LegumeSELECT: Stakeholder mapping for legume intensification in LegumeSELECT Project sites in Ethiopia





ILRI PROJECT REPORT



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Birhan Abdulkadir¹, Zerihun Abebe², Kindu Mekonnen¹, Alemayehu Dabessa³, Tamiru Muleta³, Peter Thorne¹ and Haimanot Seifu¹

¹International Livestock Research Institute (ILRI), Ethiopia

²Oromia Seed Enterprise (OSE), Ethiopia

³Oromia Agricultural Research Institute (IQQO), Ethiopia

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Box 30709, Nairobi 00100 Kenya Phone +254 20 422 3000 Fax+254 20 422 3001 Email ilri-kenya@cgiar.org

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ILRI is a CGIAR research centre

Box 5689, Addis Ababa, Ethiopia Phone +251 11 617 2000 Fax +251 11 667 6923 Email ilri-ethiopia@cgiar.org

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Acronyms and abbreviations

2SCALE Toward Sustainable Clusters in Agribusiness through Learning in Entrepreneurship' Project

Africa RISING Africa Research In Sustainable Intensification for the Next Generation

AGP-II Agricultural Growth Program Phase II

ATA Ethiopian Agricultural Transformation Agency

BBSRC Biotechnology and Biological Sciences Research Council

BoA Bureau of Agriculture

COOPI Cooperazione Internazionale

IFDC International Fertilizer Development Center

ILRI International Livestock Research Institute

ICARDA International Center for Agricultural Research in the Dry Areas

ICRAF World Agroforestry Centre

IQQO Oromia Agricultural Research Institute

LegumeSELECT Science-driven Evaluation of Legume Choice for Transformed Livelihoods

MBI Menagesha Biotech Industry

N2Africa Putting nitrogen fixation to work for smallholder farmers of Africa

OSE Oromia Seed Enterprise

1 Introduction

1.1 Background of LegumeSELECT Project

Ethiopia has favourable and diverse agro-ecology for legume production. It is one of the major grain legumes producing and supplying countries in Africa despite minimal focus being given to a few forage and tree legumes. In the country's agricultural system, legumes have been grown in a mixed cropping system with cereals and other crops, mainly in crop rotation and intercropping arrangements. These legumes have also been used for various purposes including improving food and nutrition security, generation of income, soil fertility improvement, providing livestock feed, soil erosion control, water conservation and as a source of fuel (Abdulkadir et al. 2020). The annual production and productivity of grain legumes has been showing an increasing trend, which is mainly attributed to high demand for nutrition and better prices in local and international markets. Faba bean, common bean, field pea and chickpea are the four leading grain legumes both in area of production and grain yield (Kebede 2020). However, despite their widespread production and multiple benefits, the production and productivity of grain legumes in Ethiopia is very low.

Legume SELECT is a three-year project funded by the Biotechnology and Biological Sciences Research Council (BBSRC) and led by the University of Edinburgh, which is executed in Scotland and three African countries, namely DR Congo, Kenya and Ethiopia. The implementation of the project in Ethiopia is led by the International Livestock Research Institute (ILRI) and the Oromia Agricultural Research Institute (IQQO) as the national implementing partner. The project has been implemented in Digga and Sinana districts of the Oromia region to enhance sustainable intensification and strengthen the value chains of legume crops through appropriate legume selection decisions. It also combines existing data and new data from on-farm and on-station experiments to better understand the relationship between legume traits and farmers' aspirations in a range of biophysical and socio-economic contexts. The project focuses on addressing the underexploitation of the potential of legumes in improving smallholder livelihoods.

1.2 Goal and purposes of stakeholders mapping

The main goal of the stakeholder mapping is to develop a participatory and inclusive process for development of tools that help decision-making in sustainable legume intensification strategies for the ongoing work in Digga and Sinana. The process involves identifying and mapping key individuals and/or organizations that engage in the legume value chain activities in Legume SELECT action sites. This is to know stakeholders who can contribute to sustainable legume intensification options during the project implementation and scaling stages, and those stakeholders who can sustain and scale out legume intensification activities after the project exit. It is expected that the findings of this exercise will inform and guide future decisions and interventions, including future scenarios activities on legume intensification and value chains. In addition, this mapping process will serve as an important reference to enhance partnerships and collaboration among stakeholders, minimize duplication of efforts as well as fragmentation of resources, and use of different approaches and methodologies when providing the required support to beneficiaries.

2 Methodology

2.1 Description of the action sites

The action sites of LegumeSELECT in Ethiopia are two woredas/districts, namely Digga and Sinana, in western and southeast Ethiopia. Digga Woreda is 350 km west of Addis Ababa (Figure 1). It has an altitude that ranges from 1,200–2,300 m; mean total annual rainfall of 2,080 mm and mean temperatures of 21.2°C. The farming system in Digga is dominated by maize, teff and finger millet-based crop-livestock mixed farming. The second action site, Sinana Woreda, is located around 450 km southeast of Addis Ababa. Sinana has an altitude of 2,300–2,500 m; mean total rainfall of 930 mm (bimodal) and mean temperature of 17.6°C. Sinana's farming system is dominated by wheat and faba bean-based mixed crop-livestock farming.



Figure 1. Geographic location of LegumeSELECT project action sites in Ethiopia.

2.2 Stakeholders identification and mapping approaches

Desk study and consultation with informants were done for the identification of potential collaborating stakeholders for legume intensification and value chain developments in the action sites. This step generated a list of actors with a potential interest in the LegumeSELECT project goals. Representatives of zonal and woreda government offices, non-governmental organizations (NGOs), national and international research institutions, universities, farmers cooperatives unions, input suppliers, processors and farmers were identified. The exercise was not limited only to few stakeholders working on few legumes but also assessed multiple stakeholders working on wider ranges of legumes in the targeted action sites. The interviews with different stakeholders were focused on analysis of production scenarios for multiple legumes, production and marketing opportunities, constraints and their future plans. The respondents discussed the common challenges faced by different stakeholders along the value chains and identified other stakeholders that could assist in advancing legume intensification in the action sites. In addition, each stakeholder also described their specific roles in legumes intensification in the target areas.

2.3 Data collection and analysis

A semi-structured questionnaire was initially developed by the LegumeSELECT-Kenya team and customized by LegumeSELECT-Ethiopia team prior to face-to-face and/or telephone interviews to ensure that the questions were comprehensive, relevant, and appropriate to the local context and culture. The team determined questions in advance but supplemented them with additional questions within the context of the interview to fit the study's exploratory nature. Then, the questionnaire was converted into an Open Data Kit (ODK) form for use by enumerators from the Bako and Sinana agricultural research centres, and a consultant. On average, the key informants interview lasted between 30 and 45 minutes per stakeholder. The interviews were conducted to identify the production status of existing legume species grown by smallholder farmers, level of engagements of different stakeholders and their roles, assess legume production and intensification constraints, and future plans.

Data was analysed using Excel and presented in form of tables and graphs.

3 Results and discussions

In this report, stakeholder mapping is defined as a process of identifying key stakeholders to engage with across the full stakeholder spectrum, and determining the basis for engagement strategies, in the particular sector of all legume intensification and value chain focused activities at LegumeSELECT project action sites. The results of the stakeholder mapping are presented below.

3.1 Stakeholders' information

A total of 24 key informants (KIs) were interviewed for this stakeholder mapping exercises. Thirteen of them have stakes in the Digga area and the rest (11) are linked to the Sinana area (Figure 2). These KIs represented farming communities, government and non-government organizations, input suppliers, universities, national and international research institutions, processors, farmers' cooperative unions, and projects working on legumes (Figure 3). The informants were experienced experts and most of them have served for more than 10 years in their organizations.

The primary influence of interviewed stakeholders ranged from woreda to national levels. Three stakeholders were interviewed at woreda level, 10 at the zonal, five at regional and the rest six at national levels (Figure 4). The year of involvement in legume value chain ranged from seven years by staff of international research institutes and academic institutions, and 18 years by staff of national research institutes and farmers/community-based organizations (Figure 5).



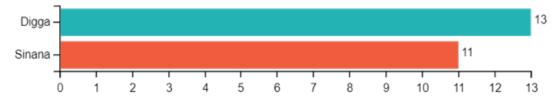


Figure 3. Type of organization represented by the key informants.

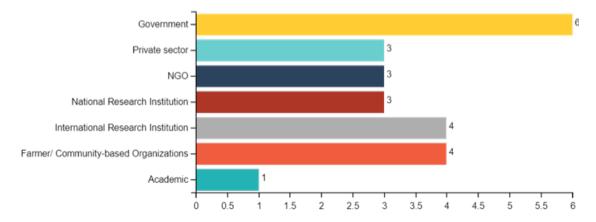


Figure 4. Key informants' primary jurisdiction of responsibility.

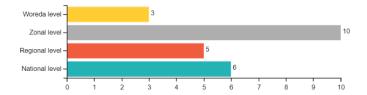
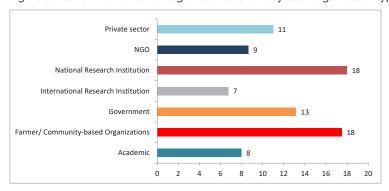


Figure 5: Year of involvement in legume value chains by each organization type.



3.1.1 Legumes engagement

The number of legumes that the interviewed stakeholders' have engaged with ranged from only one to 2–8 legumes within LegumeSELECT action sites. While 33% of the stakeholders currently work on up to two legume crops, only two (one private at national and one government organization at woreda level) of them work on up to eight grain and forage legumes (Figure 6). The top legumes which have been addressed by the interviewed stakeholders are faba bean and field pea. These legumes have received attention from 13 of the total 24 stakeholders. Soya bean and bush bean follow with attention of 14 and 11 of the total stakeholders, respectively (Figure 7). Alfalfa and vetch lablab are among the forage legumes that are most frequently produced by different stakeholders while legume trees such as Calliandra and Gliricidia are rarely planted (Figure 7).

Figure 6. Number of legumes engaged by stakeholders in LegumeSELECT action sites.

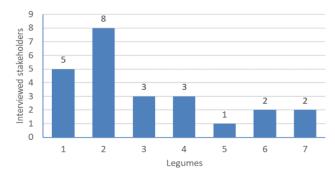
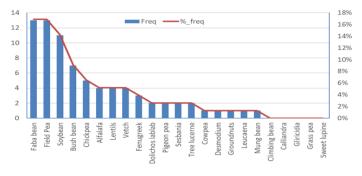


Figure 7. Frequency of legumes addressed by interviewed stakeholders in LegumeSELECT action sites.



3.1.2 Stakeholders and their roles

A diverse group of stakeholders are involved in the legume intensification and value chains in Digga and Sinana (Table 1). The interviews revealed that government organizations (zonal and woreda bureaus of agriculture [BoAs], Agricultural Transformation Agency [ATA]), cooperative unions (Siko Mendo and Ghibe Dhidessa unions), national research institutions (Bako and Sinana agricultural research centres), public universities (Madda Walabu University), international research institutions (ILRI, International Center for Agricultural Research in the Dry Areas [ICARDA], World Agroforestry Centre [ICRAF]), NGOs (Cooperazione Internazionale [COOPI], International Fertilizer Development Center [IFDC]-2SCALE), Input supplier (Oromia Seed Enterprise (OSE), Menagesha Biotech Industry(MBI), Anno Agro Industry PLC), producers (farmers) and processors (Guts Agro Industry) are the main stakeholders in the legume intensification and value chains in the LegumeSELECT action sites of Ethiopia. The identified 24 stakeholders/institutions are grouped into seven categories based on their main roles in Table 1.

Table 1. Summary of stakeholders' roles and responsibilities in legume intensification and value chains in LegumeSELECT implementation sites in Ethiopia

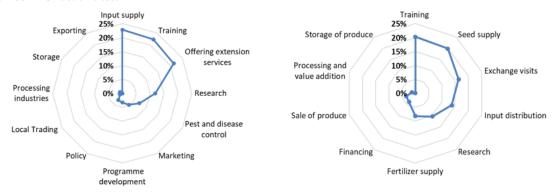
Category	Stakeholder	Roles/responsibilities
Research and technology development	IQQO-Bako and Sinana agricultural research centres; Madda Walabu University	 Testing and supplying improved food and forage legume technologies (improved seed and crop management technologies) Providing training to development agents and farmers Involved in periodic monitoring and evaluation of farmers' fields Play leading role in organizing zone and woreda level farmers' field days
Extension and regulations	Offices of Agriculture (zonal and woreda I) and ATA (Agricultural Transformation Agency of Ethiopia)	 Facilitate seed distribution and follow up day-to-day farming activities Involved in selecting participant farmers Involved in periodic monitoring and evaluation together with research centres Play leading role in supervising Development Agents and organizing farmers exchange visits Develop agricultural inputs systems and policies, cooperatives management and output markets in close collaboration with Ministry of Agriculture, Cooperative Promotion Agency and Seed Enterprises
Input suppliers and grain aggregators	Farmers' cooperative unions (Gibe Dhidessa and Siko Mendo unions)	 Facilitates input supply to farmers (improved seeds, fertilizers, pesticides) Collection of seeds/grains from farmers during harvesting Involved in market assessment activities and creating market linkages for farmers
Projects/ programs under international research institutes (ILRI, ICARDA, ICRAF) and NGOs	Projects/programs (LegumeSELECT, Africa RISING, AGP-II, 2SCALE, N2Africa) under ILRI, ICARDA, ICRAF, IFDC	 Provide technical support, training and advisory services on legumes selection, management and utilization by allocating resources through local research and development partners Support the establishment of demonstration plots on smallholder farmers' farms to intensify learning and knowledge exchange among farmers and also with other local farmer organizations Provide capacity development and budget support to programs Involved in periodic monitoring and evaluation together with IQQO and BoA staff
Input suppliers	Input suppliers (OSE, Anno, MBI)	 Produce and supply improved legume seeds/seedlings/inoculants to target smallholder farmers Provide training and technical support to farmers on inoculant application.

Category	Stakeholder	Roles/responsibilities
Processors	Processors (Guts Agro Industry)	Buy the grain product from smallholder farmers through their agents e.g. farmer cooperative unions)
		Advance payments for needy soya bean producing smallholder farmers for input purchases
		Train farmers on product quality requirements for its processing plant and
		potential risks of failure in meeting the product quality attributes
Producers	Farmers	Allocate land and perform different legume agronomic practices
		Implementing advice getting from researchers and DAs synchronizing with their own indigenous knowledge
		Participate in multiplying improved legume seeds
		Supply grain legumes to primary cooperatives/union

3.2 Level of stakeholder involvement for the legumes addressed

The stage of stakeholders' involvement for the legumes addressed were highly skewed toward input supply, offering training and extension services. Then, research, pest and disease control and marketing followed (Figure 8, left). Involvement of the stakeholders were least in processing, storage and exporting of legumes. Stakeholders' prioritized involvement focused on provision of training, seed supply mainly for grain legumes, exchange visits, and input distribution. Processing and value additions, sale of produce and financing had the lowest attention by the identified stakeholders (Figure 8, right).

Figure 8. Level of stakeholders' involvement for the legumes addressed (left) and their involvement priorities (right) in LegumeSELECT action sites.



3.3 Level of engagement with other stakeholders

The interviewed stakeholders each currently interact with at least three stakeholders. ILRI and Menagesha Biotech Industry (MBI) have the highest level of interaction with stakeholders each linking with seven other stakeholders in the LegumeSELECT action sites (Figure 9). Most of the interviewed stakeholders showed willingness to work with stakeholders they are not currently engaging with. These stakeholders also indicated that they would like to engage primarily with processors and NGOs to address the constraints associated with marketing and with financing institutions for more resource mobilization and capacity development (Figure 10). Researchers and extension personnel mentioned the need for awareness creation through exchange visits, and mobilization of farmers in the action sites as priority areas of engagement (Figure 11).

Figure 9. Stakeholders' level of engagement with other stakeholders within Legume SELECT action sites.

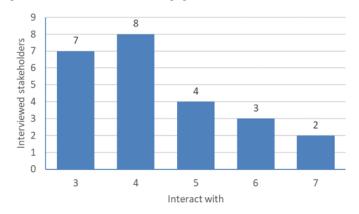
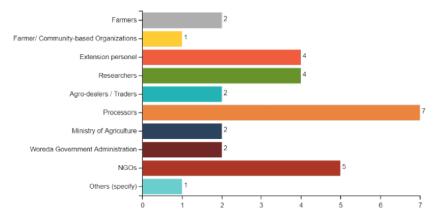
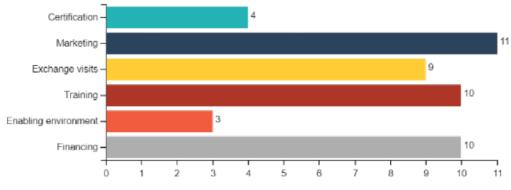


Figure 10. Number of stakeholders to engage with among different actors within LegumeSELECT action sites.



Figure~11.~Areas~in~which~stake holders~would~like~to~engage~with~other~stake holders~within~Legume SELECT~action~sites.



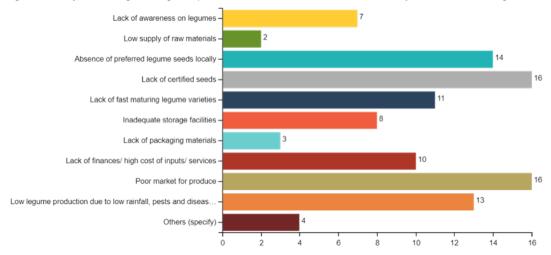
3.4 Challenges in legume production and intensification

Stakeholders mentioned the following top six challenges in legumes production and intensification in the LegumeSELECT action sites (Figure 12).

- Lack of certified seeds for legume crops
- · Poor market for legume produce
- · Absence of preferred legume seeds locally
- Low legume production due to low rainfall, pests and diseases

- Lack of fast maturing legume varieties
- Lack of finances/high cost of inputs/services

Figure 12. Major challenges in legume production and intensification identified by stakeholders in LegumeSELECT action sites.



3.5 Community engagements

All the interviewed stakeholders said that they are involved in the extension activities with farming communities in Digga and Sinana woredas. The main extension approaches used by the stakeholders are training, demonstration fields, sensitization meetings, field days and farmer exchange visits. Field days and training sessions are the top approaches used to engage farmers and other stakeholders (Figure 13). Their frequency of engagement with the communities varies from weekly to biannually for most of the stakeholders, and once a year for some stakeholders i.e. Anno Agro industry and MBI (both are input suppliers), and Guts Agro Industry (a processor) (Figure 14).

Figure 13. Types of extension approaches used by stakeholders to engage farming communities.

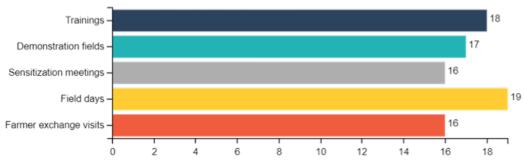
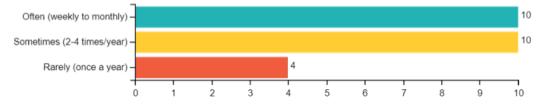


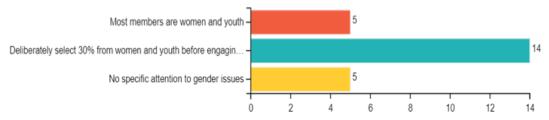
Figure 14. Frequency of stakeholders' engagement with farming communities.



3.5.1 Gender equity

About 80% of the interviewed stakeholders indicated that they have tried to ensure gender equity and inclusion of youth and marginalized groups in their selected activities. Either they deliberately select 30% women and youth before engaging men, or work with mostly work with women and youth (Figure 15).

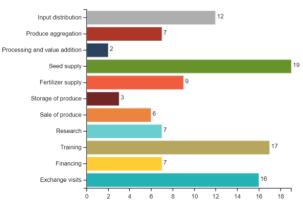
Figure 15. Stakeholders' specific efforts to ensure gender equity and inclusion of women and youth in Legume SELECT action sites.



3.5.2 Information flow

Stakeholders described that information flows between them and the farming communities are in two-way i.e., from stakeholder to farming communities and vice versa. The main information shared in the information flow process relates to seed supply, training and exchange visits. The least emphasized activities in the flow are processing and value addition and storage of produce (Figure 16).

Figure 16. Activities involved in the information flow processes.



3.5.3 Challenges in engaging communities

The interviewed stakeholders mentioned that poor market access, inadequate access to inputs, inadequate certified legume seeds and high cost of inputs are the main challenges encountered when engaging communities in the action sites (Figure 17). The stakeholders' offset the challenges with the following strategies (Figure 18):

- Improving input supply
- · Improving market channels/market aggregation
- Seeking funding
- Creating awareness on production and storage services

Figure 17. Main challenges that stakeholders faced in engaging communities in Legume SELECT action sites.

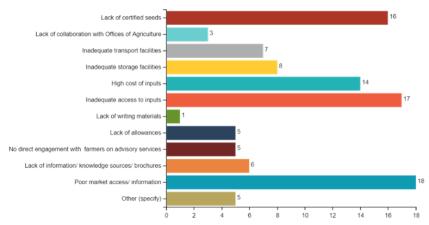
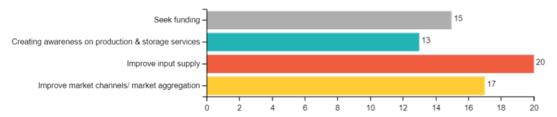


Figure 18. Stakeholders' strategies to offset the challenges in LegumeSELECT action sites.



3.6 Aspirations for legume intensification

Most of the stakeholders indicated that the demand for legumes has been increasing in the past 2–3 years. But they said the supply is decreasing and some of them were concerned about the impact of inadequate supply of legumes (Figure 19). These stakeholders, however, mostly agreed that the future of legume production is positive due to increased demand and high income from legume farming. Also, increased production for consumption, value additions on soya bean, and legumes' benefit for soil fertility improvement are likely to drive increased legume farming in the country (Figure 20).

Figure 19. Stakeholders' assessment of demand (top figure) and supply (lower figure) of legumes in the past 2-3 years.

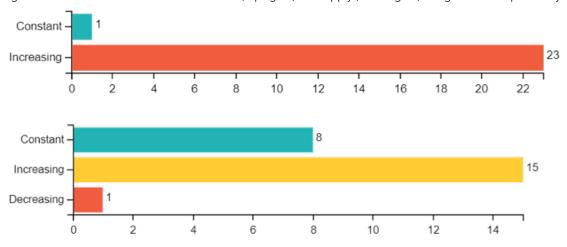
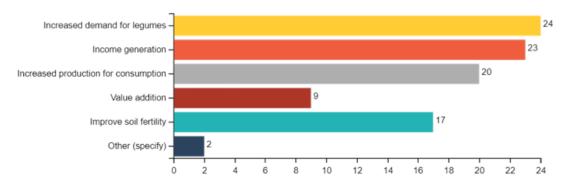
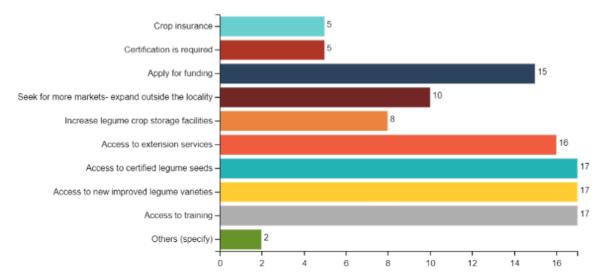


Figure 20. Opportunities associated with legumes in the near future identified by stakeholders.



Stakeholders were also asked what they would need to do differently in order to overcome the challenges listed in the previous section and enhance legume production. Facilitating access to new and certified legume varieties, and capacity building training and extension services (i.e. awareness creation on production management and marketing intelligence for inputs and outputs) were indicated as top options for future interventions (Figure 21). Searching for grants to support these for the fulfilments of these options was also emphasized because inadequate funding was indicated as the major impediment to expanding legume production and intensification activities in the action sites. Stakeholders said they would do more effort to secure additional financial resources for the implementation of future interventions.

Figure 21. Stakeholders' future plans to enhance legume production and intensification in the LegumeSELECT action sites.



Conclusion and recommendations

This stakeholder mapping exercise does not make any statistically validated conclusions because the sample size and the data collection method were not representative of all legume sector actors in the targeted sites of LegumeSELECT project. Rather, it is intended to present the range of actors, engagement, perceptions, practices, and experiences of actors in legume production and intensification, and their future plans.

The result of the stakeholder mapping and analyses revealed many actors in the legume intensification and value chain in the project action sites. Majority of the actors are government and non-governmental organizations, private sector, national and international research institutions and farmers' organizations. However, their effort are focused in limited areas and lack of coordination between these stakeholders results in duplication of activities and efforts. A holistic approach is key to enhancing coordination between them for greater impact.

Identifying key stakeholders in the LegumeSELECT project implementation sites, their roles, linkages as well as their respective levels of engagement will ensure success of legumes-related interventions in Digga and Sinana.

The following recommendations are proposed to strengthen stakeholder participation for greater impacts in legume production and intensification.

- Provision of a common formal/informal platform where all relevant stakeholders can interact and identify opportunities
 for collaboration and expansion. This may include strengthening the mechanism of legume-related capacity building
 activities, input supplies and marketing of produce in the action sites.
- Legume-specific value chain development is the most important approach for potential and influential stakeholder mapping and engagement.
- Strategic interventions are required to enhance stakeholder engagement in forage and tree legume production and marketing.
- Value addition for legumes, credit services and legume marketing components are key value chain segments that should be strengthened.
- Supply of locally preferred varieties and quality legume seeds will ensure sustainable legume intensification and diversification.

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Annexes

Annex 1: LegumeSELECT-Ethiopia stakeholders mapping KII questionnaire

Link to an online form: https://enketo.ona.io/x/IQNIaUcv

ntroduction
Interviewer full name:
Date of interview:
Mobile of interviewer:
ntroduce yourself. Explain that we are carrying out the stakeholders mapping survey for IQQO-ILRI-LegumeSELECT project on help understand legumes production challenges and opportunities for intensification. Mention that the exercise will take netween 30 minutes and 45 minutes.
Do you agree to my request to interview you?
ocation information
Woreda:
Kebele:
Sub-kebele/Got/Gari:
lame of Key Informant (respondent):
Is the respondent/informant male or female?
Affiliation/Organization of the key informant (respondent):
What is the type of your organization?
Specify other organization type he/she is affiliated
Position of informant in the organization
Mobile
Informant's primary jurisdiction of responsibility
Specify other jurisdiction of responsibility:
For how long has your organization been working in the area (give years)
evel of engagement with other stakeholders
How many legumes are you engaged in?
Which legume are you engaged in?
Specify other legume type you are engaged in
For the legume mentioned above, at what stage(s) are you involved in? (multiple responses are possible)
Specify other stages you are involved in
In each of these stages, what are your roles/priorities and core activities along the legume value chain in terms of legume production/intensification?
Specify other roles/priorities you are involved in along the legume production value chain

Stakeholder interaction How many other stakeholders do you interact with? What is the name of the stakeholder you interact with in legume production and intensification? Specify type of interactions between you and the other stakeholders (rank from the most important) Specify other types of interactions between you and the other stakeholders Are there potential overlaps/conflicts between you and other stakeholders involved in the legume value chain? Are there other stakeholders you are not currently engaging with and would wish to work with Please specify the stakeholder you would like to engage with Please specify other stakeholder you would like to engage with (if not captured on this list) Please explain how you would like to engage the stakeholder mentioned Please explain other ways you would like to engage the stakeholder mentioned (specify) Do you face any challenge/bottlenecks in legume production and intensification? Specify the challenges you encounter in legume production and intensification List other challenges (specify) What do you think you would need to do differently in order to overcome the above-named challenges and enhance legume production? Other solutions (specify) What is stopping you from taking this step? Other limitations stopping you from making this step (specify) Are there government policies or practices that affect the production and intensification of legumes in your area of operation? If yes in what way? Do the policies enable production and intensification of legumes? If not, how would you like to see these policies changed? Community engagement Are you involved in any extension activities with communities? What extension approaches do you use to engage the communities? Specify other extension approaches you use to engage the communities? How often do you engage with the communities? Are there specific efforts to ensure gender equity and inclusion of youth and marginalized groups in your activities? Please explain how you ensure inclusion of women and youth Please explain other ways you ensure inclusion of women and youth Describe the process of information flow between you and the communities Please specify activities involved in the information flow process Other activities involved in the information flow process What are the main obstacles you face in engaging the communities- Rank from the most serious challenge What other obstacles do you face in engaging the communities- Rank from the most serious challenge Which strategies do you think if put in place could help to offset the challenges Which other strategies do you think if put in place could help to offset the challenges Aspirations/future plans In your opinion, what is the demand trend for the legumes you mentioned above for the past 2-3 years? (Decreasing, increasing or constant) In your opinion, what is the supply trend for the legumes you mentioned above for the past 2-3 years? (Decreasing, increasing or constant) What legume opportunities do you foresee in the future? e.g., income generation opportunities, increased demand, value addition, increased production for consumption etc. Other legume opportunities you foresee in the future? e.g., income generation opportunities, increased demand, value addition, increased production for consumption etc. Do you have any questions or additional observations with regards to legume intensification efforts

Annex 2: Lists of organizations

Organization	Organization type
Agricultural Growth Program (AGP)	Government
Anno Agro Industry	Private sector
Bako Agricultural Research Center (IQQO-Bako)	National research institution
COOPI	NGO
East Wollegga Bureau of Agriculture	Government
Ethiopian Agricultural Transformation Agency (ATA)	Government
Ethiopian Evangelicals Church	NGO
Gibe Didessa Farmers Union	Farmer/community-based organization
Guts Agro Industry	Private sector
ICARDA	International research Institution
ICRAF	International research Institution
IFDC-2SCALE	NGO
ILRI-Africa RISING	International research Institution
ILRI-N2Africa	International research Institution
Jirata General Purpose Primary Cooperative	Farmer/community-based organizations
Madda Walabu University	Academic
Menagesha Biotech Industry (MBI)	Private sector
Oromia Seed Enterprise (OSE) - Sinana Branch	Government
OSE- Western Branch	Government
Selka CB Seed Multiplication Cooperative	Farmer/community-based organizations
Siko Mando Farmer Cooperative Union	Farmer/community-based organizations
Sinana Agricultural Research Center (IQQO-Sinana)	National research institution
Sinana Woreda Agricultural Office	Government

Annex 3: Pictures of face-to-face interview with key stakeholders





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