



# ENGINE: Empowering New Generations to Improve Nutrition and Economic Opportunities

A program under the Global Health Initiative and Feed the Future Initiative

## VULNERABLE HOUSEHOLDS PRODUCTIVE LIVESTOCK SUPPORT IMPLEMENTATION GUIDELINE – Version 1

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## INTRODUCTION

The *Vulnerable Households Productive Livestock Support Implementation Guide* (hereafter referred to as the Guideline) will inform and assist livestock provision actions being undertaken by the ENGINE program. This Guideline gives basic and practical information necessary for informed decision making during **productive livestock support** for both vulnerable smallholder farmer groups and vulnerable households (VHHs) targeted under the ENGINE program. To best serve these households, it is paramount for ENGINE to take a standardized approach to productive livestock provision in the four ENGINE operational regions. This Guideline will aid ENGINE regional and zonal coordinators, woreda experts and development agents in effectively engaging households for better nutrition and economic development.

### Role of Livestock in Human Nutrition and Health

Livestock keeping is critical for many poor households in Ethiopia. Livestock contribute to multiple livelihood objectives and offer pathways out of poverty for the rural and peri-urban poor. Livestock keeping is a valuable productive asset for the poor and supports their human capital through improvement of household nutrition and health. Malnourished and hungry households are less productive (i.e., kids performance in school, farming activity, community engagement) and experience higher prevalence and recurrence of illness (flu, infections, chronic illness) causing increased medical expenses.

Livestock kept by the poor can produce a regular supply of nutrient-rich animal source foods (ASF) that provides an important source of protein, iron, vitamins A and B<sub>12</sub>, and zinc; a critical supplement to the typical staple plant-based diet. This is particularly true for milk and eggs, which can help mitigate the effects of often large seasonal fluctuations in grain availability. Direct production of ASF, especially in households with small children or elderly, greatly improves household health and development.

The primary objective of livestock development interventions in lower-income households is to generate income for livestock-keeping households. Because livestock production is important to human nutritional and health status, the ENGINE program will focus on livestock rearing in vulnerable households for both economic development and improved human nutrition and health. Owning animals increases the amount of ASF available to the household in addition to increased household income from animal and animal product sales. Nutrition and health education must be integrated into livestock development activities to ensure the link between improved human health/nutrition and livestock rearing; both from direct consumption of ASF and use of added income to purchase nutritious foods. By taking a dual approach to smallholder production of livestock and livestock products, ENGINE aims to increase access to important animal sourced proteins, energy and critical micronutrients necessary to enhance the nutritional status of household members and secure their most fundamental livelihood asset, their human capital, as a precondition for alleviating poverty.

#### Livestock support and the linkage with household nutrition

The ENGINE Program takes a nutrition sensitive livelihood strengthening approach to improving the lives of vulnerable households in the Ethiopian highlands. The ENGINE team has designed a holistic approach in which nutrition, health, gender, credit access, technical training and animal feed are essential to the livestock support for the poor.

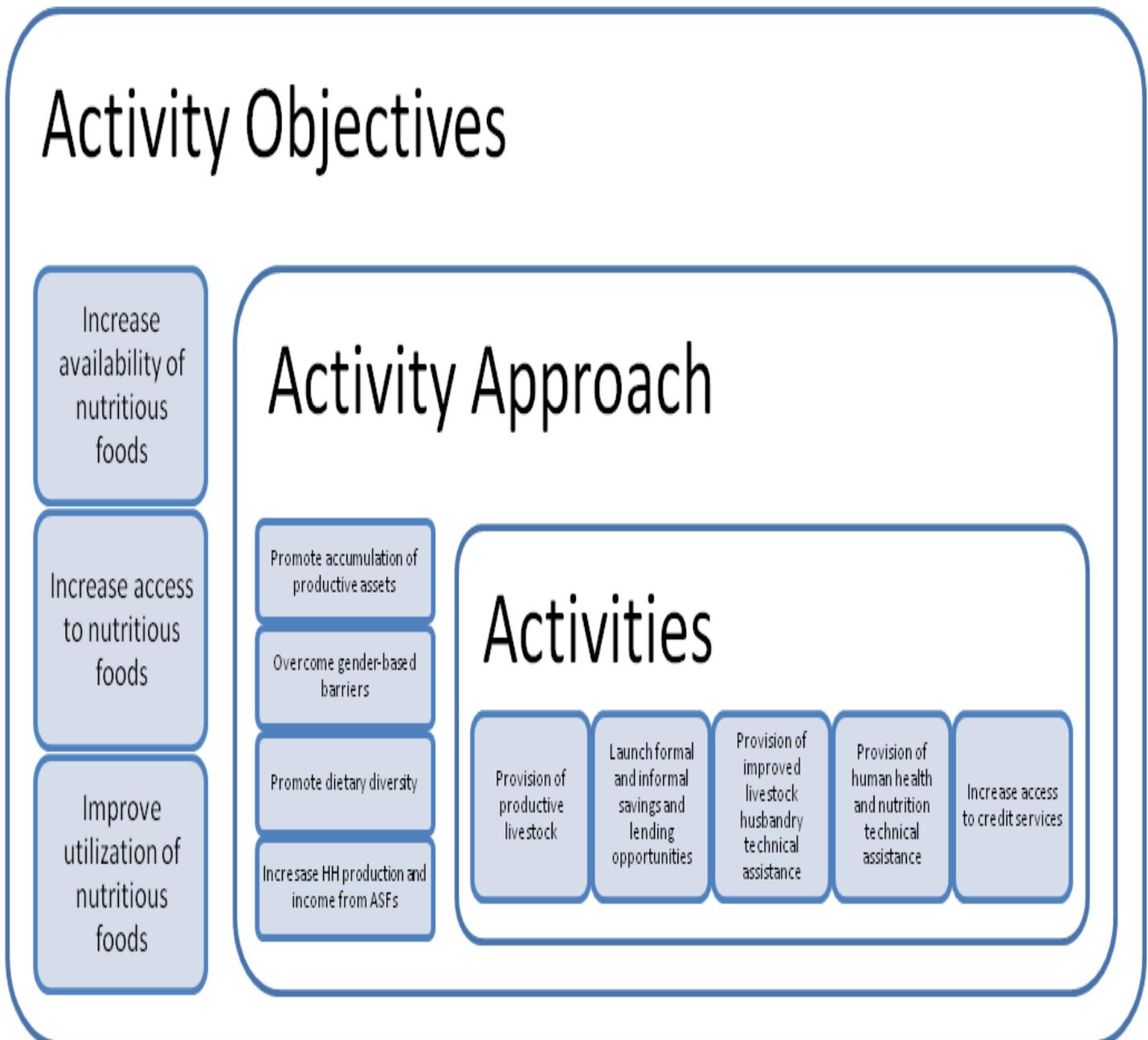
Within ENGINE, support of “start-up” livestock is being implemented. This initial distribution of livestock serves as “seed money” to enable the poor access to credit facilities leading to increased household food production and income generation which ultimately results in food availability, access and asset accumulation. Being well-versed on nutrition and health leads to more diversified and nutritious food consumption within households. The diagram below indicates hypothesized causality between variables.

**PROGRAM APPROACH: STRENGTHENING LIVESTOCK ASSETS FOR IMPROVED HUMAN NUTRITION AND HEALTH**

The dynamic between livestock keeping and the physical well-being of the family is complex.

The ENGINE causal model proposes a holistic approach combining productive livestock development, technical skill training, inputs such as forage seeds with facilitating access to financial services, strengthening market linkages and directly integrating nutrition and health knowledge and development interventions. Through this approach, ENGINE is expected to contribute toward income and food production translating into improved household food availability, accessibility and utilization and an increase in household asset accumulation with associated improvements in household nutrition.

**Figure 1: Conceptual Framework: Linking Productive Livestock Provision to Household Nutrition**



## PROTOCOLS FOR LIVESTOCK PROVISION: IDENTIFICATION OF VULNERABLE HOUSEHOLDS

In each ENGINE woreda, kebele level community development committees, in coordination with Development Agents (DAs) and Woreda Agricultural Officers, will select vulnerable households using pre-agreed selection criteria (*Annex 6: Targeting Criteria to Select Most Vulnerable Households/Individuals*) for homestead vegetable and fruit production. In order to diversify the dietary intake for the vulnerable households, it is necessary to integrate vegetable and livestock farming systems which will strengthen their economic opportunities. The selected most vulnerable households who have backyards should be engaged in homestead vegetable and fruit production and further supported with productive livestock provision.

### Livestock Selection

ENGINE is targeting the following livestock; local breed heifer, dairy goat, sheep and poultry. These animals directly impact nutrition at the household level.

### Fattening

For fast income generation, sheep and goat fattening is considered a viable livelihood option. Animal fattening, i.e., buying animals to fatten or 'finish' for 60, 90 or 180 days, must be an activity of interest to the targeted household and not something that is forced on them. The household must have the capacity (in terms of available feed and holding space) and willingness to purchase nutritious household foods and save a reasonable amount of money. **Except in very specific incidences, ENGINE staff should not recommend cattle fattening to vulnerable households due to the high cost of feeding over a prolonged time.** If target households continue to express interest in cattle fattening, communicate this to the Economic Strengthening Team Leader for further analysis. If approved, ENGINE's recommended flock size for fattening per household is: 3 lambs (young male sheep) or 3 bucks (young male goats).

### Live Animal Production

Livestock rearing (sheep, goat and cattle), poultry production are possible opportunities for farmer groups. ENGINE will consider livestock type (species and breed), relevance to a given location and alignment with addition conditions for each livestock type (see table below). Other considerations include: budget availability; management know-how; and minimal disruption to the normal agricultural practice at the rural household level. ENGINE's recommended breeding stock herd/flock size per household for rearing is:

- 1 heifer for dairy; or
- 5 sheep (1 improved breed male and 4 local females) for sheep rearing; or
- 5 goats (1 improved breed male and 4 local females) for dairy goat rearing; or
- 11-20 chickens (10 pullets and 1 cockerel of a 3-month-old chicken or 20 heads of a day-old chicken)

### Breed Improvement

Introducing male improved breed animals (in the case of sheep and goat provision) is proposed for breed improvement, income generation from mating service and collection of service charges for improved male animals serving neighboring animals. When the supply of improved breed is inadequate or the possibility of project supported sheep and goats mating with neighbors' male animals exists, vulnerable households will be supported with all female animals. Improved breed introduction is to be handled carefully as the crossbreeding (improved male mating with local female) might not meet the intended quality standard. Similarly, the improved breed geographic adaptability and its acceptance by the community will be confirmed from the supplier.

### 1. Group versus Household-level Productive Livestock Management

For the most part, the ENGINE project does not advocate for group ownership and management of livestock. Group livestock management is not without its advantages; vulnerable households working in a group can benefit from minimizing both production costs of labor, land, feed and treatment, and marketing costs of transport, labor, feed and holding space. Similarly, being in a group increases smallholder bargaining power when dealing with input traders and selling animals or animal products. Even with these benefits, group management of livestock (i.e., a group managing a herd) has strong shortcomings, especially in groups with weak management. Group management of livestock can challenge group sustainability.

Shortcomings include:

- Community level livestock fattening or rearing under confined management (zero grazing) and feeding industrial by-products is not economical. Access to feed inputs can be inconsistent and costs fluctuate over the seasons. Therefore, using local feed resources (crop residue, agricultural by-products, local beer brewing by-products and private grazing) is the better alternative for the group to receive an economic profit (i.e., profits must be higher when being shared by numerous group members). The likelihood that members will not contribute equally and in a balanced feed amount is great. Unequal contribution of feed resources by group members for group managed stock as well as the high possibility of poor animal performance from inadequate feeding is likely to ignite disputes and jeopardize group sustainability.
- Shouldering responsibility and providing care for group owned and managed resources (i.e., animals, equipment, inputs) often leads to individual assets (i.e., lead person taking over ownership of assets). In most cases, management of group owned interventions in the absence of hired or paid personnel rests on the group leaders or active participants which creates an unsustainable situation and can lead to conflict within the group.
- When working with a disease sensitive livestock venture such as poultry production, group management introduces the potential of causing biological harm (biosecurity) to members and communities. Rotational care of animals predisposes the animals to disease. Consistent observation of the animals' condition and monitoring of animal health treatments and protocols is crucial to maintaining healthy animals.
- Legitimate and agreed upon bylaws are necessary for group sustainability, accountability and good governance. A constitution, bylaws and standardized operating procedures institutionalize basic accounting principles like recordkeeping, auditing and dividend decisions. Group integrity and commitment relies on leadership accountability to the members. Rural households are often semi-illiterate or illiterate which makes the development and implementation of standardized practices difficult.
- In certain circumstances, group management is advantageous as long as the solidarity of the group is strong and the commitments of the group members are on equal footing. This cohesion is uncommon in many rural communities.
- Financial returns or gains distributed to members from group production and marketing do not commonly benefit the entire household; often being spent on the individual member for personal benefit.

ENGINE will work through smallholder farmer groups primarily for delivery of technical trainings, to ensure proper animal monitoring is provided by the group members, facilitating the group legalization process by the respective Woreda Cooperative Development desks and facilitating linkages with input and output markets. **ENGINE recommends that individuals rather than groups undertake the ownership and management of livestock fattening or rearing enterprises.**

## 2. Livestock Provision and Sustained Use

ENGINE's provision of productive livestock to the rural poor for livelihood and economic strengthening has the dual objectives of increasing household income and food availability as a means of diversifying dietary intake to improve health and nutrition. In order to achieve this, ENGINE will encourage institutional collaboration with respective Government of Ethiopia and key stakeholders from the private sector and civil society. To ensure buy-in, all stakeholders will be engaged through joint discussions, mutual respect and understanding, and they will be tasked with specific responsibilities. This will be accomplished by:

- Integrating small scale business management training as part of the livestock husbandry technical training. This integrated training approach will be enhanced by linking all small animal supported target groups to financial service institutions such as savings and credit associations. This integrated approach will discourage early selling of project supplied animals to avoid resource misuse and begin behavior change toward medium to long-term planning.
- ENGINE will use a standard donation agreement (*Annex 3: Handover Agreement for Release of Livestock*) and initiate monthly monitoring tool (*Annex 5: Monthly monitoring tool used by group representative*) used by group representative for mentoring with every vulnerable household and/or smallholder farmer group supplied with productive livestock. Groups will enter into multipartite agreements including signed agreements with the Woreda Agriculture Office, Kebele Development Committee, group chairperson, and Save the Children Sub-Office representatives prior to the distribution of livestock. This promotes buy-in of multiple stakeholders and encourages good animal management. Signatories should be briefed and agreed with their roles and responsibilities (see annex 4).

## 3. Maintaining Breeding Stock/Sold Animal Replacement

The minimum stock (not less than ENGINE start-up support) should always be maintained by the supported VHHs. Likewise, VHHs should note that ENGINE support is one-time; therefore it is their responsibility to replace sold, dead or lost animals. Unless caused by a natural disaster such as an outbreak, flooding, earthquake, lightning, etc., animal replacement should be managed by individual or community support systems.

### CROSS-CUTTING ISSUES

#### Gender and Nutrition

Women guarantee household nutrition through both their economic activities (including livestock production) and care giving skills. Assets, including livestock, are generally owned jointly between Ethiopian husbands and wives. The male head of household typically makes decisions regarding the sale of livestock or harvests and the use of earned revenue. Women tend to decide on the daily purchases of food items. The Economic Strengthening Team in collaboration with the ENGINE Gender Advisor will complete the following activities to overcome some of the gender-based barriers:

- Pre-intervention assessments will be completed to assess the potential impact of any intervention on gender roles, such as the workload of women and girls. Access and control of resources will be thoroughly investigated prior to activity implementation. The assessment will identify opportunities to exploit (i.e., traditional roles around livestock management) as well as possible enhancement of gender-based problems.
- ENGINE Targeting Committees will identify vulnerable households for project support. The committees will be comprised of a diverse team of both men and women and locally active gender institutions such as the Women's Affairs Office.
- Based on the findings of the gender-based pre-intervention assessment, gender sensitization and knowledge development trainings will be integrated into other trainings being delivered to ENGINE target groups.

Livestock keeping is critical for many of the poor in Ethiopia, often contributing to multiple livelihood objectives and offering pathways out of poverty. Provision of productive livestock can serve as an important source of animal foods (milk, meat, eggs) as well as an income source to purchase other nutritious foods. Many vulnerable households do not fully benefit from their livestock because of inadequate knowledge of the nutritional value of animal source foods, traditional barriers to consuming animal products (like sheep and goat milk) and/or other pressing income needs causing households either to sell their animals and animal products or abandon consumption.

To guarantee the contribution of productive livestock to household nutrition, health and income, ENGINE's standard and comprehensive livestock technical training will include nutrition and behavioral change communication (BCC). This will enable Health Extension Workers (HEWs) and DAs to promote the importance of animal source foods for children and women. The ENGINE Economic Strengthening team will work closely with ENGINE and stakeholder nutritional experts to effectively develop and promote optimal behaviors.

### **Environment**

Sustainable environmental management is central to successful livestock-based livelihoods since livestock depend on environmental resources such as rain-fed pastures and water for survival. Pastures in most of the regions are under pressure because of overgrazing or uncoordinated grazing practices, drought, bush encroachment, invasive species and crop expansion. Thus, the provision of additional livestock into a community could create environmental concerns especially in areas already facing pressure from inadequate range/grazing spaces. ENGINE will consider all environmental concerns during the livestock and livelihood selection process. Availability of feed resources and demand for supplemental feed for improved livestock production need to be balanced. ENGINE's support for productive livestock development will directly address the following concerns:

- ENGINE will improve animal feed availability by introducing feed technologies appropriate to the given area and available inputs. Promoted fodder species will be suitable to the area, will not cause a threat to the environment (i.e., invasive species, nutrient depleting, etc.) and will be easily integrated into local crop production practices. Inexpensive and locally available inputs will be promoted (i.e., crop residues, molasses, urea) whenever possible. Development of suitable and readily available feed/forage alternatives will relieve some of the pressure currently placed on communal grazing areas.
- Procurement of productive animals will be from the local market except when improved breeds are required. Improved animals will be sourced from research centers or private breeding including artificial insemination (AI) farms. This approach will reduce added pressure on the environment from increased livestock populations.
- Nutrient recycling (manure, unused feed resources) will be included in the improved animal production trainings. Promotion of integrated crop-livestock farmers can increase household nutrition and income with the improvement of crop production due to better soil management.

### **CRITICAL INPUTS**

To make ENGINE's integrated livelihood and economic strengthening approach more successful through impacting nutrition and household income, specific inputs need to be provided as part of productive livestock provision.

### **Comprehensive Training**

As a prerequisite to livestock provision (i.e., before a household/group can receive animals), beneficiaries must participate in and successfully pass ENGINE's comprehensive technical training. This training curriculum will include the importance of animal source food for children's and women's nutrition, behavioral change communication, gender integration, animal husbandry, animal feed preparation and feeding and small-scale business management. The ENGINE team has conducted a rapid training needs assessment and secured available

regional/localized training materials. ENGINE specific training materials are to be developed for location specific needs and need to incorporate local training resources. All materials will be suitable for both illiterate and literate populations.

Addis-based Nutrition Technical Advisors will take the lead in developing nutrition and health training materials; the Gender Advisor will be responsible for gender training materials; and the Livelihood team will develop training materials on animal husbandry and business management. The entire Addis-based technical support team will work together to fully integrate topics and materials. ENGINE staff will promote integration and rollout of relevant technical information. The respective government line office staff will facilitate the standard and comprehensive training for the vulnerable households (VHHs). Training of Trainers (TOT) training modules will be delivered to DAs, Micro-enterprise extension agents, HEWs and the Women’s Affairs Office staff based on need as identified in the needs assessment. Each technical team will be responsible for training DAs, HEWs and Women’s Affairs Officers who will pass on the training to VHHs. The comprehensive training will be provided for VHHs as a package. Strengthening the relationship between public sector technical support and communities will increase the likelihood of sustainable growth of VHHs.

**Table 1: Comprehensive technical assistance support for productive livestock development**

Major Activities	Responsible	Where	Remarks
<ul style="list-style-type: none"> <li>• Training Need Assessment (TNA) of DAs, HEWs, Micro-enterprise and Women’s Affairs Officers</li> <li>• Review existing training materials and customize for HHHs training (if needed)</li> </ul>	Technical advisors (Nutrition, Livelihood and Gender)	Sample Woredas	Advisors responsible for own expertise
<ul style="list-style-type: none"> <li>• TOT training for DAs, HEWs, Micro-enterprise and Women’s Affairs Officers (if needed and gaps identified TNA mentioned above)</li> </ul>	Technical advisors (Nutrition, Livelihood and Gender)	Respective region	Advisors responsible for own expertise
<ul style="list-style-type: none"> <li>• Productive livestock supported HHHs trained on animal husbandry (feeding and feed preparation, housing, breeding, health and management)</li> </ul>	DAs	Respective FTCs	Supported HHHs trained in their nearby FTCs
<ul style="list-style-type: none"> <li>• Productive livestock supported HHHs trained on nutrition</li> </ul>	HEWs	Respective FTCs	Supported HHHs trained in their nearby FTCs
<ul style="list-style-type: none"> <li>• Productive livestock supported HHHs trained on small scale business management</li> </ul>	Micro-enterprise staff	Respective FTCs	Supported HHHs trained in their nearby FTCs
<ul style="list-style-type: none"> <li>• Productive livestock supported HHHs trained on gender</li> </ul>	Women’s Affairs	Respective FTCs	Supported HHHs trained in their nearby FTCs

### Livestock Feed

Feed is a critical input for improved livestock production and increased productivity. Unfortunately, feed resources throughout Ethiopia are seriously inadequate. Addressing feed challenges requires a feed improvement effort focused on upgrading the local feed resource base. Therefore, ENGINE’s productive livestock provision will consider strategic land use for fodder production. Suitable locations include smallholder backyards and farm boundaries. Improving locally available feed through straw treatment (urea treatment), ration formulation from locally available inputs and the introduction of multipurpose trees are appropriate ways of expanding feed resources and making them accessible to VHHs. ENGINE’s technical training will include feed improvement techniques. As smallholder productivity increases, local affordable practices can be coupled with trainings on the use and benefit of industrial or commercial feeds. This will strengthen the link between private animal feed dealers and livestock producers.

## Access to Credit

In coordination with the Government of Ethiopia's Agricultural Growth Program (AGP), ENGINE supported households will be organized into groups and directed to their respective Woreda Cooperative desk for legal recognition. Formal registration of groups is obligatory for access to formal finance mechanisms. Groups will be linked to existing microfinance institutions (MFIs) such as rural savings and credit cooperatives. Groups which are eligible for credit will receive assistance in establishing a rural saving and credit association. The upcoming economic strengthening assessment will provide guidance on the supported households' minimum savings amount.

ENGINE staff will collaborate with existing MFIs to overcome any challenges ENGINE supported groups and individuals may encounter in registering with the MFI. ENGINE's "start-up" provision of livestock is intended to be a catalyst in linking rural poor households to MFIs. Six months after receiving animals, targeted ENGINE households will be earning income from livestock offspring and livestock product sales. Because households will be receiving financial management training, they should be able to start saving income through the MFI. One and a half years after receiving small stock (goats, sheep, and poultry), target households who have been earning an income and actively saving will be eligible for a loan to purchase a local dairy cow on their own. Those making good use of the supported livestock and have started saving but still need further support may receive ENGINE's match of up to 50 percent of the household's contribution toward a dairy animal.

## Animal Health Service

The prevalence of livestock diseases and the lack of animal health services represent a major challenge to livestock-based interventions across the ENGINE operating areas. ENGINE needs to be prepared for situations where inadequate animal health services attribute to the death of project animals. To prevent such occurrences, ENGINE takes a holistic approach to improve animal healthcare service delivery to project supported animals. To address challenges in animal health services delivery ENGINE will:

- Consult with local government animal health officials to develop a list of recommended vaccines and preventative treatment protocols. This list will be shared with all beneficiaries.
- Have Woreda Animal Health Workers inspect the animal selected for purchase to identify overall condition, existing diseases, illness and age of the animal. Animal inspection will be completed and the animal approved prior to beneficiary purchase.
- Vaccinate purchased animals with locally appropriate vaccines and clinical treatments before delivery to the beneficiary.
- Link supported households with a local public veterinary service provider to receive routine supervision and inspection of project supported animals.
- Require targeted beneficiary households to submit routine verbal reports of animal status to their nearby public veterinary clinic/health post.
- Link targeted beneficiary households to existing public and private animal health service providers for sustained service access.

## LIVESTOCK PROCUREMENT AND SUPPLY

Productive livestock procurement and supply to vulnerable households poses a high risk for resource misuse and/or poor implementation. Poor quality animals can inadvertently be purchased or may be knowingly/unknowingly purchased at higher prices. To ensure transparency and good use of project resources, relevant stakeholders (Animal Health Officers, DAs, etc.) must be fully engaged. Although the beneficiary will purchase animals of their own choosing, it is to the beneficiary household's advantage to get the best animal for the money.

To prevent the purchase of animals with reproductive problems, selected animals will be inspected by Woreda Animal Production and Animal Health Officers prior to payment.

#### **Recommended Stakeholders**

- **Recipient:** Compulsory
- **Group Representative:** Optional
- **Member of Kebele Dev Committee:** Optional
- **Woreda Animal Production Officer:** Compulsory
- **Animal Health Officer:** Optional
- **SCI:** Compulsory

ENGINE recommends purchasing animals (except for improved breeds) in local markets and/or in the village because the reproductive history and overall animal health will be better known (than from a trader), the animal will be adapted to the local environment, and the buyer can take recursive action if there are any problems with the animal.

The textbox above outlines recommendations of stakeholders to be engaged in the purchase transaction for better transparency and accountability.

Before beneficiaries receive the selected animals, the Animal Health Officer will vaccinate each animal with the outlined recommended vaccinations and treatment services. The Animal Health Officer should also complete any routine treatments (deworming) and minor treatments for identified problems (trim hooves, treat ectoparasites, etc). ENGINE will pay these expenses but only if the animal has not been delivered to the beneficiary. Upon receipt of the animal(s) the beneficiary is responsible for all treatments. To assist in the productive livestock purchase from the local market and distribution to beneficiaries, a standard format has been developed and approved (see Annex 1 and 2).

#### **LIVESTOCK-BASED LIVELIHOOD OPPORTUNITIES**

This Guideline focuses on the livelihood opportunities of dairy cattle, sheep, goats and poultry. These animals/value chains were selected because of their high potential to positively impact vulnerable households both financially and nutritionally. Thus, the ENGINE project is currently limiting animal provision to these. Constraints and opportunities for each value chain vary from woreda to woreda. A woreda-specific short-list of high potential livelihoods will be developed through market assessments at the onset of activities in that woreda. ENGINE will carefully analyze market opportunities with livelihood start-up and operating costs and other constraints before recommending a livestock-based livelihood to a household. To ensure households realize economic opportunities which also improve household nutritional status, selected animals must match the natural resource base and traditional or indigenous knowledge systems of the species in that locale.

The following sections outline ENGINE's recommendations and technical approach in the selection and management of specific livestock and livestock-based livelihoods.

#### **Sheep Rearing**

Farming systems in rain-fed areas are quite diverse with a variety of crops and cropping systems, agro-forestry and livestock production. Sheep rearing plays an important role in the economy of Ethiopia and the sustainability of poor people throughout Ethiopia's rain-fed agro-ecosystems. Sheep are raised primarily for meat and sometimes for milk. Sheep are a flexible financial reserve (social security) for smallholder households especially in years of poor crop harvests.

A herd of small ruminants can create employment totaling 184 to 437 man-days per year depending upon the herd size. Women and children provide up to 90 percent of the labor<sup>1</sup>.

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<sup>1</sup> ILRI (2010): *Sheep and goat production and marketing systems in Ethiopia: Characteristics and strategies for improvement*

## **Health Benefits**

Although sheep in Ethiopia are raised primarily for their meat and rarely milk consumption is common in some areas, especially in Tigray region. There are higher levels of total solids and other major nutrients in sheep milk than in goat and cow's milk.

Sheep rearing in Ethiopia is promoted as an income generating activity for landless and poor people, but increasing income in poor households has long-term and indirect impacts on household nutrition. When addressing household nutrition in the sheep rearing program, nutrition messaging must consider approaches to ensure that a household's income will be used to purchase nutritious foods. ENGINE will actively integrate nutrition messaging into all technical trainings.

## **Production Systems**

Farmers currently lack improved sheep husbandry skills, inputs, technical information and support crucial in the adaptation of new technologies to their specific culture and environment. But even with these challenges, the farmers have hope for a better future and are receptive to learning new methods. Technologies to improve sheep productivity and its contribution to the livelihoods of the rural poor do exist; however, the rate of adoption of sheep-related technologies in smallholder mixed farming systems in Ethiopia is consistently low. In order to solve this problem, approaches are needed that guarantee effective linkages among researcher centers, NGOs, extension workers, decision-makers and farmers, who have a complex knowledge base and widely dispersed expertise.

Ethiopian sheep have a quick reproductive rate, 2-4 lambs per year, and the availability of high quality local breeds such as Bonga of Southern Region, Horro of Oromia Region, Washara of Amhara Region and Bagayite of Tigray Region. Current research centers and universities are looking into the development of quality crossbred animals. Imported varieties include the South African Dorper breed, known for its fast body weight gain and twin births, and Awasi from Israel, the fat-tailed, milk and meat producing sheep. Crossbreeding local breeds with higher producing imported varieties creates an important opportunity for economic development for vulnerable households.

## **ENGINE's Approach**

DAs should train VHHs targeted for sheep rearing using ENGINE training materials. The training should encompass small-scale business management, human nutrition, gender; animal feeding, housing, breeding and animal healthcare. After completion of training, ENGINE should provide trained households with four local female breeding sheep and one male improved breed sourced from regional research centers and/or universities such as South Agriculture Research Institute, Sekota Research Center, Debre Birhan Research Center, Bako Research Center, Adami Tulu Research Center and/or Haramaya University.

Supported VHHs can obtain high market prices by selling the fast growing lambs, improve nutrition through milk/meat consumption and generate income from providing the male improved breed (Dorper or Awasi) insemination service to sheep rearing communities in their vicinity. Successful sheep rearing households will be linked to both input (feed, credit, animal healthcare) and output (local market, restaurants, traders and abattoirs) markets so that sheep rearing can serve as a "springboard" to acquire productive livestock like dairy cows.

## **Considerations for sheep support**

The critical considerations recommended for provision of sheep and intending sheep owners are:

<ul style="list-style-type: none"> <li>▪ Availability of inputs and services (public vs. private): existing or potential for development. These include feeds (roughage and concentrates), veterinary drugs, veterinary services, drug vendors, extension systems (technical advice) and market information systems</li> <li>▪ Existing tradition of consuming colostrum and sheep milk</li> <li>▪ The sheep should not be sold or slaughtered before lambing in case of multiplication or before attaining the body weight of 20 kg in case of fattening</li> <li>▪ The owners should inform the project staff and Kebele development committee before sale or slaughter of the animals and in case of any illness or theft</li> </ul>	<ul style="list-style-type: none"> <li>▪ Availability of the most populous local breeds in Ethiopia with a wide area coverage, thus interventions would have far-reaching impact</li> <li>▪ The breeds are kept by resource-poor farmers</li> <li>▪ The breeds are genetically diverse as evidenced by regional research centers</li> <li>▪ Existence of a good potential for genetic improvement of the breeds</li> <li>▪ Regional research centers with relevant expertise and interest are available within reasonable reach of the communities who keep the breeds</li> <li>▪ Reasonably good background information is available on the breeds and production systems, on which the planned and future research and development work could be based</li> <li>▪ The areas are easily accessible for basic inputs access and market</li> </ul>
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## Goat Rearing

Goats are important for diversifying production, creating employment, increasing income, building capital, contributing to human nutrition and reducing risk during crop failure, property security and investment. Empirical studies show that indigenous goat herds generated significantly higher net benefits under improved management than under traditional management, which challenges the prevailing notion in countries like Ethiopia that indigenous livestock do not adequately respond to improvements in the level of management.<sup>2</sup>

## Health Benefits

Goat milk is almost always pure white in color. The small size of the fat globules and the soft curd are its primary characteristics. Because of these qualities, goat milk is often recommended for infants, pregnant women and people suffering from liver disease, allergies, ulcers or digestive problems. Goat milk is healthful, nutritious, flavorful and tastes no different than whole cow's milk. One main difference is that goat milk digests within twenty minutes versus an hour or more for cow's milk. It contains desirable amounts of nicotinic and pantothenic acid, riboflavin, thiamin and niacin; and it has an alkaline reaction, as opposed to the acidic reaction of cow's milk, which helps to soothe the stomach.

Though goat milk consumption is rare in the highland farming communities, there are some pocket areas where goat milk is consumed.

Nutritional value of goat milk compared with cow and human milk

<i>MILK VARIETY:</i>	<i>GOAT</i>	<i>COW</i>	<i>HUMAN</i>
Protein (percent)	3.0	3.0	1.1
Fat (percent)	3.8	3.6	4.0
Calories/100ml	70	69	68
Vitamin A (i.u./gram fat)	39	21	32
Vitamin B (u.g./100ml)	68	45	17
Riboflavin (u.g./100ml)	210	159	26
Vitamin C (mg ascorbic acid/100ml)	2	2	3
Vitamin D (i.u./gram fat)	0.7	0.7	0.3
Calcium	0.19	0.18	0.04
Iron	0.07	0.06	0.2
Phosphorus	0.27	0.0	0.06
Cholesterol (mg/100ml)	12	15	20

## Production System & ENGINE's Approach

After goat milk consumption is confirmed, the provision of goat crossbreeds (like hybrid of Anglonubian with Hararghe Highland local breed) or a crossbreed of improved male goat with local breeds is an important economic opportunity for VHHs residing in areas where browsing

vegetation cover is available. Similar to the sheep provision, ENGINE should develop training materials and cascade to respective DAs to share with VHHs. To help improve VHH food security and nutrition status, ENGINE should provide five goats (four female and one male) per household.

## Considerations for goat support

The critical considerations recommended for provision of goat and intending goat owners are:

<sup>2</sup> <http://www.feem.it/web/activ/activ.html>: *Economic Evaluation of Smallholder Subsistence Livestock Production: Lessons from an Ethiopian Goat Development Program*

<ul style="list-style-type: none"> <li>• Availability of inputs and services (public vs private): existing or potential for development. These include feeds (browse), veterinary drugs, veterinary services, drug vendors, extension systems (technical advice), and market information systems Existing tradition of consuming colostrum and goat milk</li> <li>• The goat should not be sold or slaughtered before kidding in case of multiplication or before serving milk for 2 gestations</li> <li>• The owners should inform the project staff and Kebele development committee before sale or slaughter of the animals and in case of any illness or theft</li> <li>• The crossbreeds are kept by resource-poor farmers</li> </ul>	<ul style="list-style-type: none"> <li>• The breeds are genetically diverse as evidenced by regional research centers</li> <li>• Existence of a good potential for genetic improvement of the breeds</li> <li>• Regional research centers with relevant expertise and interests are available within reasonable reach of the communities who keep the breeds</li> <li>• Reasonably good background information is available on the breeds and production systems, on which the planned and future research and development work could be based</li> <li>• The areas are easily accessible for basic inputs access and market</li> <li>• Availability of the most populous local goat breeds in Ethiopia with a wide area coverage so interventions would have far-reaching impact</li> </ul>
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## Poultry Rearing

In Ethiopia, chickens are widespread and almost every rural family owns chickens, which provide a valuable source of protein and income. The total number of chickens in the country is estimated at 38.1 million (CSA 2009).

## Production System

In Ethiopia, rural chicken represents a significant part of the national economy contributing 98.5 percent of the egg production and 99.2 percent of the chicken meat production. Due to technical, organizational and institutional constraints, however, the economic contribution of the sector is still not proportional to the total number of chickens within the country. Despite their low productivity, indigenous chickens possess desirable characteristics such as thermotolerance, disease resistance, good flavor, hard egg shells, high fertility and hatchability as well as high dressing percentage. The majority (99 percent) of these chickens are maintained under a traditional system with little or no inputs for housing, feeding or health care. Poultry farming makes a substantial contribution to household food security throughout Ethiopia. It increases income and provides quality food, energy, fertilizer and renewable assets in over 80 percent of rural households<sup>3</sup>. Small-scale producers are constrained by poor access to markets, goods and services; they have weak institutions and lack skills, knowledge and appropriate technologies. The result is that both production and productivity remain well below potential and losses and wastage can be high. Adapted breeds, local feed resources and appropriate vaccines are available, however, along with proven technologies that can substantially improve productivity and income generation. Several woreda agriculture office staff witnessed a very low success rate with the government distribution of improved chickens to farmers. The chickens died at a very high rate due to the lack of adequate technical, feed and technological support. Thus, ENGINE will carefully monitor chicken provision and link beneficiaries with preventative (vaccination) and curative veterinary service providers. As such, only ENGINE program woredas that have well established animal healthcare facilities will be targeted for poultry provision.

## ENGINE's Approach

ENGINE, in collaboration with research institutes/universities, will provide targeted households with 3 days of "hands-on" training on the construction of poultry shelters, local feed preparation and feeding. The ENGINE program will provide locally available materials such as corrugated iron and nails for the shelters. Prior to chicken provision, ENGINE will confirm that the government and private animal healthcare service providers are willing and able to provide local drugs and vaccines.

After training, each household will be provided with ten 3-month-old pullets (females) and one cockerel (male). If there is an inadequate supply of pullets, each household will be provided with twenty day-old chicken together with a Hay-Box Chicken Brooder (locally made chicken nurturing equipment that can be till 2 months old).

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<sup>3</sup> Fisseha M, Azage T and Tadelle D. 2010. *Indigenous chicken production and marketing systems in Ethiopia: Characteristics and opportunities for market-oriented development*. IPMS (Improving Productivity and Market Success) of Ethiopian Farmers Project Working Paper 24. Nairobi, Kenya, ILRI

## Considerations for poultry support

The critical considerations recommended for provision of chicken are:

- |  |  |
|--|--|
| <ul style="list-style-type: none"><li>▪ Nearby public or private veterinary health clinic/post/vendor should be well equipped technically with adequate drugs and vaccines to extend poultry health services to targeted households</li><li>▪ The areas are easily accessible for basic inputs access and market</li><li>▪ Households should be able to prepare local feed and poultry shelters based on the training standard</li></ul> | <ul style="list-style-type: none"><li>▪ The stock chicken should not be sold or slaughtered before 18 months of age in case of laying or before being replaced by hatching fertile egg using local hens</li><li>▪ The owners should inform the project staff and Kebele development committee before sale or slaughter of the chickens and in case of any illness or theft</li></ul> |
|--|--|

## Dairy Cow

Consumption of dairy products in developing countries, though starting from a low base, is growing rapidly. Dairy development is linked to nutrition, both among farm families and resource poor dairy consumers. Milk consumption can have a dramatic effect on improving the nutritional status of poor people and is especially important for children and nursing and expectant mothers.

Dairy development in Ethiopia is constrained by inadequate start-up capital, shortage of feed, inadequate and expensive improved breed supply, intermittent and untimely access to artificial insemination, limited access to animal health, lack of credit and limited output markets.

## ENGINE's Approach

The ENGINE dairy cow support to the poor focuses on addressing the above constraints by scaling-up the small animal provision and introducing a risk averting scheme by establishing micro-insurance coverage for improved dairy cows. Below are the three most important strategies proposed as an ENGINE dairy cow provision scheme to vulnerable households.

- The first approach is to enable the poor access to dairy by strengthening the traditional wealth accumulation strategy so that households who own small animals (sheep, goats or chickens) can “climb up” to larger animals, like dairy cows. For this to happen, ENGINE target VHHs who can generate income from initial livestock support and save money in the Rural Saving and Credit Cooperative (RUSACCO) and Micro-finance Institutions (MFIs) with which they have been linked with, will be able to secure credit to purchase dairy cows on their own. This will create an opportunity to “climb the economic ladder” by transitioning from small to large animals.

In addition, it discourages the early selling of small animals that have been provided as a “business start-up”. Therefore, all ENGINE targeted women groups and/or households, as well as community members who did not receive ENGINE support but are willing to purchase better local breeds, will be linked to local dairy cow suppliers like “Horitu Borana” and AI service providers.

- Secondly, some of the groups and households supported with small animals may have encountered challenges beyond their control and they are not able to cover the full cost of a local dairy cow. Although they have started saving through RUSACCO and MFIs, they are in need of further ENGINE support. ENGINE will allot matching funds of up to a maximum of 50 percent of the local dairy cow cost for VHHs who are willing and able to contribute at least 50 percent.
- The third ENGINE dairy cow provision proposal is promoting dairy micro-insurance coverage, but this approach requires further study. Therefore, a separate implementation modality for dairy micro-insurance will be developed following the decision made by ENGINE senior management based on the findings of the study.

## Considerations for dairy cow support

The critical considerations recommended for provision of local/improved dairy cows and intending dairy owners are:

<ul style="list-style-type: none"><li>▪ Nearby public or private Artificial Insemination service and veterinary health service</li><li>▪ The areas are easily accessible for basic inputs and market</li><li>▪ Households should have private grazing land, crop residue, agricultural by-products of legume leaves and weeds from crop residues</li><li>▪ Households should be able to obtain local feed like local beer brewing by-products "Atalla"</li></ul>	<ul style="list-style-type: none"><li>▪ Households should be able to construct local dairy cow shelter as per the recommended standard for keeping dairy cow</li><li>▪ The stock dairy cow should not be sold or slaughtered before 3 years of age or before replaced by at least 2 improved heifers (birth of initial cow served with AI service)</li><li>▪ The owners should inform the project staff and Kebele development committee before sale or slaughter of the dairy cow and in case of any illness or theft</li></ul>
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**ANNEX 1: SAVE THE CHILDREN PRODUCTIVE LIVESTOCK PURCHASE FORMAT FOR NON RECEIPTS**

Name of the Seller	Unit	Specifications						Quantity	Unit Cost	Sign.
		Type of Productive Livestock	Sex (M,F)	Body Size (S,M,L)	Body Condition (F,M,T)	Color	Breed			
	No.									
	No.									
	No.									
	No.									
	No.									
<b>Total Cost</b>										

1. I, the above mentioned livestock (sheep, goat or heifer) seller, of whose address is in \_\_\_\_\_ Woreda \_\_\_\_\_ Keble; \_\_\_\_\_ Ketena have sold the above animal(s) with the amount in Birr \_\_\_\_\_ ( \_\_\_\_\_ on date \_\_\_\_\_.

2. I, the **recipient** of the aforementioned purchased animals, herewith confirmed that I have identified and selected \_\_\_\_\_ heads of breeding \_\_\_\_\_.

**The recipient Name;** \_\_\_\_\_ **Sign:** \_\_\_\_\_ **Date:** \_\_\_\_\_

*For the above reasons, we hereby have affixed our signatures.*

**Paid by:**

Name \_\_\_\_\_

Sign. \_\_\_\_\_

Date \_\_\_\_\_

**Approved by: Regional coordinator**

Name \_\_\_\_\_

Sign. \_\_\_\_\_

Date \_\_\_\_\_

**Witness by:**

Name \_\_\_\_\_ (Beneficiary committee Rep) Sign. \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ (Animal health worker) Sign. \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ (Keble Dev't agent/ Extension agent) Sign. \_\_\_\_\_ Date \_\_\_\_\_

Name \_\_\_\_\_ (Kebele chairperson) Sign. \_\_\_\_\_ Date \_\_\_\_\_

***N.B- please put the official stamp of Save the Children and Kebele Administration***



### ANNEX 3: HANDOVER AGREEMENT FOR RELEASE OF LIVESTOCK

This Agreement is between the \_\_\_\_\_ SC-Sub-Office/Kebele Development Committees (KDCs) and W/O or Ato \_\_\_\_\_ hereinafter referred to as the recipient.

The purpose of this Agreement is to establish the terms and conditions for the donation of \_\_\_\_\_ (specify type and number of animal provided) hereinafter referred to as the Productive Livestock.

1. SC-Sub-Office, WAO, GCP/KDCs hereby transfers ownership of \_\_\_\_\_ animal(s) to the ENGINE beneficiary listed above.
2. The donated Productive Livestock will be used exclusively for the needs of the recipient in relation to household food consumption and to generate income that can be reused to purchase household goods reach in nutrition.
3. The recipient should avail the required feed, housing, water and healthcare needed by supported animals.
4. The recipient will inform ENGINE staff, the Woreda Agriculture Officer and the Kebele Development Committee before he/she sells these start-up breeding animals or in case of animal loss from illness or theft.
5. SC-Sub-Office, WAO, GCP/KDCs shall be granted full and free access to inspect the provided Productive Livestock during and/or after the project period.
6. SC-Sub-Office, WAO, GCP/KDCs shall not be responsible for any costs, direct or indirect, animal feed, AI service, veterinary service, credit default, technology adopt and equipments or any third party liability that may arise in relation to the use of the donated Productive Livestock.
7. The recipient shall be responsible for any mismanagement, damage, loss, theft or third party liability.
8. By signing this Agreement, the recipient accepts the Productive Livestock (in the condition as received) and agrees to the terms and conditions stipulated herein.
9. This agreement is effective from the date of the signing by multipartite parties and actual handover of the Productive Livestock.

	Name	Title	Date	Signature
<b>Recipient</b>				
Woreda Agriculture Office (WAO)/Livestock Agency				
Group Chair- person (GCP)				
Kebele Development Committee Representative				
SC-Sub- Office/KDCs Representative				

#### ANNEX 4: PRODUCTIVE LIVESTOCK PROVISION SIGNATORIES' ROLES AND RESPONSIBILITIES

Recipient	WAO/Livestock Agency	GCP/KDC	SC-Sub-Office
<ul style="list-style-type: none"> <li>▪ Procure animals of their choice</li> <li>▪ Attend training on animal husbandry, human nutrition, gender and business management</li> <li>▪ Feeding, housing, healthcare and managing of project animals as per the recommendation</li> <li>▪ Benefit derived from project animals exclusively used for household food</li> <li>▪ Inform in case of selling project animal and/or when they are sick</li> <li>▪ Start saving and access credit in the informal and formal financial institution</li> </ul>	<ul style="list-style-type: none"> <li>▪ Coordinate signatories</li> <li>▪ Monitor and evaluate the recipients proper training reception via DAs, HEWs, Women Affairs and micro-enterprise staff</li> <li>▪ Monitor project animals for the intended use</li> <li>▪ Assign DAs to provide timely technical support to target groups</li> <li>▪ Timely avail critical inputs (animal feed, vet drugs, vaccines and equipments)</li> <li>▪ Organize and legalize the recipient in group and link to MFIs</li> </ul>	<ul style="list-style-type: none"> <li>▪ Make sure members are purchasing animals of their choice</li> <li>▪ Closely monitor the recipient and report to signatories in case of any non-attendance to project animals</li> <li>▪ Make sure the recipients are utilizing income generated from sold animals for the purchase of nutritious household foods</li> </ul>	<ul style="list-style-type: none"> <li>▪ Make sure productive animal provision is based on the Guideline</li> <li>▪ Secure funds for purchasing animals</li> <li>▪ Based on need, provide TOT training and customize training materials</li> <li>▪ Provide technical guidance</li> <li>▪ Maintain the right to monitor before and after provision</li> </ul>



**ANNEX 6: TARGETING CRITERIA TO SELECT MOST VULNERABLE HOUSEHOLDS/INDIVIDUALS**

<b><i>Basic Criteria to select Most Vulnerable Households</i></b>	<b><i>Possible Source of information</i></b>
Household is included/registered in target community/kebele	Kebele record and community
Female headed household	Kebele record and community
Youth or child headed household	Kebele record and community
Women in reproductive age, pregnant and lactating mothers	Community
Poor household with more than three months of food gap (based on wealth ranking)	Community
Orphan & vulnerable children (OVC) through their caretaker	Kebele record and community
People living with HIV (PLHIV)	Kebele record, Health facility record and referral mechanism
Households with productive age family member (lactating and pregnant women) and inadequate access to food	Health facility record and community
Disabled person who has family labor	Community
Households with children under 2 years of age, pregnant and lactating mothers, relatively large family size	Kebele record, Health facility record and referral mechanism
Landless households willing to form a group for off-farm activities	Kebele record and community
Willing to form or join a group of common interest based on the type of interventions organized through AGP	Individual consent
Physically able to do on-farm activities	Community & individual consent
Have plot of land for on-farm activities	Kebele record and community

**ANNEX 7: CONTACT LIST FOR LIVESTOCK AFFILIATED RESEARCH CENTERS, UNIVERSITIES AND HORTU BORANA CENTER**

Name of Institution	Region	Location	Livestock Related Activity	Contact Address		
				Tel	Fax	E-mail
Pawe Agricultural Research Center	Amhara	Pawe	Improved Forage and Livestock productivity*	08-202525	08-202535	
Debre-Zeit Agricultural Research Center	Oromia	Debre-Zeit	Poultry	338555/ 338765	338061	<a href="mailto:dzarc@telecom.net.et">dzarc@telecom.net.et</a>
Bako National Maize Research Project	Oromia	Bako	Forage, animal health and breeding technology and research on Horro sheep	07-650465	07-650267	<a href="mailto:bmrp@tel.et.com">bmrp@tel.et.com</a>
Werer Research Center	Afar	MW	Forage crop, Fat-tailed Afar sheep breeding	02-120049	0221140276	<a href="mailto:warc@telecom.net.et">warc@telecom.net.et</a>
National Veterinary Institute	Oromia	Debre-Zeit	Vaccines (livestock and poultry), laboratory service	338411	339300	<a href="mailto:nvi-rt@telecom.net.et">nvi-rt@telecom.net.et</a>
Areka Agricultural Research Center	SNNPS	Areka	Sheep crossbreeding program	06552143	06552143	<a href="mailto:ark.arc@telecom.net.et">ark.arc@telecom.net.et</a>
Yabello Pastoral & Dry land Agricultural Research Center	Oromia	Yabello	Dairy, beef, small animal, feed research program*	0464460265		
Sinana Agricultural Research Center	Oromia	Bale Robe	Forage and beekeeping,	026610271		<a href="mailto:sinana-arc@tele.net.et">sinana-arc@tele.net.et</a>
Holetta Bee Research Center	Oromia	Holetta	Beehive, queen rearing technology, apiary training center	0112370023		
Adami Tulu Agricultural Research Center	Oromia	Adami Tulu	Improved dairy heifers, improved dairy goat (imported Boer goat breeding), improved forage and fodder tree	0464419003	0464419108	<a href="mailto:atarc@ethionet.et">atarc@ethionet.et</a>
Debre-Birhan Agricultural Research Center	Amhara	Debre-Birhan	Improved Awassi sheep breeding with local Menze breed, Washara (Dangla) and Bonga sheep	81 45 78/2900	0116819245 / 860220	<a href="mailto:sarc@telecom.net.et">sarc@telecom.net.et</a>
Gondar Agricultural Research Center	Amhara	Gondar	Livestock productivity*	058-111-83-50	08-110138	<a href="mailto:garc2004@yahoo.com">garc2004@yahoo.com</a>
Sirinka Agricultural Research Center (SARC)	Amhara	Woldia	Livestock productivity*	03300079/05/80	03300089	
Sekota Dry land Agricultural Research Center	Amhara	Sekota	Barka, Abergelle and Central Highland goat breeds	033-4400430	033-4400409	<a href="mailto:sdarc97@hotmail.com">sdarc97@hotmail.com</a>
Andassa Livestock Research Center	Amhara	BD Zuria	Fogera milk cow performance, Crossing fogera cattle with Holsten-Friesian, local chicken performance	09-190233/34	09-190234	<a href="mailto:andassa@telecom.net.et">andassa@telecom.net.et/</a> <a href="mailto:andassaarc@yahoo.com">andassaarc@yahoo.com</a>
Haramaya University	Oromia	Haramaya	Dairy goat: Hararghe highland goat breeding with Anglo-Nubian Sheep breeding: Improved Dorper sheep breed with local Somali and Hararghe sheep breed	251 25-5530324	251 25-5530325	
Hawassa Agricultural Research Center	SNNP	Hawassa	Animal science research project*	06-202034		<a href="mailto:Arc@telecom.net.et">Arc@telecom.net.et</a>
Jimma University College of Agriculture and Veterinary Medicine	Oromia	Jimma	Hay-Box Chicken Brooder	0471110144		
Hortu Borana	Oromia	Ziwaye	Boran breed dairy heifer	0911 82 24 98		

\* = Specific livestock activity unknown