



Nutrition in RAISE-FS: Stakeholder mapping and scoping study

Getenesh Alemayehu ⁽¹⁾, Kat Pittore⁽²⁾ and Akalu Teshome⁽¹⁾

¹ Stichting Wageningen Research Ethiopia

² Wageningen Centre for Development Innovation

RAISE-FS working paper #002

Nutrition in RAISE-FS: Stakeholder mapping and scoping study

Getenesh Alemayehu ⁽¹⁾, Kat Pittore ⁽²⁾ and Akalu Teshome ⁽¹⁾

¹ Stichting Wageningen Research Ethiopia

² Wageningen Centre for Development Innovation

Resilient Agriculture for Inclusive and Sustainable Ethiopian Food Systems (RAISE-FS)
Addis Ababa, November 2022

RAISE-FS is funded by the Embassy of the Kingdom of the Netherlands in Addis Ababa (grant number 4000004753).
RAISE-FS is a programme hosted by Stichting Wageningen Research Ethiopia

RAISE-FS working paper # 002

Alemayehu, G. Pittore, K. and Teshome, A 2022. Nutrition in RAISE-FS: Stakeholder mapping and scoping study. Stichting Wageningen Research Ethiopia, Addis Ababa. SWRE-RAISE-FS-22-005

This working paper presents recommendations for actions RAISE-FS can take to support nutrition within the context of a food systems project in Ethiopia. The paper presents an overview of the key stakeholders active in nutrition sensitive agriculture, and what activities they are engaged in based on primary data collection, as well as a review of key policy documents. The report concludes with key actions the RAISE-FS project should consider to improve the nutrition sensitivity of the project.

Keywords: stakeholder mapping, nutrition, behaviour change communication, food systems, Ethiopia

This manual can be downloaded for free at

© 2022 Stichting Wageningen Research Ethiopia. P.O. Box 88, 6700 AB Wageningen, The Netherlands.
T + 31 (0)317 48 68 00, E info.cdi@wur.nl, www.wur.eu.



The Stichting Wageningen research uses a Creative Commons Attribution 4.0 (Netherlands) licence for its reports.

The user may copy, distribute and transmit the work and create derivative works. Third-party material that has been used in the work and to which intellectual property rights apply may not be used without prior permission of the third party concerned. The user must specify the name as stated by the author or licence holder of the work, but not in such a way as to give the impression that the work of the user or the way in which the work has been used are being endorsed. The user may not use this work for commercial purposes.

The Stichting Wageningen Research accepts no liability for any damage arising from the use of the results of this research or the application of the recommendations.

RAISE-FS working paper SWRE-RAISE-FS-22-005

Photo cover: Andualet Tadesse

Contents

Preface	8
List of abbreviations and acronyms	9
Summary	10
1 Introduction	12
1.1 Background	12
1.2 Overview of the Nutrition situation in Ethiopia	12
1.3 Overview of RAISE-FS project	13
1.4 Background to the issues critical nutrition issues	13
1.5 Objectives	14
2 Methodology	15
2.1 Limitation of the study	15
3 Key Findings	16
3.1 Governmental organization nutrition intervention activities	16
3.1.1 Food and Nutrition office of the Ministry of Agriculture –	16
3.1.2 Ministry of Health	16
3.1.3 Agricultural Transformation Institute	16
3.1.4 Ethiopian food and drug authority	17
3.1.5 Regional agricultural development bureaus	17
3.2 Non-governmental and UN organization nutrition intervention activities	17
3.2.1 The BENEFIT Programme	17
3.2.2 Concern worldwide	18
3.2.3 HELVETAS	18
3.2.4 Alive & Thrive	18
3.2.5 Feed the Future	18
3.2.6 The Food and Agriculture Organization	19
3.2.7 International Potato Centre	19
3.3 University and Research centres nutrition intervention activities	19
3.3.1 Ethiopian Institute of Agricultural Research	19
3.3.2 Ethiopian public health institute	20
3.3.3 Bahir Dar University Institute of Technology	20
3.3.4 Hawassa University	20
3.4 Nutrition related policies, program and projects	20
3.4.1 National Nutrition Policy and Food and Nutrition Strategy	21
3.4.2 Seqota Declaration	21
3.4.3 Home-Grown School Feeding	22
3.4.4 Productive Safety Net Programs	22
3.4.5 Participatory small-scale irrigation development program	22
3.5 Review of existing approaches to increase consumption of a diverse diet	23
3.5.1 Mass media	23
3.5.2 Mobile Phone-Based Communication	23
3.5.3 Advocacy	23
3.5.4 Nutrition Education	24
3.5.5 Participatory demonstrations /cooking demonstration	24
3.6 Key Gap identified related to nutrition intervention	24
3.7 Production Related Gaps	24
3.7.1 Limited access to input	24

3.7.2	Low adoption of nutrient dense crops	24
3.7.3	Local indigenous food information gap and lack of quality standards	25
3.7.4	Lack of Sustainability of nutrition interventions after project phase out	25
3.7.5	Weak engagement of private sector	25
3.7.6	Weak market access to nutrient dense food	25
3.8	Consumption related gaps	25
3.8.1	Limited collaboration among different actors working on nutrition	25
3.8.2	Knowledge gaps on nutrition	26
3.9	Governance Related Gaps	26
3.9.1	Lack of organizational structure for nutrition at regional and <i>woreda</i> level	26
3.9.2	Workload of extension workers	26
4	Entry points to improve availability and consumption of diverse food types	27
4.1	Suggestions to increase access to nutrient dense foods:	27
4.2	Suggestions to increase consumption of nutrient dense foods:	27
4.3	Suggestions to support improve the enabling environment for nutrition sensitive agriculture	28
4.4	Further studies	28
5	References	29
	Annex I: Interview questions	31

Preface

Resilient Agriculture for Inclusive and Sustainable Ethiopian Food Systems (RAISE-FS) is a four-year program funded by the Dutch Embassy in Addis Ababa and hosted by Stichting Wageningen Research Ethiopia based in Addis Ababa, to bring about transformation in the Ethiopian food system. RAISE-FS will develop and implement a demand-driven and interdisciplinary approach to Research for Food System Transformation (R4FST) and as such contribute to the Government of Ethiopia's transformational agenda.

RAISE-FS adopts the food system approach as a Theory of Change (ToC), which helps in analysing the drivers and food system activities that contribute to the transformation of the food system by addressing leverage points, resulting in increased productivity, enhanced value chain performance, and improved human nutrition for food security while minimizing environmental impact and ensuring social inclusion.

The project aims to leverage transformation in Ethiopian food systems, covering the spectrum from food-insecure households and regions, to better-off households that are food-secure and can realize production surpluses, towards commodity commercialization efforts that contribute to rural and urban consumption demands and export.

Contact : info.raisefsethiopia@gmail.com

More information : www.raise-fs.org

List of abbreviations and acronyms

AEW	Agricultural Extension Worker
AGMIS	Digital Agriculture Management Information System
ATI	Agricultural Transformation Institute
BMI	Body-Mass-Index
CIP	International Potato Centre
CSOs	Civil society organizations
DA	Development Agent
EIAR	Ethiopian Institute for Agriculture Research
EFDA	Ethiopian Food and Drug Administration
EPHI	Ethiopian Public Health Institute
EMDHS	Ethiopian Mini Demographic Health Survey
FTCs	Farmer Training Centres
FAO	The Food and Agriculture Organization
GoE	Government of Ethiopia
FNP	Food Nutrition Policy
HEW	Health Extension Worker
HGSF	Home-Grown School Feeding
MoA	Ministry of Agriculture
MoH	Ministry of Health
NGO	Non-Governmental Organization
NSA	Nutrition Sensitive Agriculture
NNCB	National Nutrition Coordination Body
NNP	Ethiopia's National Nutrition Programme
PASDEP II	Participatory Small-scale Irrigation Development Program II
QPM	Quality Protein Maize
PSNP	Productive Safety Net Programs
RAISE-FS	Resilient Agriculture Inclusive Sustainable Ethiopian Food System
R4FS	Research for Food System Transformation
SD	Seqota Declaration
SBCC	Social Behavioural Change Communication
SNNPR	South Nations, Nationalities and Peoples Region
SWR	Stichting Wageningen Research
WASH	Water, Sanitation and Hygiene
WCDI	Wageningen Centre for Development Innovation
WUR	Wageningen University & Research

Summary

Malnutrition is a serious problem among the poor populations in Ethiopia, where levels of dietary diversity remain low. Given the ongoing challenge, many actors are actively working to support improved dietary diversity and nutrition in the country. The purpose of this scoping study is to assess and document the nutrition interventions of different stakeholders, focusing on those working on nutrition sensitive agriculture and food chains, and to identify key gaps, for the purpose of informing the nutrition strategy of for the Resilient Agriculture for Inclusive and Sustainable Ethiopian Food Systems (RAISE-FS) project.

Semi-structured key informant interviews were conducted with 14 key stakeholders including from governmental, non-governmental organizations as well as knowledge partners including research centres and universities, working on nutrition sensitive agriculture projects. This data was supplemented by document review, including six regional agriculture bureau nutrition sensitive agriculture performance reports, academic and grey literature, including published papers, strategies, policies, performance reports and research reports from the different institutions engaged in nutrition interventions in Ethiopia.

A range of challenges relating to the production and consumption of a nutritious food were identified throughout the food system. At the production side, challenges included limited access to agricultural inputs, which is linked to low levels of private sector engagement in the agricultural input sector. Farmers have limited knowledge about nutritious indigenous and improved foods and biofortified crops, limiting the uptake of these new technologies. After harvest, farmers have limited access to post-harvest management practices, which, combined with challenges in accessing markets, may limit the ability to farmers to produce large quantities of nutritious, but highly perishable, crops including fruits and vegetables.

Various actors work on stimulating consumption of nutritious foods through a range of activities including interpersonal communication, community awareness creation (cooking demonstrations), and the use of mass media, including social media. A number of training manuals, job aids, guidelines and recipes have been developed to support these activities, which are often disseminated through farmer training centres and schools. Research on various nutrition issues is also carried out, with the aim of supporting implementation and policy.

Governance challenges were also identified, including limited collaboration between different actors working on nutrition, high turn-over of leadership, and limited vertical and horizontal integration of governance structures. Critical issues were also raised around scaling-up and sustainability of various projects and interventions after external support ended.

Conclusion and suggestions: Based on the findings of the scoping study, the following focus areas have been suggested to improve the availability and consumption of diverse food types:

Increasing access to nutrient dense foods:

- Testing, validating and promoting nutrient dense crops such as Amaranthus, camelina, and Oats. Furthermore, the project could also consider promoting orange flesh sweet potato, common bean, mung bean as food security crop and nutrition dense food.
- Exploring Key agricultural and labour-saving technologies including improving water access for small scale irrigation (water harvesting), improved seed access (small seed packs) and post -harvesting technologies (cooling and drying technologies).
- Training youth and women groups to support access to nutrient dense seeds and other agricultural inputs.
- Support the government with the policy to ensure that at least 40 percent of rural households have home-gardens by demonstrating nutrition sensitive home gardens and supporting the development of effective support systems.
- Supporting production of animal-source foods on a small scale, including small remnants, to improve intakes of micronutrients, protein, and fat.
- Identifying and scaling up selected best practices on preservation, storage and /processing of fruit and vegetable at household and community can support increased year-round access to nutritious foods.

Suggestions to increase consumption of nutrient dense foods:

- A wide variety of nutrition related documents have been developed. It is advisable to revise, update and utilize the existing nutrition related documents by RAISE- FS project, rather than attempting to develop new materials.
- The project could play a unique role in supporting the translation of Newly Developed Ethiopian food based dietary guideline (FBDG) messages into job aids and other tools, piloting them within a nutrition sensitive agriculture project, and carrying out action research to improve the guidelines or developing a seasonal calendar and food exchange list based on the agroecological zones which can be added to Food Based dietary guidelines.
- Demonstrate safe food preparation programs for communities at FTCs in collaboration with woreda nutrition focal at agriculture office. development agents and health extension workers. Nutrition education should take into account food safety and hygiene. Food safety and hygiene promotion also be an area where RAISE-FS can support the Ethiopian Food Based dietary guidelines further develop.

Suggestions to support improve the enabling environment for nutrition sensitive agriculture

- Active participation in the nutrition sensitive agriculture coordination platform, established by MoA to functional as a NSA coordination platform between and among MoA and affiliated organizations, donors', CSOs, research, academia and other partners.
- Establish collaboration with stakeholders working on WASH and Nutrition

1 Introduction

1.1 Background

Ethiopia faces high levels of malnutrition due to environmental, social, political, economic and cultural factors. Inadequate agricultural productivity, high levels of post-harvest loss, poor food safety practices which compromise food quality, inadequate capacities and opportunities to practice optimal infant and young child feeding caring practices, limited access to adequate water and sanitation, and a weak health system are some of the major drivers of food and nutrition insecurity and malnutrition. Over the past decade, nutrition has achieved widespread recognition among both international actors and countries with high burdens of under nutrition. As a result, Ethiopia has implemented different strategies and programmes to ensure food and nutrition security. Efforts are underway to implement a number of strategies and programmes including the [Food Security Strategy](#) (1996), [National Nutrition Strategy](#) (2008), Multi-Sectoral Nutrition Coordination and Integration, [National Nutrition Programmes I and II](#) (2013-2020), [the Segota Declaration Roadmap](#) (zero stunting by 2030), [Nutrition Sensitive Agriculture Strategy](#) (2016-2020), [School Health and Nutrition Strategy](#) (2012), and the [Productive Safety Net Programme](#) (1-4). The Ethiopian government-formulated [National Food and Nutrition policy](#) (FNP) was endorsed by the Council of Ministers in November 2018. In order to implement the policy at grass root level a food and nutrition strategy has developed in 2021. FNP has comprehensively addresses food security, food safety, food quality and post-harvest management, as well as other system-level issues including multi-sectoral approaches and institutional arrangements for food and nutrition governance.

Agriculture and nutrition are highly interlinked. Nutrition Sensitive Agriculture (NSA) is the science and practice of producing plants and animals, as well as preparing and marketing products which support human health and nutrition. It is an approach that seeks to ensure the production of a variety of nutritious, affordable, culturally appropriate and safe foods in adequate quantity and quality to meet the dietary requirements of populations in a sustainable manner. Agricultural projects can be made more nutrition sensitive by incorporating specific nutrition outcomes, and including an aspect promoting behaviour change around production and consumption. Agricultural development to increase access to diversified foods is one of the main contributing factors for food and nutrition security. Agriculture can impact nutrition through multiple pathways, including increased availability of food through household production; increased household incomes through agriculture- related activities; changes in women's time use, empowerment, or improved status within the household; and environmental exposures because of agricultural activities.

1.2 Overview of the Nutrition situation in Ethiopia

Ethiopia has made significant progress in increasing staple cereal production to reduce hunger and undernutrition over the last two decades. Total cereal production has increased almost tripled (CSA, 2001 and CSA 2021). On the other hand, production of Vegetables took up about 1.62% of the area under all crops at national level. However, of the total estimated area under vegetables, the lion shares which is about 69.12% and 18.26% was under red peppers and Ethiopian Cabbage respectively (CSA,2021). The country has also made considerable progress in reducing the prevalence of malnutrition. National prevalence of stunting (low height-for age) among children has remain steady, 38% in 2011 to 39 % in 2023, the prevalence of underweight (low weight-for-age) reduced slightly from 24 % in 2016 to 22 % in 2023 and wasting (low weight-for-height) has increased slightly from 10 % in 2016 to 11 % in 2023 (Central Statistical Agency - CSA/Ethiopia and ICF 2017; Ethiopian Ministry of Health, Ethiopian Public Health Institute, and UNICEF 2023)

According to the most recent data, only 8 percent of children, and 7% of women consumed the recommended number of food groups (Ethiopian Ministry of Health, Ethiopian Public Health Institute, and UNICEF 2023) and still remains too low. Consumption of foods rich in vitamin A and iron rich foods remains low among young children in Ethiopia, although it has increased slightly since, 2016 from 38% to 39% for vitamin A rich foods and 22 % to 24% for iron rich foods. Micronutrient deficiencies remain a major public health problem in the country. According to the Ethiopian national micronutrient survey of 2016, the prevalence of vitamin A deficiency (VAD) among children 6-59 months of age is 13.9 per cent. More than half of children aged 6-59 months (57 per cent) and 24 per cent of women aged 15-49 are anaemic.

Prevalence of anaemia among pregnant women is 29 per cent, with minimal improvements in the last decade.

Under nutrition among women age 15-49, as measured by BMI less than 18.5, has declined over the last 16 years. The percentage of thin women dropped from 30% in 2000 to 22% in 2016 (Central Statistical Agency - CSA/Ethiopia and ICF 2017). However, despite the achievements, the problem of food and nutrition security remain a key health and development issue for the country.

1.3 Overview of RAISE-FS project

The Resilient Agriculture for Inclusive and Sustainable Ethiopian Food Systems (RAISE-FS) programme is a four-year initiative that aims to bring about transformation in the Ethiopian food system. RAISE-FS will develop and implement a demand-driven and interdisciplinary approach to Research for Food System Transformation (R4FST) contributing to the Government of Ethiopia's transformational agenda. RAISE-FS envisions more resilient, inclusive, and sustainable food systems in Ethiopia. The RAISE-FS adopts the food system approach to analyse the drivers and food system activities that contribute to the transformation of the food system by addressing leverage points, resulting in increased productivity, enhanced value chain performance and improved human nutrition while also seeking to minimize environmental impact and support inclusion of marginalized groups.

The RAISE-FS project builds on the work of the Bilateral Ethiopia Netherlands Effort for Food, Income and Trade Partnership (BENEFIT) which was established in 2016 to unite four already running agricultural development programmes in Ethiopia that were supported by the Embassy of the Kingdom of Netherlands. This umbrella project consists of five projects: integrated seed sector development (ISSD); capacity building for scaling up of evidence-based best practices in agricultural production (CASCAPE); Ethio-Netherlands Trade Facilitation for Agribusiness (ENTAG); Sesame Business Network (SBN) and Realizing Sustainable Agricultural Livelihood Security (REALISE). Details about the key nutrition activities implemented by the BENEFIT programme can be found in section 3.1.1.

However, many actors are already actively engaged in promoting consumption of nutritious foods, and the RAISE-FS project seeks to support that work, building on existing knowledge and expertise. Additionally, RAISE-FS, as a research and knowledge partner, can best play a role in contributing to the evidence base about what works to improve dietary intake, including finding answers to questions about the most effective ways to promote improved dietary diversity for the general population, not only pregnant and lactating women and young children.

1.4 Background to the issues critical nutrition issues

While the project is, amongst others, focusing on agricultural technologies to support increased production, efforts to stimulate increased consumption of nutritious diets are also important. Evidence from a wide variety of contexts shows that increasing production of nutrient dense foods is not enough to increase consumption, projects also need to actively promote improved diets (Ruel, Quisumbing, and Balagamwala, 2018). In Ethiopia, where levels of dietary diversity remain very low, and consumption of nutrient dense foods, including vegetables and fruits, is one of the lowest in Africa, answering these questions is critical (Hirvonen, Wolle, and Minten 2018). The per capita milk consumption of Ethiopian adults is 16.6 kg per year, 7.5 kg of meat per year and 50.2 kg vegetable per year.

Additionally, while the project seeks to stimulate increased consumption of nutrient dense foods including fruits, vegetables, and animal source foods, which, while nutritious, often present a number of food safety concerns. Food safety is a critical challenge in Ethiopia, and there is a growing recognition of the links between poor nutritional outcomes and food safety challenges (Birke and Zawide 2019; USAID EatSafe Project Report 2020).

1.5 Objectives

General objectives

The main objective of this scoping study was to assess the nutrition sensitive agriculture interventions and practices of different stakeholders working in Ethiopia, and to identify key gaps related to nutrition promotion and food safety for the purpose of informing the nutrition component of the RAISE-FS project. While a large number of actors are also active in promoting nutrition specific interventions, for example promoting exclusive breastfeeding or vitamin A supplementation, the study focuses on actors working mainly on nutrition sensitive projects, with a focus on agriculture, value chain or food system projects (nutrition sensitive agriculture).

Specific objectives

- To identify the existing nutrition sensitive agriculture interventions and practices of governmental, bi-lateral, and non-government organizations.
- To assess existing social behavioural change communication approaches to increase consumption of a diverse diet, especially those related to nutrition sensitive agriculture or carried out in combination with nutrition sensitive agriculture practices.
- To identify critical gaps in nutrition sensitive agriculture interventions; especially where the RAISE-FS project might be able to generate new insights and knowledge to identify leverage points
- Identify opportunities for institutional collaboration.

2 Methodology

A snowballing methodology was used to identify 14 stakeholders working for governmental, research, non-governmental and UN organizations working on issues of nutrition sensitive agriculture and value chains (Table 1). Using semi-structured key informant interviews (see Annex 1). Data was collected from key actors and experts working in planning and implementation of nutrition programs using semi-structured key informant interviews. Interviews focused both on what the stakeholders are currently doing, as well as where they see critical gaps. Additional information was collected by reviewing grey literature including strategies, policies, performance reports and research reports from governmental, bilateral, and non-governmental organizations.

Table 1 Stakeholder and geographic area of implementation

Stakeholder and geographic area of implementation	
Concern worldwide	South Welo (Amhara) and Welayita (SNNP) regions
HELVETAS	Oromia (Borana) and Amhara (Wagi himeira)
Alive & Thrive	Tigray, Afar, Amhara, Oromia, Somali, and SNNP regions
Feed the future	Amhara, Oromia, Sidama, and SNNP regions
FAO	Oromia, SNNP, Amhara, Tigray, Benishangul Gumuz, Dire Dawa, Harari and Gambella regions
CIP	Amhara, Oromia, and SNNP
MoH, MoA, EFDA, EPHI, ATI, EIARI	National level

2.1 Limitation of the study

Many actors are working on nutrition sensitive agriculture and specific activities throughout the country, implementing a broad range of activities to reduce malnutrition and increase dietary diversity. However, it was not possible to interview all stakeholders that have been working on nutrition interventions. This study is based on discussions with a limited number of respondents. The development of the final set of nutrition activities for RAISE-FS also takes into account the outcomes of a quantitative baseline study and will be complemented with qualitative data collected by a rapid food systems assessment, which will provide additional data from the community and household level.

Finally, and as previously mentioned, we focus on stakeholders working on nutrition sensitive agriculture interventions, rather than nutrition specific interventions.

3 Key Findings

3.1 Governmental organization nutrition intervention activities

The following section starts with an overview of the key findings from each of the organization interviewed, followed by a review of the key policies which guide the implementation of nutrition activities in Ethiopia. It should be noted that this section does not intend to present a comprehensive account of all the activities carried out by the partners, many of whom have a wide mandate. Rather, the intention is to consider what activities they are engaged in around the promotion of nutrition sensitive agriculture, including activities to stimulate consumption. The aim is to identify what others actors are doing, in order to prevent duplication of work, and identify synergies. Partners were also asked to reflect on critical gaps in terms implementing nutrition sensitive activities.

3.1.1 Food and Nutrition office of the Ministry of Agriculture –

The Ministry of Agriculture (MoA) is the leading governmental organization for overall nutrition-sensitive agriculture-related activities. The ministry is co-chair of NNPI & I II and a lead on Ethiopian food systems transformation initiative. In collaboration with other stakeholders, the MoA food and nutrition office has been implementing a range of nutrition sensitive agricultural programs, projects and interventions. The major activities that are undertaken by food and nutrition office include: support and promote nutrition sensitive agriculture interventions such as the production of nutrient dense crops and animal source foods ,preparation and documentation of newly introduced nutrition-dense crops, food recipes, food safety regulations, postharvest management, SBCC for nutrition literacy, training manuals, pocket guide and job aids as well as supporting nutrition capacity building for agricultural extension workers, as well as the establishment of a digital Agriculture Management Information System (AGMIS,<http://agmis.gov.et/>) or monitoring and evaluation of nutrition-sensitive activities. It also facilitated the Ethiopian food system development including roadmap development.

3.1.2 Ministry of Health

The Ministry of Health (MoH) is primarily responsible for nutrition-specific interventions especially infant and young child feeding, provision of health service, nutrition interventions targeting the first 1000 days, nutrition screening, deworming, management of severe acute malnutrition, growth monitoring, vitamin A supplementation, social-behavioural change, youth nutrition screening, as well as water, sanitation and hygiene (WASH) activities. In addition, the National Nutrition Programme (NNP) established the MoH as the responsible organization to coordinate the implementation of multi-sectoral nutrition strategies by establishing a multi-sectoral coordination mechanism.

3.1.3 Agricultural Transformation Institute

The Agricultural Transformation Institute (ATI - formally ATA) is a policy and delivery-oriented government agency created to help accelerate the growth and transformation of the Ethiopian agriculture sector. In collaboration with the MoA, the Ethiopian Institute of Agricultural Research (EIAR), and Ethio Telecom, the 8028 hotline was created by ATI, who placed the extension information typically provided to agricultural Development Agents directly on a technology platform that can be accessed by anyone at any time. The agency's mandates is focused solely on improving the livelihood of smallholders farmer across Ethiopia. Key nutrition activities carried out by the organization include targeted nutrition messages sent to farmers by using 8028 platform The Interactive Voice Response (IVR)/Short Message Service (SMS) system currently provides smallholder farmers free access to information on cereal, horticulture, and pulse/oil seed crops, as well as a wide range of agriculture-related activities including nutrition messaging.

3.1.4 Ethiopian food and drug authority

The Ethiopian Food and Drug Administration (EFDA) is mandated to ensure the safety, quality, and efficacy of medicines as well as to regulate sale of semi-processed and processed foods. Food safety activities include conducting market surveillance on food quality and communicating food safety concerns to the community. They also have the mandate to revoke licenses for misconduct of businesses/manufacturers, prepare draft national food safety strategies for semi or fully processed foods, and regulate imported food and drug items.

3.1.5 Regional agricultural development bureaus

This study reviewed nutrition sensitive agriculture activities for six regional agricultural development bureaus: Somali, Amhara, Harari, Gambela, Oromia, Dire Dawa regional state. All regional plans focus on enhancing the availability and accessibility of diversified and nutrient-dense food through fruit and vegetable gardening as well as focusing specifically on a number of nutrient dense commodities including: quality protein maize (QPM), orange flesh sweet potato, iron and zinc rich beans, pumpkin, Amaranths, apple, peach, camelina, pigeon pea, degera (cowpea), and okra (*Kudura*). Additionally, they are working on increasing the production and productivity of animal source foods and animal products (such as Milk, Egg, Poultry etc). Gender activities focus on empowering women to access productive resources and labour-saving technologies. In terms of nutrition Behavioural Change Communication (BCC), cooking demonstration and nutrition education are two activities commonly implemented by all regional agricultural development bureaus.

3.2 Non-governmental and UN organization nutrition intervention activities

The intervention and activities of a number of non-governmental organizations including Concern worldwide, HELVETAS, Alive & Thrive, the International Potato Centre (CIP), Food and Agriculture Organization of the UN (FAO), and feed the future were also reviewed. These stakeholders were chosen because they are known to have nutrition sensitive agriculture activities in their programs and projects.

3.2.1 The BENEFIT Programme

The BENEFIT programme, the precursor to the RAISE-FS project, worked on a number of nutrition sensitive agriculture interventions. Home gardens were implemented in several projects under the BENEFIT program, supported by the Integrated Seed Sector Development Project, that worked with Dutch seed companies on the introduction of hybrid varieties of tomato and onion, and the introduction of cucumber, a novel crop. The BENEFIT project was interested to understand the perceived benefits and limitations of home gardens, which was done by developing a validation protocol to collect data on a range of parameters including social (perceived benefits vs work for various family members, household consumption) economic (costs of the home gardens vs income earned from surplus) and environmental (used of pesticides and fertilizers) sustainability. Final home garden manuals, incorporating these findings, were produced for by five universities: Addis Ababa, Bahir Dar, Jimma, Makelle, and Hawassa.

The program also supported the introduction of several biofortified crops including the seed of for early generation quality protein maize as well as introducing the crop to farmers. The orange flesh sweet potato was incorporated in the home garden activities, especially those in food insecure areas, and access to sweet potato vines was supported through the establishment of a supported the establishment of a PLC.

Quick maturing and high yielding varieties of papaya were first introduced in Mekelle, to support households improve their access to fruit and generate income through sale of the seedlings. Quick maturing papayas were also incorporated in the home gardens and documented in a best-fit practice manual, for the MoA.

The program also promoted pulses as rotational crops to improve diets for both humans and livestock. A range of pulses were tested and validated, and seed system for soya, haricot and mung bean were supported. The program also supported the established a soya bean platform which contributed to increased uptake of soyabeans small holders, which supported dietary diversity and household income as many women are interested in soya and mung beans, especially as crops for sale.

The BENEFIT programme also worked on agricultural technologies to increase access to animal source foods. Dairy goats were introduced to households with young children as a way to increase access to milk on a

regular basis in two projects, goat fattening for income and resilience building was supported with PSNP households. Eggs, as an affordable source of animal source food were also promoted through the introduction of pullets contribute to livelihood diversification and risk management.

In addition to the agricultural interventions introduced by the program, behaviour change communication around the importance of healthy diets and consuming diversified foods, were also carried out.

3.2.2 Concern worldwide

Concern Worldwide is an international humanitarian organization, that strives for a world free from poverty, fear, and oppression. Currently, they are working in Amhara (South Wello) and SNNP (Welayita). Nutrition interventions include: linking nutrition with agriculture through the promotion of nutrition sensitive and climate-smart agricultural practices (target commodities include: taro, haricot bean, vegetables, fruit), Community resilience building (watershed management), and improved nutrition status of households, supporting them with livelihood and nutrition activities allowing them to graduate from extreme poverty. Nutrition activities focus on the household level and are linked to production of nutrition sensitive crops and livestock. The organization also activities at the community level, providing sanitation and hygiene demonstrations and at the woreda level, supporting capacity building activities for woreda staff.

3.2.3 HELVETAS

HELVETAS Swiss Development Organization is an independent development organization based in Switzerland. It has been operating in Ethiopia since 1980 supporting rural infrastructure development, natural resource management, local civil society organizations and local government, skill development, education and emergency response.

Currently, the organization is actively working in Oromia (Borana) and Amhara (Wag Hemraa) regions of the country. It is promoting high value, drought-tolerant and nutritious crops (Lima (Madagascar bean), fruit seedlings, groundnuts, pigeon pea, wheat, pearl millet, etc). Permaculture, and ring basin infiltration pits are also promoted for small holder farmers.

Their approach to implement nutrition activities is through collaboration with various key partners. Partners include agriculture development offices, Sekota dry land agriculture research centre and health extension workers (HEWs). Their work includes multi-stakeholder coordination and supporting collaboration with cooperatives to supply seeds to project beneficiaries using a cash and credit-based approach. Cooking demonstrations have also been provided by health extension workers.

3.2.4 Alive & Thrive

Alive & Thrive is a global nutrition initiative which seeks to save lives, prevent illness, and ensure the healthy growth of mothers and children. Currently, it has been collaborating with MoH and MoA and is working in Tigray, Afar, Amhara, Oromia, Somali, and SNNP regions of the country.

The nutrition interventions of Alive & Thrive are focus on sustained capacity development at the national level and regional levels to improve women's and children's dietary diversity and access to safe, affordable, and nutritious food. Activities focus on governance issues including support to establish multisectoral nutrition governance structure through advocacy, budget, planning & review of nutrition policies. Additionally, they support assessment of consumption, production, market availability and affordability of nutritious foods; data capturing and its utilization (nutrition indicators) and developed a practical guide 'Making Agriculture Nutrition sensitive'. They promote iron & zinc rich beans, post-harvesting handling, food safety, increasing consumption of animal source foods and, development of job aid for example guides for extension workers, on topics such as nutrition sensitive agriculture, working in collaboration with the MoA.

3.2.5 Feed the Future

Feed the Future is the U.S. Government's global hunger and food security initiative, working to address the root causes of poverty, hunger, and malnutrition and transforms lives. The project focuses on five integrated results, increased access to diverse, safe, and quality foods, optimal nutrition, WASH, and adaptation of improved agriculture behaviours, increased utilization of quality nutrition services, increased access to sustainable drinking water supply and strengthened multi-sector coordination and capacity. Currently, Feed the Future is working in Amhara, Oromia, Sidama, and SNNP regions of the country. Projects focuses on

several pathways through which agriculture is thought to influence nutrition: own for own consumption, increasing farmer incomes, and women empowerment pathways.

Activities are also undertaken to support the enabling environment for nutrition sensitive agriculture production, including improving the food market environment, WASH and Social Behaviour Change Communication (SBCC). Nutrition activities focus on preventing undernutrition during the first 1000 days and promotion of NSA at schools (through school gardening and nutrition clubs) and at Farmers Training Centres (FTCs). NSA is also a key priority activity of the organization. NSA activities, including scaling-up best practices through model farmers' approach, training poultry out-growers, establishing an agriculture input supply stakeholder platform at region level, and promoting innovative post-harvest technologies (Indirect cabinet solar driers, zero energy cooling chamber and potato harvester demonstrated at FTC level and scaling up of traditional preservation practices for cottage cheese (Metata Ayib) at household level.

3.2.6 The Food and Agriculture Organization

The Food and Agriculture Organization (FAO) of the United Nations is a specialized agency of the United Nations that leads international efforts to end hunger and improve nutrition and food security. Currently, FAO is working in the Oromia, SNNP, Amhara, Tigray, Benishangul Gumuz, Dire Dawa, Harari and Gambella regions of the country. To improve nutrition and food security, the FAO projects cover a wide range of technical issues. Interventions range from policy support, for example the development of nutrition guidelines and standards for school meals, to promoting diversified crop production, food and nutrition education focused on behaviour change. In addition, FAO has also been working on improving specific value chains such as Moringa, rural women economic empowerment with support of input such as milk processing equipment, seed, livestock and poultry etc., home grown school feeding, food based dietary guideline and updating of 1998 food consumption table to include (bio) fortified, traditional/indigenous food, as well as and creating modern foods/recipes using the newly introduced food items.

3.2.7 International Potato Centre

The International Potato Centre (CIP) is a research-for-development organization with a focus on potato, sweet potato, roots and tubers crops. It delivers innovative science-based solutions to enhance access to affordable nutritious food, foster inclusive sustainable business, including increased employment opportunities, and support increased climate resilience of root and tuber agri-food systems. Currently, it is working in the Amhara, Oromia, and SNNP regions of the country. Nutrition activities focus at the community level in food insecure areas, providing sweet potato to farmers. Additionally, it trains experts, development agents (DAs) and farmers on sweet potato production and post-harvest handling practices, as well as strengthening local seed multipliers to ensure a sustainable seed supply system. In terms of behaviour change communication the organization has supported the development of the healthy baby toolkit, which provides counselling cards and recipe books to mothers with children under 2 years to ensure they receive the recommended amount of food at each meal for optimum growth and development.

3.3 University and Research centres nutrition intervention activities

3.3.1 Ethiopian Institute of Agricultural Research

Ethiopian Institute of Agricultural Research (EIAR) started the food and nutrition research directorate in 2018 with the objective of mainstreaming food science, postharvest and nutrition issues in research system to improve the efficiency of the agri-food system. The directorate has developed research strategies emphasizing the improvement of food processing technologies, food enrichment, value addition, reduction of post-harvest loss, and enhancement of food quality and safety which is similar to the national nutrition sensitive agriculture strategy.

EIAR is working to address several critical knowledge gaps. They have identified the following gaps: limited information about local indigenous foods and missing food standards, the absence of adequate food storage to ensure quality, and lack of food packaging. Fruit and vegetable production systems are not a focus area, and horticultural production is limited by environmental issues (e.g., polluted water used for vegetable production). Production of other nutrient dense foods is also limited by factors including a mismatch between supply and demand (dairy) and broader issues related to market access.

3.3.2 Ethiopian public health institute

Ethiopian public health institute (EPHI) is an autonomous arm of the MoH, responsible for health- and nutrition-related research activities. Knowledge gained through research can help to improve policies, programs, and practices within a nutrition service delivery system and can contribute to significant improvements in nutritional status and nutrition equity. EPHI conducts surveys and implements research that supports the national nutrition program. It is also responsible for conducting nutrition research; the development of new recipes to improve traditional diets and the diets of infants and young children; increasing the nutritional quality of foods through fortification; and the development of composite flours. The thematic research areas of EPHI focus on better understanding the magnitude, determinants, and distribution of malnutrition in Ethiopia, as well as research into food science and food technology. Additionally the organization provides nutrition, food science and food technology consultancy services, disseminates research findings for policymakers as well as for community use, carries out food quality and safety analysis, formulates key policy questions, and supports with data analysis to answer these questions and supports in communicating the findings to decision makers. EPHI has also established a data and knowledge repository.

3.3.3 Bahir Dar University Institute of Technology

Bahir Dar Institute of Technology, which is one of the institutes in Bahir Dar University, is among the oldest and well-known technology institutes in Ethiopia. The institute is carrying out research to develop the evidence related to post-harvesting technologies, food safety and quality, formulation and development of nutritious food, and assessing the contribution of neglected and under-utilized wild edible plants/crops to increased consumption of nutrient dense foods. However, the absence of systems to link research with industry creates challenges for scaling the identified interventions.

There are various research outputs delivered by graduate students, particularly in food safety, postharvest management and nutrition such as integrated post-harvest practices, biochemical profiles, quality loss, mycotoxin in pepper value chain, food and nutritional labelling etc.

The institute also works on technology transfer and community engagement activities with farm and school communities, such as hydroponic and vertical farming for urban and semi-urban food security and school gardening. Regarding improved consumption, the university promotes the use of a variety of new technologies to improve productivity and reduce postharvest loss, empower women, provide nutrition education through cooking demonstrations and role play by amateur local artists.

3.3.4 Hawassa University

Hawassa University is one of the leading public universities in the Southern Region. One of the oldest departments in the university is food science department. The department has conducted food and nutrition related research on new products. Examples of the types of projects they have supported include Vitamin A enriched commercial foods for the public, nutritious foods for school feeding, ready-to-eat Shiro Wot for commercial production, nutritious snacks made of sorghum & quality protein maize for school aged children, bean canning technology, and postharvest handling technology for ginger. They seek to carry out research on producing nutrient dense foods in a range of agroecological areas as well as processing technologies that can be used by households with a variety of economic means.

3.4 Nutrition related policies, program and projects

Ethiopia has implemented a wide range of strategies and programmes to ensure food and nutrition security these include: Food and nutrition policy (FNP) and accompanying strategy, Growth and Transformation Plan (GTP), Health Sector Transformation Plan (HSTP), National Nutrition Programme (NNP I & II), National Nutrition Sensitive Agriculture Strategy (NNSAS), One WASH National Programme, Participatory small-scale irrigation development program (PASDEP II), Productive Safety Net Program (PSNP), Agriculture Growth Program (AGP), and the Seqota Declaration. The following section briefly presents the most relevant nutrition policies and programmes.

3.4.1 National Nutrition Policy and Food and Nutrition Strategy

The Ethiopian government-formulated FNP was endorsed by the Council of Ministers in November 2018, to comprehensively address food security, food safety, food quality and post-harvest management, as well as other system-level issues, including multi-sectoral approaches and institutional arrangements for food and nutrition governance (Federal Democratic Republic of Ethiopia 2018). The policy identifies seven priority intervention areas as policy directions: ensuring availability, accessibility and utilization of diversified, safe and nutritious food; ensuring the safety and quality of foods from farm to table; improving post-harvest management of agricultural food products; ensuring optimum nutrition at all stages of life; creating a system for an effective food and nutrition emergency response, effective nutrition communication; and creating effective food and nutrition governance.

The food and nutrition strategy guides the implementation of the National Nutrition Policy. It sets out 13 strategic objectives, each of which has specific initiatives, actions and key performance indicators (KPIs), along with lead and collaborating sectors. Accordingly, the first three strategic objectives are dedicated to ensuring the availability and accessibility of food in a sustainable way and the proper utilization of diversified, safe, high quality and nutritious food, including the improvement of post-harvest management. The other three strategic objectives focus on ensuring optimum health of the population using the lifestyle approaches, including an effective food and nutrition emergency response system. The remaining strategic objectives are dedicated to creating effective food and nutrition governance and an effective nutrition communication system in order to achieve the goals of the food and nutrition policy (Federal Democratic Republic 2019).

A review of the existing policies highlighted that the most recent Ethiopian nutrition policy and accompanying strategy have shifted the framing of nutrition as nutrition, moving away from the framing of nutrition as a health and humanitarian emergency to considering the multi-sectoral nature of nutrition (Walls et al. 2018). While the policy and strategy increasingly acknowledge the multi-sectoral nature of nutrition, many ministries have lagged in mainstreaming nutrition in their sectoral plans, which often do not include specific nutrition goals, or clearly defined budgets or responsibilities and accountabilities (Walls et al. 2018). In the context of food systems project, it is useful to consider the alignment between the NNP and agricultural policies, which often focus on economic aspects of increasing production. As Walls et al argue "there can be obvious challenges when a policy problem is identified through one sector [health and nutrition] yet must be addressed by actions in another sector, e.g. agriculture (Walls et al. 2018). Ultimately, for the NNP and FNS to be effective, key ministries, including agriculture, will need to align its productivity goals with nutrition goals, which will require a discussion about trade-offs and competing interests (Walls et al. 2018).

3.4.2 Seqota Declaration

July 2015, the Government of Ethiopia (GoE) exemplified its commitment to nutrition by issuing the Seqota Declaration (SD) to eliminate child under nutrition and end stunting in Ethiopia by 2030. The 15-year Seqota Declaration Implementation Plan focuses on delivering high-impact nutrition-specific, nutrition-sensitive, and infrastructure interventions across multiple sectors.

The SD will be implemented nationally, in all 1050 woredas by 2030. It covers 700 woredas in the expansion phase including the 40 woredas from innovation phase, and an additional 350 woredas in the scale up-phase. The SD innovation phase was implemented between (2016 -2020). Amhara and Tigray were targeted for the innovation phase because of the high stunting burden in both regions. Currently, the SD Expansion Phase (2021-2025) is in progress in over 240 woredas. The Scale-up Phase (2026-2030) will be implemented across all regions.

The MoH, MoA, Ministry of Water, Ministry of Irrigation and lowlands, Ministry of Women and Social Affairs, Ministry of Education, Ministry of Road and Transport, and Ministry of Finance are jointly responsible for the implementation of the SD Expansion and Scale-up phases.

The key goals of the SD include, amongst others, to achieve the following by 2030: (1) Zero stunting in children less than 2 years; (2) 100 percent access to adequate food all year round; (3) Transformed smallholder productivity and income; (4) Zero post-harvest food loss through reduced post-harvest loss; (5) Innovation around promotion of sustainable food systems (climate smart); (6) Continue to improve the accessibility and coverage of adequate and safe drinking water supply, 100 percent open defecation free kebeles by 2030 and irrigation for supporting agriculture as well as access to water source; (7) Increase efforts to educate women and girls, especially rural girls, to help prevent the intergenerational transmission

of poverty, and implement the school health and nutrition strategy initiatives: school feeding, deworming and nutrition education; and (8) Focus on poverty reduction and resilience building through predictable cash transfer to the most vulnerable group, and in addition, targeted support to school feeding programmes for pregnant and lactating women as well as children under 2 years

Strengths of the Seqota declaration include the application of systems level thinking, taking into account various food system elements, and considering the role various ministries can play in implementation. Mechanisms to support boundary spanning and improve multi-sector collaboration are considered to address some of the previously identified challenges related to multi-sectoral working. Because the Seqote declaration is entirely driven by government, there is a high degree of ownership, and the involvement of so many ministries increases buy-in and commitment (Fatime Traore 2022). There are also a number of limitations, especially in terms of working in a truly systemic way. Systems level thinking supports the inclusion of multiple food system elements, however stops short of considering the various feedback loops, synergies and trade-offs that are key to true systems level analysis. While the multi-stakeholder collaboration mechanisms that have been proposed are strong, they will only be effective if the involved ministries have adequate staff capacity and resources for implementation, two issues which remain critical challenges in the Ethiopia context (Fatime Traore 2022).

3.4.3 Home-Grown School Feeding

The Home-Grown School Feeding (HGSF) resource framework is the result of a broad-based collaborative effort initiated, coordinated and facilitated by the World Food Programme (WFP). School feeding was introduced to Ethiopia in 1994 with hot meals provided by the WFP in Oromia, Afar and Somali regions. This was expanded to SNNPR and other parts of Oromia applying the HGSF approach, which aims to link school feeding to agricultural development through the production and procurement of locally diverse foods, especially by smallholder farmers. The government introduced Emergency School Feeding in 2015 in response to the drought. The emergency school feeding program mirrored the HGSF program.

The Home Grown School Feeding Program has been a recognized part of the platform for nutritional, health and educational intervention programs such as deworming, micronutrients fortification and supplementation (Drake et al. 2020). Various studies have suggested strengthening and scaling up school feeding program would enhance nutritional outcomes and reduce inequalities (Destaw et al. 2022). According to Destaw et al (2021), the Addis Ababa SFP had a positive effect in academic performances of school aged boys of age 10–14 years, but the effect was more noticeable for late adolescent girls of 15–19 years.

3.4.4 Productive Safety Net Programs

The Productive Safety Net Programs (PSNP) has been lauded as an “international flagship program both in its scope and in its partnership approach” to respond to chronic food instability. The Government of Ethiopia (GoE) has been implementing the PSNP since 2005. The PSNP began as a food “safety net” that would provide food or cash for food insecure households during the “hungry” seasons of the year in exchange for public works through the MoA. Although it began as a household food security program it has, for all practical purposes, evolved into a broader package of social protection, now comprising four components: social protection, livelihoods, disaster risk management, and nutrition and climate resilience/green economy.

PSNP5 will contribute to the National Food and Nutrition Plan through provision of timely, predictable, and adequate transfers to the extreme poor and vulnerable households in rural Ethiopia. The programme allocated 10 % from its total budget and integrates nutrition sensitive approaches and facilitates specific linkages to ongoing health and nutrition interventions.

3.4.5 Participatory small-scale irrigation development program

Participatory small-scale irrigation development program (PASIDP II) is a government flagship program which is funded by IFAD. PASIDP II’s Programme Development Objective is to provide improved income and food security for rural households on a sustainable basis. This program has been implemented (2016-2022) in Amhara, Oromia, and Southern Nations, Nationalities and Peoples Region (SNNPR), and Tigray region of Ethiopia.

It has three main components: A-Investment in Small-scale Irrigation Infrastructure, B- Investment in Capacity for Sustainable Agriculture; and C- Programme Management, M&E, and Knowledge Management. The Nutrition sensitive agriculture lies within Component B. The objective here is to maximize the positive

impact of the food systems on nutrition outcomes while minimizing any unintended negative consequences of agricultural policies and interventions to the target population. The focus is to have year-round availability, access and consumption of diverse, safe and nutritious foods from plant and animal sources. Enhance production of fruits, vegetables, pulses and cereals, reduction of post-harvest losses and improved food safety, increase capacities of farmer training centers, and improve natural resource base to improve food availability are the four initiatives that the PASIDP II program has put in place to support NSA.

3.5 Review of existing approaches to increase consumption of a diverse diet

After gaining an understanding of what other actors are doing to promote nutrition, the second goal of this scoping study is to identify potential strategies for promoting nutrition related behaviour change, within the context of nutrition sensitive agricultural projects. It should be noted that much of the literature on behaviour change communication comes from studies promoting infant and young child feeding, so the extent to which this is generalizable to other population groups remains a key question (Gebru et al. 2018).

3.5.1 Mass media

Mass media is a communication tool whether written, broadcast, or spoken, that reaches a large audience. This includes television, radio, advertising, movies, internet, newspapers, magazines, and so forth. Mass media is often used to complement and reinforce messaging coming from other channels. For example, Alive and Thrive used radio messaging, through a 12-part radio drama, in combination with home visits and community mobilization to reach millions of mothers with messages around complementary feeding in Ethiopia.

MoA and MoH have used TV/radio channels as nutrition communication channels. Feed the Future developed and tested the use of films to stimulate targeting adolescents to increase consumption of more diverse diets. A systematic review of mass media (often combined with another type of counselling) improved dietary diversity for young children in almost two thirds of all studies (Mahumud et al. 2022). However, another systematic review of nutrition interventions focusing on infant and young child feeding, which included a mass media component, found that mass media messages alone, did not translate into improved infant and young child feeding practices (Graziose et al. 2018). In Ethiopia, a review of the Alive and Thrive program found that minimum dietary diversity for children intensive intervention woredas (which received a combined package of mass media, interpersonal communication, home visits and community activities) showed a statistically significant increase in the intake of vitamin A rich fruits and vegetables that were promoted by the program, compared to control woredas (Kim et al. 2019). These reviews suggested that mass media is helpful to reinforce other nutrition messages (for example, those which are delivered through interpersonal communication) but that mass media messages, alone, may not be enough to translate into changed nutrition behaviours. However, variation seen in terms of the types of studies included in both systematic reviews which often used a combination of methods, for example mass media plus some other type of nutrition education (individual or group), as well as variation in terms of the duration (1 month to 2 years) and frequency of messages, makes it challenging to give specific recommendations for best practices.

3.5.2 Mobile Phone-Based Communication

SMS, voice messages, and various applications are increasingly used to enable people to (remember to) practice the desired behaviours. ATI use these practices as communication tools by sending nutrition push message to HEWs and DAs and also sending messages directly to farmers. Evidence from various studies looking at the provision of micronutrient supplementation, combined with SMS messages found, similar reductions in anaemia prevalence as individuals who received messages and peer to peer counselling (Graziose et al. 2018).

3.5.3 Advocacy

Advocacy is an approach that focuses on influencing the practices and decisions of policymakers, service providers, as well as other stakeholders who have a major influence on people's abilities and willingness to

adopt various behaviours. Alive and Thrive has been advocating for changing the organizational structure of nutrition services and increasing human resource capacity at lower governance levels, budget support for nutrition activities, as well as working to strengthen the system of planning and reviewing nutrition interventions. Advocacy interventions are often useful in combination with messages which directly target farmers. Advocacy messages can be used to support policy change to allow for better policy implementation.

3.5.4 Nutrition Education

Face to face training, either in group education sessions or one-to-one nutrition counselling are one of the most popular nutrition activities carried out by development actors. Almost all stakeholders participating engaged in nutrition education have been building the capacity of community through DAs and HEWs). Diddana et al. (2018) reported that providing nutrition education based on health belief model improve knowledge and dietary practices of pregnant women. However, other studies have found that while health extension workers are provided many trainings on nutrition content, they are not provided with adequate training on behaviour change strategies (Swanson et al. 2021). Projects which focus on supporting HEWs with skills to change behaviours can be effective, however there is currently no institutionalization to support such training (Swanson et al. 2021).

3.5.5 Participatory demonstrations /cooking demonstration

Food preparation demonstration of improved varieties of nutrient dense crops at community level is one of the key agricultural extension approaches for promoting NSA interventions. Most people learn best when they can observe how things are done and especially when they can practice themselves. That is why participatory demonstrations that actively engage people in practicing what they heard / saw can be a very effective strategy for increasing people's skills and confidence so they can actually practice the promoted behaviours (e.g., cook more nutritious meals, build a low-cost hand washing station or apply organic pest control measures). Many governmental and non-governmental actors working on nutrition used FTC and school's demonstration, however it is difficult to find evidence for the effectiveness of participatory demonstrations themselves, as they are almost always implemented in conjunction with other SBCC interventions and/ or provision of supplementary foods or other inputs (e.g. for home gardens) (Kennedy et al. 2018).

3.6 Key Gap identified related to nutrition intervention

This section describes the key gap and challenges the respondents' identified based on their experience of implementing nutrition sensitive interventions or projects which seek to increase consumption of more diverse diets.

3.7 Production Related Gaps

3.7.1 Limited access to input

Lack of access to improved /bio fortified and nutrition-dense seeds, water, post-harvest technologies, and markets are the major challenges for nutrition-sensitive agriculture interventions. Better access to improved seed and water encourages diversity of food production, including vegetables, fruits, and animal source foods through improved productivity.

3.7.2 Low adoption of nutrient dense crops

Promoting nutrient dense agricultural commodities is a promising strategy for increasing the nutrient density of diets in order to improve human health. The willingness of consumers and producers to accept new varieties varies from place to place, and may be linked to a variety of factors including availability, agro-ecology, and consumer preference, among others. Key informants revealed that the adoption of nutrient dense crop at farmer level is low.

3.7.3 Local indigenous food information gap and lack of quality standards

There is some nutrition research currently underway at the university level looking at the contribution of neglected and underutilized wild edible plant/crops to resilience and nutrition but there remains limited information about these crops at the community level.

3.7.4 Lack of Sustainability of nutrition interventions after project phase out

In the broadest sense, sustainability refers to the ability to maintain or support a process continuously over time. There is strong evidence of efficacy for many of the nutrition interventions during the project implementation period. However, the stakeholders reported that the sustainability of interventions, utilization of different guidelines and job aids often dwindled after project phase out due to poor exit strategy.

3.7.5 Weak engagement of private sector

The private sector encompasses all for-profit businesses and ranges from financial intermediaries, multinational companies, and micro, small and medium enterprises (MSMEs), cooperatives, individual entrepreneurs and farmers operating in the formal and informal sectors.

Engaging with private sector stakeholders to tackle food and nutrition security has become an important strategy for delivering the sustainable development goals. Engaging with the private sector to support food and nutrition security can increase the availability, accessibility and acceptability of nutritious foods on the local markets, while increasing opportunities for diverse agricultural production systems to be translated into dietary diversification. However, the majority stakeholders revealed the engagement of private sector in nutrition intervention is weak in throughout the country. As engagement private sectors in production of nutrient dense crops might not be profitable, the government should be taken into consideration implementation an incentive mechanism.

3.7.6 Weak market access to nutrient dense food

The farm household decision to produce nutrient dense foods on-farm or purchase from the markets has important implications for their nutrition outcomes. However, the key stakeholders reported that farmers have limited access to market to nutrient dense food to sell their product, which may limit farmer willingness to produce (as they may struggle to sell the products to the market). This will also limit the availability of foods for other consumers who rely on markets for the purchase of nutrient dense foods. Households located closer to market centres spend more on total household consumption expenditure, consume more diverse diets, and are less food insecure than households located farther away from markets (Mohammed, A. et.al, 2022.).

3.8 Consumption related gaps

3.8.1 Limited collaboration among different actors working on nutrition

Nutrition is a multi-sectoral issue, and malnutrition is driven by a wide range of factors including access to health care and sanitation, in addition to factors related to food intakes. A multi-sectoral approach to nutrition has been a central tenet of nutrition programming since the 1970s. However, implementing multi-stakeholder approaches is complex in practice.

According to this assessment, almost all of the respondents confirmed that there was limited collaboration among different stakeholders working on nutrition and lack of vertical and horizontal (intra and inter) integrated efforts on use of research outcomes. A multi-sectoral program is a complex system, so success requires achieving alignment and cooperation across ministries, sectors, and levels of government and among multiple actors within and outside the public sector. Some experts also mentioned some ministries lacked mainstreaming nutrition into their sectoral strategic plans.

The new Ethiopian food and nutrition policy (2018) focuses on increased coordination and implementation of nutrition specific and nutrition-sensitive interventions. Improved vertical and horizontal integration of research outcomes between the actors working on nutrition are critical to tackle malnutrition. However,

while the need for multi-actor coordination is well recognized, there are a number of inherent challenges related to its implementation, and translation of the policy into practical solutions remains a critical question.

3.8.2 Knowledge gaps on nutrition

Lack of awareness about nutrition was indicated to be a challenge for multiple groups including nutrition focal persons, communities, and leaders at the national and regional levels is identified as a key barrier to effective nutrition interventions. Effectiveness of nutrition intervention depend on many factors including knowledge and knowledge -sharing effectiveness on responsible person. The review reveals that there is a need for a clearer understanding of cause, consequence, and effective intervention strategies for tackling malnutrition, on the part of government and other partners.

3.9 Governance Related Gaps

3.9.1 Lack of organizational structure for nutrition at regional and *woreda* level

Lack of organizational structure for nutrition at all administrative levels was identified as a key barrier to effective implementation of nutrition-sensitive agriculture. This study revealed that all nutrition activities were led by nutrition focal persons at regional levels in all regional states except Afar and Oromia. There are food and nutrition directorate in Afar and Oromia regions. Where nutrition officers are also found at the *woreda* level. The Alive and Thrive project confirmed that it has been working to actively advocate for nutrition structures at lower levels to support improved policy implementation, which is leading to increased motivation to establish nutrition structures in some regions, which is a structure which they hope other regions will soon follow.

3.9.2 Workload of extension workers

Based on the information from key informant interviews, the majority of nutrition interventions are implemented by HEW and DAs. However, lack of accountability and perceived workload of HEWs and DAs leads to weak implementation of nutrition activities. Key informants suggested that projects which plan to include a nutrition education session should consider other methods for disseminating messages.

4 Entry points to improve availability and consumption of diverse food types

Based on the interviews with key stakeholders, as well as a review of key policy documents, the following entry points are suggested for best effectively supporting the availability and consumption of nutritionally dense food types. The recommendations are also valid for similar projects that include a focus on nutrition sensitive agriculture.

4.1 Suggestions to increase access to nutrient dense foods:

- Various types of nutrient dense crops are promoted by a number of different organizations. Testing, validating and promoting nutrient dense crops such as Amaranthus (higher amount of protein, dietary fibre, calcium, iron, and magnesium), camelina (high level of up to 45% of omega-3 fatty acids) and oats could be an area where the production and consumption focus of RAISE-FS could come together. Furthermore, the project could also consider promoting orange flesh sweet potato, Common bean, mung bean, pigeon pea as food security crop and nutrition dense food.
- Key agricultural and labour-saving technologies that can be explored within the context of the project include: improving water access for small scale irrigation (water harvesting), improved seed access (small seed packs) and post-harvest technologies (cooling and drying technologies). However, additional research will also be necessary, as a number of constraints have also been identified, for example challenges around ensuring quality of repackaged seeds.
- To enhance access of agricultural input and enhance income, organize and train youth and women groups to support access to nutrient dense seeds and participating. This may also require engaging with private sector seed companies as well.
- Support the government with the policy to ensure that at least 40 percent of rural households have home-gardens by demonstrating year-round nutrition sensitive home gardens and supporting the development of effective support systems.
- Sustainable production should consider the health impact of excessive utilization of pesticides and minimize their use.
- Supporting production of animal-source foods on a small scale, including small remnants, to improve intakes of micronutrients, protein, and fat. Care should be taken to ensure that there are adequate support services before promoting such interventions, and that the necessary behaviour change, also around sanitation and hygiene, is available.
- Year-round access to diverse diets represents an ongoing challenge in the Ethiopian context. At the same time, market access remains a challenge for many. Identifying and scaling up selected best practices on preservation, storage and processing of fruit and vegetable at household and community can support increased year-round access to nutritious foods.

4.2 Suggestions to increase consumption of nutrient dense foods:

- A wide variety of nutrition related documents have been developed. It is advisable to revise, update and utilize the existing nutrition related documents by the RAISE-FS project, rather than attempting to develop new materials. Special care should be taken to use key documents including the nutrition sensitive agriculture training developed by the MoA, food recipe as well as the newly developed food based dietary guidelines and SBCC guideline for NSA.
- The government has recently released the newly developed Ethiopian food based dietary guideline (FBDG), which have been endorsed by the MoH, MoA and Ministry of Education. The project could play a unique role in supporting the translation of these messages into job aids and other tools,

piloting them within a nutrition sensitive agriculture project, and carrying out action research to improve the guidelines or developing a seasonal calendar and food exchange list based on the agroecological zones which can be added to Food Based dietary guidelines.

- Use nutrition education and information to ensure that expanded and more diverse production translates into healthier diets and better nutrition. School gardening and nutrition clubs are one of the platforms promoting nutrition sensitive activities so RAISE-FS will better to use this platform as behavioural change communication and NSA implementation platform. This activity will specifically focus on piloting the use of food based dietary guidelines in these contexts.
- Demonstrate safe food preparation programs for communities at FTCs in collaboration with health extension workers. Nutrition education should take into account food safety. This could also be an area where RAISE-FS can support the Ethiopian Food Based dietary guidelines.
- Local supply and demand of nutrient dense food may also be influenced not only by market prices but also by SBCC, nutrition knowledge, and social marketing, which may help drive consumer preferences.

4.3 Suggestions to support improve the enabling environment for nutrition sensitive agriculture

- Active participation on nutrition sensitive agriculture coordination platform, which was established by MoA to functional as a NSA coordination platform between and among MoA and affiliated organizations, donors, research, academia and many other partners.
- Establish collaboration with stakeholders working on WASH and Nutrition interventions (such as Concern worldwide, Feed the Future, Alive and Thrive, and FAO)
- RAISE-FS should strengthen the institutional linkages at grassroots level, e.g., between HEWs and DAs for improved nutrition practices at household level.
- RAISE-FS project emphasizes on empower women, the primary caretakers in households, while also taking into account the male member of the household and overall family dynamic (gender transformative approach). Working in an inclusive way will increase women's access to, and control over income. Specific focus can include support for women to access to extension services and information; consider trade-offs between women's income earning and care responsibilities; for example, by piloting labour and time-saving technologies. RAISE-FS should also work with other project which are working on supporting land rights, education, and employment.

4.4 Further studies

- Different types of social behavioural change communication tools/approaches are used by various stakeholders. Much of this has focused on promoting improved infant and young child feeding and improving nutrition for pregnant and lactating women, but there has been much less research to look at what strategies are effective in improving the diet of the general population. This scoping study suggests that the RAISE-FS project could add to the evidence base by exploring what messaging (types/ channels/ duration/ intensity) work to increase dietary diversity in the context of a nutrition sensitive agriculture project for a broader stakeholder group.
- While many projects have supported similar types of nutrition sensitive agricultural interventions as those proposed for the RAISE-FS project, this scoping study found that they often did not become embedded into local structures and institutions. One area where the RAISE-FS project could add value would be by investigating the root cause of weak adoption of nutrient dense crops and sustainability of nutrition intervention after projects phase out.

5 References

- Birke, Wondwossen, and Firdu Zawide. 2019. "Transforming Research Results in Food Safety to Community Actions: A Call for Action to Advance Food Safety in Ethiopia." *Environment and Ecology Research* 7 (3): 153–70. <https://doi.org/10.13189/eer.2019.070305>.
- Central Statistical Agency - CSA/Ethiopia and ICF. 2017. "Ethiopia Demographic and Health Survey 2016." Addis Ababa, Ethiopia: CSA and ICF. <http://dhsprogram.com/pubs/pdf/FR328/FR328.pdf>.
- Destaw, Zelalem, Eshetu Wencheke, Samuel Kidane, Mulugeta Endale, Yohannes Challa, Melkamu Tiruneh, Meti Tamrat, Hanna Samson, Dilu Shaleka, and Mogessie Ashenafi. 2022. "Impact of School Meals on Educational Outcomes in Addis Ababa, Ethiopia." *Public Health Nutrition* 25 (9): 2614–24. <https://doi.org/10.1017/S1368980022000799>.
- Diddana, Tona Zema, Gezahegn Nigusse Kelkay, Amanuel Nana Dola, and Abinet Arega Sadore. 2018. "Effect of Nutrition Education Based on Health Belief Model on Nutritional Knowledge and Dietary Practice of Pregnant Women in Dessie Town, Northeast Ethiopia: A Cluster Randomized Control Trial." *Journal of Nutrition and Metabolism* 2018: 6731815. <https://doi.org/10.1155/2018/6731815>.
- Drake, Lesley J., Nail Lazrak, Meena Fernandes, Kim Chu, Samrat Singh, David Ryckembusch, Sara Nourozi, Donald A. P. Bundy, and Carmen Burbano. 2020. "Establishing Global School Feeding Program Targets: How Many Poor Children Globally Should Be Prioritized, and What Would Be the Cost of Implementation?" *Frontiers in Public Health* 8: 530176. <https://doi.org/10.3389/fpubh.2020.530176>.
- Ethiopian Ministry of Health, Ethiopian Public Health Institute, and UNICEF. 2023. "National Food and Nutrition Strategy Baseline Survey: Key Findings Preliminary Report." Preliminary Report. Addis Ababa, Ethiopia. https://ephi.gov.et/wp-content/uploads/2023/03/FNS_baseline_survey_preliminary_findings.pdf.
- Fatime Traore. 2022. "Analyzing Food Systems Governance in Ethiopia: The Case of the Seqote Declaration." MSc Thesis presented at the Food Systems e-course.
- Federal Democratic Republic. 2019. "National Food and Nutrition Strategy." <http://repository.iifphc.org/bitstream/handle/123456789/1026/FNP%20Strategy%20Dec%202019.pdf?sequence=1&isAllowed=y>.
- Federal Democratic Republic of Ethiopia. 2018. "Food and Nutrition Policy." <https://www.nipn.ephi.gov.et/sites/default/files/2020-05/Food%20and%20Nutrition%20Policy.pdf>.
- Gebru, Mestawet, Roseline Remans, Inge Brouwer, Kaleab Baye, Mequanint Biset Melesse, Namukolo Covic, Fekadu Habtamu, et al. 2018. "Food Systems for Healthier Diets in Ethiopia: Toward a Research Agenda. IFPRI Discussion Paper 1720." IFPRI Discussion Paper 1720. Washington, DC: International Food Policy Research Institute (IFPRI). <http://ebrary.ifpri.org/cdm/ref/collection/p15738coll2/id/132417>.
- Graziose, Matthew M., Shauna M. Downs, Quentin O'Brien, and Jessica Fanzo. 2018. "Systematic Review of the Design, Implementation and Effectiveness of Mass Media and Nutrition Education Interventions for Infant and Young Child Feeding." *Public Health Nutrition* 21 (2): 273–87. <https://doi.org/10.1017/S1368980017002786>.
- Hirvonen, Kalle, Abdulazize Wolle, and Bart Minten. 2018. "Affordability of Fruits and Vegetables in Ethiopia." International Food Policy Research Institute (IFPRI) Ethiopian Development Research Institute. 2018. <https://doi.org/nodoi>.
- Kennedy, Eileen, Jennifer Stickland, Meghan Kershaw, Sibhatu Biadgilign, and Eileen Kennedy. 2018. "Impact of Social and Behavior Change Communication in Nutrition Sensitive Interventions on Selected Indicators of Nutritional Status." *Journal of Human Nutrition* 2 (1). <https://scholars.direct/Articles/human-nutrition/jhn-2-005.php?jid=human-nutrition>.
- Kim, Sunny S, Phuong Hong Nguyen, Yisehac Yohannes, Yewelsew Abebe, Manisha Tharaney, Elizabeth Drummond, Edward A Frongillo, Marie T Ruel, and Purnima Menon. 2019. "Behavior Change Interventions Delivered through Interpersonal Communication, Agricultural Activities, Community Mobilization, and Mass Media Increase Complementary Feeding Practices and Reduce Child Stunting in Ethiopia." *The Journal of Nutrition* 149 (8): 1470–81. <https://doi.org/10.1093/jn/nxz087>.
- Mahumud, Rashidul A., Sophiya Uprety, Nidhi Wali, Andre M. N. Renzaho, and Stanley Chitekwe. 2022. "The Effectiveness of Interventions on Nutrition Social Behaviour Change Communication in Improving Child Nutritional Status within the First 1000 Days: Evidence from a Systematic Review and Meta-Analysis." *Maternal & Child Nutrition* 18 (1): e13286. <https://doi.org/10.1111/mcn.13286>.

- Ministry of Health. 2015. "Seqota Declaration." 2015. https://www.moh.gov.et/site/initiatives-4-col/Seqota_Declaration.
- Ruel, Marie T, Agnes R. Quisumbing, and Mysbah Balagamwala. n.d. "Nutrition-Sensitive Agriculture: What Have We Learned and Where Do We Go from Here?" IFPRI Discussion Paper. Washington DC: International Food Policy Research Institute (IFPRI). <http://www.ifpri.org/publication/nutrition-sensitive-agriculture-what-have-we-learned-and-where-do-we-go-here>.
- Swanson, Vivien, Joanne Hart, Lucie Byrne-Davis, Rowena Merritt, and Wendy Maltinsky. 2021. "Enhancing Behavior Change Skills in Health Extension Workers in Ethiopia: Evaluation of an Intervention to Improve Maternal and Infant Nutrition." *Nutrients* 13 (6): 1995. <https://doi.org/10.3390/nu13061995>.
- USAID EatSafe Project Report. 2020. "Integrating Food Safety and Nutrition for Improved Health and Wellbeing: A New Lens on Existing Food System Frameworks." Global Alliance for Improved Nutrition.
- Walls, Helen, Deborah Johnston, Elisa Vecchione, Abdulfatah Adam, and Justin Parkhurst. 2018. "The Role of Evidence in Nutrition Policymaking in Ethiopia: Institutional Structures and Issue Framing." In *Evidence Use in Health Policy Making: An International Public Policy Perspective*, edited by Justin Parkhurst, Stefanie Ettelt, and Benjamin Hawkins, 51–73. International Series on Public Policy. Cham: Springer International Publishing. https://doi.org/10.1007/978-3-319-93467-9_3.

Annex I: Interview questions

1. Name of organization
2. Geographical coverage (National, Regional, Zonal)
3. Formal status of the organization (Public, Non-governmental, Bilateral project...)
4. What are the roles and strategic interest of your program?
5. What types of programs your organization are running related to reducing malnutrition or improving food safety in our country?
6. We are interested in promoting dietary diversity for the whole household within the context of NSA and improve food safety, do you/ your organization currently do that type of work?
7. What type of practice or activities implemented to improve food safety in each level (preparation, handling, processing and storage area)?
8. What type of approaches and deliver channels used to disseminate promotion of consumption of diversified food and safe food?
9. Why did you choose those channels? Do you use one or multiple channels? Which do you think are most effective?
10. One of the key challenges in the Ethiopian context in term of nutrition sensitive agriculture is how to link the health and agriculture sectors better. How do you support those links in your work?
11. How do you decide where to focus your efforts on behavior change communication?
12. In our project we will specifically focus on supporting three food system: commercial, high potential and low potential/ food insecure. How do you think that we can support each of these food systems best to deliver more nutrient dense foods for both farming and non-farming households?
13. According to you, what are the key evidence gaps relating to implementing nutrition interventions and promoting more diversified diets or safe food?
14. Can you give us the list of stakeholders involved in nutrition and food safety?



Resilient Agriculture for
Inclusive and Sustainable
Ethiopian Food Systems
(RAISE-FS)

www.raise-fs.org

Stichting Wageningen
Research Ethiopia

www.wur.eu

Resilient Agriculture for Inclusive and Sustainable
Ethiopian Food Systems (RAISE-FS) is a four-year
program funded by the Dutch Embassy in Addis Ababa
and hosted by Stichting Wageningen Research Ethiopia
based in Addis Ababa, to bring about transformation in
the Ethiopian food system. RAISE-FS will develop and
implement a demand-driven and interdisciplinary
approach to Research for Food System Transformation
(R4FST) and as such contribute to the Government of
Ethiopia's transformational agenda.
