



ILRI
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AGRICULTURAL TRANSFORMATION
THROUGH SMALL RUMINANTS:
*An Evaluation of TAAT Livestock
Compact Interventions in Ethiopia*

Technologies for African Agricultural Transformation (TAAT)

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THROUGH SMALL RUMINANTS**

**An Evaluation of TAAT
Livestock Compact Activities
in Ethiopia**

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TAAT MEL Working Document No. 007

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1.0 Background

1.1 Overview of the Technologies for African Agricultural Transformation (TAAT)

The Technologies for African Agricultural Transformation (TAAT) is an initiative of the African Development Bank with an array of high-impact technologies to boost agriculture’s production capacity in Africa. TAAT, launched in 2018, is an initiative under the “Feed Africa’s Strategy, 2016-2025” of the African Development Bank and is structured around 9 commodities of importance to the African region. This includes maize, rice, wheat, high-iron beans, cassava, orange-fleshed sweet potato, sorghum/millet, small livestock, and aquaculture. The production-induced technologies included soil fertility management, water management, training/capacity development, policy support, youth in agribusiness and response to the armyworm.

The main thrust of TAAT is to develop Africa’s agriculture as a business using productivity-enhancing technologies deployed and domesticated across beneficiary countries. This is expected to enhance the rapid growth of Africa’s agricultural sector, improve food security, provide opportunities for the inclusion of women and youth in the agricultural growth process, and enable sustainable environmental practices to reduce the effects of climate variability. To encourage the commercialisation of Africa’s agriculture, TAAT set out to promote productivity increases, diversification, job creation, inclusive employment, and food and nutrition security. The focus on women and youth is expected to reduce the gender gap in income and employment in the African agricultural sector, thus reducing vulnerabilities. Specifically, TAAT aims to increase food output by



<https://www.afdb.org/en/topics-and-sectors/initiatives-partnerships/technologies-african-agricultural-transformation-taat/about-taat>

100 million tons and lift 40 million people out of poverty by 2025¹.

Hitherto, technology adoption in Africa had been difficult, with the preponderance of small farms, lack of synergy between research and practice, and weak coordinating institutions. TAAT sought to overcome this by an inclusive stakeholder design and implementation process that ensured acceptance, adaptability, and utilisation of improved technologies. Thus, TAAT worked with National and International Research networks to deploy Climate-Smart Agricultural Technologies and train value chain actors in Good Agricultural Practices. Enhanced diversification and commercialisation through access to market was also made possible by collaborations between government, private sector players, Non-Governmental Organisations, Community Based Associations (CBA), and individual actors (farmers, input suppliers, processors, fabricators, financial service providers etc.). The broad scope of stakeholder involvement is expected to provide an avenue for the sustainability of the TAAT programme after completion.

Specifically, TAAT is, therefore a policy enabler system which seeks to increase the returns to scale from technology use in African agricultural systems. The process of ensuring this was through assessing the extant regulatory environment to prioritise financing intervention in seed systems, using agricultural input systems to create availability and access to improved inputs, enhancing synergy of policies and technology releases, and improving value-added activities in agricultural value chains through analysis and policy advocacy.

The implementation of TAAT was coordinated by the International Institute of Tropical Agriculture

(IITA) in partnership with other research institutions at regional and international levels. They include The African Agricultural Technology Foundation (AATF), AfricaRice, the Alliance of Bioversity International and CIAT, the Centro Internacional de la Papa (CIP), the Forum for Agricultural Research in Africa (FARA), the International Centre for Agricultural Research in the Dry Areas (ICARDA), the International Centre for Research in Semi-Arid Tropics (ICRISAT), the International Fertiliser Development Corporation (IFDC), the International

Institute of Tropical Agriculture (IITA), the International Livestock Research Institute (ILRI), the International Water Management Institute (IWMI), and WorldFish Centre.

1.2 TAAT footprint across Africa – country and commodity focus

Over the three years of TAAT implementation, breakthroughs have occurred across the mandate countries. However, beyond this, many impacts have been made in what are termed “spillover countries” as well. The programme has deployed productivity-enhancing technologies across 31 countries in Africa to date.

The program works in an integrated intervention of 15 Compacts, comprising 9 “Commodity Compacts” and “Enabler Compacts”. There are six (6) enabler compacts within TAAT to support the Commodity compacts and create a conducive environment and specialist services for sustainable attainment of objectives. The “enabler compacts” are soil fertility management, water management, capacity development, policy support, attracting African youth in agribusiness and fall armyworm response.

With respect to Rice, AfricaRice coordinated the TAAT Rice Compact in 8 countries of focus and 7 spillover countries. The programme has released about 68 new rice varieties since implementation, with capacity building developed in Good Agricultural Practices (GAP).

IITA leads the cassava compact across 15 countries in Africa. Technologies being deployed and scaled up include high and disease-tolerant cassava varieties, laboratory-based technology for rapid cassava propagation, and high-quality cassava flour.

The TAAT Wheat Compact is concerned with developing heat, disease, pest, and stem rust-resistant varieties through sustainable seed delivery systems. Moreover, Good agricultural practices of raised beds, zero tillage, and irrigation systems are included.

The TAAT Sorghum and millet compact, led by the International Crops Research Institute for the Semi-Arid Tropics (ICRISAT), implemented programs in developing dual-purpose varieties (for feed and grain), utilising residues, fertiliser micro-dosing, and releasing parasitoid wasp. Land reclamation, small-scale mechanisation and mobile forage choppers were also

include Building OFSP Seed System within each country to ensure high-quality seed, good agronomic practices, vine conservation to ensure material lasts longer in the farmer fields, nutrition training for food diversity – pull mechanism for adoption, Household and processor level training of product development and marketing, post-harvest handling in harvesting and storage and linking producers to markets. Others include early maturing varieties and silage technology for animal feed.

The High Iron Beans compact, led by the Alliance of Bioversity and CIAT, worked in the development of biofortified bean varieties, rich in iron and zinc and lines increasingly resistant to root disease.

The WorldFish Centre leads the TAAT Aquaculture Compact and is implemented in 10 countries³. These are the Democratic Republic of Congo, Ghana, Kenya, Nigeria, and Zambia as focal countries, and the Republic of Benin, Burundi, Cameroon, Cote d’Ivoire, and Tanzania as satellite countries. The aquaculture compact aims to deploy and upscale aquaculture technologies to increase the productivity and income of fish farmers, increase protein consumption in Africa and support a sustainable aquaculture production system.

The TAAT Livestock Compact, led by the International Livestock Research Institute (ILRI)⁴, in partnership with other organisations, focused on poultry, small ruminants, and cattle programmes. The technologies deployed included interventions in livestock genetics, feed, health, production systems, policy, and marketing. Specific technologies that have been deployed are Improved poultry genetics, Thermostable Newcastle disease vaccine, High-quality cassava peel mash for livestock feed, Thermostable vaccine for Peste des Petits Ruminants (PPR), Improved forages, feed supplements and better use of crop residues for fattening, Business models for fattening enterprises and improving small ruminants’ genetics through community breeding schemes.

1.3 TAAT Technologies

The main plan of TAAT is to deploy productivity-enhancing technologies to transform Africa’s agricultural landscape. These technologies span improved varieties and Pest/disease management to adaptable machinery. Support in the technological deployment was integrated with Training and Capacity building to aid utilisation and domestication, as the case may be across the value chains. The Forum for Agricultural Research in Africa (FARA) coordinates the enabler Compact for Capacity Development and Technology Outreach (CDTO) complementing the commodity compacts.

There has been a visible improvement in the production landscape with the adoption some of the technologies. Particular attention is given to the success of deploying drought-resistant maize, heat-resistant wheat, and treatments against pests like fall armyworm, which have been devastating crops across the continent.

³ <https://worldfishcenter.org/project/technologies-african-agricultural-transformation-taat>
⁴ <https://www.ilri.org/research/projects/taat-livestock-compact>



Figure 1: TAAT intervention compacts and countries of focus

The TAAT Maize Compact, led by the African Agricultural Technology Foundation (AATF), with a presence in 14 countries, seeks to improve access of about 2 million households to water-efficient and other climate-smart maize technologies and produce 30,000 tonnes of Water Efficient Maize seed varieties (climate-smart maize seeds) through seed companies².

² <https://www.aatf-africa.org/taat-maize-compact/>

deployed.

The Orange-fleshed sweet potato compact is led by the International Potato Center (CIP) with partnerships in eight countries located in Central, East, Southern and West Africa, seeking to improve sector-wide human and institutional capacity to integrate OFSP into African Food Systems and Markets for increased incomes. Technology packages



2.0 Specific Country Context

2.1 Overview of Livestock Value Chain in Ethiopia: Relevance and Scope

The Ethiopian livestock system caters mainly to cattle, small ruminants (Sheep and Goats) and Poultry, with production levels topping that of other African countries. The country has more small ruminant animals than other livestock; however, they are mainly indigenous to the locality. Nearly all regions in Ethiopia (Table 1) have some form of livestock production because of the need for food (protein), farm manure, farm draft animals, transportation, risk management strategy in times of drought, as well as a means of accumulation of health. The livestock sector contributes over 40% of the Agricultural Gross Domestic Product and about 20% of the export value. Thus, livestock plays a significant role in the economy of the country⁵.

Table 1: Regional disaggregation of Livestock Population in Ethiopia

Region	Cattle	Sheep	Goats	Poultry
Tigray	4,908,964	2,097,619	4,838,969	6,317,518
Afar	1,952,394	4,040,176	8,531,082	92,941
Amhara	16,318,446	10,386,223	6,883,316	16,827,119
Oromia	25,031,068	9,260,493	7,526,644	16,668,657
Somale	3,646,940	9,188,394	17,001,672	354,264
Benshangul-Gumuz	626,537	72,284	404,015	884,660
SNNP	12,404,963	4,735,604	4,819,573	7,347,205
Gambela	327,801	43,903	134,206	229,151
Harari	69,615	4,236	103,567	104,585
Dire Dawa Astedader	67,364	65,462	258,629	129,575
Total	65,354,092	39,894,394	50,243,044	48,955,675

Source: Central Statistics Agency, Ethiopia, (2020)

Small ruminants are the largest population of livestock produced in Ethiopia, with great potential for meeting the country's protein needs and contributing to commercialisation. The production of small ruminants seems to be preferred to those of large cattle because of the hardiness of these animals and the lower costs in case of loss. Moreover, the cost of keeping small ruminants is relatively low, with the possibility of using them as buffers in periods of low crop production. Small ruminants are also important in the provision of milk and meat, which are consumed by farming households and/or sold for cash income. Women and youth are major keepers of small ruminants in Ethiopia; and are faced with resource constraints, thus limiting expansion.

Ethiopia's primary constraint to livestock development is linked to the production system and market assessment. At the production level, livestock is constrained by low producing stock, feed shortage, technologies for artificial insemination needed for breeding and pests/Diseases burden.

In its 5-year economic plan, the government of Ethiopia has recognised the livestock sector's potential ⁵ <https://psi.org.et/index.php/blog/164-the-current-situation-of-the-livestock-in-ethiopia-summary-of-draft-research-findings#:~:text=The%20country%20has%20abundant%20livestock,and%207%20million%20bee%20colonies>.

in providing revenue from exports. This provides an opportunity for the small livestock sector to grow with appropriate technology and, therefore, contribute to the economic plan.

The government has committed to investigating the meat export value chain and exploring the position of sheep and goats within it. This included measures to increase production through breeding and health programmes and promoting meat export. This has included prior collaborations between the government and development projects to engage in market promotion for the meat of sheep and goats, thus creating a viable market opportunity for the small livestock sector. Thus, the intervention by TAAT with the livestock compact is expected to be met with a receptive environment for success.

2.2 Approach of TAAT Livestock Compact in Ethiopia

The importance of livestock in the economies of African countries has far-reaching effects

beyond livestock production. The livestock value chain links to many other value chains, including feed, drugs, and food security. Across these countries, efforts at providing inputs (vaccination, drugs, feed) and training have reached over 3 million beneficiaries. The relevance of livestock production to Africa is linked to developing a sustainable agrifood system which can provide for the protein needs of the large population. Moreover, understanding livestock value chains and their linkages to crop value chains is far-reaching, necessitating a broad policy focus. The African food system consensus has identified the livestock value chain as necessary in driving the food security enhancement of the region.

The TAAT Livestock Compact was developed to improve the livestock value chain's performance through technology and market linkages. The technology package was geared towards improving genetic stock, feed, production processes and livestock health. The intervention in the livestock value chain was carried out in Ethiopia, Nigeria, Kenya, and Mali with processes tailored towards the context of the country's baseline characteristics. Four

leading technologies were deployed and scaled out across the focus countries: Small Ruminants (sheep & goats) fattening technology; improved feed resources; development of High-Quality Cassava Peel mash as alternative feed; and Improved Poultry Genetics and Distribution.

In the TAAT Livestock Compact, report of a progress Monitoring and Evaluation report is available for broad aspects of the interventions, but more specifically for Ethiopia. This report focuses on the Ethiopian TAAT livestock compact intervention. However, a report on progress in the broader compact intervention will be provided where information is available. Specifically, the livestock compact activities were carried out in countries where research had already been done or was ongoing by relevant research institutes like the International Livestock Research Institute (ILRI); International Centre for Tropical Agriculture (CIAT) and the International Centre for Agricultural Research in Dry Areas (ICARDA). Other research institutions and developmental organisations involved include the Food and Agricultural Organization (FAO); International Fund for Agricultural Development (IFAD), Inter-American Development Bank (IDB), as well as other national and regional research organisations. The compact's activities in Ethiopia were implemented under the aegis of ICARDA, while ILRI supported that of Nigeria.

The project implementation components included:

1. Providing an enabling environment through policy dialogue and advocacy: training of Master trainers; mitigation framework for covid 19, as well as a policy document. Specifically, the policy document reviewed policies concerning poultry and livestock production in Ethiopia and Mali, which was validated in November 2019. Moreover, the Master trainer course was an additional 30 000 USD engagement to train eight (8) countries in the East African Farmers Federation. The beneficiaries were to become livestock technology scaling masters.

2. Developing infrastructure for Regional Technology Delivery:

3. Strengthening technology delivery: This involved deploying technologies in breeding,

feed development and health for the small livestock sector. The technologies were meant to be introduced, upscaled and domesticated within the country and region. In view of this, training in use, scaling up, and training of fabricators was done. This component required collaboration with other partners for reach and sustainability. In a collaboration between ILRI Feed the Future, AMEDD, CRS (Mali), Africa Rising and Inter-Aide (Ethiopia), a joint production of 175 metric tonnes of feed and forage was produced. Technology delivery was also strengthened by filling the livestock and support services gap in Ethiopia.

4. Project management, working through the Monitoring and Evaluation and Learning (MEL) process to ensure the project is on track. A validation visit was done in Ethiopia's Bonga and Doyogena sites to truth the sheep-fattening technologies deployed. The Compact completed an Outcome Case Study report on Sheep Fattening and fodder technologies in Ethiopia with the M&E Specialist.

2.2.1 Intervention Sites of TAAT Livestock Compact in Ethiopia

The TAAT livestock compact covered small ruminants and poultry in Ethiopia. The poultry activities were conducted in Oromia and Southern Nations, Nationalities and People (SNNP). The Small ruminant dimension was conducted in Bonga, Doyogana in the SNNP region and Menz in the Amhara region (Figure 2). The focus of the livestock TAAT was mainly tailored to include youths and women who have been disadvantaged in terms of access to resources for their productive activities. The rationale for small livestock intervention was especially an attempt to solve the youth unemployment challenge in Ethiopia. As of 2018, youth unemployment led to large-scale outmigration and socioeconomic instability. This was deepened in the rural areas where youth and women did not have access to resources, thus limiting their potential for generating sustained revenue.



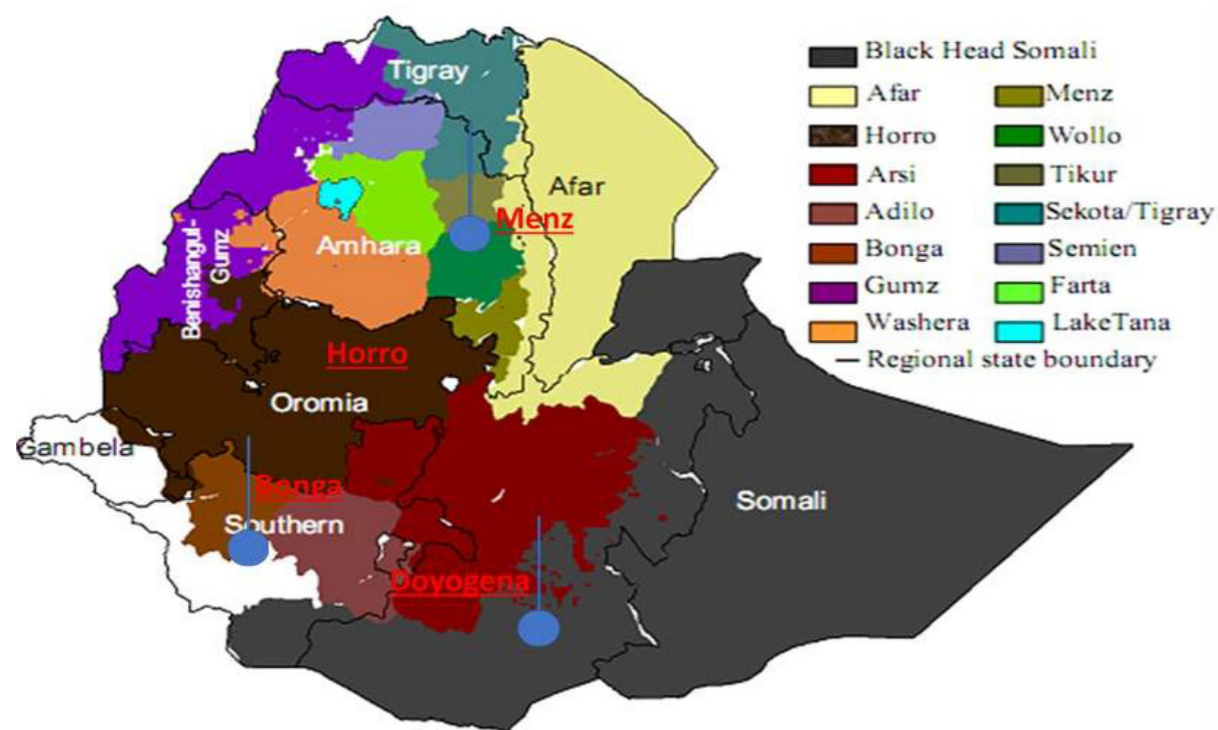


Figure 2: TAAT Livestock project sites in Ethiopia. Zozo et al., 2019

2.3 Production and Consumption volumes

As of 2014, meat production from small ruminant animals was a very small percentage of total meat production despite the country's large population of small ruminant animals. The meat supply from these small ruminants per capita was estimated at 1.6kg, which was insufficient for the demand. However, the demand for meat from small ruminants has increased due to urbanisation and changes in preference due to income growth both within Ethiopia and the states around it. Consumption was estimated to be upward (Kidoido, 2014).

This has been attributed to the low productivity of the indigenous small ruminants, leading to more extended periods in getting them fattened for meat production. This was due to the low technological inroads in sheep breeding and production for the smallholders. The informal nature of the markets had also engendered an inefficient pricing system that did not encourage investment. Moreover, until recently, the government did not provide a policy framework within which sheep and goat production capacity could thrive.

The government's 5-year plan from 2015 to increase meat exports to 110,000 in order to earn higher revenue thus provided an opportunity for the small livestock industry. In this way, the involvement of TAAT in the sector was a welcome arrangement in the policy space.

3.0 Technologies Deployed in Ethiopia

The TAAT Livestock Compact in Ethiopia focused on deploying fattening technologies for small ruminants (sheep and goats). Small ruminant animals already make up over 50% of the Ethiopian livestock sector and are almost entirely indigenous breeds adapted to agroecology. The objective of the ICARDA coordinated compact was to improve productivity through genetic improvement on small ruminants to enhance fattening on the one hand. On the other hand, adopting such technologies will be premised on the expected utility the actors would gain. Thus, linkage to the market was essential in the TAAT intervention to translate the technology improvement into revenue.

The technology introduced in the TAAT livestock compact has been validated by research partners led by ILRI, ICARDA, CIAT and others for adaptation in arid and semi-arid regions.

men, women and especially youths at individual and household levels. These technologies targeted Breeding and Genetics, Animal health, livestock feed, and commercialisation of the improved fattening system. ICARDA supported the sheep-fattening technology for youth. At the same time, Inter-Aide France was involved in scaling Integrated soil and water conservation, with ILRI deploying and scaling improved forage and fodder production. The integrated intervention in small ruminant livestock was inclusive of the following:

- i. Creation of youth and women groups
- ii. Provision of ram at no cost to beneficiaries to generate interest of youths and women.
- iii. Provision of feed equipment (feeding and watering cans).
- iv. Deployment of livestock health packages (medicines and vaccines)
- v. Training youth on Good Agricultural practices and sheep fattening through collaboration with National Agricultural research systems.



Broadly, the smallholder approach by the livestock compact was geared towards scaling up technologies to reduce production-based constraints to improve income generation for

- vi. Encouraging youth entrepreneurial skills through agribusiness training by National Agricultural Research Systems and Consultants.

Across the whole compact intervention, 7 technologies were deployed, with three being in Ethiopia (Table 3). Feeding troughs, Feeding cans, and salt licks were provided to aid feed and forage technology.

Table 3: Technologies deployed by TAAT Livestock Compact in Intervention Countries

Country	Technology deployed	Toolkit assembled (if any)
Ethiopia	Youth-based sheep fattening technologies	
	Improved feeding trough and forage technologies	
	Integrated Soil and water conservation and forage development	
Nigeria	Scaling of high-quality cassava peels (HQCP) mash	
Mali	Scaling of improved forage technologies	
	Use of thermostable PPR vaccines for small ruminants	
	sheep fattening technologies	

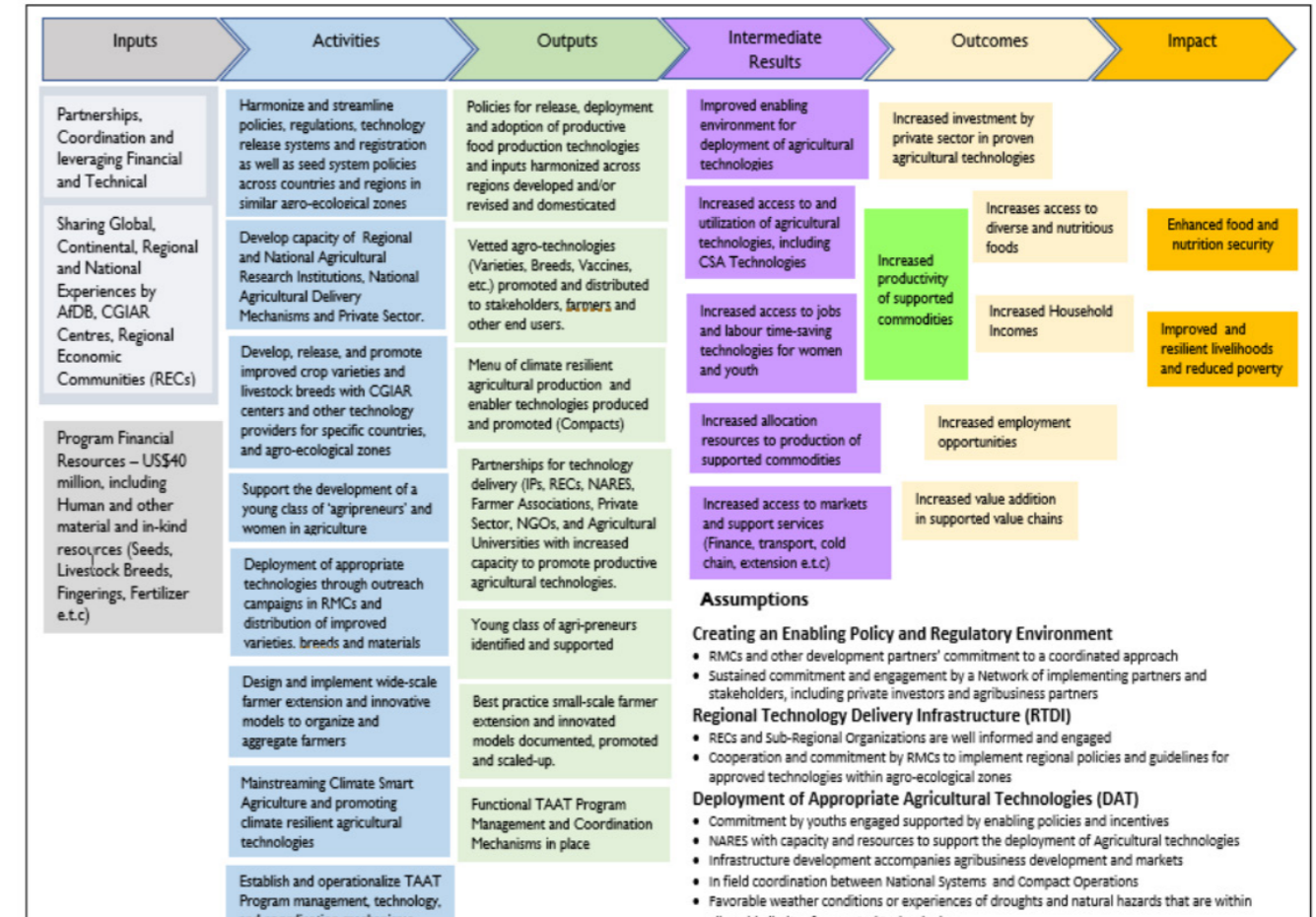


Figure 3: Generic Theory of Change for TAAT Intervention

4.0 TAAT Operationalisation in Ethiopia.

The overall TAAT compact intervention sought to find pathways for growth through the deployment of production-enhancing technologies to selected commodities across Africa. The generic Theory of change for TAAT is a provided in Figure 1. However, specific details of the change are provided within each compact and country context.

4.1 Theory of Change for TAAT Livestock Compact in Ethiopia

For the TAAT Livestock Compact in Ethiopia, the theory of change with respect to the project intervention can be defined as follows (Fig 4)

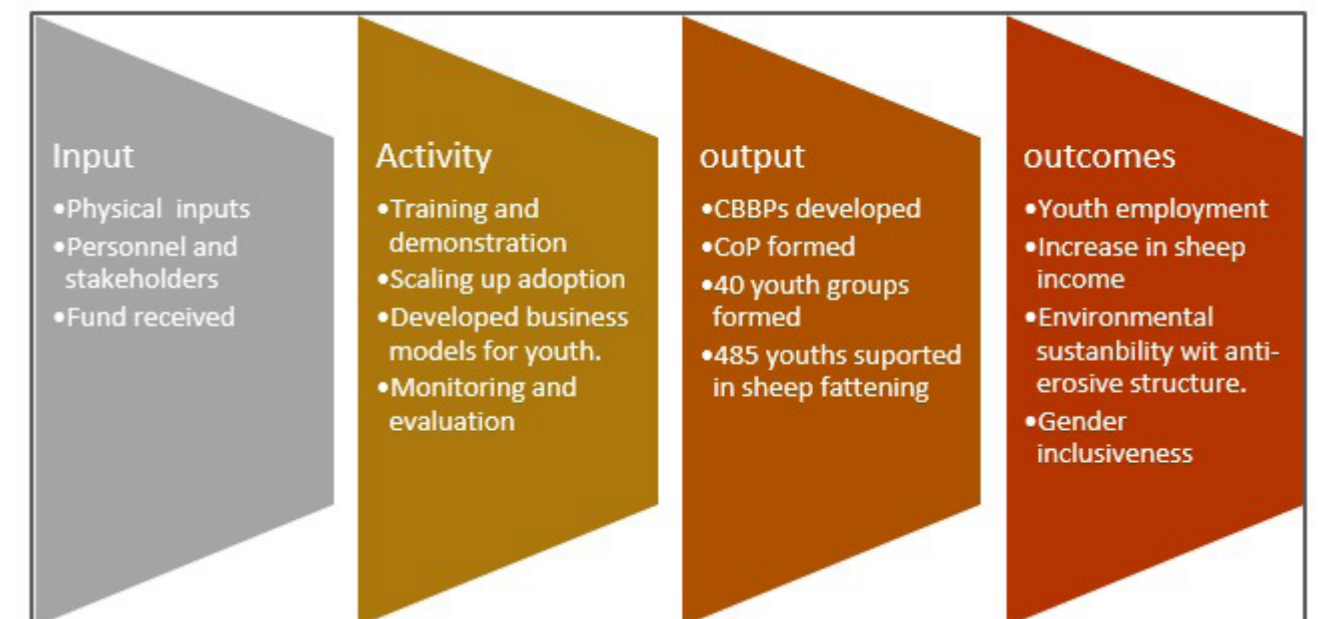


Figure 3: Theory of Change for TAAT Livestock Compact in Ethiopia.

The inputs and activities in the change pathway were crafted to bring about desired outcomes in youth involvement in the small livestock sector. This would ultimately bring about longer-term productivity outcomes, food security, employment, and gender inclusiveness.

4.1.1 Inputs

Input within TAAT's intervention in Ethiopia included physical and human dimensions of resources. TAAT deployed feed and forage materials, drugs, and vaccines as well as technology within Ethiopia's livestock system to boost the production capacity sustainably (Table 2). Human-level input requirements were based on the inclusive participation of various people and groups along the livestock value chain and system. Thus, although farmers were the beneficiaries, their input in providing fields for trials and piloting innovation was essential. Local-level Fabricators were required to adapt improved technology to fit into the Ethiopian livestock context for sustained adoption. The synergy between national and international research institutes in creating an environment for training, capacity building and support for localising improved technology for uptake. The main inputs disseminated by TAAT include:

Feed and forage: Brachiaria splits, legume forages, high-quality cassava peel mash,

Drugs and Vaccines: antibiotics, multivitamins, dewormers, vaccines.

Technology: improved technology in feed and forage production, sheep fattening, and soil water conservation were introduced and thereafter adapted to local context for domestication.

Personnel and Stakeholders: the training, supervision and implementation required farmers, mainly in the rural areas, as pilots. Fabricators were involved in scaling down technology to country adaptability. The National Agricultural System in Ethiopia, the International Fertiliser Development Centre (IFDC), Forum for Agricultural Research in Africa (FARA) and other regional research personnel were equally involved.

Table 2: Physical Inputs disseminated by TAAT in Ethiopia

Item	Quantity purchased
Ear-tags	1540
Salt lick blocks	770
Watering container	710
Feeding container	710
Vaccines – PPR	20 vials
Antibiotics – Oxytetracycline 10% (100ml)	85
Multi-vitamin Injections 100ml	85
Dewormers – Fasinex 250mg	37 Packs
Dewormers – Albendazole 300mg	32 packs
Dewormers – Ivermectin 50ml	69
Tag applicator	18
Burdizzo	18
Syringes	1540

Source: Zozo et al, 2020

4.1.1 Activities

Tailoring the available inputs/resources to produce output involves integrated activities. The main activities were training and capacity building of farmers, input suppliers and extension agents within the country. Training and capacity building were carried out in collaboration between National Agricultural Research Systems and International research institutes and organisations.

Data Collection was also conducted at country and subregional levels to understudy the baseline data and track changes. The data was collected through a collaboration between the TAAT Technology Transfer Officer and ILRI under an existing World Bank survey on the Livestock and Fisheries Sector Development Project in Ethiopia.

4.3 Desired Outcome of TAAT Livestock Compact in Ethiopia

The Ethiopian livestock compact targeted youth and women as primary actors within

ready framework, sought to achieve the following:

- link 15 youth cooperatives to input providers to facilitate selling feed supplements and live animals.
- engage at least 2,000 farmers in collective action (inputs, marketing, capacity development activities)
- provide about 500 youths with technical and business training to establish sheep-fattening agribusiness
- train 60 champion farmers to provide technical support to youths and
- train 100 public and private extension agents as Peer Trainers on improved sheep fattening technologies, entrepreneurship and cooperative management and practices.

5.0 In-Country Partnerships Developed

Partnerships and collaborations are essential to the sustainability of the TAAT interventions within countries of focus. The development of country-level partners is especially relevant



the smallholder livestock sector. Moreover, the importance of smallholder livestock in meeting the export demand for meat from Ethiopia has become increasingly important in the 2015 policy drive of the government. Thus, TAAT, riding on a

to driving change due to the ownership of project interventions and outcomes. Many of the partnerships developed in Ethiopia were in collaboration with ICARDA and are expected to continue to ensure the sustainability of the

programme. These are partners developed at the national, community and collaborative development organisations. The leading implementation partner with ICARDA is InterAide, an organisation based in France but with operations in some African countries, including Ethiopia. On the national level, there are “Iddirs”, Community-Based Breeding Programs (CBBP), Community of Practice (CoP), National Agricultural Research Systems (NARS), and Cooperative Organisations. Public extension agents, zonal offices for natural resource management and the media are also key stakeholders in partnership for development.

In implementing the TAAT livestock compact in Ethiopia, **InterAide** is the key partner in the scale up of improved technology. InterAide is involved in developmental projects, targeting vulnerable people, like the provision of water, sanitation, agriculture, health, and education⁶. This partner is fully involved in the selection of intervention sites, advocacy with government and community leaders, training of beneficiaries and peer educators, as well as monitoring and evaluation.

Africa Research in Sustainable Intensification for Next Generation (Africa Rising)⁷ provided financial partnership for the implementation of the feed and forage component with respect to sheep fattening technology upscaling in the Highlands: Basona Woreda and North Shewa Zone; and Gudo Beret, Bakello and Angolela kebeles.

CBBP is involved directly in the sheep fattening system. They are tasked with embedding participants within the fattening programme in terms of selection of youth, training, monitoring the operation of youth groups and provision of technical support. The CBBP is funded partly by the government and partly by ICARDA and is made up of researchers, key sheep value-chain actors, government experts and administrators.

Community of Practice involves various stakeholders along the sheep value chain. They coordinated awareness creation and promotion of activities in the deployment of improved technologies, such as anti-erosive structure. They also serve to provide some guidance to youth within the community.

The NARs were existing agricultural agencies within the country, and their task was to build the capacities of beneficiaries with respect to

⁶ <https://interaide.org/en/welcome/>.
⁷ <https://africa-rising.net/>.

sheep-fattening technology and the practices involved. The NARS provided the platform for the delivery and promotion of technological toolkits to the beneficiaries within the country. They also carried out as required, monitoring and evaluation of the projects.

As expected, the **media** provided a means for creating awareness, disseminating technological information and, ultimately, the success of scaling. The media’s effort has also helped generate the government’s and other partners’ interest in collaborative efforts.

The **Iddirs** are community organisations run by community members and are involved in enforcing community members’ compliance with project implementation guidelines. They are especially concerned with maintaining the anti-grazing laws in order to safeguard the environment. They are managed by **Meshap** (Community leaders), who oversee one or more **Iddirs**.

The **Zonal and Woreda** resource management offices are the governmental agencies involved in the oversight of the project. They ensure that the project’s implementation conforms to the country’s environmental sustainability plans. They also lay out a clear exit strategy in case of non-compliance.

Peer educators are volunteer farmers within communities that have been trained in the development of anti-erosive structures. Therefore, they are to support about 20-25 other farmers to develop such structures.

Government extension agents support project implementation at the project site. They are also saddled to scale improved technologies at other non-project sites. They are also involved in managing the demonstration of technologies with the farmers under their purview.

The extent of progress has generated interest in other partners working within Ethiopia. One such is the Graduation with Resilience to Achieve Sustainable Development (GRAD-II), a USAID-funded project implemented in Ethiopia by a consortium led by the Cooperative for Assistance and Relief Everywhere (CARE) International and the Netherlands Development Organization (SNV). The interest of GRAD-II is to provide a partnership arrangement with the TAAT program to scale up the sheep fattening technology using improved feeding practices and the model of

Community of Practice.

6.0 Outcome of TAAT Livestock Compact in Ethiopia

This section explores the immediate and final outcomes of the TAAT intervention. We note the output (6.1) generated from the intervention’s activities in the immediate outcome. These outputs culminate into the outcome dimensions (6.2).

6.1 Output

The immediate output of the livestock TAAT in Ethiopia was the deployment of technologies geared towards livestock production, feed, forage production, and soil/water conservation. Training and capacity building were also important outputs of the intervention, as they created the environment for utilising technologies.



Feeding Technology: the scaling up of technologies led to the development of the following:

- **Feed and Forage production:** Specifically,
 - 25, 000 fodder trees were planted, and
 - 162,000 tillers of improved *Brachiaria* grass were distributed to establish 24,200 sqm of fodder feed nurseries for integrated feed production.
 - 1,500kg of improved fodder seeds were distributed to establish 1,000 ha.
 - Local carpenters trained in fabricating feeding troughs
- **Fodder Nurseries:**
 - 420 backyard nurseries developed.
 - 2,478 smallholder farmers established family fodder nurseries.
 - 20,976 square meters of fodder micro nurseries were established.
 - Communities of practice (CoP) to facilitate fodder development, driving anti-grazing

law, and soil/water conservation drives.

Environmental Protection Technology: Soil and water conservation for the development of forage farms was a success in the Ethiopian TAAT livestock compact. Anti-erosive structures were strategically placed to combat the effects of gully erosion.

- Approximately 40km of anti-erosive structures were established for soil and

revenue within the same period than previously. This was especially important in driving youth participation.

Livestock Health: 420 sheep were vaccinated in Ethiopia. In Mali, this figure was 37,000 animals vaccinated.

Group Creation: the intervention facilitated the development of working groups within the sheep value chain.



water conservation in the Ethiopian highlands of Ofa, Kedida Gamela (Adilo), and Mesha in the Southern regions of Ethiopia. The structures protect the soil from environmental degradation and provide feed to livestock in smallholder systems.

- Community gatekeepers were tasked with maintaining the anti-open grazing laws in their areas.

Production cycle: prior to the intervention, the fattening period for sheep was 6-9 months. However, with the sheep-fattening technology, this has been reduced to 90 days. The implication is that farmers are able to get 2-3 times more

- 40 Community-Based Breeding Partners were formed.
- 12 Community-based breeding groups were developed, including 3 Communities of Practice (CoP). Other sub-committees were also developed within the value chain.
- 30 Social Community groups (*Iddirs*) for legislating and enforcing anti-open grazing by-laws and, consequently, developing anti-erosive structures.
- 44 youth groups of 10-20 persons each and facilitated by the TAAT project to collectively coordinate to undertake sheep fattening. Youth groups were formed in **29** sub-villages in **6** districts within the 3 project sites.

Youth Development: in view of the high unemployment rate in Ethiopia, youth were targeted in the TAAT intervention of a profitable fattening period. The fattening technology was aimed at reducing the fattening period for sheep in the country in order to create more appeal for youth involvement. Youths were encouraged to start off with owning a Ram to engage in the fattening program.

- A total of 485 youths were empowered, with 279 being male and 154 being female.
- Forty-four (44) champions were empowered as youth mentors in a peer development process.
- Forty-one (41) model farmers were trained.
- 12 Communities of Practice (CoP) developed to support the youth.
- After one (1) year, up to 90% of the youths now have 4-9 rams given 4 to 5 cycles of fattening and sales.
- Youth groups were formed in 29 sub-villages, in 6 districts within 2 regional states of Amhara and Southern Nations, Nationalities and Peoples' Region (SNNPR)⁸.

Training and Capacity Building:

- 1280 farmers underwent training on Soil and Water conservation techniques, as well as Forage development.
- 100 smallholder livestock farmers trained in feed conservation and handling.
- 100 carpenters trained in the construction of feed troughs.
- 1822 households, supported by 30 Iddirs⁹, in 27 villages were sensitised on the benefits of anti-erosive structures.
- 87 District Agric Officers and 184 Kebele leaders received soil and watershed management training.
- In a series of "Small Quick wins" with the Food and Agricultural Organization, farmers from 8 East African Countries were trained as technology scaling Masters training. These countries included Kenya, Uganda, Ethiopia, Tanzania, Sudan, South Sudan, Eritrea, and Djibouti.
- The TAAT Livestock Compact continue to support the AfDB livestock Flagship to produce its first Livestock Investment Master Plan (LIVEMAP).

Table 4: Some Disaggregated Output by project site

Item	Menz	Bonga	Doyogena
Fattening cycle	3 rd -4 th	4 th	5 th
Training sessions	5	6	5
Sheep sold	400-500	378	240
Sales margin	4500-5000 ETB (140-155 USD)	3300 ETB (102 USD)	4800 ETB (149 USD)
Youth groups formed	4	2	2
Champions per groups	4	14	4
TV Broad cast	na	tv episode	na

⁸ <https://repo.mel.cgiar.org/handle/20.500.11766/10767>

⁹ an Iddir is an informal community insurance or social benefit group specific to Ethiopia, with a chairman, cashier and auditor and organized around monthly meetings and monthly tithes from members.

Reach Out: Expansion, spread of intervention.

Apart from the small ruminant intervention in Ethiopia, the TAAT Livestock Compact reached out to other East African Countries in the Mater Trainers component. The East African Farmers Federation officials from Kenya, Uganda, Ethiopia, Tanzania, Sudan, South Sudan, Eritrea, and Djibouti were trained.

6.2 OUTCOME (IMPACT) OF TAAT LIVESTOCK COMPACT IN ETHIOPIA

The TAAT expectation regarding outcome included productivity increases, income, and technology adoption.

Increased income (USD)

Income: Yearly profit increased by \$94-\$151.6

Increased commodity productivity

- Productivity increases were due to reduced fattening periods.
- The number of production cycles increased from 1 to 4 on average.
 - Value of sheep increased by US \$65.83, which was about 128%
 - Sales revenue increased by 230%

Increased employment (Inclusively)

- Employment: employment generation along the sheep value chain was hinged on the increased scope of youth and women involvement in the sheep fattening project, with an increased production cycle.
- Gender integration: 154 young women empowered in sheep production.

Increased food production

No aggregate data is available.

Increased food and nutrition security

Household-level data is not available to measure food and nutrition security,

Value addition of TAAT (USD)

Information on smallholder value addition is required.

Direct TAAT beneficiaries

• Sheep fattening process:

- Direct TAAT beneficiaries are the Youth and women involved in Ethiopia's small ruminant livestock sector. 485 youths were reached, with 124 being women.
- Soil and Water conservation and Fodder development components:
 - 392 families involved in the construction of 30.55km linear physical Soil and water conservation.
 - 374 farmers participated in the cross-exchange visit as a form of peer learning.
- Other beneficiaries included local carpenters trained in fabricating feeding troughs.
- Training and Capacity building

- Eight nine (89) peer educators were trained in developing anti-erosive structures for integrated feed production, soil, and water conservation practices. Each of the educators will train an average of 25 other farmers.
- 190 model farmers have trained 374 beneficiaries.

6.3 Success stories in the Ethiopian Small livestock TAAT interventions

The impact of TAAT has been far-reaching within the project objectives and even beyond. Some testimonials are presented.

vii. Productivity enhancement through sheep fattening

In Doyogena, Ms Abaynesh Demisse (see Picture 1), a youth beneficiary aged 19 years, observed that sheep fattening helps her (and her family) move up in livestock and asset ladders (Picture 2). Ms Abaynesh, who started the sheep fattening business with two rams, is on her 5th sheep fattening cycle. She owns a Holstein Friesian crossbreed heifer worth 9,000ETB (USD279) and 4 sheep.

She has also upgraded her father's house structure and has created a shelter for her livestock on her homestead. In Bonga, Ms Ashebir, who qualified as a beneficiary on a sharecrop basis to acquire a sheep and benefit from the start-up package, is currently on his 4th sheep fattening cycle, owning an ox worth 12,000ETB (USD372) and 4 rams. They are both targeting the upcoming Easter season when prices will be high to sell the rams for the next sheep fattening cycle.

viii. Soil and Water Conservation and Fodder Development.

The community members indicated that they have been building anti-erosive structures on the hills through the Government scheme to protect the area from gullies. However, all the efforts to protect gullies did not work, and they lost their farm and grazing lands. With the TAAT Livestock Compact in partnership with InterAid, the innovation to work on farmlands and not on the gradients was very exciting. The elderly people indicated at the beginning of the project; they were reluctant to embark upon anti-erosive structures on lowlands for the risk of losing large portions of their farmlands. However, the project demonstrated that it is possible to fight erosion from the valleys, enhance fertility and degraded land and produce forage throughout the year. (FGD of Outcome Case study report, Zozo et al., 2020; Location: Kedida Gamela woreda at Kembata zone).





Land Damaged by gully erosion



Land reclaimed through soil and water conservation (anti-erosive) techniques.

7.0 Lessons Learnt and Challenges

Improved technology tends to produce unintended consequences. In the Ethiopian case, the improved fattening technology, leading to a reduced production cycle, has made smallholder farmers increase scale and asset ownership.

The use of women and youth as entry points in the Ethiopian TAAT livestock compact used the existing sociocultural structure of responsibilities within the society. This, therefore, reinforced the women's capacity to create efficiency in their already-defined roles without the fear of male capture.

Community ownership of a project is important for the success and sustainability of such. The formation of Communities of Practice and other groups saddled with the responsibilities of being duty bearers in implementation helped to increase the project's success rate. This would also ensure that the project continues to be sustained and or spread beyond the project site at the completion of the project. In respect of the beneficiaries' ownership of anti-erosive intervention, a Focus Group Discussion (FGD) report says:

"The commitment of direct beneficiaries is the major determinant factor of this project. So far, it has been proven that where beneficiaries have abided by project conditions by zero grazing the animals, feed is well managed, and erosion is reduced. The role of peer educators is very crucial to achieve results. With many years of experience in SWCS-FD, they are the source of inspiration for technology uptake and dissemination. They have learned from Government experience. Their commitment to the delivery processes of the project is very impressive. They have influenced about 68-70% of direct beneficiaries to establish the family backyard nurseries despite land shortage, which has conquered to launch the project's next phase". (Culled from Zozo et al., 2020)

However, the role of the private sector in the Ethiopian livestock sector is still limited. Stakeholder involvement in the production and support services was almost entirely made up of international development agencies, government agencies and community self-help. Therefore, the traction for enhanced production that can be brought in by private-sector investment is missing. This must be filled by creating an enabling business opportunity that gives investors a sense of security in investment.

Moreover, the extent of spillover or expansion of the technologies to non-beneficiary regions through extension services is limited. This is due to the low funding available for government agencies to function. Thus, despite potential benefits to the national economy, the inability to expand beyond the project site implies a lower capacity to influence agricultural value added significantly.

8.0 Conclusion and Way Forward.

The TAAT Livestock Compact sought to enhance productivity, income growth and environmental sustainability in the countries of focus by developing small ruminant livestock. The relevance of livestock in the economy of Ethiopia reaches out to men, women, and youth; thus, the intervention was critical to development. The report revealed vital success indicators, including male and female youth empowered in sheep production fodder production and as per trainers. Sustainability factors are reflected in the facilitation of Communities of Practices to drive anti-open grazing and anti-erosion structures.

However, some dimensions of the expected outcome are not yet validated. This is important to adequately score TAAT in terms of its achievement and provide learning opportunities for future interventions. Thus, a complete end-term evaluation is required to provide this data. Specific data gaps need to be filled in terms of household food and non-food expenditure in order to track changes in food and nutrition as a result of TAAT intervention. Furthermore, the effect of the intervention on the national economy needs to be adequately reported. The ability to plan for partnerships and sustain developmental projects is hinged on empirical evidence that the national economy will receive greater revenue flows.

Moreover, the effects of country intervention on non-project sites and neighbouring countries, as well as associated value chains, also contribute to the success of TAAT intervention and, therefore need to be explored.

References

Jane Wamatu. (30/4/2019). TAAT Sheep Fattening Scaling Project - Technical Report.

Kidido, M. M. (2014). Report from a meeting to develop an impact pathways narrative for the Ethiopia Small Ruminants Value Chain, Addis Ababa, 10-11 February 2014 <http://www.livestockfish.cgiar.org/>.

Legese, G., Haile, A., Duncan, A.J., Dessie, T., Gizaw, S. and Rischkowsky, B. 2014. *Sheep and goat value chains in Ethiopia: A synthesis of opportunities and constraints*. ICARDA/ILRI Project Report. Nairobi, Kenya: International Center for Agricultural Research in the Dry Areas/International Livestock Research Institute.

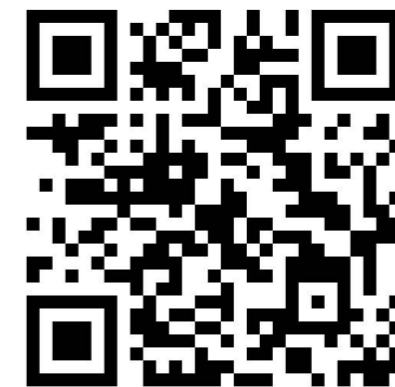
Mabeya J., Kamanda J., and Onyango P., Eshetu S., Bheenick K., Munoko K., and Abugri B. (2020). Transforming Africa's Agriculture through Enhancing Commercialization of High Iron Beans Research Products: The case of High Iron Beans Technology. FARA Dissemination Notes FDN 44. Pp 1-8

Management Entity. 2021. Ethiopia's Livestock Systems: Overview and Areas of Inquiry. Gainesville, FL, USA: Feed the Future Innovation Lab for Livestock Systems.

Technologies for African Agricultural Transformation (TAAT) (2018 -2021): Livestock Compact; Internal Completion Report.

Zozo, R., Lewis, S., Kago, K., Opaluwah, A., Adetunji, O., Asiedu, E., Ndindeng, S.A., Sanyang, S., Saidu, B., Arouna, A., Aboudou, R., and Musabyimana, I. (2021). Report on the Rice Outcome Case Study Seed Production of Resilient Rice Varieties and the GEM Parboiling System in Cote d'Ivoire. 24p TAAT MEL Working Document No. 004.

Zozo, R., Sabra, L., Adediran, A. Opaluwah, A., Feye, G., Dror, I. Bokanga, M and Akem, C. (2020). Report of the Livestock Outcome Case Study on Sheep Fattening and Fodder-soil Conservation in Ethiopia. Technologies for African Agricultural Transformation, Monitoring and Evaluation and Learning System. 26p TAAT Working Document No. 003. International Institute of Tropical Agriculture (IITA); TAAT. <https://www.iita.org/technologies-for-african-agricultural-transformation-taat/>.



-  https://twitter.com/Taat_Africa
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