

Promote the Use of Legume Supply in Ethiopia (PULSE) Project

Final Evaluation Report

Prepared and Submitted
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List of Acronyms/Abbreviations

EUCORD	European Cooperative for Rural Development
FGDs	Focus Group Discussions
Ha	Hectare
IDIs	In-depth Interviews
IPM	Integrated Pest Management
KIIs	Key Informant Interviews
MIPs	Most Impactful Practices
OECD	Organization for Economic Cooperation and Development
Qt	Quintal
SPSS	Statistical Package for Social Scientists

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Abidan Development Consulting Group PLC

Executive Summary

I. INTRODUCTION: The PULSE project, funded by the Achmea Foundation and implemented by EUCORD from January 31, 2022, to January 31, 2025, aimed to improve resilience and livelihoods in six woredas of the Oromia region. The interventions focused on enhancing the value chain for haricot beans in lowland areas (Bora, Dugda, and Adami Tullu Jido Kombolcha) and faba beans and field peas in highland areas (Tiyo, Digalu Tijo, and Lemmu Bilbilo). The project targeted 6,500 smallholder farmers, with 30% being female, and benefited 39,000 people. It focused on sustainable, market-oriented pulse value chains, specifically enhancing haricot bean value chains in lowland areas and faba bean/field pea chains in highland areas. Key components of the project addressed pulse productivity, access to inputs, market opportunities, climate-smart practices, and the engagement of women. The project has been completed, and EUCORD has commissioned Abidan Development Consulting Group to conduct a final evaluation to comprehensively assess the project's performance and results, resulting in the development of this report.

II. METHODOLOGY: The final evaluation is in line with key OECD criteria, including effectiveness, impact, sustainability, and cross-cutting issues, including gender and the project's impact on promoting climate-smart agriculture. A mixed research approach, involving both qualitative and quantitative data collection and analysis, was utilized to evaluate performance, document best practices, and provide recommendations. Primary data was gathered through beneficiary surveys, focus group discussions (FGDs), key informant interviews (KIIs), in-depth interviews (IDIs), and document reviews. Secondary sources included the project proposal, monitoring and evaluation (M&E) data, beneficiary list, demonstration reports, and progress and terminal project reports. A survey was conducted among 235 beneficiaries in four sample kebeles, located in three woredas. Of the respondents, 17% were female, and 83% were male. Though 30% of project beneficiaries were females, the majority of females were headed by men and their availability during the survey were limited. Samples were selected using a combination of random and stratified techniques. In addition, FGDs were conducted with project beneficiaries, along with KIIs involving government stakeholders, bulk buyers, and EUCORD staff. Data analysis was guided by the evaluation objectives and tailored to the collected data. Quantitative data were analyzed using descriptive statistics, such as frequencies and percentages, while qualitative data underwent thematic and content analysis procedures. The evaluation report was produced by triangulating and corroborating quantitative data and findings with qualitative and secondary data.

II. MAJOR FINDINGS

Here, the major findings of performance at impact and outcome level are presented.

Project Impact

- a. **IMPACT 1:** The project aimed to enhance farmers' capacity to produce and sell their products to both domestic and international markets to improve food security and income for 6,500 pulse producers. Data gathered from primary and secondary sources indicate that the project has successfully increased the production capacity of its beneficiaries. It has also improved beneficiaries' food security and income. While access to international markets remains limited, the produce has been effectively sold in local markets. The project, which targeted 6,500 households, has met all of its objectives with a 100% success rate, demonstrating excellent performance.
- b. **IMPACT 2:** This impact measure aims to enhance the resilience and livelihoods of 39,000 household members by establishing sustainable, market-oriented pulse value chains. Primary data collected from relevant stakeholders shows that improvements in pulse productivity and income have positively impacted the livelihoods of project beneficiaries. Additionally, a review of project documents has revealed that the project successfully reached 39,000 household members across 6,500 households, resulting in a 100% success rate.

Project Effectiveness

- a. **OUTCOME 1:** The project aims to increase the productivity of pulse crops in the intervention areas by 30%. Two types of results are observed concerning this outcome. In the first case, EUCORD benchmarked 19 Qt/ha of pulse before the project as a baseline and was able to reach 26 Qt/ha at the end of the project. This indicates that the project increased productivity by 120%, with a success rate of 300%, showing a significant achievement. On the other hand, the survey results show that the productivity of pulse crops before the project was 14 Qt/ha. By the end of the project, productivity had increased to 26 Qt/ha. Taking the survey results into consideration, the increase in productivity is calculated to be 185.7%, with an end-line success rate of 519%. A

success rate of 519% represents an outstanding level of achievement, surpassing the initial goals and expectations of the project. This figure underscores remarkable progress and demonstrates the significant impact and effectiveness of the efforts undertaken.

- b. **OUTCOME 2:** Outcome 2 states, “Farmers’ access to agricultural inputs and finance improved to cultivate selected pulse crops on 1500 ha using improved practices.” In this outcome indicator, two issues are available. The first is the improvement in access to agricultural inputs, and the second is the cultivation of pulse crops on 1,500 hectares. In the project, the variable is taken as an indicator of project success. As such, though the project aims to cultivate pulses on 1500 hectares, at the end of the project, it was able to cultivate pulses on 2,344 hectares of land with a performance rate of 156%. This level of over-performance indicates successful project design and implementation.
- c. **OUTCOME 3:** This outcome targets a 30% increase in farmers’ income due to their access to guaranteed markets. Survey results of income indicate that the average annual income of beneficiary households increased by 95.8% (from 73,250 ETB before the project to 143,305 ETB after the project), far surpassing the target improvement of 30%, resulting in a performance rate of 219.3%.

Project Sustainability

The following are some of the negative and positive factors that will enhance or constrain the sustainability of project outcomes:

Positive Factors

- a. **Knowledge and Skills Acquisition:** Farmers gained practical expertise through training programs and demonstration fields, enabling them to adopt and replicate sustainable agricultural practices independently.
- b. **Beneficiary Commitment:** A strong sense of ownership and commitment by farmers fosters long-term application of the project’s interventions, contributing to sustained productivity and resilience.
- c. **Stakeholder Networks:** Effective collaboration with agricultural research centers, woreda agricultural offices, unions, and cooperatives provides a foundation for continued support and knowledge sharing.
- d. **Policy Alignment:** The project’s alignment with government policies created an enabling environment for its activities, increasing the possibility of integrating its approaches into broader development plans.
- e. **Improved Productivity and Income:** Enhanced pulse crop yields and higher household incomes motivate farmers to sustain the practices introduced by the project.
- f. **Market Infrastructure:** Although still developing, the identification of bulk buyers and initial market linkages lay the groundwork for expanded access to sustainable market opportunities.

Negative Factors

- a. **Limited Access to Inputs:** Rising costs and scarcity of improved seeds and fertilizers hinder farmers’ ability to maintain increased productivity levels.
- b. **Credit Constraints:** Insufficient financial support from cooperatives and microfinance institutions limits farmers’ ability to invest in agricultural inputs and infrastructure.
- c. **Market Inefficiencies:** Delayed price-setting and payment processes create financial strain, affecting farmers’ capacity to sustain their activities.
- d. **Climate Challenges:** Erratic rainfall patterns and insufficient moisture threaten crop yields, requiring more robust climate adaptation measures for sustainability.
- e. **Gender-Specific Barriers:** Limited interventions addressing the unique challenges faced by women reduce the inclusivity and long-term impact of the project.
- f. **Insufficient budget allocation.** While aligned with policies, insufficient budgetary allocation and limited government resources will pose challenges for maintaining project initiatives.

Cross-Cutting Issues

a) Gender

The evaluation confirmed strong female participation in the project design and implementation phases, with 1,950 women, representing 30% of total beneficiaries, actively involved. Women, particularly in male-headed households, engaged in training and demonstrations, applying the skills gained and reporting a gradual sense of empowerment. Project interventions targeted women through capacity development activities, including training and outreach to women-headed households. However, the evaluation highlighted limited evidence of women-specific needs being

addressed in the project design. Due to their limited number in the intervention areas, female-headed households participated less, indicating a gap in fully understanding and catering to their unique challenges. Participant women also faced significant barriers in accessing credit, which limited their ability to invest in tools, inputs, and infrastructure. Structural and cultural challenges restricted their inclusion in cluster and contract farming arrangements, seed multiplication, cooperatives, and unions, depriving them of economic opportunities and leadership roles. Addressing these gaps requires gender-sensitive interventions, including improving credit access, promoting women's involvement in decision-making, and showcasing successful female role models to inspire broader inclusion and empowerment.

b)

Climate Smart Agriculture

The evaluation highlighted the project's substantial efforts in implementing climate-smart agricultural practices to enhance resilience and pulse crop productivity. Farmers adopted practices such as organic and bio-fertilizer use, crop rotation, integrated pest management, intercropping, row planting, and drought-tolerant seed varieties, which were tailored to local conditions. Improved pulse seeds like short-maturing haricot bean varieties helped farmers diversify crops and cope with climate challenges. Training programs equipped farmers with skills to make their practices more resilient, and the use of bio-fertilizers was emphasized as an environmentally friendly alternative to chemical fertilizers, contributing to soil fertility and reducing greenhouse gas emissions. Pulse crops were effectively integrated into crop rotation systems, promoting soil health, biodiversity, and sustainability while breaking pest and disease cycles. Despite these successes, though not within the scope of the project, the lack of tree planting education was identified as a missed opportunity to further align the project with climate-smart principles. Trees are critical for soil conservation, water retention, and providing shade, which mitigates the impacts of rising temperatures on crops. Addressing this gap would enhance the project's focus on long-term sustainability and environmental resilience, complementing the existing efforts to empower farmers and diversify their agricultural practices.

IV. BEST PRACTICES, LESSONS LERNED, AND CHALLENGES

a)

Best Practices

The following are the best practices identified in the project

- **Mapping value chains:** Through the mapping of the pulse value chain, the project identified stakeholders, processes, and bottlenecks, enabling targeted interventions in production, distribution, and marketing.
- **Identifying most impactful practices (MIPs):** Systematic identification and validation of high-impact agricultural practices ensure evidence-based approaches, forming the basis for training, demonstrations, and adoption by farmers.
- **Cluster-based farming:** Organizing farmers into clusters enhances collaboration, resource management, and economies of scale. This approach enables the adoption of advanced technologies, better market access, and improved financial and input services. Knowledge exchange among members accelerates innovation dissemination.
- **Informal seed systems and seed connections:** Farmer-to-farmer exchanges, local markets, and community networks ensure access to locally adapted seeds, promote diversity, and preserve traditional varieties. Seed connections link farmers with reliable sources, enhancing the availability of quality seeds, knowledge sharing, and trust.

b)

Lessons Learned

The following are some of the lessons learned during the implementation of the project.

1. **Tailor-Made Capacity Building through Practical Demonstrations:** Field demonstrations and hands-on learning opportunities, such as field days, are more effective for knowledge transfer than theoretical approaches. Farmers learn better when they see tangible results.
2. **Repositioning Pulse Crops as Valuable Cash Crops:** The project successfully shifted farmers' perceptions of pulses from secondary crops to cash crops and essential soil fertility enhancers. This change increased interest in pulse cultivation and improved livelihoods.
3. **Improved Post-Harvest Practices for Seed Quality and Yield:** Training on proper threshing techniques, such as using clean surfaces and harvesting at the right time, reduced damage and post-harvest losses, contributing to better yields and increased farmer income.
4. **Enabling Environment for Cooperative-based Seed Production:** Facilitating cooperative seed production and addressing bottlenecks improved access to quality seeds, strengthened seed security, and boosted food production.

c)

Challenges

1. **Limited access to improved seeds and fertilizers:** Farmers struggle to obtain these essential inputs consistently and in adequate quantities, impacting crop yields and production. This is due to the imbalance between demand and supply as farmers started to get the improved seed varieties introduced due to the project.
2. **Rising cost of fertilizers and seeds:** High prices make improved inputs financially inaccessible to small-scale farmers, hindering the adoption of modern practices.
3. **Insufficient rainfall:** Reliance on rain-fed agriculture and lack of irrigation systems lead to reduced productivity and yield losses during critical crop growth stages.
4. **Delayed payments and price-setting issues:** Farmers face financial strain due to delayed payments and slow market price-setting, disrupting preparation for the next planting season.
5. **Insufficient market linkages:** Insufficient connections between farmers and buyers, particularly in highland areas, prevent streamlined sales and fair pricing, leaving farmers at a disadvantage in the marketplace.
6. **Limited access to credit:** Many farmers struggle to secure loans for essential inputs or productivity improvements, as cooperatives and microfinance institutions often do not provide financial support.

V: CONCLUSION AND RECOMMENDATIONS

a)

Conclusion

The PULSE project has achieved notable successes in improving pulse production and productivity, increasing household income. Key activities, including training, seed multiplication, and value chain development, resulted in a 185% rise in pulse crop productivity and enhanced food security. The project also promoted climate-smart practices like drought-tolerant seeds and crop rotation, strengthening farmers' resilience to climate challenges. These efforts underscored the project's critical role in fostering sustainable agricultural practices and improving rural livelihoods. However, farmers struggled with limited access to affordable inputs, financial constraints, and market inefficiencies, such as delayed payments. Women faced significant barriers to accessing credit, participating in cluster farming, and engaging in seed multiplication, reflecting a gap in gender-specific strategies.

b) Recommendations

- a. **Stakeholders' engagement in promoting Most Impactful Practices (MIP):** Expanding these practices to non-targeted kebeles and woredas ensures the project's sustainability, empowers communities, and fosters long-term positive change.
- b. **Encouraging model farmers to engage in seed production:** Involving model farmers addresses seed shortages, bridges gaps in formal and informal seed systems, and improves access to quality seeds.
- c. **Strengthening linkages between actors in seed systems:** Cohesive collaboration among key stakeholders enhances seed availability and accessibility, benefiting farmers and boosting productivity.
- d. **Facilitating market access through digital platforms:** Digital platforms connect farmers and traders and provide frequent price information, improve market access, empower farmers, and foster economic resilience.
- e. **Diversification of livelihoods beyond crop-based activities:** Alternative income sources like apiculture and poultry reduce reliance on single incomes, build resilience, and broaden farmers' options. Training, technical support, and access to inputs are essential.
- f. **Stronger exit strategy for sustainability:** A comprehensive exit plan ensures the continuity of project benefits, secures long-term impact, and empowers local stakeholders.
- g. **Targeted gender-sensitive interventions:** Addressing women's challenges in agriculture through detailed assessments and tailored activities creates equitable opportunities and aligns interventions with their priorities.

1. Introduction

1.1. Project Overview

The PULSE project, funded by the Achmea Foundation, was a three-year initiative and implemented by EUCORD in six woredas of Oromia. The aim was to improve the resilience and livelihoods of rural populations through sustainable and market-oriented pulse value chains. It was implemented from January 31, 2022, to January 31, 2025, in close collaboration with key stakeholders such as the Melkasa Agricultural Research Center, the woreda agricultural offices, and farmers' cooperative unions. The project targeted 6,500 smallholder farmers, 30% female, ultimately benefiting an estimated 39,000 people. The interventions focused on enhancing the value chain for haricot beans in lowland areas (Bora, Dugda, and Adami Tullu Jido Kombolcha) and faba beans and field peas in highland areas (Tiyo, Digalu Tijo, and Lemmu Bilbilo).

Table 1 Number of households directly benefited from PULSE project

Description	Number
East Shoa zone Lowland woredas	
Bora	400
Dugda	780
Adami Tullu Jido Kombolcha	2074
Arsi zone Highland woredas	
Tiyo	1130
Digalu Tijo	1292
Lemmu Bilbilo	824
Total project beneficiaries	6500

The key components of the project included improving pulse production and productivity, ensuring access to agricultural inputs and sustainable market opportunities, and addressing cross-cutting issues such as climate-smart activities and the engagement of women and youth. Table 2 below shows the summary of the project results framework.

Table 2: Summary of impact, general objective, outcomes, and outputs of the PULSE project

Impact	Improve the resilience and livelihoods of 6,500 households in rural Ethiopia by developing sustainable, market-oriented pulse value chains
General Objective	Improve the capacity to produce and sell to domestic and international buyers to improve the food security and income of 6,500 pulse producers.
Outcome 1	The productivity of pulse crops in the intervention area improved by 30%
Output 1.1	Pulse value chain mapped
Output 1.2	Most Impactful Practices (MIPs) identified and validated
Output 1.3	6500 farmers trained on the Most Impactful Practices
Output 1.4	12 demonstration fields conducted on the Most Impactful Practices
Outcome 2	Farmers' access to agricultural inputs and finance improved to cultivate selected pulse crops on 1500 ha using improved practices.
Output 2.1	Seed multiplication and distribution of promising pulse varieties conducted to distribute 20 tons of certified seeds
Output 2.2	Farmers got access to certified seeds that enable them to produce pulses on 1500 ha.
Output 2.3	30% of targeted farmers accessed short-term agricultural credit to cultivate pulse using improved production practices.
Outcome 3	Farmers' access to guaranteed markets improved to increase the income of targeted households

	by 30%
Output 3.1	Potential bulk buyers of pulse commodities identified along with their buying requirements
Output 3.2	Market linkage was established among improved pulse variety-producing farmers and seven selected buyers.
Output 3.3	Farmers' increased sales of pulse commodities reported

As the project implementation was completed, EUCORD commissioned Abidan Development Consulting Group to conduct the evaluation of PULSE project and assess the performance of the interventions during the period from January 31, 2022, to January 31, 2025. Thus, the consultant undertook the PULSE final evaluation that encompasses project performance against plan and this report is prepared based on the information and data obtained during the field and desk analysis.

1.2. Purpose and Objectives of the Evaluation

The main purpose of this evaluation was to assess the extent to which the project has achieved its goal and remained relevant, effective, impactful, and sustainable in securing livelihoods for smallholder farmers in six woredas of the Oromia region. The evaluation generates evidence that confirms the actual implementation status of the project and also provides lessons learned and recommendations for future activities. Specifically, the evaluation sought to:

- a) Assess the extent to which the project achieved its results at an outcome level as well as its impact and prospects of sustainability.
- b) Identify lessons learned and best practices to improve project design and implementation of pulse value chain development in the future.
- c) Provide actionable recommendations for project partners and stakeholders.

1.3. Scope of the Evaluation

This final evaluation was carried out in three sample woredas from a total of six intervention woredas and covered the project implementation period from January 2022 to January 2025, considering all project activities. The evaluation had a specific focus on performance indicators, the evaluability of results, and tasks outlined in the project framework. It has also concentrated on outcomes and results as defined in the project proposal document. The consultant has adhered to the OECD-DAC evaluation criteria and requirements outlined in the ToR, which include effectiveness, impact, and sustainability. The consultant has also assessed the cross-cutting issues, such as the involvement of women in the project and the promotion of climate-smart agricultural activities. The log frame was used to critically assess the project performance against its expected outcomes.

In terms of stakeholder participation, various stakeholders provided the necessary information related to the project implementation. The stakeholders include EUCORD field staff (country representative, the MEL officer, and project and field coordinators), government officials and experts (Woreda agricultural experts, agronomists, experts of cooperative promotion agencies, agricultural researchers and development agents), bulk buyers, and project beneficiaries.

1.4. Limitations

The security challenges in the PULSE project areas made it difficult to reach the required number of sample beneficiaries, which was 260. During the fieldwork, security threats in the survey areas prevented enumerators from conducting door-to-door visits, as they could be exposed to unpredictable local situations, including conflict, leading to potential resistance from sampled households. To address these challenges, the consulting team, in collaboration with project field coordinators, attempted to arrange meetings with farmers to collect survey data and organize FGDs and KIIs. However, the desired number of farmers did not attend these meetings due to expectations of per diem payments and transport costs that were beyond the project's budget. As a result, the sample size for the survey was reduced to 235. The limited presence of farmers in both sample woredas (Lemu Bilbilo and Tiyo Woredas) is also due to various reasons, such as market days and other social issues.

During the fieldwork, the security situation in Adami Tulu Jido Kombolcha woreda (East Shewa) was good. After successfully collecting the field data in Adami Tulu, the evaluation team traveled to Arsi Zone. Based on the information collected while we were in East Shewa, we identified a kebele, Lemmu Dima, as having security threats. However, the field coordinator informed us that it was Dawa Bursa kebele that had security threats, not Lemmu Dima. We believed the field coordinator and proceeded to interview households in Lemmu Dima Kebele of Lemu Bilbilo Woreda. On the first day, we were only able to collect data from a small number of respondents due to farmers' unavailability. Since we did not obtain the required number of respondents, we planned to return to this kebele for a second day of appointments to reach our target sample size. Upon returning to Assela Town from the field and consulting with the woreda officials, we were informed that Lemmu Dima kebele had serious security issues. We were also told that none of the regional or zone leaders or workers had visited the kebele. Realizing the danger of the situation, we selected another kebele (Haro Bilalo) from Tiyo Woreda in consultation with project staff to collect the remaining data. This kebele was chosen as a replacement for Dawa Bursa and to complete the remaining samples for Lemmu Dima. Unfortunately, in this kebele, we were unable to obtain the required number of samples to make up for those we had missed in Lemmu Dima and Dawa Bursa. Despite these challenges, the field data collection was ultimately successful, with a 91% response rate.

1.5. Organization of the Report

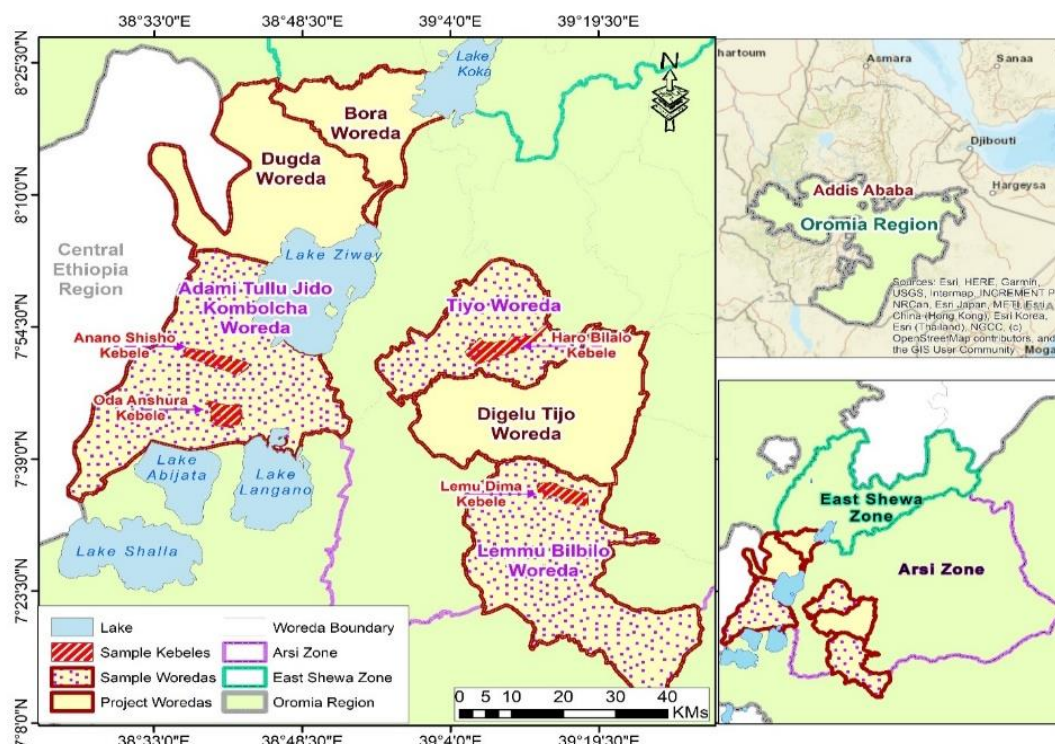
Section one deals with the introduction, including the project overview, the purpose and objectives of the evaluation, and the scope of the report. Section two addresses the evaluation methodology, covering evaluation criteria, design approach, and methods of data collection and analysis. Section three presents the major findings, organized under effectiveness, impact, sustainability, and cross-cutting issues, and explores output, outcome, and impact-level indicators. Section four focuses on best practices, lessons learned, and challenges encountered. Finally, section five concludes the report with key insights and actionable recommendations for future improvements.

2. Evaluation Methodology

2.1. Locations of the Study Areas

The evaluation was conducted in four sample kebeles of Adami Tullu Jido Kombolcha woreda of East Shoa zone and Tiyo and Lemmu Bilbilo woredas of Arsi zone in Oromia Region.

Figure 1: Location map of the evaluation areas



2.2. Evaluation Criteria and Questions

The evaluation is structured around four criteria: effectiveness, impact, sustainability, and cross-cutting issues, including gender and climate-smart agriculture. During the inception phase of this evaluation, the indicative questions under each of the evaluation criteria were consolidated into overarching main areas to define the data collected as evidence for the evaluation findings, conclusions, and recommendations. The key evaluation questions for this final evaluation were guided by the evaluation objectives and the project indicators/questions identified in the Terms of Reference. Additionally, evaluation questions related to project effectiveness, impact, and sustainability were employed based on OECD-DAC criteria. The criteria and corresponding questions are outlined in Table 3 below.

Table 3: Evaluation criteria and questions

No	Criteria	Main Areas/Issues Raised
1	Impact	Do the value chain actors show interest in replicating the activities undertaken during the project life and after the project close-out?
		Which institutions and direct beneficiaries benefited from the project and how?
		To what extent did the project contribute to the value chain development of pulse commodities?
		Are there any unintended results of the project, either desirable or undesirable?
2	Effectiveness	To what extent has the project achieved its outcomes and results?
		What were the major factors influencing the achievement or non-achievement of the expected outcomes and results (including those beyond the control of the project)?
3	Sustainability	To what extent will the benefits of the project continue after project closure?
		What factors can contribute to the sustainability of the project, and what factors can negatively affect the sustainability of the project?
		To what extent have all project stakeholders collaborated as planned?
4	Cross-cutting issues	To what extent were women engaged in the project and benefiting from the project?
		Did the project contribute to the promotion of smart climate agricultural activities in the

	intervention areas? If yes, how?
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2.3. Approach and Design

A mixed-methods approach that combines qualitative and quantitative methods was utilized to gain a comprehensive understanding of the impact of a project. This approach involves using qualitative data, such as interviews and focus groups, to gather detailed insights and narratives. Additionally, quantitative data from surveys and statistical analyses were used to measure outcomes. By incorporating both types of data, the consultant was able to address various evaluation questions, validate findings, and uncover unexpected results. This comprehensive approach ensures a deeper understanding of the project's effectiveness and impact, making it particularly beneficial for complex projects with multiple outcomes. A concurrent mixed methods design was implemented for this evaluation.

2.4. Data Collection Methods

The evaluation used mixed methods of data collection and analysis to address the evaluation criteria and questions. Both primary and secondary data collection methods were employed. Primary data was gathered through household surveys, key informant interviews, and focus group discussions. Secondary data was obtained through document reviews.

2.4.1. Document Review: One of the first steps in this evaluation was conducting a desk review and reviewing existing project documents. The consultants aimed to fully understand the objectives and history of the intervention and familiarize themselves with the specificities of the project. As a result, the consultant reviewed the value chain map report, progress reports, terminal reports, beneficiary list, and other relevant guidelines and manuals that assisted in this evaluation assignment, as well as conducted internet research. These documents were instrumental in tracking progress and assessing the effectiveness of the goals, objectives, and activities outlined in the log frames. In addition to reviewing project documents and collecting and analyzing secondary documentation, the evaluation team developed tools tailored to gather data during the interview phase.

2.4.2. Beneficiary Survey: The survey was designed to measure the outcomes, impact, and some output level indicators based on the project results matrix. By utilizing a beneficiary survey, various types of data were collected, including demographic information, agricultural practices, changes in production, productivity and income, market access, nutritional information, as well as feedback on challenges and suggestions. This household data helped evaluators assess the project's effectiveness in improving the livelihoods, agricultural practices, and socio-economic conditions of the beneficiaries, providing comprehensive insights into its overall impact.

A. Sample Size for the Beneficiary Survey: The domain of this particular survey was all beneficiary households of the project operational areas. The consultant determined the sample size employing the following formula

$$SS = \frac{Z^2 \cdot p \cdot (1 - p)}{C^2}$$

Where,

- **SS:** The number of observations or respondents needed in the study to achieve reliable results.
- **Z:** The number of standard deviations a data point is from the mean. It depends on the confidence level you choose. For example: 90% confidence level: Z=1.645, 95% confidence level: Z=1.96, 99% confidence level: Z= 2.576
- **p (Expected Proportion):** An estimate of the proportion of the population that has the characteristic of interest. It is usually expressed as a decimal. For example, if you expect 50% of the population to have the characteristic, p = 0.5.
- **q (1 - p):** The complement of p. If p = 0.5, then q = 1- 0.5 = 0.5.
- **C (Margin of Error):** The desired level of precision. It is also expressed as a decimal. For example, a margin of error of 5% is C = 0.05.

Based on the above formula, and considering the 90% confidence level, $p=0.5$ and $c=0.05$, the sample size of the infinite population of the study was:

$$SS = \frac{1.645^2 \cdot 0.5 \cdot (1 - 0.5)}{0.05^2}$$

$$SS = \frac{2.706 \cdot 0.5 \cdot 0.5}{0.0025}$$

$$SS = \frac{0.6765}{0.0025}$$

$$SS \approx 270.6$$

The above sample size needs to be adjusted to a finite population of 6,500 beneficiaries of the project. As such, the following adjustment formula was applied to determine the sample size for this particular study:

$$SS_{\text{adjusted}} = \frac{SS}{1 + \left(\frac{SS - 1}{N} \right)}$$

Where:

- **SS** is the initial sample size we calculated (approximately 271).
- **N** is the population size (6,500 beneficiaries).

Therefore, the adjusted sample size for 6,500 beneficiaries in the study will be:

$$SS_{\text{adjusted}} = \frac{271}{1 + \left(\frac{271 - 1}{6500} \right)}$$

$$SS_{\text{adjusted}} = \frac{271}{1 + \left(\frac{270}{6500} \right)}$$

$$SS_{\text{adjusted}} = \frac{271}{1 + 0.0415}$$

$$SS_{\text{adjusted}} = \frac{271}{1.0415}$$

$$SS_{\text{adjusted}} \approx 260.2$$

After adjusting for a finite population of **6,500** beneficiaries, the sample size needed was approximately **260**. However, due to security problems and the difficulty of reaching beneficiaries house to house, the total sample size was found to be **235**.

B. Sampling Procedure: The fieldwork was unable to cover all project interventions and study locations, so the sampling of woredas and kebeles was purposive. The goal was to capture specific features representative of the various project characteristics. A two-stage stratified cluster sampling approach was used to select individual farmers for the survey. Initially, three sample woredas (two from the highland and one from the lowland) were purposively chosen. Subsequently, two kebeles from Adami Tulu Jido Kombolcha woreda, one kebele from Lemmu Billbilo woreda, and one kebele from Tiyo woreda were

conveniently sampled in consultation with project staff. Factors considered included geographical distribution, security, and project-related activities. Within each kebele, farmers were randomly selected to participate in the survey after being called and gathered at their respective locations.

- C. Training of Enumerators and Pilot Testing:** The consultant recruited enumerators who have at least a bachelor's degree and a minimum of three years of experience in data collection at the local level. They were fluent in Afan Oromo and familiar with the local socio-economic conditions. After recruiting the enumerators, a one-day training session was organized to help them understand the survey questionnaire and technical terms and practice interviewing techniques with their survey colleagues. They also received training on ethical issues before beginning fieldwork. Additionally, enumerators visited nearby villages to pilot the survey tool.
 - D. Digital Data Collection:** The consultant used mobile phones configured with the Kobo mobile application to collect quantitative information from individual households. To facilitate mobile data collection and exporting, Abidan provided sufficient number of smartphones for all field workers. The structured questionnaires for the survey were converted into a Kobo template and loaded onto each smartphone.
- 2.4.3. Focus Group Discussion (FGD):** Focus group discussions (FGDs) with beneficiaries were conducted to collect detailed qualitative information about the project's overall performance, impact, and implementation process. Consultants organized the FGDs in each sample kebele targeted in the project. All participants in the FGDs were identified by the consultant in collaboration with project staff. Six to 12 participants were selected in total in each focus group discussion. To respect local cultural norms and extract more in-depth information from respondents, the consultant organized separate FGDs with male and female participants. In addition, consultants ensured that group homogeneity was maintained to avoid loss of information due to the introduction of hierarchy, class, and social status in groups.
- 2.4.4. Key Informant Interviews (KIIs):** Interviews with key informants at various levels were conducted to assess the effectiveness, sustainability, and impact of the project, as well as to extract lessons learned during implementation. The consultant conducted KII with EUCORD project staff at both the head office and branch offices, agriculture and natural resource experts, agronomists, representatives of bulk buyers, and other stakeholders to conduct a thorough analysis. Key informants were identified by the consultants in collaboration with project staff and were selected based on their subject-matter expertise, insights, and contributions to understanding the project's successes and failures. A pre-designed, semi-structured checklist was used to ensure comprehensive data collection.
- 2.4.5. Case Story Analysis:** The consultant used case story analysis to gather detailed information about the project's progress, successes, impacts, and best practices. Four case stories were taken from successful beneficiaries and will be used as learning cases for similar projects.

2.5. Data Analysis and Presentation

The evaluation objectives and the nature of the collected data guided the data analysis. For quantitative data, the consultant utilized statistical techniques to analyze data gathered from surveys and other numerical sources. The consultants utilized the SPSS statistical package for this analysis, importing the data from Kobo into SPSS. The analysis involved descriptive statistics to summarize and describe data, providing insights into key performance indicators and project performance trends. For qualitative data, the consultant employed thematic analysis to identify and interpret patterns and themes within the data. Content analysis was also utilized to systematically analyze text data from documents, reports, and other written sources, capturing the richness and depth of participants' experiences and perspectives. By combining quantitative and qualitative data analysis, the consultant conducted a comprehensive evaluation of the project's effectiveness, impact, and sustainability. This process identified areas for improvement and generated actionable recommendations for future initiatives.

2.6. Data Quality Control and Ethical Considerations

The consultant placed significant emphasis on maintaining data quality control across several key aspects. Accuracy was ensured through validation, cross-checking, targeted training, and the implementation of error-checking mechanisms. Data consistency was achieved by standardizing methods, developing clear protocols, and offering intensive training to enumerators on data collection. Data completeness was prioritized using comprehensive tools, regular data reviews, and clear guidelines for data collection. The consultant adhered to data reliability by conducting pilot tests, providing data collection training, and closely monitoring and evaluating data collection processes to ensure precision and validity.

The consultant also gave attention to data security, employing regular backups through automated systems, testing restoration capabilities, and developing a robust data recovery plan. Data was securely stored on compliant servers with frequent audits conducted to ensure safety. Data anonymization was applied to protect participant identities using de-identification techniques. To achieve comprehensiveness, the evaluation covered all relevant aspects of the project and incorporated diverse perspectives. It utilized both qualitative and quantitative methods, engaged local experts, and documented case studies. Furthermore, the study ensured geographical representation, included diverse participants, addressed disparities, and used participatory approaches to amplify diverse voices.

The consultant applied a people-centered and inclusive approach in the evaluation. This was evident through active community engagement, promotion of gender equity, and transparent communication with stakeholders to ensure fairness and inclusivity. Ethical standards were rigorously upheld, as informed consent was obtained by providing detailed information to participants and ensuring their understanding of their rights. Confidentiality was maintained by anonymizing personal data, securely storing it, limiting access, and using pseudonyms where necessary. Additionally, all required research clearances were obtained from relevant authorities to guarantee adherence to local regulations and ethical guidelines, reinforcing the integrity and reliability of the evaluation process.

3. Evaluation Findings

This findings section provides a comprehensive analysis of the project's performance based on four key evaluation criteria: effectiveness, impact, sustainability, and crosscutting issues. This section aims to synthesize insights into how well the project has achieved its objectives (effectiveness), the broader changes it has contributed to within its target areas (impact), the extent to which its outcomes and benefits can be sustained over time (sustainability), and its integration of crucial themes such as gender equality, inclusivity, environmental considerations (crosscutting issues). By exploring these dimensions, the findings shed light on the project's overall success, challenges, and lessons learned to inform future initiatives.

Readers of the report need to understand that there are three groups of project beneficiaries. The first group consists of farmers in Adami Tulu-Woreda who received the full package (training, access to inputs and finance, and market linkages). These farmers are organized in a cluster and practice contract farming with Meki-Batu cooperative union. The second group includes farmers in Lemmu Dimma Kebele of Lemmu Bilbilo Woreda who grow pulses in clusters and have organized themselves into primary cooperatives. However, they do not receive the full package, except for training and field-day visits. Farmers reported that they do not have market problems to sell their produce. They sell their products in the open market and do not have connections to bulk buyers. Both groups are involved in the multiplication of improved seeds. The third group of farmers are individuals who cultivate on their own. They have only received training from the project and focus on grain production, not seed multiplication. Like the second group, they sell their pulse crops in the open market without any connections to bulk buyers.

The presence of three distinct groups of farmers introduces varying levels of project engagement, which is crucial for a comprehensive impact evaluation. The first group, benefiting from the full package, demonstrates the

project's maximum potential, serving as a benchmark. The second and third groups, with partial or minimal support, highlight the incremental effects of varying interventions, shedding light on challenges such as limited market access and reduced assistance. This diversity allows for a comparative analysis of productivity, market connections, and sustainability, revealing the strengths and weaknesses of the project's approach while identifying key areas for improvement. However, the consultant considered these differences but provided the analysis in a lump sum.

3.1. Background Characteristics of Survey Respondents

As shown in Table 4 below, survey data were collected from a total of 235 beneficiaries in three sample project Woredas of East Shewa and Arsi zone in Oromia region. The result indicates that 224 (95.3%) of the respondents are male-headed households, while only 11 (4.7%) are female-headed households. In terms of gender, 196 (83.4%) are male, and 39 (16.9%) are female. This suggests that the project benefits married women who are part of male-headed households. The field coordinators of the project explained that female-headed households are scarce in the project intervention areas, so the project included women who are married but headed by men. The majority of respondents (55.3%) fall into the early adulthood age group of 30-49 years, with 25.5% in the middle adulthood age group of 50-65 years. Youth make up about 13.6% of the respondents. The mean age is 43.6 years, with the youngest respondent being 18 years old and the oldest being 80 years.

The majority of respondents completed high school (34%) followed by secondary school (21.7%) and primary school (19.6%). Still, 14.6% of the respondents are unable to read and write. Data on marital status shows that the majority, i.e., 93.7%, are married. Of the married beneficiaries, 71.1% are monogamous, whereas 22.6% are polygamous. The mean household size of respondents is found to be 7, with a minimum and maximum size of 1 and 15, respectively.

Table 4: Characteristics of survey respondents

Characteristics		Woreda						Total	
		Adami Tullu Jido Kombolcha		Lemmu Bilbilo		Tiyo			
		No.	%	No.	%	No.	%	No.	%
Household types	Female-headed	7	5.3	4	11.8	-	-	11	4.7
	Male headed	126	94.7	30	88.2	68	100.0	224	95.3
Sex of the HH head	Male	97	72.9	31	91.2	68	100.0	196	83.4
	Female	36	27.1	3	8.8	0	0	39	16.9
Age Group	15-29	26	19.5	1	2.9	5	7.4	32	13.6
	30-49	86	64.7	10	29.4	34	50.0	130	55.3
	50-65	17	12.8	17	50.0	26	38.2	60	25.5
	>65	4	3.0	6	17.6	3	4.4	13	5.5
Education	Unable to read & write	27	20.3	5	14.7	3	4.4	35	14.9
	Read & write only	5	3.8	4	11.8	2	2.9	11	4.7
	Primary (Grades 1-6)	16	12.0	9	26.5	21	30.9	46	19.6
	Secondary (Grades 7 and 8)	29	21.8	7	20.6	15	22.1	51	21.7
	High school (Grades 9-12)	49	36.8	6	17.6	25	36.8	80	34.0
	Tertiary	7	5.3	3	8.8	2	2.9	12	5.1
Marital status	Single	6	4.5			3	4.4	9	3.8
	Married (monogamous)	82	61.7	24	70.6	61	89.7	167	71.1
	Married (polygamous)	41	30.8	8	23.5	4	5.9	53	22.6
	Divorced	-	-	2	5.9	-	-	2	0.9
	Widowed	4	3.0		-	-	-	4	1.7
Total		133	56.6	34	14.4	68	28.9	235	100.0

Source: Field survey, March 2025.

3.1. Effectiveness

Effectiveness refers to the extent to which the project has achieved its stated objectives and delivered the desired outputs and outcomes. It assesses whether the project has met its goals as planned. The project has three outcomes and ten output indicators. Therefore, in this sub-section, the extent of realization of project outcomes and outputs is assessed one by one.

I. Outcome 1: Improved Productivity of Pulse Crops by 30%

A. Output 1.1: Pulse value chain mapped

In the PULSE project, value chain mapping is considered an important process to improve pulses' productivity. The available literature shows that value chain mapping boosts productivity by identifying inefficiencies and opportunities for improvement across the production process. It simplifies operations by highlighting bottlenecks, optimizing resource allocation, and fostering better stakeholder collaboration. The process also enhances product quality, reduces costs by addressing redundancies, and uncovers opportunities for innovation. Ultimately, it provides a clear roadmap for maximizing efficiency and achieving higher output with improved coordination and resource management. To this end, the PULSE project aimed to conduct an initial study to identify the specific pulse value chains for its targeted lowlands and highlands operational areas.

Information collected from EUCORD project coordinator indicates that value chain mapping was conducted by consulting farmers and reviewing documents and literature. During the mapping process, problems with all actors and phases of the value chain were identified. Issues such as production constraints (quality and quantity),

markets, prices of pulse products, the involvement of brokers in the value chain, and other factors affecting the value chain were identified. The informant mentioned that farmers expressed concerns about feeling isolated when making decisions about the pulse products they produce. He also noted that the needs of farmers for value chain mapping were assessed, relevant stakeholders were identified, and the necessary mapping was conducted and documented.

The project coordinator informant reported that there were production constraints, with pulse crop productivity found to be 19/ha. This indicated a productivity issue stemming from limited access to improved seeds and fertilizer, as well as challenges with pests and disease. In addition to low productivity, farmers were experiencing post-harvest losses of 30-40% of their yield. Market issues were also prevalent, with brokers playing a significant role in setting prices for agricultural products. Farmers struggled to find buyers for their goods, impacting both commodity prices and overall income. The informant also noted quality issues with pulse crops. Farmers were inadvertently mixing animal products with their crops and harvesting without considering moisture content. Additional problems included a mix of product varieties, broken seeds and grains, storage issues, inconsistent crop sizes, and weevil infestations. Following an assessment of these problems, a value chain mapping exercise was conducted.

The project's log frame shows that the means of verification of this output is a report. To check the achievement of this output indicator, the consultant has received and read a 26-page report comprising a cover page, table of contents, and references. The report comprises a detailed analysis and mapping of the pulse value chain in six woredas of East Shewa and Arsi Zones. It covers the objectives of the project and the report itself, a description of the project sites, and an overview of land use and major crops in each woreda. It outlines the major sources of inputs, income, markets, and credit services in the project area. Furthermore, the report provides an in-depth examination of the pulse value chain, including key actors such as input suppliers, farmers, assemblers, aggregators, unions, and consumers, as well as their relationships. It identifies major challenges in the value chain and presents intervention areas, focusing on farming practices, technologies, market linkages, and stakeholder engagement. The report also addresses cross-cutting issues like gender, climate-smart agriculture, and the use of digital technologies.

The report comprehensively covers the pulse value chain and the systematic identification of key actors and their interrelations. It effectively highlights the challenges faced by the sector and provides targeted recommendations for improving productivity, market access, and value chain efficiency. The inclusion of cross-cutting issues, such as gender and climate-smart practices, adds depth and relevance to the analysis. In addition, the emphasis on both domestic and international market opportunities demonstrates a forward-looking perspective. Overall, the report provides a strong foundation for designing interventions to strengthen the pulse VC.

Yet, the report has limitations that need attention. While it focuses on specific woredas, this narrow scope may not fully reflect the regional or national dynamics of the pulse value chain. In addition, it lacks detailed quantitative data, such as production statistics or financial analysis, and does not include a comprehensive monitoring and evaluation framework to track the progress of interventions. Although challenges are identified, the feasibility of implementing proposed solutions is not sufficiently explored, limiting the practicality of the recommendations. Furthermore, the report is missing key components, such as a cost-benefit analysis and an in-depth stakeholder analysis to better understand the roles and interests of value chain actors. The absence of an environmental and social impact assessment, as well as considerations for scalability and sustainability, further constrains the report's effectiveness. Limited exploration of global market trends and Ethiopia's competitive positioning in international markets also leaves a critical gap. Addressing these omissions would significantly enhance the report's utility for informed decision-making and successful intervention planning.

B. Output 1.2: Most impactful practices (MIPs) identified and validated

Identifying and validating the most impactful agricultural practices is essential for driving sustainable growth in the agricultural sector. These practices have the potential to increase productivity, improve food security, and enhance the resilience of farming systems to climate change. By focusing on evidence-based methods, farmers

can adopt technologies and strategies that maximize yields while minimizing environmental impact. In addition, validation through scientific trials or field assessments ensures that these practices are both effective and adaptable to local conditions. Aware of this fact, information collected from project staff shows that the PULSE project has identified and validated five MIPs, including the introduction of improved seed varieties, the application of recommended fertilizer rates, the introduction of new technology (rhizobium bacteria), integrated pest management practices, and improved agronomic practices. Improved basic seeds from Melkasa and Kulumsa Agricultural Research Centers were identified and evaluated on-farm, and the selection was based on yield potential, disease resistance, market demand, and ecological adaptation.

The project has introduced rhizobium bacteria to increase the number of nitrogen-fixing bacteria in the soil. This technology was new for farmers in the project areas. Farmers were advised to add rhizobia during planting time by mixing it with seeds. The project monitoring report indicates that a yield difference was observed between rhizobia-treated and untreated practices. Due to the rhizobia inoculation in the soil (demonstration fields), the productivity of pulses has increased from 27Q/ha (traditional practice) to 31.5 Q/ha (rhizobia inoculation), showing a crop yield improvement of 17% from local practices. FGD farmers in Adami Tulu- Jido- Kombolcha woredas have also confirmed that the use of rhizobium bacteria has improved the productivity of their pulse crops.

According to the project's field coordinator and document review, Integrated Pest Management (IPM) is another key focus of the project. It is considered one of the most impactful practices for reducing environmental pollution and minimizing the risk of human health contamination caused by excessive pesticide use while also improving the yield and quality of pulses. IPM emphasizes prevention, monitoring, and control to reduce reliance on chemical pesticides while effectively managing pests. The project recommends using hand-weeding, cultivation, and chemical applications as part of an IPM approach. Farmers were advised to use pesticides only when necessary and in a targeted manner to minimize their environmental impact. Information gathered from the project and field coordinators indicates that farmers were encouraged to use pesticides when other techniques are impractical, such as when hand cultivation and weeding are not feasible. In such contexts, farmers have used a chemical by the local name of "*Bukisa*" to control pests.

The application of improved agronomic practices is the other element of MIP where the project has given much emphasis to enhance agricultural productivity while maintaining sustainability. They are essential for sustainable and efficient farming, encompassing crop rotation and diversification, and, integrated nutrient management. These practices also include adopting pest control strategies like IPM, using improved seed varieties, and enhancing soil health through techniques like cover cropping and bio-fertilizers. Indeed, improved agronomic practices encompass all MIPs stated above. In this regard, information collected from field-level project staff and FGD with farmers shows that the project has applied most of these practices, including land preparation and tillage practice, crop rotation, fertilizer rate and time of application, sowing date, seed rate, crop rotation and diversification, row spacing, use of improved seeds and use of bio-fertilizers.

Yet, a survey conducted with project participants revealed that 203 (86.4%) of the respondents claimed to be familiar with the MIPs identified and validated by the project. The remaining 32 (13.6%) reported that they were not aware of these practices. This discrepancy may suggest challenges such as limited access to information, barriers to participation, or variations in engagement among specific stakeholder groups. Closing this knowledge gap is crucial for ensuring inclusivity and a consistent understanding of the MIPs, ultimately enhancing the project's overall impact. From these figures we can learn that the majority of farmers are familiar with MIPs. Those project beneficiaries who answered affirmatively were asked to specify which MIPs they were familiar with. The results, as depicted in Table 5 below, indicate that 196 (96.6%), 186 (91.6%), and 169 (83.3.3%) of the respondents know about fertilizer application, improved agronomic practices, and improved seed varieties, respectively. While 135(66.5%) of the respondents know about integrated pest management, 80 (39.4%) know about the introduced technology (rhizobium bacteria).

MIPs*	Woreda						Total	
	Adami Tullu Jido Kombolcha		Lemmu Bilbilo		Tiyo		No	%
	No.	%	No	%	No	%		
Improved seed varieties	98	81.7	30	93.8	41	80.4	169	83.3
Fertilizer application	118	98.3	29	90.6	49	96.1	196	96.6
Improved agronomic practices	111	92.5	26	81.3	49	96.1	186	91.6
Integrated pest management	95	79.2	16	50.0	24	47.1	135	66.5
Introduced technology (rhizobium bacteria)	43	35.8	13	40.6	24	47.1	80	39.4
Others (specify)	3	2.5	-	-	-	-	3	1.5
Total	120	100.0	32	100.0	51	100.0	203	100.0

Table 5: Distribution of respondents by their knowledge of MIPs

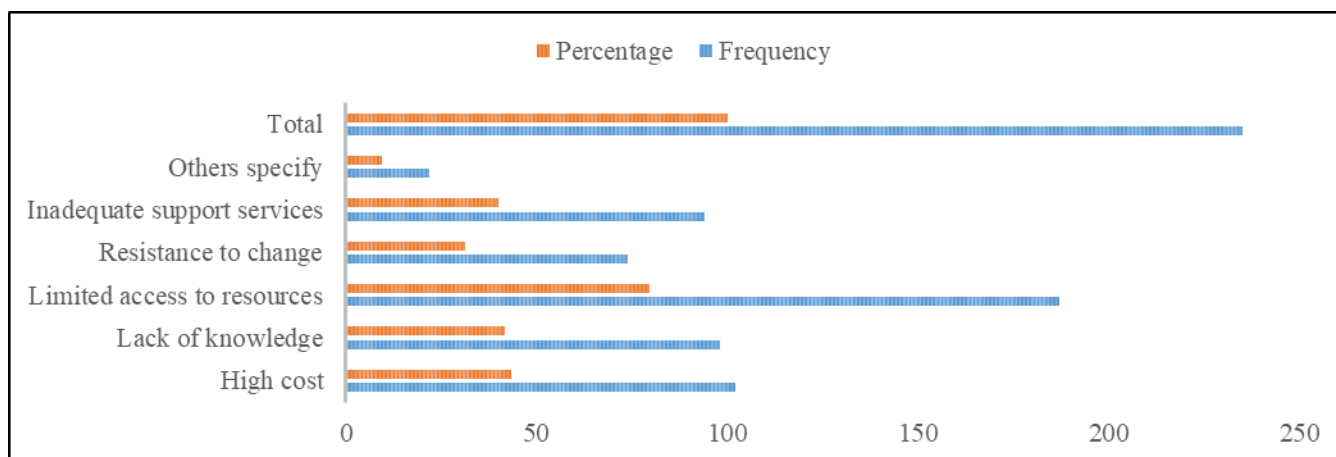
Source: Field survey, March 2025.

* Multiple response question, % of sum may exceed 100%

A follow-up question was posed to respondents regarding whether they implement the identified and validated MIPs on their farms. Out of the total respondents, 194 (82.6%) stated that they do apply the MIPs on their farms. However, 41 (17.4%) of the respondents mentioned that they do not use any of the MIPs. Discussions with farmers in the FGD reveal that this lack of application is primarily due to limited access to improved seed varieties and fertilizer. Consultants also observed that not all project beneficiaries received full package services. Full package services are only provided to those organized under primary cooperatives and working in clusters, such as those in Annano Shura kebele of Admi Tulu Jodo Kombolcha woreda. In contrast, farmers in Oda Anshura kebele in the same woreda only receive training without other support packages. Therefore, the identification and validation of MIPs do not guarantee their application unless important conditions are met.

Respondents were further asked to identify the barriers hindering the adoption of MIPs on their farms. As shown in Figure 2 below, limited access to resources (such as improved seeds, fertilizers, credit, etc.), high cost of production inputs, and lack of knowledge were identified as the three major barriers, confirmed by 187 (79.6%), 102 (43.4%), and 98(41.7%) of the respondents respectively. Inadequate support services and resistance to change are also barriers to the adoption of MIPs, confirmed by 94(40%) and 74(31.5%) of the survey participants.

Figure 2: Distribution of respondents by barriers hindering the adoption of MIPs*



Source: Field survey, March 2025.

* Multiple response question, % of sum may exceed 100%

C. Output 1.3: 6500 farmers trained on most impactful practices

As stated by project field staff, smallholders face challenges such as limited access to information, outdated techniques, and environmental pressures, which can constrain their efficiency and output. Therefore, training farmers on the MIPs has been deemed vital by the PULSE project for improving agricultural productivity, income, and livelihood diversification. The idea was that by equipping farmers with knowledge about impactful practices—such as effective land selection and soil management, use of fertilizer and improved seeds, pest control, and crop rotation—farmers can optimize their resources and adopt methods that enhance yields and reduce post-harvest losses. Farmers' training is also believed to help farmers adapt to climate change by introducing climate-smart practices that safeguard productivity and protect the environment.

Data collected from farmers and project staff show that training on full packages was provided to farmers in the two zones and six Woredas. Trainees included farmers (70% male and 30% female), Development Agents (DAs), and woreda experts. Training of trainers (ToT) sessions were also organized for DAs and experts. The participation of woreda experts and DAs in the training sessions aimed to address production gaps and provide technical support to farmers. Training farmers on a full package involved a comprehensive approach to empowering them with the skills, knowledge, and tools to enhance agricultural productivity sustainably. According to FGD with farmers and KII with project field staff, farmers were trained on various topics ranging from land selection to post-harvest handling. Based on the seasons of agricultural activities, the field coordinator mentioned that training was provided four times a year - pre-sowing, planting, crop management, and harvest and postharvest handling.

Both the field-level project staff and farmers explained that during the pre-sowing phase, the training focused on identifying land suitable for pulses based on the agroecology (highland vs. lowland), selecting the right crop varieties, preparing the land, and knowing the plowing time and frequency. In the planting or sowing phase, farmers learned about proper timing, seed and fertilizer application rate, and optimizing planting (seed spacing, sowing techniques, seed quality, timely planting, and planting patterns). In this regard, the project field coordinator stated, "Farmers, for instance, used to sow seeds using the broadcast method, but we provided training to use row planting. Regarding seed rate, farmers used to use 3Q/ha, but we trained them to use the research-recommended rate of 1.5-2Q/ha. We also trained farmers to abandon too narrow spacing and encourage them to use wider spacing with the recommended spacing of 40 cm between rows and 10 cm between plants."

Farmers reported that during the crop management phase of the training, they were taught how to control the three enemies of crops - diseases, pests, and weeds - through Integrated Pest Management (IPM), nutrient application, weed management, and monitoring crop health. They received training on cultivation, hand weeding, chemical

usage, and biological control methods. Farmers also learned about improving soil health through fertilization and crop rotation. In the post-harvest stage, farmers were trained in harvesting methods to minimize damage, proper storage and preservation techniques to reduce losses, value addition through processing, and marketing strategies to improve market access. The project field coordinator noted, *"Farmers often faced problems with harvesting overripe crops, resulting in a 20% harvest loss. To address this problem, we trained farmers to harvest pulses when the seed is 50% black and 50% green."* Furthermore, farmers were educated on climate-smart practices, integrated pest management (IPM), and sustainable land use to help them adapt to changing environmental conditions. The project coordinator also emphasized that these trainings aim to provide farmers with a comprehensive understanding of agricultural practices, leading to increased productivity, sustainable resource use, and improved livelihoods.

Information collected from farmers and field-level project staff indicates that training was accompanied by field days. Field days have greatly enhanced learning and the practical application of knowledge. According to the field-level project staff, while training provided theoretical knowledge, field days complement this by offering farm-level demonstrations and interactive experiences for farmers. These same informants also explained that, to facilitate this process, the best-performing farmers, who were beneficiaries of the full package (including training, improved seeds, fertilizer, market linkages, and others), were identified for a field day visit to their farms. Other farmers, officials from the agriculture office, extension workers, bulk buyers, and cooperative unions visit these

	Woreda			Total	
	Adami Tullu	Lemmu			

farms. This platform has created a discussion forum for farmers and other stakeholders to address their concerns and strengths. The goal was to help farmers share knowledge, encourage collaboration, and promote the adoption of sustainable and effective MIPs.

Regarding training, surveyed respondents were asked if they had received training on MIPs. Out of the project beneficiaries, 188 (80%) stated that they had received training on MIPs, while 47 (20%) did not receive any training. Despite project staff reporting that they provided training to all beneficiaries, survey results indicate that 20% did not receive any training. This discrepancy could stem from misunderstandings between project staff and beneficiaries. Some beneficiaries may not have recognized brief or informal sessions as training, while staff may have counted those interactions. Additionally, some beneficiaries may have forgotten about training sessions, especially if they were not lengthy. Others may not have been well-informed about the training in the first place. Miscommunication could have led to some beneficiaries missing sessions without realizing it. Respondents who received MIP training were asked about the specific practices they were trained in. The survey indicates that 180 (95.7%) and 160 (85.1%) of the respondents reported receiving training on the application of fertilizer and improved agronomic practices, respectively. The findings further shows, 158 (84%) and 144 (76.6%) of the survey participants received training on improved seed varieties and integrated pest management, respectively. About 82 (43.6%) of the survey respondents confirmed receiving training on rhizobium bacteria (see Table 6).

Table 6: Distribution of respondents by the type of training they received on MIPs

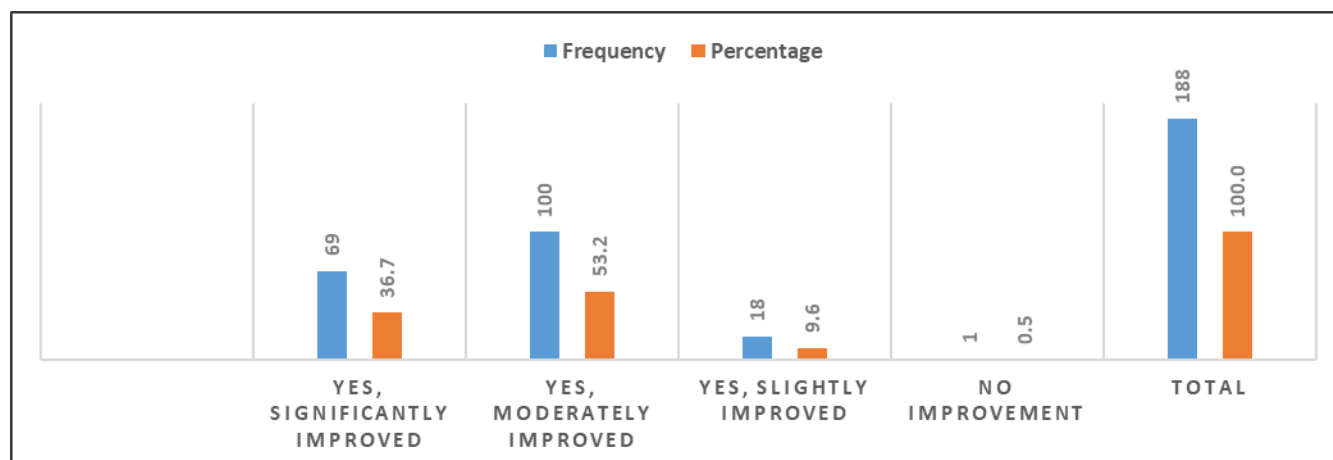
MIPs*	Jido Kombolcha		Bilbilo		Tiyo		No	%
	No.	%	No	%	No	%		
Improved seed varieties	90	81.1	31	100.0	37	80.4	158	84.0
Fertilizer application	107	96.4	28	90.3	45	97.8	180	95.7
Improved agronomic practices	96	86.5	25	80.6	39	84.8	160	85.1
Integrated pest management	98	88.3	17	54.8	29	63.0	144	76.6
Introduced technology (rhizobium bacteria)	44	39.6	14	45.2	24	52.2	82	43.6
Total	111	100.0	31	100.0	46	100.0	188	100.0

Source: Field survey, March 2025.

* Multiple response question, % of sum may exceed 100%

Evaluating the contribution of training in improving production techniques is essential for assessing the effectiveness of agricultural interventions. It helps determine whether farmers are successfully adopting the practices taught, such as the use of improved seed varieties, optimized planting methods, sustainable soil management, etc. This assessment can highlight how training translates into tangible changes in farming practices, leading to enhanced productivity, reduced resource wastage, and better environmental outcomes. It also identifies gaps in the training program and areas for improvement, ensuring that future efforts are more targeted and impactful. As such, respondents who took training on the different types of MIPs were asked if training on the MIPs improved their pulse production techniques or not. Consequently, nearly all respondents (99.5%) acknowledged that the training positively impacted their production techniques to varying extents. Specifically, 53.2% reported moderate improvement, 36.7% significant improvement, and 9.6% slight improvement, highlighting the effectiveness of the training program (see figure 3 below).

Figure 3: Distribution of respondents based on their perception of training in improving production techniques



Source: Field survey, March 2025.

When it comes to the performance of output indicator 3.3, the project aimed to provide training for 6,500 farmers, 30% of whom were women. According to the EUCORD terminal report and training report, 6,500 farmers received training on MIPs in the project targeted woredas. The project successfully achieved its goal of training 6,500 farmers, with 30% being women, as evidenced by the EUCORD terminal report and training documentation. All the 6,500 target farmers in the target woredas received training on MIPs, reaching a 100% success rate against the set target. This success underscores the project's strong outreach, organization, and commitment to providing farmers with essential knowledge and skills. By meeting the full target, the project has significantly enhanced farmers' capacity to adopt improved agricultural practices, ultimately increasing

productivity and promoting sustainable farming methods in the region. The inclusion of women in the training, while meeting the target, represents an important step towards gender inclusivity.

Output 1.4: 12 Demonstrations fields conducted on most impactful practices

The literature shows that demonstration fields play a crucial role in promoting the adoption of the MIPs by providing farmers with practical, hands-on learning opportunities. The demonstration fields serve as real-life examples where innovative techniques and technologies are applied, allowing farmers to observe the benefits firsthand. By showcasing practices such as the use of high-yield improved seeds, soil fertility management, and IPM, demonstration fields help bridge the gap between theoretical knowledge and practical implementation. They also create a platform for knowledge-sharing among farmers, researchers, and extension agents, fostering collaboration and trust. Through these demonstrations, farmers gain confidence in adopting proven practices, leading to improved productivity, sustainability, and livelihoods.

Demonstrations were a key component of the project for testing the viability of MIPs. In this regard, information collected from field level project staff shows that all MIPs were applied and tested on demonstrations. In the highland and lowland agro ecological zones, demonstrations were conducted over three years, focusing on three aspects: selection of improved seed varieties, fertilizer use, and crop management. The field coordinator in highland project operation areas reported that demonstrations aimed to compare the productivity of different seed varieties. For example, in the first year, a demonstration in the highland areas compared three faba bean seed varieties: Numan, Tumsa, and Gebelcho (local variety). Numan proved to be the most productive and has been scaled up since. Similarly, field pea varieties like Jeldu, Bilalo, and other local varieties were tested, with Jeldu performing well. Jeldu was recommended for scaling up, but due to difficulties in obtaining the seeds, Bilalo was scaled up instead, providing good results. From this, the consultant learned that experimenting and demonstrating improved seed varieties was a common practice in the project. The project coordinator mentioned that 12 demonstration fields were conducted each year (6 in each site), totaling 36 demonstration fields over three years.

Information collected from FGD participant farmers and KII with project staff shows that demonstration fields provide a space for farmers to ask questions, share experiences, and learn together. Having agricultural experts or trainers present during these visits added an extra layer of guidance, as they can explain practices in detail and address specific concerns. The demonstration field visits also created opportunities for peer learning and networking among farmers, which ultimately helped promote the widespread adoption of productive farming methods. In a survey, respondents were asked if they had visited any of the demonstration fields organized by MIPs. Out of the total sample of beneficiaries, 180 (76.6%) had visited at least one of the demonstration fields set up by the project. Among those who visited, 111 (61.7%) found the demonstration field very useful, while 63 (35%) found it useful for their agricultural practices. However, 55 (23.4%) of project beneficiaries did not visit any of the demonstration fields. The fact that 23.4% of project beneficiaries did not visit demonstration fields can be attributed to key issues such as lack of awareness about the visits, logistical challenges like physical distance and inadequate transportation, and scheduling conflicts that made participation difficult.

As indicated in the project log frame, the project aimed to conduct 12 on-farm demonstrations annually. The means of verifying the performance of this output is the EUCORD demonstration report. The consultant thus reviewed the terminal report of EUCORD and discovered that the project has carried out 36 on-farm demonstrations over the course of three years. With a yearly target of 12 demonstrations set in the log frame, the project fully met its planned output, achieving a 100% performance rate. This success underscores the project's commitment to empowering farmers through practical demonstrations, which showcase modern inputs and improved farming practices. These efforts play a crucial role in enhancing farmers' knowledge, productivity, and adoption of innovative techniques, ultimately contributing to the overall success and long-term agricultural development of the project.

Summary of performance of output indicators 1.1, 1.2, 1.3, and 1.4.

Table 7 provides a summary of the project's performance across the four key output indicators. Each indicator reflects the progress and achievements made during the project's implementation. The table highlights the planned targets, actual accomplishments, and performance rates, demonstrating the project's overall success in meeting its objectives.

Table 7: The target and achieved values of output indicators 1.1., 1.2, 1.3, & 1.4

S.No	Output Indicator	Target	Achieved	End line Success Rate
1.1	Pulse value chain mapped	Report	Report	NA
1.2	Most Impactful Practices (MIPs) identified and validated (Solution briefs for each targeted pulse value chain)	Printed extension material	Printed extension material	NA
1.3	6500 Farmers trained on most impactful practices	6,500	6,500	100%
1.4	Demonstrations fields conducted on most impactful practices	36	36	100%

Source: EUCORD Report

Performance of Outcome 1: Improved Productivity of Pulse Crops by 30%

The four outputs mentioned above (output 1.1-1.4) are expected to increase the productivity of pulse crops by 30%. Survey respondents were asked if their pulse crop productivity had increased following their participation in the PULSE project. Out of the respondents, 186 (79.1%) reported an increase in pulse crop productivity since joining the project. However, 49 (20.9%) stated that they did not see any improvement in pulse crop productivity after participating in the project. The disparity in reported productivity improvements among participants in the PULSE project could be attributed to various factors. Differences in the adoption and implementation of the project's recommended practices play a significant role. Some beneficiaries may have fully implemented the techniques, while others may not have been able to do so due to limited resources, understanding, or access to inputs like improved seeds or fertilizers. For instance, only some improved seed growers received the complete project package compared to the majority. Variations in environmental conditions, such as soil fertility or pest prevalence, could also impact outcomes. Women FGD participants, for example in Adami Tullu Jido Kombolcha woreda reported that they have got training, but did not receive any inputs. Furthermore, differences in training quality, coverage, or relevance to specific farming contexts may leave some participants less prepared to achieve the desired results.

Beneficiaries who reported an improvement in pulse crop yield were then asked to provide information on the productivity of pulse crops both before and after the project intervention. The results of this data collection can be seen in Figure 4. According to the figure, the average productivity of pulse crops was 14 Qt/ha before the project intervention. This number increased to 26 Qt/ha after participating in the PULSE project, representing an 85.7% increase in productivity. This post-intervention productivity of 26 Qt/ha aligns with the project's reported figures. However, there is a discrepancy between the survey results and the project's benchmarks. According to the information collected from a project coordinator, The project set a benchmark of 19 Qt/ha for pulse productivity at the start of the intervention, while the survey found a pre-project productivity of 14 Qt/ha. This difference could be attributed to variations in data collection methods, sample selection, or reference periods used. The project may have based its benchmark on broader secondary data or estimated averages across larger regions or populations, while the survey reflects more localized and specific conditions. Other factors, such as farmer practices, environmental conditions, or input availability in the surveyed areas compared to the project scope, could also explain this variation. Despite such variations, the consultant considered the 14Qt/ha as a benchmark before the project to evaluate the performance of the project on productivity.

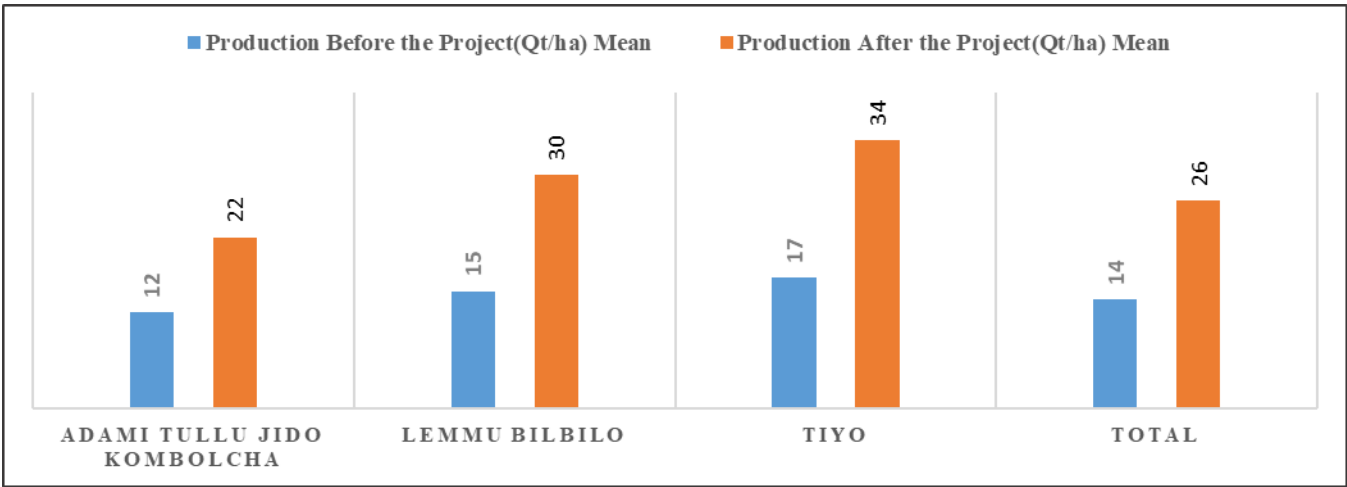
An 85.7% increase in productivity, reaching 26Qt/ha after program participation, is a significant achievement that reflects the positive impact of the interventions under the PULSE project. This result indicates that the training, improved practices, and resources provided to the farmers were effective in addressing key constraints in pulse crop production. It demonstrates the successful adoption of modern farming techniques, such as better seed

varieties, nutrient management, pest control, and optimized planting methods, which likely contributed to higher

	Woreda			Total	
	Adami Tulu Jido Kombolcha	Lemmu Bilbilo	Tiyo		

yields.

Figure 4: Average productivity of pulse crops before and after the PULSE project



Source: Field survey, March 2025.

While the increase in productivity is impressive, it would be helpful to analyze the factors driving this improvement, such as environmental conditions, access to inputs, and differences in adoption rates among farmers. Understanding these factors ensures that success can be sustained and replicated. For 87.1% of the respondents, fertilizer application is the major factor for improvement, while for 84.4% of the cases, the utilization of improved seed varieties is a contributing factor. Similarly, for 78% and 55.4% of the respondents, the contributing factors for productivity improvement are the utilization of improved agronomic practices and introduced technologies (rhizobium bacteria), respectively.

Table 8: Distribution of respondents by factors contributing to an increase in productivity

MIPs*	No.	%	No	%	No	%	No	%
Improved seed varieties	81	77.1	32	100.0	44	89.8	157	84.4
Fertilizer application	85	81.0	32	100.0	45	91.8	162	87.1
Improved agronomic practices	84	80.0	18	56.3	43	87.8	145	78.0
Integrated pest management	28	26.7	16	50.0	31	63.3	75	40.3
Introduced technology (rhizobium bacteria)	50	47.6	19	59.4	34	69.4	103	55.4
Others (specify)	7	6.7	-	-	-	-	7	3.8
Total	105	100.0	32	100.0	49	100.0	186	100.0

Source: Field survey, March 2025.

* Multiple response question, % of sum may exceed 100%

Respondents were asked how the increase in productivity of pulse crops has affected their overall income. Out of 235 respondents, 200 (85%) reported that the increase in productivity of pulse crops has improved their overall income to varying degrees. Specifically, 100 (42.6%) of the respondents said that the productivity increment of pulse crops has moderately affected their overall income. About 22 (9.4%) of the respondents stated that the increment in crop productivity has slightly improved their overall income. However, 33 (14%) of survey participants reported no change in their income due to the improved productivity of pulse crops.

The PULSE project aimed at improving the productivity of pulse crops and planned to increase productivity by 30%. EUCORD benchmarked 19 Qt/ha before the project as a baseline and was able to reach 26 Qt/ha at the end of the project. This shows that the project increased productivity by 120%, with a success rate of 300%, demonstrating a very great success. The survey result, on the other hand, shows that the productivity of pulse crops before the project was found to be 14Qt/ha. The end of project productivity was 26 Qt/ha. Considering the survey results, the increase in yield is 185.7%. The end-line success rate is found to be 519%. A success rate of 519% represents an exceptional level of achievement, far exceeding the initial goals or expectations of the project. This figure highlights remarkable progress and demonstrates the significant impact and effectiveness of the efforts undertaken. Table 9 below shows the target, achieved, and success rates of outcome indicator 1.

Table 9: Target, achieved and success rate values of improvement in productivity of pulse crops

S.No	Outcome Indicator	Target	Achieved	End line Success Rate
1	The productivity of pulse crops in the intervention area improved by 30%	30%	185.7%	519%

II. Outcome 2: Farmers' access to agricultural inputs and finance improved to cultivate selected pulse crops on 1500 ha

A. Output 2.1. Seed multiplication and distribution of promising pulse varieties conducted to distribute 20 tons of certified seeds

Seed multiplication and distribution of promising pulse varieties are essential for enhancing agricultural productivity and ensuring food security. In pursuit of this goal, the PULSE project has focused on multiplying and distributing different improved seed varieties of pulses in the project areas- both highland and lowland. As reported by the field-level project staff, this process involved several stages. The first stage was identifying pulse seed varieties with desirable traits, such as high yield, disease resistance, and adaptability to local conditions, and sourcing them from Melkasa and Kulumsa agricultural research centers. The second stage involved scaling up the production of these varieties through specialized seed multiplication fields. According to the feedback from farmers and project field staff, seed multiplication was carried out by farmers organized under primary cooperatives and unions certified to produce seeds. The third stage was the distribution of improved seeds through

farmers' unions and seed connection networks to farmers. Seed connection networks are systems where improved seeds produced in one woreda are distributed to other woredas through channels created by the project.

Survey data indicates that 49.8% of the respondents have participated in seed multiplication and distribution. Qualitative data collected from farmers and field-level project coordinators indicates that the project has facilitated cluster-based contract farming, bringing farmers together in geographically proximate groups. This enables them to work collaboratively and achieve greater efficiency. Farmers within a cluster share resources, allowing for production cost reduction and improved productivity. Through contractual agreements with unions, farmers have secured a guaranteed market for their produce, minimizing financial risks. The project staff stated that this approach has facilitated better market integration and access, as clusters have collectively negotiated prices and accessed larger markets. During focus group discussions, farmers in Adami Tulu-Jido Kombolcha Woreda also discussed producing improved seed varieties through contractual farming arrangements with the Meki-Batu cooperative union. They reported that the union provided them with inputs such as improved seeds of haricot beans (SER 119 and SER 125), fertilizer, and technical support to ensure the desired standards were met. In return, the farmers were obligated to supply all that they produced under the stipulated conditions.

The head of the Meki-Batu cooperative union and agronomist reported that the union has been involved in contract farming with farmers supported by the PULSE project. They mentioned that while the union has participated in the production of various cereals through contract farming, the PULSE project specifically facilitated the production of haricot beans through contract farming. These informants noted that the union provided farmers with necessary resources such as high-quality seeds and fertilizers to support optimal cultivation. In addition, they offered technical guidance on farming practices to help farmers meet agreed quality and quantity standards. The Union also managed logistics, including transportation and storage of harvested crops, to ensure efficient delivery to the Union. Informants further explained that the Union was involved in certifying improved seeds produced by farmers. Farmers first obtained basic seeds and produced the first generation of certified (C1) seeds, which were then certified by the Union. C1 seeds were sold to farmers who produced C2 seeds, typically used for further seed multiplication or direct commercial crop production. These certification processes were controlled by the union, working closely with farmers in this process.

Cluster-based improved seed multiplication and distribution were also practiced in Lemmu Bilbilo woreda of Arsi Zone. According to information collected from FGD participants, farmers multiplying improved seeds are organized under primary cooperatives and produce faba beans and field peas through cluster-based farming. However, unlike the contractual farming practice in Adami-Tulu Jido Kombolcha woreda, these farmers did not have access to necessary inputs and credit from any bulk buyers or unions. Market linkages were not established for them. They sought improved seeds independently and even sold their improved seed products to other farmers in the open market. Member farmers of this cooperative sold their products to the cooperative, which then sold them to other farmers and shared the dividends with the farmers. Participant farmers in the FGD in Tiyo woreda also mentioned that they have been growing pulse crops, individually focusing on grain production rather than seeds. They received training from the project and accessed improved seeds through unions/cooperatives in different woredas by paying cash. They did not get access to any additional services from the project. They also noted that while they did not face market issues, they lacked connections to bulk buyers.

The varying approaches to the same project can lead to significant disparities in outcomes for farmers. In areas like Adami-Tulu Jido Kombolcha woreda, where comprehensive support such as input provision, technical guidance, and market linkages are available, farmers are likely to achieve higher productivity, better income, and stronger market integration. Conversely, in areas like Lemmu Bilbilo and Tiyo Woredas, where such support is limited or absent, farmers face challenges in accessing resources and markets, which can hinder their productivity and economic gains. This inconsistency can create inequalities among farmers and limit the overall effectiveness and impact of the project. Indeed, the project did not aim to cover all in facilitation access to agricultural inputs.

The project's log frame indicated a plan to multiply and distribute 20 tons of certified and promising pulse varieties annually. However, the project's terminal report revealed that it was able to exceed this goal by distributing 170 tons of certified and promising pulse seed varieties. The project has shown exceptional

performance in achieving its objectives. This not only exceeded expectations but also showcased the project's efficiency, dedication, and ability to scale its operations to meet demand. By surpassing the target and distributing 170 tons, the project delivered 750% of the planned amount, likely leading to improved pulse productivity and meeting farmers' needs for high-quality seeds.

B. Output 2.2: Farmers got access to certified seeds that enable them to produce pulses on 1500 ha

The second output measure in the second outcome indicator of the project is the distribution of certified seeds to farmers. In this regard, survey respondents were asked if they had access to improved seeds due to the pulse project. Out of the respondents, 134 (57%) had access to improved seed varieties, while 101 (43%) did not. There is variation in different woredas. For example, in Lemmu Bilbilo woreda, 97% of the respondents had access to improved seeds. Information collected from FGD participants shows that this is because the respondents are all members of primary cooperatives involved in seed multiplication. In contrast, about 53 (77.9%) of the respondents in Tiyo had no access to improved seeds, despite receiving the training. In Adami-Tulu Jodo Kombolcha woreda, approximately 65% of the survey respondents had access to improved seeds. All farmers in Anano Shisho Kebele who were engaged in contract farming with the Meki-Batu union had access to improved seeds. However, those located in Oda Anshura kebele of Adami Tulu Woreda did not have access to improved seeds. From these data, the consultant learns that membership in cooperatives and contract farming agreements are key factors that influence access to improved seed varieties.

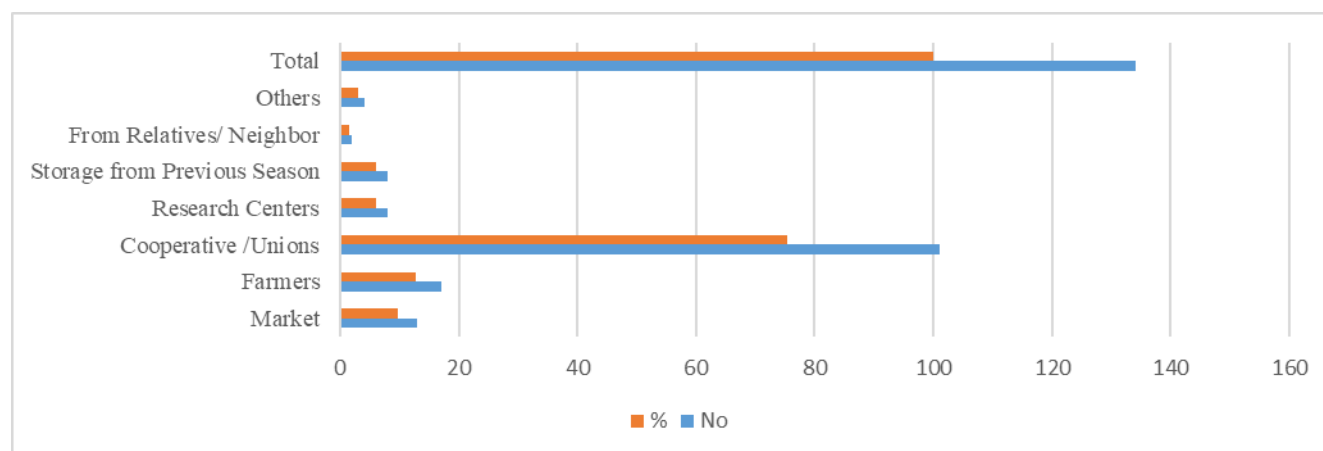
Table 10: Distribution of respondents by access to improved seeds

Access to certified seeds?	Adami-Tulu Jido Kombolcha		Lemmu Bilbilo		Tiyo		Total	
	No.	%	No.	%	No.	%	No	%
Yes	86	64.7	33	97.1	15	22.1	134.0	57.0
No	47	35.3	1	2.9	53	77.9	101.0	43.0
Total	133	100.0	34	100.0	68	100.0	235.0	100.0

Source: Field survey, March 2025.

Beneficiaries who had access to improved seeds were asked about the sources of their improved seeds. As shown in Figure 5 below, the major source of improved seeds is agricultural cooperatives or unions, which are important suppliers of agricultural inputs for farmers. Farmers and the market are also important sources of improved seeds, as confirmed by 12.7% and 9.7% of the respondents, respectively (see Figure 5). Still, 6% of the farmers use storage from the previous season. Reliance on stored seeds from the previous season, as reported by 6% of farmers, can negatively affect productivity. These seeds might suffer from reduced quality due to improper storage conditions, loss of vigor, or contamination by pests and diseases. Such factors could lead to lower germination rates, weaker plants, and ultimately reduced yields.

Figure 5: Distribution of respondents by sources of improved seeds



Source: Field survey, March 2025.

Lack of access to improved seed varieties has become a concern for those who did not receive them. During FGD, farmers in Oda Anshura kebele highlighted the issue of limited access to improved seeds as follows:

We received training from the project on MIPs. Applying the knowledge gained during the training, we have successfully planted local seed varieties and enhanced the production of our pulse crops. Access to improved seed varieties could greatly boost our productivity. However, when we requested improved seeds from the project staff, they informed us that none were available. We have land available, and if we could receive improved seeds and fertilizer on a credit basis (if possible) or in cash if not, we believe we can significantly enhance agricultural productivity and achieve food security.

Similarly, participants in the FGD in Tiyo woreda emphasized:

We had received training from the project; however, we were unable to access improved seeds. As a result, farmers who had the resources went to neighboring woredas to purchase and plant improved seeds, leading to increased productivity. On the other hand, farmers without access to improved seeds were unable to improve their productivity.

The narratives above emphasize that although project training enhanced farmers' knowledge, their limited access to improved seed varieties hindered them from fully utilizing the training. Farmers who had financial resources were able to obtain seeds from neighboring areas and increase productivity, leading to disparities between them and those who lacked such access. This underscores the importance of providing comprehensive support that combines training with equitable access to essential agricultural inputs, such as improved seeds.

The PULSE project planned to distribute 20 tons of improved seeds to farmers. The log frame also indicates that EUCORD reports, copies of invoices, and physical verification are the means of verification for this indicator. EUCORD's final year report indicates that the project was able to distribute 170 tons of improved seeds to target farmers. This shows that the project was able to achieve its plan by 750%. Surpassing the original targets by 750% showcases remarkable effectiveness, dedication, and possibly innovative approaches in executing the project's objectives.

C. Output 2.3: 30% of targeted farmers accessed short-term agricultural credit to cultivate pulse using improved production practices

Short-term agricultural credit plays a crucial role in helping farmers adopt improved production practices for cultivating pulses. It provides farmers with the necessary financial resources to invest in high-quality seeds,

fertilizers, and other inputs that can enhance productivity. In addition, access to credit allows farmers to implement modern techniques, such as better irrigation systems and pest management, which can significantly improve yields. By bridging the gap between planting and harvesting, short-term credit ensures that farmers can focus on optimizing their practices without immediate financial constraints, ultimately contributing to increased income and food security. In line with this goal, the PULSE project aims to facilitate access to short-term agricultural credit for 30% of project beneficiary farmers to cultivate pulses using MIPs. In terms of access to short-term credit, survey households were asked if they had access to it or not. As shown in the table below, 35% of the survey respondents had access to short-term credit, while the majority, 65%, did not have any access to short-term credit.

Table 1: Distribution of respondents by access to short-term credit

Short-term credit?	Survey Woreda						Total	
	Adami Tullu Jido Kombolcha		Lemmu Bilbilo		Tiyo		No.	%
	No.	%	No.	%	No.	%		
Yes	67	50.4	14	41.2	1	1.5	82	34.9
No	66	49.6	20	58.8	67	98.5	153	65.1
Total	133	100.0	34	100.0	68	100.0	235	100.0

Source: Field survey, March 2025.

The survey results also show that the major sources of short-term credit are unions. Discussions with farmers and project field staff indicate that short-term credit is provided in kind through contract farming arrangements with cooperative unions. Contract farming has provided a mutually beneficial arrangement for farmers and unions. According to interviews with the head and agronomist of the Meki-Batu cooperative union, farmers have gained access to financial resources through this model alongside pre-established agreements with unions that include provisions for inputs, training, and guaranteed markets for their improved pulse seeds. According to these informants, this arrangement minimizes financial risks for farmers, as the credit is typically tied to future sales, ensuring repayment upon harvest. It also encourages farmers to adopt improved production practices to meet buyer standards. For the union, it has secured a consistent supply of high-quality improved seeds of pulses. This system has significantly enhanced farmers' productivity and market access while fostering stronger value chain relationships.

However, as shown in the table above, although the project meets its goal of reaching 30%, the majority of the project beneficiaries had no access to short-term credit. This lack of access to short-term credit can significantly hinder farmers' ability to adopt improved agricultural practices and enhance their productivity. Without financial resources, farmers often struggle to purchase quality inputs such as seeds and fertilizers, limiting their ability to optimize yields. They may also face challenges in implementing improved techniques like pest and disease control, which are essential for sustainable farming. Moreover, the absence of credit can force farmers to rely on traditional, less effective methods, reducing the profitability of their ventures. This financial gap can affect their income, food security, and ability to invest in future growth, perpetuating cycles of low productivity and poverty.

The project aims to provide short-term agricultural credit to 30% of farmers for cultivating pulses using improved production practices. This means it plans to reach approximately 1,950 beneficiary farmers (30% of 6,500). According to the project's end-line report, it successfully arranged credit facilities for 2,050 farmers (2035 males and 15 females), exceeding its target 5%. This achievement is commendable and demonstrates excellent execution and management. It shows the project's ability to meet and surpass planned objectives. However, the gender disparity in beneficiaries - with 2,035 males compared to only 15 females - highlights the need for improvement in inclusivity.

Summary of performance of output indicators 2.1, 2.2, and 2.3

Table 12 provides a summary of the comparative overview of the project's targets and achievements across three key output indicators. It highlights the planned objectives set at the project's inception alongside the actual results achieved during the implementation phase

Table 12: The target and achieved values of output indicators 2.1, 2.2, & 2.3

S.No	Output Indicator	Target	Achieved	End line Success Rate
2.1	Seed multiplication and distribution of promising pulse varieties conducted to distribute 20 tons of certified seeds	20 Tons	170 Tons	750%
2.2	Farmers got access to certified seeds that enable them to produce pulses on 1500 ha	20 Tons	170 Tons	750%
2.3	30% of targeted farmers accessed short-term agricultural credit to cultivate pulse using improved production practices	1,950 farmers	2050 farmers	105%

Source: EUCORD Report

Performance of Outcome 2: 1, 500 hectares under improved management practices

The three outputs mentioned above are expected to result in the outcome of "Improving farmers' access to agricultural inputs and finance to cultivate selected pulse crops on 1,500 hectares using improved practices." However, the consultant has identified a problem with assessing this indicator. The main issue is the lack of specificity and comprehensiveness. While it mentions that improvements in access to inputs and finance will help in cultivating pulse crops on 1,500 hectares, it fails to explain how this increased access led to better yields, income, or adoption rates of improved practices for pulse cultivation on the specified land. Furthermore, it assumes a cause-and-effect relationship without providing evidence of how improved access directly resulted in the cultivation of pulses on 1,500 hectares. The cultivation of 1,500 hectares is considered an indicator without considering the quality of cultivation and the implementation of improved practices on this land. Despite these concerns, the project document shows that the PULSE project plans to cultivate pulse crops on 1,500 hectares. The evaluation is conducted from this perspective. As such, the assessment of the final project monitoring report indicates that by the end of the project timeline, 2,344 hectares of land were cultivated, surpassing the initial target. The achievement rate is calculated at 156%. The table below compares the targeted and achieved values of Outcome 2.

Table 2: The target and achieved values and success rates of outcome 2

S.No	Outcome Indicator	Target	Achieved	End line Success Rate
1	Farmers' access to agricultural inputs and finance improved to cultivate selected pulse crops on 1500 ha using improved practices	1,500 hectare	2,344 hectares	156%

Source: EUCORD project report

The evaluation result demonstrates that the project significantly exceeded its original target, achieving 156% of its goal and covering 2,344 hectares of land. This level of over performance indicates successful project design and implementation, particularly in mobilizing resources, engaging stakeholders, and providing support to farmers. It reflects the effectiveness of the strategies employed to expand cultivated land using improved practices.

III. Outcome 3: Farmers' access to guaranteed markets improved to increase the income of targeted households by 30%

The third outcome indicator of the PULSE project was to facilitate access to guaranteed markets for farmers to help them increase their income by 30%. The assumption is that by improving farmers' access to guaranteed markets, their incomes can be significantly enhanced by reducing market risks and ensuring stable demand for their produce. This was expected to be achieved through strategies such as arranging contract farming agreements, which offer farmers prearranged buyers and prices, and organizing cooperatives to strengthen collective bargaining power and facilitate bulk sales. This outcome measure of the project has three specific output indicators, each of which is discussed below.

A. Output 3.1: Potential bulk buyers of pulse commodities identified along with their buying requirements

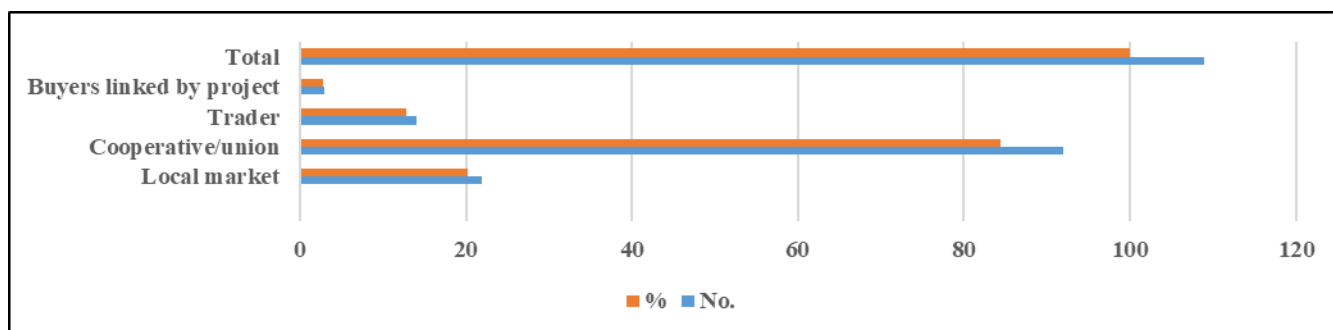
Creating market linkages provides farmers with a reliable and stable market for their produce, reducing the uncertainty and fluctuations associated with selling in open markets. Bulk buyers often offer better prices, larger volume purchases, and guaranteed demand, enabling farmers to plan their production and finances more effectively. Such arrangements can also encourage the adoption of improved farming practices as farmers gain confidence in the profitability of their efforts. Moreover, bulk buyers often provide support services, such as access to credit, agricultural inputs like improved seeds and fertilizers, and technical assistance, further enhancing productivity and quality. By eliminating or reducing the role of intermediaries, these arrangements ensure that farmers retain a larger share of the value from their produce. Strengthened market linkages also contribute to building trust and cooperation within the agricultural value chain, benefiting both farmers and buyers. Ultimately, these connections are a critical step in improving incomes, boosting productivity, and ensuring long-term agricultural sustainability.

The identification of bulk buyers and linking them to project beneficiary farmers is a crucial intervention area of the PULSE project. Interviews conducted with project staff and project terminal reports show that the project has successfully identified seven bulk buyers, achieving a 100% success rate. The unions, as bulk buyers, are buying haricot beans due to the created contract farming arrangements. According to a representative of bulk buyers (cooperative union), they have clear and specific requirements for improved seed varieties of pulses when engaging in contract farming arrangements. These seeds must have high yield potential to ensure productivity and profitability, as well as resistance to common diseases and pests to minimize losses and reduce reliance on chemicals. Adaptability to local soil and climatic conditions is essential for successful cultivation in specific regions. Quality standards are another critical consideration, focusing on uniformity in size, color, and overall crop quality, which are vital for processing and export markets. Certification from relevant authorities (in the case of PULSE project beneficiaries, farmer unions have the mandate) is often required to guarantee the quality and compliance of the seeds with regulations. In some cases, enhanced nutritional value in the resulting pulses is also demanded to meet consumer expectations. Finally, the timely availability of these seeds is crucial, as it aligns with planting schedules and enables farmers to maximize productivity. These requirements collectively support the production of high-quality pulses while fostering trust and cooperation between farmers, unions, and bulk buyers.

B. Output 3.2: Market linkage established among improved pulse variety-producing farmers and seven selected buyers.

As discussed earlier, the project has identified bulk buyers. Despite identifying seven bulk buyers, only 109 (46.4%) of the survey respondents had access to markets identified by the project. The majority, 126 (53.6%) of the respondents, had no market access established by the project. As shown in Figure 6 below, of the 109 farmers with market access, 92 (84.4%) sold their pulses to cooperatives/unions. Only 3 (2.9%) of the respondents sold their pulse products to bulk buyers linked by the project, indicating the minimal role of bulk buyers in the value chain.

Figure 6: Distribution of respondents by markets where they sell their pulse products*



Source: Field survey, March 2025.

* Multiple response question, % of sum may exceed 100%

During the FGD, farmers in Ananno Shino kebele reported that they had established market linkages with the Meki-Batu cooperative union for their produce. They had agreements with the union to supply their pulse crops through pre-arranged contract farming arrangements. They mentioned that finding buyers for their pulse crops was not an issue, as they supply their produce to the union immediately after harvest, according to the agreement. Farmers also noted that the union offers a 15% premium above the market price, which they find attractive.

Similarly, the head of the Meki-Batu cooperative union reported that they are working with farmers to produce improved seeds of haricot beans. He mentioned that farmers are now selling their products before harvesting, which is a departure from the traditional method of harvesting crops and then seeking markets. The union has established contract farming agreements with farmers to produce improved seeds for haricot beans, providing all necessary inputs and technical assistance. Once the harvest is completed, farmers are expected to deliver their produce to the union as agreed upon. The union offers a 15% premium above the market price, serving as a lucrative incentive for farmers. This approach has encouraged farmers to engage in structured farming arrangements, ensuring better earnings compared to selling in open markets. These offers have improved the financial security of farmers, motivating them to produce higher-quality and larger quantities of improved haricot bean seeds to meet demand. Furthermore, the 15% premium has fostered trust and long-term cooperation between farmers and the union, establishing a sustainable market connection that benefits both parties.

However, timely payments and fulfillment of agreements remain crucial to maintaining farmers' confidence in these arrangements. Farmers expressed concerns about the union's failure to make timely payments, which has been a significant challenge for them. The head of the union attributes the delayed payments to bureaucracies related to auditing and other logistical challenges in processing transactions. These delays have created significant hardships for farmers, who often rely on timely payments to cover their immediate expenses and reinvest in their agricultural activities. FGD participant farmers complained that delayed payments have created a ripple effect of

	Survey Woreda	Total
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financial challenges for them. They explained that many farmers depend on timely income to meet their immediate needs, such as purchasing seeds and fertilizers or paying off debts. When unions delay payments, farmers are forced to borrow money from others, often at high interest rates or on unfavorable terms, to cover these essential expenses. This has led to a cycle of debt and financial stress, further exacerbating their vulnerability. Such delays undermine trust in the unions and disrupt the economic stability of farming households.

As shown in Table 14 below, the questionnaire survey results indicate that payment delay from buyers is the major challenge in selling pulses to identified buyers, confirmed by 92% of the respondents. This issue is similar to what is repeatedly raised by FGD participants in Adami-Tulu woreda. About 11.4% of the survey respondents also reported difficulty in meeting volume requirements as a problem. The same percentage of respondents, 11.4%, reported difficulty in quality specifications and transportation issues as problems in selling pulses to bulk buyers.

Table 3: Table: Distribution of respondents by challenges in selling pulses to bulk buyers

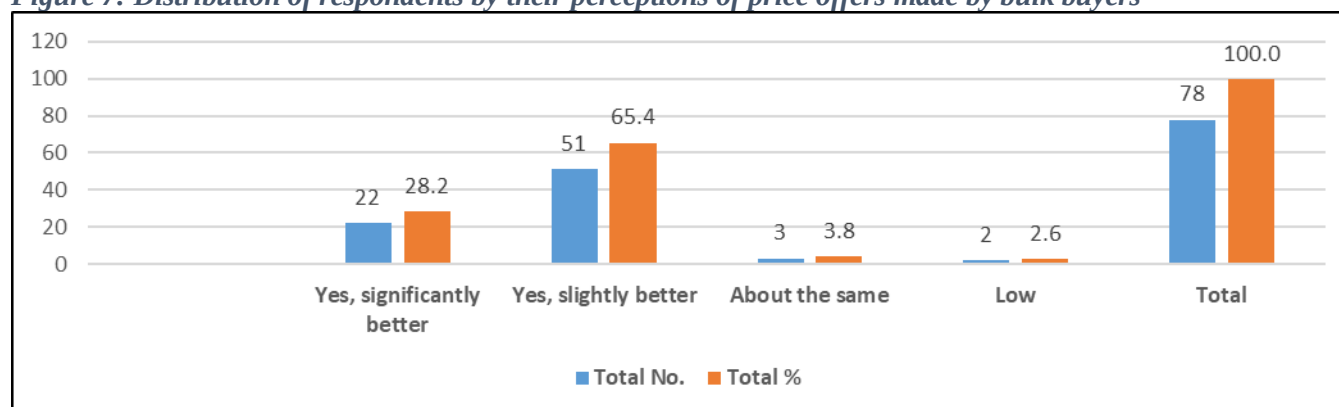
	Adami Tullu		Lemmu Bilbilo		Tiyo		No.	%
	No.	%	No.	%	No.	%		
Difficulty in meeting quality specifications	2	3.1	6	30.0	2	50.0	10	11.4
Difficulty in meeting volume requirements	8	12.5	3	15.0	2	50.0	13	14.8
Payment delays from buyers	63	98.4	14	70.0	4	100.0	81	92.0
Transportation issues	6	9.4	4	20.0	-	-	10	11.4
No challenge	1	1.6	2	10.0	-	-	3	3.4
Other specify	1	1.6	1	5.0	-	-	2	2.3
Total	64	100.0	20	100.0	4	100.0	88	100.0

Source: Field survey, March 2025.

* Multiple response question, % of sum may exceed 100%

Price plays a pivotal role in the production, marketing, and overall economic impact of pulse products. For farmers, a favorable and stable price incentivizes production, enabling them to invest in quality inputs like improved seeds, fertilizers, and modern agricultural practices. Competitive pricing also ensures that farmers earn a fair income, improving their financial stability and motivation to continue pulse cultivation. On this issue, survey respondents were asked about the prices of local buyers compared to the market price, and the results are depicted in Figure 7. As shown in Figure 7, 93.6% of the respondents (65.4% slightly better and 28.2% significantly better) reported that the price offered by bulk-buyers is better than in the local market.

Figure 7: Distribution of respondents by their perceptions of price offers made by bulk buyers



Source: Field survey, March 2025.

Disagreements have arisen regarding the market price of pulses, specifically for haricot beans, between farmers and the Meki-Batu cooperative union. FGD farmers argue that when they harvested and supplied the union with haricot beans in October 2024, the market price ranged between 3,500 and 4,000 ETB/Qt. However, they note that as of March 2025, the market price has significantly increased to between 7,000 and 9,000 ETB/Qt. Due to this surge, farmers believe they should be compensated based on the current market price plus the 15% premium promised by the union. This would result in a total payment range of 8,050-10,350 ETB/Qt, meeting their expectations of fairness and ensuring they benefit from the price appreciation. On the other hand, the head of the Meki-Batu union has a different perspective. The union claims that the market price for haricot beans in February 2025 was 5,500 ETB/Qt. With the 15% premium factored in, the payment offered by the union totals 6,325 ETB/Qt. This disparity in market price assessments has led to tensions, as farmers believe their demands accurately reflect the true value of their produce in the current market. This disagreement underscores the importance of transparent and timely payment processes in structured farming agreements. Establishing clear pricing mechanisms that consider market fluctuations and ensuring payments are made promptly could help resolve such conflicts and foster trust between farmers and unions in the future.

While the project has successfully established proper market linkages for some farmers working in clusters through unions, it has not ensured functional connections for other farmers producing grains, especially those

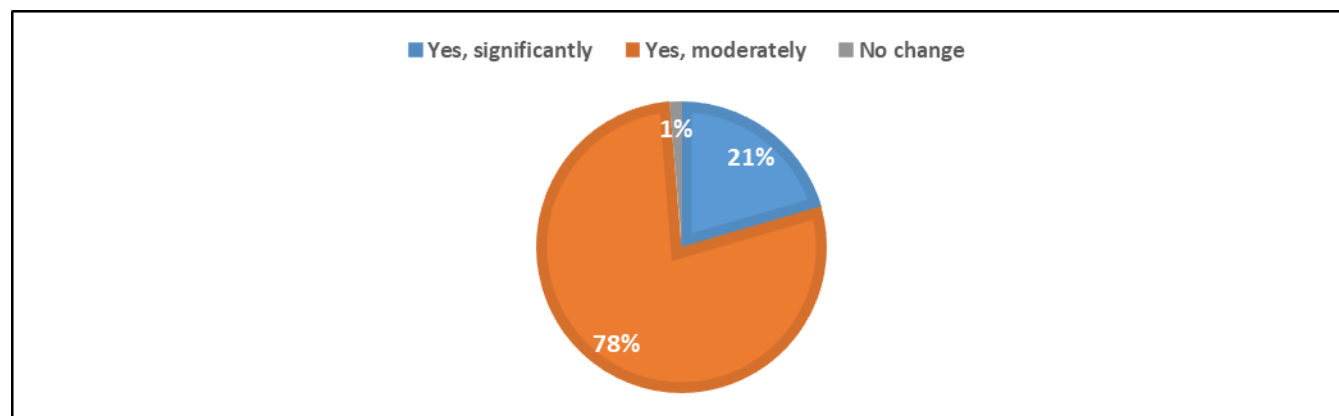
working independently or outside of these unions, cooperatives, and cluster farming arrangements. This situation indicates a breakdown in connecting farmers with bulk buyers despite their identification. These farmers lack direct access to organized market structures, leading to challenges such as fluctuating prices, limited bargaining power, and difficulty finding reliable buyers for their produce. This gap undermines the inclusivity of the project's outcomes, leaving a significant portion of the farming community without the benefits of stable market access or competitive pricing. However, farmers in Lemmu Dimma Kebele who are organized in producing improved faba bean seeds prefer to sell their produce to other farmers and the open market. These groups of farmers choose to sell their improved seed varieties of faba bean and field pea in open markets because it provides them with immediate payments, flexibility, and the ability to negotiate prices directly based on demand. FGD participants in Lemmu Demma Kebele stated that open markets are also familiar and accessible, requiring fewer formalities or commitments compared to contracts with bulk buyers. They further explained that these markets offer competitive prices during peak demand, making them an attractive option. The lack of trust in bulk buyer agreements or the absence of favorable terms have further reinforced their preference for open-market sales. This is a situation for highlands areas for crops including faba beans and field peas.

In sum, the current market linkage situation shows an imbalance in the establishment of connections between different market players. Although efforts have effectively linked certain farmers who belong to unions with buyers of improved seeds (unions), this strategy has not been extended to independent seed producers or grain farmers. This discrepancy indicates a lack of inclusivity in the initiative, resulting in many farmers being unable to access dependable markets for their goods. As a result, farmers who are not part of unions may encounter difficulties in selling their products, which hinders their ability to fully capitalize on agricultural progress.

C. Farmers' increased sales of pulse commodities reported

As discussed in previous sections, farmers have achieved higher yields in pulse crops by adopting improved agricultural practices, receiving training on MIPs, and utilizing available resources. This increase in productivity has positioned them to more effectively meet market demand. Additionally, the establishment of structured market linkages, particularly through unions and bulk buyers, has ensured that some farmers have access to reliable markets and competitive prices. These linkages provide stability and foster trust, creating a system where farmers can sell their produce immediately after harvest. The 15% premium above market prices offered by unions has further incentivized participation and strengthened cooperation. Together, these factors are expected to increase farmers' sales of pulse commodities, improve their incomes, and contribute to a more sustainable agricultural economy. Regarding this issue, surveyed beneficiaries were asked if they had experienced an increase in sales after participating in the PULSE project and establishing market linkages. About 99% of the cases reported that the project had helped them improve their sales of pulses. 78% reported that the market linkage had significantly increased sales, while 21% reported that it had increased sales by 21%.

Figure 8: Distribution of respondents by their perception of an increase in sales



Source: Field survey, March 2025.

The project planned to sell 50% of pulses to buyers identified by the project and use the other 50% for home consumption or sale to the food market. To evaluate the achievement of this goal, surveyed beneficiaries were asked to report the percentage of their pulse production sold to buyers after participating in the PULSE project. On average, 87% of pulse production is sold to buyers, while 9% is used for home consumption or sold to the food market. These figures indicate that while the percentage of sales to buyers is increasing, the percentage used for home consumption or local sales is decreasing. Therefore, the project's success rate is 174% for sales to buyers and 28% for home consumption and local sales.

Summary of the performance of output indicators 3.1, 3.2, and 3.3

The table below presents a comparative overview of the project's targets and achievements across three key output indicators. It shows the planned objectives set at the project's inception and the actual results attained at the end of the project.

Table 4: The target and achieved values of output indicators 3.1, 3.2, & 3.2

S.No	Output Indicator	Target	Achieved	End line Success Rate
3.1	Potential bulk buyers of pulse commodities identified along with their buying requirements	7	7	100%
3.2	Market linkage was established among improved pulse variety-producing farmers and seven selected buyers.	7	7	100%
3.3	Farmers' increased sales of pulse commodities reported	50% for buyers 50% for home consumption	87% for buyers 9% for home consumption	174% for buyers 28% for home consumption

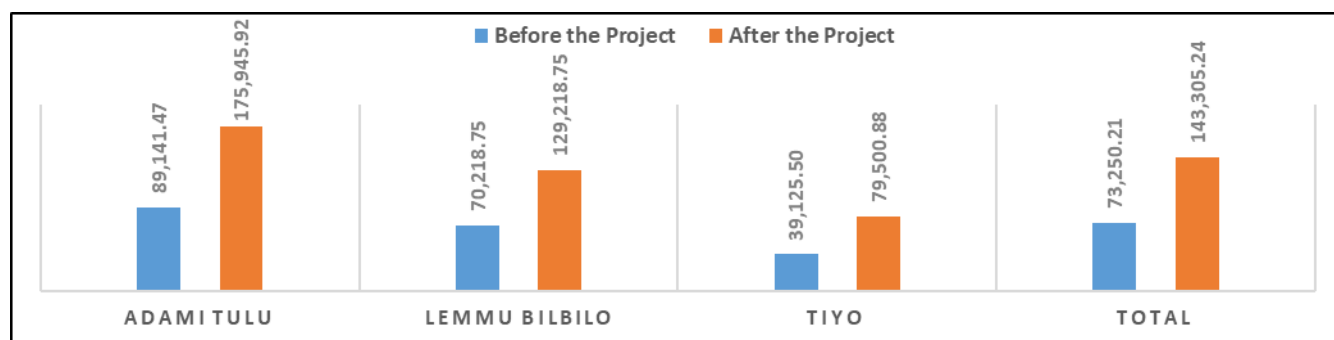
Source: EUCORD Report and Field Survey, March 2025

As shown in Figure 14 above, the project targets that farmers increase sales for crops and supply 50% for home consumption and 50% for sale to bulk buyers. But survey results show that the percentage of pulse supplied to buyers was found to be 87% whereas the percentage for home consumption was 9%. This is perhaps attributed to several reasons. As pulse productivity has increased, households are diversifying their diets and relying less on homegrown pulses, turning to purchased foods instead. Farmers are left with a surplus of pulses beyond their household needs, leading them to sell more to generate income. Improved infrastructure like market access and linkages created has made commercial farming more viable, pushing farmers to prioritize market supply over domestic consumption. Additionally, seed multipliers now grant unions' complete control over their production, further promoting a shift towards a market-driven pulse supply system.

Performance of Outcome 3: Average of additional income increase 30% per household/year

The three outputs (output 3.1, 3.2, and 3.3) mentioned above and dealing with farmers' access to guaranteed markets are expected to increase the income of targeted households by 30%. In this regard, survey households were asked if there was an improvement in their income due to their participation in the project. As a result, 164 (70%) of the respondents reported that their income had increased due to their project participation, while 71(30%) of the cases reported otherwise. With 70% of respondents confirming improved income as a result of their participation, it suggests that the project's interventions were effective for a considerable portion of the beneficiaries. These respondents were asked to report their approximate annual income before and after the PULSE project. As shown in Figure 9, there are variations in income in the three woredas. The highest income is recorded in Adami Tulu Jido Kombolcha woreda in both after and before cases, the lowest in Tiyo. In Adami Tulu Jido Kombolcha woreda, farmers are engaged in contract farming, and their productivity is better than in other areas. From the figure, we can learn that, holding other things constant, the project has increased the income of project beneficiaries from an average of 73,125.21 ETB to 143,305.24 ETB with an increment of 95.8%, which is greater than the plan of 30%.

Figure 9: Average annual income of project beneficiaries before and after the project



Source: Field survey, March 2025.

However, the fact that 30% of respondents reported no improvement in their income highlights areas that may require further investigation. Possible factors could include variations in the implementation of project components, differences in individual or household circumstances, or external challenges such as market dynamics, production issues, or local economic conditions. To strengthen the project's effectiveness, it might be beneficial to analyze the reasons behind the responses of the 30% who did not experience income growth. Addressing these factors could enhance the impact of future projects.

The table below shows the summary of the targeted and achieved values of Outcome 3. As shown in the table, the target improvement in income was 30%, but after the project intervention, the average annual household income increased by 95.8%. In here, the consultant learns that the project achieved an extraordinary outcome, with the average annual household income increasing by 95.8%, far surpassing the target improvement of 30%, resulting in a performance level of 219.3%. This remarkable success can be attributed to effective project design and implementation, which significantly improved farmers' access to guaranteed markets. These results demonstrate the effectiveness of the intervention and highlight its potential as a model for future initiatives while offering valuable insights for sustaining and scaling such achievements.

Table 5: The target, achieved values, and success rate of outcome 3

S.No	Outcome Indicator	Target	Achieved	End line Success Rate
1	Farmers' access to guaranteed markets improved to increase the income of targeted households by 30%	30%	95.8%	219.33

Source: Field survey, March 2025.

3.2. Impact

The impact of this project is rooted in its goal of strengthening the capacity of 6,500 pulse producers to access and serve both domestic and international markets. By fostering the development of sustainable, market-oriented pulse value chains, the project aims to address critical challenges in food security, elevate household incomes, and enhance resilience and livelihoods for rural Ethiopian families. This section discusses the planned and achieved values of project impact indicators.

I. Improve the capacity to produce and sell to domestic and international buyers to improve the food security and income of 6,500 pulse producers.

A. Production capacity and selling pulses to domestic and international markets

This section examines the project's initiatives to improve the capacity of 6,500 pulse producers to efficiently produce and sell their products to both domestic and international markets. The production capacity of farmers is indeed influenced by various factors, including access to resources (such as land, seeds, fertilizer, etc.), utilization of technology and modern farming practices, knowledge and skills, and external factors like weather and market demand. To assess the impact of the project, beneficiaries of the project were surveyed regarding the enhancement of their access to resources that could potentially increase their production capacity, such as access to agricultural inputs, finance, market opportunities, and land for cultivation.

Figure 11: Respondents by an increase in accessing agricultural inputs as a result of the project

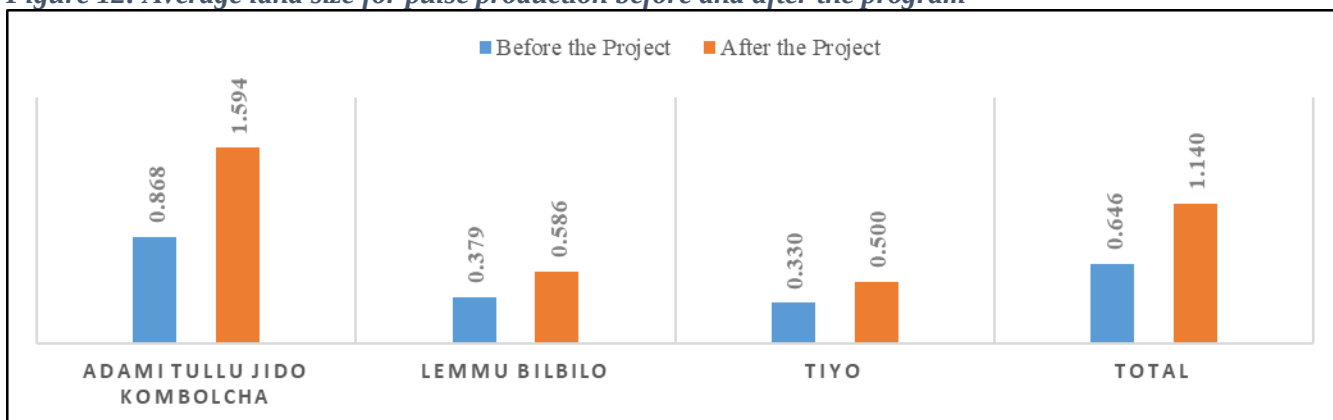
Figure 10: Respondents by an increase in accessing agricultural finance as a result of the project



Source: Field survey, March 2025.

As shown in Figure 10, 70% of the respondents reported an increase in accessing agricultural inputs due to the project. Similarly, 55% of the respondents confirmed that their access to agricultural finance, such as credits, has increased as a result of the project (Figure 11). In addition to improvements in access to agricultural inputs and finance, project beneficiary households have also shown an increase in the land allocated for pulse production. As shown in the figure below, the average land allocated for pulse production was 0.646 hectares before the project. After the project, this figure increased to 1.14 hectares, showing a 76.5% increase. This indicates that farmers have started increasing the allocation of their land to pulse production due to increased productivity pulse crops.

Figure 12: Average land size for pulse production before and after the program



Source: Field survey, March 2025.

The discussions above demonstrate that the project has enhanced access to inputs, finance, and markets, ultimately increasing household income. In terms of market access, 57.7% of survey respondents had access to local markets, while 48.7% had access to regional markets. However, farmers had limited access to international markets. The reported improvements in access to agricultural inputs and finance have significant implications for enhancing farmers' production capacity. By providing better access to inputs like seeds, fertilizers, and tools, farmers can implement improved agricultural practices and increase yields. Additionally, increased access to finance, including credit, enables farmers to invest in modern technologies, expand their operations, and manage production risks.

Survey data (see Table 17) indicate that the project has had a positive impact on farmers' production capacity, with 78.3% of respondents reporting slight (49.8%) or significant (28.5%) improvements. This suggests that the project's interventions, such as enhanced access to resources, training, and market opportunities, have been effective in boosting production capacity for most participants. However, the fact that 20% of respondents reported no change in their production capacity underscores the need for further investigation. This lack of change could be attributed to disparities in access to project benefits, specific challenges faced by certain households, or external factors like environmental conditions.

Table 6: Distribution of respondents by their perception of increased production capacity

Increase production capacity due to the project?	Adami Tullu		Lemmu Bilbilo		Tiyo		Total	
	No.	%	No.	%	No.	%	No.	%
Yes, significantly increased	28	21.1	14	41.2	25	36.8	67	28.5
Yes, slightly increased	80	60.2	19	55.9	18	26.5	117	49.8
Remained the same	22	16.5	-	-	25	36.8	47	20.0
Decreased	3	2.3	1	2.9	-	-	4	1.7
Total	133	100.0	34	100.0	68	100.0	235	100.0

Source: Field survey, March 2025.

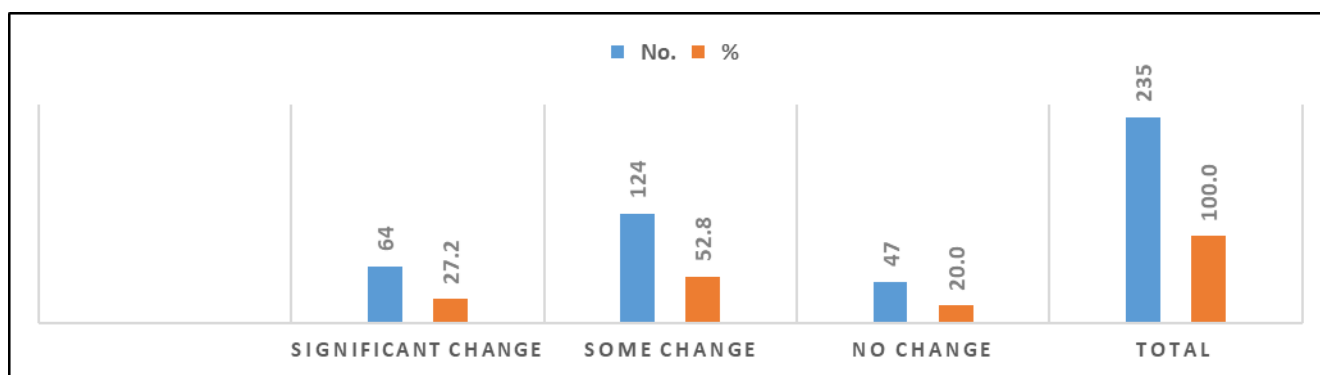
B. Food Security and Income

Increasing farmers' production capacity plays a vital role in enhancing food security and boosting household income. One of the theory changes of the project is that by enabling farmers to produce more efficiently and at higher volumes, it ensures a consistent supply of nutritious food, reducing hunger and improving overall well-being. Simultaneously, improved production capacity empowers farmers to access lucrative markets, both domestically and internationally, leading to increased earnings and greater economic stability. This dual impact contributes to stronger, more resilient communities and sustainable livelihoods. Therefore, the project's contribution is assessed from the perspective of improving the food security status of project beneficiaries.

Survey households were asked to reflect the food security status before and after the project. Before the project, 24.7% of the respondents had problems with food security. After the project, this figure declined to 12.3%. This shows an improvement in the food insecurity situation of project beneficiaries by 50.6%. In addition, the average number of months a household faced food insecurity was 2.59 months before the project. This figure has declined to an average of 1.25 months after the project. This also shows a 51.7% decline in the number of months that the households faced food insecurity. The data reveals a significant improvement in the food security status of project beneficiaries, demonstrating the project's strong impact. The decline in the percentage of households facing food insecurity from 24.7% to 12.3%—a reduction of 50.6%—shows that the interventions effectively addressed the factors contributing to food insecurity. Furthermore, the reduction in the average number of months households faced food insecurity, from 2.59 months to 1.25 months (a 51.7% decline), highlights the project's role in stabilizing food availability and accessibility for vulnerable households.

The survey findings (see Figure 13) also indicate that the project has contributed positively to improving dietary diversity for the majority of participating households. With 52.8% of respondents observing some changes and 27.2% reporting significant changes, this suggests that the interventions, such as increased production capacity and improved income, have enabled households to access a wider variety of foods. These results highlight the project's success in influencing nutrition and food choices among beneficiaries. However, 47 (20%) reported no change in their dietary diversity. The fact that 20% of respondents reported no change in dietary diversity suggests disparities in the project's impact.

Figure 13: Distribution of respondents by their perception of change in dietary diversity



Source: Field survey, March 2025

Performance of impact indicator: Improve the capacity to produce and sell to domestic and international buyers to improve the food security and income of 6,500 pulse producers.

There is no specific indicator, such as a particular percentage increase in production or income, to assess the project's actual accomplishments against its production capacity and food security goals. This lack of a clear target makes evaluating performance challenging. Without a clear goal, it becomes challenging to assess the project's success or determine whether the outcomes align with expectations. This uncertainty has impeded understanding the full impact of the project and identifying areas for improvement. However, the consultants set the number of project households at 6,500 as a target. As discussed in previous sections, the project supported 6,500 beneficiaries. In addition, it was noted that the production capacity and food security situation of these beneficiaries improved due to the project. Therefore, by considering 6,500 beneficiaries as the target, the project has achieved a 100% success rate.

II. Improve the resilience and livelihoods of 39,000 household members in rural Ethiopia by developing sustainable, market-oriented pulse value chains

The project aims to mitigate vulnerabilities, strengthen economic stability, and improve overall well-being by empowering households to access reliable markets and adopt resilient agricultural practices. The analysis explores how these interventions contribute to long-term sustainability, ensuring meaningful progress in food security, resilience, and building livelihoods. In this regard, surveyed households were asked to express whether the project has improved the resilience of households or not. Accordingly, 171 (73%) of the respondents stated that the project has improved their resilience and livelihoods, while 64 (27%) reported no improvement in their resilience and livelihoods. Households were further asked about the factors contributing to improvements in their resilience and livelihoods. The results are indicated in Table 18 below. As shown in the table, the first three important factors that contribute to resilience and livelihood building are training and capacity building initiatives of the project, access to quality agricultural inputs, and market demand for pulse products, as confirmed by 81.9%, 72.5%, and 48.5% of the respondents, respectively.

Factors influencing improvement resilience and livelihood	Survey Woreda						Total	
	Adami Tullu		Lemmu Bilbilo		Tiyo		No.	%
	No.	%	No.	%	No.	%		
Strong government support & policies	38	39.2	15	45.5	26	63.4	79	46.2
Effective training and capacity building	72	74.2	30	90.9	38	92.7	140	81.9
Access to quality agricultural inputs	73	75.3	21	63.6	30	73.2	124	72.5
Availability of financial resources	36	37.1	10	30.3	8	19.5	54	31.6
Market demand for pulse commodities	46	47.4	23	69.7	14	34.1	83	48.5
Collaboration and partnerships with stakeholders	20	20.6	14	42.4	11	26.8	45	26.3
Favorable weather conditions	22	22.7	9	27.3	11	26.8	42	24.6

Farmer participation and engagement	32	33.0	7	21.2	15	36.6	54	31.6
Timely and efficient project implementation	13	13.4	10	30.3	11	26.8	34	19.9
Other (specify)	3	3.1					3	1.8
Total	97	100.0	33	100.0	41	100.0	171	100.0

Table 18: Table: Distribution of respondents by factors influencing improvement in building resilience and livelihoods

Source: Field survey, March 2025.

An increase in access to agricultural inputs enhances farmers' ability to adopt better farming practices, leading to improved crop productivity. Higher productivity ensures a reliable food supply for households, reducing vulnerability to food insecurity. Additionally, increased income from surplus production allows families to invest in essentials such as education, healthcare, and diversified livelihoods, further strengthening their economic stability. Improved market access connects farmers to broader opportunities, enabling them to earn competitive prices and reduce dependency on informal or unreliable markets. Collectively, these factors enhance households' resilience to economic and environmental shocks while fostering sustainable improvements in their livelihoods.

Performance of impact indicator: Improve the resilience and livelihoods of 39,000 household members in rural Ethiopia by developing sustainable, market-oriented pulse value chains

Like the impact indicator mentioned above, this indicator is quite broad. Assessing the performance of this indicator is challenging due to its multifaceted nature. Measuring resilience and livelihoods involves subjective and diverse dimensions, such as income levels, food security, access to resources, and the ability to cope with shocks. By only considering the results of the three outcome measures discussed earlier, the consultant can infer that the livelihoods of households have improved. However, assessing resilience from the perspective of this project is difficult. About 73% of the survey results also confirm the fact that the project has improved their resilience capacity and livelihoods.

The log frame of the document shows that the project aims to improve the resilience and livelihoods of 39,000 household members from 6,500 households. The target is, therefore, set at 39,000 household members. A review of the project's term report indicates that the project successfully reached 39,000 household members, achieving a 100% success rate.

Table 7: The target, achieved values, and success rate of outcome 3

S.No	Outcome Indicator	Target	Achieved	End line Success Rate
1	39,000 household members benefitting from improved food security and sales	39,000	39,000	100%

Source: Field survey, March 2025.

III. Unintended Project Impacts

Discussions with project coordinator and field staff show that the project has the following unintended positive impacts:

- While its primary focus was on increasing productivity and connecting pulse crops to markets, it inadvertently helped unlock the versatility and appeal of pulses—especially the Numan variety of faba bean—in food preparation. Pulses are naturally packed with nutritional value, offering high protein, fiber, and essential vitamins and minerals. Through increased awareness and availability from the project, farmers and consumers have realized just how flavorful and adaptable these crops are. With better market linkages, pulses could have found their way into diverse kitchens, sparking creativity in traditional and modern recipes.
- The project has propagated the use of bio fertilizers (Rhizobium bacteria) to improve crop productivity. The use of bio fertilizers in the PULSE initiative not only increased crop yields but also unexpectedly

helped protect harvested produce from pest infestations. This post-harvest protection could be due to the lasting effects of the bio-fertilizers, which may leave beneficial microorganisms or substances on the crops that act as natural repellents for pests. Additionally, the improved quality of crops grown with bio-fertilizers made them less prone to spoilage or damage, reducing the likelihood of pest attacks during storage. This unexpected advantage significantly enhanced farmers' ability to preserve their harvests, decreasing losses and improving both profitability and food security

3.3. Sustainability

Under this criterion, the evaluation examined the extent to which project activities are likely to continue after the project's closure, considering potential risks. The sustainability of the project outcomes is promising, driven by the structured approach of cluster-based farming and contract arrangements with unions. Farmers have received valuable training on MIPs, which has significantly enhanced their skills and agricultural techniques. As a result, productivity has improved, leading to higher incomes and strengthened market linkages. Compared to the situation before the project, farmers are now in a better economic position and equipped with the knowledge and systems to sustain these gains. The foundation laid by this project—through education, improved practices, and cooperative frameworks—ensures that the achievements in productivity, income growth, and market connections are likely to be maintained well into the future. By fostering collaboration and empowering farmers, the initiative has set the stage for long-term success and stability in the agricultural sector.

The evaluation team assessed the sustainability of each project activity, intervention, outcome, and result in the following subsections.

a) Improvement in Productivity

Under the current performance of the PULSE project, the remarkable improvement in pulse crop productivity, reaching 26 Qt/ha, demonstrates an exceptional achievement compared to the initial baseline. The project has successfully exceeded its productivity target and showed significant progress across the study areas. The information collected from various sources shows that the remarkable improvement in pulse crop productivity under the PULSE project can be attributed to several key factors. First, the introduction of certified seeds and improved agricultural practices played a critical role in enhancing yields. Training sessions equipped farmers with knowledge and skills in modern farming techniques, enabling them to adopt more efficient and effective production methods. Additionally, partnerships with cooperatives and unions facilitated better access to resources and markets, further supporting productivity growth. The project's emphasis on addressing gaps in the value chain, such as distribution and market linkages, also contributed significantly to its success. FGD farmers confirmed they have the necessary knowledge and skills on MIPs, are accustomed to contract farming, created linkages with buyers, and hence, will continue to improve their productivity.

However, ensuring the sustainability of this performance requires ongoing efforts, such as maintaining access to certified seeds, providing up-to-date training, and reinforcing partnerships with cooperatives and unions. Additionally, focusing on equitable distribution, addressing disparities across woredas, and improving infrastructure and market access are key measures to sustain and further enhance these outcomes. By continuing these initiatives, the project can achieve long-term resilience and amplify its impact on rural livelihoods.

b) Increase in Income

Data collected from document review and primary data through surveys, KIIs, and FGDs revealed that the project resulted in increased incomes for beneficiaries from pulse production. The survey results show that the average annual household income increased by 95.8%, far surpassing the target improvement of 30%, resulting in a performance level of 219.3%. Results also show that their incomes increased due to the services provided by the project and beneficiaries' engagement in other income-generating activities by income generated from pulses. For example, some beneficiaries in East Shewa have invested in other farming activities, such as

onion seed production. The evaluation found that these income increments are likely to continue and grow beyond the project's lifespan. Data gathered from the literature review, KIIs, and FGDs and survey indicate that farmers are generating increased income compared to before the project intervention. The sustainability of income from pulse crops is supported by the analysis of the views of project beneficiaries, exemplified by the following statement during FGDs

“The project has helped us improve our annual income. Many of us have been able to start other businesses that are generating additional income. Even if the project were to stop, we would continue producing pulse crops because it has made a significant difference in our lives.”

However, it is worth noting that there is still a concern about whether such an increase in pulse-based income will be sustained in the future without further support from the government. This is because the achievements of increased incomes are highly dependent on the productivity of pulse crops. The evaluation found that productivity increases only if all the necessary factors are in place. For example, if inputs are available and arrive on time as planned, and if there is no shortage of rain. If these conditions are not met, production will not increase, and income will not increase. During the FGDs, farmers in Arsi shared that fertilizer is not arriving on time. It is coming a month after they sow the beans, which means they are not getting the expected yield due to the lack of fertilizer. Another limiting factor is the lack of improved seed.

c) Improved Seed Multiplication

It is acknowledged that the project supported cooperatives and individual farmers (who are members of the cooperative) to engage in improved seed multiplication to address the key bottlenecks in the seed value chain. It was observed that these cooperatives that multiplied improved seeds have passed them on to other farmers, and the results have been impressive, strongly suggesting that these activities will continue and have reasonable chances of being sustained. The responses from key informants and community FGDs have indicated that the seed production and distribution initiative has a high likelihood of being sustainable because the seed produced has a ready market from buyers and the seeds they planted will become one of their major sources of income in the future. Moreover, the project staff confirmed that the improved seed multiplication activity initiated by the project is likely to be continued and expanded upon by farmers.

The evaluation team found that cooperatives and farmers can continue multiplying and distributing to other farmers, which is expected to alleviate the problems of accessing quality seed. Thus, cooperatives and farmers will for some years to come be accessing haricot bean, faba bean and field pea improved seeds easily within their communities. Moreover, the leaders of the union also assumed that the adoption of high-yielding varieties of PULSE seed is likely to grow as long as there are favorable conditions, along with good returns from the market. However, it was observed during the field visit that it is still challenging for some farmers (who live in the project areas where there are no cooperatives) to access improved seeds. Due to their geographic location, these farmers have to travel long distances to acquire the seed and are subjected to high costs of transport that increase the cost of acquiring improved seed and may affect farmers' journey to self-reliance in terms of access to improved seed. The adoption of high-yielding varieties of PULSE seed is likely to grow as long as there are favorable conditions, along with good returns from the market. Moreover, discussions with plant breeders from Melkassa and Kulumsa Agricultural Research Centers expressed this concern and advised that if the current improved seeds are not replaced by new ones, there is a risk of production reduction in the future.

Sustainability of improved seed multiplication can be achieved through a combination of strategic approaches and long-term support mechanisms. First, establishing strong partnerships with cooperatives, unions, and community-based organizations ensures that farmers engaged in seed multiplication have access to resources, training, and infrastructure needed to maintain high-quality seed production. Regular capacity-building efforts, such as training programs on seed multiplication techniques and quality assurance, empower farmers to consistently produce certified seeds. In addition, creating reliable market linkages is essential to sustain demand for improved seeds, enabling farmers to earn fair prices and reinvest in their activities. Diversifying income opportunities, such as

engaging in contract farming or expanding seed multiplication to other crops, can further strengthen economic stability. Furthermore, fostering collaboration among stakeholders, including government agencies, private sectors, and research institutions, ensures continuous innovation and adaptability, making seed multiplication a resilient and sustainable endeavor.

d) Market Linkages

Based on anecdotal evidence gathered through qualitative data collection, the project's support is considered to have contributed to improved access to markets for farmers through linkages to various types of buyers. Some farmers in East Shewa and Arsi reported developing links with different buyers, resulting in more consistent markets for their farm's harvests. Furthermore, FGD data from farmers shows that the project provided them with access to markets by connecting them to various value chains through contract farming. Farmers who participated in the FGD reported that they will continue to sell their crops through markets introduced by the project. For example, farmers in Anano Shisho kebele of Adami Tulu woreda sell their haricot beans to the union through established contract farming agreements, and the collaboration between them was a commendable approach to establishing a sustainable market for haricot beans. This partnership has the potential to inspire haricot bean growers to participate actively, providing assured markets and reducing transaction costs in the value chain.

As observed in the field, the relationship between farmers and cooperatives in Arsi (e.g., Lemma Bilbilo woreda) is very strong. According to cooperative leaders, the project provided them with the skills to seek market information on prices for the Faba bean value chain, allowing them to sell their produce at more profitable margins, and the consultant believes these benefits will likely continue. On the other hand, according to KIIs with various stakeholders, there are several prevailing challenges specific to market access. For example, FGDs with haricot bean producers in East Shewa revealed the value in the market linkages that the project provided with unions through forward contracting agreements. However, there are challenges in the payment system that result in delayed payments to farmers. Farmers shared that they require cash upfront to satisfy their short-term needs and meet their day-to-day expenses, resulting in defaults on these arrangements. They would prefer to sell in the future to brokers even at low farm-gate prices unless the union improves the payment system.

Sustainable market linkages are established when several critical conditions are met. First, strong and reliable partnerships between farmers, cooperatives, unions, and buyers ensure consistent supply and demand, fostering mutual trust and long-term collaboration. Second, access to infrastructure, such as transportation networks, storage facilities, and marketplaces, supports efficient logistics and reduces post-harvest losses, making it easier to connect producers with consumers. Third, fair pricing mechanisms are crucial to ensure that farmers receive fair compensation for their produce, encouraging them to remain actively engaged in the market. Fourth, diverse and stable demand is essential, where both domestic and international markets provide opportunities for pulse crops or other products, minimizing dependency on a single buyer or sector. Fifth, capacity-building and financial services empower farmers and cooperatives to invest in expanding their production and improving product quality, further strengthening market ties. Addressing these conditions ensures the durability and resilience of market connections over time.

e) Training and Capacity Development

As indicated in the progress reports of EUCORD and confirmed by KII and FGD participants, the project successfully established sustainability structures through training, demonstration, skills transfer, and the introduction of new technology. It is noteworthy that the training provided on pulse farming, seed production, site selection, early planting, plant protection, and seed storage significantly increased the production capacity of farmers. These skills are essential for the project's sustainability as they ensure that beneficiaries in the target areas can produce pulse crops. FGD participants shared that the knowledge and skills they gained during the project will remain with them and will be shared with other farmers at the community level. In addition, during the FGD discussions, these farmers expressed that the knowledge, skills, and tools they acquired are still valuable and applicable to their future work. This sentiment was also reflected in the interviews, with stakeholders

recognizing that the skills acquired during these learning opportunities will remain within the project areas and continue to drive meaningful changes.

Data collected from project field staff and annual reports of the project indicated that the project provided Training of Trainers (ToT) for woreda agriculture experts. These experts benefited from the training provided by the project, ensuring that they will be able to continue supporting farmers beyond the life of the project. Key Informant Interviews (KIIs) conducted with woreda agriculture office experts indicate that they have acquired better knowledge from the ToT provided by the project, enabling them to pass on this knowledge to many farmers. Furthermore, discussions with project staff indicated that the knowledge and experience invested by the project will remain with the individual trainers and can be applied in future training activities, provided that these activities are budgeted and organized. The consultant demonstrated that the skills acquired by the experts during technical training will be integrated into their ongoing and upcoming similar projects. However, the financial means to continue these activities are limited. It is unclear whether the office will have the means to do so, but the determination shown by the experts suggests that there is hope that this learning will be incorporated into other future projects if the regional bureau supports this process and allocates the budget.

Establishing local ownership is critical to sustainability. This involves empowering community-based organizations, cooperatives, or unions to take charge of ongoing training initiatives, ensuring that knowledge dissemination becomes an embedded part of the system. Mentorship programs and peer learning can further strengthen capacity development, enabling participants to share their expertise and support each other. In addition, integrating capacity-building efforts into local policies and programs ensures long-term institutional support, while access to resources, tools, and technology keeps participants equipped to implement and improve upon their training.

f) Access to Finance

One of the objectives of the project was to facilitate access to finance for farmers to address barriers that prevent them from obtaining the necessary financial resources to enhance their farming practices and improve productivity. According to discussions with key informants and the project monitoring report review, some farmers and cooperatives have become linked to the union to receive credit in kind. This support boosts the purchasing power of farmers to acquire inputs and fund operating expenses in the short term, as well as make farm-related investment decisions in the long term. However, lack of access to finance remains a significant constraint for many farmers in pulse production. It was observed that some farmers struggle to afford inputs, especially improved seeds and fertilizer. This financial barrier makes it challenging for farmers to implement the knowledge and skills gained through training and capacity building. The focus group discussions highlighted that access to finance is also a challenge for some cooperatives, such as Lemmu Bilbilo woreda. This lack of access hinders pulse productivity growth, limits farmers' ability to adopt sustainable and efficient innovative technologies, and discourages agricultural productivity.

Sustainable access to finance can be achieved by creating systems and structures that ensure consistent and equitable financial resources for individuals and communities over the long term. This starts with strengthening local financial institutions, such as microfinance organizations, cooperatives, and rural banks, to provide accessible, affordable, and diversified financial products. These institutions should prioritize building trust and offering tailored services, such as small loans, savings accounts, and insurance, to meet the unique needs of farmers, entrepreneurs, and vulnerable groups. Partnerships with government and private sectors can enhance access to credit and financial services by providing guarantees, subsidies, or incentives for financial institutions to serve underserved populations.

g) Most Impactful Practices

The sustainability of increased pulse productivity can be seen in the continued use of improved agricultural practices. The evaluation revealed that beneficiaries have embraced and fully integrated MIPs, increasing the likelihood that these practices will continue to be utilized by farmers. There are also significant opportunities for farmer-to-farmer learning in the future, which will likely result in more farmers adopting good agricultural practices. During FGDs with farmers, many participants expressed their intention to continue using the productivity-enhancing practices they learned through the project. Key informants from the Agriculture offices confirmed that farmers consider improved agricultural practices crucial for increasing pulse productivity. The evaluation team also noted that the project has successfully instilled sustainable changes by promoting improved pulse farming practices. However, they expressed concern that the project's impact in this regard can only be sustained if farmers have access to the necessary inputs to fully implement all the learned improved practices and realize the full impact of the interventions.

Sustaining the MIPs requires embedding them into the core activities and behaviors of the community or stakeholders involved. To achieve this, a key step is fostering local ownership by empowering farmers, cooperatives, and other beneficiaries to take responsibility for continuing the practices independently. This involves capacity-building programs that ensure stakeholders fully understand and master the techniques, so they remain viable even beyond external support. In addition, creating strong institutional support systems, such as partnerships with local governments, organizations, and private entities, ensures that the practices receive ongoing resources, funding, and policy backing. Continuous access to resources, such as certified seeds, tools, and technologies, is vital to keep these practices effective over time. Establishing knowledge-sharing networks and peer-to-peer learning within communities can reinforce the practices by creating a culture of collaboration and adaptation. Finally, monitoring and evaluation frameworks should be implemented to track progress, address challenges, and adapt practices to evolving conditions, ensuring their relevance and effectiveness over the long term.

h) Factors that Positively Contribute to Sustainability

Several factors can influence the project activities, including:

- **Knowledge and skills obtained from the training and demonstration fields:** The knowledge and skills gained from training sessions and demonstration fields played a vital role in sustaining the outcomes of the PULSE project. These hands-on learning opportunities equipped farmers with practical expertise in best agricultural practices, including improved seed usage, crop management techniques, and climate-smart farming techniques such as use of crop rotation, integrated pest management, intercropping, row planting, and the use of improved drought-tolerant varieties. By observing and applying these practices in real-world settings, farmers were able to enhance productivity and adopt sustainable methods that could be replicated independently.
- **Sense of ownership and commitment by beneficiaries:** The evaluation found that strong commitment and ownership by farmers were evident during the FGD. These initiatives can serve as the backbone for ensuring long-term impact and sustainability.
- **Stakeholder Involvement:** The project has built a strong network, particularly with woreda agriculture offices, Melkassa and Kulumsa agricultural research centers, unions, and cooperatives. This suggests that the benefits and results of the project will continue to be useful even after its completion. However, without increased budgetary allocation or alternative funding to support training programs (e.g., hiring and training of tutors, training materials, etc.), woreda agricultural office may not have the capacity to continue delivering training.
- **Policy support:** Sustainability encompasses many dimensions, such as the government's commitment to provide ongoing support, creating a conducive policy environment, and ensuring the availability of resources. The project's alignment with the government's policy has enabled it to create an effective space for its activities and learning to influence the government's plans.

i) Factors that Negatively Affect Sustainability

Concerns voiced by beneficiaries about difficulties in sustaining project outcomes include:

- **Lack of access to other financial resources:** It was found that cooperatives mobilize funds to meet the borrowing needs of members, but they are not connected to other sources of financial resources such as micro-finance institutions. This may hinder cooperative members from accessing adequate funds to finance the expansion of seed multiplication businesses in the future.
- **Weak exist strategy plan:** Although a closing workshop was held with various stakeholders, an exit strategy plan was not made at the design stage of the project to ensure sustainable management of the achieved results.
- **Government office lacks finances:** Despite the observed interest from the agriculture office to continue supporting the project activities, the sustainability of the project remains a challenge and an uncertain element in the absence of any concrete and approved funding at the time of the evaluation. The responses from the key informants and farmers' FGDs have indicated that the cooperatives and farmers organized are confident in sustaining their operations beyond the project funding cycle. However, their continued engagement in value chains is subject to the profitability of the business operations. It was observed that cooperatives mobilize funds to meet the borrowing needs of members, but they are not linked to other sources of financial resources such as micro-finance institutions. This may hinder cooperative members from accessing adequate funds to finance the expansion of current businesses and the establishment of larger businesses in the future.
- **Security risk:** Security risk will affect the sustainability of the outcomes. It is feared that if the security problem continues, or perhaps worsens, farmers will not be able to enjoy the benefits they are currently experiencing in the future.

3.4. Cross Cutting Issues

Under this criterion, the consultant examined the extent to which gender and climate-smart agricultural practices were integrated into Project design and implementation.

a) Gender

The review of project documents and interviews confirmed the strong participation of women in the project design phase and during implementation. The project terminal report indicates that 1950 women benefited from the project, representing 30% of total beneficiaries. Information gathered directly from beneficiaries, household surveys, focus groups, and KIIs also shows the active participation of women in training and demonstrations facilitated by the project. Female FGD respondents reported using the knowledge and skills gained from the training. It was observed that women, especially in male-headed households, were the most active participants in project activities, working alongside male beneficiaries. Interviews and discussions with women revealed that they are gradually feeling more empowered to work in the community. Overall, project interventions aim to ensure greater female participation by targeting them specifically, including women-headed households, and involving women in training and capacity development activities. This indicates that gender-related factors were meaningfully implemented in the project. However, the evaluation team found limited evidence that women-specific needs were considered in project design. The participation of female-headed households in the project is quite limited, suggesting the project could have been more ambitious in engaging them to understand their needs better.

Despite women being 30% involved in the project, their participation in different aspects of the project is limited. Discussions made with female FGDs showed that one major issue is the lack of focus on improving women's access to credit. Without credit, women are unable to invest in advanced farming tools, inputs, or infrastructure. Financial literacy gaps and systemic biases often prevent women from accessing financial services. This exclusion not only limits their economic empowerment but also their contribution to agricultural productivity. Another problem noted is ensuring women's participation in cluster and contract farming arrangements. These models

offer benefits like collective bargaining and access to fair markets, but cultural and structural barriers often prevent women from joining. Their exclusion deprives them of better pricing mechanisms and market opportunities, widening the economic gender gap.

Overlooking women's involvement in seed multiplication further exacerbates their marginalization, as reported by FGD women farmers. Seed multiplication is essential for producing quality inputs, yet inadequate resources and access to land for women have hindered their participation in seed multiplication activities. This has reduced their economic opportunities and limited agricultural innovation. The project also appears to have overlooked women's inclusion in primary cooperatives and unions. These organizations play a key role in collective decision-making, bargaining power, and accessing essential services. Without deliberate efforts to involve women, the project missed an opportunity to enhance their influence and leadership in the agricultural sector. Lastly, women's participation in field days seems to have been limited. Field days are invaluable for sharing knowledge, learning about best practices, and networking. However, social norms, caregiving responsibilities, and lack of tailored outreach have restricted women's involvement, depriving them of critical learning opportunities.

Addressing these gaps requires gender-sensitive interventions, targeted training programs, and institutional reforms. Empowering women through financial literacy workshops, decision-making roles, and cultural shifts can significantly enhance their participation. Additionally, showcasing successful female farmers as role models could inspire broader inclusion and challenge stereotypes. Future initiatives must prioritize equitable access and representation to ensure that women play an active role in shaping the agricultural landscape.

b) Climate-Smart Agriculture

When evaluating the project from a climate-smart agriculture perspective, the evaluation team found that substantial effort had been put into engaging in climate-smart agricultural activities. The review of project documents and interviews indicated that the project followed implicit climate-smart agricultural practices in the design and implementation to increase resilience and boost pulse crop productivity. Focus group discussions with farmers showed that common climate-smart practices used by them included the use of organic or bio-fertilizer, crop rotation, integrated pest management, intercropping, row planting, and the use of improved drought-tolerant varieties. The evaluation team also found that the project successfully promoted climate-smart improved seeds adapted to the local environment and farmers' needs.

Providing improved pulse seeds to farmers ensures that their investments in legumes will be secure. It has been shown that drought-tolerant and short-maturing haricot bean varieties (Seri 19 and Seri 125) have been successfully introduced, enabling farmers to access improved seeds of well-adapted varieties to diversify their crops and better cope with the effects of climate change. Additionally, feedback from key informants and community focus group discussions indicated that farmers received training on climate-smart agriculture and how to make their farming practices more resilient to various hazards. According to field-level project staff, farmers' use of bio-fertilizers was also a crucial aspect of the project. Some farmers have already begun utilizing bio-fertilizers. Bio-fertilizers, derived from living microorganisms such as bacteria, fungi, and algae, enhance soil fertility by fixing atmospheric nitrogen, solubilizing phosphorus, and stimulating plant growth through the production of growth-promoting substances. Unlike chemical fertilizers, bio-fertilizers reduce greenhouse gas emissions and minimize soil and water pollution, making them an environmentally friendly alternative.

FGD farmers and project staff further stated that the project has assisted farmers to integrating pulse crops and crop rotation into farming practices. This is a cornerstone of smart agriculture, providing significant benefits for productivity, sustainability, and environmental resilience. Pulse crops enhance soil fertility through their ability to fix nitrogen from the atmosphere, reducing the need for synthetic fertilizers and lowering greenhouse gas emissions. Their cultivation also improves soil structure, supports water retention, and boosts biodiversity. When included in crop rotation systems, pulses help break pest and disease cycles, reduce soil erosion, and promote efficient nutrient cycling, creating healthier soils for subsequent crops. Together, these practices enhance overall productivity, diversify farm incomes, and build resilience against climate change. This approach aligns with the principles of smart agriculture by emphasizing efficient resource use and long-term environmental sustainability.

However, discussions with farmers reveal that the lack of agroforestry education in the project is a missed opportunity, particularly in the context of climate-smart agriculture and sustainable development. Planting trees is a powerful tool for enhancing agricultural systems and addressing the impacts of climate change. Trees play a crucial role in soil conservation, improve water retention, and offer shade, all of which are vital in mitigating the effects of higher temperatures on crops.

4. Best Practices, Lessons Learned, and Challenges

In implementing initiatives or projects, it is essential to reflect on the strategies that have proven effective, the insights gained through experience, and the obstacles encountered along the way. This section presents the best practices that have emerged as benchmarks for success, the lessons learned that offer valuable guidance for future endeavors, and the challenges that highlight areas requiring improvement or innovative solutions

4.1. Best Practices

After a thorough examination of data collected through various tools, the consultant has identified the following as the best practices of the project.

- A) **Mapping value chains:** Conducting a thorough mapping of the pulse value chain is a best practice for identifying key stakeholders, processes, and bottlenecks. Understanding the complete flow of production, distribution, and marketing has enabled the project to make targeted interventions.
- B) **Identifying and validating Most Impactful Practices (MIPs):** Systematically identifying and validating MIPs(improved seed, fertilizer application, Rhizobia bacteria inoculation, integrated pest management and improved agronomic practices) that yield the highest agricultural impact ensures evidence-based approaches. These practices have become foundations for training, demonstrations, and widespread adoption by farmers.
- C) **Cluster-based farming:** Cluster-based farming was an impactful best practice that enhanced collaboration and efficiency in agricultural systems. This approach involved organizing farmers into clusters or groups to collectively manage resources, adopt improved practices, and share knowledge. By pooling land, labor, and inputs, cluster-based farming allowed for economies of scale, making the adoption of advanced technologies and practices more feasible and cost-effective. Farmers working within clusters benefited from better access to markets, financial services, and agricultural inputs such as seeds and fertilizers. It fostered knowledge exchange among members, enabling faster dissemination of innovative techniques.
- D) **Informal seed system and seed connection:** The informal seed system and seed connection were valuable best practices in the project. Informal seed systems, which relied on farmer-to-farmer exchanges, local markets, and community networks, ensured access to seeds that were well-adapted to local conditions. These systems promoted seed diversity, preserved traditional varieties, and empowered farmers by allowing them to retain control over their seeds. Such practices were especially important where formal seed systems were limited or inaccessible. Seed connections, on the other hand, focused on linking farmers with reliable seed sources and fostering knowledge exchange about seed selection, storage, and usage. Building strong connections between farmers, local seed producers, and cooperatives enhanced the availability of quality seeds while promoting trust and collaboration. Together, the informal seed system and seed connection strengthened resilience, enhanced biodiversity, and supported sustainable farming practices by ensuring farmers had consistent access to suitable and affordable seeds.

4.2. Lessons Learned

- a) Before the project, pulse crops were traditionally viewed as secondary crops planted in small plots of land. This project changed farmers' perceptions, showing that pulses can be considered as cash crops and an important source of food. Farmers now understand that pulses increase soil fertility, are cash crops, and improve soil quality.
- b) The project facilitated an enabling environment for cooperative-based seed production and contributed to removing the bottlenecks preventing farmers from accessing improved seeds. These production systems

foster a pluralistic seed system, contribute to seed security, and play a crucial role in increasing food production and farmers' incomes.

- c) The price of beans used to be very low, but due to project interventions, many farmers have shown keen interest in producing pulse crops even outside the project areas.
- d) Proper threshing is important to minimize damage to pulse seeds. Before the project, farmers simply placed them on the ground and mixed them with the soil. Now, during threshing, they place the seeds on a clean surface and gently beat them with a stick to remove them from the pods.
- e) The project organized cooking demonstrations for improved nutrition for farmer communities. Women farmers actively participated in demonstrations and learned how to prepare nutritious food, improving the nutrition of their households.
- f) The project promoted the weeding and cultivation of neglected and underutilized haricot beans to improve production in the face of harsh farming conditions due to climate change and unreliable weather patterns.
- g) The project has made maximum efforts to bring cooperation into the seed production process to produce quality seed locally to meet smallholder demands and improve food security.
- h) The project promoted timely threshing of pulse crops to reduce post-harvest losses by providing training on post-harvest management practices and promoting the use of post-harvest technologies. According to project field coordinator, farmers before the project harvested beans when they were overripe, reducing the yield by 20 percent. Now, with training and awareness, they harvest early when 50 percent of the pods turn black and 50 percent are green.
- i) The project has enabled farmers to grow faba beans and peas on land already depleted by wheat and barley, increasing nitrogen fixation and soil fertility.
- j) Farmers have learned from the project how to store their produce and improve their income by saving harvests and shifting sales to times when prices are higher.
- k) The use of wider spacing between plants reduces the risk of stem fall or lodging.

4.3. Challenges

- **Security Concerns:** Security problems have somehow affected the project implementation, especially in the first and second years of the project. It particularly hindered movement to the project sites, which affected the monitoring of the progress of the project activities.
- **Limited access to improved seeds and fertilizer:** Limited access to improved seeds and fertilizer is a common issue among farmers. Farmers have reported that they struggle to obtain consistent fertilizer, and when it is available, they often do not receive the required quantity on time. For example, farmers mentioned during the FDG sessions that they typically sow faba beans in June, but fertilizer is not available until the end of July or even in August. As a result, they have experienced a decrease in faba bean production. Additionally, aside from those involved in contract farming, most farms do not have access to improved seeds. This lack of access to essential resources hinders the ability of farmers to maximize their crop yields.
- **Rising cost of fertilizers and improved seeds:** The rising cost of improved seeds and fertilizers has posed a significant challenge, particularly for marginal and small-scale farmers, who often find these essential inputs financially out of reach. High prices have created barriers that limit access to quality seeds, preventing many farmers from reaping the benefits of improved practices despite having received training. This issue is particularly pronounced among farmers who were trained to cultivate beans but are unable to translate their knowledge into action due to the financial burden of acquiring improved seeds. The constant escalation of seed prices not only hampers production but also discourages trained farmers from adopting modern agricultural methods, effectively stalling progress in agricultural development. Addressing this problem requires targeted interventions, such as subsidies, price control mechanisms, or financial support programs, to ensure improved seeds and fertilizers are accessible to farmers across all economic levels.
- **Insufficient rainfall:** Insufficient rainfall posed a serious challenge for farmers in East Shewa, particularly during critical growth stages of crops like the haricot bean. The lack of rainfall during the

flowering stage severely affected moisture availability, which was essential for the proper development of the bean pods. This led to reduced productivity and significant yield losses. The problem was further exacerbated by reliance on rain-fed agriculture, with limited access to irrigation or water management systems.

- **Delayed payments and problems with price setting:** Delayed payments posed a significant challenge for farmers, especially those linked to unions in East Shewa. Farmers often had to wait three to four months to receive payments, creating financial strain and limiting their ability to prepare for the next planting season. This delay disrupted timely land preparation and the procurement of essential agricultural inputs, directly affecting crop yields and overall productivity. Farmers in East Shewa also faced challenges with the union regarding market price-setting. The union struggled to establish prices promptly, creating uncertainty for farmers about the value of their produce. This lack of timely price decisions further compounded financial difficulties, especially when combined with delayed payments. The slow pricing process hindered farmers' ability to plan effectively for future investments in land preparation and agricultural inputs.
- **Ineffective market linkage:** Despite identifying seven bulk buyers for pulse commodities and efforts to establish linkages, the project lacked effective linkages between the buyers and farmers, particularly in Arsis. This disconnect hindered the ability of farmers to sell their produce efficiently and fully benefit from market opportunities. Without strong relationships and communication channels between the farmers and bulk buyers, the farmers struggled to meet specific buyer requirements, such as quantity, quality, and delivery timelines. As a result, the buyers remained underutilized, and farmers faced challenges in securing fair prices and guaranteed markets. The evaluation reveals that the absence of facilitated market links by the project has compelled farmers to sell their produce independently, often placing them at a disadvantage in terms of market prices.
- **Limited access to credit:** Limited access to credit was a significant barrier for farmers. While some farmers received seeds and fertilizers on credit from the union in East Shewa, the majority faced challenges in obtaining cash loans from cooperatives or microfinance institutions. The primary cooperative in Arsi itself lacked the financial capacity to provide loans to its members, which left farmers with few options to finance their agricultural activities. This lack of access hindered their ability to invest in inputs, prepare land adequately, and improve productivity, ultimately limiting opportunities for growth and resilience.
- **Limited government support:** Although the government advocates for agriculture, the support provided was limited in scope and impact. While policies and initiatives reflected a pro-agriculture stance, their implementation often fell short in addressing critical needs such as access to affordable inputs, infrastructure development, and farmer training. Limited financial investment and insufficient extension services left farmers, particularly smallholders, without adequate resources to modernize and sustain their agricultural activities.

5. Conclusion and Recommendations

5.1. Conclusion

The evaluation found that the PULSE project undertook a range of activities, including value chain mapping, identifying and validating the most impactful agricultural practices, training farmers, and organizing demonstration fields and field days to showcase these practices. The project popularized high yielding, early maturity and disease resistant, varieties to enhance the productivity of haricot bean and Faba beans/peas. Additionally, the project engaged farmers in seed multiplication and distribution and facilitated access to credit through the contact farming modality. For market accessibility, the project identified bulk buyers and made efforts to link them with farmers.

The project has had a big impact on productivity of pulse crops. It successfully enhanced the production capacity of farmers, leading to a remarkable 185% improvement in pulse crop productivity. This is a change from an average of 14Qt/ha before the project to 26Qt/ha after the project. Furthermore, the project contributed to a

95% increase in household income (a change from an average annual income of ETB 73,250 before the project intervention to ETB 143,305 after the project intervention), which in turn improved the food security and overall livelihoods of 6,500 households, benefiting approximately 39,000 household members. These outcomes underscored the project's vital role in addressing poverty, fostering sustainable agricultural practices, and building resilient farming communities.

Despite these achievements, several constraints continue to hinder the sustainability of the project's results. Farmers faced persistent challenges such as limited access to improved seeds and fertilizers, which were not only scarce but also expensive. This limited access has weakened efforts to expand productivity further, particularly among marginalized and small-scale farmers and women. Rising input prices also discouraged trained farmers from applying improved practices, which limited the broader impact of the project. Climate change emerged as another critical issue, with erratic rainfall patterns and insufficient moisture affecting crop yields. For example, insufficient rainfall during key growth stages of the haricot bean directly impacted productivity in certain areas. These climate-related challenges highlighted the importance of integrating more robust climate adaptation strategies into future interventions. Although the project achieved gender inclusivity in terms of participation, it fell short in designing and implementing targeted interventions specifically aimed at addressing the unique needs of women. While women may have been included in training sessions, demonstrations, and other activities, the absence of gender-specific strategies meant that critical issues such as access to credit, inputs, and decision-making roles in agricultural activities were not adequately addressed.

To promote gender inclusivity in the pulse value chain, it is essential to support female farmers by providing access to improved seeds, fertilizers, and specialized training, enabling them to strengthen their role in production and contribute to both household food security and economic empowerment. Financial inclusion plays a key role, requiring tailored financing mechanisms that address women's constraints, such as flexible loan repayment options and support for savings groups. In addition, enhancing market access through gender-sensitive systems—improving transportation, storage facilities, and direct linkages—will enable women to sell their produce more efficiently. Equally important is capacity building and leadership training, equipping women with the skills to take on decision-making roles within cooperatives, unions, and agribusinesses, ensuring their voices are heard and their contributions recognized in the agricultural sector.

In conclusion, the PULSE project demonstrated the potential of targeted agricultural interventions to significantly improve productivity, income, and food security. However, achieving long-term sustainability will require addressing the ongoing challenges that farmers face. Strengthening access to affordable inputs, enhancing market linkages, increasing credit availability, and integrating climate-smart solutions are essential next steps. Furthermore, bolstering government support and fostering public-private partnerships will be critical in scaling the successes of the PULSE project and ensuring sustainable development for farming communities. These lessons and recommendations provide a solid foundation for future programs aimed at improving agricultural productivity and livelihoods.

5.2. Recommendations

Based on the above evaluation findings, the following recommendations are suggested:

A. Recommendation for Donors

- The project covered three years, and these three years proved to be insufficient for the PULSE project to fully achieve its goals and ensure the sustainability of its outcomes. While the project made notable strides in improving pulse productivity, household income, and food security, the complex challenges faced by farmers—such as limited access to credit, rising input costs, climate-related impacts, and ineffective market linkages—require long-term solutions and continuous support. A longer timeline would allow for the deeper integration of interventions, enhanced capacity-building efforts, and strengthened partnerships with stakeholders, including bulk buyers, financial institutions, and government

agencies. Extending the project duration could also facilitate the scaling of successful practices, the implementation of more targeted gender-sensitive programs, and the establishment of resilient systems to address challenges like climate change and input affordability. Thus, the Achmea Foundation and other donors need to consider extending the length of their grants to five years instead of three.

B. Recommendation for EUCORD

- Future interventions need to prioritize the diversification of livelihoods beyond crop-based activities to include alternative sources such as apiculture (beekeeping) and poultry production. This approach will provide value chain participants, particularly farmers, with a broader range of options, enabling them to select interventions that align with their skills, resources, and interests. Diversified livelihoods will also enhance income stability, reduce reliance on a single source of income, and foster resilience against economic or environmental shocks. Implementing training programs, providing technical support, and facilitating access to inputs for these alternative livelihoods will be crucial for successful integration.
- Although 30% of project participants were women, addressing the specific challenges that women faced in agriculture requires a more targeted approach. EUCORD should undertake thorough assessments of the current gender dynamics in the project locations to identify barriers and opportunities for women's needs and priorities. Based on these findings, future interventions should include activities that both implicitly and explicitly address these gender-specific challenges.
- Although the project had begun operations by mapping value chains, there is a need for a pre-project preliminary baseline survey before the project implementation. This survey will help evaluate potential issues and identify the needs and constraints faced by the target beneficiaries.
- There is a positive prospect for the sustainability of the project outcomes, but it requires a stronger exit strategy. This evaluation highlights the need for a dedicated and comprehensive sustainability and exit plan that clearly outlines the continuation of benefits and impact beyond project's life span.
- The participation of stakeholders in implementing the project was limited, so it would be beneficial to include other stakeholders, such as microfinance institutions, cooperative promotion office, women and children's office, and the Federal and Oromia seed enterprise.
- Collaborate with governmental agencies, NGOs, and private sector organizations to secure funding, technical support, and resources required for the successful implementation of the project.
- To overcome the obstacles to knowledge transmission and the sustained adoption of project innovations, it is recommended that the project establish its own demonstration sites. This will help promote continuity in practices and create mechanisms for sharing project technology and associated knowledge within the project kebeles.
- Harmonizing support services across all project areas is essential for promoting equitable agricultural development.
- Getting the farmers in variety evaluation and selection in project areas where haricotbean and faba bean/peas are produced and multiplied has irreplaceable importance to introduce the new varieties. Introduction of new pulse crops varieties that are better adapted to non-project woredas is needed to increase production and productivity

C. Recommendation for government stakeholders

- There is a need for stakeholders' engagement in promoting and popularizing Most Impactful Practices (MIP) to other non-targeted kebeles and woredas. This will help the mandated institutions to continue the practices beyond the project implementation period.
- The interviews with stakeholders reaffirmed that the project came at the right time to raise awareness and provide training on pulse production and marketing. It has certainly generated a healthy momentum. However, they cautioned that this momentum and enthusiasm must not be allowed to wither away. There should be commitment and support at the woreda level to maintain the momentum and move forward with stakeholder coordination and collaboration.

- The project attempted to improve access to timely market information. However, additional support is required to train farmers on how to create and manage market linkages, especially through the union. Further support on market linkages will also help enhance excitement towards market solutions for the farmers.
- Contract farming should be expanded to other project areas, which would help farmers receive a reasonably guaranteed market. Government sectorial offices (e.g., agriculture office) should get involved directly in the process, but special measures may be needed to gain their full participation in the pulse value chain.
- There is also a need to encourage model farmers to engage in seed production to address the shortcomings of both farmers and formal seed systems.

D. Recommendation both for Government and EUCORD

- Linkages between different actors involved in seed systems, such as the Agriculture Office, Union, Oromia Seed Enterprise, and Agricultural Research Centers, need to be strengthened to address the improved seed shortage.
- Experience sharing is a valuable mechanism for the transfer of technical knowledge and good practices. The need for the exchange of experiences and good practices among farmers was identified as critical by beneficiaries.
- Poor market access can prevent farmers from adopting new practices, which in turn reduces yields and profits. Facilitating market access requires policymakers to tackle big challenges often associated with large investments. However, there are smaller activities that can also address market challenges through digital platforms. Hence, there is a need for digital platforms that connect farmers and traders and share frequent price information through SMS.
- Cooperatives played a decisive role in producing quality seeds of all classes and contributed to seed security. However, they are facing a lack of access to sufficient capital to fund their organizations. This calls for strengthening the financial capacities of local microfinance institutions in the provision of credit.
- The provision of incentives for seed producers could speed up investment in seed marketing infrastructure and associated issues.

Appendix

Appendix I: Case Story Analysis

Case Story I

In the rural farming community of Haro Bilalo Kebele, Tiyo Woreda, 52-year-old Dejene has experienced a significant transformation in his agricultural practices and livelihood, all thanks to the PULSE project. As a father of six - three daughters and three sons - he has always relied on farming to support his family. However, before the project's intervention, his productivity was limited, and financial stability seemed unattainable. Dejene first learned about the PULSE project through Development Agents in his woreda. He was chosen for the project based on his agricultural potential, such as land ownership and previous experience in farming. He was fortunate to be selected to participate. Over the past two years, the project has provided him with invaluable training on the most impactful practices, including land and seed selection, fertilizer and seed application rates, plowing techniques, row planting, integrated pest management practices, and post-harvest management techniques. This hands-on learning experience involved attending demonstration fields and field days, where farmers could observe and practice advanced techniques. This comprehensive training shifted his farming approach from traditional methods to scientifically supported practices, ultimately enhancing his productivity. After the training on impactful practices, he was encouraged to seek improved seeds independently. Determined to apply his newfound knowledge, Dejene obtained three quintals of high-quality faba bean seeds from a nearby woreda for ETB 21,000. Additionally, he acquired fertilizers from local cooperatives to enhance soil fertility. The impact of this agricultural investment was immediate and remarkable. Before joining the project, his faba bean yield was a modest 4-5 quintals per hectare. However, after implementing the training and utilizing improved seeds, his production soared to 26 quintals per hectare - a more than fivefold increase in output. Encouraged by these exceptional results, he decided to expand the size of his land dedicated to pulse production. The increase in productivity directly translated into higher household income. Before the project, Dejene's earnings ranged from ETB 50,000 to ETB 60,000 annually. With the improved yields from faba bean sales, his income surged to 230,000 birr and beyond - marking a life-changing financial improvement. He sold his produce to fellow farmers, boosting both his revenue and the local food supply. The substantial income increase had a ripple effect on his household. The family's food security significantly improved as they began incorporating faba beans into various dishes, thanks to cooking training provided by the project. The nutritional benefits of including pulse-based meals enhanced their diet, ensuring better health and well-being. Education also became a priority. With new financial stability, Dejene could support his son's university education at Asela University, paying nearly 5,000 birr per semester in tuition fees. He also covered expenses for another son who enrolled in Adama University's regular program, ensuring his children's prospects through quality education. Before the PULSE project, Dejene had a bank account but no savings. Now, with increased earnings, he has started depositing money into his account, securing financial stability for the long term. This newfound economic security has inspired him to continue expanding his farming operations, optimizing land usage, and increasing production capacity. The project not only impacted Dejene's livelihood but also changed his perception of faba beans. Previously seen as a household staple for consumption, the pulse crop has now become a valuable cash crop, bringing economic prosperity to farming households like his. Despite the remarkable success, challenges persist. Access to improved seeds and fertilizers continues to be a hurdle for him, jeopardizing sustained high productivity. Dejene believes that while the PULSE project has empowered farmers, government intervention is necessary to ensure continuous access to quality inputs. He wishes the government to support him beyond the project's duration, providing solutions to bridge existing gaps in agricultural resources.

Case Story 2

Aliyi Harego is aged 51 years, living in Anano shisho kebele of Adami Tulu Jido Kombolcha woreda in East Shoa Zone, Oromia region. He is married and has 6 children, and 3 extended family members, all are depending on him for their survival. Before the project, he used to grow low yielding local maize and wheat varieties and the money he earned from sales was used for food, which meant he was unable to save much. Aliyi like several others farmers in his kebele had to give up farming because of lack of water to irrigate his fields. The rains which would earlier nurture his land have of late; become scanty and unpredictable, leaving his land devoid of any crop. As PULSE project came to his kebele to improve the resilience and livelihoods of the smallholder farmers, he was among the selected 70 cluster farming members who are considered as active farmers who can change themselves. He joined the project three years ago and received training in the first year on good agronomic practices, use of pesticides and fertilizer application and maintaining the cleanliness of the land when it is harvested. Through this training, he mastered effective row planting techniques, and fertilizer application rate and pest and disease management. He also learned farm safety measures to ensure his crops would not be damaged, destroyed, or infected unintentionally. He added that the project also linked him and other farmers to the union, which supplies their input store with the certified seeds enabling them to access the seeds easily. After the completion of his training program, Aliyi put his rich knowledge about haricot bean farming to practice and engaged in improved seed multiplication on 2 hectare of land and managed to get 46 quintals and earned 243,800 birr in the second year. During the third year, he obtained 48 quintals of haricot bean and earned up to 307,200 birr. According to him, he has been involved in various crop production farms and has not achieved satisfactory production and income. He said, before the project, he used to grow local haricot bean and produced 8 quintals per hectare of land. Now, with the improved seed that he has grown, it gives 26 quintals per hectare. He and other farmers benefitted from economic benefits of this food security improvement project through the engagement of improved haricot bean seed multiplication and conducive market. He described that his kebele is located in the Rift Valley and there was a lack of rainfall, so the crops that were planted often experience a lack of rainfall when they were about to ripen, and their yields were very low, and sometimes they were completely destroyed. But now, thanks to God, the project has helped us to find the improved haricot bean seeds that are drought-resistant, high-yielding, and disease-resistant, as Aliyi explained. He added the project promoted the competitiveness among the farmers who are organized in cluster by providing them access to inputs, and financial products and services. Aliyi and his wife also received training on nutrition and they learned how to prepare food from the haricot bean, for example, how to make Samosas, soup and mixing haricot bean with rice. Aliyi said he is happy because his assets have increased and his efforts have yielded impressive results, generating a yearly income exceeding 300,000 birr from haricot bean. He said he has built a modern family house in Adami Tulu town. He is also proud that while he has a large family, he is able to send all his children to relatively good schools. Aliyi's success has also inspired other farmers to follow in his footsteps. Looking ahead, Aliyi is optimistic about the future of Faba bean farming. He continues to mentor other farmers, encouraging them to adopt modern farming techniques and diversify their crops. Agriculture is not just about hard work; it's about smart work," he highlights. His passion to change the family's livelihood and his current success in a short period of time indicates that he could be more productive and successful in the near future.

Case Story 3

Tefaye kebede is a 46 years old farmer from HaroBilalo kebele of Tiyo woreda in Arsi zone of Oromia Region. He is married and has six children. The first born child attended his first degree at college in Assela to help him earn his first degree and the rest five children attended their education at junior and secondary schools. Tefaye's land holding size is about 2.5 hectares and grows wheat and barley as main crops. Three years ago, in 2022, Tesfaye attended training on improved agronomic practices and pest management, which was facilitated by PULSE project. It unlocked a wealth of knowledge for Tesfaye including site selection, land preparation, row planting, application of fertilizer, disease management and post-harvest handling and more. Before the project, Tesfaye said he only planted beans if there was a field left over from other crops, and he did not see Faba beans as a main crop. Following receiving technical training, Tesfaye did not waste time; instead, he prepared himself to fully engage in Faba bean farming as per the knowledge and skills he gained from training. Immediately after getting improved Faba bean seed from another woreda at his own expenses, he started sowing faba bean and managed to get a good yield of 12 quintals and earned 108, 000 birr from sales. In the second year, he produced 17 quintals of Faba beans from halve hectare of land, earning up to 187,000 birr. According to Tesfaye, the improved Faba bean seed he is growing is super food for the future generation because the risk of pest and disease attack is comparatively low. Tesfaye has also given valuable advice to farmers to not consider Faba bean farming in terms of monetary benefits alone but accept it as a sustainable way for improving soil fertility and health. He believes every farmer should follow the integrated way of farming as these results in complementary and supplementary methods that enhance the productivity of faba bean. The project has now changed the way I and other farmers think about bean, as he explained. He said, the project has created a lot of enthusiasm and farmers who once relied only on traditional crops are now benefiting from improved faba bean seed and improved farming techniques to increase productivity and profitability. Tesfaye, further explained, the demand for faba bean improved seed has increased and farmers from surrounding kebele also come to learn the intricacies of improved Faba bean farming practice. Tesfaye also said he and his wife got food preparation training from the project on how to prepare a variety of food from Faba bean. Immediately after the training, his wife prepared various dishes such as samosas, stews, soups and other dishes from beans, using what she has learned, thus providing her family, especially the children, with nutritious and protein-rich food. Both the children and I like this new recipe very much and we are using it regularly, 'Tesfaye shares. He is planning to expand the land to 2 hectares next year and hoping to get 40 quintals. He also plans to save all that he collects from the sales of the faba bean in the bank and seek additional opportunities that could complement his plan of expanding other income generating activities and remain a model for the rest of the villagers.

Appendix II: Questionnaire

A. INTRODUCTION

The PULSE Project aims to promote the use of legumes to improve food security, nutrition, and livelihoods in Ethiopia. The objective of this survey is to evaluate the impact of the PULSE Project. We aim to gather valuable insights into how the project has influenced agricultural practices, economic benefits, and community well-being across the intervention areas. By participating in this survey, you will help us understand the impact of the project on various aspects, including agricultural practices, economic benefits, and community well-being. Your honest responses will guide us in making informed decisions and refining our strategies for future interventions. Thank you for your participation and cooperation. We appreciate your time and effort in completing this survey.

B. CONSENT TO PARTICIPATE

We invite you to participate in the impact assessment survey for the PULSE Project. Your participation is entirely voluntary, and your input is highly valued. You may choose to withdraw at any time. If you decide to withdraw, any data you have provided up to that point will be excluded from the analysis. Your responses will be confidential and will only be used for this assessment. Data will be anonymized, and no personally identifiable information will be shared. There are no direct benefits or risks associated with participating in this survey. However, your input will contribute to the improvement and success of the PULSE Project. .

Do you agree to participate in this survey?

☐ Yes, I agree to participate in the survey. ☐ No, I do not wish to participate in the survey.

I. ENUMERATOR'S AND STUDY AREA INFORMATION			
1.1. Questionnaire code: _____	1.2. Enumerator's Name: _____		
1.3. Survey zone: _____	1) East Shewa 2) Arsi Zone		
1.4. Survey Woreda _____	1) Adami Tullu Jido Kombolcha	2) Lemmu Bilbilo	
1.5. Survey Kebele _____	1) Anano shisho 2) Oda Anshura	1) Lemu Dima 2) Dawa Bursa	
II. PROFILE OF RESPONDENTS AND PROJECT PARTICIPATION			
2.1 Respondents Gender: _____	1) Male	2) Female	
2.2. Age of the respondent: _____	_____ Years		
2.3. Household types	1) Female Headed 2) Male Headed		
2.4. Marital Status	1) Single 2) Married (single monogamous 3) married (polygamous) 4) Divorced 5) Widowed 6) Separated		
2.5. What is the total number of HH members? _____			
2.5. Highest level of education? 1) Unable to read & write 2) Read & write only 3) Primary (Grades 1-6) 4) Secondary (Grades 7 and 8) 5) High school (Grades 9-12) 6) Tertiary			
III. PRODUCTIVITY OF PULSE CROPS (OUTPUT & OUTCOME INDICATORS)			
A. IDENTIFICATION AND VALIDATION OF MOST IMPACTFUL PRACTICES (MIPS)			
3.1. Do you know the MIPS identified by the project team? 1) Yes 2) No			
3.2. If yes, what kinds of MIPS do you know? (Select all that apply) 1) Improved seed 2) Fertilizer application 3) Improved agronomic practices 4) Integrated Pest Management 5) Introduced Technology (Rhizium bacteria) 6) Other (specify) _____			
3.3. Are you practicing MIPS in your farm? ☐ Yes ☐ No			
3.4. If yes, which MIPS do you practice in your farm? (Select all that apply) 1) Improved seed 2) Fertilizer application 3) Improved agronomic practices 4) Integrated Pest Management 5) Introduced Technology (Rhizium bacteria) 6) Other (specify) _____			
3.5. What do you perceive as the main barrier to adopting the identified MIPS? (Select all that can apply) 1) High cost 2) Lack of knowledge 3) Limited access to resources 4) Resistance to change 5) Inadequate support services 6) Others (specify) _____			
B. TRAINING ON MOST IMPACTFUL PRACTICES			
3.6. Did you receive training on the MIPS for pulse production? ☐ Yes ☐ No			
3.7. Which MIP training did you receive? (select all that can apply) ☐ Improved seed ☐ Fertilizer Application rate ☐ Integrated Pest Management			

☐ Improved agronomic practice ☐ Introduced Technology(rhizobia bacteria ☐ Others (specify)_____
3.8. Did the training on the MIPs improve your pulse production techniques? ☐ Yes, significantly improved ☐ Yes, moderately improved ☐ Yes, slightly improved ☐ No improvement ☐ Did not receive training
3.9. What challenges did you face in adopting the MIPs covered in the training? (Select all that apply) ☐ High cost of implementation ☐ Lack of access to necessary inputs ☐ Limited knowledge and skills ☐ Resistance to change ☐ Inadequate support services ☐ Others (specify)_____
C. DEMONSTRATION FIELDS ON MOST IMPACTFUL PRACTICES
3.10. Did you visit any of the demonstration fields conducted on the MIPs? ☐ Yes ☐ No
3.11. If YES, how useful were the demonstration fields in helping you understand the MIPs? ☐ Very useful ☐ Useful ☐ Neutral ☐ Not useful
3.12. What MIPs did you observe in the demonstration fields? (Select all that apply) (1) Improved seed (2) Fertilizer application (3)Improved agronomic practices (4) Integrated Pest Management 5)Introduced Technology(Rhizobium bacteria) (6)Other (specify)_____
3.13. Have you implemented any practices from the demonstration fields on your farm? (1)Yes, all practices (2)Yes, some practices (3) No, but planning to (4) No, not planning to
D. INCREASE IN PRODUCTIVITY (OUTCOME 1)
3.14. Did the productivity of pulse crops increased since participating in the PULSE project? ☐ Yes ☐ No
3.15 How much quintal is the productivity of pulse per hectare? A) Before the project_____ b) After the project_____
3.16. Which factors contributed most to the increased productivity of your pulse crops? (Select all that apply) ☐ Improved seed varieties ☐ Improved agronomic practice ☐ Integrated pest management ☐ use of new technology(rhizobium bacteria ☐ Recommended Fertilizer application rate ☐ access ☐ Others (specify)_____
3.17. How has the increased productivity of pulse crops affected your overall income? ☐ Significantly increased ☐ Moderately increased ☐ Slightly increased ☐ No change ☐ Decreased
IV. ACCESS TO AGRICULTURAL INPUTS AND FINANCE IMPROVED (Outputs & Outcome)
A. MULTIPLICATION AND CERTIFICATION OF SEEDS (OUTPUT 2.1)
4.1. Did you participate in seed multiplication activities of the PULSE project? ☐ Yes ☐ No
4.2. If yes to Qn 4.1, what type of support did you receive in seed multiplication? ☐ Access to basic seed and fertilizers ☐ Financial support ☐ Extension services ☐ Access to necessary material support such as storage units ☐ Others(specify)_____
B. ACCESS TO IMPROVED/BASIC SEED (OUTPUT 2.2)
4.3. Did you have access to improved seeds from the PULSE project? ☐ Yes ☐ No
4.4. If yes to Qn.4.3, how many kilograms of seeds did you receive from the PULSE project?_____ Kgs
4.5. From where did you access improved seeds? (1) Market (2) Farmers (3) Cooperative/union (4) Agriculture research Center (5) Own purchase (6)Storage from previous season (7) From relatives/ neighbor (8) Others_____
4.6. How many hectares of the farm did you cultivate using the certified seed? _____
4.7. How has the use of improved seeds improved your crop yield? ☐ significantly improved ☐ moderately improved ☐ slightly improved ☐ No change ☐ Decreased
C. ACCESS TO MICROFINANCE LOANS (OUTPUT 2.3)
4.8. Did you have access to short-term agricultural credit to cultivate pulses from the project? ☐ Yes ☐ No
4.9. If Yes to Qn 4.8, what was the amount of loan you received? _____ Birr
4.10. What was the source of credit (1) Bank (2) MFIs (3) Edir (4) Friend (5) Cooperatives 6 Others (specify)_____
4.11. How much was the interest rate of the loan? _____ %
4.12. How would you rate the interest rate of the loan you took? ☐ Very high ☐ High ☐ Moderate ☐ Low
4.13. How did you use the agricultural credit you received? ☐ Purchased basic seeds ☐ Bought fertilizers and pesticides ☐ Hired labor ☐ Improved irrigation ☐ Others (please specify)_____
4.14. What challenges did you face in accessing agricultural credit?(select all that apply) ☐ No challenges ☐ High interest rates ☐ Complex application process ☐ Insufficient credit amount ☐ Delays in disbursement ☐ Other (please specify)_____

D. IMPROVEMENT IN FARMERS' ACCESS TO INPUTS AND FINANCE (OUTCOME 2)
4.15. Have you been able to cultivate pulse crops using improved practices? ☐ Yes ☐ No
4.16. How many hectares of land did you allocate for pulse production? A) Before the project_____ After the project_____
4.17. Did your access to agricultural inputs increase as a result of the project? ☐ Yes ☐ No
4.18. What impact has the access to agricultural inputs had on your pulse crop production? ☐ Significant positive impact ☐ Moderate positive impact ☐ No impact ☐ Negative impact
4.19. Did your access to finance increase as a result of the project? ☐ Yes ☐ No
4.20. What impact has the access to agricultural inputs had on your pulse crop production? ☐ Significant positive impact ☐ Moderate positive impact ☐ No impact ☐ Negative impact
V. ACCESS TO GUARANTEED MARKETS
A. POTENTIAL BULK BUYERS AND THEIR REQUIREMENTS
5.1. Do you have market access? (1) yes (2) No
5.2. If yes, where do you sell your pulse? (1)Local market (2)Cooperative/union (3)Trader (4) Buyers linked by project 5)Others(specify)_____
5.3. Who are the bulk buyers for pulse commodities? ☐ Wholesalers ☐ Exporters ☐ Food processors ☐ Government agencies ☐ Large retail chains ☐ Cooperatives Unions ☐ Others (please specify)_____
5.4. Do you have any contract agreement with the potential buyers? ☐ Yes ☐ No
5.5. Have the bulk buyers helped improve market access? ☐ Yes ☐ No
5.6. What challenges did you face in selling pulses to identified buyers? (Select all that apply) ☐ Difficulty in meeting quality specifications ☐ Difficulty in meeting volume requirements ☐ Payment delays from buyers ☐ Transportation issues ☐ Other (please specify)
B. MARKET LINKAGE
5.7. Were you linked with any of the selected buyers for your pulse commodities due to the project? ☐ Yes ☐ No
5.8. Have you gained access to new markets since participating in the PULSE project? ☐ Yes ☐ No
5.9. If yes, what types of new markets did you get access? (Select all that apply) ☐ Local markets ☐ Regional markets ☐ National markets ☐ International markets
5.10. Is the price from the buyers better than the local market? ☐ Yes, significantly better ☐ Yes, slightly better ☐ About the same ☐ Low ☐ It depends
5.11. How satisfied are you with the prices offered by the buyers you were linked with? ☐ Very satisfied ☐ Satisfied ☐ Neutral ☐ Dissatisfied ☐ Very dissatisfied ☐ Not linked with buyers
C. FARMERS INCREASED SALES
5.12. Have you experienced an increase in sales of your pulse since the establishment of market linkages? ☐ Yes, significantly ☐ Yes, moderately ☐ No change ☐ Decreased sales ☐ Not linked with buyers
5.13. How many quintals of pulse were you selling to the market? a) before the project_____ b) after the project_____
5.14. What percentage of your pulse production is sold to buyers identified by the project? a) Before the project _____ % b) After the project _____ %
5.15. What percentage of pulses are used for home consumption or sold to the food market? a)Before the project _____ % b) After the project _____ %
5.16. What challenges did you face in increasing your sales of pulse commodities? (Select all that apply) ☐ No challenges ☐ Insufficient buyer demand ☐ Transportation issues ☐ Quality or quantity issues ☐ Payment delays ☐ Other (please specify) G. Did not increase sales
D. EFFECT ON HOUSEHOLD INCOME
5.17. Is there improvement in your income due to your participation in the project 1 ☐ Yes ☐ No
5.18. If the answer is "Yes," what was your approximate annual income? a) before the project__ b) after the project_____
5.19. What do you think is the most significant outcome of the improved market access for your household? ☐ Decreased production costs ☐ Increased household income ☐ Improved soil fertility ☐ Reduced market competition ☐ Others (specify)_____
VI. PROJECT GOALS AND IMPACT

6.1. How has your production capacity for pulse increased since participating in the project? ☐ Yes, significantly increased ☐ Yes, slightly increased ☐ Remained the same ☐ Decreased
6.2. Has your income improved due to the sales of pulse since participating in the project? ☐ Yes ☐ No
6.3. If "Yes," what has been the main contributor to your increased income? (Select all that apply) ☐ Improved access to markets ☐ Better farming techniques ☐ Increased production ☐ Financial support from the project ☐ Others (specify)
6.4. Do you/your household face a food insecurity problem after the PULSE project? ☐ Yes ☐ No
6.5. If yes, for how many months did you face food shortages in the past 12 months? _____ Month(s)
6.6. How many meals do you and your household members eat per day on average since project participation? ☐ One ☐ Two ☐ Three ☐ More than three
6.7. Over the past month, how often did your household have to skip meals because there was not enough food? ☐ Never ☐ Rarely (1-2 times) ☐ Sometimes (3-10 times) ☐ Often (more than 10 times)
6.8. Have there been any changes in the dietary diversity of your household as a result of the project? ☐ Significant improvement ☐ Some improvement ☐ No change ☐ Decline in diversity
6.9. Do you think your household's food security improved since participating in the project? A. Yes B. No
6.10. If the answer is "Yes," how has the project improved your household's food security? (Select all that apply) ☐ Increased food production ☐ Better access to nutritious food ☐ Reduced food costs ☐ Improved food storage techniques ☐ Others(specify)
VII. GENERAL QUESTIONS
7.1. Do you think the project has improved your livelihoods? ☐ Yes ☐ No
7.2. If "Yes", what were the factors influencing improving your resilience and livelihoods? (Select all that apply) ☐ Strong government support and policies ☐ Effective training and capacity building ☐ Access to quality agricultural inputs ☐ Availability of financial resources ☐ Market demand for pulse commodities ☐ Collaboration and partnerships with stakeholders ☐ Favorable weather conditions ☐ Farmer participation and engagement ☐ Timely and efficient project implementation ☐ Other (please specify)
7.3. If No, what were the factors influencing the unimprovement of your livelihoods? (Select all that apply) ☐ Insufficient government support and policies ☐ Inadequate training and capacity building ☐ Limited access to quality agricultural inputs ☐ Lack of financial resources ☐ Low market demand for pulse commodities ☐ Weak collaboration & partnerships with stakeholders ☐ Unfavorable weather conditions ☐ Low farmer participation and engagement ☐ Delays and inefficiencies in project implementation ☐ Other (please specify)
7.4. How likely are the project outcomes to be sustained after the project closure? ☐ Highly likely ☐ Somewhat likely ☐ Unlikely ☐ Very unlikely
7.5. What factors can contribute to the sustainability of the project? (Select all that apply) ☐ Strong stakeholder commitment ☐ Continued access to financial resources ☐ Ongoing training and capacity building ☐ Supportive government policies ☐ Effective partnerships and collaborations ☐ Community engagement and ownership ☐ Other (please specify)
7.6. What factors can negatively affect the sustainability of the project? (Select all that apply) ☐ Lack of stakeholder commitment ☐ Insufficient financial resources ☐ Inadequate training and capacity building ☐ Unsupportive government policies ☐ Weak partnerships and collaborations ☐ Low community engagement ☐ Other (please specify)

Appendix III: KII Guidelines

I. Key Informant Interview Guidelines for the woreda Agriculture office

A. Particulars of the Interviewee

Name of organization: _____ Title/position: _____ Woreda: ____/Kebele/Village: _____
Date of interview _____

B. Interview Questions

1. Are you familiar with the project PULSE? How was it implemented?
2. Was your office a collaborator in implementing the project? How was the coordination between your organization and the project?
3. To what extent has the PULSE project achieved its stated outcomes and results? **Probe** productivity of pulse crops, farmers' access to agricultural inputs and finance, farmers' access to guaranteed markets improved
4. What improvements or changes have been observed in the pulse value chain as a result of the project? How have these changes impacted the production, processing, and marketing of pulse commodities?
5. What was the project's overall impact and how did this compare with what was expected? **Probe** Food security, income increase
6. Which institutions have benefited from the PULSE project, and in what ways?
7. "How has the involvement of local stakeholders and communities influenced the project's sustainability?"
8. To what extent have all project stakeholders collaborated as planned?
9. To what extent were women engaged in the PULSE project?
10. Did the PULSE project contribute to the promotion of Most Impactful Practices, climate-smart activities in the intervention areas? If yes, can you describe how these climate-smart agricultural practices were implemented and their impact?"
11. Is there any change in the income and food security at the household level due to the introduction of improved seeds, impactful practices, and an increase in the yield?)
12. Were there any unintended results out of the project? Was there any factor that affected the effectiveness of the project positively and negatively? What are the factors?
13. Do you think that the changes in outcomes of the project will continue after exit from direct support? Are local capacities created to make it sustainable to make the government and local communities own the project?
14. What do you think are the key factors that will require attention to improve prospects of sustainability of the project outcome and the potential for replication of the approach?
15. What major challenges and constraints have the project faced, and how can these be addressed to facilitate implementation (probe for design, implementation, and coordination?)
16. What implementation issues/lessons, either positive or negative, affected the provided services?
16. Is there anything that the project could have improved to better support farmers in the woreda?
17. What recommendations can you provide for improvement of similar actions in the future?
18. Is there anything we did not discuss that you think I should know?

II. KII Guideline for EUCORD Staff at Headquarters and Field Level

A. Particulars of the Interviewee

Name of organization: _____ Title/position: _____ Woreda: ____ Date of interview _____

B. Interview Questions

1. How was the value chain mapping exercise conducted? What results did you get after the mapping exercise?
2. How were the Most Impactful Practices (MIPs) identified and validated? What were the results and the practice by farmers? What visible changes have been ensured due to the most impactful practices/activities?
3. Have you done on-farm demonstration exercises? How were farmers involved in this activity?

4. Were the processes and capacities (in terms of staffing, experience, etc.) effective in ensuring relevant and timely project delivery in support of the most needy and vulnerable?
5. How was the seed multiplication and distribution of promising pulse varieties carried out? Who did what? How did it go well?
6. How were potential bulk buyers of pulse commodities identified? "What were the key buying requirements of these buyers?"
7. How were market linkages established between farmers and the selected buyers?
Probe for contract farming, refinance etc...
8. Has the project been responding and adapting to changing circumstances? What lessons can be adapted to future programming?
9. What are the unintended outcomes of the project (both positive and negative)?
10. To what extent has the PULSE project achieved its stated outcomes and results? Can you provide specific examples of the project's successes and achievements?
11. What major factors positively/negatively influenced the achievement/non-achievement of the project's outcomes and results?"
12. Can you describe the level of interest shown by value chain actors in replicating the activities undertaken during the project life?
13. How do you explain the change in terms of ensuring women economic empowerment? Creating a job for youth?
14. To what extent do you believe the benefits of the PULSE project will continue after the project closure?
15. What factors do you think will contribute to the sustainability of the project's benefits and what factors could negatively affect the project's benefits?
16. What were the most innovative practices introduced by the project?
17. Has EUCORD developed appropriate exit strategies to contribute to the sustainability of the project achievements? What are these strategies? To what extent do the exit strategies implemented and ensure the sustainability of the project outcomes?
18. What major challenges and constraints has the project faced, and how can these be addressed to facilitate implementation?
19. What key lessons learnt and best practices documented? How can the lessons and the best practices be replicated?
20. What implementation issues/lessons, either positive or negative, affected the provided services?
21. How do you see the participation of the stakeholders (the communities, the government, and partner NGOs) in the project planning, implementation, monitoring and evaluation? Do you think, their participation deepens sense of ownership and contributes for sustainability?

III. Key Informant Interview Guidelines for Bulk Buyers

A. Particulars of the Interviewee

Name of organization: _____ Title/position: _____ Woreda: _____ Town/Kebele/Village: _____

Date of interview _____

B. Interview Questions

1. What was your role in the PULSE project?
2. What type of products did you buy from farmers embraced in the PULSE project?
3. Did you make contract farming with the farmers and refinancing
4. Did you have your requirements for buying? What are these requirements?
5. Do you get products from farmers as per your requirements? How do you set prices for farmers' products?
6. How has the project influenced your procurement practices and relationships with suppliers?
7. Can you describe the level of interest shown by value chain actors in replicating the activities undertaken during the project life?
8. What changes have you observed in the production, processing, and marketing of pulse commodities as a result of the PULSE project?
9. Do you think that farmers have benefited from the project? How?
10. Have there been any unintended results of the project, either desirable or undesirable?
11. Please also includes challenges, best practice and recommendation

IV. Key Informant Interview Guidelines for Cooperative Unions

A. Particulars of the Interviewee

Name of organization: ____ Title/position: _____ Woreda: ____ Town/Kebele/Village: ____ Date ____

B. Interview Questions

1. Was your office a collaborator in implementing the PULSE project? What specific support or resources did your organization provide for the implementation of the project?
2. How did your institution contributed to the development of the pulse value chain carried out by the PULSE project?
3. What improvements or changes have been observed in the pulse value chain as a result of your involvement in the project?
4. How have these changes impacted the production, processing, and marketing of pulse commodities?
5. How has the project influenced the cooperative's capacity to support its members?
6. Anything you would like to say regarding your institution's involvement in the project and the project as a whole.
7. Please also include challenges, best practice and recommendation

V. Key Informant Interview Guidelines for Melkasa Agricultural Research Center

A. Particulars of the Interviewee

Name of organization: _____ Title/position: _____ Woreda: ____ Date of interview _____

B. Interview Questions

1. Was your office a collaborator in implementing the PULSE project? How was the coordination between your organization and the project?
2. What were your roles in the project? How did you experiment, certify, and distribute improved seed for the farmers?
3. What improvements or changes have been observed in the pulse value chain as a result of the project? "How have these changes impacted the production, processing, and marketing of pulse commodities?"
4. Did the PULSE project contribute to the promotion of most impactful practice or improved agricultural activities in the intervention areas? If yes, can you describe how these most impactful practices were implemented and their impact?"
5. "How has the involvement of local stakeholders and communities influenced the project's sustainability?"
6. "What agricultural research findings have emerged from the project, and how can they be applied to future initiatives?"
7. What challenges did you face in the experimentation, demonstration, certification & distribution of certified seeds?

Appendix IV: FGD Guidelines

Dear FGD Participants

Hello, my name is I am the facilitator of this FGD. The objective of this study is to evaluate the performance of the PULSE project implemented in your kebele. This FGD is planned to collect the necessary data regarding the performance of the project. Data will be collected from project beneficiaries. As a project beneficiary, you are selected to participate in the FGD. Your participation is completely voluntary. The genuine responses that you provide will be used as input for this particular study and will have a great contribution to achieving the objectives of the study. Your responses will be strictly confidential, and data from this research will be reported only in the aggregate. No one knows who provides what information. We would, therefore, like to request your time to discuss a few questions prepared for this purpose.

Are you willing to respond to the questions that follow? Yes _____ No _____

If yes, thank you in advance for your cooperation, time, and support!

FGD facilitator's Name: _____ Signature _____

i. Particulars of the Discussants

FGD Number				Woreda	
				Kebele	
Facilitator's Name				Date of FGD	
				Start Time	
Number of participants				End Time	
Groups of FGD participants				Types of beneficiaries	
Code	sex	Age	Education level	Marital Status:	Current Employment Status
Physical Condition					
P1					
P2					
P3					
P4					
P5					
P6					
P7					
P8					
P9					
P10					
P11					

ii. Questions

General Questions

1. Do you know about PULSE project implemented by EUCORD? What do you know about the project? When did it start in this kebele?
2. What was/were the targeting criteria to be beneficiary of the project? Did the criteria consider the most vulnerable community groups?
3. What other similar projects have worked (are currently working) in your community? Describe when they were here and what they did.
4. Describe your participation and other different types of community members (women, the poor, and other vulnerable groups) during the project implementation. [Prompt respondents to recall how the project integrated different female members, how they applied, and the criteria for selection, why they think they were selected?]
5. How do you describe the situation of HHs before the project? Have there been any changes (e.g. increase in productivity/yield of pulse crops) in the past 3years? If so, what/who brought the changes?

Training

6. What kinds of training and support did you receive from the project? Probe: land selection, land preparation, input utilization, crop management, harvesting and post harvesting, integrated pest management.
7. How has this training helped you and /or your household?
- 8.

Access to and use of input and support from the project

9. How does your access to agricultural inputs (fertilizer, pesticides, and seed, tools) look like?? [Probe: access in terms of location, availability, timing and price]
10. Have you been using new/improved inputs promoted by the project? If not, why not?
11. What difficulties did you encounter in using new/improved inputs due to the project and what did you do to overcome them?
12. How do the inputs you are using now compare to what you used before the project? What are the project benefits?

Access to Financial services and Marketing

13. Do you have access and use of financial services? If yes, does having access to financial services allow you to procure the inputs, labor and equipment you need for your agricultural or rural off-farm activities? How?
14. How do you market your PULSE crops or products? [Probe: market place, distance, agricultural cooperative, individual buyers linked by project etc.]
15. - Did project interventions improve marketing? If yes, please tell me what difference project made to the marketing behavior/strategy of farm households in the community, if at all [improve their situation, no change, it got worse]? Explain how.
16. What are the uses & strengths of market information shared with farmers? What could have been improved?
17. Are you actively engaged in the activities of the cooperatives? Do you participate in the cooperative marketing, meeting, or other cooperative affairs? Explain your engagement with the coop & services.
18. Does the cooperative provide you with the services that you demand from the cooperative?
19. Does any member get dividend from the cooperative? What is the minimum and maximum amount of the dividend for each?

Production and Productivity

20. Which agriculture practices do you practice on your land? (Probe: before and after the project)-Which practices have you decided not to practice? Why?
21. What are the common crops and food crops grown, and the average yield in this area? (Probe: haricot bean, broad bean, and fab bean before and after the project?)
22. What support did you get from PULSE for agricultural practices? Probe: (a) training, equipment, materials, improved seeds; agri. input, new agri. practices, technical support for Impactful practice? Do you still need this support to continue using these practices? [Probe on: support for men and women- female headed, married women, youth female]

Food security, Nutrition, diversity

23. Before the project, describe your typical diet (the food you eat)?
 - a. How did you provide food for your family?
 - b. Are there times during the year where feeding your family is more difficult?
 - c. When? How were you able to feed your family during these times? [Probe on: compare food availability among male-headed and female-headed HHs]
 - d. If you have not seen an improvement of your family's nutrition, what are some of the challenges? What are your suggestions for further improvement? If it has improved, in which areas? Give details.
 - e. After the project, do you feel you will have skills to grow enough food to feed your family? [Probe: compare for male and female headed HHs]

Income and Asset

24. Did you experience an increase in HH income and assets from project support? What do you think are the causes of these changes? Probe the average HH income after schemes are operational and specifically ask income from each crop they earn; compare for male- and female-headed HHs.
25. Since participating in PULSE project, have you undertaken any new income generating activities to diversify your income sources? If so, what are they?
26. Please describe what difference has the project made to non-direct beneficiary households in your community, if at all, and how?

Gender issues

27. Has the program contributed to influencing gender norms, roles, and relations within the community? [Probe: how the roles and relations of men & women changed due to project, give examples]

28. Do you think the project influenced women's participation in training, income generation, control over income and decision making?
29. Are there any activities of the project specifically targeting men and women- including the various types of women such as female HH heads, married women, and youth females? Explain.

Challenges, lessons learned and recommendations

30. What challenges or obstacles did the project encounter, and how did the project team respond to these challenges?
31. What changes have you observed in the production, processing, and marketing of pulse commodities as a result of the PULSE project?
32. To what extent do you think the benefits of the PULSE project will continue after the project ends, and what factors will help or hinder this sustainability? Are there conditions in place by the community and local government to make the project sustainable? As well in terms of individual capacity?
33. Did the PULSE project promote climate-smart agricultural practices in your area? Can you share examples of how these practices were implemented and their effects on the community?"
34. What is your perception of the interest shown by value chain actors in replicating the project's activities, and which activities do you think are most likely to be replicated after the project ends?
35. Any recommendations?

Appendix V: Guidelines for In-depth Interview

Dear IDP participants,

The objective of this study is to evaluate the performance of PULSE project. This IDP guide is, therefore, prepared to collect the necessary data to achieve the aforementioned objective. Data will be collected from project beneficiaries. As a project beneficiary, you are selected to participate in the IDI. Your participation is completely voluntary. The genuine responses that you provide will be used as input for this particular study and will have great contribution to achieve the objectives of the study. Your responses will be strictly confidential. No one knows who provides what information. We would, therefore, like to request your time to discuss a few questions prepared for this purpose.

Are you voluntary to respond to the questions that follow? Yes _____ No _____

If yes, thank you in advance for your cooperation, time and support!

I. Profile

Question	Response
Name	
Sex	1) Male 2) Female
Age	_____
Marital Status	_____
Family size	
Do you have children under five	1) Yes 2) NO

II. Question

1. How are you selected to benefit from the project
2. For how long have you been in the project as a beneficiary?
3. What key supports did you receive from the project?
4. Was the support relevant to your pressing problems? Was the support responding to your urgent and pressing needs? Please explain how?
5. What specific achievements or successes have you observed in your community, and how have you personally benefited from the project?
6. Have you noticed any changes in your food security and Income or livelihood since participating in the project?
7. How do you evaluate the interaction that you have with the project staffs?
8. Please explain to us in detail how the support changed you and your family?
9. How to you compare your situation before the intervention and know?
10. What are your future plan? What do you expect from government and EUCORD to meet your future plan?
11. Do you see any gaps in the supports you have received? Please explain?
12. What recommendation can you give both for the project holders and the government?
13. Do you have anything to say?