



PANE



PROLINNOVA–Ethiopia (PE) Country Platform

CLIC–SR Project

**Farmers' Perceptions of Changes and their Local Innovation in
Response thereto in Enebse Sar Medir, Ethiopia:
Survey Report**

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Acronyms

ASE	Agri-Service Ethiopia
CLIC-SR	Combining Local Innovative Capacities with Scientific Research
CSOs	Civil Society Organisations
ESM	Enebse Sar Medir
FAIR	Farmer Access to Innovation Resources
FFS	Farmers' Field School
FGDs	Focus Group Discussions
HTPs	Harmful Traditional Practices
LISFs	Local Innovation Support Funds
NRM	Natural Resource Management
PANE	Poverty Action Network in Ethiopia
PE	PROLINNOVA–Ethiopia
PID	Participatory Innovation Development
PROLINNOVA	Promoting Local Innovation in ecologically-oriented agriculture and NRM
SIDA	Swedish International Development Cooperation Agency
TM	Tahtai Maichew
TVET	Technical, Vocational, Education and Training

I. Introduction

Combining Local Innovative Capacity with Scientific Research (CLIC–SR) is a project that aims to strengthen and promote local innovation by smallholder farmers to build their resilience in the face of recurring changes in their environment. The project is funded by The Rockefeller Foundation. Under the umbrella of the PROLINNOVA³–Ethiopia (PE) network represented by PANE⁴, the project focuses on the creativity of local people through building local adaptive capacities and strengthening community resilience to change, including climate change. CLIC–SR is based on the experiences of the Farmer Access to Innovation Resources (FAIR) project, which developed and piloted Local Innovation Support Funds (LISFs) between 2008 and 2012. It facilitated joint experimentation by local innovators and other experts, e.g. in the local government extension teams, with formal scientists through a process called Participatory Innovation Development (PID).

The project is being implemented in two districts: i) TahtaiMaichew (TM) near the ancient town of Axum in Tigray Region, a district that was involved in the FAIR project; and ii) EnebseSarMedir (ESM) in Amhara Region, which is a new operational area for PE but has some experience in facilitating farmer-led innovation and experimentation through previous work in the area by Agri-Service Ethiopia (ASE), an Ethiopian resident civil society organisation (CSO). TM is just over 1000 km from the Ethiopian capital Addis Ababa and 250 km from the Tigray regional capital Mekelle, while ESM is about 400 km from Addis Ababa in East Gojjam Zone, about 200 km from the Amhara regional capital Bahir Dar.

This is a report on the initial field survey made in Enebse Sar Medir (ESM) under the CLIC–SR project agreement. The aim was to document and assess how smallholders and their communities perceive the main changes affecting their livelihoods, including (but not only) climate change, and how they try to respond, innovate and adapt to these changes. The focus of this report is mainly on the innovations that show how smallholders are responding in the face of change.

The study was crucial to understand and monitor the relevant change patterns and to assess farmers' strategies to cope with the changes. The communities' own adaptation initiatives and the local innovation processes were documented not only to give recognition to the creative capacity of the farming communities and to encourage their initiatives, but also to make other stakeholders in agricultural research and development aware of this potential. Through this awareness and recognition of local innovations, these stakeholders are expected to become more open to engaging in farmer-led joint experimentation and documentation to better understand, validate and/or improve the local innovations.

³ **P**romoting **L**ocal **I**nnovation in ecologically oriented agriculture and natural resource management, an international network of state and non-state organisations in 21 countries; see www.prolinnova.net

⁴ Poverty Action Network in Ethiopia (PANE), a specialised and leading consortium of CSOs working on Poverty Reduction Strategy Paper (PRSP), Millennium Development Goals (MDGs) and Post 2015 issues in Ethiopia, currently hosts PROLINNOVA–Ethiopia (PE) and its CLIC–SR project.

II. Methodology

The field survey was conducted in Enebse Sar Medir (ESM) District in late 2013 by a study team set up for this very purpose following a learning workshop on the issue. The team was drawn from experts of the ESM District Agriculture Office, Mertule-Mariam Agricultural College, the Women, Children and Youth Affairs Office of the district, Alem Birhan Self-Help Community Development Association (ABSHCBDA), farmer innovators, model farmers and Finote Hiwot (Ending Early Marriage), an Ethiopian resident CSO working on harmful traditional practices (HTPs).

Three communities or sub-districts (*kebeles*)⁵ of ESM were identified and incorporated: Guanguna, Eneguzi and Zewter Ene Jember. The study team went to the communities three times and identified the focus areas of the survey based on: easy access of farmers, ecological representation, perceived changes in general, vulnerability to change and livelihood activities. Interviews, questionnaire, focus group discussions (FGDs), observation, snowball sampling (chain references) and existing information were deployed to gather data.

The data gathered consisted of: i) personal information (name, age, family size, address, education, typology, innovation title, sector/area of knowledge etc); ii) changes and responses to changes (changes observed over time, their impacts, coping mechanisms, innovations developed); iii) descriptions of innovations (short description of the innovation, reason for being an innovation, time and origin of the innovation, etc); and iv) information from resource persons (elder persons, development agents, CSOs, local government authorities, traditional social institutions etc).

Twenty questionnaires were administered and interviews conducted. Six FGDs were conducted that encompassed women, men and youth purposively selected from the three communities. Two FGDs were conducted in each community in mixed groups with men, women and youth.

III. Background and basic socio-economic data about the communities

ESM District is found in East Gojjam Zone of Amhara Region some 400km away from the national capital, Addis Ababa. The district is bounded by South Gonder Administrative Zone to the north, Enarije-Enawiga District to the south, South Wollo Administrative Zone to the east and Goncha-siso Enese District to the west. More than 90% of the population of ESM District resides in the rural area, while the rest lives in Mertule-Mariam, the district town.

The respondents to the survey were keen in identifying improvements in their locality: expansion of schools, health centres, health posts, telecommunication and postal services, roads, finance institutions such as banking and microfinance, technical and vocational education and training (TVET), Farmer's Training Centres (FTCs), extension offices and development agents. The distance from the communities to the nearby town, Mertule-Mariam, is about 3–25 km, which is 40 minutes to 5 hours walking distance from where the district administration and other basic services are located.

⁵ *Kebele* is the smallest administrative unit in the district.

The population of the district is increasing rapidly. According to the district Finance and Economic Development report of 2013, the total population is estimated at 151,507 of which 76,661 are female and 74,846 are male, with a growth rate of more than 2.5%. Crop production is challenged by moisture stress, crop pests and diseases and poor soil fertility status; and livestock production by shortage of animal fodder, low-input management and livestock disease. The communities witness a clear sex-based division of labour. Whereas both women and men are involved in agricultural activities, women are exclusively involved in all types of household activities.

IV. Observed changes

ESM District has witnessed a plethora of changes over the long term and in the past few years especially. Farmers provided different reasons for the changes that occurred. The common changes identified by farmers in the area are: climate change, expansion of public amenities, increase in agricultural input supply, irrigation development, deforestation, family planning, adult education *inter alia*. The changes observed can be grouped into positive and negative, depicted with subsequent outcomes:

Positive changes refer to those changes that have positive outcomes in the locality. Respondents focused on natural resource management (NRM) coupled with agro forestry development and the availability of improved animal breeds aligned with the expansion of agricultural extension (development) agents, which enhanced the productivity of farmers. In line with this, expansion of schools, health institutions, roads and telecommunications added to the wellbeing of the communities, and farmers are actively involved in exploiting the opportunities brought due to these positive changes (see Table 1).

Table 1: Positive changes observed and their outcomes

Positive changes	Outcomes	Further developments
Agriculture		
Increase in input supply	Increase in productivity	Better living conditions of farmers
Expansion of irrigation	Availability of water supply in all seasons	Increase in productivity and production of cash crops
NRM efforts	Productivity increases	Better living conditions and assuring sustainability of agricultural production
More improved animal breeds	Better productivity	Better income
Expansion of animal health services	Animal health improved	Better income and reduction of losses
Public amenities		
Expansion of health services: health centres, health posts	Access to health services improved such as family planning, vaccination, institutional delivery	Better living conditions and increase in productivity of communities

Expansion of educational institutes	More children enrolled in schools and completed secondary school	Shift of occupation and changing patterns of attitude
More roads	Access to market opportunities and other services improved	Improved income, time and labour saving
Expansion of telecommunication, especially cell phone	Access to information (markets and others) increased	Better and competitive prices
Expansion of electricity	Improved quality of life, led to use of electronic equipment such as television, refrigerator, cooking equipment etc	Increase in business activities, such as cafeterias, hotels, TV showrooms etc
Introduction of banking	Access to financial institutions increased, facilitation of business transactions	Improved habit of savings, more businesses located in the communities
Social development and good governance		
Establishment of youth and other organisations	Combined efforts made in improving livelihood conditions	Reduction in unemployment and more engagement in entrepreneurship
Expansion of traditional conflict-resolution methods	Reduction in neighbourly petty conflicts	Sustainable peaceful co-existence built
Enhanced empowerment of women	Role of women increased in the overall activities of communities	More and more women involved in economic activities rather than household activities, go to schools, hired in different institutions etc

Negative changes refer to those changes that have negative consequences on the locality. Respondents focused on the ever-increasing prices of agricultural inputs, crop pests and diseases as well as climate change, among other things, as negative changes. Since the prices of agricultural inputs (improved seeds, fertilizers etc.) are observing a steady increase every year, it becomes unbearable for the farmers to accommodate this. On the other hand, they stated that the land they are ploughing is accustomed to fertilizer, which failed to provide the intended productivity without using it. Apparently, they often found themselves in debt, which they might fail to pay off if the rains fall short due to a change in weather or if the crops are affected by pests or diseases (see Table 2).

Table 2: Negative changes observed and their outcomes

Negative changes	Outcomes	Farmers' innovations
Agriculture		
Crop pests and diseases	Low yields	Farmers exploited their local knowledge and resources to come up with appropriate solutions, e.g. sowing haricot bean in dry season
Increase in prices of agricultural inputs	Farmers failed to use inputs, stuck in debt	Use of home-produced treatments such as compost
Introduction of seeds that do not suit the local environment	Reduction in yield	Farmers breed seeds on their own so as to come up with better varieties
Weather variability	Low yields, crop failure	Shifting to short-season crops Introduction of drought-resistant crops from other areas with the help of extension agents Diversification of farm products
Deforestation and overgrazing	Unpredictable rain, escalating erosion	Feeding animals at home Planting trees Soil and water conservation
Public amenities		
More schools and students in rural areas	Low quality of education and increase in of unemployment	Sending students to other nearby schools Migrating to other areas and even Arab countries for work Improved agricultural practices
Electric failure	Business failure, income reduced	Use of alternative means of energy such as fuel
Social development and good governance		
Human trafficking	Exploitation of farmers without any return	Involving youth in entrepreneurship aligned with the government and youth organisations
Increase in family conflicts	Peaceful co-existence of the society becomes eroded	Alternative traditional dispute resolution mechanisms devised
Dependency syndrome	Lack of motivation to work and no aspirations	Model farmers and extension agents working to bring about attitudinal changes
Increase in corruption	Erodes farmers' confidence and trust in government institutions	Addressing it through various organisational arrangements, e.g. youth organisations, "One to Five" ⁶ scheme, elderly people, religious institutions etc

⁶ "One to Five" scheme: a recent government strategy of organising the community with five people in which one is considered a model so as to duplicate his/her experience to the others.

Farmers are exploiting the positive opportunities available in their locality to increase their income, leading to better living conditions. For example, all farmers in the locality own cell phones, which were introduced recently and which farmers use to exchange market information, share experiences with their colleagues and seek advice from extension agents. Apart from these, the expansion of health institutions significantly enhanced women's living conditions. Maternal and infant mortality reduced due to delivery in clinics as well as accessibility of vaccines. In line with this, expansion of family planning has helped the women to limit or space their births as per their needs.

On the other hand, farmers respond to negative changes in their own way using local resources and knowledge. They are involved in local experimentation and try to come up with some sort of finding for the problem that negatively affects their livelihood, which eventually may become an innovation. Mostly, once these innovations have proved to be successful for the innovator, other farmers take them up and even sometimes modify them, having seen some limitations in them.

V. Farmers' own initiatives in responding to changes

Although it might not have been given enough attention for a long time, farmers have devised their own mechanisms of dealing with persistent changes facing them, using their own resources and knowledge. They are well aware of the local context and can come up with innovations that are easily accessible, friendly to farmers and the environment, and simple to be applied and possibly adapted by others.

Some of the innovations devised in response to different changes in ESM District are depicted below, based on the interviews conducted with the farmers in this survey:

➤ Haricot bean crop pest control

Haricot bean, locally named "*bolokie*", is among the most common crops cultivated particularly in Eneguzi *Kebele* in ESM District. However, with the occurrence of a pest that typically damages the haricot bean leaves and stems at an early stage of germination (2–3 weeks after sowing), locally dubbed "*tegaday*", farmers faced total loss of production. Because of this, they were left with empty hands, which exacerbated the chronic food insecurity in the area. Farmers are wary of sowing haricot bean again because of the real loss they experienced. Apparently, there was no pesticide or any other chemical introduced that effectively addressed the problem.

One farmer, named Andarg Yigrem, came to the limelight with his own initiative to find a solution for the problem. His idea was to try sowing haricot bean at three different times:

- Before the beginning of the rainy season
- At the beginning of the rainy season (the usual way of sowing crops), and
- After the beginning of the main rainy season.

Ato (Mr) Andarg prepared a plot of land provided to him by the local farmers' field school (FFS), divided it in to three and sowed haricot bean at different times as stated above. He came up with striking results:

- The crop in the plot sown before the beginning of the rainy season was found to be more productive and did not suffer any damage from pests.
- The crop in the plot sown at the beginning of the rainy season was destroyed totally, as had been seen in the plots of all the other farmers.
- The crop in the plots sown after the start of the rainy season brought relatively better production but not like that of the plot sown before the rainy season.



AtoAndarg presenting his innovation to the community

This innovation suggested that the early rainy season creates a favourable condition for the incubation of the pest's eggs, but sowing before and after the beginning of the rainy season greatly reduces the chance of incubating the pest's eggs and thus leads to better production of haricot bean.

Ato Andarg stated that, when he first started sowing haricot beans in the dry season, other farmers were mocking him. But in the following year and the one after that, four and then twelve farmers followed suit, taking his advice, and more and more farmers did so in subsequent years. He further stated that he could harvest up to ten quintals of haricot bean and produce twice a year, sowing chickpea in wet seasons.

➤ **Ploughing with one ox**

The common way of ploughing in most parts of Ethiopia is using a pair of oxen. The same is true in ESM District. However, the ever-increasing price of cattle poses a serious challenge to acquiring pairs of oxen. The indigenous alternative to avert the problem had long been to combine two farmers' oxen, one from each farmer, and to plough by turns. In this instance, farmers were forced to waste their time unnecessarily, waiting for their turn to use the pair of oxen and face the hurdle of a significant reduction in their food production and security.

It is at this juncture that Zeleke Kebede, who is a priest and a farmer in Lay Michael *Kebele* of ESM District, came up with a solution: ploughing with one ox and leaving aside the conventional pair of oxen. Kes (Priest) Zeleke reiterated that, because of the skyrocketing prices of cattle, most farmers in the area own only one ox. Only a handful of farmers possess a pair of oxen. Even those who acquire two oxen face difficulties in feeding their cattle on account of the dearth of forage. On top of this, although farmers developed a practice of farming by combining their oxen, there are instances in which the partnership failed in the ploughing season. Kes Zeleke is also convinced that, rather than purchasing a pair of oxen at an exorbitant price, it is better to buy one ox and to diversify farming practices, such as acquiring a beehive and a cow, using the money that would otherwise have been used for the second ox, as this really helps to increase income.

Analysing these factors, Zeleke went on to prepare the necessary harnessing equipment and started ploughing using only one ox. The experience was strange for the locality and most neighbours criticised and laughed at him. Yet he pursued in his efforts. At a later time, the District Agricultural Bureau gave recognition to his innovation and shared the experience with other communities. Recently, the innovation has become more popular and has been adopted by at least six farmers in neighbourhood sub-districts. The district's officials and development agents say that the innovation has played a decisive role in improving the lives of the surrounding farmers, since most of them have only one ox.



Zeleke, the priest farmer, plowing with one ox

➤ **Potato seed adaptation trial**

Ato Gezie Moges is a smallholder farmer who lives with his wife and six children in GuanGuna *Kebele* in ESM District. He has only 1 ha. of farmland, where he grows potatoes with irrigation.

Though government institutions, CSOs and other stakeholders provide so-called “improved” seed to farmers, most of the time, no one in these institutions gives due attention to whether the new variety suits the local environment or not. Because of this, farmers who used the new seed face a huge reduction in production and sometimes total crop failure. In the same instance, a newly introduced scheme supported by an bilateral donor agency, SIDA provided potato seed named “*Chacho*” to the locality of Ato Gezie. When he tried the new seed in his farm, its productivity was below expectations and could not meet his family’s demand. Unlike the other farmers who suffered the consequence and sought food aid and other support, Ato Gezie realised the need to do his own trials with other varieties with possibly better productivity, so he became busy in searching for local potato seed and buying seed from the market in nearby areas.



Ato Gezie in his farm collecting his adapted potato

Once he had acquired the seed, he conducted experiments on his farm sowing the potato seed. He managed to harvest one sack of potato from 2–3 kg of potato seed, which was much better than with the previously introduced “improved” seed. Moreover, he found out that the potato variety he selected also resisted drought and yellow mildew.

Having recognised this, Ato Gezie reproduced the potato seed in his farm, and other farmers from the surroundings benefited from him, bought the potato seed and reproduced it in their farms. Working rigorously in promoting the potato seed, Ato Gezie has benefited enormously from the increasing income and social capital.

➤ **Construction of home furniture from local materials**

Etyie Yibeletal is a female household head and farmer who lives with her sole child in GuanGuna *Kebele* in ESM District. She earned her living cultivating a small plot of

land near her home. Her neighbours portrayed her as determined, proactive and a risk-taker. She reiterated that her fate is in her own hands.

Following the conventional way, most farmers prepared their home furniture/equipment from wood or either bought it ready-made from the market. Yet the escalating prices of raw materials such as wood and other inputs makes it unaffordable for most farmers, including Etyie Yibeltal. Since the area is seriously affected by deforestation, there are no available trees to make one's own furniture, and the ready-made furniture now has exorbitant prices.

Considering these factors, Etyie Yibeltal came up with the idea of preparing house equipment, mostly chairs, using clay in the same way that potters use it. Once she had finished making the furniture out of clay, she decorated it by covering it with different materials. On top of this, she is very well organised and keeps her house very clean.



Etyie Yibeltal's house furniture made of clay instead of those made of wood shown behind

People in her surroundings took the time to adopt her innovation, even though they had criticised her efforts at the outset. Later, her neighbours took her lessons and began making their home furniture out of clay. It is easily understood that Etyie Yibeltal's innovation contributes to environmental protection as it curbs the ever-intensifying deforestation at least for the sake of building home furnishings.

➤ **Traditional alternative dispute resolution through relatives' association**

Though the occurrence of conflict has long been common in ESM District, it recently became rife among the communities. Previously, when a farmer died, the government had taken over his land and transferred to those who didn't have any. But with the recent development in allowing farmers to transfer land to their siblings and relatives, inter-family conflict became common due to frustration over their share. The district court office report witnessed that 50% cases with regard to inter-family conflict are associated with inheritance issues related with land. Increase of unemployment among the youth and shortage of farmland with the increase in population also contributed to

the increase in inter-family conflicts. People kill each other for minor causes. The very frightening part of this practice is that, those who lost their families or relatives do not hesitate to avenge by doing the same thing to the killer or his relatives. Sometimes, this revenge continues for long along kinship lines on both sides. Even though a lot of effort has made to convince people to take their case to the appropriate justice organ, this has not borne fruit and conflict has become a serious threat to the society.

Recognising this, the communities in 09 *Kebele*, led by a female farmer Yerom Belay, started to form a relatives' association taking the idea from the community. The association, which consists of close relatives in the communities concerned, serves as a dialogue platform. The larger the number of relatives, the more become members of the association. Members discuss relevant issues that need their attention such as solving conflicts amicably within and among the community, avoiding consanguineal marriage that might happen between distant relatives, and strengthening social ties *inter alia*.



Yerom Belay, the lead organiser of the relatives' association

Whenever a conflict arises, members of the association gather and discuss amicable ways of solving the problem before it gets worse. Somehow, it also focuses on prevention, since it provides direction to avoid similar issues that caused the conflict. Moreover, the platform serves to ensure women's equality. If there is any complaint that the husband treats his wife badly or imposes unnecessary burdens on her, he is obliged by the association to admit his mistakes and seek forgiveness from her.

This dialogue platform did not reach its present status without challenges. At the outset, people were not willing to solve conflicts using the platform and some were not interested in joining it merely for the purpose of conflict resolution. Later on, the association broadened its area of focus to help each other in time of need whenever something happens to a member and this has become accepted by most farmers.

VI. Lessons learnt

The study team came up with a range of lessons from smallholder farmers in ESM District who perceive changes affecting their lives and found ways to respond innovatively to these changes:

- Most smallholder farmers respond to changes innovatively. They come up with their own initiatives to cope with difficulties they faced. But the farmers, as well as many people in their surroundings, do not consider their activities as innovations.
- Mostly local farmers respond to changes innovatively in the case of those changes that affect their lives negatively. Farmers did not talk about innovating in terms of using opportunities that affect their lives positively.
- Identification of smallholder farmers' local innovations takes time and needs close collaboration of other stakeholders such as development agents, responsible government bureaus as well as community members. This helps to add inputs on the existing local innovations and disseminate the ideas to other areas.
- Some farmers adopted or even adapted some local innovations without difficulty. But other innovations need further research or experimentation to show their effectiveness to the larger community and relevant stakeholders: development agents, agricultural researchers, government bureaus and academicians
- Different community members view innovation in different ways. Something that might have been labelled innovation by some groups might not be by others. The concept seems new to them but vital in enhancing their resilience to change.