Vision 2030: Transforming Ethiopian Food Systems

A Synthesis Report: Game Changing Solutions to Transform Ethiopia's Food System

Addis Ababa
July 2021

Table of Contents

List of abbreviations

ACC	Agricultural Commercialization Cluster
ACPZ	Agro-Commodity Procurement Zones
ADLI	Agriculture Development Led Industrialization
ARC	African Risk Capacity
AU	African Union
CRGE	Climate-Resilient Green Economy
CSOs	Civil Society Organizations
DRM	Disaster Risk Management
EDHS	Ethiopia Demographic and Health Survey
EFDA	Ethiopian Food and Drug Administration
EFS	Ethiopian Food Systems
ESA	Ethiopian Standards Agency
FBDs	Food-Borne Diseases
FPC	Farmer Production Cluster
FSN	Food Security and Nutrition
GC	Game Changer solution
GERD	Grand Ethiopian Renaissance Dam
GHG	Green House Gases
GTP	Growth and Transformation Plan
IRM	Innovation Recommendation Mapping
M&E	Monitoring and Evaluation
MoA	Ministry of Agriculture
MoH	Ministry of Health
NGOs	Non-Governmental Organizations
NMIS	National Market Information System
PSNP5	Productive Safety Net Program
SDGs	Sustainable Development Goals
UNFSS	Un Food Systems Summit

1. Introduction

Introducing the UN Food System Summit 2021

The United Nations Secretary-General is convening the UN Food Systems Summit (UNFSS) in New York in September 2021. The summit is designed to support member states to drive food systems transformation and, in doing so, accelerate global progress towards the Sustainable Development Goals (SDGs).

The Food System Summit is organized around 5 'Action-Tracks' or key outcomes: (i) ensure safe and nutritious food for all; (ii) shift to sustainable consumption patterns (iii); boost nature positive production; (iv) advance equitable livelihoods; and (v) build resilience to vulnerabilities, shocks, and stresses.

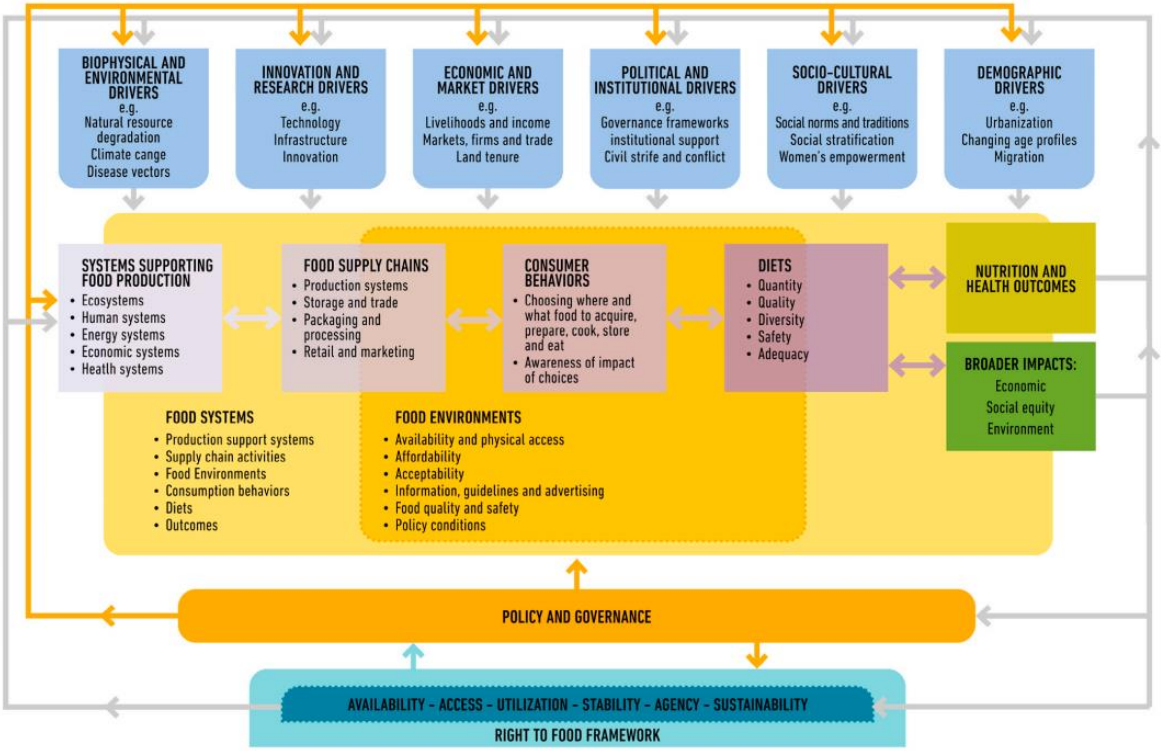
The UNFSS calls member states to apply a food systems approach as a means of achieving the SDGs. The UN Committee on World Food Security's High-Level Panel of Experts on Food Security and Nutrition (HPLE: 2017) defines a food systems approach as one that "*gathers all the elements (environment, people, inputs, processes, infrastructures, institutions, etc.) and activities that relate to the production, processing, distribution, preparation and consumption of food, including waste management, and the outputs of these activities, including socio-economic and environmental outcomes."* Food Systems transformation is intrinsically about people, the planet, prosperity, peace and partnerships (see Figure 1):

Figure 1: The Five 'Ps' of the food system:

The High-Level Panel of Experts has created a conceptual framework (see Figure 2) that supports national food systems by identifying the six key drivers of food systems changes: (i) *biophysical and environmental* (including natural resource degradation, climate change, diseases and their vectors); (ii) *technology, innovation, and infrastructure* (new plant varieties and animal breeds, data-driven innovations and management systems, new plant breeding technologies, post-harvest management and infrastructure); (iii) *economic and market drivers* (livelihoods and markets, firms, trade, and land tenure); (iv) *political and institutional drivers*

(governance frameworks, institutional support, civil strife and conflict); (v) *socio-cultural drivers* (social norms and traditions, social stratification, women's empowerment); and (vi) *demographic drivers* (population growth, youth bulge, urbanization, changing age profile, migration).

Figure 2: HPLE Food Systems Framework



Source: HLPE 2020. Food Security and Nutrition: Building a global narrative towards 2030. A Report by the High-Level Panel of Experts on Food Security and Nutrition of the Committee on World Food Security, Rome.

For these six key drivers to be addressed, *systems supporting food production* need to be transformed. A food systems approach pays specific attention to food, nutrition and health outcomes as well as the broader political, economic, social equity and environmental impacts of a food system. These outcomes are made possible through driving change in four key areas: (i) systems supporting food production, (ii) food supply chains, (iii) consumer behaviors, and (iv) diets. Considering these closely interrelated areas within the broader food system prevents siloed thinking through a thorough consideration of how different subsystems interact. Furthermore, *food supply chains* (also often referred to as food production and distribution networks), consisting of production systems, storage and trade, packaging and processing, and retail and marketing need to be transformed, which requires support for actors across the supply chain, including farmers, agribusinesses, processors and packaging plants and retailers and vendors, among others. As well as food production systems and supply chains, *consumer behaviours* and *diets* need to both support the wider food system and drive improved health and nutrition outcomes.

To further support these drivers, food policy and governance must seek to shape food system outcomes and, in doing so, shape the ways in which drivers of food systems consumer behaviors, and the rules by which supply chain actors must operate, all of which ultimately flows through to drive positive outcomes.

The Ethiopian Food systems (EFS) vision is built around addressing these drivers, as they relate to the specific challenges and opportunities and driving towards achieving the UNFSS Action Areas by 2030.

Overview of Ethiopian Food Systems process

Ethiopia is fully committed to achieving the Sustainable Development Goals and has participated wholeheartedly in the UN Food Systems summit. The Government of Ethiopia therefore launched the Ethiopian Food Systems (EFS) process in November 2020 with the objective of defining Ethiopia's vision and pathway for national food systems transformation, which will be presented at the UN Food Systems Summit. The EFS has been convened[1] by His Excellency Oumer Hussein, Minister of Agriculture, and Her Excellency Dr. Lia Tadesse, Minister of Health and has been built around a High-level roundtable discussion and Background paper, followed by two sequential national dialogues and a formal EFS launch:

1) **EFS Dialogue 1 - *Current and Future Prospects of the Ethiopian Food Systems:*** aimed at identifying key trends in the food systems and challenges that will need to be addressed for each UNFSS Action Track to achieve the SDGs;
2) **EFS Dialogue 2 – *Towards transforming Ethiopia's food systems:*** aimed at evaluating and selecting 'game changing solutions' (*see below)* that will address the challenges identified in EFS Dialogue 1 and craft a path to transforming Ethiopia's food systems and achieving the SDGs; and
3) **EFS Dialogue 3 - *the EFS Launch*** - *aimed at publicly affirming the Government of Ethiopia's commitment* to the EFS Plan and calling key stakeholders, development partners and the country as a whole to action.

The EFS process has brought together over 120 stakeholders and leveraged the experience of government departments, private sector corporations, universities and research institutes, civil society organizations and multilateral and bilateral institutions to design and launch the EFS Plan across the three dialogues.

The EFS pathway follows in the footsteps of Ethiopia's Homegrown Economic Reform Agenda, which aims to transform Ethiopia from largely agrarian low-income country to an industrialized lower-middle-income country by 2025. It has been carefully designed to both align with and evolve Ethiopia's existing food systems policy ecosystem and key national programs, including; the Homegrown Economic Reform, the Ten-year Development Plan: the Pathway to Prosperity; Food and Nutrition Policy, the Ministry of Agriculture's Nutrition Sensitive Agriculture Strategy and the Multisectoral Food and Nutrition Policy, the Disaster Risk Management Policy (DRM), social protection policies such PSNP5 (Productive Safety Net Program), and the Seqota Declaration, among others. The EFS also incorporates lessons learnt from the Government of Ethiopia's previous plans and programs: agricultural and

[1] A convener is a person, group of persons, vested with special authority to bring together and forge alliance among specialists (proposing a technically feasible and necessary solutions) and policymakers (who has the mandate to act on a rather complex often 'no go' political issues) to facilitate transformation of the Ethiopian food system. The conveners earn the trust of all parties' trust.

nutrition plans, including GTPs (Growth and Transformation Plan) I and II, and ADLI (Agriculture Development Led Industrialization).

This has resulted in an ambitious vision to transform the Ethiopian food systems by 2030 expressed in: a) the EFS Technical Synthesis (this document), which summarizes the current state of Ethiopian Food Systems and introduces the game changing solutions that form the basis of the EFS transformation; b) Ethiopia's position statement endorsing the technical synthesis; c) Roadmap which presents implementation arrangements, timelines, roles & responsibilities, accountabilities and resource requirements.

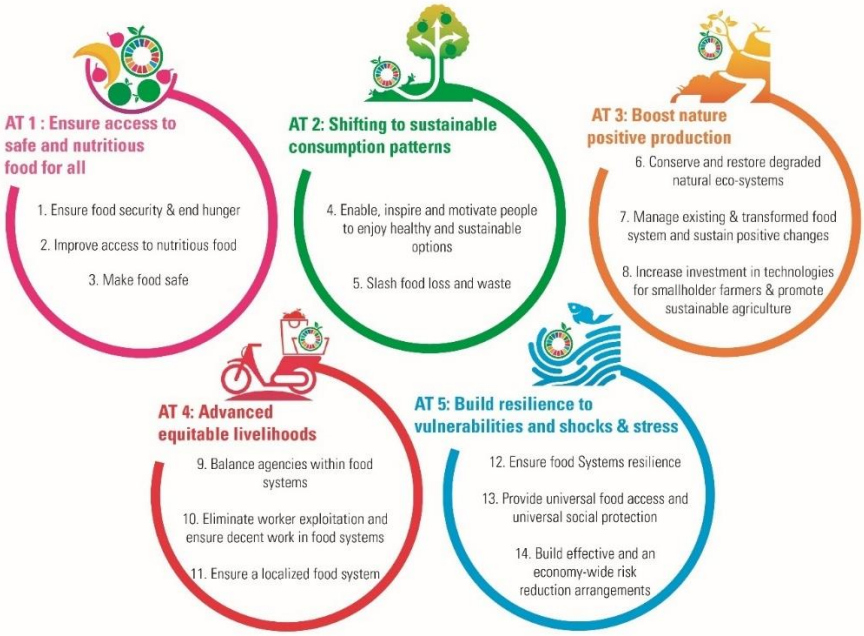
Driving a Radical Shift in Ethiopia's Food Systems

Transforming Ethiopia's food systems and attaining Agenda 2030, especially SDG 2 ('Zero Hunger'), requires concerted and radical policy action. To achieve this, the Government of Ethiopia has developed the EFS around the Five UNFSS Action Tracks. These Action Tracks represent long-term outcomes for Ethiopia. These Action Tracks are supported by fourteen Action Areas, which represent intermediate outcomes specific to the needs of the Ethiopian Food Systems. These long and intermediate outcomes represent the bedrock of the EFS Plan. The fourteen EFS Action Areas are listed in Figure 3 below:

To achieve both the long-term and intermediate outcome, Action Tracks and Action Areas, respectively, the Government of Ethiopia has identified game changing solutions, each representing an idea that addresses a specific challenge within the Ethiopian Food Systems. The EFS' mutually reinforcing game changers are designed to produce significant impact by 2030 and also be implementable at a scale sufficient to reach a large portion of the Ethiopian population and being sustainable in the medium to long-term[2]. EFS game changing solutions were collected through a national portal. These ideas were then reviewed by the EFS Technical Committee and then discussed and prioritized at the Second National Dialogue. Prioritized ideas were then clustered and developed into a full implementation plan by the EFS Technical Committee.

[2] For more detailed reading, see Avelino, F., J. M. Wittmayer, R. Kemp, and A. Haxeltine. 2017. Game-changers and transformative social innovation. *Ecology and Society* 22(4):41. https://doi.org/10.5751/ES-09897-220441

Figure 3: Action Tracks and Action Areas



The EFS identified 22 Game changing solutions. These are designed to act on systemic bottlenecks across Ethiopia's food systems (see Chapter 3 for more detail on the game changers) and mutually reinforce each other and act across Action Tracks. The connection between these solutions is illustrated in Figure 4, which depicts this report's theory of change [3]. A theory of change explains how the activities undertaken by an intervention contribute to a chain of results that lead to the intended or observed impacts.

The EFS technical synthesis was prepared through significant collaboration between government departments and agencies, national and international NGOs and CSOs, UN bodies, international organizations, development partners, universities and research institutions and private sector corporations. The Government of Ethiopia would like to thank all those who participated through submitting game changing solutions and participating in the National Dialogues. The government would like to extend special thanks to the EFS Core Team and Technical Committee for their efforts both managing the EFS process and in writing the Technical Synthesis and Position paper. Appreciation is also extended to development partners and allies who have supported the process. A full list of participants and donors can be found in *Annex 1*.

This synthesis report constitutes Part I of the Ethiopian Food System Transformation; and Part II presents a Roadmap of implementation arrangement.

[3] Anderson, A. The Community Builder's Approach to Theory of Change. A practical guide to theory development

Figure 4: Ethiopian Food Systems Conceptual Framework using the theory of change

2. The Prevailing State of the Ethiopian Food Systems

Structure of the prevailing Ethiopian food systems

This chapter aims to map the prevailing state of Ethiopian Food Systems and the key challenges that need to be addressed to accelerate transformation. The challenges discussed in this chapter are outputs of an EFS High-level Roundtable held in February 2021 which initiated cross-sectoral discussions. The Roundtable was informed by a background paper: *Informing the Ethiopian Food Systems' Transformation: Towards the UNFSS Plan of Action*, which outlined pertinent trends and synthesised existing research. EFS National Dialogue 1 was then held on 31st March and 1st April 2021 which brought together more than one hundred experts and stakeholders from across Ethiopian government, bilateral and multilateral donors, NGOs, civil society, farmer groups and trade associations and the private sector (see *Annex 1* for a full list of participants). The outputs of the National Dialogue 1 and its implications are synthesised to form Ethiopia's position paper, including the Implementation Roadmap.

Ethiopian Food Systems are undergoing a process of transformation, driven by a fast-growing population, rising incomes, rapid urbanization, development of agro-processing industries, and climate change. This transformation needs to be shaped in a way that increases food availability and choice, promotes equitable incomes and supports the adoption of healthy diets. However, significant challenges need to be resolved to achieve these outcomes. Changing demography and rising incomes will increase demand for nutritious foods, placing increasing strain on finite arable land. Furthermore, increasing soil erosion and land degradation need to be addressed through increased use of regenerative farming practises that preserve and restore soil fertility and reduce reliance on chemicals such as pesticides. Production needs to be diversified to reduce monocropping and increase food choice and the availability of affordable nutrient-dense foods. Livestock production needs to be expanded to improve access to nutritious animal-sourced foods without leading to significant increases in greenhouse gas emissions. The growing agro-processing sector needs to be supported to drive job creation and increase access to healthy and nutritious foods, such as biofortified foods. All this transformation needs to both protect and enhance the role of smallholder farmers and increase their incomes.

To feed and improve the health of a growing populace, Ethiopia must produce a more nutrient-dense food basket. Nutrient-dense food is defined as food that is high in nutrients but low in calories, such as fruits, vegetables, whole grains, low-fat or fat-free milk and lean meats, beans and pulses [4]. Nutrient-dense foods contain vitamins, minerals, complex carbohydrates, lean protein, and healthy fats. Examples of nutrient-dense foods include fruits and vegetables, whole grains, low-fat or fat-free milk products, seafood, lean meats, eggs, peas, beans, and nuts.

Ethiopia must achieve all this whilst containing the environmental impact of agriculture and livestock. An assessment conducted in 2011 by Community Development Research for the Global Methane Initiative indicates that, while CO2 and methane emissions (two of the most

[4] Definition of nutrient-dense food - NCI Dictionary of Cancer Terms - National Cancer Institute

damaging greenhouse gases (GHG)) in Ethiopia have historically been low, emissions have grown rapidly over the past two decades in tandem with economic growth. As the agricultural sector evolves to deliver a more diverse food[5] and nutrient-rich food basket, food systems' contribution to national GHG emissions will grow. The Government of Ethiopia has initiated a Climate-Resilient Green economy initiative (CRGE, 2011) that identifies opportunities to reduce the country's GHG emissions by 64% by 2030, compared to a business-as-usual scenario. This includes specific interventions for the agricultural sector. Current low productivity levels for crops and livestock mean that emissions per unit of production are higher than they are in equivalent high productivity agricultural systems. Therefore, by increasing farm productivity, promoting adoption of more sustainable regenerative farming practices and reducing food losses GHG emissions growth can be curbed, or at least contained, in Ethiopia.

The effects of climate change and environmental degradation are highly visible in Ethiopia through recurrent extreme climatic events such as droughts and floods. Land and soil degradation represent a major challenge to continued productivity, whilst deforestation has taken place at pace. To counter these challenges at the same time as increasing agricultural output, production practices also need to become regenerative to counter land, soil, water, and forest degradation. Food systems transformation needs to take a holistic account of these realities.

Furthermore, as the food system transform, it tends to increase land and labour productivity, releasing surplus labour from the dominantly '*traditional*' and subsistence system to an increasingly commercialized system. To ensure the food systems provide equitable livelihoods, Ethiopia will need to foster and support the continued growth of small and medium size manufacturing and agro-food processing enterprises to provide additional employment and absorb surplus labour released from agriculture and livestock.

Transformed food systems are expected to induce development of small and medium manufacturing and agro-food processing enterprises as it is happening in Ethiopia. The emergence of such enterprises leads to specialization and commercialization, taking advantage of local conditions, for example, livestock production, fruit, vegetables, pulses or oilseeds production specialization.

Recent progress and advances in the Ethiopian food systems

Ethiopia has made significant progress in increasing staple cereal production to reduce hunger and undernutrition over the last two decades. Total cereal production increased by 2.7 times from 10.9 million metric tons (mt) in 2000/01 to 29.7 million mt in 2019/20.[6] As Figure 5

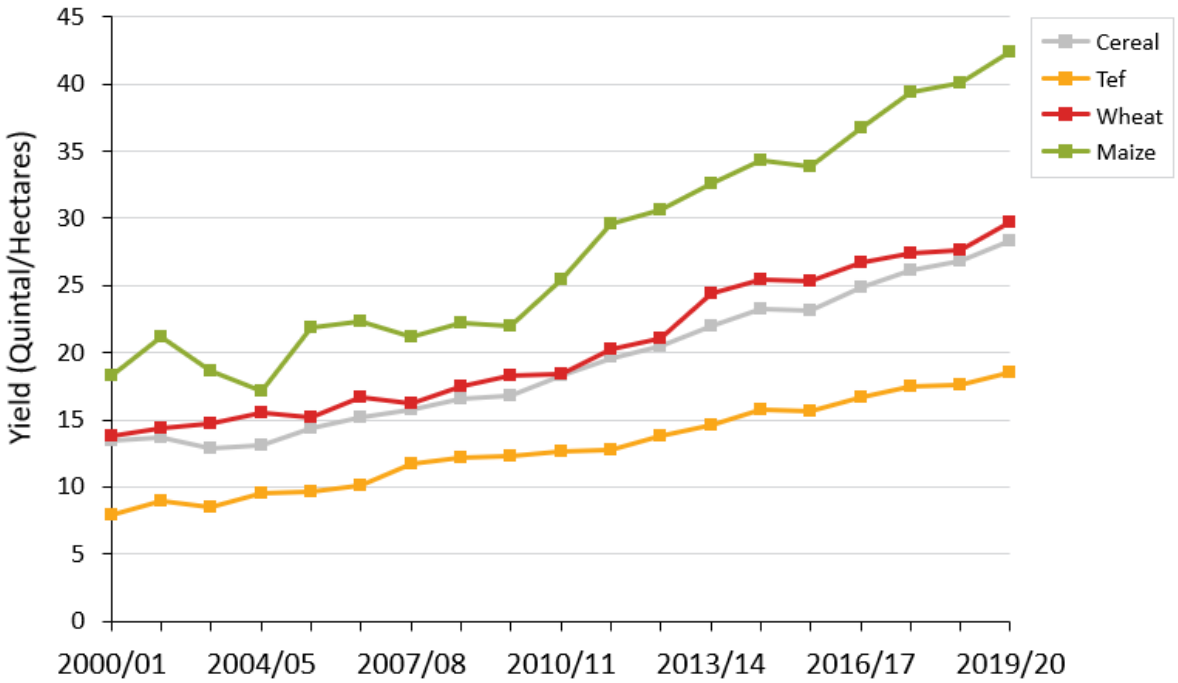
[5] Food and dietary diversification at the community and household levels include a range of food-based activities that can maximize the availability of adequate amounts and greater variety of nutritious foods. These activities include: promotion of mixed cropping and integrated farming systems; introduction of new crops (such as soybean); promotion of underexploited traditional foods and home gardens; small livestock raising; promotion of fishery and forestry products for household consumption; promotion of improved preservation and storage of fruits and vegetables to reduce waste, post-harvest losses and effects of seasonality; strengthening of small-scale agro-processing and food industries; income generation; nutrition education to encourage the consumption of a healthy and nutritious diet year round. Agriculture food and nutrition for Africa - A resource book for teachers of agriculture (fao.org)

[6] CSA

shows, aggregate cereal crops productivity increased from 1340 kg to 2832 kg/ha, doubling total production of cereals in two decades. The total area under cereal cultivation grew by 1.34% p.a and total production has grown by 5.4% p.a. and cereal productivity by 4% p.a. since 2000/01[7]. Maize accounts for 32.5% of total cereal and 21.7% of total area under cereal, followed by wheat 17.9% of cereal production and 17.1% area, sorghum 17.4% of total cereal production and 17% of area, teff 19.3% of cereal production and 29.6% of total area, barley accounts for 8% of total production and 9.1% of area, finger millet 3.8% of production and 4.3% of area, and oats 0.2% of production and 0.2% of area. It is important to note that maize is the most dominant crop in total production whereas teff dominates area cultivated. As Figure 5 clearly shows, yield has increased significantly for all major cereal crops since 2000/1, which has helped drive production increases.

Consequently, total annual food consumption has increased from 288 kg per year in 1996 to 447 kg in 2011[8]. With increased consumption, national rates of hunger have fallen from 56% to 29% between 2000 and 2019 and the percentage of children who are chronically undernourished (with insufficient dietary energy) has declined from 58% to 37%. Such progress has resulted in lower mortality rates and improved life chances for millions of families and their children.[9]

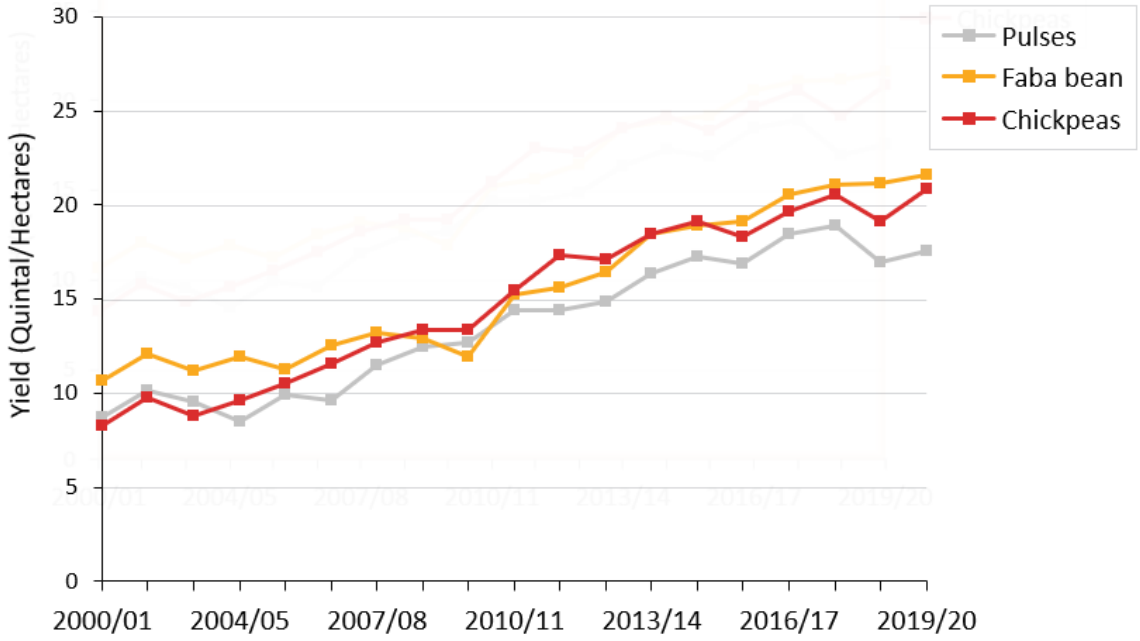
Figure 5: Cereal crop yield 2000/01 – 2019/20[10]



[7] Diriba, 2020. Agricultural and Rural Transformation in Ethiopia. Obstacles, Triggers and Reform Considerations.
[8] HCIS
[9] Ethiopian Public Health Institute (EPHI) [Ethiopia] And ICF. 2021. Ethiopia Mini Demographic And Health Survey 2019: Final Report. Rockville, Maryland, USA: EPHI And ICF; GHI, 2018
[10] Diriba, 2020. Agricultural and Rural Transformation in Ethiopia. Obstacles, Triggers and Reform Consideration. Policy Working Paper No.01/202. Ethiopian Economics Association. The data is updated using CSA data

Similarly, pulses and oil seed production have grown significantly over the past two decades. Pulses represent a critical source of protein and minerals such as iron, zinc, selenium, phosphorous and potassium. Figure 6 below shows that increased pulse crop production has been supported by strong yield increases across all key pulse crops.

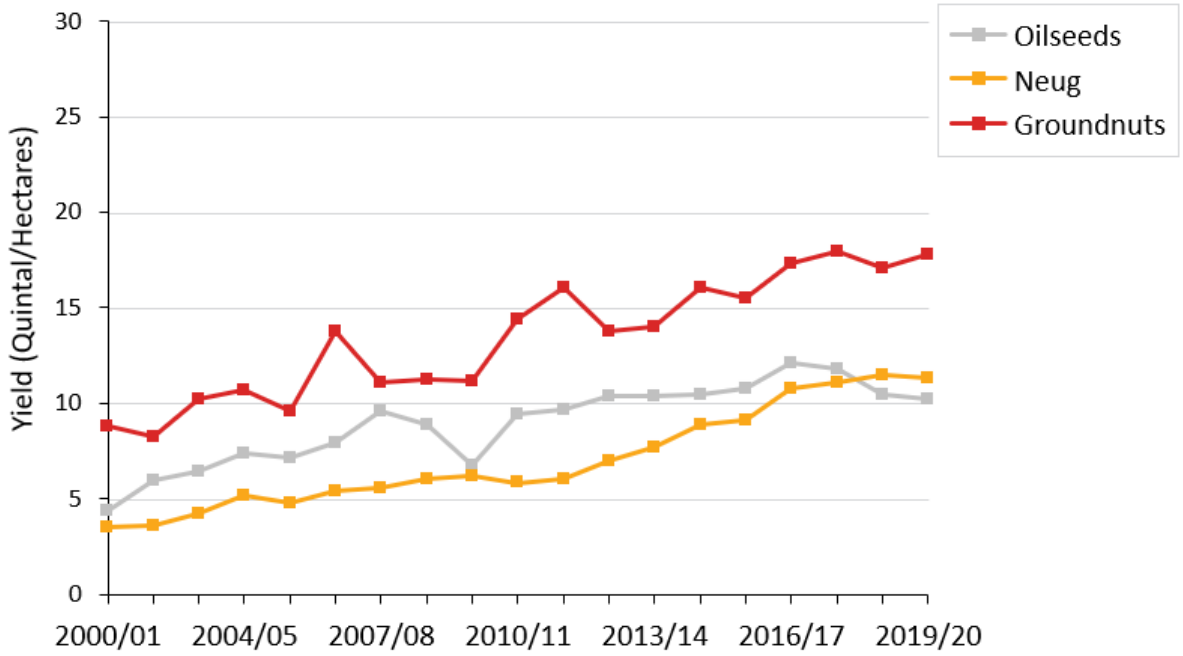
Figure 6: Pulse crop yield 2000/01 – 2019/20[11]



Oil seeds are very important for sustainable food and nutrition as they are important sources of oils, protein, fat and carbohydrate. They constitute very important food complements in the form of accompaniments of Ethiopia's staple food. Overall, the area under oilseed cultivation has been growing at a rate of 3.4%, production at 6.6% and yield per hectare at 3% over the past two decades. However, despite sustained growth in production and productivity, oil seeds production in Ethiopia is far below national demand. Domestic oil processing factories operate at low capacity due to limited oil crop availability, and most vegetable oils not being processed in the country.

[11] Diriba, 2020, ibid.

Figure 7: Oilseeds yield 2000/01 – 2019/20[12]



As overall levels of poverty have reduced, levels of dietary diversity have increased. Cereals' share of total household food expenditure has declined from 47% in 2000 to 33% in 2017, and expenditure on fruit and vegetables has increased from 4.5% to 7.9% and expenditure on animal-sourced foods has increased from 7.9% to 11.3% over the same period.[13]

Increased consumption and dietary diversity, along with significant governmental and civil society focus on improved nutrition, have delivered significant health advancements. The percentage of families that are food energy deficient has decreased from 64% in 2000 to 40% in 2016, and the proportion of underweight children decreased from 41% to 24% in the same period[14].

Furthermore, food systems transformation has driven tangible economic benefits. Average farmer incomes have risen significantly, driven by an increase in the real value of agricultural commercial surplus, which has doubled over the last decade, from 8 billion to 16 billion Birr.[15] This has helped reduce rates of rural poverty from 47% in 1999/2000 to 28% in 2015/16.[16]

Increased marketable surpluses have led to greater development of commercial food markets and the emergence of modern food distribution and retail infrastructure. Private sector agricultural investment has increased significantly in the last decade, with formal agribusiness' share of GDP growing from 5% in 2012 to 13% in 2018.[17] This investment has led to a rapid growth in the number of agro-processors, albeit from a low base. Between 2007 and 2017 the number of dairy processors in Ethiopia increased from 8 to 25, whilst the number of licenses

[12] Diriba 2020. Ibid.
[13] IFPRI Evolving food systems in Ethiopia: Past, present and future, 2018
[14] Ministry of Health, Food and Nutrition Policy, 2018; UNICEF, Ethiopia Nutrition Report, 2019
[15] IFPRI Evolving food systems in Ethiopia: Past, present and future, 2018
[16] IFPRI, Ethiopia's Agrifood System: Past trends, present challenges, 2020
[17] UNIDO, Agro-Industrial Parks in Ethiopia, 2018

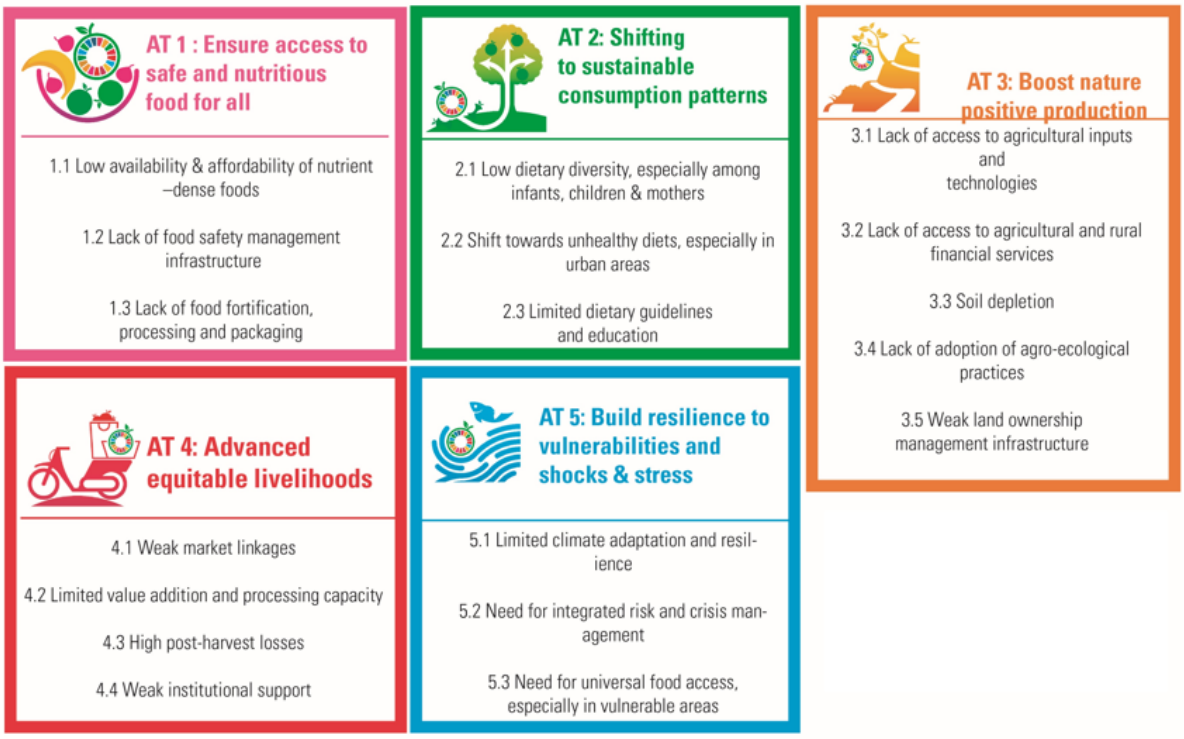
granted to new flour processing plants increased from 15 per year to more than 50 over the same period. Increased agricultural marketization is serving to both increase food availability and reduce price seasonality for staple crops[18]

This serves to demonstrate the rapid food systems transformation achieved by Ethiopia over the past two decades. Significant increases in production have led to increased consumption, heightened dietary diversity, improved health outcomes and greater development of food markets. However, although rapid progress has been made, many vestiges of the '*traditional'* food systems persist. Significant challenges persist that will need to be addressed to ensure the rate of progress does not stagnate but accelerates.

Challenges to address

Despite the rapid progress across the Ethiopian Food Systems in the last decade, significant challenges remain at each stage of the system from production through to retail and consumption. These challenges need to be addressed to accelerate food systems transformation and development and improve outcomes from production through to consumption to ensure availability of safe and nutrition-rich foods. At Dialogue 1, participants identified 18 key challenges, aligned by UNFSS Action Track (see Figure 8).

Figure 8: Systemic challenges to the Ethiopia's Food Systems



These challenges are detailed by Action Track below.

[18] IFPRI Evolving food systems in Ethiopia: Past, present and future, 2018

Action Track 1: Ensure access to safe and nutritious food for all

Firstly, Ethiopia faces a continued challenge to feed a fast-growing population. Growth in *production* is starting to slow. Growth over the past two decades has been driven by strong yield growth and an increase in land under cultivation. Yield growth is now slowing, with cereal yield growth declining from an average of 6% p.a. between 2005 to 2016 to less than 4%p.a. for 2016 to 2019.[19] Issues such as poor soil quality, a lack of availability of high-quality seed, low usage of agricultural technology and high post-harvest losses will be required to drive high yield growth going forward. Furthermore, significant potential exists to increase yields through increasing the proportion of land that is irrigated. Nonetheless, these challenges will need to be addressed to ensure the continued yield increases required to continue to feed a population that is growing at 2.7% a year.[20]

Availability and affordability of safe and nutritious foods is a particular challenge. Despite increased diversity of production, cereals still account for nearly 75% of total land cultivated and over 60% of total agricultural output by volume, leading to a lack of availability of more nutrient-dense crops such as fruits, beans and pulses. Furthermore, both the supply and prices of fruit and vegetables fluctuate seasonally, with particularly low availability between June and September, which significantly restricts the possibility of ensuring sustainable consumption patterns year-round.[21]. This contributes to Ethiopia having a low intake of fruits and vegetables, with the average household in Ethiopia consuming 42kg per person annually, less than 30% of the recommended amount.[22]

Availability of animal-sourced foods also represents a major challenge. Despite having the largest livestock population in Africa, the productivity of livestock in Ethiopia is low due to a range of factors including low feed availability, limited access to health services, the predominance of less productive breeds and other factors that inhibit the strength of livestock value chains. [23] Consequently, access to animal sourced-foods is limited and consumption is low. The per capita milk consumption of Ethiopian adults is 16.6 kg per year, and for meat it is 7.5 kg of meat per year These figures are considered very low, even by Sub-Saharan African standards.[24]

A large causational factor in Ethiopia's low levels of dietary diversity is the limited purchasing power possessed by many consumers. One in four (24.8 %) households in Ethiopia fall below the food poverty line and 25.5% of individuals are food insecure. Consequently, starchy staples that are the cheapest source of energy contribute the highest share of the energy intake (71.4 %).

As well as the low availability and affordability of nutrient-dense foods, food safety is a critical challenge. Low levels of food safety represent a significant health challenge, leading to a high prevalence of food-borne diseases (FBDs), especially diarrheal conditions, which currently

[19] World Bank, 2018
[20] UN Populations Division, World Population Prospects, 2019
[21] Selamawit Ketema Ashinie & Tesfaye Tadesse Tefera, Horticultural Crops Research and Development in Ethiopia: Review on Current Status, 2019
[22] IFPRI, Promoting fruit and vegetable intake in Urban Ethiopia, 2019
[23] USAID, Looking beyond productivity: barriers to animal-sourced food consumption in Ethiopia, 2018
[24] Global Burden of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Reference Life Table. Seattle, United States of America: Institute for Health Metrics And Evaluation (IHME), 2021. DOI HTTPS://DOI.ORG/10.6069/1D4Y-YQ37

account for 93% of FBD cases and drive significant medical and non-medical expenses for sufferers.[25] Ethiopia currently has limited infrastructure to monitor and enforce food safety standards. The Ethiopian Standards Agency (ESA) and Ethiopian Food and Drug Administration (EFDA) require additional support to continue to improve food safety standards throughout the country.

Ethiopia also lacks food fortification, processing and packaging capacity. Increasing levels of both fortification and biofortification have the potential to significantly increase nutritional outcomes and reduce micronutrient deficiencies. Furthermore, additional processing and packaging capacity can reduce levels of post-harvest loss and increase access to nutrient-dense foods.

Action Track 2: Shift to sustainable consumption patterns

In terms of consumption, although significant advances have been made in increasing overall consumption and nutrient intake, dietary diversity remains low. The challenge is particularly pronounced among infants, children and mothers. According to the 2016 Ethiopia Demographic and Health Survey (EDHS) only 12.8% of children 6-23 months of age met the Minimum Dietary Diversity of 5 food groups out of eight.[26] Only 2.4% of the adult population meets the WHO recommendation of five servings of fruits and vegetables per day).[27] The 2016 national micronutrient survey also indicated that anaemia, zinc, vitamin A, folate, and vitamin B12 deficiencies are at the level of public health concern. More than half of children at the age of 6-59 months (57%) and 24% of women aged 15-49 years were anaemic.[28]

In contrast, challenges of over-consumption of non-nutritious foods are growing, especially in urban areas. Salt consumption is above the WHO threshold of 5 grams per day in every region of Ethiopia. The national average salt intake is 8.2 g/day.[29] The low diversity of the national diet, food safety concerns, and unhealthy salt and sugar intake trends, could explain the increase in non-communicable diseases that is stretching the health system. Indeed, about 5% of the adult population is diabetic and close to a third of the Ethiopian adult population have raised blood pressure. From 2009 to 2019 alone, cause of death and disability related to dietary risk factors increased by 18%.[30]

A major contributing factor to the prevalence of unhealthy and unsustainable consumption patterns in Ethiopia is lack of nutrition and dietary education and guidelines. Further resources will need to be invested in increasing levels of training and education on balanced diets and providing guidelines on recommended consumption patterns.

[25] Havelaar, A. H., Kirk, M. D., Torgerson, P. R., Gibb, H. J., Hald, T., Lake, R.J. et al. 2015. World Health Organization Global Estimates and Regional Comparisons of the Burden of Foodborne Disease in 2010. PLoS Med 12(12): e1001923. https://doi.org/10.13

[26] CSA (Central Statistical Agency)[Ethiopia] and ICF, 2016. Ethiopia Demographic and Health Survey 2016, Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF

[27] Baye, K. & Hirvonen, K. 2020. Accelerating progress in improving diets and nutrition in Ethiopia; ESSP Strategy Support Program | Working Paper 144; Washington, DC

[28] CSA (CENTRAL STATISTICAL AGENCY)[ETHIOPIA] AND ICF, 2016. ETHIOPIA DEMOGRAPHIC AND HEALTH SURVEY 2016, ADDIS ABABA, ETHIOPIA, AND ROCKVILLE, MARYLAND, USA: CSA AND ICF

[29] Challa, F., Tadesse, W., Mudie, K. & Zeleke, G. 2019. Urinary sodium excretion and determinants among adults in Ethiopia: Findings from National STEPS survey August 2019, Ethiopian Journal of Health Development 31(Special):371-377

[30] Global Burden Of Disease Collaborative Network. Global Burden of Disease Study 2019 (GBD 2019) Reference Life Table. Seattle, United States of America: Institute for Health Metrics And Evaluation (IHME), 2021. DOI HTTPS://DOI.ORG/10.6069/1D4Y-YQ37

Action Track 3: Boost nature positive production

Ethiopia has one of the most biodiverse agricultural land systems in Africa, but intensive agriculture means it is also one of the most degraded.[31] Ongoing deforestation and soil depletion, salination and erosion, biodiversity loss and increasing water scarcity all challenge the continued transformation of the food systems. Agricultural intensification has driven significant soil depletion and salination across all agro-ecological regions. Soil depletion represents an additional major challenge for Ethiopia. The major causes of land and soil degradation in Ethiopia are agricultural intensification, severe soil loss, deforestation, low vegetative cover and unbalanced crop and livestock production. For nature positive production and environmentally sustainable development, there is an urgent need to improve land planning and resource planning and watershed management to conserve land and soil health and preserve agricultural lands for future generations.

To increase productivity whilst conserving and restoring degraded land, Ethiopia will have to address the shortage of agricultural inputs and technologies. Access to high-quality and drought-resistant seed varieties is limited. Although fertilizer use has improved significantly over the past decade, use of fertilizer per hectare is six times lower than India and twenty-two times lower than China. There is also a lack of availability of nutrient blends suitable to all soil types in Ethiopia, given the diversity of soil types in the country.[32]

Levels of mechanization are particularly low. Use of agricultural equipment such as row planters, combine harvesters, tractors are low and the cost prohibitive. Furthermore, access to irrigation, which can significantly increase productivity and preserve soil health remains limited. As Table 1 shows, there are 11,000 tractors with 70-180 hp plus 3,000 tracks with 40-65 hp. That is 14,000 tractors and 1,800 combine harvesters to a total of 12.86 million hectares under cereal, pulses and oilseed cultivation. That is 918.8 ha to a tractor and 7,145 ha to a combine harvester. This is by far the lowest ratio compared to the world and sub-Saharan Africa (see Table 1). Similarly, milk processing equipment of 1,250 is unmatched to the total dairy cows in the country.

[31] Lemlem Tajebe, Status, Challenges and Opportunities of Environmental Management in Ethiopia, 2018
[32] IFPRI, Ethiopia's Agrifood System: Past trends, present challenges, 2020

Table 1: Agricultural Machineries and Services Data, 2020, Ministry of Agriculture

Types of agricultural machineries and services	Number of	Remark
Agricultural combine harvesters	1,800	All machineries are owned by both private & public based Agribusiness in all regions (But Machineries above 200Hp mostly found in sugar industries are not included)
Agricultural tractors, 70-180 HP including accessories	11,000	
Agricultural tractors, 40-65 hp with accessories	3,000	
Irrigation water pumps with 5-15 hp with accessories	240,000	
Engine driven multi-purpose threshers	15,000	
Engine driven maize shellers	5,000	
Self-propelled rippers, riper binders/ harvesters, maize shellers	2,600	
Walking Tractors	3,200	
processing mills, rice hullers, inset processing equipment	800	owned by groups, individuals
milk processing equipment /centers	1,250	
Machinery operation/ driving and maintenance technicians training colleges	8	3 Public (Alegena, Kulumsa and Alage) and 5 Private

Source: Ministry of Agriculture

In addition to productivity enhancing and nature positive inputs and technologies, adoption of innovative agro-ecological practices is low. Existing extension services primarily focus on techniques that boost yield, rather than techniques that support environmental production. Existing extension often takes a 'one size fits all' approach and there is a need to ensure extension and the production practices they encourage are appropriate to a specific region and its agro-ecology.

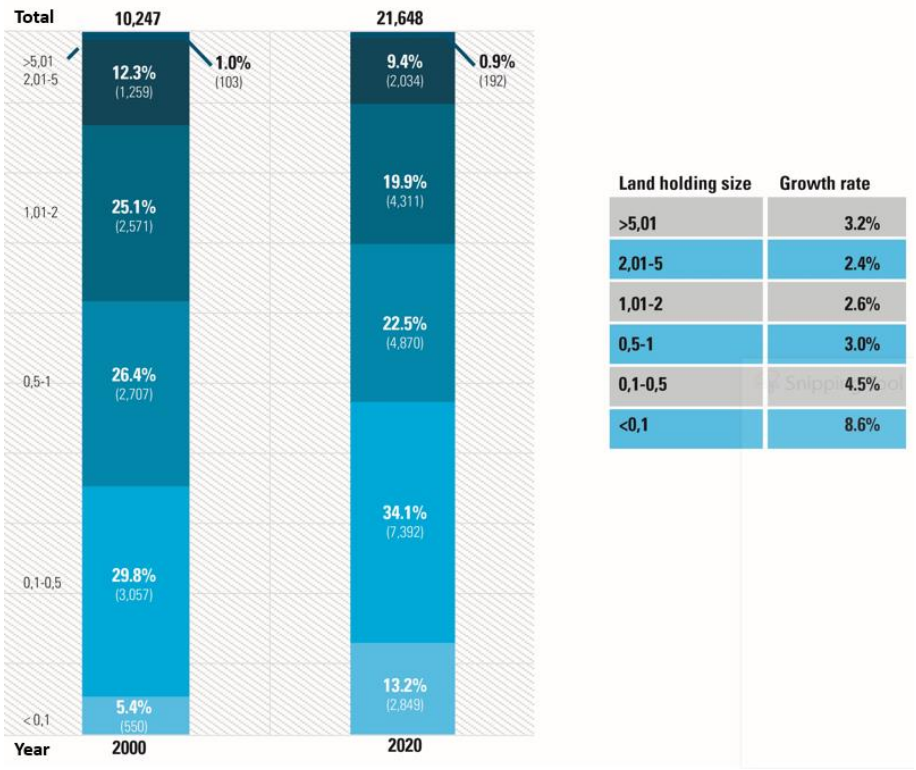
To increase access to inputs and technologies and improve land management and agro-ecological practices, access to agricultural and rural financial services is key. Farmers lack access to financing, which is essential to facilitate investment in productive technologies and equipment. This lack of financial institutions specifically serving Ethiopia's vast smallholder farmer population has prevented households from capitalizing their farms, preventing them from increasing incomes. The Agricultural Transformation Agency's annual survey showed that only 28% of smallholder farmers reported access to financial services.[33]

Boosting nature positive production in Ethiopia requires also addressing the major challenge of land availability and management. Low productivity and agricultural yields have meant that rapid expansion in agricultural land has been required to ensure production can meet the demand of a fast-growing population. Total land under cultivation increased by nearly 2% per year between 2001 and 2013.[34] Availability of cultivable land in Ethiopia is therefore likely to be a major problem in the near future. With a large and fast-growing population, land availability is scarce, with an estimated 66% of all potential cropland land already under cultivation. [35] Especially notable is that the number of holders owning less than 0.1 ha of land (1000 square meters) is growing at a rate of 7.4% per year; this size of landholding is insufficient to sustain food security.[36] The number of landholders in other categories of land

[33] ATA, 2021 FPC Farmer Survey, 2021
[34] IFPRI, Ethiopia's Agrifood System: Past trends, present challenges, 2020
[35] IFPRI, Ethiopia's Agrifood System: Past trends, present challenges, 2020
[36] Diriba 2018, Overcoming Agricultural and Food Crises in Ethiopia.

size has grown during the same time, the largest growth rate being in the land category of 5-10 ha which grew at a rate of 7.14% per annum. The growing land scarcity combined with a growing population has led to a decrease in average farm size, with the average small farm current covering just 0.65 hectares among crop growers, leaving farmers reliant on agricultural intensification, which represents a major challenge to land conservation and ensuring sustainable, nature positive production.[37]

Figure 9: Trends in agricultural holders across land holding size, 2000-2020[38] (holders in '000)



The prevailing property rights and public land ownership have produced land fragmentation, persistently declining land per capita, and an increasingly effective landless population. High levels of land fragmentation prevent land organization and coordination and restrict the application of mechanized farming or obtaining long-term capital investment on land.[39] To address the challenge of decreasing land plot size and growing land scarcity, and reform and the permission of leasing and the use of land for collateral will be essential. This will address the challenge of weak land management and ownership infrastructure.

Action Track 4: Advance equitable livelihoods

Advancing equitable livelihoods whilst delivering nutrition, health and environmental outcomes, requires strengthening an enabling environment and institutional settings for the vulnerable actors in the food systems in the different livelihood and agro-ecology zones in Ethiopia. To achieve this, the lack of production diversity and cultivation of nutrient-dense foods need to be addressed, along with activities across the food system (postharvest handling,

[37] FAO, The Economic Lives of Smallholder Farmers, 2015
[38] Diriba 2020. Agricultural and Rural Transformation in Ethiopia; Obstacles, Triggers and Reform Considerations. EEA
[39] Diriba, 2020. Ibid.

value addition, processing, formal and informal markets) have to be addressed. Women, youth, smallholder farmers and enterprises dominate these diversified activities. Women are the major workers in small-scale horticulture production and processing. These vulnerable actors face entrenched institutional, social norms and practices that limit their access to inputs, land, finance, technologies and innovations to enhance their sustainable livelihoods. Thus, transformation means revitalizing pathways of their access to, use of and control of resources (land, distribution corridors, division of labour, decision-making power); their access to stable markets (including fair and consistent prices); strengthening sustainable consumers, processors, retailers' choice patterns; resilient working environments.

To ensure safe and nutritious foods for all at affordable prices and improve nutritional and health outcomes, Ethiopia will need to develop not only its production capability but also its food market infrastructure and the challenge of weak market linkages throughout the country. As well as limiting production losses, farmers require simple access to fair markets, so that goods can be sold at a fair and cost-recovery price. This in turn will help increase incomes for those who depend on the food system for their incomes. Agribusiness and food retail have developed significantly over the last decade. However, only a small minority of farmers are fully commercial. Given the size of Ethiopia, commercialization is hindered by long value chains typically comprised of large numbers of private traders. Long chains between farmers in rural areas and processors in urban and peri-urban locations limit income potential and drive high post-harvest losses and drive-up agricultural prices.[40] Significant investment will be required to support private actors that directly support farmers such as input manufacturers. Additional action will also be needed to support aggregation and transportation facilities as well as to encourage investment and financial support for agro-processors and retailers. Supporting farmers to access reliable and equitable markets, efforts will need to be made to drive job creation in the wider Ethiopian food system, where limited capacity for processing and value addition currently exist.

Delivering nutrition, health and environmental outcomes, an effective food system needs to deliver equitable livelihoods to those whose income depends on food markets. To achieve this, firstly issues with production and post-harvest agricultural losses need to be addressed. According to a 2017 FAO study, post-harvest losses for staple cereals ranged from 14 to 27% of total production, which limits total output and erodes farmer incomes.[41] Limiting agricultural losses will require improving the efficiency of distribution networks and increasing access to storage technologies, which are currently unaffordable to many farmers.

Finally, institutional and regulatory guardrails are currently limited. To support truly equitable markets, a regulatory environment will be required that ensures fair value pricing to producers, manufacturers and retailers alike. This will need to include improved farmer financial literacy and access to market information to limit price fluctuations and improve smallholder farmers ability to sell their produce at a fair and consistent price. '

[40] UNIDO, Agro-Industrial Parks in Ethiopia, 2018
[41] FAO, Postharvest loss assessment of maize, wheat, sorghum and haricot bean, 2017

In addition to these challenges, driving equitability requires balancing agency within the Ethiopian, specifically supporting women, the young and the landless households and other groups.

Action Track 5: Build resilience to vulnerabilities, shocks and stress

Ethiopia is experiencing increasing global warming and a growing frequency of climatic shocks and events, which is heightening Ethiopia's already high vulnerability to drought and food shortage. Twice in the last fifty years widespread drought and crop failures have led to famine (1972-4 and 1984-5). Increased adaptation to the effects of climate change and natural events will be required going forward, as climate scientists predict Ethiopia will experience heightened temperatures, changes to season duration and seasonal precipitation and increased frequency and intensity of extreme weather events. The scale of these challenges may be heightened by ongoing degradation of rural environments through deforestation and land degradation and limited structures exist for the restoration of agricultural and post-industrial land. To drive adaptation and resilience, the current shortage of climate resistant inputs and technologies will need to be addressed. Access to climate resistant crop varieties and seeds will need to be expanded, whilst increased research into climate smart techniques and technologies will be required, as well as significant extension to increase awareness and uptake of new practices.

Furthermore, increased disaster risk preparedness will be needed to mitigate the impact of shocks and stresses. Effectively managing risk within the Ethiopian food system is critical to ensuring food security across the country. Currently, limited infrastructure exists to provide insurance or immediate economic support to individuals in areas affected by sudden shocks. Too often a siloed approach is taken to risk and crisis management.

Finally, universal food access needs to be ensured across the country, to ensure food security in the aftermath of natural disasters or shocks. The EFS must incorporate nutrition sensitive shock responses and develop and evolve the Productive Safety Net Program to ensure greater social protection measures, especially to cover infants, children, mothers and others particularly vulnerable to malnutrition in vulnerable areas.

Overall, across the five UNFSS Action Tracks, the challenges to address are numerous. However, each challenge represents an opportunity to accelerate transformation across the food system and remove systemic constraints that have inhibited Ethiopia's ability to provide safe and nutritious food, drive sustainable consumption patterns, produce food in a nature positive manner and advance equitable livelihoods whilst also building resilience to shocks.

The challenges identified by the EFS process will be used in devising the game changing solutions discussed in Chapter 3.

3. The Future State of Ethiopia's Food System: Commitment to Transform

Our Approach: Clustering Game changing solutions

This chapter presents Ethiopia's vision to transform its food system. The vision builds on the present state of the Ethiopian Food System (*as outlined in Chapter 2*) and then details how targeted game changing solutions, building on existing and evolving policies, institutions and programs to drive wholescale transformation.

After the conclusion of the First and Second National Food Systems Dialogues in March, April and May 2021 respectively, the Ethiopian government focused on identifying, selecting and refining game changing solutions, in close collaboration with a wide range of governmental and non-governmental stakeholders. Following the First National Dialogue, national and international food systems experts identified, evaluated and shortlisted an initial longlist of 85 game changing solutions, submitted through an online portal in two waves. The initial list of solutions was then distilled down to 33 high-priority game changing solutions that were discussed and evaluated at the Second National Dialogue. Following the Second National Dialogue, game changing solutions were further refined and merged by the EFS Technical Committee and the Core Team to leave a final list of 22 solutions. These solutions form the basis of the EFS Technical synthesis, position statement and Roadmap.

The 22 game changing solutions were then clustered into six 6 groupings;

i) Nutrient-dense food production; food safety, fortification and rural electrification and appropriate climate smart technologies;
ii) supply and value chain development, national food based dietary guidelines and nutrition literacy and awareness creation;
iii) Integrated policy-making, land reform, and improved government finance provision for agricultural and rural transformation;
iv) agricultural technologies, innovation and agricultural input supplies;
v) access to markets, market information, infrastructure and specialization; and
vi) managing risk and protecting the poor.

The Ethiopian Food System's Technical Synthesis is built on these 6 solution clusters and aspires to attain the five long-term outcomes articulated in the UNFSS Action Tracks (long-term outcomes) and Action Areas (intermediate outcomes) within the UN Food Systems framework. This chapter outlines the rationale for each cluster. The clustering of game changing solutions is intended to form coherent groupings of related technical and policy actions to foster coherent agenda around which coalitions of domestic and international institutions can be formed. Whilst most clusters primarily relate to one Action Track, many support the aims of multiple Action Tracks.

Each cluster of game changing solutions seeks to address key challenges identified in Chapter *2*.[42] Addressing these long-term challenges will bring about the transformation of Ethiopia's food systems. For Ethiopia, food system transformation would likely drive the shift from subsistence-oriented staple food production towards more specialized market-oriented production, facilitated by increased farmer specialization, increased use of inputs and increased use of agricultural technologies to increase labor productivity and marketable surpluses.[43] More specialized, equitable and efficient agricultural production will inevitably lead to a significant proportion of rural populations diversifying their incomes beyond farming and earning reliable incomes through on and off-farm agricultural businesses and markets. This transformation should be directed towards improvement in diets, nutrition, and overall societal health through strengthened social awareness and regulatory nutrition standards. Facilitating this transformation will require significant growth in value addition and agro-processing as a proportion of total agricultural output, as well as greater aggregation of small farms and increased availability of agricultural technologies, improved supply chain infrastructure and greater integration of agriculture and livestock into the broader economy.

Food systems transformation, at its most fundamental level, is about driving positive changes in the quality of lives of rural and urban populations and through improved food availability and nutritional outcomes. It is within this broader articulation that the EFS transformation seeks to achieve the following intermediate outcomes; most immediately, the game changing solutions are designed to bring about 14 intermediate outcomes or what has been referred to as Action Areas within the UNFSS processes (see Figure 3).

Game Changers to Transform Ethiopia's Food System

The 22 EFS game changers are categorized into six clusters, each relating to pre-defined UNFSS Action Tracks and Action Areas. A summary of the six clusters can be found in Figure 10 below:

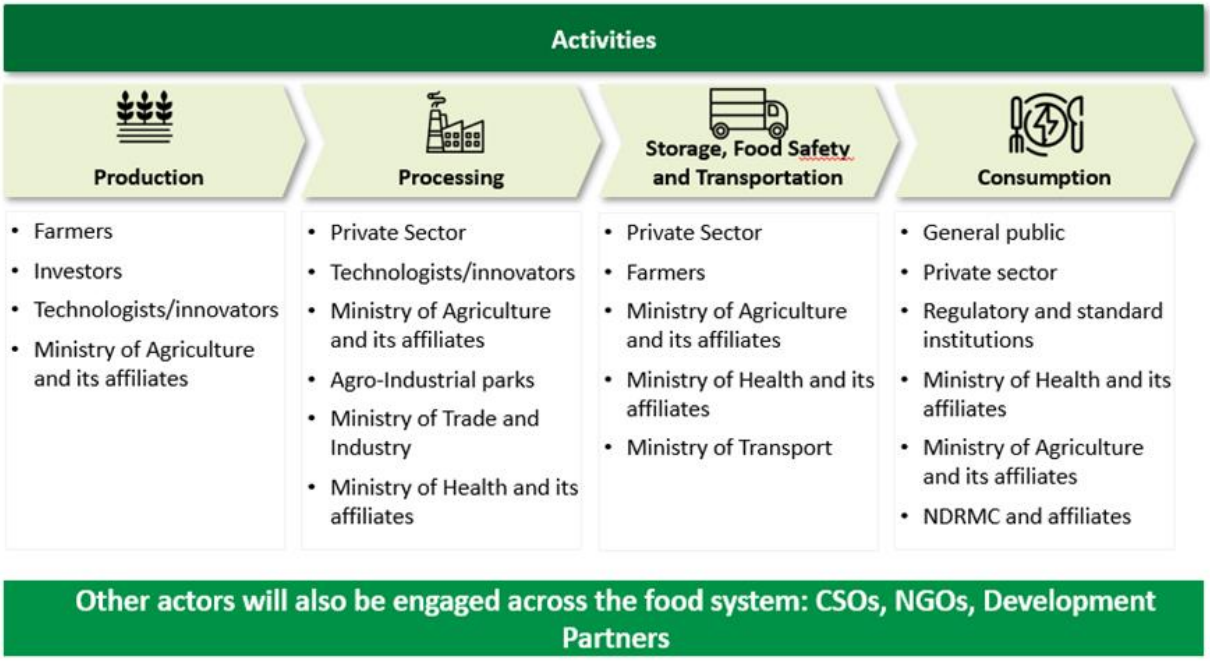
[42] These challenges are: low availability and affordability of diversified nutritious foods, lack of food processing, fortification, packaging; lack of access to agricultural inputs, technologies including small-scale irrigation, soil depletion (erosion, lack of crop rotation and diversification, high acidity, lack of zinc) and Lack of adoption of agroecology practices (agroforestry, permaculture, biodiversity, preservation), low productivity and production diversity, absence of financial services, poor tenure system, weak market linkages and poor value addition, poor post-harvest management, poor institutional support, and lack of integrated risk and crisis management, climate adaptation, mitigation and resilience, and universal access to food.

[43] For more detailed discussion, see Delgado 1995, Timmer 1998, FAO 2017, Naseem 2017, Diriba 2020

Figure 10: Action Tracks and Game Changer Clusters

To implement both the 22 game changers and their 6 clusters, significant action will be required across Ethiopia, involving a wide range of actors at each stage of the food system. Both governmental departments and agencies, as well as private sector actors, investors, regulatory bodies, CSOs, development partners, NGOs, farmers and the Ethiopian general public will need to play their part (see Figure 11).

Figure 11: Contributors and participants of Ethiopian Food System



Cluster 1: nutrient-dense food production; food safety, fortification and rural electrification and appropriate climate smart technologies

Under the nutrient-dense food production, food safety, fortification and rural electrification and appropriate climate smart technologies cluster, four top-line game changing solutions have been identified to deliver on Action Track 1 (*ensuring access to safe and nutritious food for)* all and the corresponding Action Areas (see Figure 3). These are:

1. **EFS GC 1:** Strengthen the national food safety management and regulation system of Ethiopia by assessing and upgrading the national food control system in collaboration with relevant stakeholders and focusing on selected value chains / sectors;
2. **EFS GC 2:** Support diversified food production to increase the supply of nutrient-dense foods (for example, animal sourced and plant-based foods including promoting smallholder, greenhouse and garden level production);
3. **EFS GC3:** Promote and enhance the production and consumption of fortified nutrient-dense staple foods through using industrial food fortification and biofortification and public and private partnership initiatives; and
4. **EFS GC4:** Rural electrification to promote environmentally friendly and climate resilient technologies, including solar-power for communities (for refrigerators, processing equipment and irrigation);

These game changers focus on food safety, food fortification, and rural electrification which collectively bring about increased production and reduced harvest loss to increase food availability and improved food safety standards. Increased production and food availability will support the Government of Ethiopia to improve access to nutritious food, make food safe, and deliver food security and end hunger. Attainment of these intermediate outcomes is made possible by scaling up industrial fortification and biofortification and directly addressing

current low diversity of food production, poor access to nutrient-dense foods such as vegetables and fruits, low dietary diversity, inadequate access to nutrition information, low nutrition literacy, low involvement of women in decision making at household level and limited availability of key platforms to spread nutritional information.

This cluster will a) improve diversity of and increase production of nutrient-dense crops such as fruits and vegetables; b) increase the accessibility and improve quality of nutrient-dense food, vegetables and fruits; c) expand market access to vulnerable groups and expand markets for nutritious foods; d) ensure access to labor and energy saving technologies and improve the decision making role of women through providing skill based business and other related trainings; e) give special emphasis to target the nutritionally vulnerable populations, and f) maintain or improve the agricultural natural resource base (i.e. water, soil, air).

This cluster is also well placed to both support and advance Ethiopia's existing policy landscape, including the Homegrown Policy Reform agenda, the Seqota Declaration, National Nutrition Policy, National Disaster Risk Management Policy, and the Ten-year Development Plan ecosystem.[44] Furthermore, the cluster can leverage and support the development of the Ethiopian Standards Agency (ESA) and Ethiopian Food and Drug Administration (EFDA) to offer relevant regulatory and safety standards for domestic and imported foods. As the demand for market supplied food increases including processed foods, the need for stepping up quality control and assurance of food safety will increase dramatically.

For rural electrification, the Ten-year Development Plan envisages that grid access will rapidly extend throughout Ethiopia in the coming decade, supported by power generated from the Grand Ethiopian Renaissance Dam (GERD). The Plan envisages to increase the coverage of grid-based electricity from 33% to 96%.[45] Grid sources of electricity supply will also be supplemented by off-grid using solar power. This will dramatically improve quality of life for a broad cross-section of the Ethiopian population, but specifically offers a major opportunity to improve food preservation and food safety. To capitalise on this opportunity the EFS envisages significantly increasing the availability of refrigerators, processing equipment and irrigation systems.

Cluster 2: Supply and value chain development, national food based dietary guidelines and nutrition literacy and awareness creation

The second game changer cluster focuses on improving the availability of safe and nutritious food and shifting to sustainable consumption patterns through strengthening value chains for high-priority commodities through enhancing supply and value chain management, as well as issuing national dietary guidelines and sustained awareness creation among the population. This cluster is comprised of six game changing solutions:

[44] Ethiopia's Homegrown Policy Reform agenda, launched in 2019, outlines a 'bridge to prosperity' for Ethiopia through critically identifying and assessing key bottlenecks in Ethiopia's development and outlining context-specific solutions; The Seqota Declaration is the Government of Ethiopia's Commitment to end stunting in children under 2 by 2030; Ethiopia's Ten-Year Development Plan, launched in 2021, builds on the Homegrown Economic Reform agenda through laying out the key interventions required to further catalyze Ethiopia's development through to 2031.

[45] Federal Democratic Republic of Ethiopia 2021. Ethiopia 2030: The Pathway to Prosperity. Ten Years Perspective Development Plan (2021 – 2030), page 55.

1. **EFS GC5:** Improve young children's, adolescents' and mothers' nutrition and dietary diversity through a systematic analysis and a systems approach;
2. **EFS GC 6:** Strengthen climate smart livestock value chains;
3. **EFS GC 7:** Promote innovations, government commitment and local ownership, as expressed in the Seqota Declaration;[46]
4. **EFS GC 8:** Strengthen innovative strategies and private sector engagement mechanisms for supply chain management and handling systems particularly for nutrient-dense crops (for example fruit, vegetables and animal sourced foods);
5. **EFS GC 9:** Sustained awareness creation and food and nutrition literacy to change consumer's behavior on the consumption of nutrient-dense and safe food through women empowerment and leadership in food systems; and
6. **EFS GC 10:** National food based Dietary Guidelines to provide dietary recommendations for the Ethiopian population two years and older for increased diet quality including dietary diversity and food safety for optimal health;

A food systems approach, which encompasses the entire food ecosystem from farm to consumer plate, requires consideration of whole supply and value chains, with special attention to linking production to markets across all primary agricultural products as well as manufactured goods and services. For example, strengthening livestock value chains (cattle, camel, goat and poultry) and perishable nutrient-dense value chains such as vegetables, fruit crops and other commodities will be critical to evolving and transforming the Ethiopian food system and will enable people to enjoy healthy and sustainable diets, whilst also slashing food loss and waste. The cluster will support the attainment of all five Action Tracks. However, it will be particularly impactful in shifting Ethiopia to sustainable consumption patterns, ensuring access to safe and nutritious food for all food safety, and building resilience to vulnerabilities, shocks and stress.

The cluster has been designed to closely align with and support national policy and regulatory frameworks. The cluster will also go hand in hand with Ethiopia's plan to expand value chain development across the country to support income generation and job creation. For example, Ethiopia's Ten-year Development Plan aims to; (i) enhance capacity utilization; (ii) strengthen market coordination; (iii) raise production and productivity; (iv) satisfy domestic demand as well as supplying export markets by producing competitive industrial products such as foodstuffs, wearing apparel, housing materials and pharmaceuticals; (v) encourage manufacturing industries that utilize locally produced inputs; (vi) raise the variety, quantity and quality of exportable industrial commodities; (vii) strengthen key value chains, interlinkages, and interdependencies within the manufacturing industry. This cluster will support the attainment of the Ten-year Development Plan through prioritizing and developing key crop and livestock value chains and supporting supply chain development.

Within the livestock subsector, the cluster will advance the continued operationalisation of the Ethiopia Livestock Master Plan. Strengthening climate smart livestock value chains will

[46] The Seqota Declaration centres on introducing innovative approaches to increase food availability and distribution to reduce infant stunting through combining agricultural, manufacturing, transport and health & nutrition interventions

include improving access to high-quality breed and breeding services, increasing access to animal health services and building pastoralist communities' knowledge and skills in livestock management. The cluster will also create agribusiness alliances and link them with rural finance institutions, build business capacities and ensure inclusiveness of agribusiness alliances (e.g., business development, financial literacy and gender equity training), which help build equitable livelihoods in vulnerable communities. This will include leveraging Ethiopia's Integrated Agro-Industrial Parks and the Agro-Commodity Procurement Zones (ACPZ) development mode It will also leverage and formalise best practice by building on evidence and lessons learned from existing projects and programs such as the Agricultural Growth Program and the Seqota Declaration, bringing together agriculture, industry, transport, and health sector; and through driving coordinated value chains development in their respective strategies.

Both developing and strengthening value and supply chains and increasing food safety awareness can leverage the rapid development and privatization of Ethiopia's telecommunications sector, which will drive significant expansion in internet coverage in Ethiopia. These reforms are expected to significantly improve access to digital platforms, which will speed up innovation in supply chain management as well as increasing opportunities for online self-learning and awareness creation.

Cluster 3: Integrated policy-making, land reform, and improved government finance provision for agricultural and rural transformation

The third cluster aims to implement integrated and coherent policymaking infrastructure to facilitate rapid food systems transformation through addressing restrictions on land availability and ownership and access to financial services. Too often policies are developed in government department silos with little interaction between departments. Food Systems thinking offers a platform to acknowledge that societal transformation requires mutually beneficial action across different policy areas. Only a joint approach will enable policymakers to design a robust and integrated policy that addresses not only today's policy challenges, but also pre-empts likely future challenges and opportunities.

For these challenges to be addressed and to transform the Ethiopian food system, the following four game changing solutions are proposed:

1. **EFS GC 11:** Implement land reform and land administration that will ensure the right to lease, and use it for collateral to facilitate land consolidation, adoption of innovation, and reduce environmental degradation;
2. **EFS GC 12:** Introduce land use planning including resource planning, integrated landscape & watershed management with nature inclusive and climate smart approach;
3. **EFS GC 13:** Address deforestation and environmental degradation through implementing the Green Legacy initiative, the major tree planting undertakings; and
4. **EFS GC 14:** Establish finance system for farmers to access credit, get insurance services and offer farmers financial literacy to help enhance rural and agricultural investment, and support primary investment on farms and capitalize the farm (including guarantee scheme throughout the whole food system;

This cluster is designed to support the Ministry of Agriculture's ongoing cross-departmental efforts to drive land reform to support agricultural production. As discussed in Chapter 2, the number of households relying on 0.1 ha of land or less has increased rapidly over recent decades, accounting for 13.16% of total farm households, and has been growing at a rate of 7.41% per annum and is forecast to continue to grow. Ever smaller agricultural landholdings present a major challenge to increasing yield and efficiency production and puts pressure on farmers to produce ever more output from small plot sizes, which leads to environmental degradation and soil depletion. To address this challenge, the MoA has undertaken a wide-ranging consultation process focusing on how land consolidation can be leveraged to facilitate more effective and efficient agriculture and livestock with higher rates of technology adoption. A draft land reform policy is currently under consideration by the Council of Ministers and is expected to be approved in the near future.

The trend of intensifying farmland usage and crop productivity have continued in Ethiopia (as discussed in Chapter 2). However, the growth in crop yield driven by agricultural intensification is slow due to inefficient land management, rain-dependent farming, droughts, low or non-existent farm capitalization and increasing levels of environmental degradation. Farmlands are spatially organized in small plots of a national average of 0.65 ha, which is inefficient and hinders modern land management systems and prevents nature and environmentally sound food production. The size of farmland plots is decreasing, driven by rapid population growth. For this reason, it is critical to introduce land reform that permits leasing and the use of collateral, whilst not requiring a lengthy constitutional amendment process to be initiated. A precedent already exists for urban land where leasing has been introduced and this same principle must be applied to reforming rural lands. *Cluster farming* for strategic crops has been introduced in different parts of Ethiopia which served to increase both productivity and market access for smallholder farmers through encouraging farmer specialization and aggregation to facilitate scaled production and contract farming. Within specialized farmer clusters, extension can then also be highly specialized and targeted to preserve biodiversity and ensure the adoption of climate smart techniques.

Similarly, a lack of financial institutions specifically serving Ethiopia's vast smallholder farmer population, including women, youth and the landless, has prevented households from capitalizing their farms or investing in improved technologies or value addition equipment, forcing them to continue to live in a cycle of poverty. Establishing effective access to financial services and/or rural development banks focused on agricultural lending forms a key part of the MOA's reform agenda. Driving reform across these areas represents a bold political commitment for Ethiopia.

The establishment of an inclusive agricultural financing system will be essential to supporting smallholder farmer development and agriculture-related livelihoods and encouraging access to improved inputs and technologies. Existing banks (both private and state-owned commercial banks) and the Development Bank of Ethiopia are geared towards medium and large-scale farms, with minimal incentive to support the smallholder farmers that dominate Ethiopian agriculture. Ethiopia will need to support agricultural, cooperative and rural development banks and develop the necessary legal and operational frameworks and regulations that can be rolled

out throughout the country. Furthermore, to maximize the benefit of rural and agricultural financial services and drive financial inclusion, farmers must be provided with financial literacy support and education to help stimulate demand and facilitate access to credit, enhance rural and agricultural investment, and support primary investment on farms and capitalize the farm.

Cluster 4: Agricultural technologies, innovation and agricultural input supplies

This cluster of game changing solutions focuses on the adoption of agricultural inputs (improved seed varieties, enhanced livestock breeds, fertilizer, agro-chemicals and microorganisms to support decomposition and soil conservation), innovation (improved agricultural and food processing practices), and technologies (agricultural machinery and information technology services).

To drive increase access to and adoption of agricultural technologies and inputs, two game changing solutions are proposed:

1. **EFS GC 15:** Selection and timely supply of agricultural inputs and technologies to boost production and productivity; and
2. **EFS GC 16:** Advanced forecasting system for variables affecting agriculture-based activities on fine spatiotemporal weather models in Ethiopia;

Ethiopia's food system currently struggles with low levels of yield and productivity and high levels of post-harvest food loss. The adoption of new and improved technologies and inputs will serve as a critical enabler to address these challenges, increase agricultural productivity and drive food systems transformation. These challenges have been augmented by a lack of access to high-quality inputs. A reliable supply of key inputs such as improved varieties of seed, fertilizers and pesticides, veterinary medicine will be critical to both improving yields and reducing food loss.

The transition to mechanized agriculture and livestock has significant potential to improve labour productivity, increase agricultural yields and reduce food loss due to inadequate storage facilities. Key elements of mechanization include increasing use of machinery such as tractors, combine harvesters, milking machines, cold chain facilities, irrigation equipment, grain and animal product storage and preservation systems including silos, vacuum packaging amongst other technologies to support increased productivity and reduce food loss. To ensure the success of these modern agricultural technologies, Ethiopia will need to build capacity to both train machine users and also ensure a strong and stable supply of trained maintenance technicians to ensure high utilization levels.

The introduction and widespread adoption of mechanized technologies will not only dramatically increase land and labor productivity, it will also reduce land degradation and deforestation and open up opportunities for sustainable land use and management. To ensure successful and lasting adoption of mechanized technologies, Ethiopia will need to establish training, demonstration and service centers and mechanization service centers to support users of tractors, combine harvesters and other agricultural machinery.

The selection, timely supply and appropriate use of agricultural inputs and technologies will pave the way for a gradual and incessant adoption of technologies and innovation throughout Ethiopia. The rate of adoption of these technologies will likely vary by region due to local contexts and ecological variations, and demand dynamics for different regions will need to be fully mapped out to ensure supply meets demand. Demand estimation from across the country can be systematized by introducing an online demand forecasting system, which can eventually be evolved to leverage machine learning (artificial intelligence).

In addition to mapping inputs to demand, Ethiopia will need to strengthen investment in capacity building activities including retraining agricultural extension officers, veterinary specialists, plant protection specialists, and other service providers to ensure their service provision covers new technologies and inputs.

To drive the uptake of existing agricultural technologies, allocating Research and Development (R&D) funds to support the development of new agricultural technologies will be critical. R&D funds can also support the development of technologies that reduce pre- and post-harvest losses and enhance value added product, preservation and packaging, including small and medium agro-processing industries. The private sector will play an increasingly important role in providing access to new technologies.

Finally, advanced crop and pasture forecasting capacity based on fine spatiotemporal weather data will be an important innovation that will provide policymakers and farmers reliable information on weather, crop dynamics and crop plagues. Advances in satellite data-based and vegetation index-based weather forecasting can offer a higher degree of meteorological accuracy. When combined with detailed field-level crop data, this can be used to model and forecast crop production dynamics in different scenarios, which in turn can be used to plan and design highly targeted interventions and determine risk-insurance pay-outs.

Cluster 5: Access to Markets, Market Information, Infrastructure and Specialization

Cluster 5 focuses on access to markets and market information systems, including the promotion of agricultural commercialization using crop specialization, corridor and production specialization including agro-commodity procurement zone. Increased agricultural specialization will support agricultural corridor development and drive broadened market participation. The Agricultural commercialization / corridor specialization approach integrates efforts of various actors in agriculture to commercialize smallholder farmers through market-driven value chain development. This cluster comprises of two game changing solutions:

1. **EFS GC 17:** Upgrade and strengthen national market information systems and related digital approaches for mapping to strengthen evidence-based agricultural development planning; and

2. **EFS GC 18:** Promote and facilitate the implementation of the agricultural commercialization through creating production-specific specialization corridors for nutrient-dense commodities and strengthening market linkages (e.g., agro-industrial parks)

This cluster aims to drive the Ethiopian food system to support more equitable livelihoods for both farmers and other market actors with due focus on the most vulnerable actors - women, youth and indigenous populations. It will enhance equitable market linkages through strengthening the market information system, enhancing industrialization and commercialization corridors for more diversified crops, while modernizing value chains that provide equitable and sustainable livelihoods for the vulnerable populations.

The National Market Information System (NMIS) addresses a key challenge of accurate pricing information availability, which can significantly increase the bargaining power of farmers to achieve fair prices for their produce. The National Market Information System (NMIS) already exists at federal and regional levels but currently has disparate coverage (due to poor or incomplete data, low levels of accessibility, focus on staple crops and limited digitalization) and requires significant strengthening. The proposed game changer solution will strengthen and upgrade the existing system to ensure continuous and spatially distributed collection of data overtime, expand its data to nutritious foods, improve access and literacy to digitalization and online availability. Linkages to other existing mapping and information systems like Innovation Recommendation Mapping (IRM) for evidence based agricultural development planning and others is highly encouraged to complement the information dissemination for equitable use of the system.

The Agricultural Commercialization Cluster (ACC) and Farmer Production Cluster (FPC) approaches clearly identify defined geographic clusters that can specialize in high-priority and high-value commodities. Clusters can then receive high-quality inputs and targeted extension and advisory services to boost productivity. As well as boosting specialized crop production, clusters can be supported to engage in value addition and processing activities to further boost incomes. The clusters can then be linked with institutional buyers, to ensure guaranteed, contracted volumes and support sustainable incomes. Furthermore, the ACC/FPC approach focuses on interventions that will improve production specialization and land productivity while reducing degradation, improving access to market, increasing value added activities and creating off-farm employment opportunities.

The ACC/FPC approaches can be integrated with the Integrated Agro-Industrial parks with the Agro-Commodity Procurement Zones (ACPZ) development model to help address the challenge of ensuring equitable livelihoods and eliminating malnutrition. The ACPZ development model is inclusive and built on strong Public Private Partnership approach bringing together the Government of Ethiopia, Private sector (at large scale including SMEs, producers' organizations) and households (including poor small-scale farmers, women headed households) in a well-coordinated and balanced bargaining power for all, and granting due attention to food security and nutrition (FSN) in targeted areas.

The ACC and NMIS game changing solutions are dependent on a successful implementation of other game changers to enhance their efficacy. For example, improved agricultural input supplies (seeds supply, fertilizers, pesticides, equipment), access to key technologies (e.g., small scale irrigation), access to knowledge and skills will be essential to maximizing the impact of these game changers.

Cluster 6: Managing and Mainstreaming Risk and Protecting the Poor

Effectively managing and mainstreaming risk within the Ethiopian food system is a critical enabler to ensuring food security across the country. Ethiopia's economy and food system participants, especially smallholder farmers, are highly vulnerable to shocks and stresses. The ongoing COVID-19 pandemic threatens the incomes of millions of people throughout the country who depend on the food system for their livelihoods. In addition, locust infestation also had a huge impact on the incomes of small holder farmers. This is made worse by a series of internal conflicts, leading to a significant displacement resulting in food and nutrition insecurity. It has also exposed the fragility of Ethiopia's food system and everyone who lives and works around them. Challenges due to disruption of the tourist industry has affected the service industry, adversely impacting millions of workers. The ensuing crisis has highlighted the need to reshape food systems to build back more resilient and inclusive, environmentally sustainable, and economically vibrant communities. Robust and inclusive social protection schemes will be essential to building greater resilience going forward.

The four game changing solutions included in this cluster are:

1. **EFS GC 19:** Modernize and upscale indigenous food production and processing for the general population including linkage with the school feeding program;
2. **EFS GC 20:** Formalize and integrate disaster risk management including index-based crop and livestock insurance;
3. **EFS GC 21:** Inclusive and sustainable social protection transfer including the use of digital fresh food vouchers among PSNP households (especially noting pregnant and lactating women and children under two years of age in woredas with the highest prevalence of stunting); and
4. **EFS GC 22:** Strengthen system for timely and effective shock response including the prevention and treatment of wasting and micronutrient deficiencies.

Despite massive efforts to conserve the degraded ecosystem, and more recently the ongoing Green Legacy Project (EFS GC 13) that plants billions of trees every year, there is still a large-scale land degradation problem. Hence, concerted efforts are needed to recover the degraded natural resources. Combining sustainable watershed management with improved indigenous crops production (EFS GC 19) will reduce soil erosion, enhance land rehabilitation and increase water infiltration. Watershed management will also support sustainable reforestation of degraded mountainous areas, climate regulation, increased land productivity, increased forage feed, improved water availability and spring development for downstream users.

In addition to small-scale irrigation, led by the Ministry of Agriculture, which is central to mitigating weather-induced risk, it is also crucial that a formal and an economy-wide risk management is implemented in the form of agricultural commodity risk insurance. Social and economic risks are intertwined with environmental degradation and poverty. As many studies have attested to, poverty and hunger are persistent in rural Ethiopia despite the continued national and international efforts to combat it. Declining land per capita, lack of formal insurance against multiple agricultural risk, lack of access to credit and inability of farm

households to capitalize their farms continue to push farmers to practicing farming in degraded areas and in areas which are not suitable for agriculture.

Index based crop and livestock insurance promotion will be essential to protecting farmers against periodic risk. Experience already exists in Ethiopia over the past decade including within the African Union (AU) under the auspices of African Risk Capacity (ARC) project. It is time that existing experiments and pilots of weather-based insurance are scaled up to cover crop and livestock risk insurance as a disaster risk mitigation measure.

Furthermore, indigenous crops suitable to local contexts (for example moringa, root and tubers, fruit crops) could improve livelihoods of smallholder farmers with benefits to the wider ecosystem. Increased cultivation of indigenous crops and linkages to school feeding programs can help increase food availability in vulnerable areas.

Pastoralism as a means of livelihood is challenged by climate change induced drought, which has significantly depleted livestock herds. Recurrent drought caused shortage of pasture and water which led to deterioration of livestock body conditions, lower milk production and lower market price, loss of livestock and further aggravated opportunistic diseases. Implementing Index Based Crop and Livestock Insurance is a proactive risk disaster mitigation: protect households against crop and livestock losses. The index-based insurance is linked to independently verifiable, transparent and pre-defined quantitative weather indicators monitored using the satellite (such as vegetation cover/greenness) with ground truthing, which are closely associated with the underlying risk and mirror potential losses to be experienced. Based on the threshold set of moisture and resulting vegetative greenness, insurance is paid out to the policyholders from insurance companies.

In the Ethiopian context, the links between agriculture and livestock, sustainable social protection system, biodiversity conservation and environmental sustainability are very strong and direct. Women empowerment to influence changes in women's time use, decision making and promotion of home gardens for improved dietary diversity is therefore both critical and necessary. Agricultural development initiatives must incorporate nutrition-sensitive shock responses, and ensure a social protection system that takes PSNP to universal social protection measures. Furthermore, social protection (universal access to food) measures will be an integral element of game changing solutions. Social protection measures must now streamline the PSNP, and expand to cover school feeding that Ethiopia is already rolling out. In many countries school feeding is the most extensive social safety net, with one in every two schoolchildren receiving school meals every day from national programs. According to the recently released AU Biennial Report on Home-Grown School Feeding, 65.4 million children across Africa received school meals in 2019, a staggering 71% increase from 38.4 million in 2013. This reflected the understanding that, by feeding the young generations, school meals are a smart investment in any nation's human capital development efforts.

Implementing game changing solutions to transform the Ethiopian Food System

The EFS vision, encapsulated by its 22 game changing solutions and six clusters, will accelerate change across the food system by increasing the production of safe nutrient-dense

foods to drive dietary diversity and improving nutritional awareness. The EFS transformation will increase access to rural and agricultural financial services and high-quality inputs to support farmers to boost production and access markets whilst conserving their land and soil for future generations. The EFS will also provide enhanced protection and risk management to ensure food system resilience and protection for the most vulnerable in the event of shocks and stresses. Taking these steps will allow us to create a strong and equitable food system that can deliver on the promises of the UN's Sustainable Development Goals and Ethiopia's Homegrown Economic Reform Agenda.

Implementing these game-changing solutions and driving food systems transformation will require a call to action for all Ethiopians, the EFS participants (see Figure 10). It will require close coordination and cooperation between government departments and organizations, research bodies and institutes, the private sector, civil society and non-governmental organisations, development partners and, ultimately, the general public. A detailed Roadmap will be prepared as a compendium to this synthesis which will be presented as Annex 1. Additionally, a Monitoring and Evaluation (M&E) framework is currently under development and will be presented as a compendium to this synthesis referred to as Part, Roadmap to Implement Ethiopian Food System.

It is the conviction of the Government of Ethiopia that this is Ethiopia's decade, and a decade of prosperity for all Ethiopians. The EFS vision is an affirmation of this commitment and represents a significant step forward for Ethiopia.

References

Anderson, A. The Community Builder's Approach to Theory of Change. A practical guide to theory development.

ATA, 2021. FPC Farmer Survey, 2021

Avelino, F., J. M. Wittmayer, R. Kemp, and A. Haxeltine, 2017. Game-changers and transformative social innovation. Ecology and Society 22(4):41. https://doi.org/10.5751/ES-09897-220441.

Baye & Hirvonen, 2020. Accelerating progress in improving diets and nutrition in Ethiopia; ESSP Strategy Support Program | Working Paper 144; Washington, DC

Challa, F., Tadesse, W., Mudie, K. & Zeleke, G. 2019. Urinary sodium excretion and determinants among adults in Ethiopia: Findings from National STEPS survey August 2019, Ethiopian Journal of Health Development 31(Special):371-377.

CSA various years – production data, land holding data

CSA & ICF, 2016. *Ethiopia Demographic and Health Survey 2016,* Addis Ababa, Ethiopia, and Rockville, Maryland, USA: CSA and ICF

Delgado 1995. Agricultural Transformation. Key to Broad-based Growth and Poverty Alleviation in Sub-Saharan Africa. IPRI, Discussion Paper No.7. Washington DC.

Diriba, Getachew, 2020. Agricultural and Rural Transformation in Ethiopia. Obstacles, Triggers and Reform Considerations. Policy Discussion Paper 01/2020. Ethiopian Economics Association.

Diriba, Getachew 2018. Overcoming Agricultural and Food Crises in Ethiopia. Institutional Evolution and the Path to Agricultural Transformation. Amazon, USA, and Master Printing Press, Addis Ababa, Ethiopia.

EPHI&ICF, 2019". EPHI&ICF, 2019". Ethiopian Public Health Institute (EPHI) [Ethiopia] and ICF. 2021. Ethiopia Mini Demographic and Health Survey 2019: Final Report. Rockville, Maryland, USA: EPHI and ICF

FAO, 2017. Agricultural Transformation in Africa. The Role of National Resources. Regional Office for Africa.

FAO 2017. Postharvest loss assessment of maize, wheat, sorghum and haricot bean.

FAO 2015. The Economic Lives of Smallholder Farmers.

FAO. Agriculture, Food and Nutrition for Africa. R Resource book for teachers of agriculture. Agriculture food and nutrition for Africa - A resource book for teachers of agriculture (fao.org)

FDRE 2021. Ethiopia 2030: The Pathway to Prosperity. Ten Years Perspective Development Plan (2021 – 2030). Federal Democratic Republic of Ethiopia 2021

GBD 2019. Global Burden of Disease Study 2019, Reference Life Table. Seattle, United States of America: Institute for Health Metrics and Evaluation (IHME), 2021. **DOI** https://doi.org/10.6069/1D4Y-YQ37

GHI, 2018. Global Hunger Index: Forced Migration and Hunger.

Havelaar, A. H., Kirk, M. D., Torgerson, P. R., Gibb, H. J., Hald, T., Lake, R.J. et al. 2015. World Health Organization Global Estimates and Regional Comparisons of the Burden of Foodborne Disease in 2010. PLoS Med 12(12): e1001923. https://doi.org/10.1371/journal.pmed.1001923

IFPRI 2020. Ethiopia's Agrifood System: Past trends, present challenges

IFPRI 2019. Promoting fruit and vegetable intake in Urban Ethiopia, 2019

IFPRI 2018. Evolving food systems in Ethiopia: Past, present and future

Lemlem Tajebe 2018. Status, Challenges and Opportunities of Environmental Management in Ethiopia.

MOH 2019. Food and Nutrition Policy, 2018; Ministry of Health.

Naseem, A, et al. 2017. Measuring Agricultural and Structural Transformation. Selected Paper Prepared for presentation at the 2017 Agricultural and Applied Economics Association Annual Meeting, Chicago, Illinois.

UNICEF 2019. Ethiopia Nutrition Report, 2019

UNIDO 2018. Agro-Industrial Parks in Ethiopia.

UNFPA 2019. UN Populations Division, World Population Prospects, 2019

USAID 2018. Looking beyond productivity: barriers to animal-sourced food consumption in Ethiopia.

Selamawit Ketema Ashinie & Tesfaye Tadesse Tefera 2019. Horticultural Crops Research and Development in Ethiopia: Review on Current Status.

The Seqota Declaration 2019. Innovative Government of Ethiopia Commitment to end stunting in 2030

Timmer, P, 2007. The Agricultural Transformation, In the Handbook of Development Economics. Volume I. Editors: Chenery and Srinivasan. Elsevier.

World Bank, 2018

Annex 1: List of participants

The government of Ethiopia would like to extend sincere thanks to all individuals who have kindly and tirelessly participated in the Technical Committee and National dialogues.

Name	Position/organization
H.E. Ato Oumer Aba	Minister, Ministry of Agriculture
H.E. Dr. Lia Tadesse	Minister, Ministry of Health
Dr. Mandefro Nigussie	CEO, Ethiopian Agricultural Transformation Agency
Dr. Dereje Duguma	State Minister, Ministry of Health
Fatouma Seid	FAO Representative
Dr. Getachew Diriba	Senior National Consultant, UNRCO
Mahlet Israel	Ethiopian Agricultural Transformation Agency
Dr. Ferew Lemma	Ministry of Agriculture
Dr. Mulugeta Teamir	Ministry of Agriculture
Dr. Sisay Sinamo	Ministry of Health
Alemtsehay Sergawi	Ministry of Agriculture
Fernando Rodrigues	Ethiopian Agricultural Transformation Agency
Matthew Ingram	Ethiopian Agricultural Transformation Agency
Mebrate Erstu	Ethiopian Agricultural Transformation Agency
Aster Mihret Zewdie	GAIN
Dr. Aweke Kebede	ECSC-SUN/SCI
Fesseha Tekele	Ministry of Health
Dr. Filippo DIBARI	WFP
Gabriele Schulz	GIZ
Masresha Tessema	EPHI
Maya Hage-Ali	FIRST- FAO/EU
Namukolo Covic	IFPRI
Tewodros Girma	Ministry of Agriculture
Ton Thomas Haverkort	GAIN
Professor Shimelis Admassu	AAIT, Food Engineering
Dr Kaleab Baye	Addis Ababa University, Food Science, and Nutrition Centre
Dr Abdulaziz Oumer	Alive and Thrive
Kebede Tafesse	Alive and Thrive
Abreham	Alliance2015

Sara Worku	Alliance2015
Dr Ermias Abate	Amhara Agricultural Research Institute
Yibeltal Birhanu	Amhara Bureau of Trade and Industry
Dr Admassu Fenta	Bahir Dar University, School of Chemical and Food Engineering
Fred Grant	BMGF Ethiopia
Amsale Mengistu	BMGF Ethiopia
Tewodros Ketsela	christian aid
Dr Christine Chege	CIAT-Bioversity
Dr Setegn Gebeyehu	CIP
Fekadesilasie Tadese	Dairy Producers and Processors
Ulf Flink	Development Fund Norway
Dr Feto Esimo	EIAR
Mebratu Tsehaye	World Vision
Dr. Belaynesh Yifru	Ministry of Health
Dr Kassaye Tolessa	EIAR
Heran Gebra	Ethiopian Food and Drug Authority
Bekele Mekuria	Ethiopian Food, Beverage, and Pharmaceuticals Development Institute
Pierre-Luc Vanhaverbeke	EU
Nicoliene Oudwater	FCDO, Ethiopia
Ton Haverkprt	GAIN
Sir John Beddinton	Global Panel Chair
Dr. Siboniso Moyo	CGIAR
Obert Pimhidzai	World Bank
Sidy Niang	FAO
Tewodros Hailemariam	NDRMC
Dr. Anteneh Tadesse	SNNP Agricultural Research Institute
Dr. Ermiass Abate	Amhara Agricultural Research Institute
Derek Flynn	Global Panel Consultant
Darren Hughes	Global Panel Consultant
Tom Arnold	Global Panel Member
Emmy Simmons	Global Panel Member
H.E. Rhoda Tumusiime	Global Panel Member
Professor Patrick Webb	Global Panel Secretariat
Professor Sandy Thomas	Global Panel Secretariat
Ivan Kent	Global Panel Secretariat
Jack Ryan	Global Panel Secretariat
Dr Kebede Abegaz	Hawassa University, School of Nutrition, Food Science and Post-Harvest Technology
Tewodros Zewde	Horticulture Producers Exporters Association
Lucie Vergali	IFAD
Seyoum Tesfa	IFAD
Mawira Chitima	IFAD
Andrea Limiroli	Italian Agency for Development Cooperation
Dr Yetnayet Bekele	Jimma University, Post-Harvest Management Department
Abebaw	Meat Exporters Association
Esayas Lemma	Ministry of Agriculture

Asmelash Berhe	Ministry of Agriculture
Hussein Abegaz	Ministry of Agriculture
Sentayehu Demissie	Ministry of Agriculture
Girma Bekele	Ministry of Agriculture
Abdela Negash	Ministry of Agriculture
Mengistu	Ministry of Agriculture
Tsigereda Fikadu	Ministry of Agriculture
Keberu Belayneh	Ministry of Agriculture
Bezawit Tamiru	Ministry of Agriculture
Dr Tomas Cherent	Ministry of Agriculture
Nuredin Asaro	Ministry of Agriculture
Wegayehu Yireda	Ministry of Foreign Affairs
Birara Melese	Ministry of Health
Hiwot Darsene	Ministry of Health
Amare Deribew	Nutrition International
Dr Dereje Woltedji	Oromia Agricultural Research Institute
Yilma Muluken	OXFAM
Dr Tadesse Fikre	Post-Harvest Professionals Association
Birhanu Million	Poultry Producers and Processors
Taye Tamene	Save the Children - Ethiopia
Engidu Legesse	SBN
Israel Hailu	SCI/ESCN-SUN
Dr Fekadu Gurmu	SNNP Agricultural Research Institute
Berhanu Hebana	SNNP Bureau of Trade and Industry
DR Mohammed Ibrahim	Somali Bureau of livestock and pastoralist development
Abdikarin Mohamed	Somali Research for Pastoralists Institute
Gerda Verburg	Sun Movement Secretariat
Francisca Gomez	Sun Movement Secretariat
Daniel Valenghi	Swiss Development Cooperation
Belayneh Nekatibeb	Technoserve
Mwangi Watiru	VSO
Stephen Were Omamo	WFP
Getahun Teka	WHO
Sofia Ahmed	WRI

Annex 2: Participating organizations

The government of Ethiopia would like to thank organizations participating in the national dialogues of the Ethiopian Food Systems


MINISTRY OF AGRICULTURE

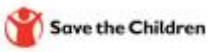
MINISTRY OF HEALTH-ETHIOPIA

Ethiopian ATA
Agricultural Transformation Agency

CGIAR
Agriculture for Nutrition and Health

Food and Agriculture Organization of the United Nations

gain

TECHNOSERVE

Save the Children

IFAD

WFP
World Food Programme

VSO

EUROPEAN UNION

Alliance
Bioversity International
CIAT

CGIAR

BILL & MELINDA GATES foundation

german cooperation

alive&thrive
nourish nurture grow

Alliance 2015

USAID

Scaling Up NUTRITION
Business Network

ILRI
INTERNATIONAL LIVESTOCK RESEARCH INSTITUTE

INTERNATIONAL FOOD POLICY RESEARCH INSTITUTE
IFPRI

UNIDO
UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

Ethiopian Public Health Institute

World Health Organization

THE WORLD BANK

AUDA-NEPAD

EIAR

WORLD RESOURCES INSTITUTE

UN WOMEN





WAGENINGEN
UNIVERSITY & RESEARCH

IQQO

christian aid

SHOA

Ahadu

Oxfam