

NUTRITION CORE COMPETENCIES FOR MID-LEVEL ANIMAL AND PLANT SCIENCE DISCIPLINES AT AGRICULTURE TECHNICAL VOCATIONAL EDUCATION AND TRAINING COLLEGES IN ETHIOPIA

December 2012

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COLLEGES IN ETHIOPIA**

**Empowering New Generations to Improve Nutrition and
Economic Opportunities (ENGINE) - A Project of the US Global
Health Initiative and Feed the Future Initiative**

December 2012

The development of this nutrition core competency document for agriculture technical vocational education and training (ATVET) graduates is made possible by the support of the American people through the United States Agency for International Development (USAID) under Agreement No. AID-663-A-11-00017. The contents of this document are the sole responsibility of Jhpiego and Save the Children and do not necessarily reflect the views of USAID or the United States Government.

TABLE OF CONTENTS

TABLE OF CONTENTS	V
ACKNOWLEDGMENTS	VI
ABBREVIATIONS AND ACRONYMS	VII
EXECUTIVE SUMMARY	IX
INTRODUCTION	1
Objectives	2
METHODOLOGY	3
In-Depth InterviewS with Key Informants	3
Desk Review	3
Operational Definitions.....	3
MAIN FINDINGS.....	4
Evidence from IDI and desk review.....	4
Outline of Nutrition Core Competencies and their attributes	10
Nutrition core competencies and their attributes.....	11
REFERENCES	19
ANNEX 1: GENERAL INTRODUCTION FOR ALL INDEPTH INTERVIEWS	22
ANNEX 2: IN-DEPTH INTERVIEW GUIDE FOR APPROPRIATE PERSON FROM MOA	23
ANNEX 3: IN-DEPTH INTERVIEW GUIDE FOR APPROPRIATE PERSON FROM DISASTER RISK MANAGEMENT UNIT	24
ANNEX 4: IN-DEPTH INTERVIEW GUIDE FOR MOA, TVET FEDERAL/REGIONAL COORDINATION UNIT.....	25
ANNEX 5: IN-DEPTH INTERVIEW GUIDE FOR FEDERAL/REGIONAL TVET COORDINATION UNIT.....	26
ANNEX 6: IN-DEPTH INTERVIEW GUIDE FOR STAKEHOLDERS (ENGINE, SAVE USA, UNICEF, CONCERN, ALIVE AND THRIVE, FAO, WFP)	27
ANNEX 7: IN-DEPTH INTERVIEW GUIDE FOR ATVET COLLEGE HEADS AND TEACHERS	28
ANNEX 8: IN-DEPTH INTERVIEW GUIDE FOR REGIONAL, ZONAL AND WOREDA AGRICULTURE OFFICES.....	29
ANNEX 9: IN-DEPTH INTERVIEW GUIDE FOR ATVET COLLEGE GRADUATES (DA AT TWO KEBELES)	30
ANNEX 10: IN-DEPTH INTERVIEW GUIDE FOR HEWS.....	31
ANNEX 11: IN-DEPTH INTERVIEW GUIDE FOR UNIVERSITY, AGRICULTURE RESEARCH INSTITUTION, EHNRI AND IFPRI.....	32
ANNEX 12: GUIDELINES FOR DESK REVIEW	33
ANNEX 13: LIST OF STAKEHOLDERS/INDIVIDUALS CONTACTED FOR IDI AND GI.....	34

ACKNOWLEDGMENTS

Jhpiego and Save the Children would like to thank all the respondents, university and college faculty, consultants and nutrition experts who gave us their precious time and literature and enthusiastically expressed their views and shared their experiences.

ABBREVIATIONS AND ACRONYMS

AED	Academy for Educational Development
AEW	Agricultural Extension Worker
ATVET	Agricultural Technical Vocational Education and Training
BCC	Behavior Change Communication
CBN	Community-Based Nutrition
CSA	Central Statistical Agency
DA	Development Agent
EDHS	Ethiopia Demographic and Health Survey
EHNRI	Ethiopian Health and Nutrition Research Institute
ENA	Essential Nutrition Action
ENGINE	Empowering New Generations to Improve Nutrition and Economic Opportunities
EOS	Enhanced Outreach Strategy
ESDP	Educational Sector Development Program
FAO	Food and Agriculture Organization of the United Nations
FGD	Focus Group Discussion
GI	Group Interview
HICE	Household Income, Consumption and Expenditure [survey]
HEW	Health Extension Workers
IDI	In-Depth Interview
IFPRI	International Food Policy Research Institute
IYCF	Infant and Young Child Feeding
M&E	Monitoring and Evaluation
MOA	Ministry of Agriculture
NGO	Nongovernmental Organization
NMNTC	National Multi-Sectoral Nutrition Technical Committee
NNC	National Nutrition Coordinating Body
NNP	National Nutrition Program
NNS	National Nutrition Strategy
NNTC	National Nutrition Technical Committee
PPE	Personal Protective Equipment
PSNP	Productive Safety Net Program
SNNPR	Southern Nations, Nationalities, Peoples' Regional State

TVET Technical Vocational Education and Training
UNICEF United Nations Children’s Fund

EXECUTIVE SUMMARY

Ethiopia is one of the 36 countries with the highest burdens of malnutrition in the world. In recent years, the country has improved the underweight and stunting trends in under-five children, for which rates of stunting and underweight decreased by 14% and 12%, respectively, between 2000 and 2011; while prevalence of wasting did not show significant progress over the past 11 years. Currently, more than four out of 10 under-five children are still chronically malnourished, and nutrition has become one of the major national agenda items that need multi-sectoral coordination. The Empowering New Generations to Improve Nutrition and Economic Opportunities (ENGINE) Project is working to strengthen multi-sector coordination and build capacity at the policy and implementation levels, as well as at the pre-service education and training level.

This document was prepared based on information gathered through in-depth interviews and a desk review conducted in August 2012. A total of 30 participants with different backgrounds and experiences were contacted from various stakeholders. A survey was administered to identify core nutrition competencies for animal and plant science agriculture technical vocational education and training (ATVET) graduates to enable them to conduct basic nutrition-sensitive production and promotion of food diversification and complementary feeding, while they engage in their primary agricultural activities.

Main findings: Based on the evidence gathered, the potential contribution of the agriculture sector to improve nutrition outcomes was emphasized; existing linkage and gaps among the nutrition and agriculture sectors was pinpointed; possibility to incorporate nutrition with agriculture education was affirmed; and the need to develop nutrition core competencies for animal and plant science ATVET graduates was underlined.

Country's nutritional profile, policy and linkage with agriculture: Key findings indicate that undernutrition in Ethiopia is not simply a result of food shortage alone, but also due to a widespread lack of awareness about food utilization. Malnutrition is a long-neglected and major public health problem in Ethiopia. However, trends have improved in the past decade, such that nutrition has attracted policy attention and become a major national agenda item. The linkage between nutrition and agriculture seems broad and intuitively direct. Agriculture can play a significant role in improving nutritional outcomes if nutrition is considered in its interventions. Yet, both sectors function independently with limited or no connection in policy, strategies and interventions.

Competency-based nutrition education and ATVET potential: Nutrition education has long been a neglected field in Ethiopia. Very few institutions teach nutrition, with limited capacity to satisfy existing and projected manpower demands. However, nutrition education is another juncture to connect nutrition and agriculture. It complements agricultural interventions aimed at improving nutritional outcomes by applying knowledge that influences food access, eating behaviors and nutritional status. Competency-based education helps to produce experts with the necessary knowledge, skills and attitudes required to perform desired tasks with the required level of capacity. ATVET is a venue to produce such competent frontline work forces. Incorporating nutrition competencies with the ATVET program promotes nutrition-sensitive production. Such a goal can be achieved if nutrition competencies are appropriately integrated with all ATVET programs and create better collaboration among the agricultural and health extension workers on the job.

Nutrition competency gap, suggested content and scope of delivery in ATVET: Apparently no ATVET program is offering nutrition training. Adding nutrition competencies to ATVET animal and plant science curricula can be an opportunity to enrich grassroots nutrition support through graduates returning to the community as frontline extension workers. Content should be derived from evidence-based nutrition interventions, but modified to suit animal and plant science ATVET curriculum. Thus,

the scope of delivery should enable the graduates to promote nutritious food production and utilization and improve eating behaviors and nutritional status. This document can also be used for professional development, registration, performance review, recruitment and capacity assessment specific to animal and plant science ATVET graduates. An add-on approach with more practical contents is recommended to integrate nutrition-related content from the competencies defined to the curriculum.

INTRODUCTION

Ethiopia is one of the poorest countries in the world and the second most populous country in sub-Saharan Africa, where more than 85% of the population is living in rural areas, of whom 84% is exclusively engaged in agricultural activities.^{1,2} According to the results obtained from the 2010–2011 Household Income, Consumption and Expenditure (HICE) surveys of the Central Statistical Agency (CSA), about 29.6% of the total population (30.4% in rural areas and 25.7% in urban) is living below the poverty line.³

Ethiopia is also one of the 36 countries with the highest burdens of undernutrition in the world.^{4,5} Food insecurity, both chronic and seasonal, is a widespread problem in the country, affecting about 45% of the total population.⁵ Each year about five million people, particularly from rural areas, are facing food shortages. In 2011, 2.8 million people required food assistance in the country.⁶ Malnutrition continues to be a major public health problem that afflicts many people in Ethiopia, primarily children, and consequently impedes the social and economic progress of the nation.⁷

The country is persistently struggling to combat the rampant poverty and malnutrition and working toward achieving food security through rain-dependent farming and livestock production and with limited development of farming infrastructure.⁸ In recent years, the country has improved the underweight and stunting trends in under-five children, for whom stunting and underweight decreased by 14% and 12%, respectively, between 2000 and 2011; although reduction in wasting rates was minimal over the past 11 years. Ultimately, more than four out of 10 under-five children are currently chronically malnourished.⁹

Nutrition interventions have not been given due emphasis in past years. In recent years, however, nutrition has become one of the major national agenda items. This change led to the development of the National Nutrition Strategy (NNS) and the National Nutrition Program (NNP) in 2008, with the objective of improving nutrition service delivery and strengthening capacities of institutions working in nutrition.¹⁰ Nutrition education is one of the means to create capable human resources with adequate knowledge, skills and attitudes that are the basis for proper planning and execution of effective nutrition interventions.¹¹

The overall purpose of this qualitative assessment was to identify and incorporate nutrition core competencies with the routine animal and plant science curriculum offered in agriculture technical vocational education and training (ATVET) colleges in order to make graduates working in the frontline agriculture sector more nutrition sensitive,¹ while implementing different agricultural programs.

¹ Nutrition-sensitive agriculture: Agricultural interventions that involve the design and adoption of cropping and farming systems (crops and animal) that provide agricultural solutions to prevailing nutritional problems or agricultural interventions, which will have an impact on nutritional outcomes.

OBJECTIVES

- The major objective of this document is to explore and develop nutrition core competencies for mid-level animal and plant science ATVET graduates to help them implement basic nutrition-sensitive production and promotion of services at the grassroots level of the agriculture system.

Specific Objectives

- To identify the potential contribution of animal and plant science ATVET graduates (from agriculture sector) toward implementing the National Nutrition Program (NNP)
- To identify and document nutrition core competencies that are needed to strengthen the routine curriculum of animal and plant science students at ATVET colleges
- To recommend possible mechanisms of integrating nutrition with the ATVET curriculum

METHODOLOGY

IN-DEPTH INTERVIEWS WITH KEY INFORMANTS

The data collection process involved in-depth interviews (IDIs), group interviews (GIs) and a desk review. Questions used in the IDI/GI guides were formulated concisely with understandable language and tailored to each interviewee's field experience to facilitate open discussion to obtain the desired information. The questions mainly focus on the role of plant and animal science students in promoting nutrition-sensitive agriculture, while planning, implementing, monitoring and evaluating agricultural programs (Annexes I–II).

A total of 30 interviewees were contacted from a variety of stakeholders, professional backgrounds and experiences. The stakeholders who participated in the assessment were mainly agriculture offices, TVET coordinating units and centers, research institutes and nongovernmental organizations (NGOs). Stakeholders were appropriately selected from federal, regional, *woreda* and *kebele* levels, covering the distribution of national to grassroots practicing bodies (Annex 13). Professionally, the majority of the key informants had animal, plant, health and nutrition science backgrounds, while the remaining respondents had backgrounds in agricultural economics, agricultural extension, rural development, rural livelihood, global change, veterinary services and education. All informants had from five to more than 25 years of experience in their respective professions.

Individual In-Depth Interviews

A total of 18 participants of various professional and academic backgrounds participated in the interviews using IDI guides (Annexes 2–II). IDIs were conducted to explore participants' expert views on policy and program-level gaps and needs and the way forward for core nutrition competencies for mid-level animal and plant science graduates from ATVET colleges.

Group Interviews

Three GIs were conducted, with a total of 12 participants. These participants included Empowering New Generations to Improve Nutrition and Economic Opportunities (ENGINE) senior nutrition advisors (three individuals), Oromia Region TVET coordinating unit senior experts (four individuals) and instructors from Dilla ATVET College (five individuals).

DESK REVIEW

Relevant national and international literature were reviewed, including different policies, strategies, programs, published articles, notes, guidelines, manuals, curricula and articles related to competency-based education, nutrition and agriculture training, nutrition education, agriculture-nutrition linkage and multi-sectoral coordination. The review was conducted as per the document review guidelines outlined in Annex 12.

This nutrition core competency document was developed based on the findings and recommendations obtained from the IDIs/GIs and desk review.

OPERATIONAL DEFINITIONS

Nutrition-sensitive agriculture: Agricultural interventions that involve the design and adoption of cropping and farming systems (crops and animal) that provide agricultural solutions to prevailing nutritional problems or agricultural interventions that have an impact on nutritional outcomes (e.g.,

homestead food production to increase dietary diversity, livelihood diversification to increase resilience, bio-fortification and rearing livestock).

Nutrition security: Physical, economic and social access to balanced diets (e.g., the needed macro and micro-nutrients), clean drinking water, sanitation, primary health care and nutritional literacy.

Traditional crops: Indigenous species native to a specific region or one that was introduced a long time ago that, due to long use, have become part of the community culture.

Competency: The capability to apply a set of related knowledge, skills and abilities required to successfully perform critical work functions/tasks in a defined work setting.

MAIN FINDINGS

EVIDENCE FROM IDI AND DESK REVIEW

Agricultural graduates are not expected to provide nutrition services, but rather, be nutrition sensitive while they are planning, implementing, monitoring and evaluating agricultural activities.¹² Questions included in the interview and desk review guides were focused on identifying potential nutrition core competencies and how to incorporate them with existing animal and plant science ATVET programs, so as to enable graduates to provide nutrition-sensitive production and promotion services in the community. Findings of the individual IDIs, GIs and desk review are summarized and presented as follows.

Policy Picture and Level of Attention Given for Nutrition

The trend, as clearly discussed in the NNP, is generally indicating for the presence of a favorable environment to address the nutrition issues in the country.¹⁰ Similarly, all respondents stated that nutrition is one of the major national agenda items, supported by development and implementation of the NNS and NNP. They believe that the launch of this strategy and program have opened new opportunities to develop a strong national system and heighten expectations from stakeholders for establishing a viable implementation arrangement and improved nutrition service delivery. For these reasons, most informants assume that nutrition is not only gaining better recognition at policy levels, but also garnering due attention at national and grassroots levels.

Equally expressed by many informants was that nutrition is not properly addressed at all levels for lacking a strong national nutrition service delivery system, coordinating mechanism and competent leadership and guidance among different stakeholders in the past. The situation does not seem that different than the role of the agriculture sector toward advancing a nutrition agenda. Informants from the Ministry of Agriculture (MOA) are encouraging national efforts, especially nutrition training delivery; however, many respondents evidently had difficulty responding similarly when asked about the sector's contribution toward the implementation of the NNP at the regional level.

One respondent said, "The sector's role is difficult to tell, for the fact that the expected role of the sector is not even clearly stated in the NNP document. All grassroots home agents who were providing nutrition services in the community under the umbrella of the agriculture sector were disbanded, and recently, the potential connection is further disrupted due to ongoing business process re-engineering." Moreover, many informants have cited that the critical shortage of nutrition-trained personnel in the sector and poor communication among ministries and sector authorities both at the national and local level hinder the contribution of agriculture sector.

Nonetheless, it was acknowledged by the majority of informants that the agriculture sector currently has high-level delegation in the National Nutrition Coordinating Body (NNC) and the National Nutrition Technical Committee (NNTC), considering the potential the sector has at national and subsequently lower administrative structures of the country. Most informants believed that the agriculture sector could have a huge contribution for effective implementation of the NNP if the initiative at the higher level flows down to lower administrative levels.

Multi-Sectoral Coordination for Improved Nutrition Outcomes

Factors contributing to malnutrition and poor nutrition outcomes are complex and varied across the production and consumption settings.¹² The solutions require strategic integration and sectoral collaboration.¹³ Sector-specific strategies tend to approach nutrition issues along narrow disciplinary lines and generally fail to capture contributing factors that fall outside the purview of that particular field.

Nutrition is intrinsically a multi-sectoral issue, and strategies should seek to improve nutrition outcomes through multi-sectoral approaches.¹⁴ The significance of agriculture, given its role as a source of food production, is quite clear. However, an understanding of how agricultural interventions can best improve nutrition outcomes remains a challenge.¹⁵ Meanwhile, multi-sector efforts that tend to address agriculture and nutrition have been hindered by institutional barriers and insufficient resources.¹⁶

The agriculture, health and education sectors are central, among many others, to the efforts of addressing the nutritional problems of the country by providing curative and preventive nutrition services. These sectors can execute their mandate through food production and dissemination of important knowledge regarding proper nutrition practices. These three sectors are necessary together, while none of them are sufficient on their own.¹⁷ Nevertheless, most of these sectors are currently organized in a way that makes coordination very difficult to achieve.

There are overlapping barriers to effective joint action across sectors, including differing worldviews and mandates, resource allocation and planning processes, and capacity constraints within sectors for generating necessary information regarding multi-sectoral nutrition coordination.¹⁶ Specialized training of various sector specialists tends to lead to discrete areas of expertise and qualitatively different worldviews. Agriculture sector objectives, for example, relate to increasing yields and profits and other benefits for producers, and are reflected in distinctive language and methods.¹³ Nutrition considerations do not fit neatly into the worldview of agriculture or sector mandates.

The informants discussed the resource-allocation processes of the government, in terms of budgeting and personnel management, that make it difficult to mount nutrition multi-sectoral action. According to respondents, the current competitive resource-allocation mechanisms provide limited, if any, incentive for carrying out coordinated activities—even if it may have a greater impact on broader inter-sectoral outcomes. Therefore, attainment of objectives requiring multi-sectoral coordinated action will rarely be advanced by routine sector-planning mechanisms.

The information limitation that specialists in agriculture sectors experienced is recognizing either determinants of poor nutritional status or effective approaches to address the problems. Creating knowledge capacity to analyze these kinds of cross-cutting development challenges would increase the understanding of the sectoral synergies that can be attained by concerted multi-sectoral effort.¹⁸

In sum, there are substantial institutional and operational barriers that prevent the agricultural sector from accepting a share of responsibility for addressing the problems of malnutrition in the society. In general, the goal of addressing nutrition challenges fits poorly within bureaucratic organizations, operational processes and incentive structures.

Importance of Linking Nutrition and Agriculture

The link between agriculture and nutrition occurs via food. In a broader perspective, the relationship between agriculture and human nutrition, or from food production to food consumption, is intuitively direct, but in practice is quite complex.¹⁴ Increased food production should lead to greater food availability and access and, ultimately, improved food intake and diets. Yet, the persistence of malnutrition as a global public health concern, despite some successes in increasing agricultural production, belies any notion that malnutrition and undernutrition can be solved entirely from the supply side by increasing agricultural production.¹⁹

The question of how agriculture can effectively contribute to improved nutrition outcomes, therefore, requires: 1) an answer that encompasses factors other than food supply, and 2) support of a new paradigm for agriculture (which is the food systems paradigm) that aims not only for productivity and sustainability, but also for better nutrition for the entire human race.²⁰

It is also important to take into account other sectors in addition to agriculture that contribute to nutrition. The human development sectors, in particular education and health, address nutrition in terms of its essential role in building and maintaining human capital. The interface between agriculture and human development provides a far more complete picture of nutrition that relates supply to demand and production to consumption.²¹ In terms of nutrition outcomes, limitations of production-focused agricultural programs and interventions have long been recognized, and finding ways to maximize the potential impact of agriculture on nutrition has been an increasing priority for some within the agricultural community for decades.²⁰

In this regard, the widely used conceptual framework developed by UNICEF identifies three main underlying determinants of nutritional status: availability and access to food; optimal quality of feeding and caring practices; and a healthy environment and adequate access to health care services.¹⁹ Agriculture is likely to improve nutrition mainly through the food production pathway, but can also contribute to the other two pathways through increased income and women's empowerment.²² Most agricultural interventions affect household nutritional status through support of production for household consumption and improving income-generation.¹⁸

Nevertheless, agriculture and nutrition are often miles apart in policy discussion and programs.²³ The two sectors usually function independently, having no or very limited connection among one another in policies, strategies and interventions.²³ Moreover, the nutrition sector thinks little on how food is produced or about agriculture policy when they urge eating a balanced diet for good health. Nor does the agriculture sector think much about nutrition and health of individuals when they advise farmers to plant another row of a commodity crop in a mono-cropping system.²⁴

However, there is a direct link and strong relationship existing between agriculture and nutrition in the way that agriculture produces food and food directly influences nutrition and health.²⁵ The relationship is even far more complex than the relationship between food production and food consumption. Increase in food production raises the availability of food, though it does little by itself to ensure all people have access to produced food. Nor does the gross quantity of food produced say much about the quality or nutritional value of people's diets. Moreover, there are bright spots where nutrition and agriculture are connecting and benefiting each other. For example, when farmers are diversify and grow a variety of healthy vegetables and grains using methods that replenish the soil and waters, as well as reduce wastage as a result of post-harvest handling problems.²⁴ In addition, increasing productivity of livestock, together with promotion of their products' consumption, is another juncture where nutrition and agriculture are connected.

The time has come to revisit what is known and what more can be done to improve the synergies between agriculture and nutrition, and to find ways that agriculture, with its customary focus on

productivity and yields, can more effectively contribute to improvements in nutrition outcomes. Together, the national agricultural policy must move from rewards based on more production to rewards based on considerations of nourishment, health and sustainability.²³ Making such a move is the most important way to improve the nutritional status and health of our nation, while at the same time, improving the livelihood of rural farmers.

Role of Agriculture for Better Nutrition Outcomes

The agricultural system as a whole has a key role to play in reducing malnutrition. Agriculture is the fundamental mechanism for achieving nutrition goals by producing the food, energy and nutrients essential for human health and wellbeing.²⁶ However, agriculture and nutrition have long occupied separate realms at policy and program levels; although their separation seems strange given they are tightly wedded to each other. Improvement in nutritional outcomes can be achieved through combined efforts of food access and good nutritional practices, which provide the direct linkage between agriculture and nutrition.

Accordingly, most informants interviewed did believe that the agriculture sector in the country is playing a bigger role, especially in increasing food productivity and reducing food insecurity in recent years. Considering the huge potential and number of opportunities that the agriculture sector has, the majority of respondents believe that the sector can contribute more to the nutrition agenda. A similar notion was reflected by officials interviewed from the agriculture sector, as well.

In contrast, there are few informants from the agriculture sector who feel the sector is solely responsible for increasing production and productivity, but not promoting the nutrition agenda. Many informants from other stakeholders thought the nutrition agenda seems less of a priority for the agriculture sector and support their argument by the notion that nutrition interventions are usually attached with food insecurity and emergency situations, rather than as regular and standalone activities in the sector. Therefore, many informants suggested that the necessary steps be taken to make sure the sector plays its role to improve the nutrition outcomes of the country.

Some of the agricultural sector's roles, which are formulated based on lesson learned and suggested for their contribution to achieve the nutritional goals of the sector, include:

- Increasing availability and affordability of bio-fortified and diversified staple foods
- Assisting homestead production
- Raising income of households engaged in agricultural work
- Increasing access to micronutrient-rich foods
- Empowering women

These roles can be implemented by employing the following approaches:

- Well-designed agricultural component of nutrition intervention effective at generating output, income and added value
- Agricultural intervention for malnutrition with well-designed nutrition component that provides appropriate services, including well-tailored education, to address specific, local malnutrition issues
- Agricultural and nutrition programs that are mutually reinforcing and benefiting each other; agriculture and nutrition/health project staff must actively collaborate; beneficiary populations participating in the agricultural and health activities should overlap
- Education and behavior change communication (BCC) complementing agricultural intervention aimed at improving nutritional outcomes

Agriculture-Related Nutrition-Sensitive Interventions

Interventions are defined broadly to mean changes purposefully introduced into an existing agricultural system to promote new technologies, management practices, production and marketing methods, and other aims that may or may not include components designed to improve nutrition.^{2,15} Agricultural interventions increase potential for improved nutritional outcomes by increasing food availability and access, combined with well-designed nutrition education, which have significant changes in participants' behaviors and nutritional status.²⁷

Suggested agriculture-related nutrition-sensitive interventions include:

- Agricultural extension services promoting better crop diversity and biodiversity including bio-fortified and indigenous food crops for improved nutrition
- Integrated agro-forestry systems that reduce deforestation and promote sustainable exploitation of nutrient-rich non-timber forest products
- Integrated farming systems utilizing the synergies of horticulture, aquaculture and small livestock rearing to reduce waste and expenses on agricultural inputs and increase food production diversity
- Improved household food production and livelihoods (e.g., diversification of household food production for self-consumption and to improve the nutritional quality of the family diet)
- Education and communication for development and social marketing strategies that strengthen local food systems and promote cultivation and consumption of local micronutrient-rich foods
- Improved post-harvest management (i.e., food storage, transformation, handling and processing) to reduce losses in terms of quantity and nutrient content, which also contributes to nutrition security

Role of Country's Education System in Promoting Nutrition Education

Education is another important juncture for the interconnectedness of nutrition and agriculture.²⁸ The NNP, launched in 2008, underlines strengthening of human resources capacity-building in nutrition as a component of the program.¹⁰ The NNP states that nutrition education is one of the means to build human resources capacity with adequate knowledge and skills in nutrition.

Accordingly, nutrition education applies principles and methods that influence the food supply, eating behavior, nutritional status and chronic disease prevention.^{29,30} It raises people's awareness about proper food production and processing, cooking and eating a balanced diet.¹¹ It also involves a combination of strategies designed to facilitate voluntary adoption of food choices and other nutrition-related behaviors conducive for health and wellbeing.²⁶

Historically, nutrition education has been a long-neglected field of study in all educational corners of the country. Many informants argue that this problem is not solved today, as insignificant numbers of higher-education institutions are currently offering nutrition training in their programs.²⁹

Current Status of Nutrition Education in ATVET Programs

ATVETs are expected to contribute toward improving the technical knowledge and practical quality of the frontline agricultural extension agents.³¹ They also have a potentially wider role to play in general in the agricultural sector through a range of disciplines, important for strengthening the sector's efforts on the nutrition actions taken both at the state and non-state level. However, the observed contribution of the ATVETs, so far, is not very significant when it comes to promoting nutrition education. Rather, it shares a similar scenario with the experiences of higher-education institutions in the country, for none of the ATVET programs in the country offers nutrition training in any form.^{29,32}

ATVET graduates have confirmed this fact by saying that they never took any form of nutrition modules during their training, except for learning very limited nutrition content fragmentally integrated with a

few specialty modules, such as livestock production, poultry and beekeeping modules in the animal production and animal health field, and horticulture, field crop and fruit crop production modules in plant science ATVET disciplines.

Similarly, baseline findings on nutrition pre-service education by ENGINE indicated that few plant and animal science departments at different TVET levels are delivering modules containing certain nutrition content. According to this report, only crop production and horticulture are listed among plant science students; while livestock production, animal production, marketing management, poultry and beekeeping modules are named in animal science disciplines that have certain nutrition contents.³²

Training of grassroots technical personnel with nutrition modules could have helped to communicate and spread basic information about nutrition-sensitive production, healthy eating habits and prevention of malnutrition in a community.³³ Unfortunately, none of the ATVET graduates, who will potentially work in the agriculture sector mostly as development agents, have knowledge about nutrition; hence, informants are concerned that such a situation will pose a significant challenge on the promotion of nutrition-sensitive production efforts in a community. Therefore, they encouraged the development of nutrition core competencies and integration of essential nutrition contents with ATVET training as a means to produce a skilled and competent grassroots work force that can take the nutrition issue one step forward in the agriculture sector to improve the nutritional situation of the society.

Defining Nutrition Core Competency for Animal and Plant Science ATVET Programs

Competency is the capability to apply a set of related knowledge, skills and abilities required to successfully perform “critical work functions” or tasks in a defined work setting. This set could be core, technical, function specific, discipline and subject specific, depending on the desired outcome.^{34–36} Nutrition core competencies are a set of cross-cutting skills, knowledge and attitudes necessary for a broader practice of nutrition as an essential component in real working conditions and settings.^{37,38}

Core nutrition competency can be acquired through different levels of training, including in higher institutions or other innovative forms, but lower knowledge transfer media, such as TVET and other tailor-made short-term training.^{39,40} However, considering its delivery convenience to wider beneficiaries at the grassroots level, most informants have stressed the need for incorporating the developed nutrition core competency with ATVET programs, particularly with animal and plant science disciplines.

Integrating nutrition core competencies with ATVET programs will not only have the highest potential to promote nutrition-sensitive production at the community level, but also to increase the effort of the agriculture sector—which is imperative to contribute to the national nutrition agenda. In addition, almost all ATVET graduates are going back to the community and usually working as frontline agriculture extension workers (AEWs). They can disseminate the nutrition-sensitive production knowledge to large numbers of the targeted beneficiaries as they are closely working with more than 85% of the total population of the country.

Moreover, having nutrition core competencies incorporated with ATVET programs is not only helping to produce a qualified work force with necessary knowledge, skills and abilities to perform the desired nutrition-related tasks in the community, but also developing competencies that can be used as a reference for staff development, job descriptions, performance assessment and planning for human resources needs.

Nevertheless, informants have recognized the apparent lack of such competency from all the disciplines that are currently offered in ATVET colleges and accordingly expressed the urgent need for developing such competency and integrating nutrition with all “appropriate” ATVET programs. They also explained

that with current pro-nutrition commitment nationally, the country can further advance the achievement of the desired goal of accelerated reduction of malnutrition, if such nutrition core competencies are appropriately integrated not only in animal and plant science disciplines, but also in all other ATVET training disciplines.

Competency Scope, Content Integration and Delivery Approach

In general, all informants believe that the content of the nutrition core competency should be derived from the principles and practices of human nutrition, but also be modified to suit animal and plant science disciplines in ATVET programs. It should also be developed through careful synchronization with the notion of meeting the nutritional knowledge gaps of ATVET graduates in order to contribute to improved nutrition outcomes in the community.

Accordingly, most informants suggested the scope of the competency should effectively enable animal and plant science ATVET graduates to promote both production and utilization of foods in community settings. They also recommended its content be designed with practical knowledge and hands-on training specifically suited to trainees so they know how to produce and access nutritious foods, improve eating behavior, enhance nutritional status and prevent chronic diseases with better nutrition and food consumption. Informants suggested the competency to be in line with graduates' potential service in the community.

Since services of the ATVET graduates in the community could range from agriculture-related program development to implementation and support, the content of the competency should also consider other services, including: designing nutrition-sensitive programs to meet the needs of the target audience and clients; using appropriate technologies to plan and deliver programs through one-on-one visits, on-farm demonstrations, field trips and tours; advising and working with farmers one-on-one or in groups; recruiting and training volunteers; developing programs that teach life skills and improved methods to farmers and families; developing and implementing evaluation plans and reporting results to clients, public and administration; and working with *woreda*, zonal and state extension specialists and agents in collecting, analyzing and evaluating agricultural data to plan and develop techniques that will assist farmers in solving problems.

Moreover, they said the design of the competency should consider the potential use of the competency for a variety of human resources building functions, including curriculum design and evaluation (pre-employment and professional development), practitioner recognition or registration, performance review, recruitment and capacity assessment specific to animal and plant science ATVET graduates.

OUTLINE OF NUTRITION CORE COMPETENCIES AND THEIR ATTRIBUTES

Description of the Competencies

This set of core competencies describes the knowledge, skills and attitudes required by animal and plant science ATVET graduates, so as to support provision of basic nutrition information to people whose livelihood depended on agriculture. These competencies apply basic principles and approaches derived from the human nutrition field to influence the production and utilization of food, which consequently affects nutritious food supply, improves eating behavior, enhances nutritional status and prevents chronic diseases through better food and nutrient consumption.⁴¹

Scope of the Competencies

The scope of these competencies is limited to the promotion and advocacy of nutrition-sensitive food production and utilization activities for the community. The learning outcomes may vary in extent and intensity in accordance with differing objectives of ATVET training levels and subsumed fields of

competence. However, these nutrition competencies are intended to generally make a successfully mid-level animal and plant science ATVET graduate capable of promoting the importance of and assisting nutrition-sensitive food production and utilization for the farming communities in the country.

Nutrition core competencies listed below are described in terms of knowledge, skills and attitudes.

- Apply basic principles of human nutrition
- Assist in a variety of agricultural food production and promote use of diversified/complementary foods
- Promote safe handling of agricultural food products during storage, transportation and preservation
- Promote nutrition through BCC and use of technology
- Utilize multi-sectoral collaboration and linkage
- Plan manage, monitor and evaluate agriculture-related nutrition interventions
- Apply professionalism and ethics

NUTRITION CORE COMPETENCIES AND THEIR ATTRIBUTES

Apply Basic Principles of Human Nutrition

Desired Competence

- Apply basic principles of producing quality/nutritious agricultural products for human consumption and its importance for healthy body functioning

To achieve this competency, the graduates are expected to have the following knowledge, skills and attitudes:

Knowledge

- Recognize agricultural food types, sources (animal and plant), the six food groups, nutrient composition and diet requirements
- Describe the need for variety in food selection
- Recognize effect of food production and processing on nutrient content of a variety of foods (e.g., not to overcook foods) and on the nutritional status of the population
- Describe the consequences of excess or deficient intake of certain food types
- Recognize malnutrition in the community

Skills

- Categorize agricultural food items into major food groups based on their nutrient compositions
- Demonstrate production and processing (cooking) of nutrient-dense foods
- Use nutritional BCC tools to advise and promote optimal dietary behavior for individuals of varying age-groups, genders and health states

Attitudes

- Work within the boundaries of one's role and responsibilities
- Maintain levels of competence and standards of good character
- Keep self-knowledge and technical skills up-to-date to ensure safe and effective practice
- Respect the dignity, privacy and safety of individuals

Assist in Varied Agricultural Food Production and Promote Use of Diversified/ Complementary Foods

Desired Competence

- Assist in production, promotion and use of diversified foods to improve the nutritional status of individuals, priority groups and families in the community

Sub-competencies

- Assist with variety in food production at the household level
- Promote dietary diversification in the family and the community

To achieve these competencies, the graduates are expected to have the following knowledge, skills and attitudes:

Knowledge

- Describe the consequences of excess or deficient intake of certain food types during pregnancy and the first two years of a child's life
- Describe importance of using diversified foods for vulnerable groups (e.g., 1,000 days, pregnancy to two years of age)
- Explain the importance of diversifying the family diet with a variety of agricultural food products
- Explain how to enrich the nutrient content of the family diet using different food groups
- Describe methods to increase variety in food production for sustainable access and supply
- Describe the importance of sharing nutritious food among family members, especially for children and increased supplies for pregnant and lactating women
- Identify local varieties of animal and plant products; revive currently underused nutrient-rich traditional crops and animal breeds to increase household food diversification

Skills

- Provide appropriate information with regard to promotion of diversified foods for pregnant women and children
- Promote vegetable gardening and small animal husbandry, together with mixed cropping technologies and traditional food crops, to improve nutritional status of families
- Demonstrate integrated farming methods: home gardening, small livestock raising, poultry keeping, use of traditional crops, introducing new crops and mixed cropping
- Promote consumption of multiple food items that are locally available and culturally acceptable

Attitudes

- Motivate individuals in the community to diversify their meals
- Interact sensitively, effectively and professionally with persons from diverse backgrounds, ages and preferences with regard to dietary diversification
- Acknowledge socio-economic and cultural values of people when planning and promoting nutrition-sensitive food production in the community

Promote Safe Handling of Agricultural Food Products during Storage, Transportation and Preservation

Desired Competence

- Promote safe handling of agricultural food products to maintain nutritional quality, while assisting in applying standard operating procedures during storage, transportation and preservation

To achieve this competency, the graduates are expected to have the following knowledge, skills and attitudes:

Knowledge

- Describe basic principles and techniques of safe food (products) handling during production, storage, preservation and processing, as well as their effects on the nutrient content of food
- Identify food additives and contaminants at different points of production
- Introduce appropriate post-harvest handling and preservation techniques
- Explain the impact of poor post-harvest handling
- Explain the importance of using safe water when cleaning materials and tools with soap before and after use to maintain nutritional value of products
- Explain the importance of washing hands with soap and using appropriate personal protective equipment (PPE)
- Explain the importance of cleaning surroundings to improve the safety of food

Skills

- Communicate nutrition information related to post-harvest handling problems and curative activities
- Apply immediate post-harvest handling techniques through drying, threshing and shelling to preserve nutritional values of crops
- Apply appropriate handling techniques for animal products
- Transform foodstuff using techniques such as cleaning, grading, de-hulling, polishing and splitting
- Use safe home-based food processing, preservation and food fortification
- Demonstrate post-harvest treatments and hazardous waste disposal methodologies
- Use appropriate protective materials and equipment

Attitudes

- Work within the limits of professional boundaries with regard to safe food handling
- Maintain the levels of required competence to assist with safe food handling
- Accept the responsibility of modeling the community in safe food processing and handling
- Respect the dignity, privacy and safety of individuals in safe food consumption
- Keep knowledge and skills up-to-date to ensure safe and effective nutrition practice

Promote Nutrition through Behavior Change Communication and Use of Technology

Desired Competence

- Promote nutrition-sensitive production, storage, processing and utilization of a variety of foods of the right quantities and combinations using appropriate techniques and technologies

Sub-competencies

- Use BCC methods for nutrition promotion
- Document behavioral changes in the community with respect to nutrition practice

To achieve these competencies, the graduates are expected to have the following knowledge, skills and attitudes:

Knowledge

- Identify BCC strategies for successful nutrition promotion
- Identify food taboos, aversions and cravings that contribute to malnutrition
- Explain use of nutrition promotion to improve nutritional status of individuals and groups through basic nutrition-sensitive production, diversification and food safety practices
- Explain food production and utilization trends associated with different cultures
- Recognize the need to communicate effectively across social groups in diverse cultures and across cultural obstacles to effective communication

Skills

- Plan and execute nutrition promotion in line with agricultural activities
- Translate technical nutrition information into practical advice on nutrition-sensitive food production and consumption
- Use appropriate nutrition-promotion material to provide tailored, actionable information
- Communicate nutrition-sensitive production information with individuals and groups in the community using a range of effective counseling skills that facilitate behavior change
- Create respectful learning environments in which clients feel comfortable to participate
- Use technology (current and emergent) including media, community networks and basic field/office equipment to explore information, analyze data and communicate effectively

Attitudes

- Acknowledge socio-cultural and economic value of people when planning and promoting nutrition-sensitive food production in the community
- Demonstrate independent lifelong learning to maintain competency in nutrition promotion
- Show willingness to share knowledge required for nutrition-sensitive production/promotion
- Listen to others in a non-biased manner, respect points of view and promote the expression of diverse opinions and perspectives

Utilize Multi-Sectoral Collaboration and Linkage

Desired Competence

- Practice multi-sectoral collaboration at the grassroots level with an emphasis on integrating nutrition interventions (nutrition-sensitive production and promotion) with agricultural activities and to enhance community-based nutrition promotion

Sub-competencies

- Integrate nutrition interventions with agricultural activities
- Participate in multi-sectoral nutrition interventions and community mobilization

To achieve these competencies, the graduates are expected to have the following knowledge, skills and attitudes:

Knowledge

- Identify key stakeholders for effective nutrition interventions in the community
- Explain possible multi-sectoral linkage among stakeholders and coordination mechanism for better nutrition interventions
- Describe the role of the agriculture sector in nutrition interventions in terms of nutrition-sensitive production and promotion
- Describe the roles and tasks of the agriculture extension officers in nutrition interventions by integrating with agriculture activities
- Identify opportunities to integrate nutrition interventions with regular agricultural plans and activities

Skills

- Identify partners and stakeholders at the grassroots level for promoting nutrition-sensitive production through proactive and responsive engagement
- Include nutrition intervention in feasible agricultural activities and identify ways to link production with proper utilization, in collaboration with other sectors such as health and education
- Identify ways to synergize the outreach efforts of health extension workers (HEWs), AEWs and other sectors
- Plan nutrition interventions jointly with stakeholders

Attitudes

- Acknowledge the socio-cultural and economic value of people when planning and promoting nutrition-sensitive food production in the community
- Respect the boundaries of sectors jointly involved in nutrition interventions
- Keep knowledge and skills up-to-date to ensure safe and effective practice
- Work, where appropriate, in partnership with other professionals, support staff, individuals, groups, colleagues, organizations and stakeholders

Plan, Manage, Monitor and Evaluate Nutrition Interventions

Desired Competence

- Integrate nutrition interventions in planning, managing, monitoring and evaluating agricultural activities using appropriate methods and tools with emphasis on nutrition-sensitive production and improving utilization

Sub-competencies

- Plan nutrition interventions in line with key agricultural activities to increase nutrition-sensitive production and diet diversity
- Monitor and evaluate key nutrition activities integrated with agricultural activities

To achieve these competencies, the graduates are expected to have the following knowledge, skills and attitudes:

Knowledge

- Describe basic principles for planning, implementing and managing nutrition interventions
- Describe planning and managing roles to promote nutrition interventions in the community
- Identify nutritional problems prior to agricultural intervention and plan for mitigation
- Identify agricultural activities that have a direct impact on nutrition, such as small livestock rearing, home gardening, nutritious food production, processing and preparation of foods
- Describe basic methods and tools used for monitoring and evaluation of nutrition interventions
- Identify resource needs and available capacity for effective nutrition-sensitive interventions

Skills

- Plan and implement basic nutrition interventions for effective behavior change outcomes
- Collect, analyze and interpret data related to nutrition-sensitive production and promotion
- Integrate nutrition-sensitive production indicators with routine agricultural activity monitoring and evaluation (M&E) tools
- Plan nutrition-sensitive food production practice and assess its impact on nutrition outcomes
- Solicit evidence-based intervention options to develop effective nutrition interventions
- Communicate key messages about community performance in regard to nutrition intervention
- Mobilize stakeholders to execute planned nutrition interventions in line with agriculture

Attitudes

- Accept the roles of the agriculture sector and integrate with rural agricultural activities
- Comply with ethical, socio-cultural and economic contexts in collecting nutrition information
- Prioritize assessment and analysis on the bases of identified nutrition needs of the community
- Accept new ideas, concepts, information, constructive criticism and suggestions
- Work within the limits of your knowledge, skills and boundaries of your responsibilities
- Manage change while considering education, cultural, social, economic and political context
- Seek others' views and ideas and respect their contribution

Apply Professionalism and Ethics

Desired Competence

- Demonstrate desired professional conduct and code of ethics with evidence of good character, adherence to responsibilities, accountability to legislation, guidelines and protocols, while promoting nutrition-sensitive production and proper utilization

To achieve this competency, the graduates are expected to have the following knowledge, skills and attitudes:

Knowledge

- Describe code of ethics and statement of professional conduct in relation to nutrition
- Identify value and principles of the organizational practices with respect to nutrition interventions
- Explain professionalism while working with people from diverse cultural, socio-economic and educational backgrounds, and persons of all ages, gender, health status and abilities
- Describe ethical principles to collect, maintain, use and disseminate information with regard to nutrition interventions

Skills

- Plan and execute nutrition-related interventions in their agricultural activities in partnership with the community, while considering individual preferences and religious and cultural practices
- Act in accordance with professional ethics and standards of practice while implementing nutrition-integrated agricultural activity
- Practice within the scope of professional competence
- Follow ethical principles to collect, maintain, use and disseminate nutrition information
- Practice principles of confidentiality and privacy in relation to nutrition interventions

Attitudes

- Show volunteerism to help the community with regard to selected nutrition interventions in addition to agricultural duties
- Accept the role of the agriculture sector as part of multi-sectoral nutrition interventions
- Consider roles, responsibilities and limitations of self and other stakeholders
- Respect differences when engaging culturally and linguistically diverse population while implementing nutrition intervention
- Maintain confidentiality of participant and program information
- Practice within ethical boundaries of the profession and limits of own area of expertise

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ANNEX 1: GENERAL INTRODUCTION FOR ALL INDEPTH INTERVIEWS

Thank you so much for your willingness to take part in this interview! My name is [NAME]. I am a nutritionist and an academician currently working as a consultant for Jhpiego to define nutrition core competencies for animal and plant science trainees in ATVETs. We are aiming to determine the minimum nutrition competencies needed for plant and animal science graduates of ATVETs to successfully design, implement, monitor and evaluate nutrition-sensitive production.

Therefore, we are interested in hearing your views about possible nutrition-sensitive agricultural/livelihood tasks that animal and plant science graduates from ATVETs can perform. We will be recording the interview on tape and taking notes to enable us capture all points of our discussion. You can refuse to answer any question that you are not comfortable with and even interrupt the interview at any point.

Before we start, I want to emphasize that any information from this interview is confidential and will be used only for the above-mentioned purpose.

Is there anything you would like to ask me at this point?

ANNEX 2: IN-DEPTH INTERVIEW GUIDE FOR APPROPRIATE PERSON FROM MOA

In-depth interview is designed to define desired nutrition-related core competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. What is the role(s) of the agriculture sector with regard to improving the nutritional status of women and children?

Probe: Considering the multi-sectoral nature of nutrition interventions:

- What does the sector do to improve nutritional status of women and children in the country? Why?
- What is your explicit objective and indicator(s) for this role(s)? How?

3. How does the sector integrate nutrition-sensitive production and promotion effort in its strategic objectives?

Explain:

- Nutrition-sensitive production in terms of promoting home gardening, translation of production with nutrition, diversified plant and animal production, production of energy-dense staple foods, etc.

4. What is the current human resources development profile of the sector in terms of acquiring nutrition-sensitive production promoters at the grassroots level?

5. Which package of the current frontline agriculture workers (DAs) encompass nutrition-sensitive production and promotion aspects? How?

Probe:

- If not encompassed, is there any plan designed by the sector to capacitate/develop its human resources with regard to nutrition-sensitive production? How?
- Which discipline(s) is/are more suitable for incorporating nutrition-related core competencies with ATVET curriculum?

6. What do you think of incorporating nutrition core competency in the curriculum of plant and animal science ATVET disciplines?

Probe:

- What is the advantage of plant and animal science ATVET disciplines in promoting nutrition-sensitive production and service delivery at the grassroots level?

7. Any other suggestions?

Thank you!!

ANNEX 3: IN-DEPTH INTERVIEW GUIDE FOR APPROPRIATE PERSON FROM DISASTER RISK MANAGEMENT UNIT

In-depth interview is designed to define desired nutrition-related core competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. Considering the multi-sectoral nature of nutrition intervention and outcome, what is the role of agriculture sector in the implementation of the National Nutrition Program?

3. What is the contribution of the agriculture sector in terms of improving nutritional status of women and children in the country?

4. What is the potential for the agriculture sector in harmonizing its strategic objectives with your sector objective in terms of improving nutritional status of women and children?

Probe:

- Nutrition-sensitive production in terms of promoting home gardening, translation of production with nutrition, diversified plant and animal production, production of energy-dense staple foods, etc.

5. What is the potential of the grassroots human resources profile of the agriculture sector in terms of promoting nutrition-sensitive production effort?

Probe:

- Which frontline agriculture workers (DAs) training discipline is suitable for incorporating a nutrition core competency? Why?

6. What nutrition competency component is worth of incorporating with the plant and animal science ATVET curriculum, so as to enable graduates to better promote nutrition-sensitive production at the grassroots level? Why?

7. Any other suggestions?

Thank you!!

ANNEX 4: IN-DEPTH INTERVIEW GUIDE FOR MOA, TVET FEDERAL/REGIONAL COORDINATION UNIT

In-depth interview is designed to identify and define desired nutrition-related competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:
Date of interview: _____
Name of the institution: _____
Position of respondent: _____
Profession: _____
Years of experience: _____
Area of responsibility related to nutrition service: _____
2. What is the contribution of ATVETs for grassroots labor force supply in agriculture sector?
3. What steps did you follow in designing the current ATVET curriculum?
4. What are the bases for defining the competency units for each discipline?
Probe:
 - Community/industry needs assessment report or other documents?
5. Which stakeholders were involved in the process of developing the existing occupational standards of ATVET?
6. Agriculture sector has a role to play with regard to improving nutritional status of different populations in the country through nutrition-sensitive production and nutrition promotion. If these roles are amid to be played by the ATVET graduates:
 - What is the role of ATVET to improve the nutritional status of women and children in the country? How?
7. What are the steps to incorporate nutrition core competency with current ATVET curriculum?
Probe:
 - What is required to integrate nutrition core competency/contents with the existing curriculum as separate unit of competency or adding on existing competency units?
8. What is the potential role of plant and animal science ATVET toward improving nutritional status of women and children through nutrition-sensitive production and promotion?
9. What is the gap and compelling needs seen for incorporating nutrition competency in plant and animal science ATVET curriculum?
10. What knowledge, skills, attitude/values/behavior do you suggest plant and animal science ATVET graduates must acquire to promote nutrition-sensitive production to a community?
11. What do you suggest for how to integrate nutrition core competency with plant and animal science ATVET curriculum?
Probe:
 - As a separate unit of competency?
 - Add-on the existing unit of competency?
12. Any other suggestions?

Thank you!!

ANNEX 5: IN-DEPTH INTERVIEW GUIDE FOR FEDERAL/REGIONAL TVET COORDINATION UNIT

In-depth interview is designed to identify and define desired nutrition-related competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. What is the contribution of ATVETs for grassroots labor force supply in agriculture sector?
3. What steps did you follow in designing the current ATVET curriculum?
4. What are the bases for defining the competency units for each discipline?
Probe:
 - Community/industry needs assessment report or other documents?
5. Which stakeholders were involved in the process of developing the existing occupational standards of ATVETs?
6. What are steps to incorporate nutrition core competency with current ATVET curriculum?
7. What is the way to integrate nutrition core competency/contents with the existing ATVET curriculum as separate unit of competency or adding on existing competency units?
8. Any other suggestions?

Thank you!!

ANNEX 6: IN-DEPTH INTERVIEW GUIDE FOR STAKEHOLDERS (ENGINE, SAVE USA, UNICEF, CONCERN, ALIVE AND THRIVE, FAO, WFP)

In-depth interview is designed to define desired nutrition-related competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. Considering multi-sectoral nature of nutrition interventions and outcomes, what is the role of agriculture sector in the implementation of the National Nutrition Program in the country?
3. What is the contribution of the agriculture sector in terms of improving nutritional status of women and children in the country?
4. What is the role of the ATVET program toward improving the nutritional status of women and children in the country? How? What are the gaps?
5. What potential roles can ATVET graduates (AEW/DAs) play in promotion and provision of nutrition-sensitive production advice and service delivery at the grassroots level? How?
6. What kind of nutrition competency gap is observed in plant and animal science ATVET graduates (AEW/DAs) in terms of promoting and provision of nutrition-sensitive production advice and service delivery at the grassroots level?
7. What is your opinion on the need for incorporating a nutrition competency component with plant and animal science ATVET curriculum? Why?
8. What nutrition competency component is worth of incorporating with the plant and animal science ATVET curriculum, to enable graduates promote and provide nutrition-sensitive production advice and service delivery at the grassroots level? Why?
9. What approach do you suggest to incorporate nutrition competency component in plant and animal science ATVET disciplines as a venue of inculcating nutrition-sensitive knowledge?
10. Any other suggestions?

Thank you!!

ANNEX 7: IN-DEPTH INTERVIEW GUIDE FOR ATVET COLLEGE HEADS AND TEACHERS

In-depth interview is designed to define desired nutrition competencies of plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. What is the role and contribution of ATVET program toward improving the nutritional status of women and children in the country? How? What are the gaps?
3. What possible roles do ATVET graduates (DAs) play in promotion and provision of nutrition-sensitive production and service delivery at the grassroots level? How?
4. What potential roles do plant and animal science ATVET graduates play in improving the nutritional status of women and children in the country? How? What are the gaps?
5. What nutrition-related competency gap(s) you observe in plant and animal science ATVET graduates curriculum to promote nutrition-sensitive production advice and service delivery?

Probe:

- Explain in terms of the knowledge, skills and attitudes they must have to provide the service and current gaps.

6. What is your opinion on the need for incorporating a nutrition core competency with plant and animal science ATVET curriculum? Why?
7. What nutrition core competency/content is worth incorporating with plant and animal science ATVET curriculum, so as to enable graduates promote nutrition-sensitive production and nutrition promotion at the grassroots level? Why?

Probe:

- What knowledge, skills, attitude/values/behavior about nutrition do you suggest plant and animal science ATVET curriculum must acquire?

8. What approach do you suggest to integrate nutrition core competencies with the existing plant and animal science ATVET curriculum?

Probe:

- As a separate unit of competency? Add-on the existing unit of competency?

9. Any other suggestions?

Thank you!!

ANNEX 8: IN-DEPTH INTERVIEW GUIDE FOR REGIONAL, ZONAL AND WOREDA AGRICULTURE OFFICES

In-depth interview is designed to define desired nutrition competencies of plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. What are the role(s) your office (Agriculture Office) with regard to nutrition-related services in this region/zone/woreda?

Probe:

- Services like nutrition promotion and nutrition-sensitive production, etc.?

3. Who/which team(s) is/are involved in nutrition-related services at your region/zone/woreda?

4. What is the role and contribution of DA's programs with regard to these nutrition-related services?

5. What are the expected role(s) of ATVET graduates in terms of providing nutrition-sensitive production and nutrition promotion at the grassroots level?

6. Which ATVET graduates have better opportunity to assist the community in nutrition-sensitive production and nutrition promotion at your region/zone/woreda? Why?

7. What is the role and contribution of plant and animal science ATVET graduate (DAs) toward promoting nutrition-sensitive production and nutrition service in the region/zone/woreda? How?

8. What nutrition-related competency gaps do you observe in animal and plant science ATVET graduates (DAs) in terms of promoting nutrition-sensitive production and services in the region/zone/woreda?

9. What is your opinion on the need to incorporate nutrition core competency/content with the training curriculum of the current plant and animal science ATVET graduates? Why?

10. What nutrition core competency/content is worth incorporating with plant and animal science ATVET curriculum, so as to enable graduates promote nutrition-sensitive production and nutrition promotion at grassroots level in your region/zone/woreda? Why?

Probe:

- What knowledge, skills, attitudes/values/behavior about nutrition do you suggest plant and animal science ATVET curriculum must acquire?

11. What approach do you suggest to integrate nutrition competency components in the existing plant and animal science ATVET curriculum?

Probe:

- As a separate unit of competency? Add-on the existing unit of competency?

12. Any other suggestions?

Thank you!!

ANNEX 9: IN-DEPTH INTERVIEW GUIDE FOR ATVET COLLEGE GRADUATES (DA AT TWO KEBELES)

In-depth interview is designed to define desired nutrition-related competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. What type of agricultural/livelihood services do you, as an ATVET graduate (DAs), provide to people in your *kebele* or *woreda*?
3. What roles (potential/opportunity) do you play as plant and animal science ATVET graduate (DA) in promoting nutrition-sensitive production in your *woreda* or *kebele*?

Probe:

- What are the indicators for the agriculture sector with regard to nutrition service?

4. Which training (in ATVET school/college) helped you most in promoting nutrition-sensitive production and service delivery to people in your *woreda* or *kebele*? How?

Probe:

- Which ATVET class helps you most in your current job with regard to improving nutritional status of people in your *woreda* or *kebele*? Why?

5. What nutrition-related competency gaps do you observe in your (animal and plant science ATVET graduates) training in terms of promoting nutrition-sensitive production and services delivery to the people in your *woreda* or *kebele*?
6. What do you propose to address the nutrition core competency gap that existed in your and the current plant and animal science ATVET curriculum to better enable graduates to promote the nutrition-sensitive production in the *woreda* or *kebele*? How?

7. Any other suggestions?

Thank you!!

ANNEX 10: IN-DEPTH INTERVIEW GUIDE FOR HEWS

In-depth interview is designed to define desired nutrition-related competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. What are the training disciplines of all ATVET graduates (DAs) who are currently working in your *kebele*?

Probe:

- What services do they (ATVET graduates) provide in your *kebele*?

3. What are those nutrition-related services that you provide to the people in your *kebele*?

Probe:

- Services included in the Health Extension Workers Package?

4. What are the activities are you currently performing jointly with the plant and animal science ATVET graduates (DAs) in your *kebele*?

Probe:

- Any nutrition-related activities/interventions? How?
- What is the contribution of plant and animal science ATVET graduates (DAs) in undertaking nutrition-related interventions in your *kebele*? How?

5. What nutrition core competency gap do you observe in plant and animal science ATVET graduates (DAs) to successfully involve in nutrition-related interventions in your *kebele*?

6. What nutrition core competency is important to include in plant and animal science ATVET graduates (DAs) training curriculum so as to increase their contribution in nutrition intervention undertakings in your *kebele*? How?

7. Any other suggestions?

Thank you!!

ANNEX 11: IN-DEPTH INTERVIEW GUIDE FOR UNIVERSITY, AGRICULTURE RESEARCH INSTITUTION, EHNRI AND IFPRI

In-depth interview is designed to define desired nutrition-related competencies for plant and animal science graduates from ATVETs in Ethiopia.

1. General information:

Date of interview: _____

Name of the institution: _____

Position of respondent: _____

Profession: _____

Years of experience: _____

Area of responsibility related to nutrition service: _____

2. What roles are the agriculture sector expected to play for the success of the National Nutrition Program?

Probe:

- What approach do you suggest to increase the role of the agriculture sector in the National Nutrition Strategy?

3. What is the contribution of ATVET graduates (DAs) in improving nutritional interventions carried out in the country? How?

Probe:

- What are the gaps?
- What tasks can they perform including nutrition-sensitive production and promotion?

4. What is the advantage of incorporating nutrition core competency with plant and animal science ATVET curriculum in terms of supporting the national effort to promote nutrition-sensitive production at the grassroots level? How?

5. What core nutrition competency do you suggest be incorporated with plant and animal science ATVET curriculum as the way to enable graduate(s) to promote nutrition-sensitive production at the grassroots level?

6. What nutrition core competency-related knowledge, skills, attitude/values/behavior do you suggest be incorporated with plant and animal science ATVET curriculum?

7. How can nutrition core competency be incorporated with plant and animal science ATVET curriculum?

Probe:

- What approach do you suggest for the integration?
- As a separate unit of competency? Add-on the existing unit of competency?

8. Any other suggestions?

Thank you!!

ANNEX 12: GUIDELINES FOR DESK REVIEW

- What is the link between and contribution of agriculture (plant and animal production), with its focus on nutrition-sensitive production and information provision, for the improvement of nutrition outcomes?
- What is the nutrition situation of the country (Ethiopia)?
- What are the national nutrition strategies?
- What are the components of National Nutrition Program of Ethiopia?
- What is the contribution of agriculture sector toward comprehensive nutrition services?
- What are indicators of agriculture sector with regard to nutrition interventions?
- What are the roles of AEW/DAs at *kebele* level? How they can contribute to nutrition intervention by collaborating with HEWs?
- What is expected from frontline agriculture cadres in line with national nutrition framework?
- What are the nutrition core competencies required for plant and animal science ATVET graduates?
- What are the nutrition-related graduate profiles/job descriptions for plant and animal science ATVET graduates?
- What are the overall core competencies for plant and animal science ATVET graduates in the provision of selected nutrition-related services?

Materials reviewed

- National Technical and Vocational Education and Training (TVET) Strategy
- Educational Sector Development Program (SDP III) action plan
- Published materials related to nutrition education and nutrition core competencies
- National Nutrition Strategy and National Nutrition Program
- National Nutrition Training Needs Assessment
- Nutrition baseline survey for the NNP (2010)
- Job description/graduate profile of TVET graduates
- HEW packages and guidelines on extension services

ANNEX 13: LIST OF STAKEHOLDERS/INDIVIDUALS CONTACTED FOR IDI AND GI

KI*	PROFESSION	DESIGNATION	AFFILIATION
1.	Veterinary/Rural Development	Livestock productivity senior advisor	ENGINE - SAVE US
2.	Agricultural Economics	Nutrition and livelihood senior advisor	ENGINE - SAVE US
3.	Public Health	Health and nutrition senior advisor	ENGINE - SAVE US
4.	Public Health	Research coordinator	Alive and Thrive
5.	Agronomist	Agronomy senior expert	MOA
6.	Agricultural Extension	Home management	MOA
7.	Animal Science	ATVET senior expert	MOA
8.	Agricultural Economics and Management	TVET labor market research senior expert	Oromia regional TVET
9.	Animal Science	TVET training development senior expert	Oromia regional TVET
10.	Electric/Electronic Technology	TVET electric/engine expert	Oromia regional TVET
11.	Geography/Curriculum	TVET market research expert	Oromia regional TVET
12.	Agricultural Economics	Disaster assessment and focal person for nutrition	MOA-DRMFSS
13.	Public Health	IYCF/Nutritionist	Concern worldwide-Ethiopia
14.	Agricultural Economics	Post-doctoral fellow	IFPRI
15.	Disaster Management	Disaster and climate risk management officer	FAO
16.	Nutritionist	Improving nutrition and household food security project manager	FAO
17.	Nutrition	Nutrition project officer	UNICEF
18.	Agricultural Extension	Rural women extension	SNNPR-Agricultural Office
19.	Rural Development	ATVET senior expert	SNNPR-Agricultural Office
20.	Animal Production	Livestock research director	SNNPR-Agri. research inst.
21.	Animal Science	Academic vice dean	Dilla ATVET College
22.	Irrigation Engineer	Registrar	Dilla ATVET College
23.	Veterinarian	Animal science dept. head	Dilla ATVET College
24.	Agronomist	Plant science dept. head	Dilla ATVET College
25.	Animal Science	Instructor	Dilla ATVET College
26.	Plant Science	Instructor	Dilla ATVET College
27.	Textile Engineering	Tech. transfer and industry extension expert	SNNPR Regional TVET
28.	Health Extension	Health extension worker	Tullo Kebele, Sidama Zone
29.	Animal Health	Assistant animal health service	Tullo Kebele, Sidama Zone
30.	Animal Production	Animal production	Tullo Kebele, Sidama Zone

*KI=Key informant