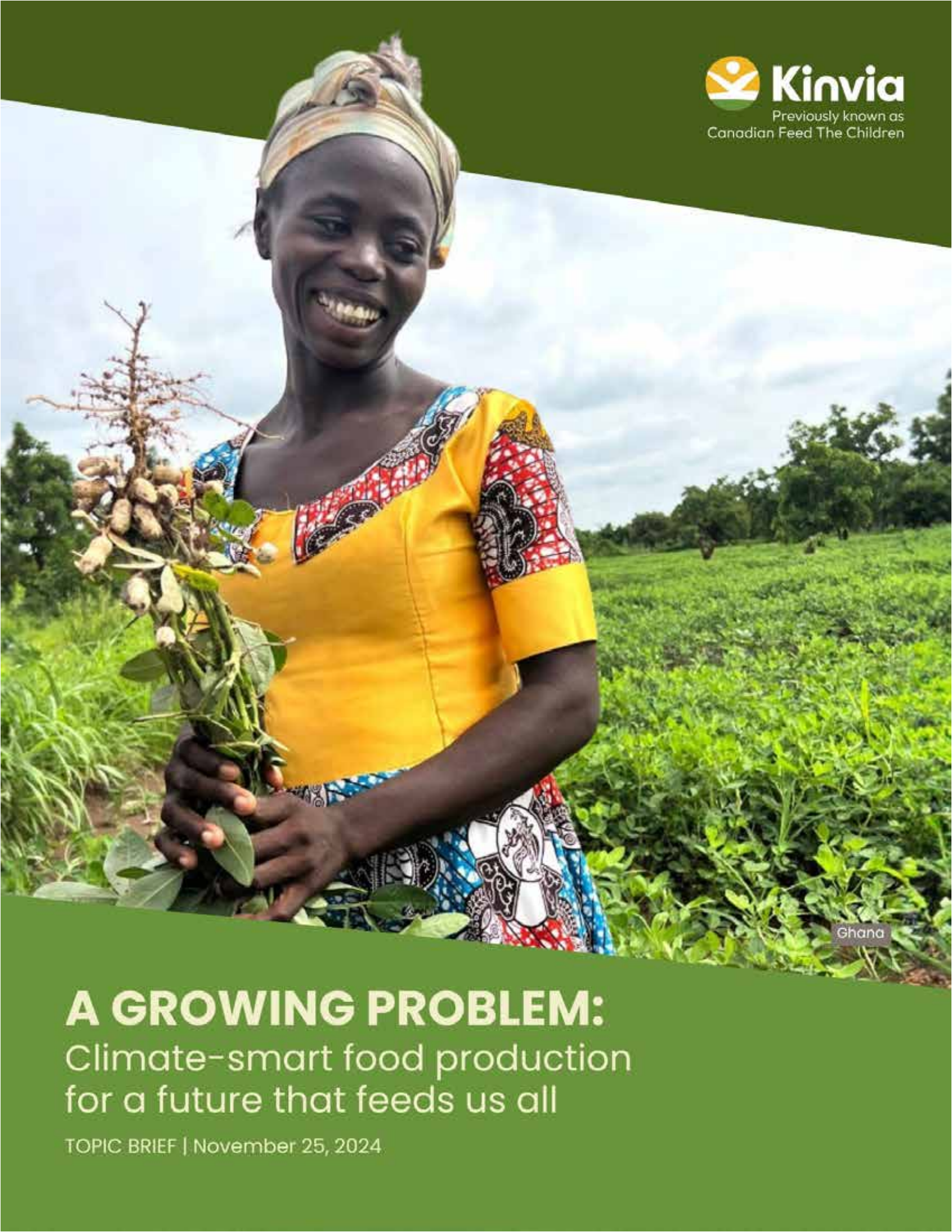




Ghana

A GROWING PROBLEM:

Climate-smart food production
for a future that feeds us all

TOPIC BRIEF | November 25, 2024

Executive summary

A Growing Problem: Climate-smart food production for a future that feeds us all addresses the urgent need to transform agrifood systems to meet two intersecting and urgent global challenges: accelerating climate change and deepening food insecurity. At the heart of this intersection are the world's smallholder farmers, who are among the least responsible for climate change and the most vulnerable to its impacts. In particular, women and youth farmers face systemic barriers to land ownership, training, financing, and access to markets upon which their ability to earn an income and feed their families rely. Without deliberate action to support their inclusion, climate-smart agriculture risks reinforcing the very inequalities it seeks to solve.

This brief draws from the FAO's Global Roadmap for Achieving SDG 2 Without Breaching the 1.5°C Threshold, which outlines 10 domains of action for reimagining food systems – from crops and livestock to forests and food waste. Yet the success of this roadmap hinges on global solidarity with the farmers on the frontlines: those already living with erratic rainfall, depleted soils, and worsening climate catastrophes.

The brief highlights Kinvia's work in Ghana, Ethiopia, Bolivia, and in Indigenous communities in Canada: from women farmers reclaiming acidic soils through composting and crop diversification, to youth developing agri-entrepreneurial skills, to local food systems development that centres Indigenous-led solutions to advance food sovereignty, agricultural production, and climate protection goals.

The brief concludes with a call to action: to prioritize investments that enable smallholder farmers, especially women and youth, to be agents of climate adaptation and food systems change. Their leadership is not only just and necessary, it is foundational to a future where both people and the planet can flourish.

A GROWING PROBLEM:

Climate-smart food production for a future that feeds us all

As the world confronts the dual crises of climate change and food insecurity, agrifood systems have emerged as both a significant driver of greenhouse gas (GHG) emissions and a potential solution to addressing global climate challenges.

The 2023 UN Climate Change Conference (COP28), held November 30 to December 12, 2023 in Dubai, gave the Food and Agriculture Organization of the United Nations (FAO) a platform to advance the conversation about the unique role of agriculture and food systems in the fight against climate change.

The FAO's most notable achievement at COP28 was to bring agriculture and nutrition onto the table for the first time, and in a meaningful way, in terms both of its contribution to climate change and the role that agrifood systems play in mitigating climate change, enhancing food security, and building resilience for vulnerable populations.

As the FAO says, “Agrifood system solutions are climate solutions. At the heart of climate action, they help to build resilience, adapt to climate change, and reduce GHG emissions while safeguarding biodiversity and ensuring food security for all.”¹

The FAO's 2023 report, *Achieving SDG 2 Without Breaching the 1.5°C Threshold: A Global Roadmap*, the first of what will be a three-part plan,² brings clarity, urgency, and points out a clear path forward to meet the challenge that faces us as we attempt to feed everyone on a planet where climate change is escalating.



Bolivia

¹ Food and Agriculture Organization of the United Nations (FAO), *Achieving SDG 2 Without Breaching the 1.5°C Threshold: A Global Roadmap*, December 2023.

² Parts 2 and 3 are to be released during COP29, being held in Baku, Azerbaijan November 11 through 22, 2024, and COP30 respectively.

The intersection of agrifood systems and climate change

Agrifood systems are a cornerstone of global development, providing livelihoods for over 2.5 billion people and serving as the foundation of food security for billions more.³ However, the environmental impact of these systems is undeniable. According to the Intergovernmental Panel on Climate Change (IPCC), agriculture, forestry, and other land uses contribute nearly a quarter of global GHG emissions, primarily through deforestation, methane emissions from livestock, and nitrous oxide emissions from fertilizers.⁴

The FAO's central premise is that addressing immediate food security and nutrition needs must not jeopardize future needs. Boosting production in certain areas or enhancing the income of rural communities today should not come at the cost of depleting natural capital or increasing emissions. On the contrary, efforts should be focused on minimizing emissions and mitigating global warming to the greatest extent possible while still aligning with social and dietary objectives.

Agrifood systems must undergo a transformative shift to align with the 1.5°C global warming threshold outlined in the Paris Agreement while simultaneously meeting SDG 2's goal of zero hunger. This transformation requires a systemic overhaul that promotes sustainable farming practices, reduces emissions, enhances biodiversity, and improves the resilience of food systems to climate-related shocks.

This overhaul must not place an undue burden on smallholder farmers in the Global South who contribute least to global greenhouse gas (GHG) emissions but face an outsized risk from climate change.⁵ Many of these farmers already struggle to

meet their own subsistence needs and are the most vulnerable to economic and climate stressors.

We must support smallholders to build their resilience to the impacts of climate change through financial support, training, and equitable access to resources, helping them boost their production and strengthen their economic capacity, while at the same time advocating for better mitigation and adaptation measures at a broader, systemic level.

The Global Roadmap: Transforming agrifood systems for climate action

Part 1 of the Global Roadmap hinges on work to be done in ten overlapping domains (eight are central, and the final two are enabling systems) that are essential to driving the transformation of agrifood systems.

THE FAO'S 10 DOMAINS OF ACTION



³ Convention on Biological Diversity, [2.6 billion people draw their livelihoods from agriculture](#), July 2024.

⁴ FAO, [Latest IPCC report highlights the critical need to transform agrifood systems as a way to mitigate and adapt to climate change](#), March 20, 2023.

⁵ FAO, IFAD, UNICEF, WFP and WHO, [The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms](#), July 2024.

LIVESTOCK



Livestock supports the livelihoods of 1.7 billion people living in poverty, with 70 per cent of the sector's workforce comprising women.⁶ Livestock is a crucial source of high-quality protein and essential micronutrients that are vital for development and good health, especially within vulnerable or remote communities.

Not only is livestock valuable for nutrition but it also builds economic resilience and income for farmers, who are able to sell products like milk, eggs, and the live animals as they breed, using this income to better withstand economic shocks and support their families' needs such as education and health care.

However, the livestock sector, driven primarily by large-scale industry, contributes to 26 per cent of agrifood emissions, rising to 50 per cent when factoring in both upstream (like feed requirements) and downstream emissions.⁷ While smallholder activity contributes a minuscule portion to these emissions, with appropriate supports farmers may take advantage of the benefits of some of the activities that the FAO recommends for mitigating the climate impact of livestock such as:

- reducing methane emissions through better management of animal diets;

- using livestock manure for bioenergy production (which also combats deforestation) and better management of manure to reduce nitrous oxide emissions;
- adopting carbon sequestration techniques such as managed grazing; and
- developing alternative proteins to replace animal-sourced foods where feasible.

FISHERIES AND AQUACULTURE



Aquatic food is a nutritional powerhouse, offering a sustainable food source rich in protein, essential fatty acids, vitamins (such as D), and vital minerals.

Some of the practices the FAO recommends to maximize this source of nutrition in a climate-friendly way are to:

- promote the sustainable management of wild fish stocks to prevent overfishing;
- support climate-resilient aquaculture techniques to protect aquatic ecosystems;
- reduce post-harvest loss in fisheries through better handling, storage, and transportation; and
- support small-scale fisheries and aquaculture to enhance livelihoods while ensuring sustainability.

⁶ FAO, [Decent Rural Work](#), retrieved October 17, 2024.

⁷ FAO, [Pathways towards lower emissions – A global assessment of the greenhouse gas emissions and mitigation options from livestock agrifood systems](#), December 8, 2023.

CROPS



Staple crops like rice, wheat, and maize are important sources of calories, particularly in regions where other food sources may be limited, but can lead to micronutrient deficiencies due to limited dietary diversification. Diverse crop systems can enhance agricultural resilience against pests, diseases, and adverse weather, and can also be used as livestock feed, supporting the livelihoods of millions of people in the agricultural sector.

Some of the FAO recommendations for climate-friendly crop production are to:

- increase crop diversity to improve resilience and nutritional outcomes;
- encourage the use of drought-resistant and heat-tolerant crop varieties;
- promote organic farming and natural pest control;
- expand the use of climate-resilient irrigation systems to manage water resources; and
- improve market access for smallholder farmers to ensure they can benefit economically from sustainable practices.

ENABLING HEALTHY DIETS FOR ALL



In 2023, 733 million people were undernourished, the majority women and children, and more than a third could not afford a healthy diet.⁸ While the FAO's main goal is to ensure that, by 2050, everyone everywhere is able to consume healthy food, the world is falling far short of meeting the 2030 Sustainable Development Goal 2, Zero Hunger.

The FAO recommends a change in dietary patterns towards healthy diets supported by sustainable agrifood systems, with actions such as:

- moving towards plant-based diets to reduce the environmental impact of food systems;
- encouraging collaboration between the health and food sectors to promote sustainable diets;
- reducing food marketing that promotes unhealthy or unsustainable food choices and raising consumer awareness of the environmental and health benefits of sustainable diets;
- encouraging local food production and shorter supply chains to reduce food system emissions; and
- promoting nutrition education that emphasizes the importance of dietary diversity and reduces the consumption of unhealthy, ultra-processed foods.

⁸ FAO, IFAD, UNICEF, WFP and WHO, *The State of Food Security and Nutrition in the World 2024 – Financing to end hunger, food insecurity and malnutrition in all its forms*, July 2024.

FOREST AND WETLANDS



Forest and wetland conservation is crucial to maintain biodiversity and ensure long-term food security. Communities depend on these ecosystems for livelihoods and food resources. Forests and wetlands play a crucial role in stabilizing local and global climates by absorbing carbon dioxide, storing carbon, and regulating the water cycle. Indigenous Peoples possess invaluable traditional knowledge of sustainable resource management, should be centred in decision-making, and should lead protection, conservation, and restoration of these ecosystems.

Some of the actions the FAO recommends to keep forests and wetlands healthy are to:

- prevent deforestation and forest degradation, especially in tropical regions;
- promote reforestation to enhance carbon sinks;
- support wetland conservation and restoration;
- encouraging agroforestry practices that integrate trees into agricultural landscapes; and
- promote policies that protect Indigenous Peoples' rights to land and natural resources.

SOIL AND WATER



Climate change has a direct effect on soil health and on water supply. Healthy soils provide essential nutrients for crops to grow, support biodiversity and ecosystem health, and aid in pest resilience. Water availability determines access to healthy diets and clean drinking water is essential for human life. Already, approximately one half of the world's population is experiencing severe water scarcity for at least one month per year due to climatic and other factors.⁹ Water is needed for primary food production, safe food processing, and for sanitation and hygiene. Access to clean water and healthy soil is vital for nearly all jobs in agrifood systems.

Some of the activities that the FAO recommends to address the impact of the changing climate on soil health and water availability are to:

- use regenerative agriculture techniques, such as composting, cover cropping, crop rotation, and shallow and reduced cultivation, to restore degraded soils;
- support sustainable irrigation practices to reduce water waste in agriculture;
- encourage precision agriculture to optimize water and fertilizer use;

⁹ UNESCO World Water Assessment Program, *World Water Development Report 2024: Water for prosperity and peace*, 2024.

- promote water conservation, rainwater harvesting, and the use of treated wastewater for irrigation; and
- promote the use of natural fertilizers and biopesticides to reduce pollution and soil degradation.

FOOD LOSS AND WASTE



Enormous amounts of land, water, energy, and labour are used to produce food. When food is lost or wasted, these resources go to waste as well. The world produces enough food to feed everyone, yet millions suffer from malnutrition and hunger. Food loss and waste make the problem worse by reducing the food available for consumption. This translates into substantial economic loss for food producers and nations, with a detrimental effect on livelihoods and economic stability.

To counter the impact of food loss and waste, the FAO's recommendations are to:

- promote better storage, transportation, and packaging to reduce post-harvest loss;
- raise consumer awareness about ways to reduce household food waste and encourage retailers and restaurants to do the same;

- encourage businesses to adopt circular economy principles, such as repurposing food waste for animal feed or bioenergy;
- support the marketing of “imperfect” or surplus food; and
- use technology to track and reduce food loss and waste along supply chains, including global supply chains.

CLEAN ENERGY



Energy consumption generates three-quarters of global GHG emissions¹⁰ and is at the centre of the action to reduce emissions. Energy consumption contributes about 30 per cent of agrifood system emissions.¹¹ Embracing clean energy sources is critical. Many households in low- and middle-income countries still rely on wood and charcoal for cooking, contributing to deforestation, generating emissions, and leading to poor respiratory health. Food producers are often well-positioned to shift to renewable energy sources such as locally generated bioenergy or small-scale solar-powered grids. Using organic waste as a source of energy, especially paired with technology that captures carbon emissions before they enter the atmosphere, can help reduce agrifood's carbon footprint.

¹⁰ International Energy Agency (IEA), *World Energy Outlook 2024*, August 2024.

¹¹ FAO, *The State of Food and Agriculture 2021: Making agrifood systems more resilient to shocks and stresses*, 2021.

Some of the actions the FAO recommends are to:

- promote the use of renewable energy sources such as solar, wind, and bioenergy;
- encourage the adoption of energy-efficient technologies in food production, processing, and transportation;
- promote the use of clean cooking technologies to reduce reliance on wood and charcoal;
- make renewable energy systems and decentralized energy access available to smallholder farmers and rural communities; and
- support research and development of innovative clean energy solutions for agrifood systems.

The following two domains of action are considered “systemic enablers,” the purview of national and international governing bodies.

INCLUSIVE POLICIES



Inclusive policies allow us to tackle inequalities systemically, for example income opportunities or through education that are targeted to marginalized groups. The actions in this domain primarily require national governmental implementation, although there are some related to women's and girls' education that may be applicable to local sector actors.

Some of the policy-level actions the FAO encourages governments to implement are to support:

- the participation of women, youth, and marginalized groups in agrifood systems;

- equitable access to land and resources;
- social protection and decent livelihoods for all food system workers;
- education and training programs that improve the skills of and promote fair and equitable access to markets by smallholder farmers; and
- inclusion of Indigenous Peoples in decision-making processes related to land and resource management.

DATA



An improved data system is a necessary condition for implementing, targeting, and monitoring most of the actions proposed in the other domains. Most of the FAO's recommendations in this domain are actionable primarily at the national governmental level. They include:

- supporting the development of data systems that track food security, nutrition, the environmental impacts of agrifood systems, and food loss and waste;
- promoting the development of early warning systems to monitor climate risks and food insecurity;
- promoting the use of data to improve market access for smallholder farmers and reduce inequalities; and
- encouraging international collaboration to improve data collection and sharing in global food systems.

Kinvia's work in climate-smart agriculture

As an international non-governmental organization that partners with local organizations to improve food security and livelihoods, Kinvia's strategies directly address several of these domains, and combinations of them.

Working with local partners in smallholder farming communities in Ghana, Ethiopia and Uganda, as well as in Indigenous communities in Canada, and in urban and peri-urban communities in Bolivia, Kinvia funds community-led initiatives that draw upon local knowledge and capacity to develop and implement innovative climate-smart agricultural practices, facilitate improved yields and incomes, support improved access to markets and value chains, and advocate for smallholder rights, including, vitally, economic and social justice for women and girls.

Kinvia employs four key strategies to support agrifood system transformation:

- 1) **improving production** by providing inputs like fortified seeds, supporting biogas capture, and through training and skills generation in climate-resilient agricultural practices;
- 2) **adding value through food processing**, preservation, and secondary processing;
- 3) **facilitating access to markets and value chains** by linking smallholders to agribusiness support and technologies; and
- 4) **advocating for enabling environments for smallholders**, especially women and youth, to access the tools, training, land, and access to resources, including financial resources such as credit, necessary for success.

These strategies represent paths to leveraging food systems transformation in the service of climate mitigation, adaptation, and resilience. They not only align with the FAO's domains of action, but they also correspond with many of the UN's Sustainable Development Goals.

Even more, they aim to strike the difficult but imperative balance of producing more food for more people while striving to minimize the impact of food production as a driver of climate change in keeping with the best practices as set out by the FAO and other sector actors.



BEST PRACTICES FOR CLIMATE-SMART FOOD PRODUCTION AND AGRIFOOD SYSTEM TRANSFORMATION

1. Sustainable, inclusive production

Promoting climate-resilient agricultural practices to reduce emissions and enhance productivity that are community-driven, informed and led.

2. Efficient resource use

Reducing waste and improving the efficiency of inputs like water, fertilizer, and energy.

3. Value addition and circular economy

Encouraging the processing of agricultural products and the reuse of resources to maximize value and minimize waste.

4. Biodiversity and ecosystem services

Protecting biodiversity and natural ecosystems to enhance the resilience of agrifood systems.

5. Inclusive governance and equity

Ensuring that vulnerable groups, particularly women, youth and Indigenous Peoples, have access to land, resources, and decision-making and the opportunity for sovereignty over food systems.

6. Resilient livelihoods

Strengthening the capacity of farmers to earn a living beyond subsistence farming and cope with climate-related shocks by promoting equitable, fairly-paid economic opportunities.

7. Culturally-appropriate, nutritious food consumption

Nutrition education that raises awareness about healthy eating, promotes healthy diets and dietary diversity, and reduces food waste.

8. Market and value chain development

Supporting farmers in accessing markets and creating value from their products.

9. Research and innovation

Investing in research to promote and use climate-smart farming techniques, water conservation, and soil preservation.

10. Finance and investment

Mobilizing partnerships that work collaboratively with communities to support climate-smart agriculture and food systems transformation.



FOUR KEY STRATEGIES & EXAMPLES

1. Improving production: Training in climate-smart agricultural practices

Agricultural productivity is foundational to food security, yet climate change is undermining traditional farming systems, particularly in vulnerable regions where smallholder farmers depend on rain-fed agriculture. In regions where Kinvia operates, prolonged droughts, erratic rainfall, and rising temperatures are making it increasingly difficult for farmers to achieve consistent yields.

To address these challenges, Kinvia and its local partners provide targeted training and capacity-strengthening programs aimed at improving smallholders' production through climate-smart agricultural practices. These efforts include:

- **Agroecological farming:** By promoting agroecology, Kinvia helps farmers adopt methods that enhance soil health, increase biodiversity, and reduce dependence on synthetic pesticide and fertilizer. Techniques such as intercropping, dry-season gardening, and conservation tillage are central to this approach, as they not only improve yields but also enhance carbon sequestration and reduce emissions.

- **Drought-resistant seeds and crops:** In areas prone to drought, Kinvia promotes the use of drought-tolerant seeds that can thrive in increasingly arid conditions. This includes indigenous grains and vegetables that are well-suited to withstand periods of water scarcity.
- **Water conservation and management:** Access to water is a critical factor in agricultural success, especially as climate change exacerbates water shortages. Kinvia's training programs teach smallholders techniques such as rainwater harvesting, drip irrigation, and contour farming to optimize water use and reduce runoff.

Through these interventions, Kinvia helps farmers not only mitigate the effects of climate change but also adapt to its impacts, building more resilient agricultural systems capable of sustaining production in the face of climate-related stressors. This work aligns directly with the FAO's emphasis on promoting sustainable, inclusive production that reduces emissions while maintaining or improving yields.



Irrigation helps crops flourish even in dry seasons

In Daramalo, Ethiopia, smallholder farmers face water scarcity during the dry seasons – periods that are increasing as climate change makes the rains more erratic and population shifts create increasing demand.

Rising temperatures and unpredictable rainfall, coupled with the drought of recent years, have been devastating in this semi-arid pastoral region, where smallholder farmers are reliant on rainfed agriculture. Farmers have experienced prolonged dry spells followed by intense rainfall, leading to soil erosion and diminished crop yields. These changes have made it increasingly difficult for families to secure enough food, threatening their livelihoods and pushing them deeper into poverty.

Improved water management and climate-smart agricultural practices are helping to address these challenges.



Kinvia and its local partner, the Wontaa Rural Development Association (WRDA), are working in the Daramalo community to train farmers on climate-smart agricultural techniques such as crop diversification, soil management, and efficient water use.

Smallholders have adopted small-scale irrigation systems, including hand-dug wells and gravity-fed irrigation systems, designed to utilize local water sources effectively. They are also using climate-smart planting, ploughing, fertilization and pesticides, and more effective post-harvest handling techniques to reduce waste.

These techniques have helped farmers adapt to the impacts of climate change.

The training on climate-smart agriculture techniques helped us produce vegetables resisting the drought and not requiring a higher amount of water in dry seasons, for example, like pepper and watermelon –

Asaye, farmer, Daramalo

The new techniques they are using are also improving soil health and reducing erosion.

Farmers are now able to produce enough crops not only to feed their families but to generate a sustainable income. They report they are now able to save money to build homes, start businesses, and purchase livestock.

A few years ago, we used to worry about what to feed our children; now we are accumulating assets and planning to grow more. We have changed a lot, and we are now in a growth mindset –

Aberash, farmer, Daramalo

2. Adding value: Food processing, preservation, and secondary processing

Adding value to agricultural products is a critical component of transforming agrifood systems. It involves converting raw agricultural products into processed foods, which not only increases their marketability but also extends shelf life, reduces post-harvest losses, and creates additional income-generating opportunities for smallholders.

Kinvia supports smallholders in adding value through:

- **Reducing waste and spoilage:** We help farmer-based groups secure storage facilities that are properly ventilated and pest-resistant. This allows them to defer the sale of their crops until after the post-harvest glut, increasing profit.
- **Food preservation:** Simple technologies such as drying and smoking can extend the shelf life of perishable goods, allowing farmers to sell their products when prices are higher. In addition to reducing food waste, this increases income security for smallholders. It also supports dietary diversity and better

nutrition through access to fruit and vegetables year-round – vital in remote or cold-weather areas, or those where a reliance on rainfed agriculture creates food shortages during dry seasons.

- **Secondary processing:** By supporting the development of secondary processing industries, such as grinding grains into flour or making shea butter and cosmetics from shea nut harvests, Kinvia and its local partners are supporting farmers, especially women, to create higher-value products and obtain better prices in the marketplace.

These interventions align with the FAO's call for a circular economy in agrifood systems, where waste is minimized, and resources are reused to create value. For example, agricultural by-products such as husks or peels can be repurposed as animal feed or made into briquettes for fuel, and animal waste can be used as organic fertilizer or biofuel, contributing to both environmental sustainability and economic resilience.



Garden Hill First Nation, Treaty 5 Territory

Meechim Farm applies Indigenous knowledge to the linked problems of food insecurity, poor nutrition, and climate challenges

Garden Hill First Nation, an Indigenous community located in Treaty 5 territory in northern Manitoba, Canada, was plagued by severe food insecurity, poverty, and disproportionately high rates of type 2 diabetes—up to 500 times the national average. The root of these issues lies in the complex legacy of colonization and the multi-generational trauma stemming from the loss of traditional food systems and ways of life.

With the support of Aki Foods, an Indigenous-led social enterprise, and Kinvia, the community has turned to local, sustainable agriculture as a solution to these interlinked challenges. The thirteen-acre Meechim Farm is producing hundreds of pounds of food annually, reducing the community's dependence on expensive and unhealthy store-bought food flown in from urban centres. The goal is sustainable food sovereignty and food security in keeping with traditional knowledge and practices around environmental stewardship.

The Meechim Farm Crew, made up of local residents, is a way to transfer skills essential for creating sustainable livelihoods in the context of the local economy and embed traditional, Indigenous knowledge about agriculture, livestock management, and horticultural best practices in youth. The program extends to nutrition education which incorporates traditional foods for culturally-appropriate and healthy eating that address high rates of food-related disease in the community.

Meechim Farm's journey from concept to thriving community asset demonstrates the power of local, Indigenous-led initiatives in addressing the interconnected challenges of food insecurity, climate change, and health disparities. By integrating traditional knowledge with modern climate-smart agricultural practices, the community has not only improved access to healthy food but also fostered a renewed sense of pride, connection, and resilience.



Garden Hill First Nation, Treaty 5 Territory

3. Facilitating access to markets and value chains: Aligning production with market demand

As smallholders increase their productivity through climate-smart practices, accessing and integrating into markets becomes a critical next step. Many smallholder farmers, particularly women, are disconnected from markets and value chains, resulting in missed opportunities to generate income from surplus production. Without adequate market access, farmers can become trapped in subsistence-level production, which restricts their capacity to invest in better inputs, technologies, or techniques.

Kinvia addresses these challenges by creating linkages between smallholders, markets, and agribusinesses, and supporting farmers in adapting their production to align with market demand. By ensuring farmers can reach larger markets and leverage economies of scale, Kinvia helps them transform agriculture from a subsistence activity into a profitable enterprise.

Some of the core elements of this strategy include:

- **Supporting farmers' collectives:** These groups are self-organized and often comprised and led by women. By collaborating, farmers are able to consolidate their harvests and secure larger contracts, and increase their yields by staggering planting and harvesting across multiple smallholdings throughout the growing season. They are also able to pool their resources to secure inputs and technologies that improve their productivity and their incomes.
- **Capacity strengthening in marketing and business management:** Kinvia provides seed capital for small-scale businesses and basic business skills training in areas such as business planning, marketing, and negotiation skills. This training enables smallholders to better understand market dynamics, secure favorable terms for their products, and invest in and grow their small businesses.

- **Linkages to agribusiness and financing:** Kinvia helps farmers establish connections with agribusinesses that can offer inputs, processing services, or buyers. Access to financing and credit is often a key obstacle for smallholders, particularly women and youth. Kinvia facilitates these connections, supporting the establishment of village savings and loans associations (VSLAs) and savings and credit cooperatives (SACCOs) to inculcate a culture of savings and credit use, and provide smallholders with access to capital to invest in scaling their operations.
- **Aligning production with market demand:** Kinvia emphasizes aligning smallholder production with the specific needs of local and regional markets. By engaging with buyers and agribusinesses early in the planting cycle, smallholders can plan their production to meet demand, reducing the risk of oversupply and enabling farmers to secure better prices.



Empowering women smallholders through climate-smart agribusiness

Smallholder farmers in northern Ghana, particularly women, face numerous challenges, including limited access to land, markets, and sustainable agricultural techniques. Traditionally, women play a significant role in subsistence farming, but their contribution to commercial agriculture remains marginalized. These women are also disproportionately affected by climate change, as they rely heavily on rain-fed agriculture, making their livelihoods vulnerable to erratic weather patterns, droughts, and floods. In addition to environmental challenges, they face structural barriers, such as inadequate access to markets, land, financial services, training, and agricultural tools. Without these resources, women farmers often struggle to improve their own and their children's food security and generate income from agribusiness ventures.

In collaboration with local partners and communities in Ghana, and with funding from

Global Affairs Canada, Kinvia's *Sustainable, Healthy, Integrated, Nutrition and Education* (SHINE) project focuses on strengthening women smallholders' capacity by introducing sustainable farming techniques that mitigate the impact of climate change, improve their crop yields, and support their entry into commercial sales and marketing of their farm produce.

Key interventions under this program include:

- **Climate-smart agricultural training:** Women farmers gain knowledge and skills in sustainable farming practices, such as land preparation, crop selection, composting, irrigation methods, and organic pest management. These practices help farmers improve resilience to climate variability while enhancing soil fertility and increasing crop yields.
- **Access to agribusiness training, tools and resources:** With the support of Kinvia's local partner, Trade Aid Integrated (TAI), women have been encouraged to participate in village savings and loans associations, through which they are gaining access to financial resources, business training, and agrifood markets. TAI also supports at the tactical level, facilitating access to farming tools and ploughing services, drought-resistant seeds, and the technical expertise of agricultural extension agents.
- **Support in value chain development:** To ensure that women can secure better prices and maximize their profits, SHINE encourages women to pool their resources and increase their bargaining power, and facilitates direct access to markets reducing the need for women to work through "middlemen." The African Agribusiness Incubators' Network (AAIN) offers women business incubation services, promoting value chain development by connecting them with processors and buyers. Women farmers are trained in post-harvest handling, packaging, and value addition, which increases the marketability of their products.



Women farmers who have participated in SHINE report improved crop yields, even in the face of erratic weather conditions. The use of drought-resistant crops, composting, organic pesticides, and more efficient irrigation methods has contributed to more stable and resilient agricultural systems.

A mid-project assessment that surveyed 200 SHINE participants determined that 95 per cent are using CSA practices such as mulching, composting, and cover cropping, up from 73 per cent at baseline. These practices have made a significant contribution towards reclaiming the acidic soil for sustainable food production and enhanced productivity.

Already, SHINE has surpassed its target of having one-third of project participants increase their sustainable food production from the previous year, reaching 41 per cent during the 2023 assessment (up from 11 per cent at baseline). Even larger effects were found in the increases to women's income, with 100 per cent of respondents reporting improved economic success in sustainable agriculture and agribusiness related activities, such as from the production and sales of potato, beetroot, onion, and maize.



4. Advocating for smallholders: Creating enabling environments for women and youth

Smallholder farmers, particularly women and youth, often face significant barriers that prevent them from fully participating in agrifood systems. These barriers include restricted access to land, inadequate financial services, limited training opportunities, and exclusion from decision- and policy-making processes. As a result, women and youth are often unable to benefit from the economic opportunities that agrifood systems present.

Kinvia recognizes that advocating for systemic change is a crucial component of transforming agrifood systems. By creating enabling environments that prioritize the needs of women and youth, Kinvia helps dismantle the structural barriers that prevent equitable participation in the food system. This strategy is rooted in the belief that agrifood systems cannot be truly climate-smart or resilient unless they are also inclusive and equitable.

Key components of Kinvia's advocacy efforts include:

- **Access to land, training, and agricultural inputs:** For many women, customary laws and practices often restrict their ability to own or control land, gain access to financial and other resources to start businesses, or secure the necessary inputs to earn a good livelihood from agriculture. Kinvia and its partners provide direct support (training, tools, agricultural inputs) to enable women to pursue agricultural livelihoods. We and our partners also facilitate conversations with local leaders and community members, both men and women, to address the barriers to women's full participation in agrifood systems, including their access to land and their ability to share equally in decision-making about the income that accrues from their labour.
- **Youth empowerment in agrifood systems:** Youth represent a significant portion of the population in many rural communities, yet

they are often underrepresented in agrifood systems and decision-making. Many are also driven to migrate from rural areas due to a lack of economic opportunities, leaving these regions more vulnerable to poverty and less able to invest in climate-smart agriculture, not to mention putting youth themselves at risk of violence, trafficking, and other harms. Kinvia and its local partners focus on creating opportunities for young people to engage in both agricultural and non-agricultural income generation through vocational training, mentorship, and entrepreneurship support, and by advocating for youth-friendly policies and programs.

- **Gender equality:** Women and girls experience the greatest burdens imposed by climate change. They bear a disproportionate responsibility for securing food, water, and fuel and benefit least from agricultural income, despite agriculture being the most important employment sector for women in low- and lower-middle income countries. Girls' educations are often sacrificed where income and food security are scarce, and girls and women are more susceptible to sexual and gender-based violence (SGBV) and other harmful traditional practices, which present significant threats to not only their livelihoods but their lives.¹²

Kinvia and its partners engage local community leaders and community members to tackle the systemic barriers to women's and girls' participation in the agrifood economy. We support communities to raise awareness about discriminatory practices and advocate for policy reforms that promote women's and girls' rights and leadership, advocate for girls' education, and promote attitude and behaviour change to prevent SGBV and harmful traditional practices.

¹² UN Women, [Explainer: How gender inequality and climate change are interconnected](#), February 28, 2022.

Bolivian families gain food and income security through climate-smart gardening

Bolivia is considered the most vulnerable country in South America to the effects of climate change. The 2023–2024 South American drought, which has affected half of Bolivia as well as large parts of Brazil, Peru, and Colombia, has led to record low water levels, significant water shortages, sweeping crop failures, and widespread wildfires.

Many Bolivian families depend on limited and nutrient-poor diets, and water scarcity makes fresh fruit and vegetables difficult to access. The situation is even worse for Bolivia's large population of Indigenous people. Indigenous women and children are by far the most food and income insecure. Indigenous women, traditionally responsible for feeding their families, are also constrained by a lack of access to resources, training, and markets. These combined factors create a cycle of poverty, undernutrition, and limited opportunities for future generations.

Working with local partner IPTK (Instituto Politécnico Tomás Katari), Kinvia has supported communities to address both food and income insecurity for women, and the need for youth vocational opportunities.

Women in these communities have been trained in agroecological techniques such as composting, water conservation, and organic pest control to create sustainable and climate-smart home gardens. These gardens provide fresh, nutritious vegetables for household consumption and surplus produce that can be sold at local markets. Women have organized into Women's Vegetable Producers' Associations to take collective advantage of income, training, and financial opportunities. Participation in these groups is boosting women's self-confidence and enabling them to have a greater voice in local decision-making.

The gardens continue to provide a reliable and sustainable source of food, contributing to greater dietary diversity, better health, improved food



security, and resilience against the effects of climate change for some of the most vulnerable Bolivians.

Meanwhile, IPTK teamed up with Bolivia's Ministry of Education to offer local secondary students the chance to earn a *Bachillerato Técnico Humanístico* (a bachelor's degree in technical and humanistic studies) in gastronomy – a subject students chose because they knew they had the raw materials available in their family gardens.

By 2021, two cohorts of students had started the four-year program with 16 students expected to graduate in 2025. In 2023, the success of this community-developed vocational training program led to its formal adoption by the Bolivian Ministry of Education. This is a clear example of agrifood systems transformation where local, community-driven initiatives, in this case sustainable home gardening coupled with youth vocational training, can gain policy-level support from governments to make transformative change on a larger scale.

Agrifood systems as climate solutions

As the world faces escalating climate challenges, the transformation of agrifood systems is essential to achieving both climate mitigation and food security goals. The FAO's Global Roadmap underscores the importance of rethinking agrifood systems to align with the 1.5°C threshold while ensuring that no one is left behind in the fight against hunger.

Kinvia, working with local partners and communities, is demonstrating how community-led solutions can be part of this transformation. By focusing on climate-smart agriculture, value addition, market access, and advocacy, Kinvia is helping smallholders – particularly women and youth – to become active participants in the global response to climate change.

Kinvia's approach not only improves food security and economic outcomes for vulnerable communities but it also contributes to the global effort to reduce GHG emissions and build resilience against climate shocks. By linking

our work to the FAO's domains of action, Kinvia illustrates that climate-smart agriculture and sustainable food systems can play a pivotal role in addressing the climate crisis while enhancing livelihoods and promoting equity – all in the service of meeting the UN's Sustainable Development Goals by 2030.

In the communities where we work, agrifood systems are indeed climate solutions. As the world continues to grapple with the impacts of climate change, it is critical that organizations, governments, and the private sector invest in transforming agrifood systems.

Join us! Together, we can create a more sustainable and equitable world, where both people and the planet thrive.



Ethiopia



CATALYZING COMMUNITY-LED CHANGE SINCE 1986

Ethiopia

Kinvia, previously known as Canadian Feed The Children works in solidarity with communities as they build local, self-determined, sustainable systems to provide food for their children, youth, and families across generations.

Our core belief is that food and nourishment is a human right. Together with our donors, we are committed to community-driven solutions that address the unique needs of children, youth, and their communities by:

- advancing food security and working towards food sovereignty
- focusing on school nutrition and quality education
- embedding climate action and gender equality

We now reach close to 270,000 people in 133 communities in five countries.

We remain steadfastly committed to financial transparency, accountability, cost efficiency, and social impact, and have been recognized as a Top 100 Rated Charity by Charity Intelligence for nearly a decade, most recently in 2024.

Thank you for joining us as we work together toward our vision of a world in which children, youth, and their communities thrive, realizing their full potential.



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