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MULTISECTORAL APPROACHES FOR SUSTAINABLE FOOD AND NUTRITION SECURITY ACTIONS IN ETHIOPIA

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ABSTRACT

Ethiopia has demonstrated a commitment to tackling the high burden of Food and Nutrition Security (FNS) challenges by developing and implementing various policies, strategies, and programs. Despite the efforts, the current FNS situation is of significant public health concern observed by various nutrition indices. The narrative review aimed to appraise multisectoral policy, strategic and programmatic initiatives aimed at addressing FNS challenges and identify entry points for enhancing coherent and integrated FNS approaches. The review involved broad literature research using Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) guidelines. A total of 1,086 articles and grey literature were identified. Out of this, 47 full-text articles and documents met the selection criteria and were included in this review. Evidence was synthesized in themes to characterize the successes and challenges of key FNS policies, strategies, and programs and identify potential areas of improvement to enhance multisectoral actions and address FNS challenges. Overall, Ethiopia has made considerable progress in enhancing FNS through the implementation of a range of FNS policies, strategies, and programs such as the National Nutrition Program (NNP), Productive Safety Net Program (PSNP), and Agricultural Growth Program (AGP) among others. These efforts have resulted in notable achievements, such as the reduction of the prevalence of undernourishment from 47.0% in 2000 to 24.9% in 2020 and the reduction of stunting among children under five years from 57.4% to 35.2% over the same period. Nonetheless, the pace of progress has been hindered by various contextual and programmatic challenges such as climatic shocks, poverty, high inflation, political instability, limited access to production resources, inadequate coverage of FNS interventions, inadequate financing, and inadequate multisectoral coherence and integration. A comprehensive and integrated multisectoral FNS approach focusing on enhancing commitment, planning, coordination, financing, capacity building, and accountability across sectors and levels is imperative. Strengthening coherence across various sectors, alongside the operationalization of robust multisectoral monitoring and evaluation systems highlighted in the National Food and Nutrition Strategy, constitutes the most suitable entry points for ensuring sustainable advancement in mitigating the prevailing FNS challenges in Ethiopia.

Key words: Food and nutrition security, policy and program, multisectoral approaches, Integration, Ethiopia

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INTRODUCTION

The world is facing a complex food and nutrition crisis with various dimensions, ranging from extreme hunger to obesity. All forms of malnutrition are responsible for significant negative economic, health and social consequences [1,2]. Presently, 148.0 million children under five years are stunted, 45.0 million are wasted and 37.0 million are overweight according to the 2023 State of Food Security and Nutrition in the World report [3]. Furthermore, an estimated one-third of the global population suffer from at least one form of micronutrient deficiencies with iron, vitamin A, vitamin D, zinc, iodine, and folate deficiencies being at the forefront [4]. Concurrently, 677.6 million adults have obesity and NCDs are on the rise at epidemic levels [5]. The projection of those who will be affected by hunger was between 691 to 783 million people in 2023 [3]. Africa particularly Sub-Saharan Africa (SSA) has consistently emerged as the region with the highest number of malnourished people in the world after South Asia [6]. The situation is more challenging in the SSA region because various forms of malnutrition co-exist simultaneously [7]. The State of Food Security and Nutrition in the World Report projected a quarter of the people in SSA to be malnourished [8]. According to World Bank, UNICEF, and WHO modeled estimates, 40%, 25%, and 7% of children under five years are stunted, underweight, and wasted respectively [9]. Furthermore, the region is leading globally in the prevalence of iron, zinc, calcium, and vitamins A, D, B9, and B12 deficiencies, with some areas having prevalences of up to 70% among children and women of reproductive age [10, 11]. While undernutrition persists as a significant concern, overweight and obesity rates are steadily rising, particularly in urban settings [9]. Notably, substantial disparities in the nutrition situation at the national and sub-national levels exist [5].

Ethiopia has presented decreasing trends of food insecurity, undernourishment, stunting, wasting, and anaemia in the past 20 years despite the chronic and acute incidences of severe Food and Nutrition Security (FNS) crises [8, 12]. Although there is progress, the current food insecurity, hunger, and malnutrition rates are still above cut-off values of public health significance (Figure 1) [13]. More than half (56.2%) of the population in Ethiopia is moderately and severely food insecure while a quarter (24.9%) is undernourished [8]. Additionally, the 2022 Global Nutrition Report noted that Ethiopia is progressing towards meeting just one of the five global World Health Assembly (WHA) nutrition targets for Maternal, Infant, and Young Child Nutrition (MIYCN). Specifically, while childhood overweight is on track, Ethiopia is falling short in achieving targets for childhood stunting, underweight, exclusive breastfeeding, and anemia [5]. The country has also shown limited progress toward achieving diet-related non-communicable disease (NCDs) targets

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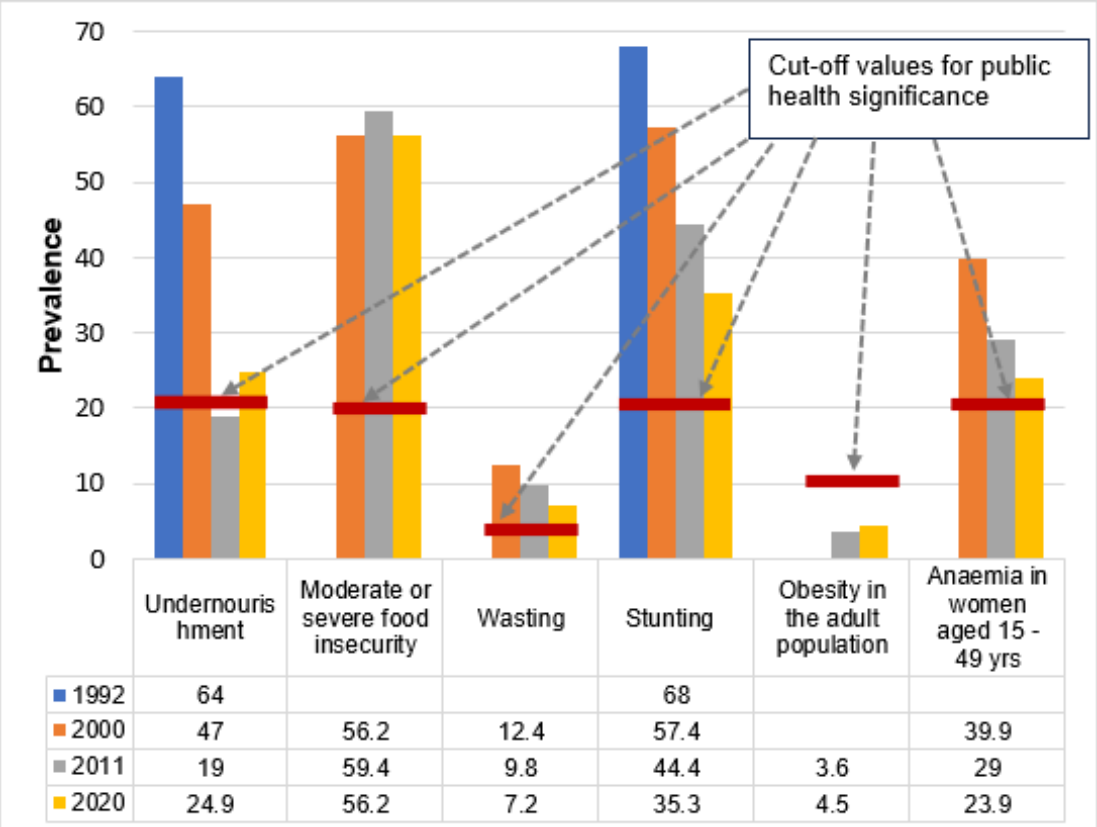
for obesity, diabetes, and raised blood pressure, as well as sodium intake in adult women and men [5].



	Undernourishment	Moderate or severe food insecurity	Wasting	Stunting	Obesity in the adult population	Anaemia in women aged 15 - 49 yrs
1992	64			68		
2000	47	56.2	12.4	57.4		39.9
2011	19	59.4	9.8	44.4	3.6	29
2020	24.9	56.2	7.2	35.3	4.5	23.9

Figure 1: Food and Nutrition Security Situation Snapshot in Ethiopia from 1992 to 2019 [8]

The prevailing food and nutrition insecurity situation have severe economic, health, and social consequences for the population. At the national level, hunger is estimated to cost the country 16.5% of its Gross Domestic Product (GDP) [12, 14]. Moreover, food insecure households are more likely to sell assets, withdraw savings, and request loans [15]. From a health perspective, food and nutrition insecurity has been associated with higher maternal and child morbidity and mortality rates, as well as low birth weight [16], increased risk of cardiovascular diseases [17] and mental and neurobehavioral disorders [18]. Approximately 50,000 maternal and child deaths annually are attributed to poor dietary practices and sub-optimal weight levels [5, 19]. Food insecurity has been linked to poor educational prospects for children in Ethiopia [12]. In addition, FNS challenges in conjunction with poverty, inequalities, and climate change, have been linked to the ongoing conflict in Northern Ethiopia which has affected over five million people [20]. Given these developments in Ethiopia's history, a comprehensive examination

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of initiatives to address FNS to identify opportunities for improvement issues is imperative.

Ethiopia has committed to various global and regional initiatives that hold the promise of alleviating FNS challenges if implemented adequately [21]. Key commitments include the Sustainable Development Goals (SDGs), specifically SDG 2, which aims to end hunger, achieve food security and improved nutrition, and the Comprehensive Africa Agriculture Development Programme (CAADP) which seeks to eliminate hunger and reduce poverty by improving economic growth through agriculture-led development [22]. The global and regional commitments have been incorporated in various policies, strategies, and programs such as the National Nutrition Program (NNP II), Productive Safety Net Program (PSNP), Seqota Declaration initiative, Nutrition Sensitive Agriculture (NSA) Strategy, Agriculture Growth Program (AGP), Health Extension Program (HEP), and Climate Resilient Green Economy (CRGE) strategy among others [23,24]. These policies, strategies, and programs are expected to work in an integrated manner to achieve FNS goals.

The current FNS situation in Ethiopia represents a critical challenge with negative implications for the well-being of its population. Ethiopia presents a unique African case of a country where several government investments have been made at the policy level to address the situation yet public health nutrition challenges of concern remain. This underscores the complexity of the underlying factors and the need for coherent and integrated efforts to achieve FNS goals. Therefore, there is a need to review the status, successes/achievements, and challenges of multisectoral initiatives aimed at improving FNS in Ethiopia with a particular focus on coherence and integration. A critical review of the various policies, strategies, and programs would be crucial not only to identify successes and challenges but also to recommend entry points to improve the situation in Ethiopia and other countries in SSA that face similar FNS challenges. This review aimed to 1) provide an overview of the current FNS situation in Ethiopia, 2) appraise multisectoral policy, strategic and programmatic initiatives aimed at addressing FNS challenges, and 3) identify opportunities for improving the coherence and integration of multisectoral approaches for progress in addressing FNS issues.

METHODS

Narrative review design and search strategy

The study used the Preferred Reporting Items for Systematic Reviews and Meta Analyses (PRISMA) checklist to systematically identify appropriate literature and ensure rigorous synthesis and reporting of FNS information [25]. The literature search included peer-reviewed articles, reviews, and unpublished/grey literature

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such as reports, policy briefs, working papers, bulletins, book chapters, dissertations, and conference proceedings, among others. Peer-reviewed articles were accessed from electronic academic research databases including ScienceDirect, PubMed, SCOPUS, Web of Science, Google Scholar, Proquest, and EBSCO Host. Unpublished/grey literature was drawn from Ethiopia government websites and international organizations websites such as Food and Agriculture Organization (FAO), International Food Policy Research Institute (IFPRI), World Bank Group (WBG), United States Agency for International Development (USAID) and United Nations Children's Fund (UNICEF) among others. A manual search of reference lists of original articles and grey literature was also conducted.

The search terms used in electronic databases were based on key phrases related to food security and nutrition policy and programming in Ethiopia. Keywords and phrases were combined using Boolean operators 'AND' to narrow the search appropriately and 'OR' to expand the search. The following search string was applied to specific databases: *("food and nutrition security programming" OR " food and nutrition security policy and programming " OR " multisectoral food and nutrition security programming" OR "multisectoral nutrition programming" OR "food security policy and programming" OR "nutrition policy" OR "hunger" OR "malnutrition") AND ("Ethiopia").*

Eligibility criteria

The selection process started with the exclusion of duplicates followed by an examination of titles and abstracts obtained. Inclusion criteria entailed articles and grey literature that covered FNS policies, strategies, and programs in Ethiopia. Articles and grey literature written in English and published between 2010 and 2023 were considered. The publication period ensured the findings and conclusions were based on recent and current evidence. Articles and grey literature focusing on individual/specific FNS interventions without reference to the policy and programming context were excluded. For example, project reports on actions to improve breastfeeding in a specific Woreda without mention of policy and strategic issues were excluded. This is because the narrative review sought to appraise FNS policy and programming initiatives at the federal and regional levels. The full text of the remaining articles and grey literature was reviewed to establish eligibility.

Literature Analysis

The evidence was synthesized and classified to highlight the successes and challenges of key FNS policies, strategies, and programs. This was then used to identify potential areas of improvement to enhance multisectoral actions and address FNS challenges in Ethiopia.

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RESULTS AND DISCUSSION

A total of 1,086 articles and documents (798 from *online* databases and 288 from grey literature) were obtained in the electronic and manual literature search. We excluded 821 articles and documents consisting of duplicates (299), not published in English (109), and those with irrelevant information (413). Of the remaining 265 articles and documents, further examination of abstracts, keywords, and year of publication excluded 218 articles and documents based on the year of publication (98) and focus and topics that were out of the scope of the review (120). A total of 47 full-text articles and documents were appraised in this narrative review. Synthesis was conducted under the three aforementioned themes.

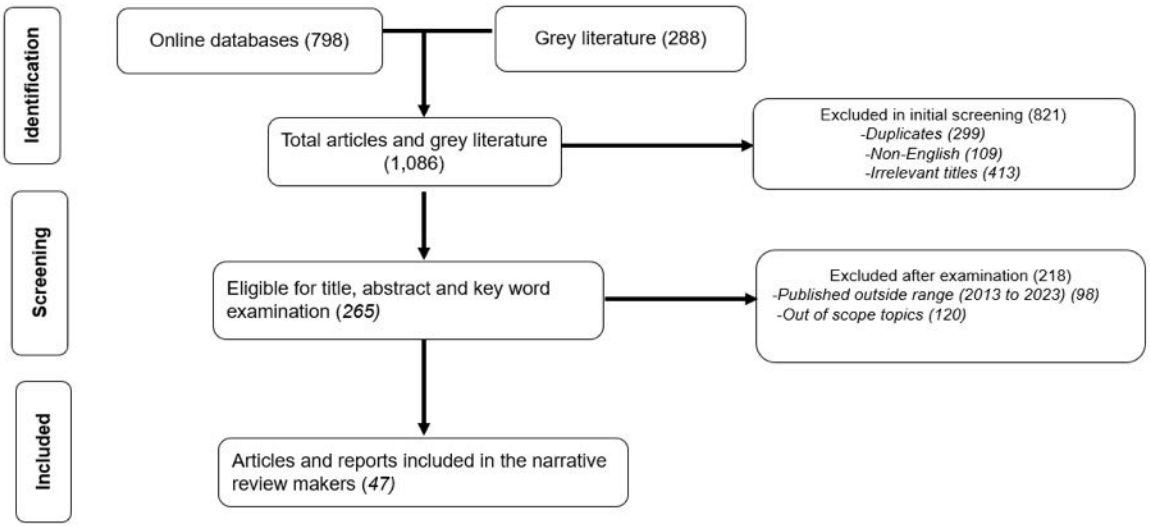

Figure 2: ***Articles and Documents Included and Excluded During the Search Process***

Status across the four pillars of the food and nutrition security conceptual framework

This FNS situation in Ethiopia is reviewed and discussed based on the Committee on World Food Security (CFS) definition of FNS and the conceptual framework of FNS. They focus on the four pillars of FNS which are food availability, food access, food utilization, and stability of three pillars over time [8, 26]

Food availability: Learning from the 1984 famine which claimed approximately 700,000 lives, various policies, strategies, and programs aimed at improving FNS and reducing poverty have been implemented [27]. They include rural development policy, agricultural-led industrialization, sustainable development, and poverty reduction programs, successive growth and transformation plans, and the Productive Safety Net Program (PSNP) among others [28]. These initiatives have contributed significantly to improving food availability and decreasing poverty. For

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instance, there has been an increase in consumable crop yield by 32% in the past decade and the agricultural sector still employs more than 66% of the population [14]. The production of staple crops increased from 5.3 to 30 million metric tonnes between 1993 and 2021 [29]. Similarly, the production of nutritionally rich food groups (animal-source foods, fruits, and vegetables) has increased between 19% and 62% over the past 10 years [30]. The area coverage of vegetables increased from 71,600 hectares (ha) with a total yield of 59,000 tons in 2009 to 112,140 ha with a total production of 1,150,000 tons in 2019 [31]. Although there is progress in improving food availability, the level of production is still inadequate to meet population needs. This has been attributed to limited access to land, inadequate access to extension services and inputs, land degradation, and post-harvest losses among others [14, 32].

Food Access: FNS cannot be achieved without focusing on economic development, income, safety nets, markets, and commodity prices [26]. Ethiopia has witnessed rapid economic growth and development in the last decade with a real Gross Domestic Product (GDP) growth rate of approximately 10.5 % per annum driven by agriculture, industry, and service sectors [33]. However, more than a quarter (27%) of the population is living on less than United States Dollars (US$) 2.15 a day and the country's multidimensional poverty index is high (83.5%) [34,35]. Poverty and unemployment and inadequate access to credit facilities, particularly in urban areas, are responsible for frequent food shortages [36]. For example, a study in South West Ethiopia showed a significant relationship between microcredit utilization and household food security [37]. Moreover, inflation in terms of purchasing power and adjusted prices is currently at 26.8%, which is ranked among the highest in Africa. The year-on-year food inflation increased by 42% in September 2022 as compared to the same period in 2020 [14,38]. The high inflation and tough global economic conditions have led to high food prices making nutritious diets unaffordable for more than 70% of households. For instance, the price of legumes, nuts, fruits and vegetables, and animal-source foods increased by between 23 and 74 % from 2005 to 2018 [3,39,40]. To help in addressing food access challenges, the PSNP has consistently provided in-kind and cash safety nets to over eight million vulnerable food insecure populations which has contributed to improving their access to food staples [19]. Studies continue to highlight poverty, high food prices, unemployment, volatile agricultural markets, and negative effects of COVID-19 restrictions as the key drivers responsible for pushing 58.1% of individuals into severe and moderate food insecurity from 2020 to 2022 [3, 5, 12, 41, 42]

Food Utilization: The utilization of various nutrients in the body is influenced by access to health care, biological and social environment, feeding practices, food

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preparation, and diversity of the diet among other factors [8]. Ethiopia's health system has undergone positive reforms with the main being the decentralization of health services which allows local governments to play a leading role in primary healthcare delivery [16]. This accelerated the implementation of policies, strategies, and programs such as the Health Extension Program (HEP), Health Sector Transformation Plan (HSTP), and Hygiene and Sanitation Strategic Action Plan (HSSAP) among others [43]. This has contributed to improved delivery of healthcare interventions, improvements in water, sanitation, and hygiene, and feeding and care practices by approximately 15% in the past two decades [44,45]. Improved access to these services has also been associated with enhanced utilization of food and improved nutritional status [46]. However, there are still significant disparities in coverage of universal healthcare, nutrition, and water, hygiene, and sanitation (WASH) services with rural areas being more deprived [47]. The overall Universal Health Care (UHC) service coverage is approximately 34.3%, ranging from 52.2% in Addis Ababa to 10% in the Afar region [48]. Low dietary diversity and nutritional inadequacy are widely prevalent in Ethiopia. The 2019 DHS showed that 11% of children aged 6 to 23 children fed according to the minimum acceptable diet standards, representing a marginal increase from 7% in 2016, potentially indicating a continued low quality of diets among the population [49].

Stability: Several factors such as climatic shocks, political instability, and economic challenges negatively affect the stability of the food availability, access, and utilization pillars over time [8]. The 2022 drought was recognized as the worst in 40 years, it resulted in over 20 million people being food insecure particularly in the Southern and Eastern parts of Ethiopia [50]. Besides, the protracted conflict in Tigray and Amhara regions has caused considerable loss of livelihoods and lives and disruption in the delivery of social services affecting more than five million people in 2021 [51]. Drought and conflict reversed the gains made by nationwide programs such as NNP II, PSNP, and AGP. Finally, economic issues highlighted under the food access pillar such as high inflation, price fluctuations, and high unemployment are emerging as important in determining household FNS [15]. While Ethiopia demonstrates progress in improving the four pillars of FNS, various challenges persist. Therefore, it is beneficial to assess key policies, programs, and strategies aimed at improving FNS. Evaluating these specific initiatives aids in recognizing both successes and challenges, offering insights into areas that require attention. This approach enables the identification of entry points that will help in evidence-based policy, strategy, and program formulation to enhance Ethiopia's progress towards attaining FNS goals.

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Overview of key initiatives aimed at improving FNS

Ethiopia has demonstrated a commitment to addressing the high burden of food and nutrition insecurity through adopting and implementing policies, strategies, and programs across various ministries (Table 1). The main policies, strategies, and programs include: (i) the National Nutrition Program (NNP II) which aims to improve nutrition status among women, adolescents, and children under five, improve prevention and management of communicable and non-communicable diseases and strengthen implementation of nutrition-sensitive interventions, and improve multisectoral nutrition coordination [24]; (ii) the Productive Safety Net Program (PSNP) endeavors to shield households from hunger, protect household assets during emergencies, and improve household productive capacity [52]; (iii) the National Nutrition Sensitive Agriculture (NNSA) Strategy aims to improve the nutritional status of children and women by enhancing the quantity and quality of food available, accessible, and affordable, while promoting the utilization and improving resilience and improving gender equality and women empowerment [53]; (iv) the Agricultural Growth Program (AGP) seeks to enhance agricultural smallholder farmer production and market access for major crops and animal products [54,55]; (v) the Health Extension Program (HEP) aims to achieve UHC through the provision of equitable health care to communities [12,56]; and (vi) the Climate Resilient Green Economy (CRGE) Strategy which focuses on enhancing climate change adaptation through the incorporation of Climate Smart Agriculture (CSA) and sustainable land management practices to improve crop and livestock production [57] (Table 1).

Successes of the policies, strategies, and programs

FNS outcome indicators

The concerted efforts of various policies, strategies, and programs in Ethiopia have yielded notable successes in improving FNS indicators. The implementation of the NNP II and HEP has observed a reduction in stunting among children under five years from 44.3% in 2005 to 35.3% in 2020 [45]. This is attributed to increased coverage of nutrition-specific interventions maternal, infant young child feeding practices and care, vitamin A supplementation, and treatment of severe acute malnutrition and sanitation among others by 15% [56,58,59]. Similarly, the Productive Safety Net Program (PSNP) which began in 2004 has not only improved calorie consumption and meal frequency but also enhanced resilience to shocks among beneficiary households, thus contributing to poverty reduction and increased access to health and education services in over 3.5 out of the 8 million beneficiaries [30,60,61]. The NNSA Strategy has been associated with enhanced production and consumption of nutrient-rich foods, particularly among rural households. For instance, the production of fruits, vegetables and milk increased by 13%, 10% and 115% respectively between 2016 and 2021 according to

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preliminary findings of NSA strategy evaluation [62,63]. In addition, CRGE strategy contributed to the increase in cumulative production and supply of cereals, fruits and vegetables from 2010 to 2017. Cereals increased from 148.7 to 159.8 while fruits and vegetables increased from 21.9 to 25.9 Kg/person/year [64,65]. Moreover, the Agricultural Growth Program (AGP) has significantly increased agricultural productivity and food security potential by 39% and increased consumption of maize, potatoes, and sorghum in over 50% of target households particularly in target households [62].

Coherence and integration related successes

These successes highlight the significance of integrated approaches in achieving progress toward FNS. The incorporation of the Seqota Declaration (a high-level commitment to end stunting in children by 2030) in NNP II and its linkage to the Food and Nutrition Policy has strengthened political commitment and emphasized the importance of multisectoral actions in addressing FNS challenges [66]. PSNP has established vital links with programs like the Livelihood Development Program and Community-Based Health Insurance, enhancing resilience during shocks [30]. Moreover, AGP has witnessed increased funding commitments and doubled nutrition-sensitive budgets, signifying a stronger financial commitment to FNS initiatives [67]. The HEP has leveraged its extensive network to integrate large-scale programs such as the Community Based Nutrition (CBN) and Comprehensive and Integrated Nutrition Services (CINUS) which rely on the HEP platform, thereby expanding coverage, especially in rural areas [16, 67]. Additionally, the NSA Strategy has contributed to improved women's empowerment, particularly among small-holder farmers, who often serve as primary caregivers. This has been observed through job creation, promoting women's engagement in Income Generating Activities (IGAs), and improving women's access to labour and energy-saving technologies among others [68].

Challenges faced by policies, strategies, and programs

Programmatic challenges

Recurrent program implementation challenges hinder the effectiveness of FNS initiatives. Insufficient financing has impeded the full implementation of planned actions in NNP II. Only 50% of the required funding has been committed by the government and partners, thereby constraining the achievement of targets such as those set out in the Seqota Declaration investment phase [54]. The Health Extension Program (HEP) like other programs is facing low coverage of (<40%) in remote and underserved areas in the country [16]. Similarly, PSNP has shown slow progress in graduating beneficiaries and the program has not significantly improved food security, and stunting rates in participating households. The median Woreda graduated only 25% of PSNP beneficiaries by mid-2015, falling short of

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the 50-83% target [19, 61, 69, 70]. Moreover, the both AGP and CRGE Strategy are struggling with low adoption of practices by smallholder farmers due to restricted landholding, limited access to financing, and slow return on investments in Climate-Smart Agriculture (CSA) practices [55, 71]. Non-farm and off-farm livelihood diversification strategies which play a key role in guaranteeing food security and dietary diversity in the majority of rural households are yet to be fully explored by AGP [72, 73].

Coherence, integration, and collaboration challenges – These challenges persist across the initiatives. The NNP II is facing challenges of inadequate multisectoral collaboration and ownership at regional, district, and municipal levels, undermining coordinated efforts to address FNS challenges [21]. The HEP faces challenges of limited coordination with other FNS programs hindering its reach and impact [16, 67]. Likewise, the inadequate coordination between PSNP and other social protection programs hampers a comprehensive approach to alleviating poverty and food insecurity [70]. This challenge also affects the NSA Strategy which has observed insufficient coordination and integration with other sectors such as education, health, women and social affairs, and social services [62, 67, 74]

Monitoring and evaluation (M&E) challenges

Successful monitoring and evaluation of FNS progress and impact in Ethiopia entails effective systems both at the individual program level and within the broader context of various programs. At the individual program level, inadequate technical capacity, limited financial resources, and low data quality impede the capacity for comprehensive FNS monitoring and evaluation [75]. For example, both NNP II and NSA lack sufficient capacity and resources to monitor progress beyond their traditional domains, which are health and agriculture, respectively limiting their ability to assess progress comprehensively [41, 58, 75]. At the multisectoral level, FNS initiatives such as NNP II, PNSP, and CRGE lack unified M&E systems with the capacity to assess processes and impact across sectors and FNS pillars [59]. Other M&E challenges from a multisectoral perspective include lack of consensus on a set of FNS indicators to be tracked across sectors and the presence of various M&E frameworks which has led to fragmentation in M&E [58, 59].

CONCLUSION, AND RECOMMENDATIONS FOR DEVELOPMENT

Ethiopia faces multifaceted challenges in achieving FNS including climatic shocks, poverty, limited access to resources, and inadequate coherence across sectors, among others. Despite these challenges, the country has made considerable progress in addressing FNS through the implementation of various policies, strategies, and programs across ministries. These efforts have resulted in notable

achievements, such as the reduction of the prevalence of undernourishment from 47.0% in 2000 to 24.9% in 2020 and the reduction of stunting among children under five years from 57.4% to 35.2% over the same period [3, 56, 58]. Other gains include improved MIYCN practices, increased coverage of safety net programs, health interventions, and essential nutrition actions, improved calorie consumption and meal frequency, increased resilience to shocks, and increased funding commitment for FNS actions among others [32, 58, 63, 67]. However, programmatic and coherence challenges hinder the full potential of these initiatives. Some challenges include inadequate financing, low coverage in rural areas, inadequate multisectoral coherence, and integration, and lack of systems and tools to monitor progress and guide the process of prioritization within and across sectors. For instance, inadequate financing has limited the implementation of planned actions under NNP II, with only 50% of the required investment committed by the government and partners [54]. The HEP, PSNP, and CRGE are facing challenges with low coverage and adoption of optimal practices [19, 69, 70, 71]. To address these challenges effectively, a comprehensive and integrated multisectoral approach is essential [35]. This approach requires robust coordination and integration among various sectors, including health, agriculture, education, and social protection. Moreover, strengthening programmatic and M&E related linkages between programs, such as the HEP and AGP, is crucial for enhancing the effectiveness and sustainability of FNS initiatives. Prioritizing the development and implementation of a robust multisectoral M&E framework aligned with key FNS programs is essential. This framework should enable evidence-based decision-making, track progress, identify successes and barriers, and ensure accountability. In addition to strengthening multisectoral collaboration and coordination, metrics to assess overarching multisectoral FNS themes, such as political commitment and financing, should be developed. This can be achieved by facilitating multisectoral governance which entails joint commitment, planning, coordination, financing, capacity building, and accountability at the federal and sub-national levels. These strategic imperatives present effective entry points for fostering integrated and evidence-driven programming, increased commitment across various sectors, and sustainable reduction in food insecurity and malnutrition in Ethiopia.

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CONFLICT OF INTEREST STATEMENT

None of the authors declared a conflict of interest.

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AUTHOR CONTRIBUTIONS

KJ and WNG conceived the idea and designed the study. KJ reviewed and analyzed the literature. KJ, WNG, OW, and SA drafted and edited the manuscript. WNG and OW offered supervisory and overall editorial oversight.

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Table 1: Overview of Food and Nutrition Security Policies, Strategies and Programs in Ethiopia

Policy, strategy, or program	Aim	Target FNS pillar	Successes	Challenges
National Nutrition Program (NNP II) (2016 - 2020)	-Improve nutrition status of women, adolescents, and children under five, prevent and manage communicable and non-communicable diseases, strengthen implementation of nutrition-sensitive interventions, and improve multisectoral nutrition coordination.	-Utilization – Enhance access to nutrition services. Sensitize the population to access other services e.g., health, education, social protection, water, hygiene, and sanitation (WASH), and agriculture for sustained improvement in nutrition outcomes	- Increased coverage of nutrition-specific interventions, such as vitamin A supplementation and treatment of severe acute malnutrition [66]. -Reduction in stunting among children under five years of age. For instance, the prevalence of stunting decreased from 44.3% in 2005 to 38.4% in 2016 and is attributed to this program [41, 56,58]. -Incorporation of the Seqota Declaration (a high-level commitment to end stunting in children by 2030), in NNP II and linkages to the recently endorsed Food and Nutrition Policy (2018). This has helped to increase political commitment and highlighted the need for multisectoral actions to tackle FNS challenges [66].	-Inadequate financing to adequately implement planned actions. Only 50% of the cost to implement the Seqota Declaration investment phase (a key component of NNP II) was committed by the government and partners [54]. -Multisectoral collaboration, coordination, and ownership at the regional, district (Woreda), and municipal (Kebele) levels is weak [21]. -Inadequate information systems and resources to collect nutrition-sensitive data and track the progress of multisectoral actions across sectors [41,58].
Productive Safety Net Program (PSNP) (2004 - present)	-Shield households from hunger, protecting household assets during emergencies and boosting household productive capacity	-Availability - enhance the productive capacity and income generation in poor households -Access - increase household income	Increased total annual income by 39% and calorie intake by 8.4% for PSNP participant households compared to non-participant households in rural Ethiopia. The increase in income has been linked to reduced poverty and increased access to health and	-Lack of improvement in diversity, food security and stunting in participating homes [69]. -Slow pace of graduation of beneficiaries from PSNP due to the limited ability of PSNP to meet household needs, frequent shocks, and other challenges.

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	through providing cash transfers, food distribution, safety nets, income-generating activities, and the creation of community assets such as farmer demonstration plots.	-Utilization - promote the consumption of diverse food -Stability - facilitate investment in human capital and other productive assets	education services among beneficiary households [61]. -Establishment of viable links with programs that seek to improve long-term resilience such as the Livelihood Development Program (LDP) and Community-Based Health Insurance (CBHI). A World Bank evaluation found that LDP participation led to a 22% increase in household income for those who had graduated from PSNP [60,76]	For instance, the government and donors planned to graduate 50-83% of beneficiaries by mid-2015 but the surveys showed that median woreda graduated 25% of PSNP [19,61,70] -Inadequate coordination between PSNP and other social protection programs leading to a lack of comprehensive approach to addressing poverty and food insecurity [70]
National Nutrition Sensitive Agriculture (NNSA) Strategy (2017 - 2021)	-Improve the nutritional status of children and women by increasing the quantity and quality of food available, accessible, and affordable, and promoting utilization of diverse, nutritious, and safe foods for all Ethiopians at all times.	-Availability - production of diverse food -Access - enhance agricultural income -Utilization - sensitize smallholder farmers on the importance of consuming a diverse diet -Stability - enhance agricultural productivity and income to be used during times of shocks	-Enhanced women's empowerment particularly small-holder farmers. Evaluations showed that NSA contributed to increased job creation, women's engagement in IGAs, and improved women's access to labour and energy-saving technologies. This led to increased income and enhanced decision-making in production and control at the household level [63,68,77] -Current improvements in food security and nutrition could have been associated with this strategy [62]. Enhanced production and consumption of nutrient-rich foods such as fruits, vegetables, and orange-	-Inadequate coordination and collaborative action with other sectors such as education, women and social affairs, and social services especially at the sub-national level if the strategy is to be successful [62,67]. -Inadequate engagement and participation of smallholder farmers, who are the primary beneficiaries of the strategy [62] -Insufficient integration between NSA strategy and other nutrition-specific and nutrition-sensitive interventions leading to a lack of a comprehensive approach to addressing malnutrition [74] -Inadequate monitoring and evaluation systems across various sectors, [75].

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			fleshed sweet potatoes especially among households in rural Ethiopia [67]	
Agricultural Growth Program (AGP) (2011–2020)	-Enhance agricultural smallholder farmer production and market access for major crop and animal products throughout Ethiopia.	-Availability - production of diverse food -Access - commercialization of smallholder farmers for increased income -Stability- enhance agricultural productivity and income to act as a safety net during shocks	-Increased agricultural productivity and food security potential by up to 39% in participating households as compared to 32% in AGP non-AGP households [78] -Improved consumption especially of maize, potatoes, and sorghum in over 50% of target households [62] -Increased funding commitment and doubling of nutrition-sensitive budgets from 2013 to 2016 [67].	-Smallholder farmers' engagement in agricultural sector commercialization remains low due to challenges such as restricted land holding and limited access to financing [72]. -Non-farm and off-farm livelihood diversification strategies which play a key role in guaranteeing food security and dietary diversity in the majority of rural households are yet to be fully explored by AGP [73].
Health Extension Program (HEP) (2013–present)	-Achieve universal health coverage (UHC) through the provision of equitable health care to the community within a context of limited resources.	-Utilization - promote the consumption of diverse food and access to nutrition-specific, water, hygiene, and sanitation (WASH), and health services	-Contribution to improved maternal, infant young child feeding practices and care by 15% and reduced stunting by 10.1% sanitation over the last 20 years [44,45]. -The extensive network of health workers employed under HEP has enabled the integration of large-scale programs such as the Community Based Nutrition (CBN) program and Comprehensive and Integrated Nutrition Services (CINUS) which rely on the extensive HEP platform to increase coverage, particularly in rural areas [16,67].	-Limited linkage and coordination between HEP and other food security and nutrition programs such as the National Agricultural Extension Intervention Program (NAEIP), PSNP, and education sector interventions [67]. - Low coverage (<40%) in remote and underserved areas in Ethiopia [16].

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Climate Resilient Green Economy (CRGE) Strategy (2011)	- Enhance climate change adaptation through the incorporation of Climate Smart Agriculture (CSA) and sustainable land management for improving crop and livestock production, while reducing greenhouse gas emissions	-Availability - promote the production of diverse, nutrient-dense, and safe food. -Access - diversification and commercialization of smallholder farmers -Stability - adoption of climate-smart strategies that aim at sustained food production and access during shocks	-Increase in cumulative production and supply of cereals, fruits and vegetables from 2010 to 2017. Cereals increased from 148.7 to 159.8 while fruits and vegetables increased from 21.9 to 25.9 Kg/person/year [64,65]	-Limited adoption of smallholder practices by smallholder farmers. -Adoption of CSA practices such as the use of residue cover, conservation tillage, manure, and compost are at 18%, 14% and 3% respectively [71]. -Slow return on investments. Many CSA practices, such as agroforestry take more than five years to provide tangible benefits to farmers [55]

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REFERENCES

1. **Victora CG, Christian P, Vidaletti LP, Gatica-Domínguez G, Menon P and RE Black** Revisiting maternal and child undernutrition in low-income and middle-income countries: variable progress towards an unfinished agenda. *The Lancet*. 2021; **397(10282)**.

2. **Penman-Aguilar A, Talih M, Huang D, Moonesinghe R, Bouye K and G Beckles** Measurement of Health Disparities, Health Inequities, and Social Determinants of Health to Support the Advancement of Health Equity. *Journal of Public Health Management and Practice*. 2016; **22(Supplement 1)**.

3. **FAO, IFAD, UNICEF, WFP and WHO.** The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum. 2023; Rome, FAO. https://doi.org/10.4060/cc3017

4. **Han X, Ding S, Lu J and Y Li** Global, regional, and national burdens of common micronutrient deficiencies from 1990 to 2019: A secondary trend analysis based on the Global Burden of Disease 2019 study. *EClinicalMedicine*. 2022; **44:** 101299. https://doi:10.1016/J.ECLINM.2022.101299

5. **Development Initiatives** 2022 Global Nutrition Report - Global Nutrition Report. 2022. Available from: https://globalnutritionreport.org/reports/2022-global-nutrition-report/ *Accessed March 2023.*

6. **Osgood-Zimmerman A, Millear AI, Stubbs RW, Shields C, Pickering BV, Earl L, Graetz N, Kinyoki DK, Ray SE, Bhatt S and AJ Browne** Mapping child growth failure in Africa between 2000 and 2015. *Nature*. 2018; **555(7694)**: 41-47. https://doi:10.1038/nature25760

7. **Christian AK and FAA Dake** Profiling household double and triple burden of malnutrition in sub-Saharan Africa: prevalence and influencing household factors. *Public Health Nutr*. 2022; **25(6)**.

8. **FAO, IFAD, UNICEF, WFP and WHO.** The State of Food Security and Nutrition in the World 2023. Urbanization, agrifood systems transformation and healthy diets across the rural–urban continuum. 2022. Rome, FAO.

9. **UNICEF, WHO and World Bank.** Levels and trends in child malnutrition. Joint child malnutrition estimates. 2023 New York, NY: United Nations International Children's Fund.

10. **Amegbor PM, Borges SS, Pysklywec A and CE Sabel** Effect of individual, household and regional socioeconomic factors and PM2.5 on anaemia: A cross-sectional study of sub-Saharan African countries. *Spat Spatiotemporal Epidemiol*. 2022; **40**: 100472.

11. **Beal T** Achieving dietary micronutrient adequacy in a finite world. *One Earth*. 2021;4(9): 1197-1200. https://doi:10.1016/J.ONEEAR.2021.08.019

12. **Mohamed AA** Food security situation in Ethiopia: a review study. International journal of health economics and policy. 2017; **2(3):** 86-96.

13. **De Onis M, Borghi E, Arimond M, Webb P, Croft T, Saha K, De-Regil LM, Thuita F, Heidkamp R, Krasevec J and C Hayashi** Prevalence thresholds for wasting, overweight and stunting in children under 5 years. *Public Health Nutr*. 2019; **22**(**1**): 175–9.

14. **World Bank**. Ethiopia Country Profile. Published in 2023. https://data.worldbank.org/country/ethiopia *Accessed February 16, 2024.*

15. **Tefera SA, Tadesse TB and GW Asmare** Prevalence of household food insecurity in Ethiopia during the COVID-19 pandemic: Evidence from panel data. *Sci Afr*. 2022; **16**.

16. **Rieger MN, Wagner A, Mebratie G, Alemu T and A Bedi** The impact of the Ethiopian health extension program and health development army on maternal mortality: A synthetic control approach. *Soc Sci Med*. 2019; **232**: 374–81.

17. **Mosadeghrad AM, Gebru AA, Sari AA and TB Tafesse** Impact of food insecurity and malnutrition on the burden of Non-communicable diseases and death in Ethiopia: A situational analysis. *Hum Antibodies*. 2019; **27**(**4**).

18. **Birhanu TT and AW Tadesse** Food Insecurity and Mental Distress among Mothers in Rural Tigray and SNNP Regions, Ethiopia. *Psychiatry J*. 2019; **2019**.

19. **Bahru BA, Jebena MG, Birner R and M Zeller** Impact of Ethiopia's productive safety net program on household food security and child nutrition: A marginal structural modeling approach. *SSM Popul Health*. 2020; **12**: 100660. https://doi.org/10.1016/j.ssmph

20. **Yigzaw GS and EB Abitew** Causes and impacts of internal displacement in Ethiopia. African Journal of Social Work. 2019; **9(2)**: 32-41.

21. **Ursula TG, Anne B, Aregash S and G Meron.** Review of the Ethiopian Nutrition Policy Landscape 2010 –2020.Agriculture for improved nutrition: seizing the momentum. CAB International; 2020, supplement. 165–77.

22. **Diallo M and F Wouterse** Agricultural development promises more growth and less poverty in Africa: Modelling the potential impact of implementing the Comprehensive Africa Agriculture Development Programme in six countries. *Development Policy Review*. 2023; **41(3)**: e12669

23. **Federal Democratic Republic of Ethiopia (FDRE).** National Food and Nutrition Strategy. Addis Ababa. FDRE. 2021.

24. **Federal Ministry of Health (FMOH).** National Nutrition Programme II. Addis Ababa. FMOH. 2016.

25. **PRISMA.** Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA). 2023. 2022. Available from: http://www.prisma-statement.org/ *Accessed October 2023.*

26. **FAO.** Global Strategic Framework for Food Security and Nutrition (GSF) Committee on World Food Security (CFS) Global Strategic Framework for Food Security and Nutrition (GSF) 2017 Edition. Rome. Italy.

27. **Dercon S and C Porter** Live aid revisited: Long-term impacts of the 1984 Ethiopian famine on children. *J Eur Econ Assoc*. 2014; **12**(**4**).

28. **FDRE.** Federal Democratic Republic of Ethiopia Growth and Transformation Plan II (2015/16-2019/20). *National Planning Commission*. 2016; **I**(**III**).

29. **FAO.** Food availability and access in Ethiopia. 2023. Rome. Italy.

30. **IFPRI.** Food systems for healthier diets in Ethiopia: Toward a research agenda. 2018. https://cgspace.cgiar.org/server/api/core/bitstreams/55372053-48a7-4c12-b7d3-ac3957aedccd/content *Accessed February 16, 2024.*

31. **Hengsdijk H, Sertse Y, Tesfaye S and E Likoko** Scoping study on fruits and vegetables: results from Ethiopia. Wageningen Economic Research; 2021. https://library.wur.nl/WebQuery/wurpubs/fulltext/553043 *Accessed July 2023.*

32. **Gebremedhin S, Baye K, Bekele T, Tharaney M, Asrat Y, Abebe Y and N Reta** Predictors of dietary diversity in children ages 6 to 23 months in largely food-insecure area of South Wollo, Ethiopia. *Nutrition*. 2017; **33**: 163–8.

33. **Eshetie T** Ethiopia's Manufacturing Industry Opportunities, Challenges and Way Forward: A Sectoral Overview. *Novel Techniques in Nutrition & Food Science*. 2018. **2(2)**.

34. **Bersisa M and A Heshmati** A Distributional Analysis of Uni-and Multidimensional Poverty and Inequalities in Ethiopia. *Soc Indic Res*. 2021; **155**(**3**).

35. **Neglo K, Gebrekidan T and K Lyu** The role of agriculture and non-farm economy in addressing food insecurity in Ethiopia: A review. *Sustainability (Switzerland)*. 2021; **13**(**7**).

36. **Mekuria W** The link between agricultural production and population dynamics in Ethiopia: a review. *Advances in Plants and Agriculture Research*. 2018; **8**(**4**).

37. **Berhanu A, Amare A, Gurmessa B, Bekele Y, and T Chalchisa** Does microcredit use helps farmers win battle against food insecurity: evidence from Jimma zone of Southwest Ethiopia. *Agric Food Secur*. 2021.**10(1)**.

38. **Sisay E, Atilaw W and T Adisu** Impact of economic sectors on inflation rate: Evidence from Ethiopia. *Cogent Economics and Finance*. 2022.**10(1)**.

39. **EPHI and WFP.** Fill the Nutrient Gap, Ethiopia. https://www.wfp.org/publications/fill-nutrient-gap-ethiopia-summary-report-english *Accessed February 16, 2024.*

40. **Ameye H, Bachewe FN and B Minten** The rising price of nutritious foods: The case of Ethiopia. *Glob Food Sec*. 2021.**31**. https://doi.org/10.1016/j.gfs

41. **Yonas A and H Shafi** Nutrition Information Systems in Ethiopia: Strengths and Challenges. *Curr Dev Nutr*. 2021; **5**(**Supplement 2**): 100.

42. **Asrat D and A Adugnaw** Status of food insecurity in dryland areas of Ethiopia: A review. *Cogent Food Agric*. 2020; **6**(**1**).

43. **FMOH.** National health promotion strategic plan. Addis Ababa. FMOH. 2021.

44. **Tasic H, Akseer N, Gebreyesus SH, Ataullahjan A, Brar S, Confreda E, Conway K Endris BS, Islam M, Keats E and A Mohammedsanni** Drivers of stunting reduction in Ethiopia: a country case study. *Am J Clin Nutr*. 2020; **112**: S875–93.

45. **Assefa Y, Gelaw YA, Hill PS, Taye BW and W Van Damme** Community health extension program of Ethiopia, 2003-2018: Successes and challenges toward universal coverage for primary healthcare services. *Global Health*. 2019; **15(1)**.

46. **Gebre A, Reddy PS, Mulugeta A, Sedik Y and M Kahssay** Prevalence of Malnutrition and Associated Factors among Under-Five Children in Pastoral Communities of Afar Regional State, Northeast Ethiopia: A Community-Based Cross-Sectional Study. *J Nutr Metab*. **2019**: **1–13**.

47. **Sisha TA** Household level food insecurity assessment: Evidence from panel data, Ethiopia. *Sci Afr*. 2020.7.

48. **Bayked EM, Toleha HN, Kebede SZ, Workneh BD and MH Kahissay** The impact of community-based health insurance on universal health coverage in Ethiopia: a systematic review and meta-analysis. *Glob Health Action*. 2023; **16(1)**.

49. **EPHI and ICF**. Ethiopia Mini Demographic and Health Survey 2019: Key Indicators.; 2019. ICF and Macro. Maryland.

50. **Devi S** Climate change driving east Africa towards famine. *The Lancet*. 2022; **400**(**10347**): 150–1.

51. **Gesesew H, Berhane K, Siraj ES, Siraj D, Gebregziabher M, Gebre YG, Gebreslassie SA, Amdeslassie F, Tesema AG, Siraj A and Aregawi.** The impact of war on the health system of the Tigray region in Ethiopia: An assessment. *BMJ Glob Health*. 2021; **6**(**11**).

52. **FMOA**. Productive Safety Net Programme Phase IV Programme Implementation Manual Ministry of Agriculture. 2014. Addis Ababa. FMOA.

53. **FDRE**. National Nutrition Sensitive Agriculture Strategy. 2017. Addis Ababa. FDRE.

54. **Fantay K, Mekonnen Haileselassie W, Haftom Temesgen A, Oumer Seid A, Afework and B Mulugeta** Determinants of stunting among under-five children in Ethiopia: a multilevel mixed-effects analysis of 2016 Ethiopian demographic and health survey data. *BMC Pediatr*. 2019;**19(1)**.

55. **Zerssa G, Feyssa D, Kim DG and B Eichler-Löbermann** Challenges of Smallholder Farming in Ethiopia and Opportunities by Adopting Climate-Smart Agriculture. *Agriculture*. 2021; **11**(**3**): 192.

56. **FMOH**. The National Nutrition Program (2016-202) Progress Analysis: Evidence for the Upcoming Food and Nutrition Strategy Development. 2020. Addis Ababa. FMOH.

57. **Woolf D, Solomon D and Lehmann** Land restoration in food security programmes: synergies with climate change mitigation. *Climate Policy*. 2018;**18(10)**:1260-1270.

Ayele S, Zegeye EA and N Nisbett Multi-Sectoral Nutrition Policy and Programme Design, Coordination and Implementation in Ethiopia CORE View Metadata, Citation and Similar Papers at Core.Ac.Uk Provided by IDS OpenDocs. 2020. www.ids.ac.uk/publications *Accessed October 2023.*

58. **Asrat Y and H Shafi** Nutrition Information Systems in Ethiopia: Strengths and Challenges. *Curr Dev Nutr*. 2021; **5**.

59. **Tadesse G** Agriculture and social protection: The experience of Ethiopia's productive safety net program. Boosting growth to end hunger by 2025. 2017–2018 ReSAKSS annual trends and outlook report. 2018. **2017-18**.

60. **Berhane G** Can Social Protection Work in Africa? The Impact of Ethiopia's Productive Safety Net Programme. *Econ Dev Cult Change*. 2014;63(1): 1-26. https://doi.org/10.1086/677753

61. **Wordofa MG and M Sassi** Impact of agricultural interventions on food and nutrition security in Ethiopia: Uncovering pathways linking agriculture to improved nutrition. *Cogent Food Agric*. 2020;**6(1):**1724386. https://doi.org/10.1080/23311932.2020.1724386

62. **FMOA**. Evaluation of Ethiopian Nutrition-Sensitive Agriculture Strategy Report. 2022.

63. **Tadesse M, Simane B, Abera W, Tamene L, Ambaw G, Recha JW, Mekonnen K, Demeke G, Nigussie A and D Solomon** The effect of climate-smart agriculture on soil fertility, crop yield, and soil carbon in southern ethiopia. *Sustainability (Switzerland)*. 2021;**13(8).** https://doi.org/10.3390/su13084515

64. **Gebremedhin S** Trends in the national food supply of absorbable zinc in Ethiopia: 1990-2017. *Public Health Nutr*. Published online 2020. https://doi.org/10.1017/S1368980020003456

65. **Bach A, Gregor E, Sridhar S, Fekadu H and W Fawzi** Multisectoral Integration of Nutrition, Health, and Agriculture: Implementation Lessons From Ethiopia. *Food Nutr Bull*. 2020; **41(2):** 275-292. https://doi.org/10.1177/0379572119895097

66. **Bossuyt A** Moving Towards Nutrition-Sensitive Agriculture Strategies and Programming in Ethiopia. 2019.

67. **Tsige M, Synnevåg G and JB Aune.** Gendered constraints for adopting climate-smart agriculture amongst smallholder Ethiopian women farmers. *Sci Afr*. 2020; **7**: e00250. https://doi.org/10.1016/j.sciaf.2019.e00250

68. **Welteji D, Mohammed K and K Hussein** The contribution of Productive Safety Net Program for food security of the rural households in the case of Bale Zone, Southeast Ethiopia. *Agric Food Secur*. 2017; **6(1).** https://doi.org/10.1186/s40066-017-0126-4

69. **Getaw T** Agriculture and Social Protection: The Experience of Ethiopia's Productive Safety Net Program.; 2018.

70. **Feyisa TG** Is There A Synergy in Adoption of Climate Smart Agricultural Practices? Evidences from Ethiopia. *Turkish Journal of Agriculture - Food Science and Technology*. 2022; **10**(**8**).

71. **Neme AA and TL Tefera** A review on commercialization of smallholder agricultural producers and its impacts on household livelihoods evidence from Ethiopia context. *Journal of Agribusiness and Rural Development*. 2021; **59**(**1**).

72. **Kassegn A and E Endris** Review on livelihood diversification and food security situations in Ethiopia. *Cogent Food Agric*. 2021; **7(1).** https://doi.org/10.1080/23311932.2021.1882135

73. **Sharma IK, Di Prima S, Essink D and JEW Broerse** Nutrition-Sensitive Agriculture: A Systematic Review of Impact Pathways to Nutrition Outcomes. *Advances in Nutrition*. 2021; **12(1).** https://doi.org/10.1093/advances/nmaa103

74. **Bezabih AM, Kahsay ZH, Kahsay A, Bekele A, Seid O, Asfaw S, Gebrearegay F, Tadesse K, Bazzano AN, Jogo W and N Covic** Challenges to joint planning, monitoring, and evaluation for nutrition-sensitive agriculture in Ethiopia: an exploratory qualitative study. *Agric Food Secur*. 2022; **11(1).** http://doi.org/10.1186/s40066-022-00400-6

75. **IFPRI**. Agriculture and Social Protection: The Experience of Ethiopia's Productive Safety Net Program. 2018. Washington DC. IFPRI. https://doi.org/10.2499/9780896295988_03

76. **Mechlowitz K, Singh N, Li X, Chen D, Yang Y, Rabil A, Cheraso AJ, Ahmed IA, Amin JK, Gebreyes WA and JY Hassen.** Women's empowerment and child nutrition in a context of shifting livelihoods in Eastern Oromia, Ethiopia. Frontiers in Nutrition. 2023; **10**: 1048532.

77. **Teklewold H** How effective is Ethiopia's agricultural growth program at improving the total factor productivity of smallholder farmers? *Food Secur*. 2021;**13(4).** https://doi.org/10.1007/s12571-021-01175-7