoralists, and an overemphasis on emergency-relief food supplies (often in the form of imported maize stocks and stores) instead of the resilience-building efforts needed. In West Pokot, smallholder farmers are pastoralists, or agro-pastoralists, with animal husbandry (principally cattle and goats, but also poultry and bees) as a key feature of the agroecological system. Investing in the farming of locally adapted crops and livestock production systems is needed to build resilience. Work to improve value addition to farmed products and compliance with value-chain standards and regulations, as well as support for better market access for pastoral and agro-pastoral products, such as meat, milk, hides, and honey, would help locals build sustainable livelihoods and resilience to drought.

The way forward

- Local policymakers, agricultural officers, and key decision-makers should incorporate the local agroecological system and pastoral farming communities' food preferences and indigenous knowledge into the definition of nutrition and food security and into food-system planning efforts.
- Researchers, together with key local stakeholders, should work to raise the local community's (women and men) awareness of, and pride in, the nutritional value of locally available indigenous foods and build capacity to prepare, preserve, and use such foods.
- Local agricultural officers and extension agents, together with researchers and the pastoralists, need to build the capacity of smallholder farmers and pastoralists to add value to their products and to understand and comply with value-chain standards to improve their access to markets.



Group members' cassava demonstration plot in Bungoma. Photo credit: David Jakinda Otieno

AgriFoSe2030's intervention

This AgriFoSe2030 project supports livelihood transformation through (a) creating awareness among local decision-makers and creating policy change around nutrition and food security and the local strategies for achieving it; and (b) building of pastoralists' and their institutions' capacity to improve value addition, market access, and profitable livelihood strategies and to ensure nutrition and food security and diversity, so that poor smallholders can have stable access to safe and nutritious food. The programme achieves this through:

- Influencing local policymakers to design nutrition- and food-security policies and actions that are contextually appropriate and that incorporate community members' food preferences and indigenous knowledge.
- Facilitating women's groups to train community members on preparation, preservation, and use of nutritious indigenous foods.
- Facilitating peer-learning and exchange visits for farmers and pastoralists with agricultural officials and extension agents to learn about value addition, diversification, value-chain standards, and market requirements for their products.

Improved governance of food systems in Nakuru and Kisumu Counties, Kenya

Samuel Omondi, University of Nairobi, Kenya

The situation in Nakuru and Kisumu Counties

Kenya is a country with a wide range of agroecological conditions. However, arid and semi-arid land, often with poor soil quality, comprise close to three-quarters of the country. Thus, only one-quarter of the total land area is suitable for farming. Variable weather caused by climate

change, such as prolonged droughts and dry seasons and irregular and short-duration rainfall, has worsened in most parts of the country. Overdependence on rain-fed agriculture is risky in the context of climate change.

Pests and disease pose serious risks to the food-security situation in the country. In the past few years, fall armyworm infestations and desert locust swarms



An extension worker demonstrating to farmers traditional vegetables husbandry practices during a peer to peer learning event in Nakuru County. Photo credit: Samuel Omondi

have caused enormous crop and pasture destruction. The COVID-19 pandemic affected agricultural production and food distribution, and rising fuel prices have increased agricultural production costs. These factors contributed to the country's below-average production of food, leading to food insecurity, especially for low-income households and vulnerable members of society. Prices for staple food items are unaffordable for most low-income households; for instance, in 2022, a 2 kg packet of maize flour sold for KES 250, up from about KES 100 in 2019.

The way forward

- The country needs to rethink strategies to ensure sustainable and resilient food systems as it faces the current drought crisis. One strategy is tapping into the productivity potential of traditional crops and broadening the food basket (focusing on more than the three major crops of maize, wheat, and rice) to meet the population's food and nutrition requirements. Traditional crop species (root vegetables, leafy vegetables, tubers, and nuts) rely on biological functioning of the ecosystem, requiring less need for synthetic fertilisers, pesticides, and irrigation. Farming traditional crops will improve the smallholders' adaptability to shocks within domestic and global food

systems and their resilience to climate change.

- Climate change poses a serious risk to food production under rain-fed agriculture. For those smallholder farmers who grow less-shock-resistant crops, investment in irrigation will go a long way in reducing climate change risks. However, irrigation is costly, and most smallholder farmers cannot afford it. Thus, fostering partnerships between county governments and private-sector actors could secure funding for irrigation equipment and installation. Support from county agricultural extension departments could encourage farmers to collect and use rainwater for irrigation.
- County governments and development partners should encourage smallholders to farm traditional crop varieties that are generally more tolerant to many of the effects of climate change. Subsequently, county governments need to support the development of traditional-crop value chains and make consumers aware of the benefits of consuming these traditional crop varieties, creating adequate demand for the commodities.

AgriFoSe2030's intervention

The AgriFoSe2030 project on governance of food systems in Nakuru and Kisumu Counties establishes platforms for discussion and sharing ideas on the food system, and it builds the capacity of smallholders through peer-to-peer learning. The project is also developing a training manual for the cultivation of traditional vegetables that will build the smallholders' capacity, improve their agricultural productivity and reduce food insecurity. Traditional vegetables have been essential in ensuring food self-sufficiency, despite not being recognised as important crops in the agricultural system. Besides meeting the daily subsistence food requirements, these crops can also be transformed into marketable commodities for sustained food security, better nutrition, and income generation. The training manual will provide guidelines on the economic and nutritional benefits of selected traditional vegetables being grown in Kenya's Nakuru and Kisumu Counties.

Participatory analysis of conventional agroecological intensification for increased productivity and sustainability in the coffee–banana systems in Uganda

Jeninah Karungi–Tumutegyereize, Judith Nagasha, Mike Butseya Maliro, Geoffrey Arinaitwe, Anthony Raphael Ijala, Michael Kazooba, Nestor B. Mugabe, and Johnny Mugisha, School of Agricultural Sciences, Makerere University, Uganda

The situation in Uganda

A population growth rate of 3% per year puts a lot of pressure on Uganda's land resources to meet increasing food needs and economic development. National statistics from 2014 to 2020 show alarming fluctuations in productivity and production for some key food–security crops (bananas, millet, maize, rice, beans, and groundnuts) and for cash crops (coffee, cotton, tea, and tobacco). According to the Uganda Bureau of Statistics, 40% of Ugandan children under the age of five are malnourished, 29% are stunted, and 11% are underweight. Even before COVID–19 and Russia's war on Ukraine, food production and supply had been curtailed in Uganda for a host of reasons. Land access and tenure and the lack of credit facilities are key issues affecting agricultural production in Uganda, driven by social, cultural, economic, and political factors. Unpredictable weather and the ravages of pests and diseases have exacerbated production challenges, contributing to keeping most farmers in a vicious circle of low productivity and food insecurity. The aggregate effects of COVID–19, Russia's war on Ukraine, price hikes of agricultural supplies and equipment, Ebola, and accelerating climate change (prolonged droughts and floods) are food shortages and higher food prices in Uganda. As of this writing (January 2023), food–price inflation stands at 22.7%.

In the Mount Elgon region of Uganda, population growth is reducing the land area available for agriculture, jeopardising food security. Without sufficient space to plant and fallow, the only way to increase productivity is by intensifying production on the remaining fragmented farmlands to produce more food and animal feed. Such intensification may follow the conventional pathway of using green–revolution technologies, or it may follow the agroecological pathway.

The way forward

Increasing productivity per unit area (intensification) is recognised as a viable pathway for smallholder farmers to improve food production however, Uganda is lagging behind in this area. Farmers and production–unit heads must be empowered through targeted messaging; conducive communication and policy environments; subsidies on agricultural inputs; and better access to improved germplasm, credit, and markets. Special emphasis should be placed on including women and youth in empowerment programmes, as they form the core of the labour force and are the future of agriculture in Uganda. To achieve this, all stakeholders, including farmers, extension agencies, researchers, private–sector actors, state agriculture institutions, and

policymakers, need to work together with a shared vision for agricultural development:

- The state agricultural sector entities (researchers, agriculture service providers, and extension agencies), via local governments and the newly commissioned Parish Development Model (which prioritises a holistic, system-based approach to agriculture development), should emphasise training and provide incentives to ensure sustainable intensification in agriculture.
- Fair trade and adequate compensation for farm produce should be emphasised,

because increases in farmers' household incomes will inevitably drive the uptake of technologies and innovations, leading to better-quality produce. In Uganda's liberalised economy, farmers are mostly left to fend for themselves and are often "squeezed" by middlemen, both in purchasing supplies and equipment and in prices for their produce at market.

- Farmers should come together through viable, all-inclusive groups or cooperatives to amplify their voices and drive service delivery. As long as they remain lone voices, they will continue to be ignored and marginalised.

AgriFoSe2030's intervention

This project is set up in the Mount Elgon region, an area suitable for the cultivation of two key crops: bananas for food security and income, and coffee for income to secure the other needs of the households. The project aims to promote sustainable intensification in the coffee-banana systems through capacity building at the farm level and co-creation of platforms for knowledge and information exchange among all the actors in the food chain. By empowering farmers and fostering their knowledge and skills in production, post-harvest handling, and produce marketing, we envisage increased farm yields of bananas and coffee that will translate into food security and income for improved livelihoods.



Poorly managed coffee-banana cropping system in Kapchorwa in the Mt. Elgon region of Uganda. Such a farmer needs sensitisation and support on proper plant populations, crop management and weed management. Photo credit: Christopher Sebatta

Gender-based approaches for improving milk safety, value addition, and marketing among smallholder livestock farmers in western Uganda

Judith Nagasha, Kyambogo University, Uganda

The situation in western Uganda

The western part of Uganda has experienced frequent droughts that reduced agricultural productivity, causing food insecurity and lower household incomes. Notably, the COVID-19 outbreak caused a temporal disruption in the production and marketing of rural agricultural products, including dairy products. The 2022 global fuel crisis resulting from Russia's war on Ukraine triggered price hikes for transportation and transaction fees, making farm supplies

and equipment and marketing much more expensive. Additionally, Uganda is a culturally patriarchal society that restricts women's ownership of resources (land and cattle), and the COVID-19 pandemic exposed and exacerbated vulnerabilities for many households. With the odds stacked against success, the project team took on this daunting task, applying the theory of change and the United States Agency for International Development's five-domain framework to implement the AgriFoSe2030 project which aims to build women's capacity for value addition and increase

Women demonstrating different indigenous/traditional techniques of processing milk to ghee/butter and to the final cosmetic product in Kikatsi Sub-county, Kiruhura District, Western Uganda. Photo credit: James Tembo



trust between both men and women in the community. The project team emphasised that the objectives were not to disrupt household dynamics but to empower and develop women's capacity for financial stability, which will in turn lead to overall increases in household incomes.

The way forward

Government should develop and implement laws and policies that are gender responsive. This would, for instance, enable women smallholder farmers in western Uganda to produce and market safe milk and milk products. Farmers and other major stakeholders, with the involvement of relevant institutions, should be able to:

- Enable women farmers (through the formation of farm groups and cooperatives) to engage with value addition and marketing of dairy products in a sustainable manner with the guidance of the government's newly commissioned Parish Development Model.
- Empower women to access and leverage produce value chains through inclusive financial training. Women lack financial literacy; therefore, inclusive financial training coupled with increases in agricultural financing for them will enable

them to participate equally in existing markets. Because of the sensitive nature of gender dynamics in western Uganda, all training should be done transparently and with the men's participation.

- Mainstream gender inclusivity in agricultural research through supporting academia and agricultural research institutions, local government institutions, and other development partners.

AgriFoSe2030's intervention

This AgriFoSe2030 project is implementing gender-based approaches for improving food safety, value addition, and marketing in dairy-livestock production systems in western Uganda. The project is mainly focusing on creating strategies for the value addition of milk and milk products produced by women farmers in the Kiruhura district. Women have participated in several training activities on the best ways of adding value to milk to produce such products as yoghurt, butter, cosmetics, and other items that have a long shelf life to avoid wastage. These products assure food security, not only to the farmers but also to the community. Through the production and sale of value-added products, women farmers have improved their incomes, enabling them to purchase other food products needed by

their households. The project partnered with the Uganda Industrial Research Institute to carry out a one-week intensive training course on the value addition of milk products. This training called for women to visit a variety of sites within the capital city of Kampala that are in the milk value chain. The project team engaged the men in the community through a consent process to allow the women to travel for the training. The men's involvement in this exercise helped build trust for the implementation of the project activities.

Unlocking the potential of smallholder farmers in Mbale City and Kasese Municipality for more resilient urban food systems in Uganda

Frank Mugagga, Peter Kasaija, Paul Isolo Mukwaya, Patricia Nagawa Kiggundu and Ritah Nakanjakko, College of Agricultural and Environmental Sciences, Eunice Muyama, Mbale City Council, Mbale Uganda, Allen Kiiza, and Antony Philip Emenyu, Kasese Municipal Council, Kasese Uganda

The situation in Mbale City and Kasese Municipality

Unpredictable weather in Mbale City and the Kasese Municipality urban regions makes it difficult for smallholder farmers to ensure steady food production. Farming relies largely on regular cycles of rainfall; therefore, delays in, and unpredictable durations of, rainfall have disrupted food production. Disasters such as floods and landslides are becoming more frequent. This was a pronounced threat in the Kasese Municipality urban food shed, where regular seasonal flooding was caused by the overflow of the River Nyamwamba. The problem also recently emerged in the Mbale City region where unprecedented heavy floods in September 2022 destroyed smallholder farms along the River Nabuyonga. Food production also faces increasing threats from pest infestations and disease outbreaks. The Kasese Municipality urban food region suffers the ravages of the fall armyworm that infests large acreage of staple food crops such as maize. The supply chains affecting food produced in both regions were seriously disrupted by government measures taken at the onset of the COVID-19 pandemic that restricted social interaction, transport, and mobility.

The way forward

The most sustainable way forward for smallholder farmers in both sites is to mobilise key actors around a common platform where they can share experiences, voice their concerns, and, ultimately, learn from one another. This will generate the momentum for increasing evidence collection and knowledge exchange and dissemination that influences practices and actions of the key actors' towards achieving more sustainable, resilient, and secure urban food systems. Three key actions are needed towards actualising such systems in Mbale City and the Kasese Municipality urban regions:

- Continue smallholder farmers' self-mobilisation and formalisation into viable groups, building a critical mass for voicing their concerns, representing their interests, and participating in critical decision-making processes.
- Create databases on the farmer groups operating within their boundaries that can be used by the respective local urban authorities as a basis for support and inclusion in the local budgeting processes.

- Build synergies, maintaining coordination and communication and integrating actions among relevant state - and non-state actors that will build resilience to climate vulnerabilities and the flood, drought, and landslide risks.

AgriFoSe2030's intervention

The project is undertaking several interventions to ensure food security in the Mbale City and Kasese Municipality urban regions, including mobilising smallholder farmers to form groups that can be supported by their respective local governments with technical and financial resources; providing mobilised farmer groups with relevant knowledge to guide their planning and farming and to help build their resilience to floods, droughts, and other disruptions or crises. The project also facilitates peer-to-peer knowledge exchanges between the two sites to introduce stakeholders – especially the smallholder farmers – to new ideas, to expand their networks, and to enable shared learning, which are critical to transforming local urban food systems.



RUFS_Uganda Project Team on a field visit to Mr. Juma Wepukhulo, who uses space confined technologies to practice urban agriculture in Mbale City. Photo credit: RUFS_Uganda

Engaging Vietnamese smallholder fruit farmers in e-commerce

Rachmat Mulia, the Center for International Forestry Research (CIFOR) and World Agroforestry (ICRAF), Vietnam

The situation in Vietnam

Fruits and vegetables are among Vietnam's main agricultural export commodities, accounting for US\$3.2 billion in export revenue in 2020, 80% of which was from fruit sales. The Mekong River Delta is Vietnam's main horticulture production area, but over the past decade, fruit tree cultivation has been expanding in the northwest mountainous areas of the country, home of diverse ethnic minorities, driven by the high economic return. With the onset of the COVID-19 pandemic, Vietnam's fruit export revenue was reduced by as much as 30% due to the effects of social and travel restrictions on domestic production and supply chains. Just as Vietnam's domestic and export markets for agricultural products were recovering in early 2022, Russia's war on Ukraine triggered a series of sanctions from the United States and other western countries, substantially affecting Vietnam's exports, including fruits, to Russia. Although trade volumes had decreased substantially due to COVID-19, Vietnam had maintained its position as the sixth-largest supplier of fruits and vegetables to Russia in 2021. Vietnam's annual extreme weather events, such as storms and droughts, further exacerbated the impacts of agricultural production and marketing challenges brought by the pandemic and the war.

The way forward

- Smallholder fruit farmers in Vietnam need to adopt more sustainable and climate-resilient cultivation systems such as fruit-tree agroforestry. They also need to broaden and diversify their market channels through e-commerce platforms and social media, enabling them to directly reach potential buyers from different regions and urban centres within Vietnam, significantly reducing their reliance on middlemen.
- The government should continue supporting farmers in developing more sustainable fruit-tree cultivation systems through policies to help provide seedling subsidies and financial assistance to partially cover investment costs and to recover from climate-related disasters, including better access to soft loans.
- The government must also improve existing services, such as climate early warning systems and agricultural extension programmes, and collaborate with private-sector actors and other key stakeholders to improve efficiency in fruit and vegetable value chains. To continue moving Vietnam's agriculture towards a more digitalised system, this group must focus on creating the means for all actors along the value chain, including consumers, to better participate in

e-commerce, making it a viable way to diversify the produce supply and marketing channels.

- Research and development institutions can help facilitate interactions between farmers and local government, share scientific evidence on the conditions that constrain or enable farmers to better engage in e-commerce, co-facilitate capacity development activities for local stakeholders, and provide policy recommendations to authorities at national and sub-national levels.

AgriFoSe2030's intervention

The AgriFoSe2030 project has been mapping knowledge, technical, and policy challenges to understand constraints that smallholder fruit-tree farmers in rural and peri-urban areas of Vietnam have been facing to help them better engage in e-commerce. The project also co-facilitated several training activities and workshops on e-commerce that involved members of farmers' cooperatives, local authorities, and representatives from mainstream e-commerce platforms in Vietnam. Through the workshops and consultation meetings, the project has provided policy recommendations to national and sub-national authorities and will produce communication

materials, including policy briefs, that link research with policy and practice. Local authorities have supported the project's activities because Vietnam's government encourages smallholder farmers to participate in e-commerce and is targeting a more digitalised agriculture sector by 2030. Farmers' cooperatives and their members participated in the project's

outreach activities because they recognise the need to increase their knowledge and technical skills to better engage in e-commerce.

Training in Northwest Vietnam on using e-commerce platform for advertising and selling fruit products. Photo credit: Rachmat Mulia (World Agroforestry)



Digitalization of extension services for smallholder farmers in Southeast Asia

Flordeliz B. Dacuyan, UP Visayas Tacloban College, Philippines; Jisaiah Enoch Alban. Alban, UP Visayas Tacloban College, Philippines; Le Thi Hoa Sen, Hue University of Agriculture and Forestry, Vietnam; Chou Phanith, Royal University of Phnom Penh, Cambodia

The situation in Southeast Asia

While the region is gradually returning to normal, the COVID-19 pandemic continues to hinder global trade, exacerbating unemployment and income losses for a large part of the middle- and low-income populations in the Philippines, Cambodia, and Vietnam. When the COVID-19 crisis began, supply systems were constrained by the movement restrictions on people, goods, and food, with these protective measures leading to increases in food prices. The Philippines' agricultural production volume decreased by 3% due to farm labour reductions. The Cambodian economy also was hit hard, leading to high unemployment and difficulties for farmers accessing agricultural supplies, such as seeds and fertiliser, during the wet season. Vietnam's labour market was heavily impacted, as was income generation in the agricultural sector.

As the region began to recover from the COVID-19 crisis, a new challenge emerged with the Russian invasion of Ukraine. This

compounding of disasters is causing significant shocks to the food supply chain in the region. Data from household surveys indicate that many farmers are burdened by high supply prices, debt, and increased farm labour costs. Overall, countries in the region are suffering from rising costs of energy, fertiliser, wheat, and wheat-related products. This is especially evident in the Philippines, which depends on major grain exporters, such as Ukraine, to make up the difference in domestic grain production. Russia's war on Ukraine has highlighted the disparities, inequalities, and vulnerabilities in global food production, with major grain-importing countries, such as the Philippines, at risk of food price shocks and potential food insecurity.

The rapid population growth in the region is outpacing its food-production abilities. The Philippine Statistics Authority anticipated the population growth rate to be 1.4% in 2019, but the agriculture industry grew a meagre 0.5% in late 2020. These numbers illustrate the mismatch between population increase and food production.



Jeswie Legaspi, a smallholder farmer in Masagaosao Kawayan, Biliran Island, Philippines, checking the growth level of his newly planted vegetables using a new acquired approach through digital extension services. Photo credit: Flordeliz B. Dacuyan

The way forward

Smallholder farmers' productivity should be increased through focusing on:

- Connecting farmers to domestic and international market actors and facilitating access to supplies, techniques, and technologies that will add value to their production. This can be done through digital platforms, such as the Philippines Partnership for Sustainable Agriculture governed by Grow Asia, with counterparts in Cambodia and Vietnam.
- Helping farmers gain better access to low-risk produce markets through training in post-harvest techniques.
- Ensuring farmers have adequate farm insurance and increasing their financial literacy to deal with sudden climate and market shocks. Remote learning facilities such as School-of-the-Air radio programmes can focus on the role of crop insurance in improving disaster resilience.
- Ensuring equitable access to agricultural mechanisation, since most of the smallholder farmers interviewed still rely on traditional farming practices.
- Providing climate service information regularly to farmers to reduce the risks from climate change.

- Training farmers, particularly smallholders, to access and use Digital Extension Services (DESs) and to embrace DES offerings, such as e-training and farming applications.

AgriFoSe2030's intervention

This AgriFoSe2030 project aims to explore the availability and quality of digital advisory information to smallholder farmers to ensure their accessibility to science-based extension programmes, innovative approaches, and timely market information. DESs in Southeast Asia are a way forward to support food security in times of crises. Different types of DESs are providing timely and relevant information to smallholder farmers, offering them multiple benefits through more efficient agricultural production, improved market information, and increased income opportunities. The project in the Philippines, Cambodia, and Vietnam aims to:

- Strengthen partnerships among agricultural stakeholders to ensure a more productive and effective production system.

- Facilitate farmers' access to and use of DESs in project areas and stakeholder engagement in relevant research, such as training workshops on smartphone apps for facilitating agriculture, orientations on e-extension websites, and programmes and services developed by the government and the private sector.

- Identify barriers and enablers to DES access and use by smallholders in project communities in the three countries, to make the production system more effective and to improve farmers' incomes and food security.

- Introduce farmers, via project activities, to more-accurate and updated information about agriculture production technologies and market opportunities. Many farmers' groups have been established to learn, exchange, and support each other in applying DES training and in selling products.

- Support farmers' introduction to effective agricultural information channels and market platforms.

Concluding remarks

This report provides seven perspectives on how the current food crisis and the global interlinkages of the agricultural sector are unfolding in East Africa and Southeast Asia. Many of the problems and issues described are local, but there are also strong themes and serious challenges shared among the regions, such as (a) climate change, with consequent droughts and floods; (b) the COVID-19 pandemic, with the disruption of mobility and markets; and (c) the Russian invasion of Ukraine, leading to increased costs of agricultural supplies and transportation and, ultimately, higher food prices.

The challenges described here greatly reduce smallholders' productivity and their ability to improve local food security and livelihoods. These challenges also highlight the urgent need to build more-resilient food systems that can withstand external shocks and crises. Yet, even as there are grave problems and serious challenges, there are also solutions in sight. The AgriFoSe2030 researchers list many key actions that could be taken to combat the current food crisis and build more-resilient food systems, including:

- supporting the use of local knowledge by, for example, promoting locally available foods and the planting of climate-resilient crops
- facilitating the organisation of smallholder farmers to voice concerns and interests and to improve participation in critical decision-making and policymaking processes
- improving communication among farmers, extensionists, value-chain actors, and local governments on how to improve conditions for increased food production and value addition to local crops and food sources
- supporting knowledge services and extension programmes, including DESs, for improved agricultural practices that build pathways for sustainable intensification
- connecting smallholders to value-addition opportunities, improving their access to agricultural supplies (better seeds, fertilisers, etc.) and credit, and facilitating diversification of their market channels through e-commerce platforms and social media.

The common denominator here is that all of the AgriFoSe2030 project contributions emphasise the importance of stakeholder interaction and building on local knowledge. All the authors in this report explain how they as scientists interact with and engage farmers, extension agents, and policymakers, and how science-based knowledge can be used to address the current food crisis and support improved food security. In this endeavour, local scientists and local expertise are the key factors.

Yet having scientific knowledge is not enough: scientists must also have the capacity to communicate knowledge to multiple and diverse actors. For this, there must be methods and structures for building knowledge on how to

combat the food crisis and improve food security in local settings. This is what the AgriFoSe2030 programme is all about. We have developed an innovative approach for translating science to collaboratively improve local practices and policies. This has been done in two key ways:

- training scientists on the Theory of Change approach to strategically think through and plan for science to make a genuine impact on a policy or a practice
- supporting researchers' best methods for engaging with diverse stakeholders to co-create locally adapted scientific knowledge that will improve policies and practices in target regions.

To read more about the AgriFoSe2030 programme, please visit:
<https://slu.se/agrifose>

Assoc Prof. Sofia Boqvist
Programme Director AgriFoSe2030
E-mail: agrifose@slu.se

AgriFoSe2030

Agriculture for Food Security 2030

Translating Science Into Policy & Practice

