Overview of the Ethiopia Sheep and Goat Productivity Improvement Program

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Background

Ethiopia has one of the largest resources of sheep and goats among African countries, which has not been fully exploited. There is considerable room for improving productivity of this resource for local use and the export market. Small ruminants play a vital economic role for smallholder producers in Ethiopia in that they can bring about substantial changes in livelihoods in a relatively short period of time. Sheep and goats are becoming more important in the livestock sector. Their production is possible in areas characterized by high rural human population pressure, fragmented land holdings and scrub land. They are relatively drought tolerant, small in size, easily manageable, and are saleable resources that the family can use for ready cash.

The Ethiopia Sheep and Goat Productivity Improvement Program (ESGPIP) is a Cooperative Agreement between the Prairie View A&M Research Foundation (PVAMRF) and USAID/Ethiopia. The ESGPIP arose from the visit of His Excellency Ato Addisu Legesse, the Deputy Prime Minister and Minister of Agriculture and Rural Development, to the USA, including Prairie View A&M University near Houston, Texas in early 2005. The overall objective of this program is to sustainably increase the productivity of small ruminants in Ethiopia to improve food and economic securities.

In formulating the ESGPIP, consultations, meetings, and discussions among stakeholders and development partners from the Ministry of Agriculture and Rural Development, Prairie View A&M University, and Langston University were held and the following major limitations were identified:

- Limitation of the genetic potential for improvement of small ruminants, with a long period of time necessary for enhancement with reliance on indigenous animals.
- Sub-optimal health management, including inadequate vaccinations for disease prevention.
- Seasonal fluctuations in feed availability, with generally low nutritional value.
- Under-developed marketing systems.
- Limited technology transfer to producers in conjunction with inadequate supportive research.
- Limited availability of credit.
- Low level of technical services provided to farmers and pastoralists.
Scope of the ESGPIP

The ESGPIP is designed to address small ruminant productivity improvement through human and institutional capacity building, applied research and technology transfer, development of private providers of services in the control of external parasites and animal health care, and introduction of improved genetics in six regions of Ethiopia.

Regions and Woredas Covered

The program covers six regions, namely Afar, Amhara, Oromia, Southern States, Somali, and Tigray, where the small ruminant resource is predominantly found. Previously, it was envisaged that a large number of woredas within the six regions would be addressed by the ESGPIP. Given the limitation of professional staff that the program has, it was forced to focus on 26 woredas selected by the regional Bureaus of Agriculture and Rural Development of the six regional states. The woredas of focus are:

- Afar: Mile, Chifra, and Gewane
- Amhara: Ebnat, Kalu, Guba Lafa, Kobo, and East Belessa
- Oromia: Shashamane, Arsni Negelle, Fentale, Yabelo, and Adami Tulu
- SNNPRS: Damot Gale, Kedida Gamela, West Badewach, Alaba, Silti and Mesakn
- Somali: Jijiga, Aware, Harshim, and Gursum
- Tigray: Alamata, Abergelle, Wukro, and Hawzien

Cooperative Agreement and Funding

The Cooperative Agreement was signed in September, 2005 between USAID and Prairie View A&M Foundation (PVAMRF). The program was designed to be implemented by Prairie View A&M University as a main contractor and Langston University as a subcontractor, in close collaboration with the Ethiopian Government’s Ministry of Agriculture and Rural Development. Initially, it was contemplated to support the program with 10 million USD over a 5-year period, but the amount was reduced to 6,999,998 USD. Also, the program was to address only goats in five regions, although sheep were later included as was a sixth region, Afar.

Due to the delayed initiation of activities, a decision was made by USAID to restructure the ESGPIP and reduce the budget. These changes occurred during FY 07, with a lessening of the total allocation by 1,499,998 USD to 5,550,000 USD.

Initial Objectives

- Enhance transfer of production and marketing knowledge and technologies to sheep and goat producers to increase animal health and productivity.
- Determine and teach improved management practices for indigenous breeds of sheep and goats and introduced improved breeds.
• Enhance communication capacity of the Ministry of Agriculture and Rural Development to transfer technologies resulting from sheep and goat research, and share knowledge through teaching, training, and technical assistance.

The restructured ESGPIP work plan re-defined five problem areas to be addressed. They are:

• Slow rate of gain and lack of uniformity and small carcass size of sheep and goats.
• Decreased value of sheep and goat skins and reduced growth rate and increased mortality due to ecto-parasite infestation.
• Limited efficiencies of small ruminant production and associated economic returns due to suboptimal nutrition and feeding management at herd and flock levels.
• Poor sheep flock and goat herd health management practices and lack of access to health management services and technology.
• Lack of technical services to pastoralists and smallholder sheep and goat producers.

Program Personnel

The program was structured in such a way that implementation at ground level would be carried out by agricultural extension workers and research personnel of Bureaus of Agriculture and Rural Development, Agricultural Research Institutes, and universities. For this reason, the program has a skeletal staff consisting of a Chief of Party, Deputy Chief of Party, four senior level professionals (i.e., Program Officers), and seven support staff. The staff members are placed to provide technical support and guidance to the regional staff participating in program activities.

The senior staff members are:

• Chief of Party     Professor Desta Hamito
• Deputy Chief of Party    Ato Tefera Gebremeskel
• Training Program Officer   Dr. Alemu Yami
• Genotype Program Officer   Dr. Kassahun Awgichew
• Production Program Officer  Dr. Girma Abebe
• Health Program Officer     Dr. Sileshi Zewdie
• Administrative Assistant  Mr. Shiferaw Abebe
• Accountant             Ms. Tersit Aseged
• Secretary/Receptionist  Miss Kelemua Taye

Implementation Partners

The ESGPIP has an overall partnership with the Ministry of Agriculture and Rural Development. Entities that work closely with the ESGPIP include the following:

• Ethiopian Institute of Agricultural Research
• Six regional Agricultural Bureaus
• Six regional Agricultural Research Institutes
• Hawassa University
• Haramaya University
• Mekele University

Program Components and Implementation Status

There are four program components to address the challenging issues of small ruminant production of the country.

1. Training and enhancing technical services
An aspect limiting small ruminant production in Ethiopia is an insufficient knowledge base. Livestock extension has traditionally focused on dairy cattle management and improvement. Little or no attention has been given to management and husbandry of small ruminants. Thus, extension packages and training in small ruminants offered to development workers to extend to farmers have been limited. Under the ESGPIP training program, Kebele Development Agents (KDA) who work directly with smallholder producers are trained and continuously provided with technical bulletins that serve as fact sheets on specific topics. This provides support to KDA for focus on relevant topics when training producers. A handbook on small ruminant production has also been provided to KDA as a comprehensive source of information when undertaking their livestock field work. Activities covered so far are:

• 1,305 KDA (1,182 male sand 123 females) have been trained to date. It is expected that over 20,000 farmers will be trained by these KDA.
• 20 technical bulletins (TB) on different topics relevant to farmers have been published. The TB produced thus far have received wide acceptance as a useful extension support tool.
• 8,000 copies of the Sheep and Goat Production Handbook for Ethiopia, the first of its kind, have been published and distributed to KDA, Bureaus of Agriculture and Rural Development, Research Centers, and various other institutions. The handbook is considered to be one of the major contributions of the ESGPIP.

The trained KDA have been instrumental in assisting and facilitating ESGPIP’s technology demonstrations and in organizing field days and applied research activities.

2. Technology transfer
Another major component of the ESGPIP is applied research and transfer of knowledge of key production practices (applied research, demonstrations, and field days). Although there has been ample research of a number of useful technologies, adequate extension efforts for adoption by farmers have not occurred. Therefore, the ESGPIP has been conducting technology transfer activities focusing primarily on feed resources and feeding management.
Improvement of feed intake and feeding value
Ammoniation of low quality roughage has been demonstrated and field days have been conducted in many of the program woredas. Body condition and weight gain have been monitored. Where farmers heavily depend on crop residues, the technology has been readily accepted and adoption is extending fast, particularly in Shashemene, Alaba, Silti, and Western Badewacho woredas in the Southern Nations and Nationalities and Peoples State (SNNPR) and the Oromia region.

Forage development
The ESGPIP is focusing on strategically selected forage species with multiple uses (food, fuel and feed). On farms where land holdings are small and there is little or no grazing land, demand for fodder cuttings and seed is increasing, as seen in Alba Special Woreda of the SNNPR.

Improved feeding and feed management
To reduce feed wastage due to inappropriate feeding methods, the ESGPIP encourages farmers to construct practical feeding troughs from locally available materials. This technology has been readily adopted by many farmers and is becoming more widespread.

Organizing farmers for exchange visits
During demonstrations of various technologies, farmers from other areas who have not used the particular technology are invited to learn and share experiences. Groups of women farmers with improved feeding practices and farm households selected for establishing sire stations have made visits to research stations and farms to exchange experiences. This has proven to be a quick method of technology transfer.

Organizing women groups
An important factor in Ethiopia, particularly in the highlands, is that sheep and goats are under the control of women. Hence, the ESGPIP is organizing women into groups and providing training in management, which has positively impacted the role of women in the household.

3. Genotype improvement
Indigenous genotypes of sheep and goats in Ethiopia are generally low in productivity. There are different means by which breed improvement can be achieved, each with advantages and disadvantages. However, the approach taken in this program is to achieve marked impact in a short period of time. Boer goats and Dorper sheep have been imported from the Republic of South Africa and are now being used in pure lines at Nucleus sites and for crossbreeding at Breeding, Evaluation, and Distribution (BED) sites. Nucleus sites serve as sources of the improved stock. At BED sites, purebred sires are crossed with indigenous dams to obtain F1 sires for dissemination to farmers. The activities undertaken in this program so far are:
• A quarantine facility was designed and constructed at Sebeta to isolate up to 300 sheep and goats.
• The sheep and goat genotypes were safely received in Ethiopia and placed at Sebeta on July 1, 2007.
• In the period that these genotypes have been in Ethiopia, mortality has been low.
• Construction at the four Nucleus sites was completed. These facilities may be the first designed for such a purpose in Ethiopia.
• All genotypes were transferred to their respective locations in October, 2007 and mating at the sites has been underway since November, 2007.
• Insignificant kid and lamb losses have been occurred. Numbers of Boer goats and Dorper sheep have markedly increased.
• Despite delays in construction of most BED site facilities, crossbreeding has begun with temporary shelters (except for Hawassa University) provided by partner institutions.
• Construction at 8 of the 10 BED sites (including a BED site under construction by Haramaya University) either has or soon will be completed.

4. Animal health
Maintaining the health of small ruminants is one of the neglected areas in the livestock health services provided in Ethiopia. The death toll and loss of body condition as a result of heavy infestations of internal and external parasites and infectious diseases are very high in small ruminants. In this regard, one of the schemes that the ESGPIP has undertaken is the promotion of private service providers for external parasite control. It is believed that this will offer a long-term sustainable solution for the control of parasites and will also serve to generate income to the service providers. Lamb and kid mortality monitoring is another activity carried out in selected woredas. Close follow-up of animal health is also carried out at the Nucleus and BED sites.

External parasite control
A training curriculum was prepared to train selected farmers to become Spraying/Dipping Service Providers (SDSP). This training will enable selected farmers in communities of pastoral and farmer associations to acquire skills on the application of external parasite control treatments to become private service providers. Particularly, pastoral communities are in dire need of such services. Thus far, 105 SDSP have been trained in Oromia (Borena), Afar, and SNNPR (Areka) and provided with the required equipment and supplies.

Monitor major causes of lamb and kid mortality
The monitoring will identify causes of lamb and kid morbidity and mortality, which will help in implementing appropriate prevention and control measures. As a result, flock size will be increased, thereby increasing numbers of animals available for use as replacements, for household consumption, and for immediate sale. The information generated also will benefit professionals and regional governments in preparing and implementing sound disease prevention and control strategies. The monitoring is taking place in Oromia (Borena and Adami Tulu), Tigray (Wukro), and Amhara (Ebinat) woredas.
Follow up of health activities at Nucleus and BED sites

The health of sheep and goats kept at Nucleus and BED sites is regularly monitored. This is done through vaccinations (for anthrax and Peste des petits ruminants (PPR), contagious caprine pleurapneumonia (CCPP), Pasteurellosis, sheep pox, enterotoxaemia), treatments for internal and external parasites, and treatments such as for copper deficiency and infectious diseases.

Major Achievements

- The ESGPIP has established good communications, coordination and working relationships with government institutions, e.g., *regional Agricultural and Rural Development Bureaus and Research Institutes*.
- Centers for animal multiplication and to serve as a source of pure genetic material in the country have been established, which will result in significant increases in meat production by small ruminants.
- The Sheep and Goat Production Handbook for Ethiopia has been published to serve as a resource for livestock extension workers and for use as a reference at higher learning and research institutions.
- Over 20 TB have been published that serve as fact sheets mainly for extension professionals working with small ruminants.
- The ESGPIP has established an expressed mutual sense of ownership of program activities by most partners, e.g., *SORPARI, Haramaya and Hawassa Universities*.

Major Constraints

- A National Steering Committee should have been established to follow, oversee, and guide implementation of program activities. The Ministry of Agriculture and Rural Development and all other partners were heavily involved in Business Process Re-engineering (BPR) the past 2 years.
- Initiation of some activities was delayed by approximately 1.5 years as a consequence of the replacement of the Chief of Party and the restructuring process. Planned tasks most impacted were *construction and importing and breeding of the improved genotypes*.
- Inflated prices of construction materials and fund reduction restricted timely performance of planned tasks, e.g., *construction of all BED site facilities has not yet been completed*.
- Time allowed for the program was too short for obtaining results from breeding activities, which was stated by the mid-term review team.

Need for Sustainability

A major problem with agricultural programs in Ethiopia is maintaining the strength of activities after implementation periods. Unfortunately, often programs terminate before full potential is realized.
The ESGPIP has been officially underway for nearly 3.5 years, with only 1.5 years remaining. It cannot be overlooked that the program has received great support from its partners. There have been services and material support provided by almost all partners at times when the program was facing critical limitations. Moreover, as is indicated in the table below, many partners have gone to the extent of making financial contributions needed for crucial tasks to be completed. At this juncture, the ESGPIP would like to acknowledge the good will and noteworthy support it has received from its partners.

<table>
<thead>
<tr>
<th>Organization</th>
<th>Amount contributed (ETB)</th>
<th>Purpose of Contribution</th>
<th>Outcome</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hawassa University</td>
<td>300,000</td>
<td>Power supply, goat flock supply, fencing.</td>
<td>Fence completed, goat flock handed over, paid for a transformer.</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Installation by Ethiopian Power Supply Corporation awaited</td>
</tr>
<tr>
<td>Ethiopian Institute of Agricultural (EIAR) for WARC Nucleus and BED sites</td>
<td>190,000</td>
<td>Fencing, supply of, goats and sheep, granting old barn for nucleus stock.</td>
<td>Barn granted and renovated by ESGPIP, Fencing has been completed, sheep and goats handed to Program.</td>
</tr>
<tr>
<td>SNNPR Agricultural Research Institute (SARI) at Areka BED Site</td>
<td>360,000</td>
<td>Fencing and forage development.</td>
<td>Forage seeds and cultivars planted. Fence of the BED site will begin soon.</td>
</tr>
<tr>
<td>Oromia Research Institute (OARI) at ATARC</td>
<td>450,000</td>
<td>Fencing of Nucleus and BED sites.</td>
<td>Completed</td>
</tr>
<tr>
<td>Somali Pastoral and Agro pastoral Research Institute (SOPARI)</td>
<td>1,740,00</td>
<td>Water supply, support for construction of BED sites, temporary shelter.</td>
<td>Deep wells dug, 2 reservoirs constructed, construction of BED site and fencing will commence.</td>
</tr>
<tr>
<td>Haramaya University</td>
<td>500,000</td>
<td>To fully cover construction of sheep BED site.</td>
<td>Sheep BED site under construction.</td>
</tr>
<tr>
<td>Ministry of Agriculture and Rural Development</td>
<td>600,000</td>
<td>Translation of technical bulletins into local languages.</td>
<td>The first set of payment for translation is in process</td>
</tr>
</tbody>
</table>
The ESGPIP is the most significant externally supported small ruminant livestock program received by the Ethiopian Government in the last two decades. Expectations that the program will improve productivity of the industry are high. Continuity of ESGPIP activities after its lifetime is vital if Ethiopia is to realize full, potential benefits from this rich resource, particularly to reduce poverty of the smallholder farmer and generate increased economic returns.

The ESGPIP is progressively meeting its program targets. However, it is imperative that these activities be maintained after the program for a lasting outcome. This requires increased and full-fledged involvement and support by all partners. It is a serious issue that all partners and stakeholders must resolve before the end of the program.