IMPROVED RURAL LIVELIHOODS THROUGH SUPPORT TO MORINGA VALUE CHAIN DEVELOPMENT IN SNNPR, ETHIOPIA

(Multi-bilateral)

Submitted by

UNITED NATIONS
INDUSTRIAL DEVELOPMENT ORGANIZATION

Food and Agriculture
Organization of the
United Nations

November 23, 2018

IMPROVED RURAL LIVELIHOODS THROUGH SUPPORT TO MORINGA VALUE CHAIN DEVELOPMENT IN SNNPR, ETHIOPIA

Recipient Country	Federal Democratic Republic of Ethiopia
Donor	Italian Agency for Development Cooperation (AICS)
Project Title	**Improved rural livelihoods through support to Moringa Value Chain development in SNNPR, Ethiopia**
Financial Modalities	Grant
Executing Agency	United Nations Industrial Development Organization (UNIDO) Food and Agriculture Organization of the United Nations (FAO)
Proposed Budget	Total Budget Proposed: € 3,000,000 • UNIDO (Component One): € 1,564,565 • FAO (Component Two): € 1,435,434
Duration	36 months (EOD January 1, 2019)
Proposed Partners	Bureau of Agriculture and Natural Resources(BoANR) Southern Agricultural Research Institute (SARI) Ethiopian Public Health Institute (EPHI) Italian Public Institute of Health -*Istituto Superiore di Sanita'* (*ISS*) Food, Medicine and Health Care Administration and Control Authority (FMHACA) World Health Organization (WHO)
Intervention areas	Southern Nations Nationalities and Peoples Regional State (SNNPR) Gamo, Gofa, Segen, Konso, South Omo, Dawro and Wollayta Zones
Brief description of the project	In the Ethiopian context, the links between agriculture, agro-industry development, gender and nutrition have important implications on poverty reduction, biodiversity conservation and environmental sustainability; therefore, rural women's role is critical and necessary in all development agendas. This project is aimed at building on the achievements of the initial pilot phase implemented by UNIDO, to scale-up moringa production and productivity (*M. stenopetala* and *M. oleifera*), strengthen the value chain through integrated utilization of natural resources, and improve value addition through processing and marketing in a sustainable way. To realize its objectives, the project will focus on improving food and nutrition security and livelihood of rural households, targeting especially rural women, through the development of an inclusive and sustainable Moringa Value Chain. In particular, the project will: i) Enhance sustainable production and productivity of moringa through integrated utilization of natural resources; ii) Improve value addition of moringa through processing and marketing of moringa products; iii) Strengthen a nutrition-sensitive moringa value chain through inclusive agri-food systems, promotion of nutritious products and a conducive enabling environment.
Submission date	November 23, 2018

INDEX

List of Acronyms

AICS	Italian Agency for Development Cooperation
BoANR	Bureau of Agriculture and Livestock Resources
CAGR	Compound Annual Growth Rate
CFU	Complementary Feeding Units
EPHI	Ethiopian Public Health Institute
FAO	Food and Agriculture Organization of the United Nations
FTC	Farmers Training Centre
FBPIDI	Food, Beverage and Pharmaceutical Industry Development Institute
FMHACA	Food, Medicine and Health Care Administration and Control Authority
GAP	Good Agricultural Practices
GDP	Gross Development Product
GMP	Good Manufacturing Practices
GoE	Government of Ethiopia
GTP	Growth Transformation Plan
HGSF	Home Garden School Feeding
ISS	*IstitutoSuperiore di Sanità* (Italian public institute of health)
MOU	Memorandum of Understanding
MVC	Moringa Value Chain
NNP	National Nutrition Program
NNSAS	National Nutrition Sensitive Agriculture Strategy
NSA	Nutrition Sensitive Agriculture
PHM	Post Harvest Management
PMU	Project Management Unit
PSC	Project Steering Committee
SARI	SNNPR's Agricultural Research Institute
SNNPR	Southern Nations, Nationalities and Peoples Region
SDGs	Sustainable Development Goals
TAG	Technical Advisory Group
UNDP	United Nations Development Programme
UNIDO	United Nations Industrial Development Organization
WHO	World Health Organization

1. BACKGROUND CONTEXT AND PROBLEMS TO BE ADDRESSED

1.1 Origin of the Project

The Government of Ethiopia (GoE) targets the Agriculture sector to play a vital role in GDP growth, job creation, foreign exchange earnings, and small & medium enterprises (SMEs) development over the years. The Growth and Transformation Plan 2010/11-2014/15 (GTP I) has given special emphasis to the role of agriculture as a major source of economic development. The GTP I consists of three components, of which the agricultural production and commercialization component focused on strengthening the capacity of farmer organizations and their service providers to strengthen marketing and processing of selected commodities. The plan also gives priority to smallholder farmers to intensify productivity by scaling up best practices and adopt improved technologies in production to increase average farmers' productivity and integrating them with the market. Furthermore strategic pillars such as creating conducive environment for industry to pay a key role in the economy, and promoting gender and youth empowerment and equality are relevant to the proposed project.

UNIDO Inclusive and Sustainable Industrial Development (ISID)[1] stipulates that industrial development increases productivity as well as employment and generates income, thereby contributing to poverty eradication, while providing opportunities for social inclusion (i.e. gender equality, empowering women and girls and creating decent employment). As industry develops, it drives an increase in value addition and enhances the application of science, technology and innovation (STI), encouraging greater investment in skills and education, and thus providing the resources to meet broader, inclusive and sustainable development objectives.

The Moringa Value Chain (MVC) initiative –Phase One, fits within the interventions planned under GTP I, forms a core component of the GTP II, implementation period planned to cover 2015/16-2019/20). This project is also in line with the Agriculture Sector Policy Investment Framework SO1: "to achieve a sustainable increase in agriculture productivity and production"; "to accelerate agriculture commercialization and agro-industrial development"; and "to sustain rapid and equitable economic growth" it is also in line with the National Nutrition-Sensitive Agriculture Strategy 2016. Nutrition-sensitive value chains such as the MVC are likely to leverage opportunities to enhance nutrition value, increasing supply and demand for the product, and minimizing nutrition losses. In the Ethiopian context, the links between agriculture, agro-industry development and gender have important implications on poverty reduction, better nutrition, biodiversity conservation and environmental sustainability

UNIDO's Phase One

The project was developed based on the official letter from the Government of Ethiopia requesting UNIDO's support in developing a project that could foster rural women development in terms of technical assistance through skill development, particularly in the organization of women farmers clusters, introduction of value-adding rural agro-processing units, packaging and quality assurances for domestic, regional and international markets. Based on the inception

[1]UNIDO, February 2014, Inclusive and Sustainable Industrial Development, creating shared prosperity | Safeguarding the environment

phase, Wezeka Kebele in Arba Minch Zuria wereda, Gamo Gofa zone, has been identified as the priority intervention area. One hundred ten (110) community members participated in the pilot initiative training process, however, the results of the pilot project benefited the entire Wezeka Kebele, composed of about 7,340 people.
The Pilot Initiative of the MVC project recorded the following achievements that laid a base for the currentproject:

- *On rural development*: Pilot project site was identified, securing 30 ha of land. Under the pilot initiative the first pilot demonstration unit of 5 ha has been developed, to demonstrate the improved production system. One ha is allocated for seed production and tree planting, with intercropping option, and 4 ha for dense-planting system. Targeted beneficiaries, selected rural women of Wezeka Kebele, Arba Minch Zuria Wereda, have been trained on improved production and processing techniques. Product development training, knowledge transfer, (e.g. moringa soap production) has been conducted to introduce new aspects of Moringa use. A feasibility study has been conducted on organic production system on the allocated land (30 ha). The study provided a sound base for the establishment of a Moringa seed system, the processing of leaves and Moringa oil, and the scaling-up of the pilot initiative (diversification and marketing). The potential of *M. stenopetala* as a commercial product that can penetrate the commercial market structure both locally and internationally is clear.

- *On institutional development*: Ethiopian Public Health Institute (EPHI) capacity was strengthened through provision of laboratory equipment. Two important laboratory instruments, amino acid analyser and fat analyser, were procured and installed to enable the Institute conduct the complete nutrition profiling of *M. stenopetala.* Furthermore, international networking has been established between the Italian Public Health Institute, *Istituto Superiore di Sanità (ISS),* to improve the technical capacity of EPHI and other relevant institutes through training and knowledge transfer, especially on research and development laboratories. The collaboration between *Istituto Superiore di Sanità (ISS)* and local institutes shall be stipulated in the form MOU in the second phase. Institutional support is provided to the Ethiopian Food, Medicine and Health Care Administration and Control Authority (FMHACA) for developing a regulatory framework to ensure the marketing and distribution of Moringa products. Within this context the MVC project supported the development of a policy document, on Traditional/Herbal Medicines and Herbal Supplements THM&HS). A draft proclamation and directives have been developed and submitted to the relevant authorities for review and to be presented to the Council of Ministers for endorsement and submission to the House of Representatives for approval. Arba Minch University and Hawassa University have been supported to conduct a baseline nutritional assessment which is expected to be completed before the end of 2018. The assessment included a household survey of the existing handling practices, preparation and processing techniques of Moringa in the lowlands of Arba Minch Zuria wereda. Thus, the MVC initiative is considered as a strategic project for the regional Government. The regional government financed the construction of a post-harvest unit and a borehole to supply water for irrigation at the demonstration plot. The value addition of other underutilized agricultural products, which SNNPR is abundantly endowed with, can further trigger similar value chain development initiative. The

intention of the regional government is to create a centre of excellence for Moringa post-harvest handling and agro-processing. The Government anticipated to replicate the lessons learned to other zones in SNNP regional state, as well as to promote Moringa at the national level.

- *On product innovation & development*: Moringa-based improved recipes have been developed based on the study conducted on consumption pattern of Moringa and ways to improve the nutritional values of foods consumed in Arba Minch area. A nutrient analysis was performed on the young, old, dry and freshMoringa leaves and a sensory evaluation was conducted on the improved recipe. A communication strategy, a training manual and communication tools such as recipe cards, leaflets and billboards were developed as well. Trainings of trainers (ToT) have been provided health extension workers of Wezeka Kebele on balanced diet, malnutrition, nutrition during the first 1000 days, complementary feeding, and dietary diversity. The nutritional values of Moringa together with hygiene & sanitation aspects have been emphasized on training modules.

1.2 Country Context

Ethiopia is located in the horn of Africa, with an area of 1,127,127 km^2. It is a country of great geographic diversity with wide altitudinal and agro-ecological variations. The altitude ranges from 116 meters below sea level in the Danakil Depression of the Afar National Regional State to the highest peak of 4,620 meters above sea level on Mount Ras Dashen of the Amhara National Regional State.

The Great Rift Valley divides the western and south-eastern highlands; these highlands, on each side, give way to vast semi-arid lowland areas in the east and west, especially in the southern part of the country. The country macro and micro-climatic conditions are highly variable, with bimodal rainfall distribution. The major rainy season usually lasts from June to September, followed by the short rainy season that occurs between February and April. The mean annual rainfall ranges from 250 mm to 2,800 mm.

Ethiopia is known as one of twelve *Vavilov* centres of primary plant domestication in the world. Furthermore, due to its geographical position, its agricultural and socio-economicpatterns, the production of numerous exotic and endemic crops has developed an enormous secondary diversification in the Ethiopian Regions. Vegetation types are highly diverse, ranging from afro-alpine to desert species. The number of higher plants is over 7,000 species from which 12% is probably endemic. Ethiopian rural farmers play a significant role in the development of the agricultural sector; they are the custodians of important crops genetic materials used as food, industrial raw materials, and medicinal plants.

1.3 Sectoral and Institutional Context per Region

Despite registering a fast-growing economy and meeting most of its SDGs, Ethiopia remains one of the least developed countries in the world, with significant challenges. It ranks 174thout of 188 countries in the recent (2015) UNDP Human Development Index. About 27.6% of the population is estimated to live below the total poverty line, with strong disparities between

regions, as well as between rural and urban areas in income levels, poverty and access to social services.

The country is predominantly rural, with only about 16% of the population living in urban areas. The economy is largely based on agriculture. In Ethiopia rural poverty and vulnerability are highly gender biased. Women play a significant role in agricultural production, carrying out an estimated 40 to 60 percent of all agricultural labour (R. Holms R. Holmes and N. Jones, 2009)[2] but suffer from unequal access to resources and capacity building opportunities.

Women are generally responsible for household dietary intake of the family. However, women and children under 5 are among the most vulnerable concerning food and nutrition insecurity. The prevalence of undernutrition remains a serious challenge for the country, hence addressing it is essential for the Government of Ethiopia to achieve sustainable development.

Rural women farmers' economic empowerment will be addressed by creating equal opportunities for the beneficiaries to actively involve them in the value chain organisation, through developing capacity in improvement of production and productivity, value addition, marketing and entrepreneurship.

In response to food and nutrition security challenges, the Government is promoting the development of agriculture, agro-processing through sustainable utilization of natural resources and protection of the environment and maintaining biodiversity. In addition, there is a strong governmental commitment for ending malnutrition by 2030 through the *Seqota* declaration, the elaboration of specific strategies, policies and programs such as the national nutrition-sensitive agriculture strategy 2016 (NNSAS) and the second national nutrition programme (NNP II), with existing roadmaps and gaps in terms of indicators and capacity building, among others. Institutional engagement in inter-sectoral collaboration for nutrition, including mainstreaming the topic into agriculture considerations through the NNSAS is an opportunity for partners to collaborate in tackling those challenges.

Maize, wheat and enset are the three most important staple food crops in SNNPR. Other important crops include barley, teff, haricot bean, Irish potato and sweet potato. SNNPR is the land of the origin of Arabica coffee. In the midland agro-ecological zones coffee is a major cash crop of this region and contributes to about 40% of the annual coffee production of the country. In Ethiopia there are two cropping seasons, the short rainy season, from mid-February to mid-June *(Belg)* and the long rainy season, from July to the end of September *(Meher)*. *Belg* contributes about 75% of the annual crop production of the region. Crop production of the region has highly increased in the past two decades, due to capacity building and utilization of improved agricultural technologies.

The food and nutrition security situation in the region has highly improved over the past two decades, due to the intervention of different programs supported by the Government and its development partners. Since 2015, the regional Bureau of Agriculture and Natural Resources Development, in partnership with FAO, has been implementing Nutrition Sensitive Agriculture

[2] (R. Holmes and N. Jones December 2009) Gender inequality, risk and vulnerability in the rural economy: re-focusing the public works agenda to take account of economic and social risks Background Report for SOFA 2010

(NSA) interventions in five districts of the region, through strengthening of multi-sectoral collaboration for optimal nutrition outcomes.

1.4 Problems to be addressed

Despite a registered fast-growing economy, the Government of Ethiopia has several challenges ahead to reduce poverty and improve the livelihood of rural communities. Ethiopia remains one of the poorest countries in the world; it is prone to weather-related shocks and experiences high levels of food insecurity, particularly among rural populations and smallholder farmers. Similarly, ensuring food security, nutrition and livelihoods of rural and remote populations remains a challenge for the Ethiopian Government. The vast majority of the population is dependent on rain-fed agriculture with a mix of crops and livestock husbandry. Progress to increase the number of households with access to irrigation water is high. Agriculture in SNNPR reflects altitude, with highland, mid-land and lowland agro-ecological zones, with associated declines in rainfall with altitude.

Over the past two decades, the food security situation of SNNPR has highly improved. However, despite the relatively favourable agro-ecological situation, the prevalence of malnutrition among under five children is still 38% for stunting, 24% for underweight, 10% for wasting while about 30% of rural population lives below the poverty line.The underlying causes of malnutrition comprise household food insecurity and weak economical inclusion.

Moringa is a plant, which, in its diverse forms, is very rich in proteins & micronutrients and can be a valuable complement to diets. Thus, an improved production system and a fostered nutrition-sensitive value chain will contribute to improve nutritional status in farming communities of SNNP national regional state. Moringa is one of allies against malnutrition where food diversification is a challenge, which is the case in pastoralist or agro pastoralist areas. It has high nutritious content especially in Calcium and vitamin A, is instrumental for the fight against undernutrition acting as a shield against eye, skin disease, heart ailments, and diarrhoea. It also contains vitamin C, potassium and proteins.In the pilot phase of the project the nutrient analysis of *M. stenopetala* has been evaluated compared to other locally available products. Parameters such as protein, fat, energy, iron, calcium, zinc and vitamin C were found to be higher for Moringa with respect to other locally consumed products such as cereals and legumes.

The nutrition analysis in the different preparations/cooking techniques indicates that the improved preparation methods enriched the nutrition values. Five different traditional recipes were tested; in all the preparations the improved method enriched the protein content on average by 190%, fat by 120%, energy 113%, iron160 %, calcium 600%. The phosphorous content of some traditional preparations had higher values, but the total average is about 130%.

Largely used for medicinal purposes, when adequately transformed, it can be added to family food and complementary foods for children under 5, but also integrated into livestock feeding through removing leaves from the plant, leaving soft twigs and stems. In addition to human and animal nutrition, Moringa-based products are very marketable and can consequently strengthen livelihoods and alleviate poverty through women/youth empowerment and income generation. Counting with its high nutritional value, especially for *M. oleifera*, its potential medicinal or food

use as complement and/or supplement (functional foods) for local consumption, local use or export, and its high potential for improving livestock and poultry feed (thus quality milk, egg production opportunities) are considerable.

The importance of Moringa as food supplement, cosmetic, medicinal and industrial crop is gaining attention not only as affordable protein, mineral and vitamin source for rural communities, but also for its cosmetic and health benefits in the developed world. As Moringa leaves contain about 46 antioxidants and have anti-aging effects the cosmetic industry considers it as raw material for face and body products.

The past decade has seen significant growth in Moringa products. The growing awareness of the health benefits is a major factor driving the increasing consumer demand for these products, especially in Europe and the Americas. The Global Moringa products market is expected to grow at a CAGR of nearly 10% during the period 2018-2022. According to Technavio analysts, the rising awareness of the health benefits of Moringa products is a major factor driving the market's growth.[3] The above factors are referred to *M.oleifera.* Even though *M. oleifera* is the widely domesticated in the tropics, the two spp. *M.oleifera* and *M. stenopetala* are considered as the world's most useful multi-purpose trees sharing similar traits.

M.stenopetala is an important tree for millions of people living in the SNNPRS. It is a staple food for millions in the lowlands of the region, mainly distributed in South Omo, Gamo Gofa and Segen Zones, but also consumed in Sidama, Gedeo, Dawro and Wolaita lowlands.

The demand for the local production is increasing as a result of the recently created awareness onMoringa health benefits through cooking demonstrations of improved recipes to promote the utilization by the wider public.
Food and beverage industries showed interest to consider Moringa for the fortification of processed foodsand as raw material for soft and energy drinks. If the industries develop the right formula for food fortification the demand of the Moringa leaf powder might reach to several tons per annum. The demand of the beverage industry such as Zebym Trading P.L.C. that produces Melkam Moringa soft drink, current annual demand is about 36 tone of Moringa powder. When the factory reaches full capacity the need for Moringa powder will exceed 10 fold of the current demand. The need of Moringa powder would continue to rise as other products such as moringa syrup come to the market.

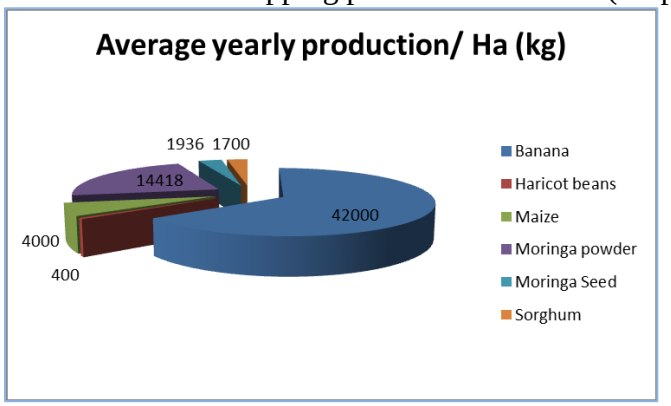
Improving the production system together with a well-developed value chain of Moringa creates an opportunity to diversify the production system, bring new products to the market that benefits the communities to create wealth. The table below demonstrated the cropping pattern and productivity of the different crops *vis a vis M. Stenopetala* (based on the data collected form the demonstration unit) in the area of intervention. However the results below will be further elaborated on the different scenarios.

[3]https://www.technavio.com/report/global-moringa-products-market-2018-2022

Table 1. Average production of conventional crops in SNNPR

NO	Type of Crop	Estimated Average Price/ Kg (ETB)	Total estimated revenue/ year (ETB)	Productivity /ha/ton
1	Banana	9.5	399000	42
2	Maize	6.5	26000	4
3	Sorghum	10	17000	1.7
4	Haricot Bean	13	5200	0.4
5	Moringa powder	65	937170	14.418
6	Moringa Seed	75	145200	1.936
Average production of conventional crops reference from Arba Minch wereda Agricultural Office. The moringa production is based on the pilot project results.				

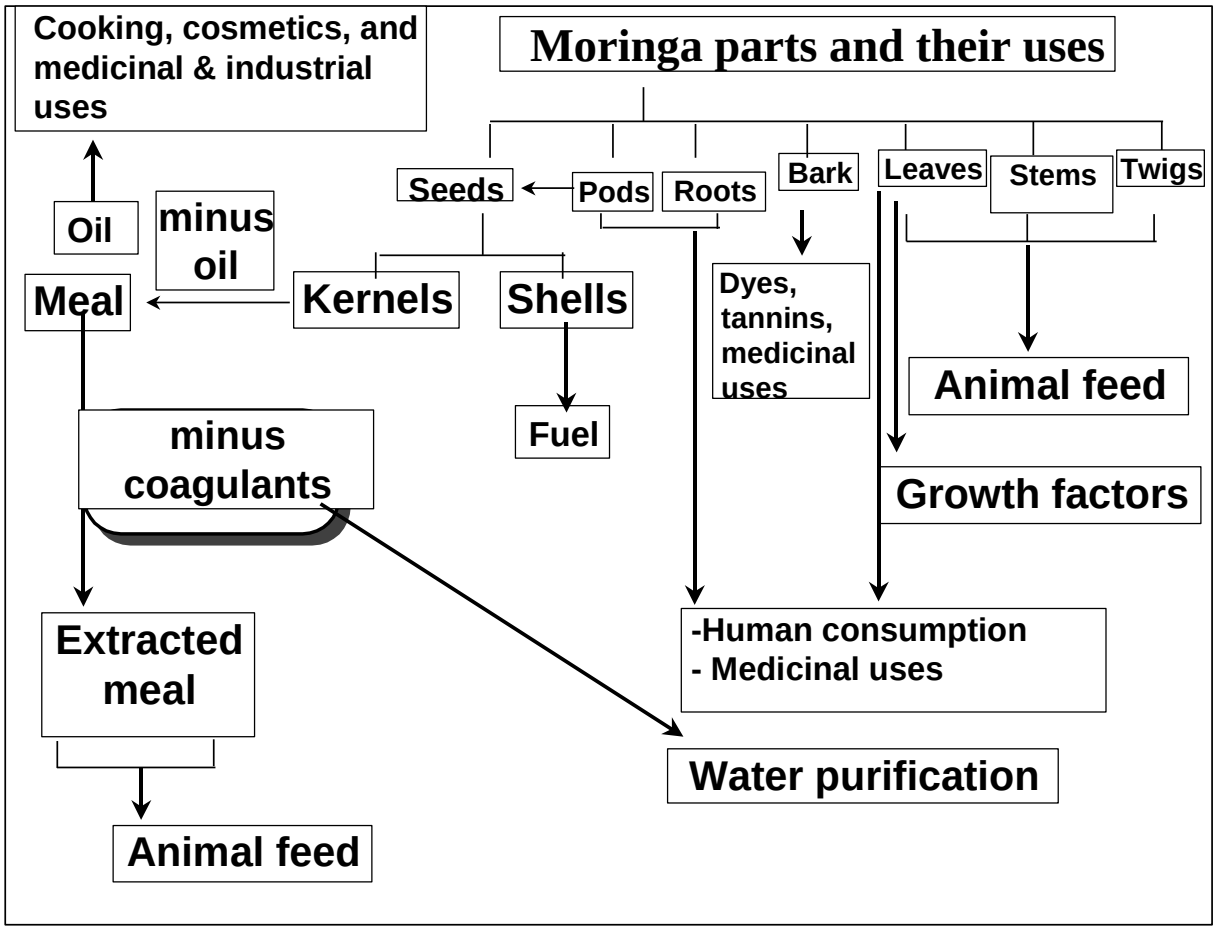
Figure 1. Intervention area cropping pattern and revenue (un-published)



In terms of agro-ecology and sustainability, Moringa is a strong environment cleaner in the sense that Moringa seed proteins can be used as coagulants as a substitute for alumina for water purification, which can prevent aluminium accumulation in the environment. Then Moringa protein-impurities complex produced as a result of water purification are biodegradable, whereas alumina-impurities complex are not. This is one of the numerous examples of use of Moringa to promote circular zero waste economy.

Empowerment of women farmers can be achieved through economic development, enhancing women participation in the value chain including paying leadership role in the cooperative decision making body. The current Moringa processors cooperative attained 4:1 women: manratio in theExecutive Committee. To maintain the proportion and motivate others to actively participate, leadership (decision making) and management skills and marketing capacity development training will be conducted. Furthermore, continuous training will be required to empower them in all aspects of the value chain and create awareness within the community (men and women) on the importance of women economic empowerment and equality to acquire the necessary support and understanding.

Figure 2. Uses of different parts of Moringa



.

2. THE PROPOSED PROJECT

2.1 Implementation strategy

Building upon the results of the phase one (implemented by UNIDO) the proposed project will capitalize on the establishment of the moringa production unit in Wezeka kebele, Arba Minch Zuria wereda, Gamo Gofa zone. This production unit of 30 hectares of land is managed by 110 community members (98 women and 12 men). At present, only five hectares have been developed as a first pilot demonstration unit for improved moringa production system. One hectare is for *M. stenopetala* seed production and tree planting with intercropping option, and four hectares are for dense-planting system of both *M. stenopetala* and *M. oleifera*. At year one, ten additional weredas will be identified and targeted within Dawro zone, Debub Omo (South Omo) zone, Segen zone, Gamo zone, Gofa zone, Konso special zone and Wolayita zone. Lessons learned from phase one will be replicated and up-scaled. In year two, the number of targeted weredas within the same zones will be doubled – for a total of 20 weredas in addition to Arba Minch Zuria wereda.

Moringa production

During the proposed project, all 30 hectares in Arba Minch Zuria wereda will be cultivated by the established cooperative for organic production of both seeds (multiplication/distribution and sales for oil extraction) and biomass (industrial processing). The existing cooperative is expected to grow to 784 members, who will be involved in the operation of the production and processing the 30. An area of about 2 hectares covers the infrastructure; the remaining 28 hectares will be divided to 18 hectares plantation for seed production and 10 hectares for biomass, moringa leaf production. The planting will be done progressively to cover the entire area end of year 2. The regional Bureau of Agriculture will support through development/promotion of a small-scale irrigation scheme. In each wereda, FAO will establish one moringa tree nursery within existing Farmer Training Centres (FTCs) – for a total of ten nurseries in year one, and twenty nurseries subsequently - in collaboration with the regional Bureau of Agriculture. Both *M. stenopetala* (90%) and *M. oleifera* (10%) seedlings will be produced in the nurseries; hence, piloting the utilization of both species for consumption and animal feed in the targeted area. Each nursery will have a surface of approximately 20x20 meters, in order to address the need of seedling for each wereda (approximately 4,000 seedlings). The management of these nurseries will be handled by women farmers group supported by agriculture extension workers. Other nurseries will be established by the BoANR in order to distribute seedlings to the selected groups for planting, production and harvesting and linkages will be created with the women farmers group for provision of leaves to the processing units. In case the women groups are established sufficiently close to the nurseries, they will assist the agriculture extension workers in charge of the nurseries' management. Also, FAO will provide capacity development and the initial seedling infrastructure/equipment, including irrigation. Irrigation schemes may include water harvesting systems for irrigation (e.g. dams), considering that the areas of intervention are drought-prone. A business plan will be prepared jointly with the local Cooperative Development Office, to ensure economic sustainability of the nurseries. The nurseries will be linked to the seed production unit in Wezeka kebele, which will supply quality seed certified by the regional branch of the Ethiopian Seed Enterprise. In order to provide seed certification, FAO will support

the Seed Enterprise and will facilitate linkages with the Southern Agricultural Research Institute (SARI) on developing specifications and quality parameters for *M. stenopetala* and *M. oleifera*.

To promote moringa production at community level, FAO will support the formation of two women groups per targeted wereda (10 individuals per group – for a total of 20 groups and 200 women in year one, and 40 groups and 400 women at year 2, 800 women at year 3). These pre-cooperative groups will be cultivating moringa trees both on individual plots and within marginal lands in their communities. FAO will provide capacity development on GAP and farmingas a business. Linkages will be established with the nurseries for purchasing moringa seedlings (on a cost-sharing basis with FAO in year one). Within a landscape management approach, each household will be responsible for 50 moringa trees planted in marginal lands, for a total of 500 trees per group.[4] The expected production of moringa leaves is estimated at 3 kg of moringa seeds per planted tree; which are expected to produce 2 kg per cycle – assuming there are 6 cycles per year so an average of 12 kg leaves produced per tree/per year with the landscape management approach. In addition, each household will cultivate a 5x4 meters plot for high-density production (50 plants of *M. stenopetala* at 0.4x0.4 meters between rows and plants) near the homestead. For *M.oleifera*, the density of plants in a plot will be slightly higher. Household (family) appropriate irrigation technology (including drip irrigation systems) will be promoted; these systems will be used for production of other vegetables as well. Therefore, each group of ten households is expected to produce one ton of moringa fresh matter (6 tons per year) and 1.65 quintal (1 ton per year) of dry matter.[5] To maintain household food diversity, targeted farmers will receive high quality diverse seeds and crops for homestead horticulture. This will be mostly addressed by the direct support to BoANR. Capacity development on the use and maintenance of irrigation systems will be provided by FAO, in collaboration with the regional Bureau of Agriculture and Livestock Resources. A business plan will be prepared jointly with the local Cooperative Development Offices, to ensure economic sustainability of the groups.

Capacity building of institutions on land use planning and management, planting, plant management, agroforestry, harvest and post-harvest, in the form of ToT for wereda experts and DAs and community members will be provided. Extension and monitoring will be continuous and on-going to minimise the risks related to intensive production.

A partnership will be established with GIZ on their ongoing project "*Supporting the communities in and around the Nechsar National park to improve livelihoods through reforestation activities"*. The project long term vision is that the communities will benefit from the wood-processing industry; and the country will benefit from the ecological and economic services of forests, such as water storage, erosion protection, improved soil quality, production of wood and non-wood products. Hence, moringa has been considered as an alternative source of income and nutritious food for the communities. Distribution of seedlings from the nearby nursery will benefit both the project beneficiaries, communities around the national park and will contribute to protect the area from deforestation. SARI research activity on *M. oleifera* is ongoing. Even though the project is not yet completed to provide a comprehensive report, results indicated that

[4] Equivalent to 1 hectare of trees planted at approximately 4.5 meters apart between rows and plants.
[5] Based on an average production of 39 tons/hectare of fresh matter and 6.63 tons/hectare of dry matter, and six cuttings per year.

M. oleifera has shown high adaptability, growth performance, biomass production and good response for improved management practices such as pollarding even better than *M.stenopetala,* for some traits.

Small-scale processing and income generating activities

UNIDO and FAO will support the women groups to engage in primary processing (i.e. leaves cutting and cooking), through capacity development and provision of initial capital and equipment. The women groups will perform primary processing of moringa leaves, preparation of moringa-derived products (e.g. moringa soap), as well as livestock feed for the consumption of their own cattle. They will be able to sell processed products in the local market as income generating activity. Capacity development will be provided on processing/recipes and social behaviour change and communication (SBCC) food safety and food losses reduction. The regional Bureau of Agriculture will provide the necessary land for the establishment of the primary processing units. In addition, FAO will support the formation of at least two youth groups in Wezeka kebele (10 individuals per group, at least 50% women) for animal feed production. The youth groups will further process the by-product of oil extraction into animal feed in higher quantity (e.g. cakes, etc.) mixing it with crop residues and other supplements; their expected production capacity is in average 1800 kg from the 500 trees. FAO will provide capacity development on GMP and business skills, as well as initial equipment and start-up capital. The regional Bureau of Agriculture will provide the necessary land for the establishment of these units. A business plan will be prepared jointly with the local Cooperative Development Offices, to ensure economic sustainability of the groups.
In addition, FAO will develop and test moringa-based animal feed products, in collaboration with SARI.

Human nutrition

The BoANR will provide ToT's and community trainings in FTCs, incorporating activities of NSA about nutritious crops - including but not limited to Moringa - and food preparation for children under 1,000 days,adolescent girls, pregnant and breastfeeding women. FAO will ensure technical assistance to the BoANR. Each household is expected to retain 5% of the moringa leaves for home-consumption, i.e. cooking and complementary feeding for children under 5 years of age. Another 20% will undergo primary processing, cleaning and drying using locally made mobile solar dryers, forthe local market (village) outlets. The remaining 75% will be sold to local institutional buyers (e.g. schools, etc.) as well as to the processing plant located in Wezeka kebele.
Linkages will be established with the on-going UNICEF-FAO's *"Multi-sectoral interventions to improve nutrition security and strengthen resilience"* in South Omo and Wolayita zones. Indeed, the approach used on complementary feeding units will be up-scaled to the remaining target areas. On this topic, linkages will be created through SARI with the ongoing research by EFRI/ EPHI on moringa-based recipes development for complementary foods (building upon results of Phase One and on the UNJP/ETH/090/CEF). Links with institutional procurement and school-feeding initiatives in SNNPR (especially through project GCP/GLO/775/ITA) will ensure that students get diversified fresh products for their meals, if optimum standardisation and quality for children feeding are met.

In line with the National Nutrition Guidelines and NNP2, WHO will support the development of the moringa and moringa products through an evidence-based clinical research on the nutritional benefit (bioavailability of micronutrients) as food and food supplement (fortification)of *M. stenopetala* and *M.oleifera*. The study will be the responsibility of the BoANR with EPHI (and/or other relevant institution) with the technical assistance of WHO.

Animal feeding

On a pilot basis, FAO will promote the use of moringa-based animal feed products for cow and goat milk production. In particular, 400 livestock owners – 200 dairy cow owners and 200 goat owners (at least 50% women) - will be targeted in year one. FAO will facilitate linkages with the youth groups for purchasing of animal feed (on a cost-sharing basis with FAO in year one), thus increasing production and milk quality on zero grazing environment. Capacity development on GAP (livestock rearing) and business orientation will be provided. On a marginal basis, the women group will process animal feed for the consumption of their own cattle. In addition, FAO will support the organization/strengthening of one dairy cooperative for the collection and marketing of cow and goat milk. Initial infrastructure and equipment will be provided by FAO, together with capacity development on hygiene and food safety, Post-harvest Management (PHM) practices and marketing/business skills. The milk produced and marketed through the dairy cooperative will integrate on a piloting basis the human complementary foods production activities (especially targeting children under 5 years of age) to the extent possible. In addition, it is expected that the livestock owners will increase their revenues from milk sales, through ameliorated market linkages with local (village) outlets as well as business arrangements between the dairy cooperative and institutional buyers (e.g. schools, hotels/restaurants, etc.). SARI will be involved in monitoring some key indicators related to milk production: productivity increase, physio-chemical composition.

Industrial processing

During phase one, the regional Industrial Parks Development Cooperation constructed 500 sq. meters processing facility next to the 30 hectares production unit in Wekeza kebele. In order to manage this facility, UNIDO will support the creation of a processing unit branch of the existing cooperative. At the end of the third year about 784 people will be directly involved in the day-to-day activities of the central processing unit, out of which 392 will be involved in the post-harvest handling and processing unit. The processing facility will have two production lines, one for moringa powder/moringa tea and the other for moringa oil extraction, and will be equipped with the necessary technologiessuch as, dehumidifier, dryer, processing tables, grinder, oil press, packing, bottling machine. UNIDO will provide capacity development to the ‘processing unit’ branch of the cooperative on post-harvest handling, GMP, including food safety, quality and certification. Furthermore, UNIDO shall support the establishment of primary processing unit through identification of appropriate technology for locally made mobile/fixed drying units, in the different weredas for the youth and women group organized by FAO. Capacity development

training will be provided on post-harvest handling, food safety, and quality. It will also support the certification of the products and the establishment of market linkages. UNIDO will further support the group with capacity development on entrepreneurship, maintenance and services for the machineries, business plans preparation and branding and marketing. Concerning the fresh biomass, the produce will be sourced from both the demonstration unit in Wezeka kebele and the women's groups in other targeted areas. By the end of the project period, from the demonstration unit, about 1,258 tons of fresh moringa leaves fresh biomass, shall be harvested, which will correspond to close to 157 tonnes of dry moringa powder/ year. From the 18 hectares, assumed to be planted for seed production, about 8 tons of seeds per year are expected to be produced. Each household will sell the seeds collected in marginal lands (landscape management) to the processing plant in Wezeka kebele for oil extraction.

Moringa products innovation

UNIDO will facilitate linkages with market outlets at national level for moringa products (including fresh ones). In addition, it will explore the export potential for processed products. The organic production system and certification (on a pilot basis) for the demonstration plant could create opportunities to access to better market and fetch higher prices, especially in the international market. Organic certification for the out-growers scheme and willingness of farmers in certification will be studied. To ensure traceability and quality for organic production, the processing of the production grown at the demonstration plot and that of the out-growers can be separated. The food industry is considering using moringa to improve the nutrition content of processed food. Several companies have been identified for the industrialization of enriched foods such as *GUTS Agro Industry PLC*, and *Hilina*. Linkages between the cooperatives and the private sector will be established to create and secure a sustainable market for the farmers/cooperative members. In line with the above, the demand for moringa powder from the beverage industry, such as *Zebym Trading P.L.C*, an enterprise that manufactures soft drinks, and *Melkam* Moringa; other products will be considered and willbe fulfilled by the cooperatives with the support of UNIDO to produce quality and certified products for a sustainable market. UNIDO and FAO will collaborate with organizations such as Global Alliance for Improved Nutrition (GAIN) and other private sector entities for the identification of innovative approaches to develop, test, and certify products for moringa mainstreaming as a supplement, fortifying ingredient, to increase nutrient density of locally processed food. The Ministry of Industry's,Food, Beverage &and Pharmaceutical Industry Development Institute (FBPIDI) is expected to support the linkages with the private sector and foster sustainability. Recipes developed during the pilot phase will be utilized for product diversification and will be promoted to improve the nutrients content of the food both at the project intervention area and beyond.

Regulations and Certification

Following-up on results from phase one, FMHACA is expected to finalize the legal framework including the publishing of the proclamation Traditional/Herbal Medicines and Herbal Supplements THMandHS). The regulatory authority shall develop/adopt a framework, considering WHO traditional herbal medicines and supplements guideline on regulation model for harmonization of scientific assessment and facilitation of product marketing. This will enable producers to register and certify their products and safeguard the public from altered products.

ISS will strengthen the capacity of EPHI, FMHACA, Ethiopian Standard Authority and regional/local laboratories on food control and quality certification. UNIDO will ensure the coordination between the regulatory authorities and *ISS* to ensure the establishment of national standards for all moringa products, quality certification and registration of *M. stenopetala*. In addition, *ISS* will strengthen the Ethiopian regulatory framework on food and nutrition and will provide tools for its implementation. Finally, it will support FMHACA to achieve registration and legal commercialization of *M. stenopetala* in Ethiopia, other African countries and in the EU market (preparation of the dossier to access the EU market). The on-going activities related to the regulatory framework with FMHACA will be continued. The draft proclamation that has been derived from the policy document will be presented to wider public for debate and publication of the policy documents, proclamation and regulations.FAO will ensure linkages with the on-going projects on "Update of the National Food Composition Table" and "Elaboration and Implementation of Food-Based Dietary Guidelines", in particular during the field surveys and the analyses of nutrition profiles conducted by EPHI for moringa and moringa products.
By year three at least two products (moringa powder/tablets and oil for cosmetic use) shall be certified and marketable in European Union countries.

2.2 Overall Objective

The overall goal is to "contribute to economic empowerment and poverty reduction, food and nutrition security and sustainable use of natural resources in SNNP regional state".

2.3 Specific Objective, Outputs and Activities

The **specific objective** of this proposed project is to improve income, livelihoods and nutritional status of the targeted rural communities in SNNPR, through the development of a nutrition and gender-sensitive Moringa Value Chain and the sustainable use of natural resources.

- **Output 1:** Enhanced sustainable production and productivity of moringa through integrated utilization of natural resources (FAO-led);
- **Output 2:** Improved value addition of moringa through processing and marketing of moringa products (UNIDO-led);
- **Output 3:** Strengthened nutrition-sensitive value chain through inclusive agri-food systems, promotion of nutritious products and a conducing enabling environment (FAO-led);
- **Output 4:**Improved knowledge about the intervention areas and the projects results dissemination (UNIDO led).

Output 1:Enhanced sustainable production and productivity of moringa through integrated utilization of natural resources (FAO-led)

Under output 1. FAO will identify 200 women head of families (2 women groups of 10 each), per wereda on year 1, 200 additional on year 2, and support them to enhance their production and

productivity through integrated utilization of natural resources through the implementation individual plots of 5*4 m2 and landscape management (Activity 1.1), promoting the establishment of appropriate land use, irrigation systems and carbon sequestration (Activity 1.2). Quality control mechanisms will be established for genetic material and a well-structured seed system (Activity 1.3). Multiplication of *M. Stenopetala* and piloting of *M. Oleifera* will be promoted for different landscape niches, like livestock feed and fodder, as well as functional foods/medicinal purposes using *M. Oleifera* as a pilot (Activity 1.4). Specific training material and curricula will be developed on good production practices and processing of both moringa species (Activity 1.5). FAO will promote out-grower schemes to link producers to processing units and the central plant (Activity 1.6). Government agricultural extension services and other local institutions in SNNPR will be strengthened through their involvement in the value chain and capacity building (1.7). The central production unit in Arba Minch zuria woredawill be strengthened and expanded to 10 ha for biomass production and 18 ha for seed production (1.8).

Output 2: **Improved value addition of moringa through processing and marketing of moringa products (UNIDO-led)**

Under output 2 UNIDO will **c**onduct a detailed market assessment for moringa (both species) and moringa products for animal consumption and human consumption, including for medicinal use, in order to identify products requirements: quantity, quality, continuity of supply (activity 2.1). UNIDO will provide technical support to BoANR on capacity building activities of public institutions (activity 2.2). UNIDO, in collaboration with FAO, will strengthen the analytical, regulation, certification and registration capacity of the national regulatory authorities (FMHAC/EPHI/ESA) in collaboration with international organization (*ISS)* (activity 2.3). Agribusiness skills (e.g. management, marketing, maintenance and services, etc.) for cooperatives and pre-cooperative groups will be developed (activity 2.4).
UNIDO will establish a moringa processing unit in Arba Minch Zuria wereda, Wezeka kebele, which will engage about 784 people in the processing in both the production and processing activities (Activity 2.5).The capacity of beneficiaries (with special emphasis on women)will be strengthenedon the principles of GAP,GMP, management and entrepreneurship (activity 2.6).The development of moringa products in collaboration with the private sector to promote its industrialization (Moringa oil, cosmetics etc.) will be supported (Activity 2.7).Other value chain actors will also be trained on GAPs and GMPs (activity 2.8)
UNIDO will finally support to create marketing opportunities through internationally recognizedregulatory framework and popularization and facilitate forward and backward linkages between value chain actors (linking with national and international markets) (activity 2.9). Forward and backward flow of information about products, functions, relationships, roles and strategies along the value chain will be guaranteed by UNIDO (activity 2.10).

Output 3: Strengthened nutrition-sensitive value chain through inclusive agri-food systems, promotion of nutritious products and a conducing enabling environment (FAO-led)

The 40 women groups identified under activity 1.1 will be formed with FAO support (Activity 3.1) and organised in appropriate business modalities and processing units of moringa-derived products for human and animal consumption. Two (2) youth groups will be organized in Wezeka kebele specifically for moringa-derived livestock fodder production (Activity 3.2) and the

utilization of moringa-derived products will be promoted, in order to enhance livestock nutrition and limit land grazing in an integrated manner through the support of 400 livestock owners and the organization/strengthening of one dairy cooperative (Activity 3.3). Both agencies will jointly manage an assessment about regulation and certification schemes of Moringa *stenopetala and oleifera* (Activity 3.4). The Activity 3.5 will see FAO support the procurement of both species as food/food complement at household level, home-grown school feeding and their utilization in complementary feeding value chain through market linkages with complementary feeding units when existing, strengthening the market at the same time. In collaboration with UNIDO, FAO will support the development of innovative products and recipes for the local communities and markets (Activity 3.6).

Output 4: Improved knowledge about the intervention areas and the projects results dissemination (UNIDO led)

Appropriate communication strategy will be established to popularise the utilization of moringa nationwide. School clubs, cooking demonstrations, public lectures and events will be organized to info the public the appropriate use and value. Professional workshops, mass media and social media platforms will be used to promote the project's outcomes and the role of the Donor (activity 4.1). Project Management Unit (PMU) will be set up between the implementation agencies (UNIDO/FAO/BoANR), for overall project coordination, monitoring & evaluation and reporting. The implementing agencies shall develop detailed joint work plan and agree on the specific activities relevant to the individual implementation agencies. Collaborate on overlapping and cross-sectoral activities relevant to respective agency. PSC meetings will be organized by the joint implementation unit which will also facilitate the preparation of mid-terms and final report (activity 4.2). The multi-disciplinary project team (extended implementation unit) will be closely monitored by the PMU. A Project Steering Committee (PSC) composed of the project implementation partners, implementation agencies and the Donor, will oversee the smooth coordination. On monitoring & evaluation (M&E), the project coordinators of each component (UNIDO/FAO/BoANR) will provide monthly updates on activities and progress to the PMU, against the stated milestones in the logical framework and project document. They will undertake regular missions to the project sites for supportive supervision and to monitor project progress. There will be a total of 6 joint supervisory missions in the field. The project shall be subject to a mid-term evaluation (formative) and a final independent evaluation (summative) during the final year. The PMU will organize a biannual experience sharing and review meetings which includes the donor, to share lessons learned and best practices among the stakeholders. In addition biannual joint field visits will be conducted by a team composed of the donor, the executing agencies and key partners.

2.4 Beneficiaries

One hundred and ten community members in Wezeka kebele, Arba Minch Zuria wereda were direct beneficiaries of Phase One and will be targeted as well during the proposed project. In addition;

Table 3. Estimation beneficiaries

Direct beneficiaries (individuals)	**Year 1**	**Year 2**	**Year 3**
Production (wezeka kebele)	210	350	392
Processing (wezeka kebele)	210	350	392
Wezeka operations sub-total (UNIDO)	**420**	**700**	**784**
Out-growers schemes (farmers) in weredas (women from groups and farmers)	200	400	800
Seedling producers (nurseries)	40	80	
Youth groups (2 in wezeka kebele)	20		
Livestock Owners	100	150	150
Dairy cooperative	10		
Students from schools			200
Sub-total (FAO)	**790**	**1330**	**1756**
Grand total	**1210**	**2030**	**2540**

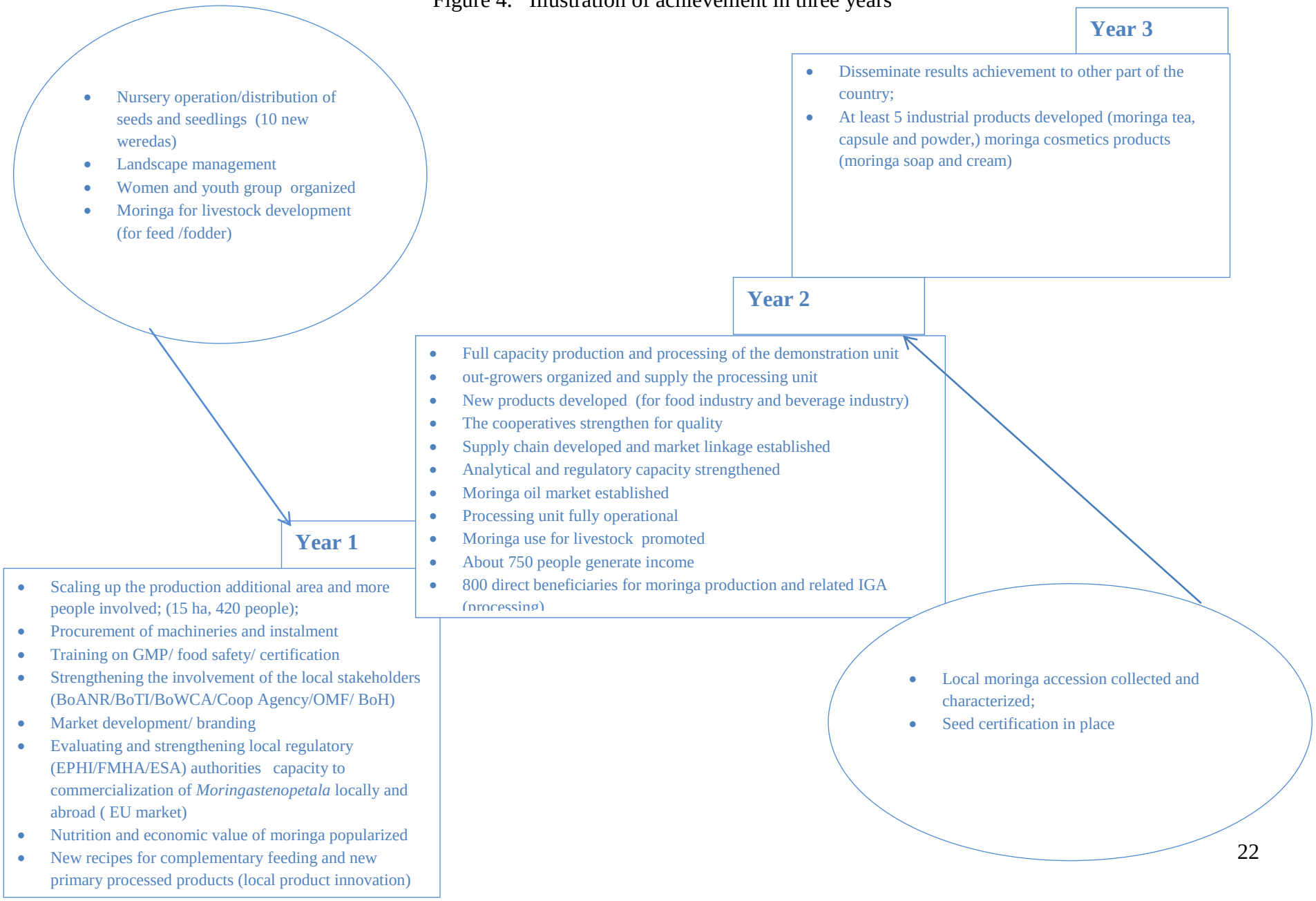
Indirect beneficiaries include families of farmers, youth, women involved in moringa production and processing. Each direct beneficiary (except student) indirectly benefits to 6 other family members.

Year one: about 410 people will be directly involved in the activities relate to the UNIDO operations in demonstration unit in Wezeka, which will have about 2940 an indirect beneficiaries.
Year two: about 700 people will be directly involved in the activities relate to the UNIDO operationsin demonstration unit in Wezeka, which will have about 4900 an indirect beneficiaries.
Year three: about 784 people will be directly involved in the activities relate to the UNIDO operations in demonstration unit in Wezeka, which will have about 5488 an indirect beneficiaries.

Year one: Approximately 790direct beneficiaries (4240 direct and indirect beneficiaries) in eleven weredas.
Year two: Approximately, 1,330 additional direct beneficiaries (7,230 direct and indirect beneficiaries) in twenty-one weredas.
Year three: Approximately 1756 additional direct beneficiaries (8,536 direct and indirect beneficiaries) in twenty-one weredas.

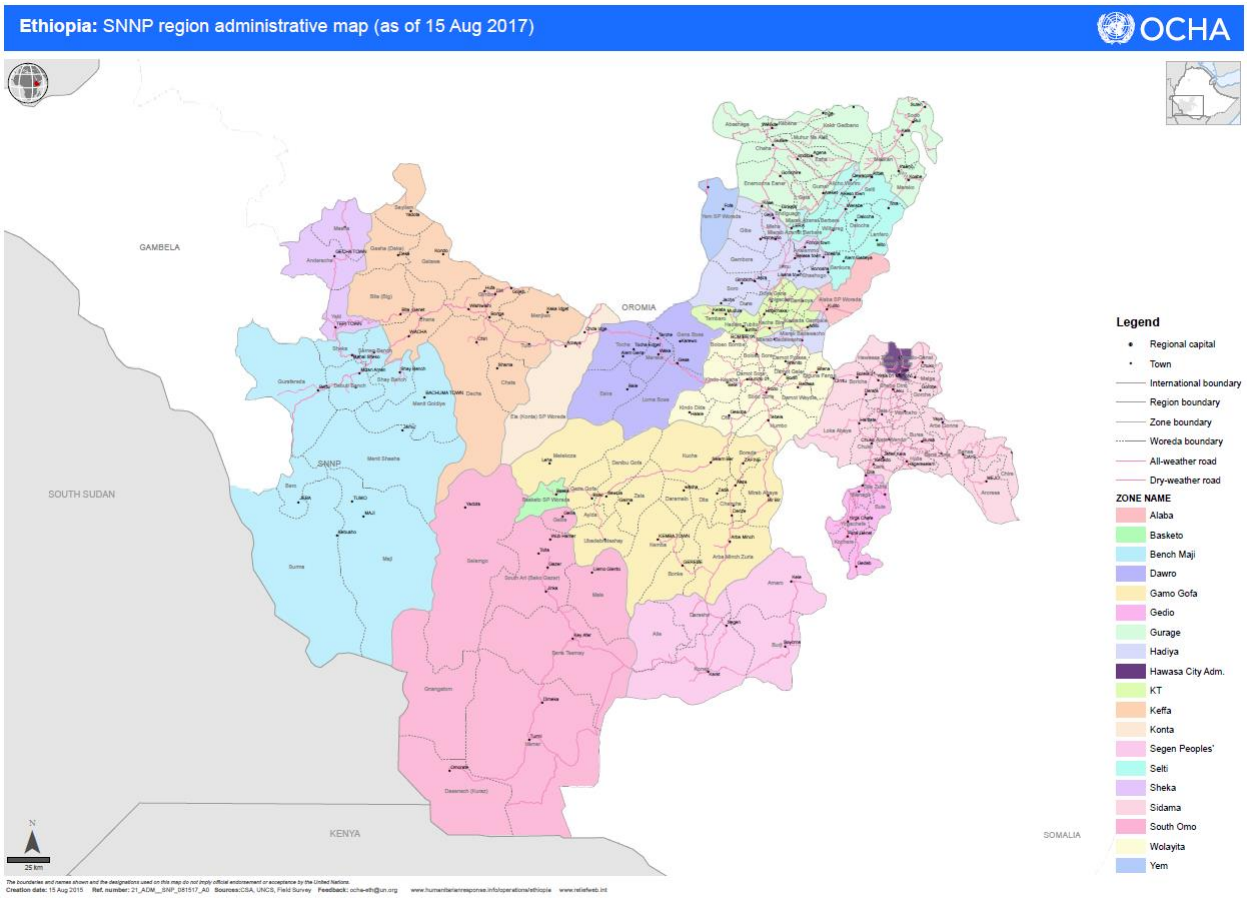
At the end of year the three about 35,000 direct andindirect beneficiaries will be targeted by the proposed project in Arba Minch Zuria woreda, Dawro zone, South Omo zone, Dirashe special woreda, Gamo Gofa zone, Konso special woreda and Wolayita zone.

Figure 4. Illustration of achievement in three years



2.6 Project location

The pilot demonstration unit and the processing plant (achievements of Phase One) islocated in Wezeka kebele, Arba Minch Zuria wereda, Gamo Gofa zone. This site will be the central unit to serve the beneficiaries involved in moringa value chain. The production site shall serve as nucleus farm for the production of both moringa leaves and seeds. The processing unit will provide services for the cooperative members, out growers and other relevant value chain actors on post-harvest handling, oil extraction, product development and training.



At year one, ten additional weredas will be identified and targeted within Dawro zone, Debub Omo (South Omo) zone, Segen zone, Gamo zone, Gofa zone, Konso special zone and Wolayita zone. Lessons learned from phase one will be replicated and up-scaled. In year two, the number of targeted weredas within the same zones will be doubled – for a total of 20 weredas in addition to Arba Minch Zuria wereda.

2.6 Logframe

The logical framework is presented in the details of**Annex III.**

3. PROJECT IMPLEMENTATION AND MANAGEMENT

3.1 Coordination mechanisms

The **Government counterpart** is the Bureau of Agriculture and Livestock Resources (BoANR) of SNNPR region. The Bureau has appointed the SNNPR Agricultural Research Institute (SARI) as a focal institute to link the relevant stakeholder in the implementation process and to follow up and support the project. The head of the BoANR chairs the Project Steering Committee (PSC) (TOR of the PSC see annex VI).

The achievements of the pilot project created interest both at the regional and federal level to scale up the lessons learned. The involvement of federal institutes such as Ministry of Industry, Ministry of Agriculture and Livestock Resources, and Ministry of Health etc. is important to disseminate the information and scale up the activities.

a. Project Steering Committee (PSC)

The Project Steering Committee is considered the highest level of the project governance structure composed of relevant federal and regional institutes. BoANR is the chair of the PSC, SARI, the Bureau of Health (BoH), the Bureau of Women, Children and Youth Affairs (BoWCYA), the Regional Cooperative Promotion Agency (CPA), the Bureau of Trade and Industry, Omo Micro Finance (OMF), EPHI, FMHACA, Italian Agency for Development Cooperation (AICS), UNIDO and FAO.

b. Technical Advisory Group (TAG)

The TAG is a multi-disciplinary team representing the relevant stakeholder institutes from research, development and regulatory authorities. In the TAG SARI, AMU, EPHI, FMHACA, ESA, Arba Minch Agricultural Research Centre, AICS value chain and gender and nutrition experts, UNIDO and FAO project coordinators, BoANR expert, CPA, BoWCA are represented and contributeto the implementation of the project

UNIDO and **FAO**, under the overall ownership and leadership of the SNNPR regional Government, will be the implementing agencies of the project. UNIDO and FAO will be responsible for the overall project coordination function, program management and performance. UNIDO will be responsible for product development, value addition, quality assurance, certification and marketing while FAO will be responsible for enhancing production and productivity, sustainable use of natural resources, product quality standardization, nutrition-sensitive value chain management, women's inclusion, effective integration and backward and forward linkages of value chain actors. In addition, FAO will support the Bureau of Agriculture and Natural Resources through continuous staff presence backstopping.

The **Italian Agency for Development Cooperation (AICS)**, which provided financial support in the initial pilot phase, is expected to support the second phase of the project as well. The Agency will, continue to receive project reports, monitor activities on the ground and participate

in meetings to review project progresses and agree on the strategic direction of the project. AICS will contribute with 3 million Euros for the second phase of the project.

3.2Project management and time frame

Financial mechanism

AICS will be signing separate contracts, one with UNIDO and one with FAO, regarding finance and administration. Each agency will be accountable for the fund allocated to the corresponding activities and outputs and reporting to the Donor accordingly.

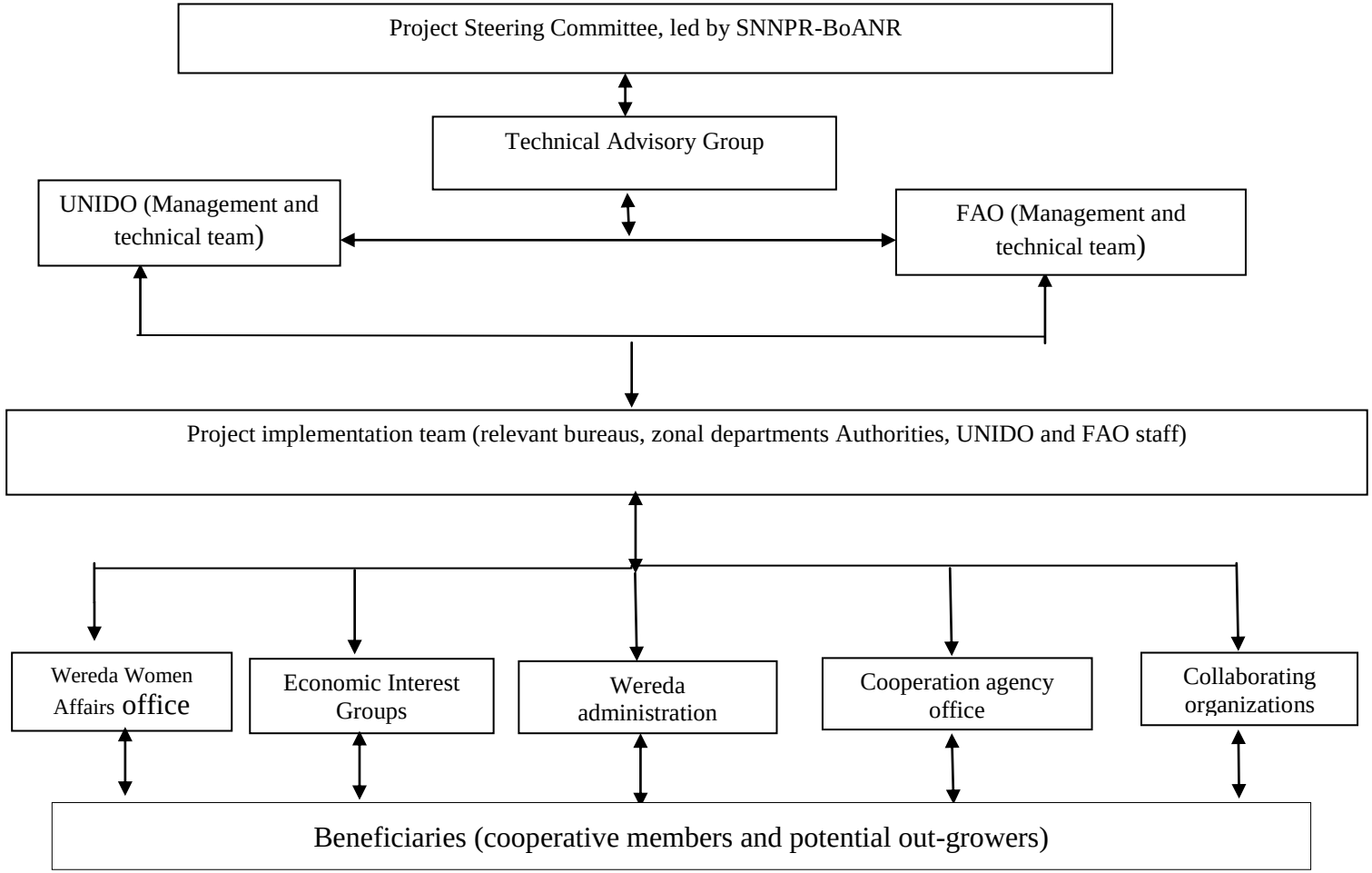
Operational Mechanism

The project, as it was done during the pilot phase, envisaged to ensure sustainability by integrating the technical assistance into the institutional framework to maximize the benefits of the communities from value chain development. UNIDO approaches the value chain development bringing desirable change andimprove project operations, developing the capacity to bring a sustainable production system that support the economic empowerment to bring gender equality and nutrition security. FAO value chain approach is a useful way to analyse and navigate the complexity of the food system to improve food security and nutrition outcomes. It helps to identify entry points for investment decisions and capacity development.

The SNNPRS will take the lead of the project ensuring, the participation of all relevant organizationsfrom both regional and federal level. The coordination and overall supervision of the project will be held by a consortium of 2 project managers (1 per implementing agency), namely one in FAO for outputs 1 and 3, and one in UNIDO for outputs 2 and 4, both supported by national experts.

Within the Regional Government, the implementing partner is the Bureau of Agriculture and Natural Resources. The Bureau appointed, since the project formulation, Southern Agricultural Research Institute (SARI) as the technical counterpart and focal institute to link the relevant stakeholder in the implementation process and to follow up and support the project. The project office has been provided by SARI both in Hawassa and Arba Minch research centre premises.

Diagram 1. Project Structure



Time frame

The project is meant to start on January 1, 2019 and to last 36 months (NTE: December 31, 2021). The precise timeframe is indicated in the result framework in **Annex 4.**

3.3Estimation of project costs

The estimated cost of the project is presented to reflect the activities implemented by the two agencies, UNIDO and FAO.

Detailed budget presented in **Annex** I.

4.PROJECT SUSTAINABILITY

4.1 Political and Institutional sustainability

As stated above, the project goals and activities are aligned with the ones in GTP II and 2016 NSAS. As the component is planned in participation with governmental stakeholders from the outset and will be implemented and owned by the government structures, the potential for its continuity is high. Furthermore, the extensive capacity building planned by Government institutions and staff will not only sustain the project within the target institutions but also will have multiplicative effects to a wider community.
This will ensure (i) harmonized coordination, monitoring and evaluation between the project and Government-owned initiatives, and (ii) continuity after the project ends. Through its strong capacity-building component, the MVC initiative is meant to get enshrined in the SNNPR agricultural and business landscape for further scale up.

4.2 Financial and economic sustainability

Improved diet awareness and community-increased demand for quality nutrition products will have a positive effect on moringa based product consumption and agricultural extension delivery. The stronger the market linkages, the higher sustainability of the MVC.

Comparative advantage of using *M. oleifera* or *M. stenopetala* will be assessed in terms of financial profitability, as well as land use and time spent for economic activities, since producers have in general mixed production systems with staple crops.

4.3 Social sustainability and gender impact

Strengthening women farmers' capacity is critical to achieve the desired economic development. In the agrarian communities' the traditional socio-cultural structure is male-dominated, constituting a major obstacle to the active women's participation, especially at decision-making processes. Strengthening the skills and self-confidence of women in leadership, management and marketing shall be in place to build confidence within the targeted women groups. It is equally important to educate the communities on the important role women play in society and their right to equal opportunity and participation in socio economic development. Furthermore, trainings

and community awareness activities shall be conducted on the role and importance of women economic empowerment to improve the livelihood of the family life, whichimproves food and nutrition security. The implementation of the MVC project will mainly address the increased role of women beneficiaries in agro-processing. The beneficiaries of the project will be mostly women, organized in cooperatives or pre-cooperative groups. Economically empowered, they will have facilitated access to the market, improved and nutritious foods and food supplements as a project outcome. Reporting and all logframe indicatorsshallbe gender-disaggregated as per Donor requirement.

4.4 Environmental sustainability

Moringa is a plant that can be used in landscape management for soil erosion prevention and carbon sequestration. Afforestation activities in agreement with local communities (kebeles) will allow to put into practice a circular economy model that will increase the ecosystem resilience, while providing opportunities for increased household incomes through the harvesting of moringa leaves and seeds. Some research shows that moringa may be usedas a biodegradable water purifier to prevent aluminium accumulation in the environment, though this project will not focus on this function of moringa.

With a food system (holistic) approach the value chain aims at being nutrition-sensitive and climate change sensitive as well. Regarding landscape management, this project is strongly in line with the Great Green wall initiative which the African Union put in place. FAO's support to build the resilience of communities and ecosystem in the drylands of Africa by combating land degradation, desertification, loss of bio-diversity and climate change though the promotion of Sustainable Land Management and Restoration.

5. RISKS AND ASSUMPTIONS

Risks are considered in the implementation process. The likelihood of risks to happen, the threats they constitute and the means of combating the risk are indicated in **Annex II.**

6. MONITORING AND EVALUATION

The multi-disciplinary project team will be closely monitored by the joint team composed of the Project implementation partners, implementation agencies and the Donor.

The project coordinators of each component (UNIDO/FAO) will provide monthly updates on activities and progress, against the stated milestones in the logical framework and project document. They will undertake regular missions to the project sites for supportive supervision and to monitor project progress. The monitoring of the activities and financial disbursements will be under the responsibility of UNIDO and FAO, according to their respective implementation modalities. The PSC will approve annual work plans and will review annual progress reports. Reporting to the PSC, the TAG shall follow the activities and advise the PSC on technical matters. The project shall be subject to a mid-point evaluation (formative) and a final independent evaluation (summative) during the final year. The organization, terms of reference and precise timing of the evaluations will be decided after consultation among counterparts.

UNIDO and FAO will organize a biannual experience sharing and review meetings which includes the donor, to share lessons learned and best practices among the stakeholders.In addition biannual joint field visits will be conducted by a team composed of the donor, the executing agencies and key partners.

Reporting

UNIDO and the national focal point will develop a reporting structure in line with the accountability of the project management unit, taking into account the existing UNIDO reporting guidelines and AICS reporting schedule and requirements.

Semi-annual technical and financial reports: Prepared twice a year, no later than 30 calendar days after the last day of every 6th month.

Final technical and financial report: Prepared no later than 45 calendar days after the end of the implementation period

Monitoring

The performance monitoring will be executed based on a detailed work plan and logframe (cf. **Annex III**), taking into account the baseline indicators that are going to be established during the inception phase. The monitoring will be performed by the project management unit and/or by consultants on a need bases. Day-to-day technical and financial monitoring will be part of UNIDO responsibilities. A Project Oversee Committee will be established and will be responsible for the overall program oversight and guidance.

A gender expert will support the collection of gender-disaggregated data as well as the regular monitoring and reporting of gender issues and behavioural changes towards greater gender equality. In the new intervention areas, gender-disaggregated assessment shall be conductedon the social context of the project area. Including cooperatives and women's associations, in order to identify obstacles and constraints women face in the moringa value chain and associated activities and provide suggestions and recommendations to overcome the constraints.

Evaluation

The program will be subject to an independent review process assisted by the UNIDO Evaluation Group. It will include:

- mid-term (formative) review;
- final evaluation (summative), at the beginning of the closing phase.

The budget allocated for evaluation is50,000 Euro. The conclusions and recommendations of the mid-term review will determine the follow-up actions to be taken and any corrective remedy, including, if deemed to be necessary, the reorientation of program components. The counterparts and beneficiaries will be informed at least two months in advance of day foreseen external mission dates. The counterparts and beneficiaries shall collaborate efficiently and effectively

with the monitoring and/or evaluation experts, and inter alia provide them with all necessary information and documentation, as well as access to the project premises and activities.

7. VISIBILITY STRATEGY

UNIDO together with FAO will ensure the communication, knowledge sharing and visibility of the project. An increased effort will be made by UNIDO for promoting knowledge sharing in moringa product transformation and FAO will assist in providing information on nutrition and market value-addition.

The visibility of AICS contribution to phase two will be ensured through the following: (i) UNIDO and FAO publications such as posters, brochures, agenda, web stories, blog, (ii) press releases issued by UNIDO and by FAO for the recognition of donor contribution, (iii) media events for major interventions and milestones.

A communication and visibility plan, in close consultation with AICS, will be elaborated by both agencies and a portion of the budget will be dedicated.

Annex I. Estimated budget for the implementation phase (3 years)

COMPONENT ONE (UNIDO)					
Budget lines	**Items**	**Unit**	**Quantity**	**Unit cost (Euro)**	**Total (Euro)**
11-00	International consultants	Months	30	10,000	300,000
11-00	International consultants (specialized tasks)	Months	6	10,000	60,000
13-00	Local experts, administrative and support personnel	Months	18	800	14,400
15-00	Project travel	Lump sum	-	24,000	24,000
16-00	UNIDO staff travel	Lump sum	-	27,000	27,000
17-00	National experts	Months	36	1,500	54,000
17-00	National experts	Month	18	1,000	18,000
17-00	National experts (HQ)	Month	12	2,500	30,000
21-00	Subcontracting	Lump sum	-	440,000	420,000
30-00	In-service training (exchange of experience)	Lump sum	-	60,000	60,000
32-00	Study tours	Lump sum	-	25,000	25,000
35-00	Workshops	Lump sum	-	15,000	15,000
45-00	Equipment	Lump sum	-	255,000	257,171
51-00	Miscellaneous/monitoring and evaluation	Lump sum	-	80,000	80,000
Sub-total					1,384,571
Support cost 13%					179,994
Total (EUR) Component One					1,564,565
COMPONENT TWO (FAO)					
Budget lines	**Items**	**Unit**	**Quantity**	**Unit cost (Euro)**	**Total (Euro)**
5011	Professional Staff - Salaries	Months	3	21,258	63,773
5012	General Service - Salaries	Months	6	3,178	16,589
5013	Consultants	Months	36	11,222	412,521
5014	Contracts	LoAs	6	91,767	479,022
5021	Travel	Lump sum	-	50,982	42,091
5023	Training	Events	3	10,044	26,215
5024	Expendable Procurement	Lump sum	-	180,000	148,130
5025	Non-Expendable Procurement	Lump sum	-	50,000	43,730
5027	Technical Support Services	Lump sum	-	55,680	55,680
5028	General Operating Expenses	Lump sum	-	53,464	53,777
Sub-total					**1,341,528**
5029	Support costs 7%				93,906.86
Total (EUR) Component Two					**1,435,434**
GRAND TOTAL BUDGET (EUR)					**Euro 3,000,000**

UNIDO budget disaggregated per activity below:

Output 0 Project management system is established		
0.1	Set up a Joint Project Management Unit.	
0.2	Ensure stakeholders' coordination.	
0.3	Co-ordinate all project activities, ensure that duties and responsibilities, of all project staff and partners are well defined, and liaise with collaborating institutions for timely implementation	
Output 2 – Improved value addition of Moringa through processing and marketing of Moringa products		
2.1	Conduct a detailed market assessment for moringa (both species) and moringa products for animal consumption and human consumption including for medicinal use, in order to identify products requirements: quantity, quality, continuity of supply	20,000
2.2	Develop capacity of public Institutions (e.g. Bureau of Industry, Bureau of Agriculture and Livestock Resources, Cooperative Agency, OMF).	UNIDO provides technical support cost cover by the bilateral fund
2.3	Strengthen the capacity of regulatory authorities (e.g. EPHI/FMHACA/ESA) to ensure quality, certification and registration of *M.stenopetala* in the global market	300,000
2.4	Develop agribusiness skills (e.g. management, marketing, maintenance and services, etc.) of cooperatives and pre-cooperative groups to run the processing unit.	60,000
2.5	Support the establishment of processing unit for moringa-based products including for the pilot on *M.oleifera;*	257,171
2.6	Develop training procedures, manuals for the Cooperative members, and conduct trainings based on the concepts and principles of the Food Quality and Safety procedures.	20,000
2.7	Support the communities developing new products in collaboration with the private industries (Moringa oil, cosmetics etc.)	20,000
2.8	Develop capacity of value chain actors on GAPs, GMPs.	20,000
2.9	Support the development and promotion of moringa based products, to create market opportunity (e.g. collaborate with industries to development new products), in line with national and international regulatory frameworks (in synergy with Output 3).	35,000
2.10	Facilitate forward and backward linkages between value chain actors (linking with national and international markets).	25,000
Output 4. Improved knowledge about the intervention areas and the projects results dissemination		
4.1	Develop Project factsheets, videos and other promotional material (including media local campaigns, awareness raising initiatives at national and international).	35,000
4.2	Conduct Project Monitoring (gender analysis, baseline, mid-term and final reports, PSC, etc.) and evaluation	65,000
Other costs contributing to the different outputs		
11-00	International consultant	360,000
13-00	Support staff	14,400
15-00/16-00	Travel/ local and UNIDO staff	51,000
13-00	National experts (local and HQ	102,000
	Support costs 13%	179,994
	TOTAL	1,564,565

UNIDO (Total Euro 1,564,542)

- UNIDO will deploy a fulltime Chief Technical Advisor (CTA) to coordinate and follow up the overall activities of the project. International experts will be hired for 6 months on product development, branding and marketing. National experts for 36 months and a trainer for 18 months to backstop the technical requirement who will be based in Arba Minch. Project assistance will be engaged for 12 months, backstopping the financial administration at the HQ level. Support staff covering 18 months for a total budget of 476,400 Euro.
- UNIDO will procure machineries for the processing unit that includes processing tables, dehumidifier, drying, grinding and packaging machineries for moringa powder and oil press machine and bottling for the moringa oil. For about 257,171Euros.
- The total amount allocated for subcontract is about 420,000. 300,000 will be dedicated for the activities related to output 2, activity 2.3. 20,000 will be allocated for the subcontracting to implement Output 2, Activity 2.1 (market assessment). 25,000 Euro will be allocated for market development, trade fairs and study tours for product developers and supporting institutes. Product development, diversification and market creation that is relevant to Output 2. Activity 2.9 35,000 euro is planned to be utilized.
- Various trainings will be conducted under output 2. Activities related to 2.4, for an estimated budget 60,000 Euro over a period 30 months.
- For activity 2.6 an approximate 20,000 euro will allocated to develop training materials relevant to food quality and safety, for product developed related to activity 2.7 20,000 Euro is allocated. Capacity building on GAP/GMP shall be conducted with about 20,000 Euro.
- 50,000 euro shall be allocated for monitoring and evaluation, 15,000 for PSC meetings and workshops and 35,000 for promotion and popularization and publications.
- For local and international UNIDO project staff travels 51,000 Euro is allocated. That covers local travel between Addis Abeba and the project site, as well as project managers' travel expenses between HQ and the project site.

FAO disaggregated budget per activity elaborated below:

Output 1 - Enhanced sustainable production and productivity of moringa through integrated utilization of natural resources.		
1.1	Identify 400 farmers head of families (W) per wereda (20 weredas) and support them to enhance production and productivity through integrated utilization of natural resources and production of 1 moringa plot per household + moringa landscape management: Develop specific training material and curricula to enhance production and productivity of Moringa (*M.stenopetala* and *M.oleifera*). Women will become 800 at year 3.	36,004
1.2	Promote the establishment of appropriate land use, irrigation systems and carbon sequestration for sustainability	23,878
1.3	Establish quality control mechanisms for genetic material and a well-structured seed system	18,878
1.4	Promote multiplication of *M. Stenopetala* and piloting of *M. Oleifera* for different landscape niches and livestock feed and fodder	134,000
1.5	Develop specific training material and curricula to enhance production and productivity of moringa (*M. stenopetala + M. oleifera*) as well as processing techniques	18,878
1.6	Promote out-grower schemes to link producers to processing units and processing units to central plant	90,000
1.7	Support local institutions improving Government agricultural extension services.	22,878
1.8	Strengthen the central production unit in Arba Minch Zuria wereda and expand to 10 ha for biomass production and 18ha for seed production	41,004
Output 3 - Strengthened nutrition-sensitive moringa value chain through inclusive agri-food systems, promotion of nutritious products and a conducive enabling environment		
3.1	Organize 40 women groups in appropriate business modalities/processing units for moringa -based products on *M. stenopetala* and*Moleifera*	22,608
3.2	Organize 2 youth groups in Wezeka kebele in appropriate business modalities/processing units for moringa derived livestock fodder production	18,878
3.3	Promote utilization of moringa based feed and fodder for livestock (goats, milk cows) to enhance livestock nutrition and limit land grazing in an integrated manner through support of 400 livestock owners (200 cows/200 goats) and 1 dairy cooperative	132,000
3.4	Carry out an assessment on M*oringa stenopetala & M.oleifera* and related products regulation & certification scheme (joint)	13,000
3.5	Support the introduction and foster the procurement of *Moringa stenopetala*& *M.oleifera* as food/food complement such as (i) its utilization at household level, (ii) its utilization in home-grown school feeding programs, (ii) its utilization in complementary feeding for children <5 at household level and in linkage with CFU	27,091
3.6	Develop moringa-based (nutritious) products & recipes for local communities and market	90,000
	Activities	
4.1	conduct a baseline survey and gender analysis of the new intervention areas (joint)	8,000
Other FAO costs		
	Professional staff	63,773
	General services- salaries	16,589
	Consultants	412,521
	Travel	42,091
	Technical support services	55,680
	General operating costs	32,277
	GOE common services	21,500
	Support costs FAO 7%	93,907
	TOTAL	**1,435,434**

FAO (Total Euro 1,435,434)

- On staff budget – total EUR 492,883 FAO will hire an international consultant full time for the whole project duration, based in Addis Ababa. Twelve months of international consultancies have also been budgeted for various technical backstopping and technical support. The project will also benefit from an international operation and procurement officer on a shared-costs basis as well as by a national finance officer and punctual technical expertise in the field for a duration of one year. Finally, a FAO national coordinator will be hired for the entire project duration; he/she will be based in Hawassa SNNPR.FAO allocated 6 months of national secondment for the WHO work.
- Most field activities will be undertaken under various (~six) contracts with government entities and research institutes (up to EUR 479,022 for FAO). They will concern field and regional capacity development on various topics and nutrition sensitive agriculture interventions; shared between Output 1 and Output 3.
- FAO travels are budgeted up to EUR 42,091 since they include 5 international travels and ~ 15 national travels including travels from Addis Abeba for workshop organization, supportive supervision, backstopping and procurement-related travels.
- FAO budgeted an average of three trainings on various topics amounting up to EUR 10,044 each.
- Procurement has been budgeted up to Euro 191,859 for all related supply covering agricultural inputs - mostly seeds of *M. stenopetala* and *M. oleifera* seeds, other nutritious seeds for home-grown horticulture, livestock fodder, irrigation systems and material.
- FAO budgeted technical support services (TSS) up to EUR 55,680 which include reporting costs, backstopping, staff participation and incompressible evaluation costs.
- General operating costs EUR32,277 cover some logistics such as vehicle and machine repair, security expanses, procurement fees. IT and financial services cost EUR 21,500 under general operating expenses.

Total budget segregated by year

Organization	**Year 1**	**Year 2**	**Year 3**	**Total**
UNIDO	Euro 709,607	Euro 432,564	Euro 422,394	Euro 1,564,565
FAO	Euro 478,478	Euro 478,478	Euro 478,478	Euro 1,435,434

Annex II. Risks and Risk Management

Risks	Likelihood 1-minimal 5- high	Threat to the project 1- marginal 5- killing	Risk management
Limited local market interest /buy in	2	4	The promotion of the moringa products shall be designed well and strategized to promote both the local and international market
Limited human resource capacity in the partner organization to follow up the project	2	4	Capacity building exercises are planned for the project for staff of counterpart bureaus and institutes.
Delay of the finalization of the Processing unit	2	3	Effective institutional coordination through the PSC for close monitoring and quick trouble-shooting.
Small holders are not interested in intensifying the production Moringa.	2	4	1. Continuous training and consultation with the beneficiaries. 2. Involve of the private sector to insure sustainable market and identifying the possible bottlenecked and take prompt action at a regional and local level. 3. Involve the industries interested in the processing of moringa.
Lack of credit facilities for the cooperatives.	1	4	1. Effective coordination between microfinance institutes and the cooperatives. 2. Continues support and training for the Coops regarding business plan preparation and funding possibilities.
No compliance of our-growers to the market	3	4	Develop inclusive and attractive forward agreement modality among buyers and smallholder. This should be supported with legal mechanisms.
Disease prevalence	3	4	Consider early warning system and set up effective planning and protection schedule.
Lack of good quality seeds	3	4	Accelerate the seed selection, evaluation and certification process.
Imbalanced moringa products demand and supply.	2	3	The value chain actors need to synchronize the planning and market promotion to ensure the supply and demand balance.
Insufficient energy source available locally.	3	4	Working closely with the Regional Government where access to energy sources is possible in sufficient amounts. Renewable energy sources should be examined.

Annex III. Logical Framework

OBJECTIVE, OUTCOMES, OUTPUTS	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
GENERAL OBJECTIVE: To contribute to poverty reduction, food and nutrition security and sustainable use of natural resources in SNNP regional state, towards the achievement of targets set by Ethiopia's national development plans.			
OUTCOME: Improved food and nutrition security and livelihood of rural households through the development of an inclusive and sustainable moringa (*M. stenopetala or M. oleifera*) value chain.	- 800 farmers that generate income from moringa and moringa products - 800 farmers, out of which 75 % women, involved in the moringa value chain. - 400 households that have adopted moringa and moringa based products in their diets.	- Project reports. - Government institutions' annual reports. - Service provider's reports. - Independent evaluation reports. - Baseline survey (e.g. on the involvement of women groups into the moringa value chain, on the utilization of moringa and moringa based products in targeted households, etc.).	- The SNNP Regional Government maintains its commitment towards improving food and nutrition security and livelihood of rural households. - Political stability in SNNPR and Ethiopia in general remains at the same level or improves. - The donor maintains its financial commitment. - There is no major natural disaster and climate change impact is limited.
OUTPUTS			
Output 0Project management system is established			
Activities			
0.1 Set up a Joint Project Implementation Unit.			
0.2 Ensure stakeholders' coordination.			
0.3 Co-ordinate all project activities, ensure that duties and responsibilities, of all project staff and partners are well defined, and liaise with collaborating institutions for timely implementation			
Output 1 - Enhanced sustainable production and productivity of moringa through integrated utilization of natural resources (FAO-led)	- 800 farmers actively engaged in moringa production - 400 farmers trained in GMP and integrated NRM - 100 AEW and decentralized government staff trained - Effective quality control mechanism established for seeds - 75% of production (increased) and productivity levels. - 50% Income generation and increases from farm's productivity disaggregated by gender - 6 times increase in moringa	- Project reports, training reports including service providers' reports. - Government annual reports (CSA, etc.). - Report of control mechanism - Household and farmers interviews	- Availability and affordability of production inputs (seeds, etc.) remains at the same level or improves. - Farmers and other value chain actors are willing to participate in project activities and increase their knowledge and technical capacity.

	cultivated area. - Proportion of *M. stenopetala* vs *M. oleifera* planted 90/10 - 20% or moringa sold to the local market - 75% of moringa sent to the central plant for transformation - 50% of moringa utilized for transformation for human consumption vs animal feed - 6 times size of irrigated land used for moringa production. - 50% use of moringa leaves and other parts to be utilized in livestock feed - Size and type of rehabilitated/ restored land due to lower land grazing by milk cattle		
Activities			
1.1 Identify 400 women heads of families (2 Women groups of 10 each) per wereda (20 weredas) and support them to enhance production and productivity through integrated utilization of natural resources and production of 1 moringa plot (5x4 m2) per household + moringa landscape management: Develop specific training material and curricula to enhance production and productivity of moringa (*M. stenopetala and moringa oleifera*). Women will become 800 at year 3 1.2 Promote the establishment of appropriate land use, irrigation systems and carbon sequestration for sustainability 1.3 Establish quality control mechanisms for genetic material and a well-structured seed system 1.4 Promote multiplication of *M. Stenopetala* and piloting of *M. Oleifera* for different landscape niches, livestock feed and fodder, and for functional food/medicinal purposes. 1.5 Develop specific training material and curricula to enhance production and productivity of moringa (*M. stenopetala* + *M. oleifera*) as well as processing techniques 1.6 Promote out-grower schemes to link producers to processing units and processing units to central plant 1.7 Support local institutions such as BoANR, BoI, CA, BoWCA, improving Government agricultural extension services 1.8 Strengthen the central production unit in Arba Minch zuria woreda and expand to 10 ha for biomass production and 18 ha for seed production			
Output 2 - Improved value addition of moringa through processing and marketing of moringa products (UNIDO-led with FAO contribution)	- 2 moringa-based products developed and introduced to the market. - About 75% of moringa processed and commercialized (value added). - 500 of farmers with established business linkages with processors- i.e. participating in the value chain (also through cooperatives and pre-cooperative groups). - of value chain actors/ institutions trained (both technical and managerial capacities). - About 800 people involved in training and capacity development activities conducted on GMP. - About 800 farmers/women farmers trained of food quality and safety. - number of capacity development activities organized for stakeholder partner organization.	- Project reports, training reports including service providers' reports. - Reports and documents from sectoral associations, chamber of commerce and other private sector institutions. - Government annual reports (CSA, etc.).	- Market demand for moringa (*M. stenopetala*) remains at the same levels or increases. - Value chain actors (private sector) understand the potential of moringa for increased incomes and are willing to invest in the sector.

	- About 800 cooperative members trained on management, marketing, maintenance and services - About 800 jobs created for women and youth with in the processing and value addition activities.		
Activities			
2.1 Conduct a detailed market assessment for moringa (both species) and moringa products for animal consumption and human consumption including for medicinal use, in order to identify products requirements: quantity, quality, continuity of supply 2.2 Develop capacity of public Institutions (e.g. Bureau of Industry, Bureau of Agriculture and Livestock Resources, Cooperative Agency). 2.3 Strengthen the capacity of regulatory authorities (e.g. EPHI/FMHACA/ESA) to ensure quality, certification and registration of *M.stenopetal*a in the global market 2.4 Develop agribusiness skills (e.g. management, marketing, maintenance and services, etc.) of cooperatives and pre-cooperative groups. 2.5 Support the establishment of processing units for moringa-based products including for the pilot on *M. Oleifera;* 2.6 Develop training procedures, manuals for the coop members, and conduct trainings based on the concepts and principles of the Food Quality and Safety procedures. 2.7 Support the communities developing new products in collaboration with the private industries (Moringa oil, cosmetics etc.) 2.8 Develop capacity of value chain actors (BoTI, wereda and zone industrial/agricultural development experts, and Cooperative members) on GAP, GMP. 2.9Support the development and promotion of moringa based products, to create market opportunity (e.g. collaborate with industries to development new products), in line with national and international regulatory frameworks (in synergy with Output 3). 2.10 Facilitate forward and backward linkages between value chain actors (linking with national and international markets).			
Output 3 - Strengthened nutrition-sensitive moringa value chain through inclusive agri-food systems, promotion of nutritious products and a conducive enabling environment	- 40 women group organized in moringa based production and trained - 40 women groups trained in processing, cooking techniques, safety and SBCC - 2 youth groups organized in fodder production and trained - 400 livestock owners supported through procurement of moringa derived fodder - 50% milk production increase - 5 moringa based recipes developed for CF and other products in link with the local market - 5% cultivated moringa utilized for consumption - 25% household consumption of milk and milk derived products increase - 400 households utilizing regularly moringa in complementary feeding and/or family diet - 50% MDDW (minimum dietary diversity score for women of reproductive age) - 2 CFU utilizing moringa - 10 schools utilizing moringa - 400 moringa producers and retailers trained (nutrition, product optimal utilization, moringa processing, food loss/waste management) - 5 (nutritious) moringa products available on the local market at an affordable price - All the necessary of measures taken to optimize the regulatory framework, including certification	- Project reports - Business plans from women and youth groups - Training reports - Interviews, households visits and focus groups reports of beneficiaries and partners - Policy/regulation documents in alignment with international standards.	- Availability of diverse moringa-based products in the local markets at affordable prices - Willingness of communities to adopt moringa-based products in their diets - National regulatory framework include moringa and moringa products and is in alignment with international standards (e.g. *Codex Alimentarius*)

	- 1 nutrition standard established for public procurement and catering services to ensure moringa products are supplied in schools and public services		
Activities			
3.1 Organize 40 women groups in appropriate business modalities/processing units for moringa -based products on *M. stenopetala* and *M. oleifera* 3.2 Organize 2 youth groups in Wezeka kebele in appropriate business modalities/processing units for moringa derived livestock fodder production 3.3 Promote utilization of moringa based feed and fodder for livestock (goats, milk cows) to enhance livestock nutrition and limit land grazing in an integrated manner through support of 400 livestock owners (200 cows/200 goats) and 1 dairy cooperative 3.4 Carry-out an assessment on *M. stenopetala* and *M. oleifera* and related products regulation and certification scheme 3.5 Support the introduction and foster the procurement of moringa *M. Stenopetala* and *M. oleifera* as food/food complement such as (i) its utilization at household level, (ii) its utilization in home-grown school feeding programs, (ii) its utilization in complementary feeding for children <5 at household level and in linkage with CFU 3.6 Develop moringa-based (nutritious) products and recipes at community level (link with UNIDO industrial product innovation and market output)			
Output 4 - Improved knowledge about the intervention areas and the projects results dissemination (UNIDO led)	- 2 baseline data collected; - 6 promotional initiatives performed; - 6 press release organized, awareness workshops conducted; - 6 awareness workshops and seminars;		
Activities			
4.1 Develop Project factsheets, videos and other promotional material (including media local campaigns, awareness raising initiatives at national and international). 4.2 Conduct Project Monitoring (gender analysis, baseline, mid-term and final reports, PSC, etc.) and evaluation).			

Annex IV: Timeframe

		Year 1				Year 2				Year 3			
		Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Output 0Project management system is established													
Activities													
0.1	Set up a Joint Project Implementation Unit.												
0.2	Ensure stakeholders' coordination**.**												
0.3	Co-ordinate all project activities, ensure that duties and responsibilities, of all project staff and partners are well defined, and liaise with collaborating institutions for timely implementation												
Output 1 - Enhanced sustainable production and productivity of moringa through integrated utilization of natural resources.													
1.1	Identify 400 farmers head of families (W) per wereda (20 weredas) and support them to enhance production and productivity through integrated utilization of natural resources and production of 1 moringa plot per household + moringa landscape management: Develop specific training material and curricula to enhance production and productivity of moringa (*M. stenopetala and moringa oleifera*)												
1.2	Promote the establishment of appropriate land use, irrigation systems and carbon sequestration for sustainability												
1.3	Establish quality control mechanisms for genetic material and a well-structured seed system												
1.4	Promote multiplication of *M. Stenopetala* and piloting of *M. Oleifera* for different landscape niches and livestock feed and fodder												
1.5	Develop specific training material and curricula to enhance production and productivity of moringa (*M. stenopetala + M. oleifera*) as well as processing techniques												
1.6	Promote out-grower schemes to link producers to processing units and processing units to central plant												
1.7	Support local institutions such as BoANR, BoI, CA, BoWCA, improving Government agricultural extension services												
1.8	The central production unit in Arba Minch will be strengthened and expanded to 10 ha for biomass production and 18 ha for seed production (UNIDO-managed)												
Output 2 - Improved value addition of moringa through processing and marketing of moringa products													
2.1	Conduct a detailed market assessment for moringa (both species) and moringa products for animal consumption and human consumption including for medicinal use, in order to identify products requirements: quantity, quality, continuity of supply												
2.2	Develop capacity of public Institutions (e.g. Bureau of Industry, Bureau of Agriculture and Livestock Resources, Cooperative Agency).												

2.3	Strengthen the capacity of regulatory authorities (e.g. EPHI/FMHACA/ESA) to ensure quality, certification and registration of *M.stenopetal* in the global market													
2.4	Develop agribusiness skills (e.g. management, marketing, maintenance and services, etc.) of cooperatives and pre-cooperative groups to run the processing unit.													
2.5	Support the establishment of processing units for moringa-based products including for the pilot on *M. Oleifera;*													
2.6	Develop training procedures, manuals for the Coop members, and conduct trainings based on the concepts and principles of the Food Quality and Safety procedures.													
2.7	Support the communities developing new products in collaboration with the private industries (Moringa oil, cosmetics etc.)													
2.8	Develop capacity of value chain actors on GAPs, GMPs.													
2.9	Support the development and promotion of moringa based products, to create market opportunity (e.g. collaborate with industries to development new products), in line with national and international regulatory frameworks (in synergy with Output 3).													
2.10	Facilitate forward and backward linkages between value chain actors (linking with national and international markets).													
Output 3 - Strengthened nutrition-sensitive moringa value chain through inclusive agri-food systems, promotion of nutritious products and a conducive enabling environment														
3.1	Organize 40 women groups in appropriate business modalities/processing units for moringa -based products on *M. stenopetala* and *M. oleifera*													
3.2	Organize 2 youth groups in Wezeka kebele in appropriate business modalities/processing units for moringa derived livestock fodder production													
3.3	Promote utilization of moringa based feed and fodder for livestock (goats, milk cows) to enhance livestock nutrition and limit land grazing in an integrated manner through support of 400 livestock owners (200 cows/200 goats) and 1 dairy cooperative													
3.4	Carry out an assessment on moringa Stenopetala & Oleifera and related products													
3.5	Support the introduction and foster the procurement of moringa *M. stenopetala*and*M. oleifera* as food/food complement such as (i) its utilization at household level, (ii) its utilization in home-grown school feeding programs, (ii) its utilization in complementary feeding for children <5 at household level and in linkage with CFU													
3.6	Develop moringa-based (nutritious) products and recipes for local communities and market (link with UNIDO product innovation and market output)													
Output 4 - Improved knowledge about the intervention areas and the projects results dissemination														
4.1	Carry out baseline survey and gender analysis in the new intervention areas													
4.4	Develop Project factsheets, videos and other promotional material (including media local campaigns, awareness raising initiatives at national and international).													

Annex V. Terms of Reference of PSC and TAG

The Project Steering Committee is considered to be the highest level of the Project governance structure composed of relevant federal and regional research and development institutes, Italian Agency for Development Cooperation (the donor) and UNIDO etc. It will be chaired by the BOANR of SNNPRS. The purpose of establishing the Steering Committee is to review the progress and obstacles encountered and ultimately suggest solutions. The main functions and responsibilities of the PSC is to:

Overseeing the overall project activities:

a) Provide the project with strategic direction in terms of implementation of the activities;
b) Ensure the effective coordination and cooperation between relevant stakeholders;
c) Monitor the progress towards achieving the planned outputs as well as to review and approve the annual work plans;
d) Guide and direct to resolve problems that might arise at the different level of Project structure during its implementation;
e) Provide policy direction as deemed necessary for the sustainability of the Project;
f) Ensure that the available resources are used to achieve outcomes and output defined in the Project document;
g) Monitor the application of the approved annual action plan of the Project.
h) The SC will hold quarterly meetings: the Project Management Unit (PMU) will act as the secretariat of the PSC.

Specific Activities of the PSC

The PSC will receive a detailed progress report of the Project every 3 months, depending on the intensity of implementation as well as on a need to discuss urgent matters, which could affect the Project's life. The UNIDO project team (PMU), in cooperation with the Project Manager, will prepare the report.

This report will include:

a) A description of the activities planned to take place in the reporting period, and results achieved;
b) Explanations on any deviations or delays of activities, which were planned and could not take place, or had to be postponed;
c) A description of all activities planned for the following 3 months, including a projection of results to be achieved, as well as their effect on the overall implementation of the project;
d) Presentation of challenges or obstacles, which need to be brought to the attention of the donor country and the Government of Ethiopia.

The PMU secretariat will distribute an agenda of the meeting prior to the scheduled meeting, (at least 15 days before), as well as other relevant documentation.

Composition of the Steering Committee

In the pilot phase of the project the Project Steering Committee has been composed of representative of the following institutions and organizations. In the next phase of the project the composition of the PSC shall be revised, based on the current institutional structure and representative of the respected offices. Furthermore the PSC shall nominate or invite representatives of relevant federal o other regional institute representative to support the dissemination and scaling up of the project outcomes.

Responsible Institute	Duties and responsibilities
Head of the Bureau of Agriculture and Livestock Resources, Chair the PSC	Over all Implementation partner of the project, ensures the overall coordination with the relevant government body and the implementation partners.
Head of the Bureau of Women and Children Affairs (BOWCA); SNNPR	Facilitate the implementation of the project related to women economic empowerment, ensure the equal participation of the rural women in the project, and facilitate the coordination of the project at zone, wereda and kebele women organization.
Head of Southern Agricultural Research Institute (SARI)	Focal institute to follow up and facilitate the operation of the project. Coordinate/liaison between the project and the stakeholders. Closely collaborate on the implementation of improvement of landscape management, production and productively.
Head of SNNPR Cooperatives Agency	Support the establishment and strengthening of the cooperatives, topromote the economic interest and general welfare of members in accordance with cooperative principles and values.
Ethiopian Public Health Institute	Ensure the implementation of the activities indicated related to the nutrition assessment, fingerprint development, quality assurance in collaboration with the relevant regulatory authorities (FMHACA/ESA).
Director General, Food Medicine and Health Care Administration and Control Authority (FMHACA)	Ensure that the regulatory framework is in place to distribute and market moringa based products.
Head of the Bureau of Health; SNNPR	Follow up and support initiative of the project to utilize for nutrition improvement and safeguard the communities in collaboration with the regulatory authorities.
Head of the Bureau of Trade and Industry	Support/promote the product development and marketing of moringa products.
Head of Omo Micro Finance Institution	Support the beneficiaries of the project/ cooperative members to have access to the finance related to the Moringa Value Chain
Director, Italian Agency for Development Cooperation	Donor
Project Managers (UNIDO/FAO)	Implementation partners

The Chairperson of the Steering Committee will be Head of the BoANR of SNNPRG. The Steering Committee will have one secretary, i.e. National Project Coordinator of the project.

Meeting Schedule of the Project Steering Committee

The Steering Committee will meet every 3 months in Hawassa/Arba Minch. The duration of the meeting depends on the volume of matters to be discussed, but should not exceed two days, including travelling, for those coming from outside of the meeting venue.

Financial and administrative arrangements

For participants coming from Addis Ababa and Arba Minch, financial and administrative arrangements will be made in accordance with UNIDO's rules and regulations: a Daily Subsistence Allowance (DSA) at the prevailing UN rate of Birr per day will be paid to the participants from Addis Ababa and Arba Minch. The DSA will cover taxi rent, lodging, and incidentals for the period of attendancefor a maximum of two days. If the SC meeting is conducted at the project site the above arrangement shall prevail for members coming from Hawassa.

Language:

The working language of the Meeting, both PSC and TAG will be English.

Terms of reference of the Technical Advisory Group (TAG)

The composition of the TAG should be multi-disciplinary that contributes to the development of moringa production and processing to improve the livelihood of the rural community, with special emphasis on rural women. The TAG members' expertise shall cover agronomy, agro-processing, nutrition, community development, gender mainstreaming, marketing and quality and standards components. The members shall be nominated based on their technical merits and contribution to the Moringa R&D both at national and international level. In this phase of the project the composition of the TAG shall be revised, based on the current institutional structure and technical requirement.

The role of the TAG is:

- Provide technical support and advice to achieve the project objectives;
- Work closely with the PMU;
- Review the project activities quarterly;
- Advise the Steering Committee on technical issues;
- Guide the project in establishing quality and slandered parameters and structure
- Conduct quarterly meetings in Hawassa, visit the project site as it deems necessary and report to the SC.
- Guide, advise and follow up the sustainability of the project

Composition of Technical Advisory Group (TAG)

• Ato. Getahun Yakob	Southern Agriculture Research Institute
• Ato. Solomon Eshetu	Ethiopian Public Health Institute (EPHI, MTF)
• Ato. Adamu Belay	Ethiopian Public Health Institute (EPHI)
• Ato. Dawit Dikasso	Food Medicine and Health Care Administration andControl Authority (FMHACA)
• Ato Yilma Mengistu	Ethiopian Standard Agency (ESA)
• Dr.SimionShibiru	Arba Minch University
• TBD	Director of Arba Minch Agricultural Research Centre
• TBD	Relevant expert for AICS
• Dr. Lemlem Sissay FETENE	UNIDO CTA/NPC
• TBD	FAO

Rules and criteria for Technical Advisory Group (TAG) Members

- The TAG members shall meet every three months to review the progress of the project and advise the SC on technical matters;
- The TAG meetings shall take place in Hawassa; however field visit will be conducted to advice on the developments.
- The Chairperson of the TAG shall be nominated by the SC to serve for 1 year;
- Additional member can be nominated if it deemed necessary;
- TAG members are expected to attend extraordinary meeting and events such as field day other project promotion events;
- The Project National Coordinator shall serve as a secretary of the TAG;
- Agenda must be distributed to all members 2 weeks prior to meeting. Additional items can be added up to 2 days before meeting;
- The SC will give annual feedback to the TAG with regard to minutes, direction and priorities.