

Delivering Food and Nutrition Security through Agribusiness Partnerships: Lessons from CASA

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The Commercial Agriculture for Smallholders and Agribusiness (CASA) Programme aims to drive global investment for inclusive climate-resilient agri-food systems that increase the income of smallholder farmers.

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ACRONYMS

ASF	African Swine Fever
CASA	Commercial Agriculture for Smallholders and Agribusiness
DFI	Development Finance Institutions
ECD	Early Childhood Development
FAO	Food and Agriculture Organisation
FCDO	Foreign, Commonwealth and Development Office
FGD	Focus Group Discussion
FIES	Food Insecurity Experience Scores
FNS	Food and Nutrition Security
FPO	Farmer Producer Organisation
GMP	Good Manufacturing Practices
GHG	Greenhouse Gas
HDDS	Household Dietary Diversity Scores
IBP	Inclusive Business Plan
ICAI	Independent Commission for Aid Impact
IPM	Integrated Pest Management
KII	Key Informant Interview
LLL	Laser Land Levelling
M&E	Monitoring and Evaluation
MSD	Market Systems Development
MRL	Minimum Residue Levels
NER	Northeastern Region
NSFP	National School Feeding Program
SME	Small- and Medium-sized Enterprise
TAF	Technical Assistance Facility
VSL	Village Savings and Loans

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EXECUTIVE SUMMARY

Who Should Read This Learning Paper and Why

Donors and Investors	Implementation Practitioners	Agribusiness Leaders
<p>For insights on:</p> <ul style="list-style-type: none"> • Pathways to Food and Nutrition Security (FNS) impact through agribusinesses • Opportunities to improve FNS impact through design and measurement • Tensions and trade-offs between FNS and other outcomes 	<p>For insights on:</p> <ul style="list-style-type: none"> • Assessing opportunities and identifying potential negative impacts on FNS • Considering FNS impact of distribution models where inclusive sourcing models are not competitive 	<p>For insights on:</p> <ul style="list-style-type: none"> • The importance of understanding out-grower farmers' broader crop portfolios, maximising FNS impact and minimising negative impacts, to ensure ongoing license to operate

Introduction

The right to food is a right not only to a minimum ration of calories, but to all nutritional elements that a person needs to live a healthy and active life, and to the means to access them.¹ The number of people suffering acute food insecurity globally more than doubled between 2019 and 2022, rising from 135 to 345 million people.² Agriculture and agribusinesses play a key role in overcoming food security and nutrition challenges. In addition to its nutrition-specific programming, FCDO mainstreams food security and nutrition as a central theme of all its agriculture programmes.

The Commercial Agriculture for Smallholders and Agribusiness (CASA) Programme, funded by FCDO since 2019, aims to build inclusive, climate-resilient agri-food systems, increase smallholder farmer incomes, strengthen smallholder and agribusiness adaptation and resilience to climate change, and improve smallholder food and nutrition security. Additionally, CASA seeks to generate evidence on the efficacy of investing in agri-SMEs for both financial return and development impact. This paper shares CASA experience and lessons learned for supporting food and nutrition security through food and agriculture development programmes, providing insights for FCDO, other donors and implementation agencies seeking to generate food and nutrition security outcomes through such programmes and partnerships.

Our analysis is structured around the “4A” framework³, which defines four elements which need to be present for people to be food and nutrition secure:

- **Accessibility** – the ability to access food, including economic access (i.e., income to purchase food) and ease of travel/cost of transport to access safe and nutritious food
- **Availability** – the quantity and quality of safe and nutritious food at either the household level for subsistence producers or at the market, as well as the diversity of food items and the extent to which they can be consumed throughout the year
- **Affordability** – refers to the cost of food in the marketplace (or on the farm if it is directly consumed by the farmer); in this paper we have captured the effect of individual farmer income under (economic) access, and
- **Acceptability** – reflects taste and other qualities including safety and convenience that can change both with changes in product and in perception through education.

1. FAO: [The Right to Adequate Food](#)

2. World Food Programme: [A Global Food Crisis](#)

3. The 4A framework is one possible FNS framework – others are available and as highlighted in the recommendations, programmes should review and select the best framework for their specific needs.

Pathways to Addressing Food and Nutrition Security (FNS) through Inclusive Agribusiness Models

CASA developed broad FNS strategies centred around the income pathway (there was no intention or expectation to engage in any behaviour change initiatives at household level, or to attempt to measure where food produced ends up beyond the immediate CASA-supported buyer). From 2023 onwards, global shocks and the FCDO policy environment led to increased attention on food security and nutrition, including Covid-19 crisis response activities, updated frameworks and investment in additional FNS resources. Crisis response activities included supporting the production of maggots for poultry fodder as an alternative low-cost protein source in Malawi, supporting a dairy client with powdered milk to meet immediate food security needs, and implementing input discount programmes. Food security outcomes are

directly measured at impact level, combining mean food insecurity experience scores (FIES) and dietary diversity scores of households directly reached by CASA activities – typically smallholder farmers supplying produce to agribusinesses.

Although FNS was not always explicitly built into design, multiple pathways for CASA activities to impact FNS were identified across the portfolio, as shown in Table 1 below. Strong links also exist between FNS, women’s economic empowerment and farm environmental sustainability and climate resilience. It is important to note that agriculture production is only one element within a wider context contributing to nutrition and health outcomes, while education, sanitation, and political and economic stability are also key contributors.

Table 1: Major Pathways through which Agribusiness Support Can Address FNS

Access	Availability	Affordability	Acceptability
<p>All value chains (VC) – economic access:</p> <ul style="list-style-type: none"> • Volume increase (productivity increases & post-harvest loss reductions) – Through training and access to inputs and services; price increases can also incentivise increased volumes • Price increase (quality & certifications) through training and access to inputs • Cost decrease through training and access to inputs or optimisation of input package <p>All VCs – physical access:</p> <ul style="list-style-type: none"> • Increased infrastructure built/catalysed by business and/or incomes of agricultural workers crowd in new food stalls to rural area <p>Vcs selling to local market with nutritional/food security value – physical access:</p> <ul style="list-style-type: none"> • Own production increases physical access to food • Foods reach wider markets, increasing physical access 	<p>Vcs selling to local market with nutritional/food security value:</p> <ul style="list-style-type: none"> • Increased volumes from increased production, increased productivity and reduced losses <p>Export VCs with nutritional/food security value:</p> <ul style="list-style-type: none"> • Retention of produce for own consumption or local sale • Sale of secondary produce on local markets • Consumption of a by-product of the focus export crop/product • Re-investment in business units focused on domestic market <p>Export VCs without direct nutritional/food security value:</p> <ul style="list-style-type: none"> • Cultivation techniques that involve diversification (e.g., coffee stumping with beans intercropping) • Additional services provided to out-growers (e.g., broader financial inclusion) • Labour-saving investments (free up time to focus on other crops) • Cross-over from agronomy training 	<p>Vcs selling to local market with nutritional/food security value:</p> <ul style="list-style-type: none"> • Disease outbreaks can inflate prices – addressing production practices and implementing tracking systems can help to reduce/control outbreaks and stabilise prices • Vegetables: Production out of season might reduce off-season prices • More efficient production and lower wastage have potential to impact affordability if models reach scale, but savings unlikely to be passed onto consumer • Cost reductions can increase affordability of any produce consumed directly by the household • Lower costs (e.g., through more efficient use of inputs or mix of bio vs. synthetic inputs; through purchasing power of big distributor being passed on to farmers to gain market share) effectively increase affordability if any of crop produced is consumed by household; potential to impact affordability if models reach scale, but savings unlikely to be passed onto consumer 	<p>Vcs selling to local market with nutritional/food security value:</p> <ul style="list-style-type: none"> • Marketing of new or less common products by the lead company can address acceptability issues <p>Export VCs:</p> <ul style="list-style-type: none"> • If crop is not directly relevant to food and nutrition security, sometimes marketing of any by-products or crops grown alongside main cash export crop to local farmers and/or local market by the lead company can address acceptability (“ad hoc” opportunity)

Importance of Each Pathway and Opportunities to Enhance Impact

Agribusiness support programmes do not impact all four “As” equally (nor do they need to: other elements might already be in place and/or can be addressed by other programmes). Working through individual businesses can be an effective way to increase economic access through increased farmer incomes, and to some degree to increase availability, especially at household or local levels. It is, however, much less likely that working through a single business will impact affordability at a market level. It is possible to impact acceptability through a business (e.g., through a marketing campaign for a new food); however, CASA’s scale targets – which focus on the number of smallholder farmers impacted –

incentivise investment in existing sectors which already have large numbers of smallholder producers and market demand. In general, addressing acceptability falls more within the remit of nutrition behaviour-change programmes. Table 2 shows the likelihood of each “A” being addressed through working with agribusinesses in different value chains and business models. These are general trends, not hard and fast rules; for example, although the likelihood of non-food export crops addressing acceptability is low, the CASA portfolio includes an agribusiness exploring marketing a nutritious by-product (the leaves of a flower exported for herbal teas) for local consumption.

Table 2: Likelihood of Agribusiness Interventions Addressing 4As of FNS

CASA Business Segment	Accessibility	Availability	Affordability	Acceptability
1 Non-food export crops	Green	Yellow	Red	Red
2 Export crops with nutrition/food security value	Green	Yellow	Red	Red
3 Nutritious foods for domestic markets	Green	Green	Yellow	Yellow
Poultry	Green	Green	Yellow	Yellow
Dairy	Green	Green	Yellow	Yellow
Vegetables	Green	Green	Yellow	Yellow
Aquaculture	Green	Green	Yellow	Yellow
4 Staple foods for domestic markets	Green	Green	Red	Yellow
5 Input/services distribution and ag-tech models	Green	Yellow	Yellow	Red

Green = High impact; **Yellow** = Medium or uncertain impact; **Red** = Limited impact

Economic access is a key pathway across all sectors and business models. Income is a critical component of accessing dietary diversity and studies show that “commercialisation contributes to higher incomes and increased nutrients from purchased foods, but it does not reduce the consumption of nutrients from own-produced foods. Enhancing market access is important not only for rural economic growth, but also for making smallholder agriculture more nutrition-sensitive”.⁴ CASA anecdotal evidence supports this relationship. Farmers supplying SokoFresh, an avocado business in Kenya, report using additional income to buy cows/milk, diversify crops or buy food for their own consumption. Income was used to purchase inputs for maize, beans and vegetables (which are consumed by the household) and to invest in the farm, for example in a borehole/irrigation, which in turn increases food availability. A

SokoFresh survey⁵ quoted farmers reporting: “The food we eat [is] much better now because of the extra money that I make” and “I have been able to buy meat for my family at least once a week. I couldn’t afford this before.” Data in Figure 1 below highlight how additional income generated through agribusiness linkages is often utilised by smallholders for expenditure on diverse and nutritious foods. The data from the 2024/25 outcome assessment shows the percentage of smallholder farmers supported by CASA in Malawi and Nepal that report utilising additional income for a variety of purposes, including purchasing additional or more diverse foods. The purchase of additional foods is the most commonly observed use for additional income generated through agribusiness linkages, highlighting the link between additional income and improved food security and nutrition outcomes.

4. Agricultural Commercialisation and Nutrition in Smallholder Farm Households, 23 August 2019 <https://onlinelibrary.wiley.com/doi/full/10.1111/1477-9552.12359>

5. SokoFresh 60 decibels report, September 2022. Note that this was an internal SokoFresh document and not an evaluation of CASA TAF specific work.

Smallholders farmers' utilisation of additional income

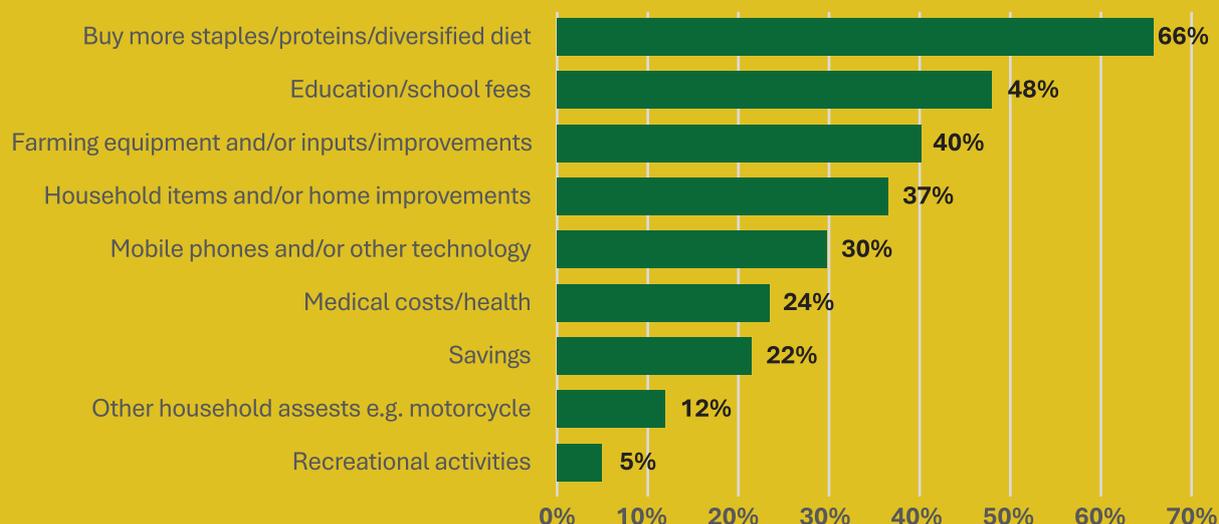


Figure 1: Income analysis of small-scale farmers supported by CASA MSD

Examples of improved physical access include [Viphya Chambo](#) (Malawi, aquaculture, case study 2.4), which is scaling a model that distributes fish at multiple trading centres and locations, improving accessibility of fish in both peri-urban and rural markets; [Tac Maz](#), a Malawian poultry company that is targeting multiple markets such as hotels and supermarkets, improving accessibility of diverse poultry products; and [Arohan](#) (India, pork, case study 1.2), which is establishing a decentralised sales model through a network of local entrepreneur-run kiosks.

Availability is a second important pathway: volumes of food produced can be increased by interventions which (for example) improve access to information on production practices and to higher quality inputs, varieties and services; disseminate innovations to reduce post-harvest losses; and provide access to more stable and higher value markets. Actual impact on availability will depend on whether there is unmet demand in the marketplace that is supplied by the inclusive business model (i.e., rather than additional volume displacing another producer or imports). Availability is ranked medium impact for export value chains and distribution/ag-tech models, due to uncertainty rather than lack of potential: the multiple relevant pathways to address availability in these value chains/models are illustrated in Figure 1 above. Programmes working on export value chains could more intentionally understand the broader portfolio of crops produced by the farmers and look for potential “spillover” opportunities to benefit food crops. These activities might include, for example, promoting diversification practices; exploring labour-saving

investments to free up time – especially women’s time – to focus on other farming or other activities that impact food nutrition and security; or expanding agronomy practices to some food crops too.

Affordability: It is not likely that working through a single business will impact affordability at the level of the marketplace. However, there are a few possible pathways as outlined in Figure 1 above and some examples. For example, [BioTech Senegal](#) (Senegal, bio-inputs) expects to enable farmers to grow off-season onions with its organic fertiliser which could potentially stabilise and reduce off-season prices. Collecting data on market-level changes requires significant resources owing to the highly dynamic nature of markets, the mix of formal and informal marketplaces for almost all locally consumed food commodities, and the multiple factors external to agribusiness support programming that shape market prices (e.g., other agribusinesses beyond programme partners, government policies including subsidies, climate shocks).

Acceptability: Marketing of nutritious food products to drive sales is the most common way for agribusinesses to contribute to improved acceptability. Processed meat or dairy products may be more convenient or longer-lasting than fresh meat/milk. For example, [Bhawani Dairy Corporation](#) (Nepal, dairy, case study 4.1) was supported by CASA to integrate new farmers into its supply chain and enhance existing farmer cooperatives; the increased milk production also allowed farmers to produce other milk-based products like curd, ghee, and paneer, providing essential nutrition to the local community and

improving the acceptability of dairy by diversifying into different product forms. Poshilo (Nepal, grains/beans, case study 4.3) is working to champion Satu, a powdered mixture made of roasted ground grains, cereals, and seeds, long consumed in rural areas of Nepal and colloquially known as “poor man’s protein”. Poshilo’s marketing aims to improve Satu’s acceptability within health-conscious urban middle-class markets, based on its nutritious value, especially compared to increasingly accessible processed foods. Company investment in marketing can promote domestic alternatives to imports, which in some cases might be fresher or healthier. In Ethiopia, Samanu is addressing the acceptability of local seed oils (e.g., sunflower, soybean, rapeseed), believed to be a healthier alternative to imported palm oil. Agribusinesses often have incentives to improve food safety and quality which may improve acceptability, especially where awareness of this is passed onto the consumer.

Tensions and Trade-offs

While both income and availability are important pathways for agribusiness impact on FNS, their relative importance depends on many contextual factors. A programme designed to maximise small-scale farmer income may have a lower impact on availability; conversely, a programme designed to address availability may have a lower impact on income. More broadly, in some cases there may be a tension between the goal to develop inclusive business models and the goal to produce large quantities of affordable food or to maximise impact on the most food insecure farmers. These trade-offs are complex and need to be weighed up carefully, including considering the impacts of strategic choices over the medium- and long-term and how they impact sustainability of the initiative. FAO’s 2020 food security framework explicitly includes sustainability and stability.⁶ Tensions include:

- Despite their theoretical potential to increase availability of food, developing inclusive sourcing models in domestic value chains – especially staples – can be challenging as these sectors tend to be low margin with high potential for side-selling. Inclusive distribution models can offer stronger economics and a higher potential to impact food and nutrition security in low-value domestic food sectors compared to sourcing models.
- Policymakers and development programmes alike need to grapple with tensions between creating jobs/opportunities and supporting the country’s industrial development vs. importing cheap food. There are

concerns that tariffs – which are needed to support local industry and associated jobs – can increase food prices in the short term. However, consideration needs to be given also to food sovereignty (domestic supply can be more stable in the face of global shocks) and food quality (local food is often considered fresher and more nutritious than imports) to ensure an appropriate balance is struck.

- Attempting to address affordability within inclusive business models – if this includes reducing the price paid to farmers – could leave the farmers themselves with reduced economic access to food. Alternatively, farmer price reductions might result in inclusive models becoming unviable.
- Engaging food insecure farmers in inclusive business models can potentially help food insecure households earn income to spend on food. However, this is not always possible as companies often want to engage farmers with a certain level of land ownership and available labour (who are typically not the most food insecure) and in one case, CASA experienced that poorer farmers were not repaying loans. This may be more viable in in-grower and wild collection models which do not require farmers to own land.
- Prioritising income or availability could have a parallel negative impact on nutrition if additional chemical inputs (which are harmful to health) are used to increase yields (whereas switching to organic/bio-inputs can have a positive impact).
- A focus on income alone could lead to food crops being removed in favour of cash crops or income being spent on unhealthy food. Potential negative impacts need to be identified and mitigated.

Recommendations

Recommendations for Donors

- Develop simple and practical tools and support mechanisms to enable agribusiness programmes to maximise FNS impact and share best practice and case studies
- Consider the tensions and trade-offs between different elements of FNS – and between FNS and other goals – including what is possible through an agribusiness support or farmer income generation programme vs. a programme focused primarily on nutrition outcomes
- Be pragmatic about the level of information that can easily be captured, especially on availability and affordability, without extensive surveying which can be expensive
- Where feasible, invest more in technical experts and

6. <https://www.fao.org/cfs/cfs-hlpe/insights/news-insights/news-detail/ensuring-food-security--why-agency-and-sustainability-matter/en>

M&E to gain greater insight into programmes' direct impact on FNS

Recommendations for Implementing Agencies

- Consider most relevant FNS frameworks to assess and monitor the private sector development programme, the adoption of the 4 A's has been a good structure for CASA MSD but other frameworks may better suit different or more specific contexts
- Based on the selected framework, explicitly consider the relevant elements prioritised at design stage to ensure the team has a broad understanding of the issues and trade-offs, and spots potential FNS opportunities
- Analyse potential negative impacts on FNS upfront; develop monitoring and mitigation plans as needed, including encouraging agribusinesses to monitor risks as part of their ongoing community relationship and local "license to operate"
- Analyse competitiveness of any proposed inclusive sourcing model upfront, especially in low-value crops for domestic markets, including understanding the policy environment. Where sourcing models are not competitive, consider whether distribution models may

be more immediately impactful and offer a stronger pathway to impact incomes and FNS outcomes

- Consider engaging FNS experts upfront to identify opportunities that can be practically integrated into programming and implementation

Recommendations for Agribusinesses

- Understand farmers' crop portfolio and additional crops that are being produced in addition to the main crop that is included in the commercial supply chain to determine if there are opportunities to promote food and nutrition security outcomes
- Consider any positive or negative implications on farmers' food and nutrition security and if these should and could be mitigated within an inclusive business model, for example, training on whole family farm management including split between cash crops and household food security crops (to avoid any challenges with household over-investment in cash crops and impact on long-term license to operate in the area); inclusion of training on food crops as well as cash crops where this makes sense (e.g., for input distribution businesses, where farmer loyalty can be supported through this approach)

1. INTRODUCTION

The right to food is an inclusive right. It is not simply a right to a minimum ration of calories, proteins and other specific nutrients. It is a right to all nutritional elements that a person needs to live a healthy and active life, and to the means to access them.⁷ However, the number of people suffering acute food insecurity globally more than doubled between 2019 and 2022, rising from 135 to 345 million people.⁸ This is the result of several compound drivers of food insecurity and malnutrition, specifically conflict, climate variability and extremes, and economic slowdowns and downturns, combined with the well-established underlying factors that contribute to food insecurity and malnutrition, such as lack of access to and unaffordability of healthy diets, unhealthy food environments, and high and persistent inequality.⁹

Inevitably, agriculture plays a key role in overcoming food and nutrition security challenges globally. Particularly in developing country contexts, agribusiness can play a key role in addressing food and nutrition challenges and improve rural livelihoods by creating pull effects on the production of nutritious foods, which it can support through access to inputs, services, and markets.¹⁰

Based on the normative and instrumental imperative for addressing food and nutrition security globally,

FCDO funds several programmes that address nutrition. In addition to nutrition-specific programming, FCDO also intends to mainstream food and nutrition security as a central theme of all its agriculture programmes. This is explicitly the case following the acceptance of the recommendation from the ICAI Review of UK Aid to agriculture in a time of climate change that all commercial agriculture programmes and investments should be monitored for nutritional outcomes.¹¹

The Commercial Agriculture for Smallholders and Agribusiness (CASA) Programme, funded by FCDO since 2019, supports agri-SMEs with smallholder supply chains to grow and attract investment for high development impact. CASA aims to build inclusive, climate-resilient agri-food systems, increase smallholder farmer incomes, strengthen smallholder and agribusiness adaptation and resilience to climate change, and improve smallholder food and nutrition security. Additionally, CASA seeks to generate evidence on the efficacy of investing in agri-SMEs for both financial return and development impact. CASA has three crosscutting themes: climate change and the environment, gender equality and social inclusion, and food and nutrition security. CASA's implementation is structured across three components (Table 3).

Table 3: CASA Components, Their Purpose and Countries

Component [implementing organisations]	Purpose	Countries
CASA Market Systems Development (CASA MSD) [NIRAS and Swisscontact]	Demonstrating innovative interventions in target countries with partner agribusinesses with smallholder supply chains. The aim of these interventions is to mobilise investments for partner agribusinesses, and to improve the income, food and nutrition security and climate resilience of smallholders.	Ethiopia, Malawi, Nepal and Rwanda, and formerly Uganda
CASA Technical Assistance Facility (CASA TAF) [TechnoServe]	Working alongside investors to deploy inclusive technical assistance that strengthens upstream and downstream supply chains of partner agribusinesses, promoting returns, development impact and resilience.	Global
Research, Learning and Communications [NIRAS]	Learning and knowledge-sharing component for upscaling and replication of CASA activities, collating evidence and drawing learnings from across CASA MSD and CASA TAF.	Global

7. FAO: [The Right to Adequate Food](#)

8. World Food Programme: [A Global Food Crisis](#)

9. FAO (2024) [The State of Food Security and Nutrition in the World 2024](#).

10. UNIDO (2022) [A world without hunger is possible. This is how! Innovation in agribusiness will be the key to achieve zero hunger in the long run.](#)

11. [FCDO response to the Independent Commission for Aid Impact \(ICAI\) recommendations on UK aid to agriculture in a time of climate change](#) (August 2023)

As a crosscutting theme, CASA has key impact metrics that relate to food and nutrition security (see section 3.2). However, there has been less qualitative assessment of the effect CASA's agribusiness partnerships have on food and nutrition security, including on what results have been delivered, through which mechanisms, and how they might be improved. This paper therefore reviews CASA's contribution to food and nutrition security, drawing lessons and recommendations for donor, implementation practitioner, and agribusiness audiences. The paper is structured to respond to three research questions:

RQ1: To what extent and how has CASA embedded food and nutrition security in the design, implementation, and monitoring of its projects?

RQ2: What effects has CASA generated for food and nutrition security across its interventions and where are there opportunities to improve?

RQ3: Can CASA implementation provide any initial evidence or contribution on the relative pros and cons of mechanisms for delivering food and nutrition security?

To answer these questions, the paper analyses a range of qualitative and quantitative data. At the programme level, strategy documents and frameworks have been analysed to understand how CASA conceptualises food and nutrition security. At the component and country levels, desk-based reviews of the programme partnership portfolio (64 CASA MSD partnerships and 27 from CASA TAF) have been used to gather insights into how food and nutrition security are included in – or might be impacted by – partnership design. This has been supplemented by primary data collection with CASA implementation teams to inform understanding of how

agribusiness partnerships and specific interventions have been designed to address food security and what challenges have been faced. At the agribusiness level, interviews with agribusiness partners and smallholder farmers inform 15 case studies showing how agribusiness partnerships can deliver food and nutrition security outcomes, both for the smallholders working directly as suppliers and for individuals who consume this production by purchasing from smallholders or other local, national, and international markets. Throughout, key details from the case studies are used to evidence and bring to life key findings in response to the research questions outlined above.

This paper, and the analysis therein, is grounded in the reality that CASA is not a food and nutrition security programme. Therefore, food and nutrition security have often not been the priority guiding intervention selection and design, which is primarily based on where a commercial case for inclusive agribusiness can be identified and acted upon. Resultantly, there are limited outcome and impact data collected by the programme to date to support the paper's findings, which primarily draw on an analysis of intentions set out in partnership business plans and the primary data collected from agribusinesses and smallholder farmers. Throughout the paper, areas of interest for further and more in-depth inquiry by CASA or other agribusiness partnerships that were beyond the scope of this paper are identified. CASA TAF relies on impact evaluations to measure the indicators on food and nutrition security. At the time of writing, only the baselines for these assessments have been completed with planned follow-ups happening at the end of 2025.

2. CONCEPTUALISING FOOD AND NUTRITION SECURITY ON CASA

There are several ways of defining and conceptualising food and nutrition security. This chapter summarises how key concepts have been defined by CASA. It introduces the “four A’s” framework for defining food security which is used to structure the paper’s findings and the two mechanisms that are central to CASA’s logic on delivering impact for food and nutrition security. It also reviews how CASA’s portfolio of agribusiness partnerships can be categorised to assess how different agribusinesses can generate impact on food and nutrition security.

2.1 The “Four A’s” of Food Security

Drawn from the CASA MSD food and nutrition strategy,¹² the four A’s framework addresses (i) Accessibility, (ii) Availability, (iii) Affordability and (iv) Acceptability. It provides a simplified analytical structure that captures the key elements or pillars of food and nutrition security within the value chain.

- **Accessibility** – can be broken down into economic and physical accessibility. Economic accessibility considers how, through increased income resulting from improved integration into agribusiness supply chains and associated support and behaviour change, smallholder farmers may be increasingly able to access/purchase nutritious food. Physical access involves understanding the distance that consumers must travel to access safe and nutritious food, including modes and cost of transport. Travel time is an important consideration for perishable food items and for time-poor household members. Poor rural women, for example, are frequently time-poor due to farming and household obligations or may be unable to travel due to safety or cultural restrictions. For smallholder farmers, the accessibility of inputs for their farming systems and markets for production is also an important factor in their ability both to produce and make available safe and nutritious foods.
- **Availability** – concerns the quantity and quality of safe and nutritious food at either the household level for subsistence producers or at the market level, as well as the diversity of food items and the extent to which they can be consumed throughout the year. Improved availability is driven by both increasing the absolute amounts being produced (e.g., through the delivery of better inputs, and also by reducing food losses through better post-harvest control in the production and processing parts of the value chain). The availability, accessibility, affordability and acceptability of inputs for farmers will also impact on the availability of safe and nutritious foods.
- **Affordability** – especially for poor households, the affordability of safe and nutritious foods can be improved by increasing production efficiencies (reducing costs or increasing yields through better inputs and processes) or economies of scale which reduce unit costs, assuming cost reductions are passed on to the consumer through corresponding price reductions. Food can also become more affordable through education, where consumers better understand the short- and long-term benefits from eating better quality foods and therefore make different purchasing decisions. Other opportunities for improving affordability are to offer products in smaller and cheaper packets or selling quality seconds that would otherwise be discarded. At the market level, affordability can be improved by increased availability, i.e., overcoming scarcity or seasonal fluctuations in availability which can lead to price spikes.
- **Acceptability** – reflects taste and other qualities, safety and convenience that can change with both changes in product and in perception through education. It will also vary considerably between different market segments and can require considerable expenditure to properly understand and create new products that address market tastes. Acceptability has significant impact on the adoption of higher yielding crops or more nutritious foods where, for example, local varieties of staples may have taste, colour, cooking speed or storage potential that needs to be integrated into introduced fortified varieties. Crops such as beans – with numerous localised varieties where preference is based around acceptability rather than yield and seeds are usually saved – become unrealistically expensive for seed breeders to develop without subsidy as the volume of

12. Updated in 2023

sales is low. Knowledge also affects acceptability in the form of understanding how to prepare foods better as well as how to select quality food and the frequency that it needs to be consumed.

Each of the four A's is both affected by and influences each node of the value chain, from production through to consumption, with common nodes including (i) inputs, (ii) production, (iii) processing, (iv) distribution, (v) marketing, (vi) consumption, and (vii) enabling environment (e.g., national policy). Achieving outcomes for food and nutrition security can sometimes benefit from an understanding of and ability to positively influence multiple actors at different nodes over time, though achieving impact is also possible through a single agribusiness (usually at smaller scale). The A's in the framework are often mutually reinforcing and single interventions/agribusiness partnerships can therefore impact on several areas at once (see chapter 4).

Not all A's are likely to be equally impacted by a programme modality of working through individual agribusiness partnerships. For example, working through individual businesses can be an effective way to increase economic access through increased farmer incomes, and to some degree to increase availability, especially at household or local levels. It is, however, much less likely that working through a single business will impact affordability at a market level. It is possible to impact acceptability through a business (e.g., through a marketing campaign for a new food); however, CASA's scale targets, which focus on number of smallholder farmers impacted, incentivise investment in existing sectors which already have large numbers of smallholder producers and market demand. In general, addressing acceptability falls more within the remit of nutrition behaviour-change programmes.

Chapter 4 presents evidence on how the CASA portfolio has worked across availability, accessibility, affordability, and acceptability, and notes the factors that affect the ability of agribusiness partnerships to have an effect on each pillar.

2.2 Mechanisms for Delivering Food Security

The primary aim of CASA has been to facilitate inclusive agribusiness linkages with smallholder farmers, ultimately leading to an increase in smallholder income and more climate-resilient agrifood systems. The inclusion of food and nutrition security as a crosscutting issue is a reflection of the expectation that CASA's

agribusiness partnerships, and the ways that these engage smallholder farmers, will have knock-on effects for food and nutrition security. There are two primary mechanisms through which this is assumed to happen, which can broadly be characterised as either income- or production-based.

Income as a mechanism for food and nutrition security through agribusiness:

This pathway assumes that the increased income generated by smallholders through their relationships with agribusinesses leads to improved food and nutrition security outcomes. Income is a critical component of accessing dietary diversity and studies show that “commercialisation contributes to higher incomes and increased nutrients from purchased foods, but it does not reduce the consumption of nutrients from own-produced foods. Enhancing market access is important not only for rural economic growth, but also for making smallholder agriculture more nutrition-sensitive.”¹³

CASA anecdotal evidence supports this link. Farmers supplying Sokofresh, an avocado business in Kenya, report using additional income to buy cows/milk, diversify crops or buy food for their own consumption. Income was used to purchase inputs for maize, beans and vegetables (which are consumed by the household) and to invest in the farm – for example in a borehole/irrigation, which in turn increases food availability. A recent Sokofresh survey quoted farmers reporting: “The food we eat and the clothes we wear are much better now because of the extra money that I make courtesy of Sokofresh”; “I have been able to buy meat for my family at least once a week. I couldn't afford this before” and “After selling the avocados through Sokofresh, I was able to buy a water pump. There is now water supply in my whole house”.¹⁴ On CASA MSD, data on the utilisation of additional income resulting from agribusiness linkages points to increased expenditure on diverse and nutritious foods, as well as other investments that can positively impact food and nutrition security, e.g., on-farm investments, health, education (see Figure 1 in section 4.1).

The income mechanism is built on three key assumptions: (i) the increased income is sufficient to be able to afford sufficient and nutritious food; (ii) that sufficient and nutritious food is available to purchase; and (iii) household members making purchasing decisions are motivated to purchase more nutritious food (which in turn is affected by, e.g., gender relations, time available, and access to information). Importantly,

13. Agricultural Commercialisation and Nutrition in Smallholder Farm Households, 23 August 2019 <https://onlinelibrary.wiley.com/doi/full/10.1111/1477-9552.12359>

14. SokoFresh 60 decibels report, September 2022. Note that this was an internal SokoFresh document and not an evaluation of CASA TAF specific work.

these assumptions can underpin either the purchasing of food to attain sufficient calories in instances where smallholder households are unable to acquire sufficient calories at baseline or, in instances where calorific needs are already met, the purchasing of better/more nutritious foods. Factors that may undermine these assumptions include (i) lack of supply or increases in cost of production can lead to price rises and make sufficient or nutritious foods prohibitively expensive for smallholder farmers, despite increased income (especially if income gains are small); (ii) buying additional food, or investing in on-farm improvements or other areas that can improve family food and nutrition security, may not be a priority of the smallholder farmer who has realised increased income – it is worth noting that women smallholders have been observed to be more likely to spend income increases on nutritious food for the household¹⁵; (iii) even when extra income is spent on food, it is not necessarily diverse and nutritious but may consist of too many processed and sweetened foods – this is becoming increasingly common due to global dietary transitions, but depends on context, e.g., country and farmer profile.¹⁶

To overcome these challenges, some literature suggests that “interventions focused on income generation should monitor and promote crop and livestock production diversity and provide nutrition education.”¹⁷ Proponents of this view highlight the importance of farm diversity, especially when it includes livestock, for example, “production diversity and livestock ownership are consistently associated with household and dietary diversity and, when measured, with increased intake of essential micronutrients.” Adopting such an approach on a business-led programme like CASA is often challenging, as interventions are focused on supporting the commercialisation of smallholder production through agribusiness linkages, rather than providing wider advice to smallholders on production diversity or nutrition education. However, there could in some cases be a commercial case for promoting diverse smallholder farming plots where practices such as agro-ecology, mixed cropping, or crop-livestock systems can provide higher and/or more resilient yields and increased farmer loyalty, whilst also underpinning more diverse diets.

Production as a mechanism for food and nutrition security through agribusiness:

Two of the assumptions underpinning the income mechanism relate to the sufficient availability of nutritious foods on the market. Reflecting this, the second mechanism for delivering food and nutrition security through agribusinesses is that increased production of more nutritious food can increase its availability and affordability in relevant markets. Agribusinesses that work with CASA have often been supported to stimulate production in multiple ways, including improving access to information on good and climate-smart production practices, access to higher quality inputs and improved/new varieties, the dissemination of innovations to reduce post-harvest losses, and by providing access to new (often more stable and higher value) markets. All these actions aim to improve (or, in the case of new markets, often require improving) the quality, quantity, and variety of production. Where exactly this produce lands, and therefore where the benefits for food and nutrition security are accrued, depends on the business model and smallholder decision-making. Plausible destinations include home consumption by the producing smallholders, local markets, domestic urban-centres, regional and international export markets, or other agribusiness processors (local or international).

As with the income mechanism, there are key assumptions that underpin the production mechanism, notably (i) that potential buyers have sufficient income to buy higher quantities and/or more nutritious food; and (ii) those buying food are motivated to purchase higher quantities and/or more nutritious food. It also assumes that the overall volume of food increases as a result of the target businesses producing food; this may or may not be the case depending on overall market size and competitiveness factors, e.g., the food could displace some other producers’ food or imports, meaning there is no net change in availability.

Both of the mechanisms above have had recognition amongst CASA implementation teams and often underpin the logic connecting CASA business plans and agribusiness partnerships with food and nutrition security as a crosscutting theme. However, their nuance and characteristics in implementation have not yet

15. DFID (2014) *Agriculture and Women*. DFID; Antriyandarti et al., (2024) ‘The dual role of women in food security and agriculture in responding to climate change: Empirical evidence from Rural Java.’ *Environmental Challenges*.

16. Baker et al., (2020) ‘Ultra-processed foods and the nutrition transition: Global, regional and national trends, food systems transformations and political economy drivers’. *Obesity Review*. doi: [10.1111/obr.13126](https://doi.org/10.1111/obr.13126)

17. Food Access Deficiencies in Sub-saharan Africa: Prevalence and Implications for Agricultural Interventions, 2019 <https://www.frontiersin.org/journals/sustainable-food-systems/articles/10.3389/fsufs.2019.00104/full>

been explored in detail. As such, this paper explores the relative efficacy of the two mechanisms and what each means for food and nutrition security, and for whom.

While the two mechanisms outlined above indicate how agribusiness and commercial agriculture can have positive impacts on food and nutrition security, it is important to recognise that agriculture is part of a wider picture, including education, sanitation, and political and economic stability, which collectively determines nutrition/health outcomes.

2.3 Food and Nutrition Security through Different Types of Agribusiness

The diversity of agribusiness partners within the CASA portfolio has implications for pathways to creating positive outcomes for food and nutrition security. The

value chain approach of CASA MSD only considered food crops and generally works with smaller agribusinesses that, typically, produce food products almost exclusively for the domestic market.¹⁸ The context is quite different in CASA TAF's portfolio, which has wide variation in geography, product, market, and business model. This diversity has significant implications for the mechanisms of delivering food and nutrition security outcomes. As such, to assess the CASA TAF portfolio's food and nutrition security impact against the four A's framework, the portfolio was categorised into five segments, based on whether the focus crop is food or non-food, whether it is a nutritious or a staple food, and whether it mainly reaches export or domestic markets. The first four segments relate to sourcing models, and the fifth segment is focused on distribution models, including farmer services and ag-tech models. The segmentation is laid out in Table 4 and the pathways to FNS in Table 5.

Table 4: CASA TAF Business Segments

Business Segment	Example Sectors	CASA TAF Company Examples Included in Assessment
1. Non-food export crops	Coffee Cocoa Herbs and spices	<ul style="list-style-type: none"> • Mercon (coffee, Ethiopia) • Sucafina (coffee, Tanzania) • Niche Cocoa (cocoa, Ghana) • Kennemer (cocoa, Philippines) • NEI (vanilla, Tanzania)
2. Export crops with nutritional/food security value	Rice Coconut Fruits and nuts	<ul style="list-style-type: none"> • SokoFresh (avocado, Kenya) • Olivado (avocado oil, Kenya) • Kentaste (coconut oil, Kenya) • Aliet Green (coconut sugar, Philippines) • Exotic (macadamia, Kenya) • BRM (rice, Cambodia) • Organic Africa (hibiscus, Zimbabwe)
3. Nutritious foods for domestic market	Pork Poultry Dairy Aquaculture	<ul style="list-style-type: none"> • Arohan (pork, India) • Lilongwe Dairy (dairy, Malawi)* • HR Foods/Osam Dairy (dairy, India)** • Countryside Dairy (dairy, Kenya)* • Kelfoods (poultry, Malawi)* • FirstWave/AllerAqua Zambia (aquaculture, Zambia)*
4. Staple foods for domestic market	Rice Edible oils	<ul style="list-style-type: none"> • Coscharis (rice, Nigeria) • Samanu (sunflower, Ethiopia)
5. Distribution and ag-tech models		<ul style="list-style-type: none"> • DeHaat (ag-tech, various, India) • Farmerline (ag-tech, soy/maize/cashew, Ghana) • Zamseed (seed, various, Zambia) • Cropnuts (soil testing, various, Kenya) • Regen Organics (organic fertiliser, various, Kenya) • Nileda (bio-stimulants, rice, Cambodia) • Biotech Services (organic fertiliser, various, Senegal)

***TA support provided through strategy design and development, no implementation support**

****Implementation only through Covid-19 crisis support programme**

18. Some partnerships in Nepal, particularly in vegetables, have had success when supported by CASA to pursue export opportunities.

Table 5: Summary of Major Potential FNS Impact Pathways across Agribusiness Segments

	Access	Availability	Affordability	Acceptability
Segment 1: Non-food export crops	Economic access: <ul style="list-style-type: none"> • Volume increase (productivity increases & post-harvest loss (PHL) reductions) – through training and access to inputs; price increases can also incentivise increased volumes 	<ul style="list-style-type: none"> • Cultivation techniques that involve diversification (e.g., coffee stumping with beans intercropping) • Additional services provided to out-growers (e.g., broader financial inclusion) • Labour-saving investments (free up time to focus on other crops) • Cross-over from agronomy training 	N/A	<ul style="list-style-type: none"> • Marketing of any by-products or crops grown alongside main cash export crop to local farmers and/or local market by the lead company can address acceptability (“ad hoc” opportunity)
Segment 2: Export crops with nutritional/food security value	<ul style="list-style-type: none"> • Price increase (quality & certifications) through training and access to inputs • Cost decrease through training and access to alternative inputs, and input optimisation 	<ul style="list-style-type: none"> • Retention of produce for own consumption or local sale • Sale of secondary produce on local markets • Consumption of a by-product of the focus export crop/product • Re-investment in business units focused on domestic market 	N/A	
Segment 3: Nutritious foods for domestic market	Physical access: <ul style="list-style-type: none"> • Increased infrastructure built/catalysed by business and/or incomes of agricultural workers crowd in new food stalls to rural area 	<ul style="list-style-type: none"> • Increased volumes from increased production, increased productivity and reduced losses 	<ul style="list-style-type: none"> • Disease outbreaks can inflate prices – addressing production practices and implementing tracking systems can help to reduce/control outbreaks and stabilise prices • Vegetables: Production out of season might reduce off-season prices 	<ul style="list-style-type: none"> • Marketing of new or less common products by the lead company can address acceptability issues
Segment 4: Staple foods for domestic market	<ul style="list-style-type: none"> • Own production (primary or secondary crop) increases physical access to food • Foods (primary or secondary crop) reach wider markets, increasing physical access 		<ul style="list-style-type: none"> • More efficient production and lower wastage have potential to impact affordability if models reach scale, but savings unlikely to be passed onto consumer unless competitive pressures in the market • Cost reductions can increase affordability of any produce consumed directly by the household 	
Segment 5: Distribution, services and ag-tech models			<ul style="list-style-type: none"> • Lower costs (e.g., through more efficient use of inputs or mix of bio vs. synthetic inputs; through purchasing power of big distributor being passed on to farmers to gain market share) effectively increase affordability if any of crop produced is consumed by the household; potential to impact affordability if models reach scale, but savings unlikely to be passed onto consumer unless competitive pressures in the market 	N/A

3. CASA'S APPROACH TO FOOD AND NUTRITION SECURITY

RQ 1: *To what extent and how has CASA embedded food and nutrition security in the design, implementation, and monitoring of its projects?*

Although not considered a nutrition programme, CASA was designed from the outset to have indirect influence on food and nutrition security. Since inception, this aim has been underpinned by food and nutrition security strategies in both CASA MSD and CASA TAF. Latterly, impact level indicators on food security (food insecurity experience scores) and nutrition (dietary diversity) have been added to the programme logframe. In addition to summarising the formal frameworks and indicators, this section also reflects on the tools and approaches used by implementation teams in addressing food and nutrition security when building partnerships with agribusinesses.

3.1 CASA Food and Nutrition Security Frameworks

Both CASA components developed broad food and nutrition security strategies during the inception phase. The CASA MSD Food and Nutrition Security Framework was developed during inception in 2019 to align with DFID's requirement for programmes within agriculture to support food production and processing that preserve food nutrients and improve food quality, crops that are nutritionally, climatically and culturally appropriate and business models that enable access to nutritious foods for low income and other vulnerable households. The key tenets of CASA MSD's framework are the 4 A's given in section 2.1. Whilst CASA TAF used a different framework, in establishing linkages between CASA activities and economic access to food, continuity and stability of food supply, and availability of food in local markets, it followed broadly the same logic as CASA MSD. These frameworks establish the logic and the pillars through which CASA intended to deliver food and nutrition security benefits.

The income pathway has been central across the programme. Since both CASA components have primarily been focused on generating increased incomes for smallholders, the approach to food and nutrition security established in the strategies mainly focused on increasing economic access to food through these increased incomes. Within this, CASA TAF considered stability of incomes. A secondary focus was on increasing food availability defined as the "presence of food in the local market." There was no intention or expectation to engage in any behaviour change initiatives at household level, or to attempt to measure where food produced ends up beyond the immediate CASA-supported buyer.

From 2023 onwards, global shocks and the FCDO policy environment led to increased attention on food and nutrition security. Several global and national level events led to a renewed focus on food and nutrition security from 2022/23 onwards.

- The Covid-19 pandemic restrictions and the Russia-Ukraine conflict led to global spikes in the costs of agricultural inputs, impacting both the cost of production (affordability) and the quantity of production (availability), whilst also causing major economic slowdown and unemployment (accessibility). This created significant policy focus on the availability and accessibility of nutritious foods.
- CASA designed crisis response activities to address these challenges. Under CASA MSD, this included shifting focus to the domestic markets and engaging partners focused on organic manure and fertilisers due to the increased prices of feed, fuel, and fertilisers. To address the increased prices of inputs, CASA supported the production of maggots for poultry fodder as an alternative low-cost protein source in Malawi. CASA TAF implemented input discount programmes, subsidised maize inputs, and supported a dairy client with powdered milk to meet immediate food security needs.

- A renewed focus on food and nutrition security was supported by revisions of the CASA MSD framework in 2023 and 2024.¹⁹ The updated frameworks present a broader scope and more structured approach to mainstreaming food and nutrition security as a crosscutting theme within the CASA programme. Significantly, food and nutrition security expertise was decentralised from a programme level position to country level advisory experts/roles, allowing the development of country level strategies and targeted food security input into the design of agribusiness partnerships through national level nutrition experts.
- On CASA TAF, the shift in focus was seen in a more intentional focus on businesses producing staple crops with associated impact on food security. This saw a shift away from sourcing models, of which the majority were export focussed, towards distribution models. Segment 5 – distribution and ag-tech models – is more likely to be focused on crops produced for domestic consumption and has potential to address availability and affordability, whereas export-focused businesses are unlikely to directly address affordability.

3.2 Monitoring Food and Nutrition Security on CASA

Food security on CASA is only directly measured at impact level, with reporting starting in 2022/23. CASA Impact Indicator 2 combines mean food insecurity experience scores (FIES) and Household Dietary Diversity Scores (HDDS) of households directly reached by CASA activities. As CASA is not a nutrition programme, quantitative analysis of the impact of its agribusiness partnership on food and nutrition security at wider scales (e.g., consumers and community members beyond the farmers directly linked to partner agribusiness) have not been addressed by the monitoring system.²⁰

FIES is informed by a survey module of eight questions included in a household survey of farming families undertaken as part of the outcome assessment. The reference period in response to these questions is one year.

HDDS are assessed in line with FAO methodology²¹, where households are asked to recall food consumption over a 24-hour period. Based on the presence of 12 food categories, household dietary diversity can be calculated. Whilst internationally recognised as a pragmatic way of assessing food and nutrition security, there are some limitations of this methodology, particularly regarding the representativeness of a given

24-hour window (e.g., depending on season, income variability, macro-economic conditions). However, as CASA is not a nutrition programme, it has been out of scope to take further steps in capturing food security metrics, e.g., through longer duration food diaries on the types and sources of food consumed by farming households.

Data for both metrics comes from a survey of sample households (approximately 200 per country in CASA MSD, and a representative sample of reached farmers for five agribusinesses reached by CASA TAF) involved in a sample of CASA interventions under each component. This sample is taken as representative of the wider portfolio during programme reporting.

For both components, there is a challenge of attribution when it comes to food and nutrition security, although CASA TAF uses quasi-experimental approaches to establish causality and attribution, i.e., measuring improvements in the FIES and HDDS for target farmers and a control group. Household food and nutrition security are influenced by a myriad of factors, many of which are outside both CASA's control and remit as a commercial agriculture programme. The many other influencing factors that determine household food security are potentially the source of discrepancies between quantitative and qualitative findings of CASA's impact on food security (see section 4.5). As such – and in spite of using quasi-experimental approaches – further qualitative inquiry is needed to better understand how agribusiness linkages have contributed to food and nutrition security outcomes of engaged farmers. End line surveys will be completed within the final programme year. This paper aims to contribute to filling this gap in the current data collection to synthesise evidence and capture learnings. Several areas that may warrant further investigation on CASA or future programmes, but were out of scope for this paper, are identified.

In addition to food security specific measures, CASA MSD also tracks how additional income is utilised by the sampled smallholder farmers. Directly relevant to food security is additional income that is utilised for the purchase of additional food, with categories of spending on (i) staples, (ii) protein, and (iii) diversification of diets, tracked (see Figure 1 in section 4.1). These data provide some supporting evidence for the economic access pathway which is central to CASA's theory of change on food security. Income utilisation also details the use of income to further invest in agriculture, which may impact physical access as well as availability and affordability for producing households.

19. CASA Food and Nutrition Security Framework, September 2024

20. This echoes the [ICAI recommendation on monitoring for nutrition](#), which problematised the common lack of data on nutrition impacts on consumers in commercial agriculture programming.

21. FAO (2014) [Guidelines for Measuring Household and Individual Dietary Diversity](#). Rome.

4. CASA'S INFLUENCE ON FOOD AND NUTRITION SECURITY OUTCOMES (RESULTS)

RQ2: What effects has CASA generated for food and nutrition security across its interventions and where are there opportunities to improve?

RQ3: Can CASA implementation provide any initial evidence or contribution on the relative pros and cons of mechanisms for delivering food and nutrition security?

Combined, CASA MSD and CASA TAF have provided technical assistance to 136 agribusinesses as of April 2025.²² The results presented in this chapter include analysis of 91 agribusiness partnership plans²³ to assess how the two portfolios were expected to address food and nutrition security. Analysis presented under each of the A's in Tables 5 and 6 highlights where and how CASA's agribusiness partnerships have been able to address food and nutrition security. There is also analysis of how different agribusiness segments are positioned to deliver

on each A and what findings from across the portfolio reveal about the two key mechanisms of delivering on food and nutrition security (income and availability).

Overall, accessibility is the most commonly addressed pillar (approximately 80% of reviewed business plans across the combined CASA portfolio²⁴), followed by availability (approx. 55%), affordability (10%), and acceptability (3%). Several of the value chains selected by CASA MSD are inherently nutritious, such as poultry, dairy, vegetables and fish.²⁵ CASA TAF also developed business plans in all these sectors (though unfortunately many of the plans did not move forward to further implementation support for various reasons). As nutrition is closely embedded within each of the A's, it is not included in these summary tables, but as narrative in section 4.5.

Table 6: Mapping the CASA Portfolio across the 4 A's by Business Segment

Business Segment	Businesses / Value Chains	Accessi- bility	Availa- bility	Afforda- bility	Accepta- bility
1 Non-food export crops (5)	Coffee (2) Cocoa (2) Vanilla (1)	Green	Yellow	Red	Red
2 Export crops with nutrition/food security value (7)	Avocado (2) Coconut (2) Macadamia (1) Rice (1) Herbs/spices (1)	Green	Yellow	Red	Red
3 Nutritious foods for domestic markets (60)	Pork (1) Poultry (MSD x18; TAF x1) Dairy (MSD x8; TAF x3) Aquaculture (MSD x16; TAF x1) Vegetables (MSD x12)	Green	Green	Yellow	Yellow
4 Staple foods for domestic markets (2)	Rice (1) Sunflower (1)	Green	Green	Red	Yellow
5 Distribution and ag-tech models (7)	Ag-tech (2) Seeds (1) Soil testing (1) Bio-inputs (3)	Green	Green	Yellow	Red

Green = high impact; **Yellow** = medium or uncertain impact; **Red** = limited impact

22. 96 in CASA MSD, 40 CASA TAF

23. 64 CASA MSD business plans, plus 27 CASA TAF IBPs

24. This is not 100% due to CASA MSD interventions with enabling environment partners (governments, cooperatives, financial institutions) which were not directly linked with increasing smallholder income and therefore did not contribute to economic access.

25. Which is well in line with FCDO agriculture programme requirements to support food production and processing that preserve food nutrients and improve food quality, crops that are nutritionally, climatically and culturally appropriate and business models that enable access to nutritious food for low income and other vulnerable groups.

Each business segment has its own typical pathways to impact FNS. Overall, segments 1 and 2 (exports of non-food and food crops) mainly impact economic access with some “add-on” impact on availability in some cases, while segments 3, 4 and 5 (nutritious foods for domestic markets, staple foods for domestic markets, and distribution/ag-tech models) are likely to have higher impact on food and nutrition security across the A’s beyond economic access. Segments 3 and 5 may have the highest potential overall to directly increase availability of nutritious food at household and local/regional/national levels. While identifying viable sustainable, scalable inclusive business models in segments 3 and 4 can be challenging (as discussed further below), it has been the primary focus for CASA MSD. CASA TAF also developed a number of Inclusive Business Plans (IBPs) focused on nutritious foods for the domestic market (segment 3) that for various reasons did not move forward to further implementation support. In addition, CASA TAF introduced segment 5 part way through the project; this opened up an interesting opportunity to support input and services businesses

that are promoting increased production of staples and nutritious foods for domestic markets, given some of the challenges in establishing sourcing models in some of these sectors. A more detailed view of potential impact pathways per segment per A is presented in Table 4 above (section 2.3).

Below, specific findings on the mechanisms for delivering availability, accessibility, affordability, and acceptability are given from across CASA.

4.1 Accessibility

Both economic (ability to purchase) and physical (distance and cost of travel to access safe and nutritious food) access to food by smallholder farmers

Access is the most commonly addressed pillar of food security across the portfolio, with both economic and physical access to safe and nutritious food a result of agribusiness partnerships. Table 7 highlights the pathways through which agribusiness partnerships can improve economic and physical access to food.

Table 7: Pathways to Economic and Physical Access to Food as a Result of Agribusiness Partnerships

Drivers of Economic Access	Drivers of Physical Access
Yield increase, generally as a result of training/improved practices, and adoption of new or different inputs or services	Production and home consumption
Price increase due to quality or certification. Generally achieved through training with added layer of certification assessment or other quality control mechanism to validate the premium	Nutritious foods reach wider markets (dairy and vegetables in Nepal, fish and poultry in Malawi)
Cost reduction, e.g., by reducing inputs through implementing regenerative agriculture practices	Entrepreneurs selling food to new markets as a result of improved infrastructure built/catalysed by the agribusiness and/or incomes of agricultural workers

The primary pathway to economic access to food has been through income generation. Increasing incomes for smallholder farmers linked to partner agribusinesses is one of CASA’s key outcomes and has been central in the design of all partnerships. CASA has mainly facilitated access to economic opportunities through improving access to more stable and higher value markets for smallholder farmers by encouraging linkages with partner agribusinesses, who are in turn supported by the programme with technical assistance and other services. All CASA partnerships contain an analysis on farmer level income increases that the partnership seeks to deliver. For CASA TAF, targets for incremental annual income set at the inclusive business planning (IBP) stage

vary from ≈\$40 to over \$2300 in a steady state – but are generally around \$100-500 per year. Increased income is directly aligned to the income mechanism introduced in section 2.2, whereby increased earnings support the purchasing of sufficient food (in instances where basic needs were previously unmet) or improved quality food (where more nutritious food is available, affordable, and individuals are motivated to purchase). Such benefits of improved economic access to food through increased income are primarily realised by the farmers and aggregators directly engaged with the agribusiness, e.g., as suppliers or buyers of agricultural products and their households.

Utilisation of additional income by smallholders on CASA MSD provides evidence for the economic access mechanism of delivering improved food security through commercial agriculture programmes.

When asked about how additional income generated by agribusiness linkages is being utilised, smallholders linked with agribusinesses in Malawi and Nepal reported using additional income to purchase more staple foods, improving food security, and also more protein and an increased diversity of food products, supporting nutrition (see Figure 2). When aggregated, responses that indicate additional income is utilised for the purchase of additional (either staples or protein) or more diverse foods are the most commonly reported amongst smallholder farmers, with 66% utilising additional

income for this purpose. This clearly highlights the link between additional income generated by agribusiness linkages and food and nutrition security outcomes. Data on how additional income is being spent on food reveal that purchase of additional staples is most common (42%), followed by purchase of more diverse foods (35%) and purchase of additional protein (34%). This is further supported by qualitative reflections from smallholders in the focus groups. For instance, a smallholder supplying Himalayan Supervores, a vegetable business supported by CASA MSD in Nepal (case study 4.2), stated, “with this [additional] income, I can buy whatever food we need from morning to evening. I have no worry about the regular meals of my family.”

Smallholders farmers’ utilisation of additional income

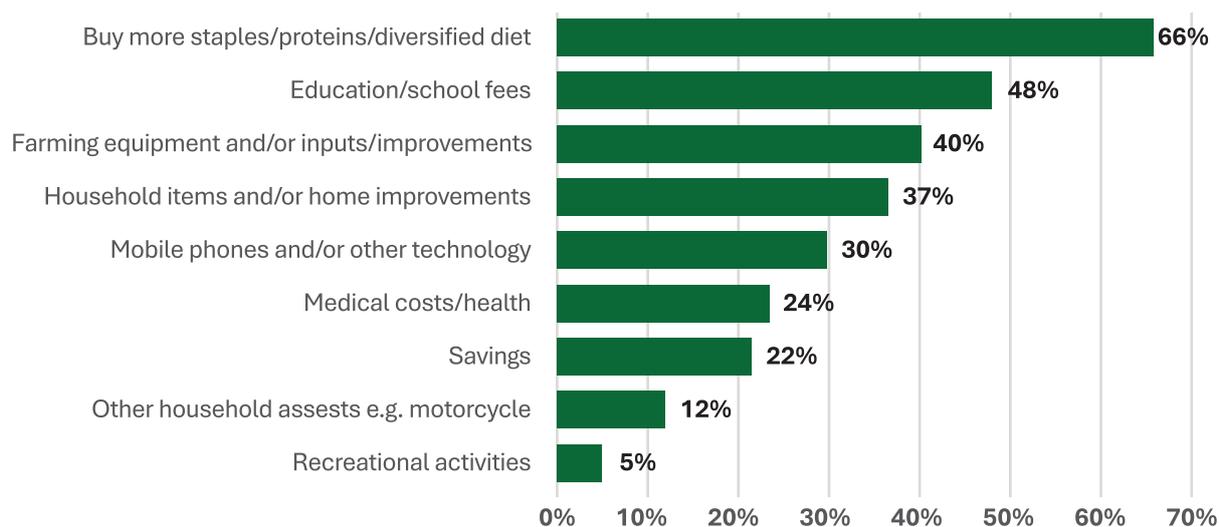


Figure 2: Percentage of smallholder farmers supported by CASA MSD in Nepal and Malawi that report utilising additional income for a variety of purposes, including purchasing additional or more diverse foods (based on 2024/25 outcome assessment data)

Physical access to food can also be promoted through market linkages facilitated by integrating smallholder farmers into agribusiness supply chains.

CASA’s agribusiness partnerships create physical access to food benefits for both smallholders directly engaged with the agribusiness, and for consumers at various markets (local, national, and regional). Physical access can often increase when agribusinesses develop in rural areas, bringing in infrastructure, logistics and more commodities which can increase access to food, e.g., small entrepreneurs moving into areas where workers at a processing plant have more income, or new roads being built to support major new economic activity also bringing new traders into the area. This can be done on a range of scales. Larger agribusinesses may

invest in significant infrastructure projects that can have a significant impact on access. For example, independently of their partnership with CASA TAF, BRM Agro (case study 1.1) constructed a road to enable access to smallholder farmer produce from a rural locality that was previously inaccessible. Several small stalls – including food vendors – opened up along this road, improving the offering of nearby food for local individuals. In addition to creating access benefits through improved infrastructure, CASA MSD partner Viphya Chambo (Malawi, aquaculture, case study 2.4) offers an example of how agribusinesses can increase physical access to nutritious foods for wider consumers. They have improved accessibility of fish in both peri-urban and rural markets by scaling a model

that distributes fish at multiple trading centres and various locations within the Mzuzu market. Similarly, Tac Maz (Malawian poultry business) has targeted multiple markets such as hotels and supermarkets, thereby improving accessibility of diverse poultry products. CASA TAF partner Arohan (India, pork, case study 1.2) uses a similar model, selling through local entrepreneur-run kiosks, improving local access to hygienically stored pork products where they may otherwise not have been available for purchase.

Some agribusiness models directly centre the improved accessibility of nutritious food, but these often rely on a conducive enabling environment.

This is particularly true where public sector bodies procure nutritious foods (e.g., for schools, hospitals, or emergency relief), which essentially creates new demand for nutritious foods either where people cannot afford it or by introducing new products to the market. Such procurements, which typically rely on initiation by public/NGO actors, offer opportunities for agribusinesses to directly contribute to food and nutrition security. For example, Agrilec Ltd in Rwanda (case study 3.3) in a pilot supplies fresh vegetables to 27 schools in Kayonza District under the national school feeding programme targeting 32,400 students. By sourcing vegetables from nearby contract farmers, Agrilec ensures that fresh produce is delivered directly to schools, reducing transport costs and thereby improving the access of nutritious foods for school children in Rwanda. Vegetables included are selected based on school demand, for example, French beans, eggplant, peppers, carrots, onions, and spinach. The contracted farmers also sell any surplus produce in local markets, further improving accessibility to fresh vegetables in the locality. As seen across the CASA portfolio, contract farming arrangements can provide benefits for agribusiness partners (who secure access to raw material) while also formalising smallholder access to markets and services. This can be particularly beneficial for women, who often face additional barriers commercialising their product compared to men, such as lack of capital and difficulty accessing markets, and thus benefit from additional security.²⁶ Similarly to Agrilec, B5CD Ltd (case study 3.1), also in Rwanda, has established direct links with Early Childhood Development (ECD) centres to provide eggs at wholesale prices. This initiative improved accessibility by ensuring that vulnerable children have increased access to nutritious food. The short distance from farms to ECDs enhanced convenience and ensured a regular supply thus impacting availability as well as access. In both cases, these models rely on government funding support to schools and ECDs to enable sustained procurement of fresh foods.

Further examples of how agribusiness partnerships can improve physical and economic access can be seen across the case studies.

4.2 Availability

The quantity and quality of safe and nutritious food available year-round, improved by better production practices/inputs and reduced food losses

Both CASA MSD and CASA TAF highlight multiple pathways to delivering improved availability of nutritious and staple foods, though potential impact pathways vary by agribusiness model/segment.

Availability is the second most commonly addressed pillar across the CASA portfolio. While economic access is already comprehensively addressed across segments through the primary programme goal of improved smallholder income, availability is impacted differently depending on the value chain. Most business models within value chains supplying domestic markets are assumed, to some extent, to positively impact availability. The primary limitation of this methodology/pathway is that we lack insights on whether increased volume from the inclusive business models increases overall supply volume or may in some cases displace other production or substitute other products in the market. As such, it is not possible to quantitatively define the extent to which CASA supported business models increased food availability. For value chains where the primary cash crop may not itself end up on the domestic market, a number of different impact pathways were identified and are useful for future programmes to consider and seek to enhance (see below).

Where increased smallholder production can be linked to increased availability that addresses a clear supply-demand gap, commercial incentives for activities that improve food security can be found.

Across the portfolio, improved availability is primarily driven by improved quality and quantity of production by smallholder farmers. Where agribusinesses rely on smallholder supply chains, they can sometimes be commercially incentivised to offer services that improve the quality and quantity of smallholder production (Table 8). Development partners (programmes or DFIs) can play a key role by offering capacity building and de-risking to agribusinesses establishing such service offerings. The examples in this section highlight the pathways for such improvements in production to lead to an improvement in the availability of food at household and local levels, which could be more intentionally embedded within the design of future agribusiness interventions.

26. Covey, J, Rose, M and Savolainen, G (eds) et al 2025 *Delivering Women's Economic Empowerment through Agribusiness Partnerships: Lessons from CASA*. CASA.

Table 8: How Agribusiness-Smallholder Linkages Can Improve Production Quality and Quantity and Lead to Improved Availability

Service Offering	Connection to Agribusiness Linkage	Pathway to Improved Availability
Training on good agricultural practices	Offered by agribusiness to out-growers and suppliers to ensure correct quantity and quality to meet market demand	Improved yields increasing volumes for home consumption or sale on local markets; diversification of farm plots leading to wider variety of foods available
Access to inputs	Provided, often on credit, by agribusinesses to meet needs of the market	Improved yields; improved nutritional value of product (e.g., improved varieties)
Post-harvest handling ²⁷	Training and/or infrastructure provided by agribusinesses to reduce losses, increasing efficiency in the supply chain	Increased volume for sale or consumption, if going to local markets, improving availability
Labour-saving technology	Promoted by agribusiness to improve supply chain efficiency or return on labour for farmers, improving incentives	Increased time for food production for home or local market

Agribusiness models that sell nutritious food products on domestic markets offer the most direct link to improved availability (segments 3 and 4). In these segments, basic volume increases resulting from increased production and productivity at the smallholder and agribusiness levels contribute to food availability, whether at household, local or national market levels. The route to market for additionally available food varies depending on decisions by smallholders (i.e., how much they sell to the agribusiness, versus other sale or home consumption) and the agribusiness model (i.e., where the final product is sold). For CASA MSD, in

the case of aquaculture, dairy, and poultry, improved production practices by smallholders stimulated through agribusiness linkages have, anecdotally, led to improved availability and consumption of nutritious foods at both household and market levels (see Box 1). Agribusiness interest in continuous supply can also overcome challenges in seasonal availability of food. For example, in Malawi, aquaculture company Viphya Chambo (case study 2.4) staggered the harvest of one pond per month to allow for continuous production and a steady supply of fish on the Mzuzu market.

27. The role agri-SMEs can play in reducing post-harvest losses and the impact this has on food availability is captured in the CASA paper [Wellspring \(2023\) Opportunities and drivers for SME agribusinesses to reduce food loss in Africa and Asia. CASA.](#)

Box 1: Improved Agriculture Practices through Agribusiness Partnerships Leading to Improved Availability of Nutritious Animal Source Foods

Bhawani Dairy Corporation (case study 4.1), Nepal, was supported by CASA to integrate new farmers into their supply chain and enhance existing farmer cooperatives through the provision of trainings in good agricultural practices. These interventions increased Bhawani's daily milk collection from 10,000 litres to 16,000 litres. The increased milk production also allowed farmers to produce other milk-based products like curd, ghee, and paneer, providing essential nutrition to the local community and improving the acceptability of dairy by diversifying into different product forms. One smallholder reflected: "Before, I used to produce 30 litres of milk per day, but now, as part of the cooperative linked with Bhawani Dairy, I'm producing 90 litres daily. The training and consistent market support from Bhawani helped me significantly improve my production and income."

Viphya Chambo (case study 2.4), Malawi, was supported by CASA to pilot a fish aggregation and off-taking model with smallholder farmers, which improved the availability of fish in both rural and urban markets. This was further supported by growth in Viphya Chambo's fingerling production (as inputs for smallholders) from 300 to 2,000,000. One respondent suggested that, "there have been changes in consumption of diverse food because the fresh and quality fish is readily available". Quality was further improved by support from CASA to procure a refrigerated van, maintaining the cold chain and reducing post-harvest losses. Furthermore, Viphya Chambo encouraged farmers to integrate fish farming with other enterprises such as sugar cane, banana, maize, vegetable, and chicken production for sale on the local market and for home consumption, supporting diversification of diets at the household level.

Agwenda Investment Limited (case study 2.1), Malawi, worked with CASA to establish an out-grower scheme that has increased smallholder production (some of which is retained for home consumption), contributing to availability of indigenous chickens and eggs in both rural and local markets. For the urban market, Agwenda established linkages with bars and restaurants, meeting previously unmet market demand with the increased production from the out-grower scheme. This quote from Agwenda reflects this increase in production: "Before CASA, Agwenda had 400-600 chickens; after CASA we have, including those that are with the out-grower farmers, an excess of more than 8,000 chickens." To sustain these increased levels of production, CASA supported Agwenda to set up an extension support system among the poultry groups supplying Agwenda and Government Veterinary Officers, which is still operating post-CASA support.

Models that produce staple foods for domestic markets (segment 4) are rare because of low commercial appeal, but where they exist can benefit availability. This is particularly relevant where there are overlapping policy incentives which can improve the attractiveness of staple markets to agribusinesses, as shown by two TAF examples. In Ethiopia, Samanu was processing oils from imported feedstocks but due to macro-economic issues around forex availability, needed to shift to sourcing locally, leading to its investment in establishing sunflower and other oilseeds

(e.g., rapeseed) value chains.²⁸ Another example is seen in Nigeria, where the government has a strategy of supporting domestic rice production to displace imports, and quotas on imports. Given this, there is an additional incentive for processors to invest in rice production schemes to improve volumes and processing throughput, as seen in the case of Coscharis (Nigeria, rice, case study 1.3). These examples highlight how domestic enabling environment and policy incentives can support agribusiness models that have positive implications for the domestic availability of staple foods.

28. Whilst edible oils have nutritious value and are not typically considered staples, they have been included under segment 4 as the market dynamics are much more like low-value commodity staple products.

Export crops with nutritional/food security value can have a more direct impact on availability in instances where the export crop is locally consumed, but can also have an impact where it is not. Across the CASA portfolio, where export crops are consumed locally and are of nutritional value (segment 2), four key pathways to increased availability exist:

(1) Retention of produce for own consumption or local sale, whether allowed by the company or not.

For example, whilst Paicho Pasal (case study 4.4) primarily export vegetables to high-value markets, some produce is still either sold locally (by both farmers and Paicho) or retained for home consumption. With an increasing diversity of vegetables now being grown locally to meet market demand, an improved diversity of vegetables is being consumed in rural households, with one respondent noting: “My children don’t want to eat the same vegetables every day. Thanks to Paicho, I can now buy different but preferred vegetables from nearby farms if I have to, creating variety in our meals.” Further examples from the TAF portfolio include Sokofresh (avocado), Olivado (avocado and mango), Kentaste (coconut products), Exotic (macadamia), and BRM (rice).

(2) Sale of secondary produce on local markets. In mixed cropping systems, where a nutritious secondary crop supports the cultivation of the export crop, there is potential for agribusiness models that support increased production to increase the market availability of the secondary product. Whilst not an export example, Viphya Chambo (case study 2.4) have encouraged the cultivation of bananas alongside fish ponds to improve stability, with the produce increasing availability for home consumption and sale on the local market, with 61 tonnes sold to date. In the TAF portfolio, BRM Agro (case study 1.1) have explored a variety of sustainable farming and agro-forestry techniques which produce a range of secondary foods, including water cleansing (fish in water to cleanse), perimeter trap crops (lemongrass, marigolds to repel pests) and agro-forestry (planting of trees: banana, mango, coconut, neem, indigenous bushes).

(3) Consumption of a by-product of the focus export crop/product. Whilst this is likely to be less significant, even in instances where the export crop is not consumed locally, there may be a by-product that is relevant to local food security. In such instances, increase in the volume of the export crop could have an impact on the availability and consumption of the non-exported food. Examples from the TAF portfolio include: Aliet Green (coconut sugar – both exported and consumed locally; coconuts not exported) and Organic Africa (hibiscus – flowers exported; leaves can be consumed locally). In some of these cases, acceptability might need to be addressed to realise a food security impact.

(4) Re-investment in business units focused on domestic market. Where a business is serving both export and domestic markets, technical assistance focused on improving the export business can sometimes have knock-on impacts on the domestic market side of the business, e.g., re-investing profits from export business or using learnings on the export side also to support domestic operations.

Both food and non-food cash crops for export markets (segments 1 and 2) can also have multiple indirect impacts on availability through associated or “add-on” initiatives. Examples of this include (1) where cultivation techniques promote diversification of plots, such as coffee stumping with intercropping with beans; (2) where additional services provided to out-growers have secondary benefits on production of locally consumed foods, such as improved agronomic practices, e.g., from improved soil quality, or indirect impact from implementing practices learned on the cash crop also on food crops, e.g., composting/manure, Integrated Pest Management (IPM), agro-forestry; and (3) where labour-saving investments free up time – especially women’s time – to focus on other farming or other activities that impact household food security/nutrition. Whilst this was not a strategy that was directly pursued across the TAF portfolio, it is a possible impact pathway that could be explored and even explicitly included in the design of future partnerships, if it is low cost for the business and sufficient commercial incentive for the business exists.

4.3 Affordability

Realising lower prices for food items through realising production efficiencies or offering different portion size or greater affordability by changing budgetary prioritisation

Affordability is much harder to address when working through individual agribusiness partnerships, although there are some examples of possible impact. In CASA’s experience, and reflective of market dynamics, it is not likely that working through a single business will impact affordability at the level of the marketplace. However, at the household level, cost reduction initiatives that are extended to crops which are consumed by the farmers themselves may effectively reduce the cost of those crops to the household. Even though CASA MSD has adopted a value chain approach in its implementation countries, the programme has not sought to document any market-level changes in affordability of agricultural produce. Collecting such data would require significant resources owing to the highly dynamic nature of markets, the mix of formal and informal marketplaces for almost all commodities CASA MSD works with, and the multiple factors external

to CASA programming that shape market prices (e.g., other agribusinesses beyond CASA partners, government policies including subsidies, climate shocks). Whilst robust quantitative data is lacking for impact on affordability, a review of CASA business plans and case study data collection allow some comment to be made on possible pathways (see below).

In theory, if an initiative reaches scale, or is replicated by others, market level affordability *might* be impacted, depending on competitive dynamics in the sector; however, there were no examples of this effect having been achieved to date in the portfolio.

The highest potential example in the TAF portfolio was a dairy company (an initiative which did not move forward to implementation support) which aimed to increase milk volumes based on farmer support through a network of dairy hubs. At the time of the design phase, milk demand was exceeding supply and creating competition among buyers, resulting in price pressure. In this environment it is possible that a large enough increase in volume (whether through the dairy company directly, or by others replicating the model) would stabilise/reduce farm-gate prices. Given the dairy company was selling to low-income consumers, such a reduction might in this case be reflected in consumer prices to achieve sales volume increases. This is a similar model to the collection centres promoted by [several of the dairies that CASA MSD works with in Nepal](#). However, collecting data on market prices (which fluctuate on a daily basis) and then attributing any decreases (which may mark an improvement in affordability, but would not necessarily be good for producing farmers or agribusinesses) is challenging and has been out of scope for CASA. The way in which wider market volatility shapes the price of agricultural products was seen in the dairy crisis in Nepal, where a national oversupply occurred, leading to plunging prices, high losses, and farmers emptying their milk on the streets in protest.²⁹

Agribusiness models that level out year-round production/supply deficits may have an impact on price fluctuations and therefore affordability. CASA Kenya – a spin-off from CASA TAF – is supporting a vegetable production model that produces irrigated vegetables during the off-season. As vegetable prices are high out of the main production season, availability of more produce at that time of year can reduce prices and make vegetables more affordable. Similarly, under segment 5, BioTech Senegal (a bio-inputs company) expects to enable farmers to grow off-season onions

with its organic fertiliser; again, this could potentially stabilise/reduce off-season prices. A similar example is seen on CASA MSD with Viphya Chambo's efforts to smooth out availability of fish on local markets (case study 2.4). Whilst the intention behind this was to secure continuous revenue for the business, it may have had a secondary effect contributing to reducing price volatility, though no data have been collected. Production volatility and subsequent price volatility can also be influenced by disease outbreaks in animal-sourced food value chains which can temporarily increase consumer costs due to supply contractions. Many of CASA's interventions in such value chains, including CASA MSD's work in the Nepali dairy sector and CASA TAF's support of Arohan (case study 1.2), have included access to veterinary services and good management practices to reduce the likelihood of disease events, effectively stabilising prices/preventing shortage of supply and subsequent spikes versus a scenario without the intervention.

Reducing the cost of production can improve affordability if the product is being consumed at the household level. As noted under accessibility, improved production practices and efficiencies realised through services provided to smallholders through agribusinesses may lower the cost of production, improving affordability in cases where producing households consume the product. CASA TAF observed this is especially true in segments 3, 4 and 5 (focused on nutritious foods and staples for domestic markets, and distribution and ag-tech models) – although logically applies as well to the impact pathways identified for segments 1 and 2 (export crops) under availability, e.g., if mixed cropping models produce food for own consumption or the domestic market. Particularly for distribution models in segment 5, improved affordability can be realised for producing households that also consume the product if there is a reduction in the use of chemical/synthetic inputs and/or where bulk purchasing at scale by the distributor lowers the cost of inputs. Similar examples are seen where access to affordable feed, a primary challenge in animal-sourced food value chains, has been a target of CASA MSD interventions in poultry and aquaculture. Despite these opportunities for producing and subsequently consuming households, it is unlikely cost reductions on the farm will be reflected in the market price for wider consumers unless there is a particular competitive pressure. It is possible that if these initiatives reach a high scale, or are replicated by others in the market, they could impact local affordability, though this is not envisaged in any examples across the portfolio.

29. Kathmandu Post (July, 2024) [Unpaid dairy farmers memo government, threaten new protest from this week](#)

Export and domestic staples sectors are unlikely to address affordability. Export sectors (segments 1 and 2) will not impact affordability at all. Domestic staples (segment 4) are challenging as the potential for inclusive business models within these sectors is constrained and in the two examples assessed, coincides with a protectionist policy environment (as at least in the short term, local production may be more expensive than importing cheaper product at scale, although as previously noted this may pose threats to food sovereignty). For example, in Ethiopia, locally produced crude sunflower oil is expected to be more expensive initially than imported oil and the government may introduce import tariffs to protect the industry, which could enable the sustainability of the nascent value chain (and associated income, health and resilience benefits) though they will not support short-term affordability for the consumer. Note that this strategy however also implies greater food sovereignty for the country which might in some scenarios lead to more stable and resilient pricing over time versus dependency on imports subject to global pressures and shocks.

Product diversification by agribusinesses can make business sense and lead to the emergence of more affordable nutritious food options for consumers. In many of the markets CASA works in, particularly under CASA MSD, agribusinesses are targeting relatively lower income customer segments. In these markets, some agribusinesses have opted to offer their products in smaller and more affordable varieties or quantities. For instance, selling small fish, eggs, and chicken parts makes these protein sources more affordable for low-income households. This approach ensures that even the poorest households can access high-protein foods, contributing to dietary diversification and improved nutrition. Examples include Viphya Chambo's fish pricing strategy (selling small-sized fish as fish remains relatively expensive for the average consumer) and Agwenda's chicken portioning (cutting up chickens into smaller packages), both in Malawi.

4.4 Acceptability

Taste and other qualities, safety and convenience that can change with both changes in product and in perception through education and awareness raising, influencing consumption

Marketing of food products to drive sales is the most common way for agribusinesses to contribute to improved acceptability. If an agribusiness is promoting a product line through marketing and consumer awareness, this can drive improved acceptability.

Agribusinesses that produce nutritious food for domestic market (segment 3) may address acceptability if nutritious products that are not yet widely consumed are promoted. It is important to note that to be of benefit to food and nutrition security, this should be the promotion of healthy and nutritious foods. In some cases, the linkage is less clear. For example, the promotion of flavoured milk or ice cream by several of the dairies supported by CASA MSD on the one hand represents agribusinesses responding to incentives to promote processed products of lower nutritional value than the unprocessed product, but on the other represents a way to increase dairy consumption. Additional examples of marketing campaigns linked to acceptability across the CASA portfolio include:

- Processed meat or dairy products may be more convenient or longer-lasting than fresh meat/milk.** Arohan (case study 1.2) is selling bacon and sausages, as well as smoked/pickled meat made from the unsold meat from the kiosks. Over time, Arohan marketing may increase acceptability of these processed meats and/or even of pork meat itself. Similarly, CASA MSD partner [Urban Food Industries](#), were supported to market and diversify into pork processing. Additionally, CASA's partnership with IFFNT (case study 2.2) included training on fish processing through smoking. This not only added value and improved shelf life but also increased acceptability, with consumers preferring the smoked fish flavour. It is believed this has contributed to increased demand for fish products, which often sell out on harvest days, with a trend for pre-ordering emerging.
- Acceptability can be motivated by a desire to promote domestic alternatives to imports.** In Ethiopia, TAF partner Samanu are addressing the acceptability of local seed oils (sunflower, soybean, rapeseed) as a believed healthier alternative to imported palm oil. A key risk to note is that sometimes, though not across the CASA portfolio examples, local products are felt to be inferior to imports which may mandate further acceptability work from the agribusiness.
- Acceptability work can be motivated by seeking commercial opportunities from by-products.** Organic Africa, with CASA TAF support, is exploring the potential nutritional value of hibiscus (rosella) leaves which are eaten in other geographies but not yet in Zimbabwe. The leaves are a "by-product" of the hibiscus flowers, which are separated and exported as a cash crop.

- **Acceptability can be incentivised by a need to increase the consumer base for an already existing product.** Poshilo (case study 4.3) was supported by CASA MSD to champion Satu, a powdered mixture made of roasted ground grains, cereals, and seeds, long consumed in rural areas of Nepal and colloquially known as “poor man’s protein”. The marketing centred the promotion of Satu’s nutritious value, especially compared to increasingly accessible processed foods, to an increasingly health-conscious middle-class consumer base in Nepal and India. CASA supported Poshilo to improve its smallholder aggregation processes, to achieve certification for quality, and develop a branding and marketing strategy for Satu as the key product line.
- **Other options for promoting acceptability could include education on how to cook, recipes, for example; however, this is often a low priority for agribusinesses unless embedded as part of a market campaign to grow the customer base.** For example, as Poshilo were promoting an infrequently consumed food product to a new customer segment, there was a commercial incentive to embed education on consumption within the marketing campaign. CASA supported Poshilo with “Project Poshan”, which sought to raise awareness on nutrition, engaging children, parents and teachers from 11 schools and one ward office and hosted a range of interactive sessions on meal preparation, healthy diet, nutritional balance, hygiene and improved understanding of nutrition and healthy living.
- **Adoption of new, higher-yielding varieties can both increase business margins and improve consumer acceptability.** This has particularly been seen in the case of poultry and aquaculture in Malawi. For Sprodeta (case study 2.3), the introduction of Mikolongwe and Kuroiler chickens (which are faster growing, more resilient in times of drought, and have a higher meat content, but have a similar taste to local chickens) has led to high acceptance of the new product. Similarly, Viphya Chambo’s (case study 2.4) use of parent Chambo fish from Lake Malawi has increased the acceptability of the fish by customers. Demand is high due to the quality of the fish (size, flavour) and harvested stock is sold the same day. Similarly, the fish is well accepted by smallholder farmers and the local community because of improved taste and weight.

Agribusiness often have incentives to improve food safety and quality, which may improve acceptability, especially where awareness of this is passed onto the consumer. A key area for quality improvements across the CASA portfolio is in working on agribusiness-smallholder linkages to improve production practices. This is especially incentivised in cases where agribusinesses are seeking certification, which itself is closely linked with acceptability, though often for international rather than local markets. Pathways to this from CASA TAF include a focus on organic crops and/or lower use of chemical/synthetic inputs (e.g., Kentaste), a focus on hygiene (e.g., Arohan working through a national pig research centre to monitor rural slaughterhouse operations, with processed pork being certified for food safety), promoting safer inputs like biopesticides (e.g., KAPI in Kenya). Further examples are seen in the CASA MSD portfolio. In the case of Himalayan Supervores (case study 4.2), acceptability of the vegetables was not just about taste or quality; it was about safety and the trust built through consistent, transparent practices. CASA MSD support included technical assistance on safe storage and transportation, ensuring they reached consumers fresh and free from contaminants, significantly improving their acceptability in the market.

Wider acceptability action is not incentivised on commercial agriculture programmes. Many nutrition-specific programmes have distinct aims and objectives to improve awareness and education on how to source and prepare nutritious foods and the benefits associated with doing so. However, on a commercial agriculture programme such as CASA – which works directly with and through agribusinesses – these activities are typically out of scope as targets for scale (number of smallholders impacted) incentivise investment in sectors which already have large numbers of smallholder producers and concrete market demand. For example, a key part of the CASA MSD value chain selection was the presence of market demand for the products, creating viable agribusiness opportunities. There are often limited business incentives for wider acceptability activities as agribusinesses are typically working with products for which there is already at least a nascent demand and that can be effectively marketed at scale. Evidence from CASA MSD and CASA TAF highlights that acceptability is addressed in the few projects where new products/varieties are being introduced to the market, such as the examples given above.

4.5 Nutrition

Quantitative results on nutrition from CASA MSD are reflective of wider downward trends in food security in Malawi and Nepal. Household dietary diversity scores have seen marginal declines across men and women smallholders working in aquaculture, poultry, dairy, and vegetables across Malawi and Nepal. This echoes the findings of household food insecurity experience scores, which have seen a marginal rise across all smallholders and value chains in the 2023/4 outcome assessments as compared to the 2022/3 baseline on CASA MSD. In the case of Malawi, this is symptomatic of significant national decline in food security. From the third (2010-11) to the fifth and most recent (2019-20) integrated household surveys, households with high food security decreased from 57.6% to 23.8%, whilst households reporting low food security increased from 32.5% to 62.9%.³⁰ More recent data and projections from the IPC point to a continuation in this decline from 2024 to 2025, with all districts food stressed and an increasing number in crisis, driven by climate shocks, economic decline and high food prices.³¹ Similarly, in Nepal, prevalence of moderate or severe food insecurity has risen from 29.5% of the population in 2015 to 37% in 2022.³²

Despite the picture painted by the quantitative data, qualitative reflections on food and nutrition security collected through the case studies and shared throughout the paper appear more positive. This may highlight limitations of the methodology, which is based on a 24-hour recall of consumed foods, and further in-depth exploration would allow firmer conclusions to be drawn, including on if agribusiness linkages had slowed declines amongst linked smallholders when compared to un-linked smallholders. If future programmes are seeking to make concrete claims about *impact* on food and nutrition security, more specific indicators and resources to determine attribution of the programme versus external factors should be provisioned as part of programme design at the donor level.

In summary, commercial agriculture programmes can positively impact nutrition, but there are limitations based on what can be commercially incentivised through agribusiness models. As highlighted through the analysis of the four A's above, there are meaningful pathways through which commercial agriculture programmes can contribute to food and nutrition security. However, it is important to note that, as compared to programmes with an explicit focus on nutrition, agribusiness programmes will remain limited

by where a commercial case can be meaningfully put forward so there may be areas, such as affordability and acceptability, that are beyond the remit of these programmes. Should donors wish to have such direct impacts across all four A's, it may be advisable for this to be done either through separate programme components or by joining up with other programmes that centre complementary approaches to nutrition beyond income and availability (i.e., not only relying on agribusiness partnerships that require a commercial incentive). This work would need to be complemented by specific monitoring indicators for nutrition to track progress.

4.6 Potential for Tensions and Negative Impacts on Food Security

Despite having several pathways to creating benefits for the four pillars of food and nutrition security (as highlighted in the above sections), a review of agribusiness partnerships across the CASA portfolio also highlighted several possible risks to food security. Whilst there was no evidence of CASA doing harm, it is important to identify these potential risks, ensuring they are considered and intentionally mitigated in partnership design.

The smallholder farmer suppliers to the agribusiness benefit most but are also exposed to the most potential risks which need to be considered and mitigated. The primary risk for smallholders linked to agribusinesses is the potential for commercial agriculture activity to undermine the production of other food crops grown for home consumption. Potential pathways to this risk include:

- Prioritisation of cash crops leading to neglect of homegrown food, reducing the resilience of household food supply and increasing exposure to market risks
- Shifts in production practices on the cash crop area of the land (e.g., shift to organic production to target higher-value markets) could negatively impact the yield of food crops grown in the area (if new organic inputs/practices are not in turn adopted) or are more labour intensive and therefore take time away from other activities relevant to household food security
- If inputs are paid for but not used properly, there is a risk that valuable cash can be spent without impact; potentially that cash could have been used for other food security-related needs (this highlights the need for timely services to ensure investments by smallholders in production pay-off)³³

30. The Fifth Integrated Household Survey (IHS5) 2020 Report. Accessible [here](#)

31. IPC 2024 [MALAWI: Acute food insecurity analysis, May 2024 – March 2025](#).

32. Prevalence of Moderate or Severe Food Insecurity in the Population: Nepal. Accessible [here](#)

33. The complexity of the relationship between inclusive agribusiness and food and nutrition security, as well as the potential risks, are outlined by van Westen et al 2019 Inclusive Agribusiness Models in the Global South: The impact on local food security. Current Opinion in Environmental Sustainability, 41, pp 64-68.

- Greater use of non-organic inputs could lead to less healthy food with higher residues
- Higher yielding or commercially preferred varieties might be less nutritious or less suitable for household consumption. CASA has sought to mitigate these risks by ensuring that adoption of new practices is driven by smallholder choice, and that sufficient training on pros/cons of different strategic options is available to farmers. This is equally important for agribusinesses who, despite potential needs for rapid increase in production volume, require sustained reputation and license to operate in the area to ensure long-term viability of their operations.

The 2024 CASA Annual Review noted that some CASA MSD companies may diversify into unhealthy/less-nutritious products. The particular example cited was product diversification to flavoured milk in Nepal. Whilst the nutrition impact of this product, which targeted the urban middle-class who were typically not drinking much milk, are limited, it is important to note that there are often commercial incentives and consumer preferences for unhealthy foods in many market contexts.

Agribusiness development programmes should remain cognisant of this, assessing on a case-by-case basis to determine where mitigation would be required.

In some cases, there may be a tension between the goal to develop inclusive business models and the goal to produce large quantities of affordable food or to maximise impact on the most food insecure farmers. While both income and availability are important pathways for agribusiness impact on FNS, their relative importance depends on many contextual factors. A programme designed to maximise small-scale farmer income may have a lower impact on availability and conversely, a programme designed to address availability may have a lower impact on income. More broadly, in some cases there may be a tension between the goal to develop inclusive business models and the goal to produce large quantities of affordable food or to maximise impact on the most food insecure farmers. These trade-offs are complex and need to be weighed up carefully, including considering the impacts of strategic choices over the medium- and long-term and how they impact sustainability of the initiative. FAO's 2020 food security framework explicitly includes sustainability and stability.³⁴ Tensions include:

- Despite their theoretical potential to increase availability of food, developing inclusive sourcing models in domestic value chains – especially staples – can be challenging as these sectors tend to be low margin with high potential for side-selling. Inclusive distribution models can offer stronger economics and a higher potential to impact food and nutrition security in low-value domestic food sectors compared to sourcing models.
- Policymakers and development programmes alike need to grapple with tensions between creating jobs/opportunities and supporting the country's industrial development vs. importing cheap food. There are concerns that tariffs – which are needed to support local industry and associated jobs – can increase food prices in the short term. However, consideration needs to be given also to food sovereignty (domestic supply can be more stable in the face of global shocks) and food quality (local food is often considered fresher and more nutritious than imports) to ensure an appropriate balance is struck.
- Attempting to address affordability within inclusive business models – if this includes reducing the price paid to farmers – could leave the farmers themselves with reduced economic access to food. Alternatively, farmer price reductions might result in inclusive models becoming unviable.
- Conversely, there is a tension between agribusiness pursuit of increased margins and affordability of food products by wider consumers. Whilst improved prices for agribusinesses may lead to benefits for involved smallholders, there is the possibility that it worsens affordability for the wider consumers and increases inequality amongst local communities.³⁵ Whilst no examples of this have been identified in the CASA portfolio, agribusiness programmes must remain mindful of the risks and work to mitigate them in partnership design.
- Engaging food insecure farmers in inclusive business models can potentially help food insecure households earn income to spend on food. However, this is not always possible as companies often want to engage farmers with a certain level of land ownership and available labour (who are typically not the most food insecure), and in one case, CASA experienced that poorer farmers were not repaying loans. This may be more viable in in-grower and wild collection models which do not require farmers to own land.

34. <https://www.fao.org/cfs/cfs-hlpe/insights/news-insights/news-detail/ensuring-food-security--why-agency-and-sustainability-matter/en>

35. The complexity of the relationship between inclusive agribusiness and food and nutrition security, as well as the potential risks, are outlined by van Westen et al 2019 Inclusive Agribusiness Models in the Global South: The impact on local food security. Current Opinion in Environmental Sustainability, 41, pp 64-68.

Risk mitigation should be done on a case-by-case basis. Due to the diversity of business models and smallholder farmers engaged across the CASA portfolio, and the variety of mechanisms/relationships linking them, it is important that the above-mentioned potential risks are mitigated in a way that is appropriate to the context. For example, case-by-case assessments of how organic-compliant practices and inputs could maintain yields, and support farmers to plan their commercial versus home production activities.

The risks noted above exist across segments and relate more to specific programme design and practices promoted. No particular trends regarding potential negative impacts per agribusiness segment were observed.

4.7 Intersectionality: Food Security, Climate Change and Gender

When appraising the portfolio's linkages to food and nutrition security, it is important to also consider the relationship between food and nutrition security and gender equality and social inclusion/women's economic empowerment and climate resilience, CASA's other crosscutting themes. Though complex³⁶, the relationship among food security, gender, and climate are well established in the literature.^{37 38} CASA-specific evidence has emerged through the analysis that took place for this paper and also on women's economic empowerment in CASA.³⁹

Women's economic empowerment through agribusiness linkages can have a positive impact on food security. Quantitative evidence from CASA MSD's work in Malawi and Nepal shows women have an increasing role in decision making following engagement with agribusiness linkages. This is linked to food security through qualitative evidence of women opting to spend additional income on staple or nutritious foods. For example, 90% of the respondents working with [Tac Maz](#), a CASA MSD partner producing poultry in Malawi, indicated in a focus group discussion that they had invested their earnings in family healthcare, savings, household necessities, and food security. This aligns with the sentiments of CASA staff, who, whilst not documenting links between food security and gender within the partnership plans, held the belief that where women have some level of control over the income earned, that income will be more likely to be invested in key household needs including food and nutrition security. This evidence also addresses concerns in the literature that "women may lose decision-making power with increasing levels of commercialisation, but this may possibly be prevented through more gender-sensitive approaches and awareness-building initiatives."⁴⁰

The graphic in Figure 3⁴¹ illustrates how women's empowerment contributes to food and nutrition security alongside income and food availability. Future commercial agriculture programmes can take lessons on how to incentivise agribusinesses to work in ways that lead to women's economic empowerment, which may be a way of indirectly targeting food and nutrition security. However, this linkage relies on the assumption that affordable and/or nutritious food is available to buy on the market.

36. Clement et al 2019 [From Women's Empowerment to Food Security: Revisiting global discourses through a cross-country analysis](#). *Global Food Security*, 23, pp 160-172.

37. For WEE, see FAO 2023 [The status of women in agrifood systems](#). Rome. <https://doi.org/10.4060/cc5343en>;

38. FAO 2018 [The State of Food Security and Nutrition in the World 2018: Building climate resilience for food security and nutrition](#). Rome.

39. Covey, J, Rose, M and Savolainen, G (eds) et al 2025. [Delivering Women's Economic Empowerment through Agribusiness Partnerships: Lessons from CASA](#). CASA.

40. Agricultural Commercialisation and Nutrition in Smallholder Farm Households, 23 August 2019 <https://onlinelibrary.wiley.com/doi/full/10.1111/1477-9552.12359>

41. Ogotu, Godecke, and Qaim (2019) 'Agricultural Commercialisation and Nutrition in Smallholder Farm Households' *Journal of Agricultural Economics*. <https://doi.org/10.1111/1477-9552.12359>

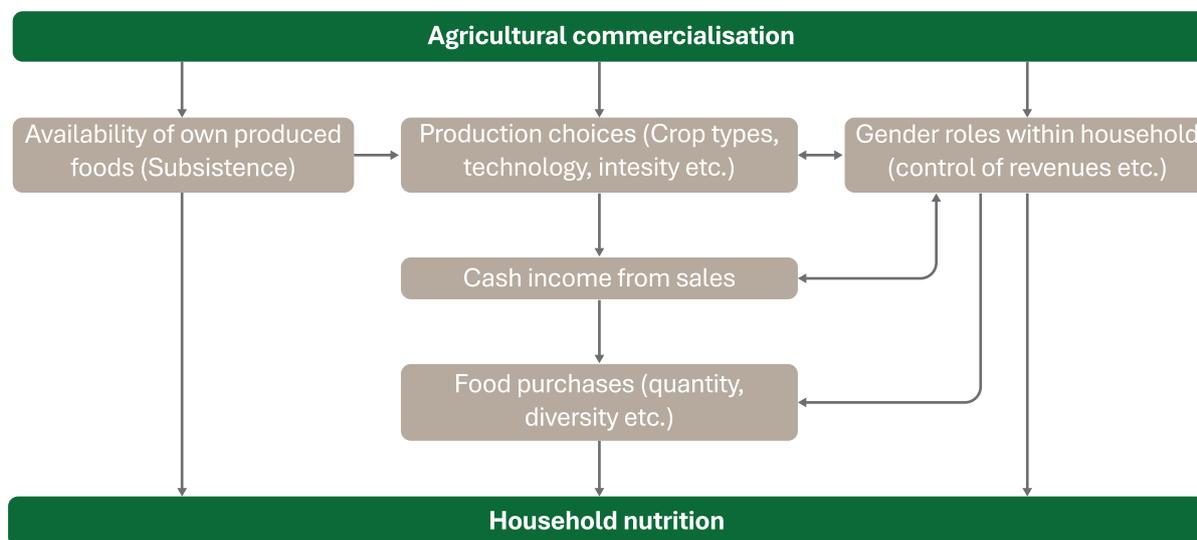


Figure 3: Availability, Income and Gender

There is a strong link between initiatives designed to increase farm resilience/climate resilience and food security. Having climate resilience as a key programme objective has meant that many CASA agribusiness partnerships include some level of training for smallholders on climate-smart production techniques, with agribusinesses incentivised by a need to secure production to meet onward market demand. Such techniques, when applied to either the crop being produced for the agribusiness (if it is a food crop, or if it is cropped alongside food products), or if also applied to the land on which household produce is grown, can also support increased availability of food year-round, improving the resilience of food availability against climate shocks. For example, agro forestry can include planting fruit trees; inter-cropping may be with legumes which may be consumed by the household. For CASA TAF, these practices were most visible in segment 5, but this may be a function of timing rather than higher likelihood of that segment demonstrating this linkage (segment 5 IBPs have been developed more recently when there was a higher CASA TAF programme focus on climate resilience). On CASA MSD, aquaculture producers in Malawi have been encouraged to plant fruit trees, especially bananas, on the banks of ponds to improve resilience to flooding, whilst also providing nutritious food for home consumption or sale on local markets (case study 2.4). Also in aquaculture, activities that address pollution through fishpond run-off and effluent water have utilised this to act as a fertiliser of home garden and other food plots, aiming to improve yields and thus availability.

4.8 Differences across Smallholder Farmer Groups

Across the CASA portfolio, there is a range of farmer profiles, from small commercial farmers to poor, marginalised farmers. Most commonly, targeted farmers are not the most vulnerable/food insecure because they are rarely good targets for companies embarking on inclusive business models. Typically, the most marginalised farmers do not have sufficient land, sufficient risk appetite, or sufficient “farming as a business” experience to be effectively integrated into agribusiness models. This is a common challenge for development programmes working through a commercial agriculture model. Therefore, it is typically farmers who are at the stage of ‘stepping up’ and ‘stepping out’ that are the target of programmes such as CASA. For example, on CASA TAF, Nileda’s pilot farms are on average 3 ha and 90% irrigated, while De Haat’s pilot finance initiative was to focus on farmers with 2.5-5 acres and a baseline income of \$1100. In these cases, it is possible that economic access may be a less important barrier for farmers engaged than for some other even smaller farmers, though these farmers are still on limited incomes and therefore struggle to afford more expensive foods like meat, meaning agribusiness linkages can still impact nutrition even if the family is already food secure. However, the portfolio does show some examples of where agribusiness models can reach smaller and poorer farmers where income impacts might

have a relatively higher impact on food security (rather than nutrition). On CASA MSD, work in the Malawian poultry sector has typically engaged smaller scale (e.g., 5-10 birds) and more marginalised smallholders, which is reflective of the micro size of some of the agribusiness partners, which in turn is reflective of the nascent nature of agri-SMEs in the Malawian poultry sector. On CASA TAF, Organic Africa, on the other hand, sources rosella from amongst the most economically disadvantaged smallholders, in marginal production areas with limited access to resources and opportunities. Additionally, Kentaste's village agent strategy was specifically focused on buying more efficiently from smaller farmers than those it had previously been able to buy directly from. The scale of agribusinesses – and their models of smallholder engagement (e.g., out-grower vs. in-grower vs. wild collection; sourcing vs. distribution) – matter for equity of inclusion and outcomes across different levels of smallholder farmer. This should be considered at the programme design phase.

Future work could assess how impact on food and nutrition security differs by farmer profile and if there are any trends. For example, more vulnerable farmers might be more likely to spend income gains on food. Better-off farmers might be more likely to buy more expensive food (e.g., meat) or invest in their farms, leading in turn potentially to greater food availability. Exploring these trends was beyond the scope of this work.

There is also variety in the number of farmers targeted under different agribusiness models. The CASA TAF learning paper highlights the important considerations around breadth and depth of impact when it comes to creating benefits for smallholder farmers through inclusive business models.⁴² While the analysis above has focused on depth of impact, the number of farmers impacted is relevant too. In general, analysis of the TAF portfolio shows segments 1, 4 and 5 offer the highest farmer numbers. Segment 3 may typically impact fewer farmers.

4.9 Overview of Findings on Mechanisms

The analysis above reflects the CASA theory of change in identifying economic access from improved income as the main pathway to improved food and nutrition security for smallholder farmers linked with partner agribusinesses. This is backed up by a series of anecdotal reflections from smallholders and the quantitative evidence from CASA MSD on utilisation of additional income. Perhaps more interestingly, the analysis of the business plans and generation of case studies also highlighted the importance of the production mechanism and the way in which agribusiness linkages can generate outcomes for physical access for smallholders directly linked as well as availability for consumers in local and further afield markets, even in non-food crops and in food crops for export markets. Almost all of the interventions draw on both mechanisms of delivering food security and both are well balanced across the portfolio. This is indicative of how smallholder production typically works, divided between production for market and production for home consumption. Retaining both pathways is likely to improve the resilience of food security at the smallholder level as it prevents over-exposure to both market (i.e., price volatility, availability of food on the market) and production (e.g., climatic shocks) risks. It is important to acknowledge that commercial incentives for agribusinesses are likely to push smallholders toward further commercialisation, increasing integration with and reliance on markets. Whilst there are many benefits of this market integration, as highlighted above, development programmes must remain cognisant of the risks this may present to smallholders and the vulnerabilities it may engender.

42. CASA TAF 2025 [From Pilot to Scale: Shared Value Creation for Inclusive Agribusiness March 2025 Insights from CASA Technical Assistance Facility 2019-2024](#). CASA.

5. CONCLUSIONS AND RECOMMENDATIONS

Overall, it appears agribusiness partnerships in the CASA portfolio across CASA MSD and TAF can influence all four A's of food security.

The strongest potential to impact food and nutrition security is through access, both economic and physical, and availability, through improved production driven by services offered to smallholders by agribusinesses. Development programmes can play a key role in supporting and de-risking these pathways through capacity building and grant-making. Specific pathways vary by agribusiness model and are discussed in sections 4.1 and 4.2. This is exactly as expected and as laid out in the CASA food and nutrition security brief and theory of change.⁴³

Affordability at the household level for directly linked smallholders can also be addressed through cost reduction initiatives, though broader impact on affordability in the marketplace is less likely except where there may be a shortage of supply driving higher prices (e.g., off-season vegetables and potentially animal source foods), or smaller quantity and therefore price packages are launched to meet market demand.

Acceptability is mainly addressed through agribusiness marketing campaigns, usually for new or diversified products, with limited commercial incentives for wider acceptability work which would fall in the remit of social development programmes.

The following key recommendations emerge from the analysis:

Recommendations for Donors

- Develop simple and practical tools and support mechanisms to enable agribusiness programmes to maximise FNS impact and share best practice and case studies
- Consider the tensions and trade-offs between different elements of FNS – and between FNS and other goals – including what is possible through an agribusiness support or farmer income generation programme vs. a programme focused primarily on nutrition outcomes
- Be pragmatic about the level of information that can easily be captured, especially on availability and affordability, without extensive surveying which can be expensive
- Where feasible, invest more in technical experts and

M&E to gain greater insight into programmes' direct impact on FNS

Recommendations for Implementing Agencies

- Consider most relevant FNS frameworks to assess and monitor the private sector development programme
- Based on the selected framework, explicitly consider the relevant elements prioritised at design stage to ensure the team has a broad understanding of the issues and trade-offs, and spots potential FNS opportunities
- Analyse potential negative impacts on FNS upfront; develop monitoring and mitigation plans as needed, including encouraging agribusinesses to monitor risks as part of their ongoing community relationship and local “license to operate”
- Analyse competitiveness of any proposed inclusive sourcing model upfront, especially in low-value crops for domestic markets, including understanding the policy environment. Where sourcing models are not competitive, consider whether distribution models may be more immediately impactful and offer a stronger pathway to impact incomes and FNS outcomes
- Consider engaging FNS experts upfront to identify opportunities that can be practically integrated into programming and execution

Recommendations for Agribusinesses

- Understand farmers' crop portfolio and additional crops that are being produced in addition to the main crop that is included in the commercial supply chain to determine if there are opportunities to promote food and nutrition security outcomes
- Consider any positive or negative implications on farmers' food and nutrition security and if these should and could be mitigated within an inclusive business model. For example, training on whole family farm management including split between cash crops and household food security crops (to avoid any challenges with household over-investment in cash crops and impact on long-term license to operate in the area); inclusion of training on food crops as well as cash crops where this makes sense (e.g., for input distribution businesses, where farmer loyalty can be supported through this approach)

43. CASA Technical Assistance Facility, Contribution to food security, CASA TAF, July 2021; CASA MSD Food and Nutrition Security Strategy

ANNEXES

Annex 1: CASA TAF Case Studies by Margaret Rose

1.1 BRM, Rice, Cambodia (Segment 2: Export crops with nutritional/food security value)

BRM is an integrated rice plantation and mill in Cambodia, contracting blocks of ~20 ha to different farmer groups (~17 farmers per group) and serving a total of ~1,800 smallholders. BRM aims to increase rice value-addition and productivity through an integrated contract farming model which becomes one of the first circular and sustainable rice production and export hubs, based on (1) rice straw-based composting; (2) laser land levelling (LLL); and (3) natural pest management and agro-forestry. Through this, BRM will expand exports to high-value geographies (e.g., EU, US) through achieving low MRLs (minimum residue levels) and positioning a sustainable, regenerative rice.

Access: Developing the model contract farming scheme will lead to income increases of 47% in the pilot year and 95% by 2030, equivalent to \$410 per ha of incremental net profit for 2880 growers at scale. Key drivers of the increase are use of compost (can reduce costs by 50%) and natural pest management (can reduce costs by up to 20%), LLL (can increase yields up to 25%) and additional savings in fertiliser and crop protection use. The programme will appoint a woman farmer to lead and implement the first pilot and to lead the lead farmer network, directly targeting and improving overall female participation. This helps to increase the likelihood of the incomes being spent on household food and nutrition security needs.

In terms of physical access, separately from its work with CASA TAF, BRM has built a 13 km road to open the area for development. There are now small shops along the road making foods more accessible than before. This road could also open up more employment/entrepreneurship opportunities for local households to earn more money, from which they could spend more on food/nutrition.

Availability: The goal under this plan is to achieve more exports and under BRM's current contract farming model, BRM purchases 100% of the rice produced which they then mill and export. However, the programme will provide free fresh fish and fruits for the farmer community. These are produced through sustainable farming/agro-forestry techniques: water cleansing (fish in water to cleanse), perimeter trap crops (lemongrass, marigolds to repel pests), agro-forestry (planting of trees:

banana, mango, coconut, neem, indigenous bushes) – these also reduce the need for chemical crop protection by up to 20%. Fish are bred in the water canals – besides cleaning, they will serve as an additional food item for the farmers. BRM is also exploring use of ducks to weed and kill insects at the beginning of the rice growing season, while the ducks' droppings act as a natural fertiliser; ducks could also be eaten, improving farmers' access to protein.

Quality: BRM's goal is to reduce chemical pesticide use by 20%, lowering residues and increasing the quality of rice from a human health perspective. While this is initially for export, the idea is that the models can be scaled and replicated more widely.

Overall, BRM's programme has the potential to influence the Cambodian rice sector towards sustainable rice production and has already attracted interest from the Ministry of Agriculture in Cambodia. Through potential replicating of the models at scale, more farmers could improve food and nutrition security through increased access and availability.

1.2 AROHAN, Pork, India (Segment 3: Nutritious crops for domestic consumption)

Arohan is a pork processing company, producing a range of pork products (fresh meat, bacon, sausages, smoked / pickled meat) which are sold across the Northeastern Region (NER) of India. Arohan is establishing of a network of pork processing centres, owned and operated by farmer producer organisations (FPO). Smoked pork, bacon and sausages will then be sold to Arohan. Arohan's sourcing operations are underpinned by a technology platform which will facilitate key aspects – buying and selling of pigs by farmers/micro-entrepreneurs; pig record keeping to drive improvement in food safety and animal welfare; and sales and cost tracking and central ledger reconciliation. With the network of centres anticipated to reach 150 within five years, this is a scalable model with the potential to continue to increase all the "A"s as it expands.

Access: The scheme will prevent wastage and ensure that farmers are paid for the full value of their pigs, driving smallholder farmer impact through improved payment transparency and increased incomes, whilst also improving food safety standards and animal welfare. Farmer income uplifts will be delivered through the elimination of middlemen and farmer payment

according to the weight of meat sold (rather than the traditional approach of payment per pig). Arohan expects to benefit thousands of farmers with an average annual income uplift of \$120 (based on \$60 extra net income per pig, with an average of two pigs per farmer). Income benefits are likely to accrue disproportionately to women smallholder farmers, who typically take the leading role in raising and selling pigs in NER and form the vast majority of Arohan's current supplier network. Women are likely to invest more income than men in household food and nutrition security needs.

In terms of physical access, local sales via hygienic retail kiosks may increase access to pork for local people, making it easy to buy locally.

Availability: NER is a hub for pig-rearing: the top 4 NER states are estimated to account for c.40% of India's total pig population with 2M pigs in Assam alone. However, NER farmers usually focus their efforts on rice agriculture and there is no formal breeding and a lack of good production practices – even though >90% population in NER states is non-vegetarian and there is significant demand for pork. Arohan's investment in training – and the potential also to sell inputs in future – will improve the professionalism and productivity of the sector, which is likely to lead to more pork available overall in the areas served. Because Arohan only buys the prime cuts it wants, 33kg of meat per pig goes onto the local market for sale through a network of micro-entrepreneur-run hygienic retail kiosks. Arohan's data system also enables better management of when interventions may be required and when pigs are ready to go to slaughter (i.e., more efficient production management). Overall, the system leads to lower waste/spoilage than the traditional system of local butchers and retailers, again resulting in more meat available.

Affordability: It is not clear whether micro-entrepreneur kiosks will sell meat more cheaply than the traditional retailers, but Arohan's technology system can support with identifying and managing any disease outbreaks. Good production practices promoted by Arohan may also help to prevent disease. This may help to stabilise the meat prices: the African Swine Fever (ASF) outbreak in 2020 led to a decline in pig population and increases in pork prices. Post-ASF prices for pork were INR360 / kg in 2022 vs. INR280 / kg before ASF.

Acceptability: Arohan itself is selling bacon and sausages, as well as smoked/pickled meat made from the unsold meat from the kiosks. Over time, Arohan marketing may increase acceptability of these processed meats and/or even of pork meat itself.

Quality and food safety: As pork is nutritious, all the "A"s above address nutrition. In addition, a key element of system, underpinned by technology, is traceability and

food quality assurance. Vets from ICAR-NCP (the national research centre on pigs) will monitor RSH operations, ensuring pigs are healthy and RSH workers are complying with food safety standards. Pork produced from RSHs will be FSSAI certified (food safety certification). Tracking of pig health metrics will also enable vets to more rapidly identify potential disease outbreaks.

1.3 COSCHARIS, Rice, Nigeria (Segment 4: Staple crops for domestic consumption)

Coscharis is a vertically integrated rice farm and milling business in Anambra State, Nigeria. Coscharis has made significant capital investment into land cultivation (1,800 ha), a grain silo (25k MT) and a rice mill (40k MT). The business sources paddy from a combination of own-farm operations, out-grower farmers and on the open market; however, it has historically struggled to achieve target utilisation of the mill (c. 65% in 2022) due to structural local supply-side issues, most notably the acute impact of flooding in Anambra State.

The business is aiming to increase the volume of paddy it sources and therefore improve utilisation of these assets by supporting productivity and climate resilience initiatives with local community farmers. By facilitating an in-grower seed multiplication programme on its land, Coscharis can increase the availability of certified, improved varieties of seed in the local market. Coscharis purchases at least 50% of seeds produced by in-growers for use on their own farm, and for out-grower farmers within their supply chain. CASA specifically provided technical assistance towards (1) Seed multiplication through an in-grower programme, (2) Extension and advisory for out-grower farmers, (3) Establishment of a revolving fund and financing mechanism for in-grower farmers, and (4) Seed field trials to shortlist climate-resilient and certified rice seed varieties. The farmer extension programmes will support seed in-growers and out-grower farmers with the information and skills needed to improve yields and adapt to climate challenges. Coscharis are also testing shorter season seed varieties that could further mitigate the flood threat for farmers, improving climate resilience.

Access: The seed programme has the potential to reach ~3,000 out-grower farmers by Y5, increasing incomes by ~\$192 p.a. per household as a result of productivity increases (+47%). In addition, seed in-growers will achieve net incomes of ~\$1,500 p.a. at maturity. At maturity, the in-growers can produce 600 MT of seed p.a., 400 MT of which can support 4,000 farmers. The scheme will also generate benefits for out-grower farmers whose incomes will be enhanced through extension support and access to better seed (up to ±\$100 incremental revenue per household p.a.). Coscharis also targeted inclusion of 50% women; this focus on gender is likely to strengthen

the link between improved economic access and spending on household food security and nutrition (since when women have more authority over income earned, they tend to prioritise spending on household needs).

Availability: In an effort to support the sector, the Nigerian government has imposed quotas on imported rice and incentivised investment into milling facilities. In this context, it is likely that increased availability of rice may directly lead to more domestic consumption of rice/

calories. Low yields have historically been due in part to lack of availability of improved seed, so addressing this key barrier should increase volumes.

Affordability: Through this initiative, mill utilisation will be improved via accessing more paddy, reducing the overall cost of production; at the same time, the in-grower farm will enjoy cost savings from producing its own seed vs. buying from a third party.

Annex 2: CASA MSD Case Studies from Malawi by Mphatso Mapemba

2.1 Agwenda Investment Limited (AIL), Poultry

Agwenda Investments Limited (AIL) is a Malawian-owned agriculture enterprise which has the capacity to produce 600 chickens and 2,500 quails per month. The company currently has incubator equipment with the capacity of 2,700 chicken eggs and 4,420 quail eggs and an egg hatcher with the capacity of 1,200 chicken eggs and 1,968 quail eggs.

CASA partnered with AIL to establish an inclusive business model to meet the growing demand for indigenous chickens in Malawi, mainly produced by SMEs and smallholders. The business model was to engage small scale producers in AIL's supply chain to increase volumes of production and meet the growing demand for its chicken products. Key activities for the project include Investment facilitation; Farmer mobilisation; Organising farmers into formal groups; Training farmer groups in group dynamics; Setting up a sustainable extension system and Facilitating contract farming arrangement.

The project duration was for 24 months (July 2022-June 2024).

CASA activities targeted/realised influence on food and nutrition security

Key achievements of the partnership include:

- Mobilisation of 1,694 (1,667 women) smallholder farmers and setting up of 168 poultry production groups in Nkhotakota and Lilongwe districts.
- 1,694 smallholder farmers were trained in group dynamics.
- 1,308 farmers (including 931 females) received start-up chickens on credit.
- 125 clubs (375 farmers) were trained as trainers of trainers in improved poultry management.

- 606 farmers under the out-grower scheme were trained in maggot production as a low-cost alternative protein feed. An additional 1,400 smallholders outside the out-grower scheme (Dowa) were also trained in maggot production to form part of a supply chain towards potential commercialisation of maggot-based feed.

The four themes of food and nutrition security were demonstrated as follows.

Availability: The out-grower scheme has facilitated access to the improved and quality Kuroiler chicks on loan, thereby increasing the availability of eggs and chickens at household level. *"We consume eggs three times a week." (Smallholder focus group) "Before CASA, Agwenda had 400-600 chickens; after CASA we have ... about ... including those that are with the out-grower farmers we have an excess of more than 8,000 chickens." (Agwenda interview)*

Indigenous chicken hens are used to brood the Mikolongwe eggs, resulting in increased production and improved dietary diversity through the consumption of the eggs and chickens. Kuroiler hens lay about 300-350 eggs in their lifetime. The out-grower scheme has contributed to market linkages for smallholders, improving the availability of chickens and eggs at both rural and local markets. For the urban market, Agwenda had established markets with entities such as bars and restaurants and with the out-grower scheme. Agwenda has managed to meet the demand of the market, which was not met previously, highlighting improved availability. *"Sometimes they would say supply us with 40 chickens, but we were just managing to supply 20 chickens, but with the establishment of the out-grower scheme with CASA's support we are managing to meet the demand." (Agwenda interview)*

Accessibility: Higher egg and meat production at the household level has contributed to easy physical access to high protein by the local community through the local market. Economic access has been improved for direct out-growers through increased income, driven by improved quality of chickens and eggs supporting price increases from K150 to K500 and from K5,000 to K16,000, respectively. The increased incomes through sales have contributed to improved economic accessibility of other nutritious foods for household consumption, thus improving food and nutrition security outcomes for directly involved households.

Affordability: A marginal impact on affordability may be seen in how the Kuroilers sold by Agwenda are the same price as other varieties but are significantly heavier at an average weight of 2.5 kg, meaning consumers are getting more meat for their money. Income increases for out-growing smallholders may also improve the relative affordability of healthy and nutritious foods for these households. Smallholders reported using proceeds from the egg and chicken sales to purchase other food such as small-sized fish and maize.

Acceptability: Whilst the CASA partnership has not directly undertaken work to improve acceptability, the Agwenda business model benefits from the acceptance of Kuroiler varieties, which is driven by their higher meat ratio as compared to local chickens. *“Customers like the Kuroiler chicken because the meat ratio is high so naturally customers would comment oh! these chickens are big ...”* (Agwenda interview)

The taste is also similar to local chickens, thus increasing its acceptability by customers. Eggs are also liked by the smallholder farmers and consumers because of their size. There is a growing rise in the demand for local and dual-purpose chickens due to their perceived health benefits. Production of Kuroilers meets dietary needs and preferences of these health-conscious customers, creating a commercial opportunity.

Nutrition: The business model, selling mainly to local markets, directly increases the presence of nutritious protein-rich foods. The availability of freezers supported the maintenance of the cold chain and ensuring quality and safety for the dressed products. Value addition through processing of the poultry products ensured quality and safety of poultry products.

Relevant lessons on mechanisms for delivering food security

- Inclusion of sessions on natural/traditional remedies in the treatment of chicken diseases in poultry production training, provides an alternative treatment method in scenarios where vaccines are scarce thus contributing to high productivity.

- Proper housing and availability of proper feed is important for improved productivity. Rural households do not usually have separate houses for chickens, and this affects chickens' productivity.
- Quality products are key in demand creation as people are willing to pay more for quality Kuroiler chicken meat. This increased the profitability of the agribusiness.
- Targeting of extremely poor/food insecure households in agribusiness sometimes poses challenges in the realisation of profits as household consumption is prioritised compared to loan repayments.
- Supporting groups of smallholder farmers can be costly compared to supporting a single larger and more commercial farmer, as no training is required.
- Agwenda has observed inconsistencies in the quality of birds coming from out-grower farmers which reflects wider differences between farmers, with some taking the legacy of previous 'hand-out' based development partnerships and using this as an excuse to default on loan repayments.

Impact on FNS of smallholder producers

The training on poultry management and maggot production ensures proper management and continued production among smallholder farmers. Continued production was also facilitated by the set-up on an extension support system among the group leadership and Government Veterinary Officers. The clubs were empowered and are still operating after the CASA's support. This is key in sustaining the livelihoods, food and nutrition security for smallholder farmers and their households.

The poultry agribusiness has contributed to increased income thus supporting the affordability and accessibility of food at household level. Food availability has also been boosted by the high egg production.

Chicken and egg sales cushion smallholder farmers from the effects of climate change. For instance, with poor harvests of maize, farmers have been able to purchase maize using the proceeds from the egg and chicken sales.

Engaging in different enterprises such as poultry farming, integrated farming and Village Savings and Loans (VSL) have provided different avenues for generating income thus building the livelihoods and resilience of smallholder farmers.



Figure 3 Tidziwane Club, Agwenda, Lilongwe



Figure 4 Pangani Edwini, a Tidziwane Club Member, Agwenda, Lilongwe

2.2 Innovative Fish Farmers Network Trust (IFFNT), Aquaculture

Summary of partnership with CASA

Innovative Fish Farmers Network Trust (IFFNT) is a registered member-based organisation which was established in 2005. IFFNT was created with an aim of assisting small- and medium-scale farmers to increase productivity and profitability through access to improved financial services and markets. All the members of the IFFNT own and run their own aquaculture enterprises either as hatchery operators, fish producers or processors, and input suppliers.

CASA partnered with IFFNT to roll out an 18-month project titled “Strengthening the Technical and Management Capacity of Smallholder Farmer Organisations for Bulk Input Purchasing, Product Aggregation and Access to Better Markets”. The project was executed across nine districts in Malawi, namely Rumphi, Mzimba, Nkhatabay, Dowa, Mchinji, Lilongwe, Phalombe and Blantyre.

The project was designed to build the organisational capacities of smallholder producer groups and create a solid foundation for them to access commercially viable input and output markets in a reliable and consistent manner. CASA’s partnership with IFFNT aimed to organise aquaculture smallholder farmers into producer groups and build their capacity to operate as coherent and effective units called farmer hubs.

The key activities for the project included mapping out players in the value chain including smallholder farmers to identify project participants; Technical and agribusiness support in production, harvesting, preservation and value addition; Business development support to producer groups, and Strengthening market linkages among market actors.

The project ran from September 2020 to March 2022.

CASA activities targeted/realised influence on food and nutrition security

The following are key achievements for the project:

- 1,528 farmers were identified in eight districts (Rumphi, Mzimba, Nkhatabay, Mchinji, Lilongwe, Dowa, Phalombe, and Blantyre)
- 45 hubs and 26 hub banks were established across the districts.
- Six Frismo Kilns were constructed in each of the six districts (Rumphi, Nkhatabay, Mchinji, Lilongwe, Blantyre and Phalombe)
- Approximately 1.5 million fingerlings were produced over a period of five years.
- Three tonnes of fish were harvested; in 2024, 300 kgs of chambo fish was sold locally at K5,000 per kg. The current (February 2025) fish price is K6,500 per kg.
- 50,000 fingerlings were sold to small-scale producers and farmers (price for last year was K50 per fingerling to small-scale businesses and K30 per fingerling to farmers).

CASA activities targeted/realised influence on food and nutrition security

The project was relevant to all food and nutrition security themes of availability, accessibility, affordability, and acceptability.

Availability: With the coming in of CASA, the agribusiness successfully equipped fish farmers with various production skills in a bid to improve the farmers’ productivity. For instance, the use of quality inputs such as fingerlings, improved fish feed and provision of aquaculture Best Management Practices capacity-building. Technical support from CASA also contributed to improved quality fingerlings and the harvested chambo

fish which weighed between 100 g and 300 g. In addition, the Karongae Chambo has a short cycle (4-5 months) thereby increasing productivity and making high protein from the fish available and accessible in the markets. Preservation of fish also helped reduce post-harvest losses of fish which increased quantities of fish available for household consumption.

Accessibility: The smallholder farmers are encouraged to consume some of the fish from the harvest as well as to sell the fish to the local community, thereby improving affordability of fish among low-income households. The high production has improved the accessibility of fish within the surrounding communities, viz. local market/communities (1 km) and new markets Mkanda Market (5 km) and Mchinji Market (35 km). Previously, fresh Chambo was being sourced from Salima (235 km). In the 2024 harvest season, the club realised profits of MWK2.5 million and used part of the money to purchase a fishing net. Access to quality feed enhanced fish productivity, hence contributing to improved economic, nutrition and food security status. Construction of Frismo Kilns, for fish processing and value addition, facilitated the preservation of fish allowing a constant supply of diverse fish products on the market.

Affordability: Improved access to affordable feed and improved productivity generated more income for farmers to be able to afford more nutritious food for household consumption, boosting the protein intake. Value addition of fish also provided an opportunity for farmers to fetch more income from the sales, therefore allowing them to purchase other nutritious food for household consumption, resulting in improved dietary diversification.

Acceptability: Furthermore, IFFNT trained farmers in fish processing through smoking, thus adding value to their fish and resulting in higher selling prices and increasing the shelf life of the fish. Smoking of fish also enhances the flavour and taste, and this allows consumers to have diverse fish products. Smoked fish is also well accepted by the communities, thus assisting in meeting the demand of consumers. The demand for fish is high; the fish sells fast and sometimes fish pre-orders are received even before the fish is harvested. The following quotes cement this. *“There is high demand for the fish. We sell all the harvested fish within a day.”* *“In some cases, customers send fish orders before the harvest day.”* (FGD participants)

The training curricula included topics on nutritional benefits of fish. This awareness is key in motivating farmers to venture into aquaculture and creates demand for fish by consumers. Construction of Kilns for demonstration ensured quality and standardisation of the fish product, thus delivering it in its accepted form on the market.

Nutrition: Improved access to quality inputs supports the availability, affordability, and accessibility of high-value fish protein, thus contributing to household economic status and food and nutrition security. *“Fish contributes to dietary diversification and nourishes our bodies.”* (FGD participant)

Capacity building of farmers in nutrition and fish processing equips them with knowledge and skills to purchase, consume and preserve, and add value to the produce. Awareness of the nutritional benefits of fish also creates demand in the production and consumption of fish. Targeting of women and youth also supports their economic, and food and nutrition security status.

Relevant lessons on mechanisms for delivering food security

The project offers the following lessons:

- High quality feed results in quality products.
- Sex-reversed fish fingerlings enhance the growth rate and weight of the fish, thereby resulting in fish of higher quality and weight as compared to non-sexed reversed fish.
- Working through fish cooperatives enhances profits through bulk selling and offers sharing of expertise/experience in aquaculture production.
- Strong linkages with aquaculture government extension workers ensure continued support beyond project support.
- Inclusion of local leaders in the group supports group cohesion and enhances accountability.

Impact on FNS of smallholder producers

Similarly, smallholder producers have registered achievements in fish farming. One of the notable achievements is that Chikondi Fish Club is self-reliant. The club is still active two years after CASA project completion. The club has 26 members: 13 men (eight youth) and 13 women (ten youth) and has nine fishponds. Six additional clubs have been formed from the initial group. This increase in the number of smallholder farmers engaging in fish farming has contributed to availability and accessibility of fish at household level, thus improving the food and nutrition security outcomes. Other villagers are still interested in joining fish farming since they are attracted by the quality characteristics of the Karongae Chambo: its higher growth rate, shorter cycle of production, bigger, and tastier compared to the previous Chambo species that the farmers were farming before CASA's support. With these improved qualities, the Chambo is well accepted by communities as this is evidenced through increased purchases and consumption in the local area. *“We like the fish; it's tasty and does not have the muddy taste like other fish from ponds.”* (Snowballed KII)

Farmers' incomes through farming have also increased through the agribusiness. Current estimate of one harvest is between 400-600 kg and the current price of the fish is K10,000.

2.3 SPRODETA, Poultry

Summary of partnership with CASA

SPRODETA Agribusiness is a commercial arm and a subsidiary of SPRODETA NGO. The local NGO was formed in 2009 and registered in 2012 with the aim of empowering marginalised men, women, and youth to achieve sustainable development. In this project, CASA partnered with SPRODETA Agribusiness to pilot an out-grower model involving 1,500 smallholder producers of indigenous and dual-purpose breed chickens already organised in cooperatives by SPRODETA the NGO (and another 1,200 formerly under Hen Park). The aim of the project was to develop and improve the poultry supply chain, increase production levels, and professionalise the cooperative so that they can aggregate and supply quality live chickens to the SPRODETA Agribusiness processing centre, which will dress the chickens and supply to hotels, its own shop and supermarkets in the short- and medium-term. Activities included investment facilitation; capacity building of support and field staff; and facilitating contract farming arrangements. The project ran from April 2024 to December 2025.

Partner activities targeted/realised with influence on food and nutrition security

Key achievements included:

- 320 Mikolongwe and Kuroiler chicks were distributed as follows: 100 chicks to five champions (20 chicks each), 200 chicks to twenty farmers (ten chicks: eight hens and two cocks each), to 13 men and 12 women who received the chickens. As part of the company's social obligation, a total of 20 chicks were distributed to two widowed elderly women.
- 25 smallholder farmers (13 men and 12 women) were trained in cooperative development.
- 29 smallholder farmers (13 men and 16 women) were trained in poultry management and nutrition.
- Procurement of one incubator. The first hatch had 143 chicks and was expecting another hatch by February 2025. The incubator will support a shift in the current production from about 1,200 to about 30,000 chickens per annum.

The project design is relevant to the four themes of food and nutrition security (availability, accessibility, affordability, and acceptability) as follows.

Availability: The out-grower scheme will contribute to improved availability of food at household level through

increased productivity with the availability of incubators which will increase the quality of chicks. Access to affordable inputs (on loan) and high quality Mikolongwe and Kuroiler chicks with higher survival and growth rates will also increase the availability of eggs and chickens. *"Before the introduction of the Mikolongwe and Kuroiler chickens, mortality rate and stuntedness of the chicks was high due to poor feeding and non-adherence of vaccine administration protocols. By this time, we could have been receiving a lot of reports on chicks' deaths."* (SPRODETA KII)

The farmers also plan to hatch their eggs using the incubators for continued production. Integrated farming where chicken manure is used in crop farming also enhances the availability of diverse food at household level. This increased livestock and crop production will also generate additional incomes for the family to afford the purchase of other nutritious food for household consumption. *"The chickens provide nutrition and health benefits to the family. Ministry of Health Surveillance Assistants tell us to consume food from all the six food groups to be healthy and well nourished. So, the chicken meat and eggs are a good source of protein."* (SPRODETA FGD participant)

Accessibility: The out-grower farmers will receive twelve chicks and will repay nine chickens, remaining with three chickens. Apart from household consumption, surplus eggs would be hatched, while some will be sold in their local communities. This will boost availability of eggs and chickens in the surrounding villages and the nearby market (Rumphi Boma is 7 km away). It was noted that previously farmers were accessing eggs from Rumphi Boma. The cooperative has an already established market in the name of Chef's Pride Restaurant at Rumphi Boma. The dual-purpose chicken production offers diverse poultry products in both rural and urban markets. For instance, eggs and dressed and live chickens will be available for the market to reach both far and near customers. Availability of a processing unit and the freezer will help with the preservation and storage of the chickens and improve the accessibility of the chickens to urban customers living far from the processing unit. This will also support in meeting the demand for the markets, Grand Palace Hotel, Mzuzu Hotel, the company's outlet shop and other supermarkets.

Affordability: Increased quality of poultry products (e.g., bigger-sized chickens, enormous size of the eggs and chickens) and value addition entails high profitability due to high prices. This additional income generated by farmers will allow households to purchase other nutritious food from the markets. For instance, it was reported that currently chickens in Rumphi Market were selling at MK15,000 each, but they expect to sell the Mikolongwe and Kuroiler chicken at MK20,000 each. Eggs

were selling for K400 while their eggs were expected to be sold at K500 per egg. Sales at high prices will increase farmers' incomes, enabling them to afford a wide range of other foods. The sale of chicken portions and parts will promote the affordability of high-protein poultry products by low-income households.

Acceptability: Mikolongwe and Kuroiler chickens have a similar taste to local chickens; as such, smallholder farmers and consumers accept them. Labelling of the chicken packs also raises nutrition awareness to consumers, thus creating demand for more of these poultry products.

Nutrition: The project is delivering on nutrition in several ways. Firstly, the training on poultry production includes sessions on food and nutrition such food allocation and budgeting, dietary diversity, food preparation, utilisation, and safety. This is important for demand creation as farmers become more aware of the benefits of nutritious food they produce, purchase, and consume. Secondly, SPRODETA Agribusiness ensures adherence of hygiene standards during processing of poultry as prescribed by the Malawi Bureau of Standards. This is important for delivering safe and nutritious poultry and products to consumers. Thirdly, the business (SPRODETA) is also promoting a number of value chains (e.g., chickens, soybean, maize, vegetables) which are key in meeting the dietary needs of consumers.

Value addition also offers high-quality products for increased income for producers, thus enabling achievement of food and nutrition security. Fourthly, the project targets women and youth who are nutritionally vulnerable. Increasing income for such groups supports their economic status as well as food and nutrition security. Lastly, the project promotes sales of chicken parts, and this is important in accessibility of animal protein by poorer households.

Relevant lessons on mechanisms for delivering food security

Lessons learnt include:

- Quality chicks should be sourced from trusted suppliers.
- Adherence to vaccine regime improves survival rates, thus high productivity.
- Farmers' consultations during project design support ownership of the agribusiness, i.e., consultations on the breed for the poultry agribusiness.
- Utilisation of already existing groups and building on past engagements allows more time for project

activities and fast realisation of the agribusiness benefits as not much time is wasted on group formation.

- Capacity building on food preparation and utilisation increases consumer demand and consumption of nutritious food.
- Use of model farmers within the same community motivates other farmers.
- Project trade-offs include:
 - Soaring prices of chicken feed may affect quality of products.
 - Scarcity of soya and maize for feed production also compromised production as poorer household may prioritise consumption of maize and soya over production of chicken feed.

Impact on FNS of smallholder producers

The agribusiness increases household incomes thus contributing to their improved economic, and food and nutrition security. The poultry production also supports household resilience, since the increased income contributes to affordability of fertiliser, thereby making maize and other crop foods available to the household. High demand for the Mikolongwe and Kuroiler breeds by non-CASA beneficiaries due to the improved quality of the chicken (e.g., low mortality rate of chickens; adapts to local growing conditions), and bigger size when compared to the local chickens, presents the potential for increased production of the highly-demanded breeds.



Figure 5 Yozgani Kumwenda, Model Farmer, Chipereka Cooperative, Mzimba, SPRODETA



Figure 6 Davis Kumwenda, Model Farmer, Chipereka Cooperative, Mzimba, SPRODETA

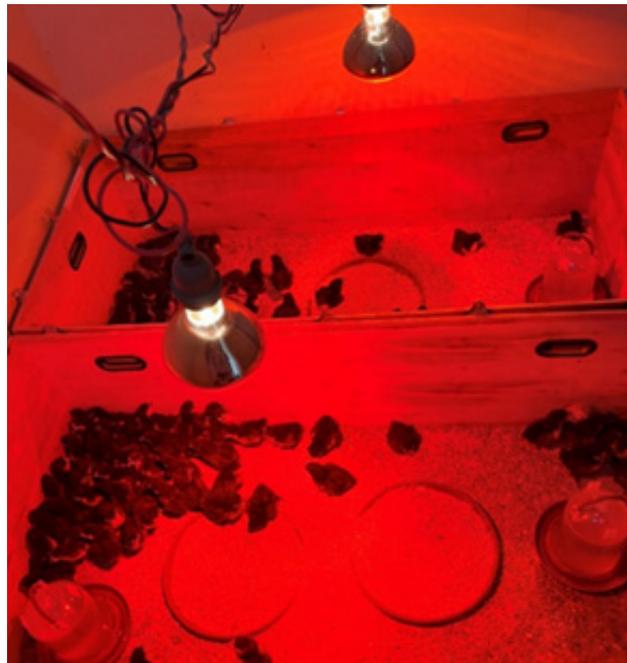


Figure 8 First hatch from the incubator (143 five-day old chicks), SPRODETA Agribusiness Centre, Mzimba



Figure 7 Chicken egg incubation in progress, SPRODETA Agribusiness Centre, Mzimba



Figure 9 SPRODETA Agribusiness Center

2.4 Viphya Chambo, Aquaculture

Summary of partnership with CASA

Viphya Chambo is a family-owned enterprise which focuses on the production of fingerlings and Tilapia fish species commonly known as Chambo. Viphya is in Mzuzu City, in the northern region of Malawi. The company was established in 2011 and registered in 2018. CASA supported Viphya Chambo to pilot a fish aggregation and offtaking model with seventy-two smallholder farmers in Rumphu, 70 kilometres north of

Mzuzu City. Viphya Chambo further contracted another cohort of 550 smallholder farmers.

Key activities for the project included:

- Mapping and building a strong fish supply chain, including collection points
- Developing a business expansion strategy
- Developing a business plan
- Covid-19 interventions

The project ran from July 2020 to December 2021.

CASA activities targeted/realised influence on food and nutrition security

Key achievements included:

- 3,000 tilapia brooders were procured; 117,236 sex-reversed fingerlings produced and stocked during the pilot phase
- 622 (292 women) aquaculture farmers were mobilised
- 1.4 metric tonnes of formulated starter feed were distributed
- 17 hormone treatment tanks were constructed
- 72 farmers were trained on basic agribusiness management
- 642 kg of fish were offtaken during the pilot phase
- ten fish ponds were maintained
- Increased fingerling production from 300 fingerlings to 2,000,000 fingerlings
50-100 kg per harvest (biweekly) with profits of K1,500 per kg
- 3,000 stations of banana planted (61 tonnes sold)
- Two hectares of sugar cane and five hectares of maize grown
- Increased sales revenue by about GBP 14,100 and a net additional profit of about GBP 4,700 on account of the fish aggregated and offtaken from the satellite farmers (2020)

The project contributed to all four themes of food and nutrition security as follows.

Availability: With CASA's support, Viphya Chambo increased its fish production from two to four tons per hectare, thus making fish available for both household consumption and sale. The high productivity was achieved through the construction of breeding tanks, use of sex reversed fingerlings, improved access of input loans by farmers (feed and fingerlings), and scaling up of fish aggregation and the offtake model (from 72 to 622 smallholder farmers). The Chambo fish has a short cycle of production allowing farmers to harvest at six months of stocking compared to the normal production cycles of ten or twelve months and thereby increasing the income generated for farmers and allowing them to afford other nutritious food on the market for household consumption. *"With this new fish variety given by CASA we can harvest in six months, and this has supported realised profits from the agribusiness."* *"As regards our household's fish consumption, I do not grade the fish ... I get five kg of fish from each harvest for home consumption; I keep a portion for household consumption then the remainder goes to the market."* (FGD participants)

Integration of fish farming with other enterprises (such as sugar cane, banana, maize, vegetable, and chicken production) has also supported diversification of diets at household level and proceeds from surplus produce/harvest sales are used for purchasing of other nutritious food. *"Previously, it was difficult for parents to buy meat for household consumption, but now through the integrated farming we can buy meat, and we eat meat twice a week ... things have really changed for our households."* (FGD participant)

Accessibility: High productivity of fish has contributed to improved access of fish in both rural and urban markets. Viphya Chambo has increased its selling points to four around Mzuzu Market. The price is higher at K8,500/kg to K10,000/kg depending on the size in Mzuzu, and this is because of high feed costs. The procurement of a refrigerated van has been instrumental in maintaining the cold chain during the transportation and selling of the fish, thus providing customers with safe and quality fresh fish. Staggering of harvest of one pond per month allows fish production continuity and steady supply of fish on the market. With high productivity of quality fingerlings, Viphya Chambo has managed to sell fingerlings to other customers beyond Mzuzu: Maldeco Fisheries and Food and Agriculture Organisation (FAO) Malawi. Similarly, smallholder farmers also acknowledge the improved accessibility of fish in rural areas. Fish is sold at Nchenachena trading centre, Lura Market (2 km away) and Admard Depot (within 500 m). The fish price ranges from K6,000 to K7,000 per kg depending on the size. Informants also mentioned that fish is readily available on the market and farmers can buy on loan. *"There have been changes in consumption of diverse food because the fresh and quality fish is readily available."* (Snowballed KII)

Affordability: Affordability of the high-protein fish has been achieved by selling small-sized fish in both in rural and urban markets. *"Fish is readily available and is cheaper than beef at Nchenachena trading centre. For instance, beef costs MK7,000 per kg while fish costs MK6,000 per kg."* (Snowballed KII)

Acceptability: Use of parent Chambo fish from Lake Malawi has increased the acceptability of the fish by customers. Demand is high due to the quality of the fish size and flavour and harvested stock is sold the same day. Similarly, the fish is well accepted by smallholder farmers and the local community because of improved taste and weight. *"With the coming in of CASA's support, the fish is well accepted by smallholder farmers and community; because of the improved fish the fish has a better taste (not as muddy as before CASA). The fish is also bigger in size compared to the ones previous bred by us."* (FGD participant)

Nutrition: Increased productivity enhances the availability, accessibility and affordability of fish protein for consumers. Procurement of a refrigerated van facilitated maintenance of the cold chain in the transportation and selling of fish, thus delivering safe and quality food to consumers. Targeting of women and youth in the aquaculture value chain boosted their economic status, thus achieving food and nutrition security outcomes. Diversification of farming – especially in the promotion of high nutrient crops such as orange-fleshed sweet potatoes rich in Vitamin A, bananas, sugarcane, and vegetables – is key to addressing food and nutrition insecurities.

Relevant lessons on mechanisms for delivering food security

Lessons learnt include:

- Diversification of agriculture production is vital for maximising profits.
- Selection of quality parent for breeding is key for maintaining quality in production.
- Establishment of linkages and collaborations is key in increased agribusiness.
- Trade-offs: High price of feed may compromise the quality of fingerling and overall product.

Impact on FNS of smallholder producers

Fish farming has contributed to improved economic, food and nutrition status for households. The livelihoods of smallholder farmers have also been uplifted through continuation of agribusiness beyond project closure. Through the participation in agribusiness, the smallholder farmers have afforded to pay school fees for their children, procure livestock, and access tap water.



Figure 10 Integration of fish farming with vegetable and fruit production, Mrs Mazoe Gondwe's fishpond, smallholder farmer, Umodzi Fish Farmers Club, Rumpfi



Figure 11 Integrating fish farming with bananas and sugarcane, Viphya Chambo Ponds, Mzuzu



Figure 12 Refrigerated van at the Mzuzu City point of sale, Viphya Chambo, Mzuzu



Figure 13 Maintaining cold chain using refrigerated van, Viphya Chambo ponds

Annex 3: CASA MSD Case Studies from Rwanda by James Munanura

3.1 Build 5 Capacity Development (B5CD) Poultry Farm Ltd, Poultry

Summary of partnership with CASA

Under this initiative, CASA is assisting B5CD Ltd to launch a contracted out-grower scheme, through a designed business plan, and securing investment to implement the model with 600 smallholder farmers in its first year, with plans to expand thereafter. B5CD Ltd Poultry's integrated contract farming model is based on forward agreements with smallholders, ensuring they receive necessary inputs and skills training.

B5CD Ltd was chosen for this support as its owner has prior experience working with smallholders through training programmes. Additionally, B5CD Ltd has both the capability and commitment to execute its growth plans and is planning to establish a farmer field school on its land in Bugesera District.

By implementing this out-grower scheme, B5CD aims to create a productive and profitable model with well-organised smallholder farmers. The company expects to enhance both the quality and quantity of its products while meeting market demands through input provision and training for farmers. Furthermore, B5CD intends to strengthen its business by developing a solid strategic plan and securing commercial investment for scaling.

Currently, B5CD supplies various restaurants with eggs but lacks formal contracts due to its limited production capacity. With increased output, the company plans to secure contractual agreements with buyers, e.g. early childhood development (ECD) centres for feeding infants and children under five years, potentially obtaining advance payments that can be used to finance inputs for out-growers.

CASA activities targeted/realised influence on food and nutrition security

B5CD's poultry business plays a crucial role in improving food and nutrition security by increasing the availability of eggs and poultry meat, both rich sources of animal protein. These are essential for combating malnutrition, particularly stunting among children under five. By producing eggs in large quantities, B5CD ensures their presence in local markets and communities, while also training smallholder farmers to enhance production.

Despite increased production, accessibility remains a challenge as many households in CASA-supported areas struggle to afford eggs, which are often transported to high-end markets like Kigali. However, B5CD has established direct links with ECD centres, making eggs more accessible to vulnerable children. The short distance from farms to ECDs enhances convenience and ensures regular supply.

Eggs remain relatively affordable due to their size, making them a viable option for low-income households in Bugesera. B5CD also provides eggs to ECDs at wholesale prices, further improving affordability. Nonetheless, high poultry feed costs, influenced by transportation expenses, pose a challenge that impacts final prices.

B5CD's efforts align with Rwanda's "One Egg Per Child, Every Day" initiative, reinforcing the acceptability of eggs as a staple in local diets. As a result, eggs are increasingly recognised as a critical element in food security strategies, offering nutrition and economic benefits to smallholder communities.

Relevant lessons on mechanisms for delivering food security

Eggs play a crucial role in enhancing food security in Rwanda by providing an affordable and rich source of animal protein, essential for combating malnutrition and supporting child development. Recognising this, the Rwandan government has implemented initiatives to boost egg production and consumption. The "One Egg Per Child, Every Day" campaign, launched in December 2022, aims to promote egg consumption among children to improve nutrition and reduce stunting.

Investing in logistics can increase accessibility but might increase distribution costs. Per capita egg consumption in Rwanda is still relatively low in the region, and nutrition education may not necessarily increase egg consumption at household level.

Impact on FNS of smallholder producers

One important learning was the partnership the poultry farmer has had with the ECD centres which promote good child feeding practices to provide eggs at wholesale price. Many smallholders lack capital for inputs and technical services, leading to low productivity and quality concerns.



Figure 14 Focus group discussion with smallholder farmers near B5CD in Bugesera District

3.2 Fine Fish Ltd, Aquaculture

Summary of partnership with CASA

Fine Fish Ltd registered its business entity in 2015 and has a hatchery with capacity to produce 2,000,000 fingerlings per month for both external and own use. Fine Fish cage-produces more than 20 tonnes of tilapia fish every month and sells to established selling points in Kigali, secondary cities and to neighbouring DRC.

In June 2023, Fine Fish started a plant for fish feed production that will be producing more than 20 tonnes of floating fish feeds every day by October 2023 with the capacity to potentially produce 40 tonnes as market demand grows. Currently, they are undertaking production trials for three feed grades. Fine Fish Ltd records RWF2 billion (approximately £1.4m) as annual revenue. Through the project lifetime, Fine Fish will supply quality feed to more than 100 cooperatives and 30 SMEs by the end of year 1, benefiting 2,500 smallholder farmers and expanding to 50 more cooperatives and 15 SMEs in year 2, further increasing beneficiary numbers.

CASA is supporting Fine Fish Ltd to install laboratory equipment, develop a marketing and distribution strategy, support for studying the status of GHG emissions for Fine Fish, and support in leveraging investment for working capital and equipment. Smallholder farmers and cooperatives will receive sample feeds to test the benefits of applying quality feeds; provide feedback on the accessibility, usability and benefits of accessing quality feeds; understand benefits and pay for supplied feeds; and apply feeds and increase production. So far, Fine fish is supplying high-quality fish feed to cooperatives in the districts of Kayonza, Rwamagana, Gatsibo and Nyagatare.

CASA activities targeted/realised influence on food and nutrition security

Fine Fish produces over 20 tonnes of tilapia monthly, supplying markets in Kigali, secondary cities, and the DRC. Increased local fish feed production by Fine Fish in Kayonza has enhanced availability, ensuring fresh fish reaches consumers. However, fish consumption remains culturally taboo in many rural communities, limiting its benefits, particularly for children under five.

Despite growing demand and accessibility in urban centres, rural households struggle with fish perishability due to a lack of refrigeration. The cold storage and refrigerated transport supported by CASA have improved fish distribution, ensuring freshness and safety for urban consumers. However, rural communities, where stunting is prevalent, continue to have limited access due to cultural barriers and storage challenges.

Fish remains relatively expensive, especially in Kayonza, where high fish feed costs drive up prices. This limits affordability for low-income households, even as urban areas with higher purchasing power sustain demand. The high cost of fish feed impacts overall fish prices across Rwanda, making it less accessible to vulnerable populations.

In terms of acceptability, fish is widely consumed in urban areas like Kigali but faces resistance in rural regions. Addressing cultural perceptions and providing alternative preservation methods could enhance fish consumption in high-malnutrition areas. Promoting nutrition education and behaviour change initiatives could help integrate fish into rural diets, improving food and nutrition security. Fine Fish's expansion presents an opportunity to tackle these barriers and increase the nutritional benefits of fish for all communities.

Relevant lessons on mechanisms for delivering food security

Fish and seafood from aquaculture play a crucial role in supplying omega-3 fatty acids and essential nutrients. They are a source of high-quality protein, essential for human growth and development and rich in essential amino acids, making them valuable protein sources. In Rwanda, fish will be a key source of protein to reduce levels of malnutrition, especially stunting. Fish and other aquatic organisms produced through aquaculture are nutrient-dense, providing essential vitamins and minerals. They are rich in omega-3 fatty acids, which are crucial for brain development, cardiovascular health, and overall well-being. The CASA-supported fish farmers in Rwamagana had Tilapia and lung fish species but had prospects of adding other species. Aquaculture provides employment opportunities and income for communities

involved in the production, processing, and marketing of aquatic products. This economic benefit will contribute to poverty reduction and enhance the overall well-being of communities.

Feed sustainability: Fish farming relies on feed inputs, which could increase demand for grains and other fishmeal products, potentially raising feed costs.

Consumer acceptance: Some Rwandan communities may not traditionally consume fish, requiring investment in awareness and behaviour change campaigns.

Distribution challenges: Unlike eggs and vegetables, which are widely available in rural markets, fish requires efficient supply chain infrastructure to reach schools and consumers.

Initial Investment Costs: Setting up fish farms, particularly hatcheries and cold storage facilities, requires significant financial and technical support.

Impact on FNS of smallholder producers

Current provision of fish feed to the cooperative in Nyagatare (COODEPOITA) for increased fish production has been a major learning point and even other districts like Gatsibo are at the stage of almost harvesting fish.



Figure 15 Focus group discussion with COODEPOITA cooperative in Kyabayaga sector, Nyagatare District, who are currently receiving fish feed from Fine Fish

3.3 Agrilec Ltd., Vegetables

Summary of partnership with CASA

AGRILEC Ltd, founded in Rwanda in 2013 by Alphonse Hategekimana, specialises in fresh vegetable production and supply, focusing on school feeding programmes. Trials in 2022 (11 schools) and 2023 (27 schools) demonstrated profitability and demand growth. AGRILEC Ltd, an SME sourcing fresh vegetables from smallholder farmers, is being supported by CASA to scale its model to improve food and nutrition security. This initiative will introduce a contract farming approach, providing 5,000 smallholder farmers (55% women) with inputs such as seeds, fertilisers, pesticides, and training. Costs will be deducted from farmers' sales, ensuring sustainability.

The project aims to increase vegetable availability by directly supplying 100 schools in Kayonza District with nutritious produce, supporting school feeding programmes. The priority crops, including French beans, eggplant, peppers, carrots, onions, and spinach, are selected based on school demand. AGRILEC will ensure fresh vegetables reach public, private, and subsidised schools, enhancing children's dietary diversity and improving nutrition. By formalising contracts, smallholder farmers gain secure market access, reducing financial risks and increasing income, contributing to food security. Future plans include expanding to all 166 schools in Kayonza and scaling nationwide under MINEDUC's guidance. This pilot will demonstrate a sustainable and replicable model for strengthening food and nutrition security through structured vegetable production and distribution.

AGRILEC directly worked with 126, 308, and 1,074 smallholders in 2021, 2022, and 2023, respectively, and indirectly with 2,500, 3,000, and 5,500 farmers. They sourced 47,908 kg, 112,800 kg, and 167,917 kg of vegetables, generating RWF 39.7M, 86.8M, and 105M in revenue. The company employs four staff, including two agronomists, and engages 73 casual workers on average. Agrilec Ltd signed a contract with CASA in December 2024 and ongoing activities have not yet been evaluated for impact assessment.

CASA activities targeted/realised influence on food and nutrition security

AGRILEC Ltd, in partnership with the National School Feeding Program (NSFP), enhances food security and nutrition by supplying fresh vegetables to over 31,000 students in 27 schools. With plans to expand to 207 schools, AGRILEC strengthens availability by sourcing directly from local smallholder farmers, ensuring a steady supply of nutritious vegetables while boosting farmers' incomes. By working with contract farmers near schools, AGRILEC improves accessibility, reducing transport costs and making fresh produce more affordable for schools and local markets. The initiative not only ensures school children have access to essential nutrients but also benefits surrounding communities by providing a stable market for smallholder farmers.

Affordability is a key factor, as locally-sourced vegetables lower costs for schools and consumers. The inclusion of fresh vegetables in school meals aligns with national dietary recommendations, ensuring acceptability among students and school administrations. However, to maximise nutritional benefits, proper cooking practices must be promoted, as overcooking can significantly reduce nutrient retention.

To measure the project's impact on food and nutrition security, relevant FNS indicators should be applied. While access to fresh vegetables has significantly improved, ongoing monitoring is necessary to evaluate its full effects. Cooking demonstrations are recommended to enhance nutrient preservation, ensuring school children receive the full benefits of fresh vegetables. By addressing availability, accessibility, affordability, and acceptability, AGRILEC's initiative contributes to improved food and nutrition security while fostering sustainable agricultural development in local communities.

Relevant lessons on mechanisms for delivering food security

The company's partnership with the NSFP showcases its ability to address national food security challenges while improving nutrition for over 31,000 students across 27 schools. With plans to expand its reach to 207 schools, AGRILEC is positioned to solidify its leadership in supplying fresh, nutritious vegetables. The Agrilec business strategy includes income generation but also improving the nutrition status of school children and school attendance.

Trade-offs include:

Farmers may need to accept lower prices for their vegetables to make them affordable for schools, reducing their potential profits. While this ensures better nutrition for students, it may not provide the same financial returns as selling in open markets or to higher-paying buyers like supermarkets or restaurants.

Contract farming offers stable demand and guaranteed income, but it also limits farmers from taking advantage of higher market prices elsewhere. If market prices increase, farmers supplying schools at a fixed price might earn less than those selling in open markets.

Producing high-quality, nutrient-dense vegetables may require additional investment in inputs like organic fertilisers, pest control, and better irrigation. While this enhances student nutrition, it may increase production costs, reducing net income for farmers.

Impact on FNS of smallholder producers

Agrilec signed a contract with CASA in December 2024 and has not yet had any direct impact from the support provided by CASA.

Annex 4: CASA MSD Case Studies from Nepal by Uma Koirala

4.1 Bhawani Dairy

The partnership between Bhawani Dairy Corporation and CASA

In the heart of Chitwan, Nepal, where the dairy industry holds significant promise for economic growth and rural prosperity, Bhawani Dairy Corporation (BDC) and CASA have formed a groundbreaking partnership. This collaboration, which started in 2019, aimed at improving the dairy sector's uptake of innovation and technology, contributing to Nepal's agricultural goals, and enhancing the food and nutrition security of local communities. The partnership focused on implementing the "Support Growth and Expansion of Agri-Businesses through Innovation" project, spanning from 2019 to 2023.

Bhawani Dairy Corporation, known for its commitment to quality and purity, embarked on a journey to revolutionise the food culture of Nepal by providing diverse, healthy, and tasty dairy products. The company envisioned a sustainable, high-quality dairy industry where both consumers and farmers thrive. By prioritising product purity and offering innovative dairy varieties, BDC sought to make Nepal a leader in the sustainable production of dairy products.

The partnership's core objective was to strengthen BDC's supply chain, improve product quality, and expand its reach both domestically and internationally. Through CASA's support, BDC increased its daily milk collection from 10,000 litres to 13,000 litres—an impressive growth of 3,000 litres per day—by integrating new farmers into their supply chain and enhancing existing farmer cooperatives.

CASA activities targeted/realised influence on food and nutrition security

With the inclusion of approximately 3,000 smallholder farmers (half of whom were women), the project focused on empowering these producers through Good Manufacturing Practices (GMP) training and climate adaptation strategies. The results were impressive: farmers saw an increase in the price they received for higher-quality milk, contributing to a £80 increase in their net income. The project also emphasised climate resilience, teaching farmers waste management techniques and how to adapt to shifting environmental conditions. The transformation of the supply chain and capacity-building efforts allowed farmers to boost their production and sustain a stable income, ensuring better food security for their families. One farmer shared, "Before, I used to produce 30 litres of milk per day, but

now, as part of the cooperative linked with Bhawani Dairy, I'm producing 90 litres daily. The training and consistent market support from Bhawani helped me significantly improve my production and income." (Focus group discussion)

CASA's influence on BDC was transformative. Through technical assistance, training, and financial support, CASA helped BDC modernise their management systems, streamline operations, and boost the quality of dairy products. One significant achievement was the digitalisation of BDC's management system, which improved their efficiency and transparency, allowing for better tracking of products, sales, and financial transactions. BDC's management shared, "Thanks to CASA's support in digitalising our management system, we now track our products and financials with ease, which has greatly increased our efficiency."

Further, CASA's support enabled BDC to expand both its domestic and international markets. By strengthening its supply chain and improving its branding, BDC successfully increased its production and sales, particularly in its ghee and dog chew (chhurpi) exports. Not only did this lead to a revenue increase of £20,000 (from £159,000 to £179,000), but it also created stable markets for farmers, further incentivising them to increase their milk production.

As part of the project, BDC worked to become a climate-smart corporation by focusing on energy optimisation, minimising emissions, and reducing production costs. The company began implementing energy-efficient practices and auditing its processes, making significant strides in sustainable dairy production. A BDC representative mentioned, "We are improving our status as a climate-smart manufacturing corporation by practicing lower emissions and minimising our energy costs, all while maintaining product quality."

Additionally, training programmes empowered farmers in cattle raising practices, shed management, and nutritious feeding techniques. These skills not only helped farmers increase their milk yield but also contributed to better health and nutrition for their families. As one farmer described, "I learned how to manage cattle health, identify diseases, and provide nutritious feed—this training has improved my dairy production and my family's income."

The partnership between BDC and CASA had a clear impact on food and nutrition security. Farmers benefited from stable incomes, enabling them to meet their families' nutritional needs. The increased milk production

allowed for better access to dairy products, which are rich in protein and calcium. Farmers, like those in the Torikhet Cooperative, were able to sell most of their milk to BDC while also producing other milk-based products like curd, ghee, and paneer, which provided essential nutrition to the local community.

One chairperson of a cooperative shared, *“We used to collect 2,000 litres of milk daily, with 1,700 litres supplied to Bhawani Dairy. The rest was used to make various products that are now circulating in the markets, providing protein and calcium to consumers. This has not only benefitted our cooperative but also helped our community stay nourished.”*

Impact on FNS of smallholder producers

The 12-month project (concluded in 2024) targeted at training 1,500 dairy farmers and had a lasting impact on smallholder producers. By fostering climate-smart practices, improving product quality, and supporting farmers' livelihoods, BDC helped stabilise farmers' incomes and increase their production. The partnership also empowered farmers to better manage their production, strengthen marketing efforts, and sell their products efficiently, even during challenging times such as the COVID-19 pandemic. One farmer expressed, *“I can now sell all my milk through the cooperative, and I'm increasing my production every day. Bhawani Dairy's fair pricing has greatly improved my family's food security. I no longer worry about feeding my family. We have access to nutritious dairy products regularly.”*

The partnership between BDC and CASA highlighted several key mechanisms for improving food security. The digitalisation of management systems, training in climate resilience, and improving market access were crucial in ensuring a stable income for farmers and consistent food supply for their families. The collaboration also demonstrated the importance of empowering smallholder farmers, especially women, by providing technical and material support to improve their livelihoods. The success of this partnership provides valuable lessons for scaling similar models in other sectors of Nepal's agricultural economy, ensuring that farmers are not only economically empowered but also resilient to climate challenges.

The collaboration between BDC and CASA has had a transformative impact on Nepal's dairy sector. Through innovation, training, and market expansion, this partnership has improved the lives of thousands of smallholder farmers, boosted dairy production, and contributed to food security in local communities.

The journey of BDC, supported by CASA, stands as a testament to what can be achieved when technology, innovation, and community-driven development come together for a common goal: sustainable growth and prosperity for Nepal's dairy industry.

4.2 Himalayan Supervores, Vegetables

Summary of partnership with CASA

Established in 2018, Himalayan Supervores (HS) is an agribusiness focussing on the new choice and interest of people consuming quality foods, and primarily focuses on the processing and supply of ready to eat or cook vegetables. Based in Kathmandu (Balkhu) the company sources vegetables from smallholder and commercial farmers. After collection, processing of the vegetables is done (grading, washing, sorting, and cutting) before being sold to both national and international markets. CASA has provided support to leverage investment for expansion of the company's packhouse and technical support to build the capacity of the company along with improvement of the quality of their products through training, value chain management, sanitation, machine handling, good agriculture practices and business-to-business marketing. CASA also supported HS for Good Manufacturing Practice Certification and branding of the products to make them acceptable in national branded markets (stars hotels, restaurants, supermarkets and affluent consumers) and international markets. CASA support was also utilised for rural and commercial farmers to provide training, extension services, and access to high-quality agricultural inputs to support precision farming practices.

CASA activities targeted/realised influence on food and nutrition security

In the heart of urban and peri-urban areas, where the hustle of daily life is juxtaposed with the quiet rhythms of agriculture, CASA-supported high-value agricultural systems (HS) have set in motion a transformation. The purpose of CASA's activities, centred around enhancing food and nutrition security, has been grounded in a keen understanding of key factors such as availability, accessibility, affordability, acceptability, and nutrition.

The mission to boost food security began with increasing the volumes of high-quality vegetables that not only enhanced availability but also improved the nutritional profile of diets. By facilitating better access to safe, nutritious vegetables, CASA aimed to address the gap in urban and peri-urban food markets where fresh produce was scarce or of poor quality. One of the ways CASA achieved this was through building robust

infrastructure—equipping HS with cold storages and a cold chain management system. This meant that vegetables could be safely stored and transported, ensuring they reached consumers fresh and free from contaminants, significantly improving their acceptability in the market. CASA also facilitated obtaining Halal Certification, one of HS's landmark achievements, by which the acceptance of HS meat in Gulf countries has been increased and the demand as well (KII).

At the core of this effort was the empowerment of farmers, the true beneficiaries of CASA's initiatives. The HS provided extensive support in the form of training, new skills, and essential inputs like high-quality seeds. Coordinating with CASA, HS focused heavily on post-harvest loss of the products which was one of the great causes of farmers' low income. After training, post-harvest loss reduced drastically, which not only added value to the products but increased the farmers income also. *"We are working specifically on post-harvest loss of the vegetables at Madhesh Province. We provided training to our farmers, and it has reduced remarkably; nearly 20-30% reduction was recorded. This created positive impact on farmers not only on increment in income but also boosted their enthusiasm to produce more."* (KII). More than just technical know-how, the HS supported farmers in optimising the value chain of their products, ensuring their output could be directed towards appropriate markets and sold for fair, competitive prices.

Farmers who were part of the programme experienced significant change in both their livelihoods and perspectives. One of the key insights came from a Key Informant Interview (KII) that shed light on the satisfaction of the farmers. *"We provide a good price for the agricultural products, so they are happy working with us,"* said a representative of the HS. Farmers echoed this sentiment during Focus Group Discussions (FGD). One farmer expressed his newfound security, saying, *"I have no worry about my farm products. They come to my farms to collect the vegetables and give me a good price for those vegetables. With this income, I can buy whatever food we need from morning to evening. I have no worry about the regular meals of my family."*

The impact was evident: not only were farmers earning a stable income, but they were also able to purchase other necessary foodstuffs to supplement their family meals. The improvement in their financial security had a direct impact on the nutrition of their families. This brought a sense of relief to many who, in the past, struggled to provide consistent meals.

As one farmer explained, *"I am earning a good amount of money after associating with HS. We have vegetables to eat, but we buy other necessary foodstuffs from the nearby market. I have no problem buying food and feeding my family."*

This narrative highlighted how CASA's interventions addressed the multifaceted aspects of food and nutrition security. Availability and accessibility were tackled through better infrastructure and market linkages, while affordability and nutrition were enhanced by ensuring fair compensation for the farmers' labour. Furthermore, the acceptability of the vegetables was not just about taste or quality—it was about safety and the trust built through consistent, transparent practices.

HS has developed and established collection centres in Kathmandu and other various pocket areas of Nepal. Lead farmers collect demanded vegetables from the member farmers and supply to HS. Lead farmers do field-level quality control. After receiving by HS, it also performs quality control of the products and select for processing. *"We aim to supply quality products to our customer which they can eat or cook without any hesitation of quality, pesticide residue and hygiene of foods"... "Our network of highly trained farmers is spread across Nepal, and their products are transported to our processing facility in Kathmandu."* (KII)

As the programme continues to evolve, the story of CASA-supported HS stands as a powerful testament to the role of agriculture in achieving food security. It demonstrates how a combination of technical support, infrastructure, fair pricing, and strong value chains can make a tangible difference in improving the lives of farmers and the nutritional outcomes for their families and communities.

Relevant lessons on mechanisms for delivering food security

Himalayan Supervores source vegetables directly from producers, rather than wholesale markets. This action can guarantee the standards such as pesticide levels and GAP as these add value for Himalayan Supervores to export to other countries including Gulf countries. For the institutional market of Nepal, HS is supplying "ready to eat" and or "ready to cook" vegetables so that hotels and restaurants can produce meals more efficiently with assured quality.

HS has a vision of providing quality vegetables to customers in "ready to eat" or "ready to cook" form. They are collecting the vegetables directly from the farm. So, HS are investing an impressive number of resources to train farmers and also supporting by providing seeds, plastic seats and agro technicians. An HS representative said, *"We have developed supportive mechanisms, i.e., support farmers by directly buying the vegetables from their farms (that helps reducing players in-between), formed farmers networks for internal consultations and support, and providing various support in the form of*

TA, and in kind such as plastics and seeds those are supporting to increase productivity which definitely has increased farmer income. A large chunk of this increased income is invested in buying food for their family." This statement had an agreement of the farmers also by saying that they have increased the production when HS started supporting them. They also agreed that they have good income now where they feel relaxed for their food security. One of the farmers said, "Nowadays I have not to worry about carrying my products to the markets and value those. People come and collect vegetables from my farm and give money immediately. I can buy other necessary food products from that income. Vegetables are already in my house." This statement gives the sense of food security at the household level. Increased income has provided them the ability of food accessibility.

With the investment, HS installed cold storage so that it can store more vegetables for longer, bought a chilling van for transportation of fresh produce, upgraded their washing and cutting stations to enhance ready-to-cook services, and applied for GAP and GMP certification so that it can have quality compliance to sell in both domestic and international markets. These activities enhanced the products' quality which is been reflected in the increasing demand for HS products and supply also increases.

Considering this opportunity, CASA supported HS by providing TA support to develop a business plan for its expansion, helped them secure the needed investment from BFIs for growth, provided TA on quality certification including GAP and GMP, provided training on post-harvest and handling training to factory staff; and facilitated the export process. All these institutional supports from CASA made HS grow faster and succeed to make steps from national to international markets. "We used cold chain system as much as possible to ensure the freshness of our products and preserve the nutritional quality and taste of those products" ... "By intervening in post-harvest mechanisms at the farm level, we are able to make a difference in preserving the quality of our produce until it reaches the customer." (KII)

Impact on FNS of smallholder producers

Smallholder farmers are the backbone of local agriculture. A transformative partnership with HS is making a significant impact on food and nutrition security of these farmers. Through dedicated training, consistent support, and the implementation of Good Agricultural Practices (GAP) and Integrated Pest Management (IPM), smallholder farmers are experiencing a wave of change, not only in their farm productivity but also in their livelihoods.

HS sources its vegetables directly from farms that adhere to IPM/GAP guidelines. These farms are carefully assessed for field quality, farming practices, and product knowledge, ensuring that each farmer meets the rigorous standards set by the company. The emphasis on continuous education through specialised training programmes has become the cornerstone of the success for many smallholder producers, empowering them with technical expertise that ensures their farm products remain resilient and productive.

One farmer, who has been practicing agriculture for many years, shares his story: "I have been involved in farm activities for a long time. Now, I'm associated with HS. My family and I work together on the farm. Over the years, I've accumulated a wealth of indigenous knowledge that has helped make our farm products more resilient. However, the technical knowledge I gained through the training provided by HS has been invaluable. It has allowed me to increase production by overcoming various challenges such as plant diseases, soil management, and crop management. Thanks to this, my farm has become much more productive."

The training that HS provides extends far beyond the basics of farming. It is a holistic approach that equips farmers with the skills and knowledge necessary to improve the quality of their produce, ensuring that their vegetables are not only healthy but also highly marketable. The training programme covers all aspects of farming, from seed selection and pest control to post-harvest management, ensuring that farmers are well-equipped to maximise the potential of their farms.

One of the most profound changes has been the financial impact. A farmer shares his perspective: "We learned how to produce high-quality vegetables through the training, which directly helped me increase my production. These days, I receive a good income from selling my vegetables, and the company even comes to collect them right from my doorstep. I feel so much more comfortable selling my produce, and now I can afford all the food my family needs. It's a huge relief to be able to provide for my family like this."

The convenience of doorstep collection is another benefit that HS provides to smallholder farmers. It eliminates the challenges of transportation, which can be a significant barrier for many rural farmers. This service has not only made the selling process smoother but has also ensured that farmers receive fair compensation for their hard work.

In the context of food and nutrition security, this partnership with HS has led to more than just an increase in farm production. It has brought tangible improvements in the quality of life for smallholder farmers. Through increased income, improved production practices, and

better access to essential resources, farmers are now able to nourish their families with the food they grow, ensuring both food security and a higher standard of living.

The impact of HS's support goes beyond just the farmer's household. Other neighbouring farmers are also adopting the way HS member farmers are doing. This positive imitation has created a productive environment in the communities. As smallholder farmers thrive, the entire community benefits. With more nutritious vegetables available, people develop eating habits of whatever is available in the surroundings, local economies are boosted, and the resilience of the agricultural sector strengthens, making it more sustainable in the long term. Through partnerships like these, the future of smallholder farming looks brighter, ensuring that both food and nutrition security are addressed for generations to come.

4.3 Poshilo, other

Poshilo, a private limited company established in October 2021, began its operations in 2022 with a bold vision of making Nepali foods visible in the global food landscape. By focusing on one of Nepal's staple foods, *satu* – a nutritious product made by roasting and mixing various grains and beans adding other high value nutritious dry fruits stuffs such as almond, okra, dates, and milk powder – Poshilo has positioned itself as a catalyst for both economic and nutritional transformation in Nepal.

Partnership with CASA: A journey towards global expansion

In partnership with CASA, Poshilo has successfully embarked on a mission to improve food security and promote nutritious, locally produced food. CASA has played a pivotal role in strengthening Poshilo's approach to food security by supporting the company's activities in promoting availability, accessibility, affordability, and acceptability of nutritious *satu*. *"CASA supported us in office management, branding, levelling and marketing which is a huge support for us. We became very ambitious now and looking for a larger picture for more constructive collaboration."* (KII) Through the company's strong focus on local production, it has supported smallholder farmers by purchasing grains and pulses directly from them, ensuring better prices for farmers and increased incomes without adding any mediators to share income.

At the heart of this partnership is Poshilo's dedication to uplifting local agricultural practices and driving social change. As of 2025, Poshilo's products are now expanding into international markets, notably India, where *satu* holds cultural significance and people have a habit of taking this type of food especially for breakfast. The company's success is reflected in its annual production capacity of 200 metric tonnes, and its plans to target a broader consumer base through expanded marketing strategies.

Enhancing food security: A multi-dimensional approach

Poshilo's work aligns closely with CASA's focus on food and nutrition security, addressing several key dimensions:

Availability: By sourcing all its raw materials from Nepali farmers, Poshilo contributes to the local agricultural ecosystem and ensures a steady supply of nutritious grains and pulses.

Accessibility: Poshilo's commitment to fair pricing and direct buying from farmers eliminates middlemen, making nutritious food more accessible to local populations. Their *satu* products are now easily available in supermarkets and urban markets, especially in cities where health-conscious consumers are increasingly adopting these products.

Affordability: Poshilo's strategy to offer quality Nepali products at a competitive price has been a game-changer in the market. While Nepali products may be slightly more expensive than their Indian counterparts, Poshilo's competitive pricing strategy ensures that its products are affordable for a broad spectrum of consumers, particularly urban residents.

Acceptability: Poshilo's varied product offerings—tailored to the needs of different groups like athletes, children, pregnant women, and the general public—have sparked a change in food behaviours. Through effective branding, packaging, and targeted advertising campaigns aimed at school children and mothers, Poshilo has successfully raised awareness about the nutritional value of its products.

Nutrition: The promotion of *satu* as a nutritious food product has proven successful in improving the diet of people, especially those in remote areas, as it helps to meet nutritional needs with easily accessible ingredients. Additionally, Poshilo's educational programmes on good agricultural practices and nutrition awareness have led to behaviour changes, encouraging people to adopt healthier eating habits.

Key achievements: From local to global

Poshilo's success is a testament to the power of strategic partnerships and sustainable business models. Here are some key milestones:

Certification and Market Expansion: Poshilo's acquisition of the necessary certifications, including NS and FSSAI, has paved the way for the export of *satu* to the Indian market by 2025.

Job Creation: The company has created over ten jobs in its sales and marketing departments, and established seven regional distributors to enhance product reach and market penetration. This initiative has contributed to regional economic development and strengthened Poshilo's presence in Nepal and beyond.

Impact on Smallholder Farmers: Poshilo's approach to sourcing directly from smallholder farmers has dramatically improved their livelihoods. Farmers no longer have to worry about market access or low prices. By purchasing products directly from the farm, Poshilo ensures fair compensation, allowing farmers to focus on improving productivity and quality. As one farmer expressed, *"I don't have to worry about market access anymore. Poshilo comes to me, buys my products, and pays a fair price. My income has increased, and I now have enough food to feed my family."*

Transforming Agricultural Practices and Livelihoods

Before partnering with Poshilo, many farmers were struggling with low production levels and limited market access. As one farmer shared, *"I used to produce only a small quantity of grains and pulses due to reduced production and degraded soil condition, and most of it was consumed by my families. Selling what little was left was difficult and costly. Now, production has increased. Poshilo buys everything at a fair price, and we no longer need to worry about market demand or transportation costs"*. Similarly, another participant farmer said *"We never did matter of the soil quality and other any things about enhancing agriculture and techniques on which we could increase production. I mainly had only traditional knowledge on it. But when I got various training and advice from the Poshilo than I became aware and succeed to increase production. The quality of the produced grains/pulses are also of good qualities."* She further added, *"My income of these farm products goes to make available foods for my families. I feel more comfort to feed my families these days than previous days when I was not linked with Poshilo."*

This shift has allowed farmers to increase production, diversify their crops, and secure better income. The impact on food security is profound: farmers are not only improving their economic standing but are also ensuring better nutrition for their families.

The road ahead: A vision for sustainable Growth

Looking ahead, Poshilo aims to continue expanding its reach while maintaining its commitment to social responsibility. The company plans to introduce new flavours and products tailored to different consumer needs, further improving the accessibility and acceptability of nutritious *satu* in local and global markets.

Poshilo's success illustrates the importance of integrating local agricultural practices with innovative food products. By supporting farmers, promoting nutritious foods, and creating jobs, Poshilo is contributing to a healthier and more sustainable food system in Nepal, with the potential for global impact.

The partnership between Poshilo and CASA exemplifies the transformative power of aligning local food production with global market opportunities. By focusing on improving the livelihoods of smallholder farmers and promoting nutritious foods, Poshilo has set a model for other companies to follow in enhancing food security, both locally and internationally. Through its dedication to quality, sustainability, and community development, Poshilo is not just shaping the future of Nepali food, but also contributing to a more food-secure world.

4.4 Paicho Pasal Pvt Ltd, Vegetables

Summary of partnership with CASA

In the heart of Western Nepal, where the rhythms of agricultural life blend with the changing landscape, Paicho Pasal Pvt Ltd has grown from a humble initiative into a powerful business model supporting the prosperity of farmers and communities. Established in 2017 with the slogan "Taste of village living in urban," Paicho has committed itself to transforming the agricultural sector, linking smallholder farmers with urban markets while ensuring that the benefits of growth and development reach every corner of rural Nepal. Paicho was established with clear core mission to collect farm products directly from their origin especially from hilly/high hilly areas and deliver them to larger markets, bridging the gap between rural hill/high hill fresh production and urban demand. Over the years, the company has expanded its focus beyond simple distribution. It has undertaken

various activities aimed at not only variation in products but also to empower farmers through capacity building, income generation, production improvement, and the promotion of good agricultural practices among farmers. Paicho operates through its network of local shops and franchises across Western Nepal, but its future is even more ambitious.

Now poised for a new chapter, Paicho partnering with CASA has prepared the shift from Pvt Ltd toward a public private partnership model, where farmers themselves will become shareholders in the company, giving them a direct stake in the business. This innovative approach is part of Paicho's commitment to creating a sustainable and inclusive business ecosystem that supports rural farmers while contributing to the growth of the national economy and ensuring food and nutrition security.

CASA activities targeted/realised influence on food and nutrition security

In 2019-20, Paicho embarked on a significant partnership with CASA to further enhance its operations and impact. This collaboration marked a turning point in Paicho's evolution. The partnership brought critical support in several areas, including capacity building, technological advancements, and strategic guidance. With CASA's help, Paicho not only increased its operational capacity but also took its services to a new level, from merely collecting and distributing smallholder farm products to processing, branding, and efficiently managing the supply chain with cutting-edge technology.

As a result of this partnership, Paicho has seen significant growth and transformation. What once started as a small-scale operation, producing 100 litres of "Chuk" for the local market, has now blossomed into a national operation that produces 40,000 litres, with the potential to reach international markets. However, the demand still outstrips their capacity. This is an example of how Paicho has grown into a successful entrepreneur by co-partnering with CASA. Paicho was also encouraged to open their outlet shops at various parts of Nepal.

The real impact of the Paicho-CASA partnership can be seen in the lives of smallholder farmers who have directly benefited from this collaboration. For many farmers, Paicho's assistance has been a game changer. Take, for instance "... a farmer earned approximately 68 thousand rupees, a significant increase from just 12,834 rupees five years ago," says the Managing Director of Paicho. This jump in earnings reflects the success of Paicho's model of integrating farmers into a broader supply chain, providing training, advice, and access to improved farming practices.

One farmer shared, *"I used to sell hardly 10 kg of tomatoes at the market during the season. Now, by associating with Paicho, I have received training and skills in farming, and I am able to produce 400 kg of tomatoes. I don't need to go far to sell them. I simply drop them at the nearby collection center, and Paicho picks them up. This has made farming more profitable and less stressful."*

This gives a glimpse of satisfaction and how far they have benefited from the association with Paicho.

Paicho's efforts also extend beyond just income generation. The partnership has empowered farmers by offering them more diverse products and food security. *"We have enough vegetables and other farm products in and around us, so we don't have to worry about what to eat. If there's anything missing, Paicho makes it available at our doorsteps, even with just a phone call,"* said a farmer. This level of convenience and reliability has transformed the food security landscape for rural communities.

Relevant lessons on mechanisms for delivering food security

The partnership with CASA has not only increased the incomes of smallholder farmers but has also ensured that food security is within reach for every household. As production has increased, farmers have been able to diversify their crop selection, meeting the growing demand for a variety of farm products. *"My children don't want to eat the same vegetables every day. Thanks to Paicho, I can now buy different but preferred vegetables from nearby farms if I have none, creating variety in our meals. Paicho encourages us to grow crops based on market demands,"* one farmer noted in the FGD.

This diversity of products, combined with the steady income from improved farming techniques and the assurance of market access, has made farmers feel more secure in terms of production and also food and nutrition security. Paicho's model ensures that food is not only available but also accessible and affordable, particularly through their delivery model, which reaches farmers' doorsteps easily either from the shop and or on demand. The convenience and ease of getting food when needed has reduced food insecurity in rural communities: *"I needn't worry about food ... whatever is needed I can take it from Paicho Pasal (shop)."* This statement shows the assurance of farmers having availability, accessibility and sustainability of food and nutrition having associated with CASA supported Paicho Pasal Pvt Ltd.

Moreover, Paicho's impact goes beyond income generation. *"We have better and regular income from our farms through our association with Paicho. The regular training and advice I receive have supported me to increase my production, and now I can afford various food items that my family needs and desires,"* another farmer shared in an FGD.

Paicho and CASA have implemented two key mechanisms for delivering food security that are closely aligned with the objectives of FCDO. The first mechanism is improved agricultural practices, which directly enhance production levels. Through ongoing capacity building and technical support, Paicho has increased the productivity of its partner farmers, ensuring greater yields and higher incomes.

The second mechanism is market access and distribution. Paicho has streamlined the process of getting products from farm to market, ensuring that food is not only produced but also made available to those who need it. Whether it is through local shops or door-to-door delivery, Paicho ensures that food security is addressed comprehensively, at both production and distribution levels.

While the partnership has been overwhelmingly successful, some trade-offs have emerged, especially in balancing the rapid scaling of production with the need to maintain quality control and meet growing demand. However, Paicho's ability to adapt and its willingness to integrate technology have allowed it to navigate these challenges effectively.

Impact on FNS of smallholder producers

Paicho's partnership with CASA has already yielded impressive results in terms of income generation, food security, and community development. The company's growth trajectory, from a small distributor of farm products to a national leader in agricultural business, is a testament to the power of strategic partnerships and community-focused business models.

As Paicho moves toward a public partnership model, where farmers will become shareholders, it envisions a future where smallholder farmers are not only suppliers but also stakeholders in the company's success. This model not only empowers farmers but also ensures that the benefits of growth are shared with the very people who make it possible.

In the coming years, Paicho's vision to improve rural livelihoods and ensure food security will continue to inspire other businesses and organisations working in the agricultural sector. By enhancing the capacities of smallholder farmers, expanding markets, and ensuring that food is both available and accessible, Paicho is helping to shape a more prosperous, food-secure future for rural Nepal.



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